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Ellipsis in Comparatives

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Contents

Chapter 1
Introduction

It is probably safe to say that there are more unresolved problems and puzzles enshrouding the syntax and semantics of the comparative construction than there are well-established solutions. Partially, this is due to the bewildering variability of the construction and the wide range of different shapes it appears in. For instance, clausal comparatives as in (1) exist alongside Subcomparatives such as in (2) and phrasal comparative as illustrated by (3), and it is far from obvious whether all three manifestations lend themselves to a unified analysis (Bresnan 1975; Chomsky 1977; Corver 1994; Heim 1985; Hendriks 1995; Kennedy 1998; Klein 1980; McConnell-Ginet 1973; Moltmann 1992a; Napoli 1983; Pinkham 1982; Smith 1961):[1]

(1) a. *This screen is wider than that screen is.*
b. *Sam knows more musicians than Mary knows.*

(2) a. *This screen is wider than it is high.*
b. *Sam knows more musicians than Mary knows cooks.*

(3) a. *This screen is wider than that screen.*
b. *Sam knows more musicians than Mary.*

Partially, the challenge posed by comparatives for linguistic research derives also from the significant complexity of the fundamental components of the construction. Numerous issues pertaining to the syntax and semantics of gradation are still under debate. They include questions concerning the ontological status of degrees, their relation to scales and the proper truth conditional representation of the atoms of the comparison relation (Bartsch and Vennemann 1972; Bierwisch 1989; Gawron 1995; Hackl 2000; Heim 1985, 2000; Kennedy 1999; Klein 1980; Larson 1988; Lerner and Pinkal 1992; Moltmann 1992a; Schwarzschild and Wilkinson 2002; von Stechow 1984); the syntactic structure of comparatives and their compositionally interpretable logical forms (Bresnan 1973, 1975; Corver 1994, 1997; Izvorski 1995; Kennedy 1999; McCawley 1988; McConnell-Ginet 1973; Pinkham 1982; von Stechow 1984); and the commonalities and disparities between comparatives and related constructions such as coordinate structures, relative clauses and free relatives (Berman 1973; Corver 1994; Hendriks 1995; Larson 1988; McConnell-Ginet 1973).

This monograph addresses a set of problems central to both of the two domains identified above. In particular, it is intended as a contribution to the analysis of two construction specific types of deletion processes which have been claimed in the literature to co-determine comparative formation. The first kind of ellipsis, Comparative Deletion is widely assumed to be implied in the derivation of comparatives (Bresnan 1973). The second type, Comparative Ellipsis has been hypothesized to be involved, among others, in relating the phrasal comparatives in (3) to the clausal constructions in (1) (Hankamer 1971; McCawley 1988; Pinkham 1982). Thus, the postulation of CE makes it possible to locate the source of the surface variability of comparatives in an optional deletion process.

The present monograph develops a new, directly semantically interpretable analysis of comparatives which does not require reference to the type of designated deletion processes above. In particular, this study defends the two claims under (4), each of which in turn encapsulates two specific hypotheses which generate empirical predictions for clausal and for phrasal comparatives:

(4) CLAIM I: Comparatives do not involve construction specific types of ellipsis.
- ! Comparative Deletion consists in overt AP-Raising.
- " There is no designated process of Comparative Ellipsis.

CLAIM II: All ellipsis processes in comparatives are reflected in syntax.
- ! Comparative Deletion is an instance of syntactic ellipsis.
- " The ellipsis site in phrasal comparatives contains structure.

In what follows, I will briefly outline the content and structure of the book, anticipating some of the consequences of the hypotheses in (4) and providing the skeleton of the central arguments and analyses to be discussed in greater detail in chapters 2 to 4.

1. Synopsis of chapter 2: Comparative Deletion

Comparatives characteristically contain gradable expressions and establish a relation between two degree terms associated with these gradable properties. For instance, (1)a intuitively is understood to be true in situations in which the degree of width of this screen exceeds the degree of width of that screen.

(1) a. *This screen is wider than that screen is.*

According to an influential line of thought, degrees are construed as sorted individuals which are provided by the semantic translations of gradable adjectives, while the relation of comparison is established by the meaning of the comparative morpheme (Cresswell 1976; Rullmann 1995; von Stechow 1984). On this conception, sentence (1)a can be paraphrased as in (5)b:[2]

(5) a. *This screen is wider than that screen is.* (= (1)a)
b. 'The degree to which this screen is wide is greater than the degree to which that screen is wide.'

Since the comparison relation requires two degrees, and since the surface representation of sentence (1)a contains only a single occurrence of the degree predicate *wide*, the adjective sponsoring the second degree has to be reconstructed from phonologically covert parts of the phrase marker. Following Bresnan (1973), this can be achieved by assuming that the adjective *wide* is present in the underlying representation of the comparative complement, but elided from the surface string by Comparative Deletion (CD):

(6) *This screen is wider than that screen is* $\triangle_{CD}$.
($\triangle_{CD}$ = [$_{AP}$ d-wide])

Various problems materialize in this contexts. To begin with, CD constitutes a construction specific process, which in itself represents an undesirable aspect of a restricted theory of grammar. Furthermore, CD encompasses interesting empirical qualities which have so far resisted a satisfactory analysis. For one, various diagnostics indicate that CD is located at the boundary between ellipsis and movement phenomena. On the surface, CD appears to fall in the class of ellipsis operations because it deletes terminals in a syntactic parse under identity (*salve* comparative morphology). But at the same time, CD also displays behavior characteristic of movement processes in that it leads to the creation of bounded dependencies (Chomsky 1977). Sentence (7) attests to the fact that embedding the CD-site inside an island (e.g. complex NP) results in an ill-formed output string:

(7) **This screen is wider than I know the fact that that screen is* $\triangle$.
($\triangle$ = [$_{AP}$ d-wide])

The recognition of this hybrid status of CD motivated the analysis of comparatives as empty operator movement constructions in Chomsky (1977). Comparative formation is now no longer taken to proceed in a single step, but is decomposed into empty operator movement and ellipsis of the gradable

adjective (i.e. CD). This leads to the new derivation for (1)a under (8), according to which the operator moves out of the AP first, binding a degree variable from its surface location ((8)a), with subsequent ellipsis of the AP by CD as in (8)b:

(8) a. *This screen is wider* [*OP*$_i$ *than that screen is* [$_{AP}$ *d*$_i$ *-wide*]].
b. *This screen is wider* [*OP than that screen is* ⌓].
(⌓ = [$_{AP}$ d -wide])

Although successful in the treatment of predicative comparatives such as (1)a, the empty operator analysis encounters complications once the empirical range is extended to NP-comparatives as in (9). Attributive modifiers are standardly assumed to be left-adjoined to NP, and should therefore constitute left-branch islands for extraction (Corver 1990; Moltmann 1992a). As detailed by (9)b, the operator chain is therefore incorrectly predicted to violate the locality conditions on movement:

(9) a. *Sam knows better musicians than Mary knows* ⌓.
(⌓ = [$_{NP}$ d-good musicians])
b. Sam knows better musicians
[OP$_i$ than Mary knows [$_{NP}$ [$_{NP}$ [$_{AP}$ d$_i$-good] musicians]]].

In principle, the problem above is amenable to two different kinds of solutions: Either the empty operator movement analysis is abandoned (Bresnan 1977), or the structural relation between the operator and its trace inside the NP is adjusted. Adopting the latter approach, I argue in chapter 2 that a re-evaluation of the phrasal architecture of attributively modified NP-comparatives leads to an adequate analysis of Comparative Deletion. Instead of assuming that the operator trace is part of the CD-site, as in (9)b, I propose that the foot position of the chain is located outside the category which undergoes CD, as in (10).

(10) Sam knows better musicians
[OP$_i$ than Mary knows [[$_{CD\text{-}site}$ good musicians] d$_i$]].

This has - among others - the effect that the degree variable can be construed as being no longer contained in an island.

But structurally separating the operator chain from the CD-site entails a second, theoretically more interesting consequence. Once the CD-site is treated as a constituent to the exclusion of the degree variable, it becomes possible to redefine the relation which links the CD-site to its antecedent in the

matrix clause. The new analysis of CD is expressed in terms the *AP-Raising Hypothesis* in chapter 2, which states that the CD-site and its antecedent are related by a movement operation similar to the kind of head-raising postulated for relative clauses constructions (Bianchi 1999; Kayne 1994; Sauerland 1998; Vergnaud 1974). More specifically, the AP-Raising Hypothesis maintains that CD consists in feature-driven movement of a gradable property - α in the schematic representation under (11) - from the CD-site below *than* to its surface position adjacent to *more*:

(11) [... *more* [α ... [*than* ... [α ...]]...]...]

The movement account receives empirical legitimation from an extensive range of phenomena, including the observation that comparatives can be derived from environments which do not tolerate (AP-)ellipsis, and the ability of AP-Raising to contribute to an understanding of a number of old puzzles for NP-comparatives related to the influence of word-order variation on the size of ellipsis and adjectival interpretation.

The assumption that the CD-site is associated with its antecedent by overt movement also entails that CD manifests a genuinely syntactic process, and does not represent an instance of semantic ellipsis, whose identification is deferred to the semantic component, as e.g. in Kennedy (1999) and Lerner and Pinkal (1995). Empirical support for the correctness of this view comes from an inspection of the scope and binding properties of the CD-site and categories embedded inside the CD-site. More precisely, there is evidence that the lower occurrence of α in (11) is visible for the principles of Binding Theory as well as for the computation of scope, indicating that the CD-site is reconstructed at LF. The AP-Raising analysis, according to which the CD-site is syntactically active throughout the derivation, offers a natural account for this finding. Semantic approaches, on the other side, which maintain that identification of the CD-site is delayed to the semantic component, fail to generate empirically adequate predictions without further stipulations.

2. Synopsis of chapters 3 and 4: Comparative Ellipsis

The second main objective of this monograph consists in presenting an analysis of optional deletion processes in comparatives. The specific account to be endorsed is characterized by two properties: (i) it does not refer to the construction specific operation of Comparative Ellipsis (CE), and (ii) it extends to phrasal comparatives, i.e. constructions in which the comparative complement (*than*-XP) contains only a single remnant.

More specifically, two hypotheses will be defended in chapter 3 and 4. On the one hand, it is maintained that all deletion in comparatives results from the application of Conjunction Reduction (CR) operations such as Gapping, Right Node Raising (RNR) or Across-the-Board (ATB) movement (*CR-Hypothesis*). On this conception, it is argued, the effects of the designated rule of CE can be subsumed under the more general processes of CR, which are independently attested in coordinate structures. On the other hand, phrasal comparatives (PCs) are claimed to derive from an underlying clausal source (*PC-Hypothesis*). In conjunction with the CR-Hypothesis, the PC-Hypothesis moreover entails that the surface appearance of phrasal comparatives is the product of CR operating on their clausal correlates. To exemplify, Gapping of the clausal comparatives in (12)a and (12)b yields the phrasal comparatives in (13)a and (13)b, respectively, while (13)c can be linked to its clausal correlate in (12)c by Gapping and ATB subject extraction:

(12) a. *This screen is wider than that screen is.* (= (1)a)
b. *Sam knows more musicians than Mary knows.* (= (1)b)
c. *Bart visited Millhouse more often than Bart visited Otto.*

(13) a. *This screen is wider* [$_{\textit{than}\text{-XP}}$ *than that screen* ~~*is*~~]. (= (3)a)
b. *Sam knows more musicians* [$_{\textit{than}\text{-XP}}$ *than Mary* ~~*knows*~~]. (= (3)b)
c. *Bart* [$_{\textit{than}\text{-XP}}$ *t visited Millhouse more often than t* ~~*visited*~~ *Otto*].

This position fundamentally contrasts with competing direct (or base-generation) analyses of PCs, according to which phrasal comparatives do not contain any syntactically projected structure apart from the overt remnant (Brame 1983; Heim 1985; Krifka 1987; Napoli 1982). It will be argued that the ellipsis approach proves empirically more adequate in several domains.

To forecast the central features of the analysis, the CR-Hypothesis rests on four premises which distinguish it from direct approaches. First, the conditions on CR operations in coordinate contexts are postulated to be identical to the ones which can be found in comparatives. As a comparison of the restrictions on Gapping in coordinate structures and comparatives reveals, this assumption is empirically supported by data from English as well as from German.

Second, the CR-Hypothesis predicts that the positional distribution of phrasal *than*-XPs (*More people like Mary* [$_{\textit{than}\text{-XP}}$ *than Sam]* vs. **More people* [$_{\textit{than}\text{-XP}}$ *than Sam] like Mary*) should match the behavior of other types of reduced clauses (such as the second conjunct in base-generated conjunctions). It will be demonstrates that this is indeed the case, and that the distribution of phrasal *than*-XPs can be made to follow directly from contextual restrictions on CR.

Third, the CR-Hypothesis generates a taxonomy of comparative complements which markedly differs from the one predicted by competing base-generation analyses. According to the CR-Hypothesis, phrasal *than*-XPs are expected to display the same positional distribution and internal organization as partially reduced *than*-XPs, i.e. constructions in which the comparative marker *than* is followed by more than a single remnant (*More people met Mary on Sunday [$_{than\text{-XP}}$ than Sam on Monday]*). Chapter 3 establishes that this prediction is borne out. For direct analyses, this result comes as a surprise, since they reserve a special status for phrasal comparatives and therefore (wrongly) prognosticate that partially reduced comparatives should pattern along with unreduced, clausal comparatives.

Taken together, these first three substantive components of the CR-Hypothesis form a complete analysis of the distribution and shape of reduced and phrasal comparatives in strict word order languages (English), as well as in languages with a flexible middle field (German). Consequently, it is concluded, the construction specific operation of Comparative Ellipsis can be eliminated from the grammar.

Finally, the CR-Hypothesis implies the claim that the syntactic structure of reduced comparatives overlaps at one point of the derivation with the convergence of properties which defines coordination. In chapter 4, I propose that the coordinate parse of comparatives is sponsored by optional extraposition of the *than*-XP to the right periphery of the clause by a process which will be referred to as *than*-XP *Raising* (TR). Empirical support for the assumption that formation of a derived coordinate structure proceeds by movement mainly comes from two sources. First, TR emulates the restrictions on extraposition (TR is e.g. bounded and upwards). Second, TR interacts with Binding Theory, as is detailed in an investigation of the relation between the size of the ellipsis site affected by Gapping inside the *than*-XP and the Binding scope of the remnant in phrasal comparatives. Apart from providing an explanation for the impact of the *size* of ellipsis on the syntactic scope of the remnant, the CR-Hypothesis is shown to account for the observation that the binding scope of the remnant is dependent upon the internal structure, that is the *shape*, of the ellipsis. This latter observation represents an additional, strong argument against direct approaches towards phrasal comparatives.

Chapter 2
Comparative Deletion

1. Introduction

Since Bresnan (1973, 1975, 1977), a consensus has emerged in the generative literature that the rules of grammar contributing to comparative formation minimally have to include the process of Comparative Deletion (CD). CD is defined as an obligatory operation which removes the gradable property from the *comparative complement* (*than*-XP), accounting for the observation that comparatives in English and related languages characteristically contain a gap which cannot be lexically filled:

(1) *Mary knows younger authors* [$_{than\text{-XP}}$ *than Peter knows* $\triangle_{CD}$].
($\triangle_{CD}$ = d-young authors)

(2) **Mary knows younger authors than Peter knows young authors.*

The present chapter investigates some syntactic and semantic properties of CD, and attempts to answer three questions: First, at which level of representation is CD identified? Should the CD-site be assumed to be already projected during the syntactic derivation (for instance at LF), or should the ellipsis be restored only later, in semantics? Second, what is the fine-grained structure and interpretation of attributively modified nominal comparatives such as the object *younger authors than Peter knows* in (1)? Third, which mechanism exactly is responsible for the recovery of the empty gradable property in comparatives? The sections to follow will address these three issues in turn.

In section 2, I will advance an initial argument in support of the view that CD should be interpreted as an instance of syntactic ellipsis. Section 3 turns to an investigation of aspects of the phrasal architecture of NP-comparatives. In addition, section 3 provides the contours of a new theory of CD, which will be referred to as the *AP-Raising Hypothesis*. Section 4 supplements the proposed LF output structures with specific semantic rules, and demonstrates that the LF representations are directly compositionally interpretable. Focusing on empirical ramifications of the analysis, it will be shown in section 5 that the approach developed in this chapter sheds light on some long-standing problems as well as on a new puzzle for the analysis of attributive NP-comparatives. Eventually, section 6 returns again to the question of when CD is resolved, and presents two additional arguments for syntactic CD-identification,

which are cast in terms of a direct comparison between the AP-Raising Hypothesis and semantic approaches toward CD.

1.1. Locality and the identification of ellipsis

Descriptively speaking, ellipsis phenomena in natural language potentially vary - at least - across two distinct dimensions: the structural locality conditions that govern the distance between the elliptical constituent and its antecedent, and the level of representation at which the content of the ellipsis is restored.[3] To exemplify the effects of locality, consider the locality properties of Gapping and *do-it* anaphora. Gapping requires that the licensing antecedent precede the elided category ((3)a vs. (3)b). In addition, Gapping is restricted to non-embedded contexts ((3)a vs. (3)c):

(3) a. *Sam imitated a pheasant and Peter ⌓ a salmon.*
b. **Sam ⌓ a pheasant and Peter imitated a salmon.*
c. **Mary imitated a pheasant, and Peter had the suspicion that Peter ⌓ a salmon.* (⌓ = imitated)

In contrast to Gapping, the silent VP of *do-it* anaphora can be recovered retroactively and at a distance (see (4)), subject to discourse theoretic principles which resemble the ones responsible for assigning reference to pronouns (Chao 1987; Hardt 1992; Johnson 1997a; Kehler 2002; Lobeck 1995; Partee and Bach 1984; Sag 1976; Williams 1977):

(4) *Until the ventriloquist did it ⌓, nobody believed that it was possible to imitate a salmon.* (⌓ = imitate a salmon)

Turning now to the criterion of *level of identification*, it can be observed that the variable degree to which an ellipsis site has to match its antecedent in shape can be taken as a diagnostics of when in the derivation the content of the elided category has been recovered (see Merchant 2001 for complicating factors). That is, if ellipsis resolution proceeds in syntax, the deletion site characteristically has to agree with the antecedent in formal syntactic features such as person, gender and number marking.[4] A prototypical case of syntactic ellipsis in this sense is exemplified by Right Node Raising ((5)), which requires strict surface identity between the silent and the phonologically realized strings:

(5) a. **I raised ⌂ and Bill lowered **his** hand.*
(⌂ = **my** hand)
b. *Sam raised ⌂ and Bill lowered **his** hand.*
(⌂ = **his** hand)

If identification is on the other side postponed to semantics - a level which disregards formal syntactic features - the relation between the ellipsis and its antecedent is generally constrained by less severe identity conditions. *Do-it* anaphora not only operates on non-matching surface strings ((6)), but also ignores the active-passive distinction ((7)), and even remains recoverable in the absence of a linguistic antecedent, as witnessed by (8):

(6) *I raised **my** hand. Bill did it ⌂ two seconds later.*
(⌂ = raised **his** hand)

(7) *They asked to be squirted with the hose, so we did it ⌂.*
(⌂ = squirt them with the hose) (Sag and Hankamer 1976)

(8) *You shouldn't have done it!*

In (8), the ellipsis cannot be matched against any syntactically projected category, and is thereby also trivially non-local. These properties of *do-it* anaphora indicate that locality and level of identification are linked to each other in a systematic way: In general, it seems to hold that the less local anaphoric phenomena, such as *do-it* anaphora, are also identified at a later point in the derivation.

The next subsection discusses CD from the perspective of the two criteria introduced above, and briefly reports results from the recent literature. Section 2 will subsequently examine more closely the question at which level of the grammar the content of CD is restored.

1.2. Semantic approaches towards CD-resolution

In a recent study on NP-comparatives, Lerner and Pinkal (1995) propose to treat CD as a manifestation of discourse level ellipsis which is resolved in the semantic component. Lerner and Pinkal argue that the content of CD in NP-comparatives is recovered by means of a discourse anaphoric mechanism which resembles the one that governs the distribution of *one*-anaphora (Lerner and Pinkal 1995: 228). The silent categories in (9)a and (9)b would consequently be identified by similar principles:

(9) a. *John owns a faster car than OP Bill owns ∆.*
b. *John owns a fast car and Bill owns one ∆, too.*
(∆ = d-fast car)

Lerner and Pinkal extend this analysis to predicative comparatives as in (10):

(10) *Mary is younger than OP Peter is ∆.*
(∆ = d-young)

In essence, their account rests on the assumption that a context variable built into the denotation of the empty comparative operator takes up the reference of the gradable property, and is λ-converted into the appropriate position within the comparative complement in the course of the semantic computation. The *than*-XP of (10) can informally be translated as in (11)a. $\mathbf{P_0}$ represents the context variable, which is later instantiated by *young*, yielding (11)b:

(11) a. than $\mathbf{P_0}$ (d)(Peter)
b. than **young** (d)(Peter)

An idea similar in spirit is defended in Kennedy (1997, 1999), who also adopts a semantic approach towards CD, but does not employ the help of context variables. To begin with, he points out that the content of the CD-site is always determined locally[5], and contrasts in this respect with other kinds of semantic ellipsis, notably VP-deletion. The empty node inside the comparative clause in (12) is e.g. unequivocally interpreted as *d-long*, a gradable property that is provided by the matrix predicate of the second conjunct ((12)a). The non-local construal (12)b, according to which the CD-site within the second conjunct is identified by the AP heading the first conjunct *(d-wide)* is intuitively unavailable:

(12) *The table is wider than this rug is, but this rug is longer than the desk is ∆.*
a. ∆ = d-long
b. *∆ = d-wide (Kennedy 1997: 154, (167))

Comparing CD with VP-ellipsis, it becomes obvious that the two phenomena fall into two distinct groups w.r.t. locality. Example (13) displays ambiguity between a local and a non-local interpretation, indicating that the antecedent of VP-deletion may be recovered at a distance:

(13) *Marcus read every book I did and I bought every book Charles did ∆.*
a. ∆ = bought
b. ∆ = read (Kennedy 1997: 154, (166))

In developing an accounting for (among others) the different behavior of CD and VP-ellipsis, Kennedy adopts Lerner and Pinkal's suggestion of letting the empty comparative operator mediate the identification of CD. However, instead of opting for a solution in terms of context variables, he capitalizes on the fact that the operator and the antecedent of the CD-site are in a local relation at LF, much in the same way in which the empty operator of relative clauses (or other empty operator constructions) is local to the head noun (or some other category heading the respective construction).

More specifically, Kennedy proposes that the comparative operator binds a property denoting trace of a Degree Phrase (DegP; Abney 1987; Corver 1994) in the position of the CD-site:

(14) a. Syntax/LF: *Mary is younger than* [$_{CP}$ OP_i *Peter is* $T_{DegP,\ i}$]
b. Semantics: *Mary is younger than* [$_{CP}$ $\boldsymbol{OP_i}$ *Peter is* $\boldsymbol{T_{i,\ <e,t>}}$]

This higher-type variable T_i in (14)b serves as a place holder into which the AP-denotation of the antecedent is λ-converted in the semantic component. The effects of ellipsis resolution can now essentially be derived by employing the mechanism of Semantic Reconstruction (Cresti 1995; Rullmann 1995). First, the comparative complement of (14) is translated into a function from gradable adjectives to degrees in semantics. (The higher type trace T_i of (14)b is represented by the variable 'G' in the expression below):[6]

(15) $[\![\text{than } OP_i \text{ Peter is } T_i]\!] = \lambda G_{<e,d>}\ [\max(\lambda d[ABS(G(Peter))(d)])]$

Second, letting a functional degree head *more*, defined as in (16), apply to the AP-denotation results in the translation of the matrix comparative AP in (17):

(16) $[\![\text{more}]\!] = \lambda G_{<e,d>}\lambda Q_{<<e,d>,d>}\lambda x[MORE(G(x))(Q(G))]$

(17) $[\![\text{younger}]\!] = [\![\text{more}]\!]([\![\text{young}]\!]) =$
$= \lambda G\lambda Q\lambda x[MORE(\mathbf{G}(x))(Q(\mathbf{G}))]\ (\mathbf{young}) =$
$= \lambda Q\lambda x[MORE(young(x))(Q(young))]$

In the next, and crucial, step of the computation, the matrix AP is combined with the denotation of the comparative complement, and the gradable adjective is λ-converted into the CD-site:

(18) ⟦younger⟧ (⟦than OP_i Peter is T_i⟧) =
= λQλx[MORE (young(x))(**Q**(young))]
(**λG[max(λd[ABS(G(Peter))(d)])]**) =
= λx[MORE (young(x))(λG[max(λd[ABS(**G**(Peter))(d)])] (**young**))] =
= λx[MORE (young(x))(max(λd[ABS(young(Peter))(d)]))]

In this way, Kennedy derives the locality of CD from the principle of compositionality together with appropriate definitions for the comparative operator and the degree head *more*. Once the subject has joined the derivation, the final semantic representation looks as follows:

(19) ⟦Mary is younger than OP_i Peter is T_i⟧ =
= MORE(young(Mary)) (max(λd[ABS(young(Peter))(d)])) =
= 1 iff young(Mary) > max(λd[ABS(young(Peter))(d)])

Recapitulating briefly, both Lerner and Pinkal's and Kennedy's analyses of CD are based on the assumption that the ellipsis site is recovered at a late stage in the derivation, in semantics. One is therefore led to expect that principles which operate only on syntactic representations (overt syntax or LF) are blind to the content of CD. In the next section, I will demonstrate that this prediction is incorrect, and that one should therefore seek an alternative theory of CD, one which determines the content of the ellipsis already in syntax.

2. Identification of CD in syntax

2.1. Disjoint reference effects

A first argument for the view that the CD-site is restored in syntax can be derived from the distribution of disjoint reference effects in comparatives. In order to establish the argument, it is necessary to turn to a brief discussion of two competing analyses of possible variation in the size of the CD-site first.

If the comparative adjective is transitive, CD may affect either the adjectival head alone, or erase the adjective along with its complement:

(20) a. *Mary is prouder of John than Bill is of Sally.*
(⌂ = d-proud)
b. *Mary is prouder of John than Bill is ⌂.*
(⌂ = d-proud of John)

The question that arises in this context is whether the PP in (20)b has been elided along with the adjective by CD, or whether it has been suppressed by a deletion process distinct from CD. If the first option can be shown to obtain, the properties of an elided PP could be used as a heuristic tool for the detection of more general properties of CD.

Paradigm (20) is reminiscent of one that shows up in contexts of coordinate structures. In clausal conjunctions of predicative adjectives, phonological deletion may either affect the adjectival head alone, as in the Pseudogapping example (21)a (Levin 1986), or may elide the adjective together with its argument, as in the instance of 'VP'-ellipsis in (21)b:

(21) a. *Mary is proud of John and Bill is* ⌓ *of Sally.*
(⌓ = proud)
b. *Mary is proud of John and Bill is* ⌓*, too.*
(⌓ = proud of John)

Jayaseelan (1990), Johnson (1997a) and Lasnik (1995b) argued that the difference between (21)a and (21)b is not to be located in the size of ellipsis (A˚ vs. AP or VP), but rather in the presence of an additional movement step in the derivation of (21)a. Given this assumption, (21)b constitutes a straightforward instance of VP-deletion. In (21)a, on the other side, the object PP in moves out of the containing VP (and AP) prior to the application of VP-ellipsis ((22)b), yielding the appearance that VP-ellipsis only affects the adjectival head *proud* ((22)c):

(22) a. *Mary is proud of John and Bill is* $[_{VP}\ [_{AP}$ *proud of Sally*$]]$.
b. *Mary is proud of John and Bill is* $[_{PP}$ *of Sally*$]_i\ [_{VP}\ [_{AP}$ *proud* $t_i]]$.
c. *Mary is proud of John and Bill is* $[_{PP}$ *of Sally*$]_i$ ⌓_{VPE}.
(⌓_{VPE} = $[_{VP}\ [_{AP}$ proud $t_i]]$)

The same strategy can now be employed in the derivation of the comparative construction (20)a. In an initial step, the object PP is evacuated out of the AP ((23)b). Subsequent application of CD in (23)c yields an output representation for the *than*-XP practically identical to the second conjunct of Pseudogapping (the only difference being that VP-ellipsis targets full VPs, while CD deletes APs):

(23) a. *Mary is prouder of John than Bill is* $[_{VP}\ [_{AP}$ *proud of Sally*$]]$
b. *Mary is prouder of John than Bill is* $[_{PP}$ *of Sally*$]_i\ [_{VP}\ [_{AP}$ *proud* $t_i]]$
c. *Mary is prouder of John than Bill is* $[_{PP}$ *of Sally*$]_i\ [_{VP}\ \text{⌓}_{CD}]$
(⌓_{CD} = $[_{AP}$ proud $t_i]$)

On this conception, the categories affected by CD in (20)a and (20)b are of the same size, in both cases it is an AP that has been removed from the underlying representation. It follows that the PP object which is elided along with the adjectival head in (20)b is also contained in the CD-site, and not erased by some independent ellipsis operation.

Consider in this context example (24):

(24) **Mary is prouder of John$_i$ than he$_i$ is ⌓.*
(⌓ = d-proud of John$_i$)

(24) lacks a reading in which *John* and *he* are construed as coreferential, attesting to a Principle C violation.[7] Adopting the premise that Principle C is operative in syntax, the object PP accordingly has to be present at least by LF.[8] Moreover, since the object PP is part of the CD-site, one is led to the conclusion that the CD-site *d-proud of John* has been restored already during the syntactic computation, i.e. prior to semantics.

Two remarks are in order here: First, the Principle C effect in (24) is obviated if the CD-site is further structurally separated from the antecedent, e.g. by embedding it inside a complement clause:

(25) *Mary is prouder of John$_i$ than he$_i$ believes that I am ⌓.*
(⌓ = d-proud of John$_i$)

This signifies that Binding Theory treats the name inside the CD-site in (24) and (25) as a pronoun, and not as an R-expression. That is, reconstruction into the CD-site for Principle C is subject to *Vehicle Change* (in the sense of Fiengo and May 1994) from R-expressions to pronouns. Similar observations can be made for coordinate structures, in which embedding the ellipsis under a clause boundary also leads to a weakening of the disjoint reference effect:

(26) a. **Mary is proud of John$_i$ and he$_i$ is ⌓, too.*
b. *Mary is proud of John$_i$ and he$_i$ believes that I am ⌓, too.*
(⌓ = proud of John$_i$)

Second, observe that (24) is not amenable to an alternative analysis in terms of a Principle B violation in surface syntax, which would allow one to account for the deviance without reference to properties of the CD-site. This is so for two - partially related - reasons. First, the binding domain for the pronoun in (24) is the *than*-XP, and not the matrix clause, as can be seen from the fact that *than*-XP internal anaphors cannot be bound from the matrix clause:

(27) **John$_i$ is taller than himself$_i$ is ∆.*
(∆ = d-tall)

It follows that the pronoun in the clausal comparative (24) is free in its binding domain, too, precluding a Principle B account.

Second, the behavior of phrasal comparatives provides evidence that the AP-complement in (24) does not c-command the *than*-XP, raising additional problems for the Principle B solution. As was initially brought to attention by Hankamer (1973), phrasal comparatives in English differ from their clausal counterparts in that the *than*-XP is transparent for the computation of indexical dependencies. In particular, anaphoric remnants of phrasal comparatives can be bound by an antecedent in the matrix clause (see (28)a, which contrasts minimally with (27)), whereas pronominal remnants cannot be coindexed with an external c-commanding NP ((28)b):

(28) a. *John$_i$ is taller than himself$_i$ ∆.*
b. **John$_i$ is taller than him$_i$ ∆.*
(∆ = is d-tall)

Crucially, although phrasal comparatives are in principle able to host externally bound reflexives ((28)a), it is not possible, though, to establish a binding relation between *John* and *himself* in examples such as (29), in which the antecedent serves as the complement of the matrix AP:

(29) **Mary is prouder of John$_i$ than ∆ (of) himself$_i$*
(∆ = d-proud)

This indicates that the prepositional object of the matrix AP *John* fails to c-command the *than*-XP as well as the *than*-XP internal anaphor *himself*. Since the *than*-XP is arguably attached at the same structural position in phrasal and clausal comparatives, it is licit to hypothesize that the *than*-XP in (24) is not c-commanded by the AP complement, either. Given these assumptions, the ungrammaticality of (24) cannot be attributed to a Principle B effect, confirming the conclusion that categories inside the CD-site are visible to Principle C, and therefore need to be projected at the level of LF.

2.2. Reflexives and reciprocals

The behavior of anaphors provides (within certain theories) a second argument in support of a syntactic account of CD resolution. As demonstrated by the

examples in (30), the subject of the comparative complement can sloppily bind an anaphor or a reciprocal contained within the CD-site:

(30) a. *Mary is prouder of herself than Sally is ⌓.*
(⌓ = d-proud of herself)
b. *The girls are prouder of each other than the boys are ⌓.*
(⌓ = d-proud of each other)

(31) LF: Mary is prouder of herself than **Sally**$_i$ is d-proud of **herself**$_i$

The point can be strengthened, if an LF cliticization analysis of reflexives is adopted, which holds that the local relation between the anaphor and its antecedent is expressed in terms of covert raising of the anaphor to its binder (Chomsky 1986, 1992; Lebeaux 1985). Applied to the example at hand, the resulting LF representation, in which *self* has undergone covert syntactic movement, can be rendered as below:

(32) LF: Mary is prouder of herself than **[self**$_i$ **[Sally**$_i$ is d-proud of [her- t_i]]]

Example (30)b receives an analysis similar to the one assigned to (30)a on the theory of Heim, Lasnik and May (1991), which rests on the assumption that reciprocal binding involves raising of the distributive operator *each* to its plural antecedent at LF. On such an account, one is once again lead to the conclusion that CD is identified at least by LF. Otherwise it would not be possible to establish an LF chain between *each* and its antecedent *the boys* in the LF representation for (30)b below:

(33) LF: ... than [**each**$_i$ [the boys are proud of [**t**$_i$ other]]]

2.3. Coordinate Structure Constraint

Overt *wh*-movement contributes a third piece of evidence in favor of a syntactic approach towards CD-resolution. The argument has two parts to it: First, I will show that extraction out of comparatives is subject to the Coordinate Structure Constraint (CSC; Ross 1967a). Second, it will be demonstrated that the CSC needs to be computed during the syntactic derivation. Taken together, these two premises entail that the CD-site has to be projected in syntax.

Observe to begin with that in comparatives, Across-the-Board (ATB) extraction of two adjectival complements, as in (35), yields well-formed output strings ((34) serves as a control):

(34) *a person* ***who***$_i$ *Mary is proud of* $\boldsymbol{t}_i$

(35) *a person* ***who***$_i$ *Mary is* [*more proud of* $\boldsymbol{t}_i$] *than Peter is* ⌓
(⌓ = d-proud of $\mathbf{t}_i$)

At first sight, (35) resembles a parasitic gap configuration:

(36) ***a book***$_i$ *which you filed* $\boldsymbol{t}_i$ [*before reading* $\boldsymbol{t}_i$]

One might therefore wonder whether the analysis of parasitic gaps could not also be extended to cover ATB extraction in comparatives (in a similar vein, Munn 1993 suggests to analyze ATB extraction in coordination as parasitic gaps; see chapter 4, section 4.1). As it turns, however, comparatives differ from parasitic gaps in a crucial aspect. While asymmetric extraction out of the matrix clause is licit in 'parasitic gap' configurations ((37)), non-ATB movement leads to strong deviance in comparatives ((38)).[9, 10]

(37) ***a book***$_i$ *which you filed* $\boldsymbol{t}_i$ [*before reading the newspaper*]

(38) a. **a person* ***who***$_i$ *Mary is* [*more proud of* $\boldsymbol{t}_i$] *than Peter is* ⌓ *of John*$_k$
(⌓ = d-proud of t_k)
b. **a person* ***who***$_i$ *Mary is* [*more proud of John*] *than Peter is* ⌓
(⌓ = d-proud of $\mathbf{t}_i$)

This quality makes comparatives now rather look like coordinate structures, for which asymmetric extraction is prohibited by the CSC. On this view, the comparatives in (35) and (38) can be analyzed in the same way as the coordinate structures in (39) and (40), respectively, attributing the unavailability of non-ATB extraction in (38) to a reflex of the CSC:

(39) *a person* ***who***$_i$ [$_{IP}$ *Mary is proud of* $\boldsymbol{t}_i$] *and* [$_{IP}$ *Peter is proud of* $\boldsymbol{t}_i$]

(40) a. **a person* ***who***$_i$ [$_{IP}$ *Mary is proud of* $\boldsymbol{t}_i$] *and* [$_{IP}$ *Peter is proud of John*]
b. **a person* ***who***$_i$ [$_{IP}$ *Mary is proud of John*] *and* [$_{IP}$ *Peter is proud of* $\boldsymbol{t}_i$]

In fact, it has been observed at various points in the literature that comparatives share certain syntactic properties of base generated conjunctions (Corver 1994; McCawley 1988; Moltmann 1992a; Napoli 1983; Pinkham 1982, among others).[11] I will for the time being adopt the assumption that comparatives can (at least optionally) be parsed into trees which sufficiently resemble coordinate structures in order to license ATB movement, and postpone discussion of further empirical support for this claim and the exact mechanism

underlying the formation of this coordinate structure for comparatives to a later point (see chapter 3 and chapter 4).

The second step in the argument consists in justifying the assumption that the CSC represents a condition on syntactic derivations (Postal 1999), and not on semantic representations or Conceptual Structure (as argued by Culicover and Jackendoff 1997, 1999; Lakoff 1986). An initial indication to that effect comes from the observation that examples which violate the ATB requirement are still fully interpretable. For one, the interpretation of (38)a can be roughly paraphrased as below:[12]

(41) 'a person x such that there is a degree d and Mary is d-proud of x and d is greater than the maximal degree d' to which Peter is proud of John'

More importantly, the CSC is also operative in a domain which is generally thought not to have any consequences for truth conditional interpretation, i.e. verb movement (on the semantic vacuity of verb movement see e.g. Bittner 1994). Notice first that question formation out of conjoined clauses invariantly leads to deviance, irrespective whether *wh*-movement proceeds in observance of the CSC or not (compare to the relative clauses in (39) and (40)):

(42) a. ****Who**$_i$ is Mary proud of* **t**$_i$ *and Peter is proud of* **t**$_i$.
b. ****Who**$_i$ is Mary proud of* **t**$_i$ *and Peter is proud of John.*
c. ****Who**$_i$ is Mary proud of John and Peter is proud of* **t**$_i$.

Descriptively, the three strings under (42) are ill-formed since Subject-Aux inversion has failed to apply in the second conjunct.[13] This generalization can be accounted for on the assumption that (42) involves IP-coordination and that auxiliary fronting is equally subject to the CSC, as shown below for (42)a:[14]

(43) **Who* [$_{C'}$ ***is**$_i$* [$_{IP}$ [$_{IP}$ *Mary* **t**$_i$ *proud of t*] *and* [$_{IP}$ *Peter* ***is*** *proud of t*]]] (= (42)a)

In the derivation above, verb movement asymmetrically targets the auxiliary inside the first IP-conjunct, incurring a violation of the CSC. Hence, head movement provides substantive evidence in support of the position that the CSC is a constraint on syntactic processes (see chapter 3, section 4, for additional discussion). Reduplicating this condition in semantics would furthermore lead to unwarranted redundancy. This strongly suggests that the operative scope of the CSC should be restricted to the syntactic derivation.

Finally, even if the CSC could be shown to be also active in semantics, CSC violations in comparative constructions would nevertheless have to be computed in the syntactic component. This follows from the fact that even

though comparatives display certain syntactic properties characteristic of coordinate structures, they still unambiguously are semantically interpreted as subordinate structures. Thus, the CSC cannot be employed to filter out ill-formed instances of comparatives in the interpretive component, for the reason that comparatives simply do not qualify as coordinate structures semantically.

Critically for the argument against the semantic identification of CD, these considerations indicate that the CD-site in (38) is present already in the course of the syntactic derivation. More precisely, the syntactic approach towards CD-resolution can straightforwardly distinguish between (35) and (38) by appealing to the CSC (examples repeated from above):

(35) *a person* ***who***$_i$ *Mary is* [*more proud of* $\mathbf{t}_i$] *than Peter is* ⌓
(⌓ = d-proud of $\mathbf{t}_i$)

(38) a. **a person* ***who***$_i$ *Mary is* [*more proud of* $\mathbf{t}_i$] *than Peter is* ⌓ *of John*$_k$
(⌓ = d-proud of t_k)
b. **a person* ***who***$_i$ *Mary is* [*more proud of John*] *than Peter is* ⌓
(⌓ = d-proud of $\mathbf{t}_i$)

If the CD-site were on the other side represented by a higher type trace, as posited by the semantic analysis, this simple explanation would no longer be available. On the semantic account, the CD-sites in (35) and (38) denote properties which contain a bound variable each. The only point of variation consists in the exact location of the binder (*who* and/or *John*) of that variable. Furthermore, given that comparatives represent instances of semantic subordination, the factor separating (35) from (38) cannot be linked to a semantic condition which makes reference to the CSC. It is therefore far from obvious how to formulate a semantic principle which would be capable of generating the correct distinctions. Thus, manifestations of the CSC in comparatives constitute a robust argument in favor of the view that the CD-site is not restored in semantics, but as early as at LF.

The next section pursues two main objectives. First, section 3 turns to an investigation of some syntactic aspects of NP-comparatives. I will propose a novel structural representation for NP-comparatives, which will be shown to assist in solving a number of recalcitrant problems surrounding this complex construction. The second main goal of section 3 consists in presenting the contours of an alternative theory of CD. This new analysis of CD will prove capable of handling the reconstruction effects discussed in the present section, as well as a variety of additional properties of NP-comparatives. In section 4, I will finally provide the compositional semantic rules that render the proposed LF output structures interpretable.

3. The syntax of NP-comparatives

The current section focuses on the fine-grained structural relations between the DP, the AP-modifier and the degree system in NP-comparatives such (1), repeated below:

(1) *Mary knows younger authors* [*than Peter knows*].

In developing an account of NP-comparatives, I will diverge from standard assumptions about the degree and the DP-internal modifier system that can be found in the generative literature in two respects. First, I will advocate a new architecture for the organization of the DegP, which primarily rests on a reformulation of the structural relations between the comparative complement and the AP that it is associated with. Second, I will argue that the traditional analysis of prenominal attributive modification in terms of left-adjunction - in particular the relation between the DegP and the head noun - should be re-evaluated in light of more complex constructions such as (1).

3.1. The Degree Phrase

To begin with, I will adopt a general form of the *Functional AP-Hypothesis*, according to which an AP is embedded under a functional DegP (Abney 1987; Bresnan 1973; Corver 1990, 1993, 1997; Kennedy 1999, among others). In those studies that have considered comparatives from the perspective of this hypothesis, simple predicative comparatives such as (44)a are assigned the factorization (44)b, in which the AP and the *than*-XP are generated as daughters of a recursive Deg'-node (Corver 1993; Kennedy 1999; Kennedy and Merchant 2000).

(44) a. *Mary is younger than Peter is.*
b. *Mary is* [$_{\text{DegP}}$ [$_{\text{Deg'}}$ [$_{\text{Deg'}}$ *Deg* $^{\circ}$[$_{\text{AP}}$ *younger*]] [$_{\textit{than}\text{-XP}}$ *than Peter is*]]]

Contrary to the positions taken in the literature,[15] I will argue here that the *than*-XP serves as a complement to Deg$^{\circ}$, and that the AP originates in SpecDegP as the external argument of the degree head (see also Izvorski 1995, who proposed, for independent reasons, a similar structure):

(45) *Mary is* [$_{\text{DegP}}$ [$_{\text{AP}}$ *younger*] [$_{\text{Deg'}}$ *Deg* $^{\circ}$$_{\text{[+comparative]}}$ [$_{\textit{than}\text{-XP}}$ *than Peter is*]]]

On this view, the *than*-XP is treated as an internal argument which can under certain conditions be contextually recovered, similar to complements of transitive verbs such as *notice:*

(46) a. *Mary noticed.*
b. *Mary is younger.*

One immediate consequence of the parse in (45) is that AP and Deg° are in a Spec-head configuration. Comparative morphology can therefore be base-generated directly on the adjectival head, and checked on the AP by a suitable [+comparative] feature in Deg° under Spec-head agreement (Chomsky 1992).[16] In essence, this amounts to treating *younger* as an instance of phrasal - as opposed to lexical - comparative formation.[17]

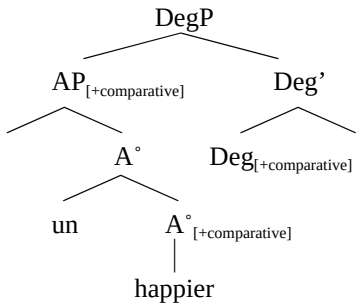
A second prediction directly entailed by the phrase structure in (45) pertains to interpretation. According to the null-hypothesis, which I will adopt, Deg° not only checks comparative morphology on its specifier, but also serves as the position in which comparative semantics is encoded (see section 4 for details). This conception provides a new angle on the problem of the *unhappier* Bracketing Paradox (Beard 1991; Pesetsky 1985; Sproat 1992).

The paradox consists in the observation that the string *unhappier* is subject to conflicting structural requirements. On the one side, morpho-phonological considerations force the negative prefix *un-* to attach outside the comparative morpheme ((47)a), since *-er* only attaches to words with maximally two syllables (cf. *curious/*curiouser*). But this bracketing would incorrectly assign to *unhappier* the interpretation 'not happier' instead of 'more unhappy'. That is, for semantic purposes, *unhappier* has to be parsed as in (47)b.

(47)	*unhappier*	Morpho-phonology	Interpretation
a.	[*un*[*happier*]]	✓	*
b.	[[*unhappi*]*er*]	*	✓

The current phrase structure offers a natural solution to the paradox by structurally dissociating the surface position of *-er* from the location of its interpretation. More specifically, it is assumed that *-er* morphology manifests a reflex of feature checking which selectively surfaces on mono- and bisyllabic adjectival heads only. (If A° is polysyllabic, the feature is spelled out on Deg°, resulting in the periphrastic form *more A°*.) Adopting moreover the plausible view that (productive) derivational morphology is syntactically represented, the bisyllabic form *happy* represents the head of *unhappy*, with *un-* head-adjoined to *happy*. The full string *unhappier* is accordingly assigned a bracketing consistent with (47)a, as explicated in more detail by the tree in (48):

(48)



Crucially, since the [+comparative] feature is located and interpreted on Deg°, *-er* unambiguously takes scope over *un-*, leading to the interpretive bracketing (47)b. The reverse structure (47)a in terms of lexical comparative formation cannot feed the semantic component, because it illegitimately separates the [+comparative] feature in Deg° from its meaning.

Expanding the empirical domain at this point to include slightly more complex structures such as the NP-comparative such (1), it becomes obvious that the analysis outlined so far encounters a complication, though:

(1) *Mary knows younger authors* [*than Peter knows*].

On the standard assumption that prenominal modifiers are left-adjoined to the common noun, the DegP should be parsed as an NP-adjunct, as in (49)a. But this factorization yields the illicit surface order (49)b, which locates the *than*-XP inbetween the prenominal modifier and the head-noun:

(49) a. [$_{NP}$ [$_{DegP}$ [$_{AP}$ *younger*] [$_{Deg'}$ *Deg* ° [$_{\textit{than}\text{-XP}}$ *than Peter knows*]]] [$_{NP}$ *authors*]]
b. **younger than Peter knows authors*

Thus, NP-comparatives reveal the limitations of the traditional NP-adjunction analysis, which apparently fails to correctly describe a basic generalization about word-order restrictions in comparatives.[18]

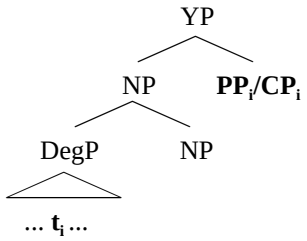
In principle, there are two ways to reconcile the DegP-hypothesis with the actually attested serialization. On the one hand, one might postulate an obligatory extraposition operation which shifts the *than*-XP in (49) to the right periphery of the DP (Bresnan 1973). As it turns out, though, this step leads to empirically unwarranted results. On the other hand - and this is the line I would eventually like to pursue - it is possible to interpret the conflict manifest in (49) as an argument against the NP-adjunction analysis of prenominal modification. Before going into the details of the new proposal, I will briefly comment on the shortcomings of the extraposition account.

3.2. Against extraposition of the *than*-XP

Even though extraposition has attracted the attention of a variety of recent studies, there is little consensus on the questions whether extraposed phrases end up in their surface position by movement (Büring and Hartmann 1994), are base-generated in a high, right-adjoined position (Culicover and Rochemont 1990; Wiltschko 1995), or are projected low in a uniformly right-branching tree (Haider 1995; Kayne 1994). Without committing myself to a specific position on this issue, I will demonstrate in what follows that the relation between the *than*-XP and its point of origin inside the DegP does not obey the same locality restrictions which typically hold for extraposed phrases and their associated base positions.

If extraposition were indeed the source for the postnominal location of the *than*-XP in (1), one would be led to expect that extraposable categories (PPs and CPs) which are generated inside left-branch adjuncts are more generally able to undergo movement (or some other dislocation process) to the right periphery of the minimally containing DP. That is, the extraposition account for (1) generates the prediction that in the configuration (50), it should be possible to associate the DegP-internal trace t_i with a dislocated PP or CP:

(50)



In order to test this prediction, it will be instructive to consider examples from languages which - unlike English - license complex prenominal modifiers such as German.

In German, prepositional and clausal complements of adjectival predicates as well as relative clauses modifying the nominal complement of adjectives can be extraposed in predicative contexts. This indicates that neither DegP nor AP constitute inherent barriers for rightward movement (or chain formation):

(51) PP-COMPLEMENT: $[_{DegP}\,[_{AP}\,\mathbf{t_i}\ A^{\circ}]\ Deg^{\circ}]\ \mathbf{PP_i}$
- a. *weil Hans* $[_{PP}$ *auf seinen Hund*] *stolz ist*
  since Hans of his dog proud is
- b. *weil Hans stolz ist* $[_{PP}$ *auf seinen Hund*]
  since H. proud is of his dog
  'since John is proud of his dog'

(52) CP-COMPLEMENT: $[_{DegP}\,[_{AP}\,\mathbf{t_i}\ A^{\circ}]\ Deg^{\circ}]\ \mathbf{CP_i}$
- a. *?weil sich Hans* $[_{CP}$ *daß er zu spät kommen werde*] *sicher war*
  since himself Hans that he too late come would certain was
- b. *weil sich Hans (dessen) sicher war* $[_{CP}$ *daß er zu spät kommen werde*]
  since himself Hans (thereof) certain was that he too late come would
  'since John was certain that he would come too late'

(53) RELATIVE CLAUSE: $[_{DegP}\,[_{AP}\,[DP\ \mathbf{t_i}]\ A^{\circ}]\ Deg^{\circ}]\ \mathbf{RelCl_i}$
- a. *weil Hans einer Bekannten* $[_{CP}$ *die umziehen wollte*] *behilflich war*
  since Hans a acquaintance who move wanted helpful was
- b. *weil Hans einer Bekannten behilflich war* $[_{CP}$ *die umziehen wollte*]
  since Hans a acquaintance helpful was who move wanted
  'since John helped an acquaintance that wanted to move'

However, once the DegP containing the AP is construed as an attributive modifier, PP/CP extraposition is no longer tolerated, as illustrated by the contrasts between the a- and the b-examples below:

(54) PP-COMPLEMENT: $*[_{NP}\,[_{NP}\,[_{DegP}\,[_{AP}\,\mathbf{t_i}\ A^{\circ}]\ Deg^{\circ}]\ ...]]\ \mathbf{PP_i}$
- a. *weil Hans eine* $[_{PP}$ *auf ihren Hund stolze*] *Frau getroffen hat*
  since Hans a of her dog proud woman met has
- b. **weil Hans eine stolze Frau getroffen hat* $[_{PP}$ *auf ihren Hund*]
  since Hans a proud woman met has of her dog
  'since John met a woman proud of her dog'

(55) CP-COMPLEMENT: $*[_{NP}\,[_{NP}\,[_{DegP}\,[_{AP}\,\mathbf{t_i}\ A^{\circ}]\ Deg^{\circ}]\ ...]]\ \mathbf{CP_i}$
- a. *?weil Hans einen sich dessen* $[_{CP}$ *daß er zu spät kommen werde*]
  since Hans a himself thereof that he too late come would
  sicheren Freund getroffen hat
  certain friend met has
- b. **weil Hans einen sich dessen sicheren Freund getroffen hat*
  since Han a himself thereof certain friend met has
  $[_{CP}$ *daß er zu spät kommen werde*]
  that he too late come would
  'since John met a friend who was certain that he would come too late'

(56) RELATIVE CLAUSE: *[$_{NP}$ [$_{NP}$ ... [$_{DegP}$ [$_{AP}$ [DP **t$_i$**] A˚] Deg˚] ...]] **RelCl$_i$**[19]

a. *?weil Hans einen einer Bekannten* [$_{CP}$ *die umziehen wollte*]
since Hans a a acquaintance who move wanted
behilflichen Freund getroffen hat
helpful friend met has

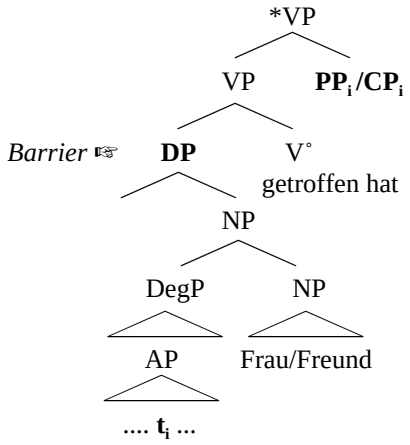
b. **weil Hans einen einer Bekannten behilflichen Freund getroffen hat*
since Hans a a acquaintance helpful friend met has
[$_{CP}$ *die umziehen wollte*]
who move wanted
'since John met a friend who helped an acquaintance who wanted to move'

(54)b - (56)b attest to the fact that extraposition may not remove a phrase from within a prenominal DegP and shift it into the *Nachfeld*, i.e. the position to the right of the clause-final verb. Note that this observation in itself does not yet provide sufficient evidence for the claim that the surface location of the *than*-XP in example (1), repeated below, cannot have been the result of extraposition.

(1) *Mary knows younger authors than Peter knows.*

This is so because in the examples (54)b - (56)b, the extraposed category is attached at least as high as at the VP-level[20], as illustrated by (57), and their ungrammaticality could therefore also be linked to the observation that the chain headed by the right-peripheral PP/CP is interrupted by the DP-node which serves as the host for the modifier:

(57)



In order to establish that (1) does not derive from extraposition of the *than*-XP, it therefore does not suffice to demonstrate that extraposition over a DP node (as in (57)) leads to ill-formedness. It also needs to be shown that even rightward shift over an NP-adjoined DegP conflicts with the locality statements imposed on extraposition. The relevant examples are provided by (58):

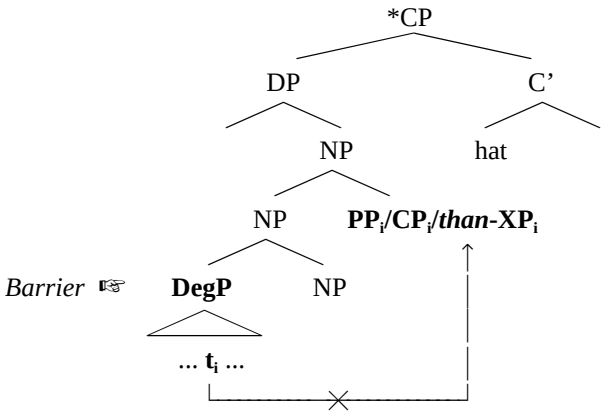
(58) a. **Eine stolze Frau* [$_{PP}$ *auf ihren Hund*] *hat den Hans getroffen*
a proud woman of her dog has the Hans met
'A woman proud of her dog met John.'

b. **Ein sich dessen sicherer Freund* [$_{CP}$ *daß er zu spät komme*] *hat*
a himself thereof certain friend that he too late come has
den Hans getroffen
the Hans getroffen
'A friend who was certain that he would come too late met John.'

c. **Ein einer Bekannten behilflicher Freund* [$_{CP}$ *die umziehen wollte*] *hat*
a a acquaintance helpful friend who move wanted has
den Hans getroffen
the Hans met
'A friend who helped an acquaintance who wanted to move met John.'

In (58), a modified DP occupies SpecCP, and parts of the modifier are dislocated inbetween the head noun and the finite auxiliary *hat*/'has' in C°. This specific configuration ensures that the extraposed category does not leave the containing DP, but only crosses over the adjunct DegP (and one segment of the NP), as detailed by the tree (59):

(59)



The severe ungrammaticality of the strings in (58) clearly documents that prenominally adjoined DegPs constitute barriers for rightward dislocation. It

follows that the extraposition account for (1), which rests on the premise that a *than*-XP may be shifted across its minimally containing DegP, cannot be maintained.

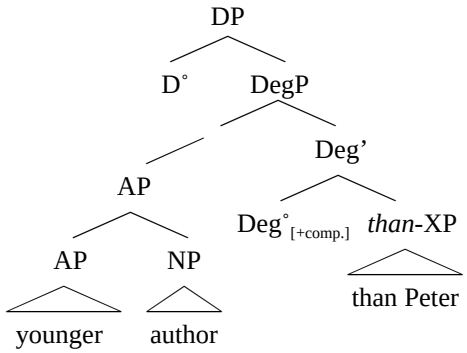
3.3. A new structure for prenominal AP's

The alternative account for prenominal attributes which I would like to advocate is modeled after Abney (1987), and couples an unorthodox[21] structure for prenominally modified DPs with properties of the DegP-hypothesis. On the one side, I adopt the hypothesis defended in Abney (1987) that prenominal AP-modifier are selected by D°, and take the head noun they modify as a complement (see also Berman 1973):

(60) $[_{DP}$ D° $[_{AP}$ young $[_{NP}$ authors]]]

On the other side, the DegP-hypothesis maintains that APs are embedded under DegPs. Combining these two assumptions, the DegP is no longer base-generated as an adjunct to NP, but originates on a right-branch complement of D°. An implementation of this idea leads to the revised structure for NP-comparatives in (61):

(61)



One notable feature of (61) consists in the fact that the *than*-phrase is directly generated in its surface location as a complement of Deg°, rendering *than*-XP-extraposition superfluous.[22] This solves the problem posed by the conflict between surface serialization and base generated word order. The following two subsections introduce two further, *prima facie* pieces of evidence in support of the specific parse in (61).

3.3.1. Low attachment of the than-XP

In the particular phrase structure in (61), the *than*-XP is not only base-generated at the right periphery of the containing DP, it also originates in the hierarchically lowest position within the DP. This leads one to expect that the *than*-XP should be c-commanded by all preceding categories, except for those which are properly contained in categories which themselves c-command the *than*-XP. Data from pronominal variable binding supplies support for the empirical correctness of this corollary. As illustrated by the English and German examples below, a DP-internal quantificational modifier may bind a pronominal variable contained within the *than*-XP if the quantifier precedes the *than*-XP:[23]

(62) a. *She offered a better description of* ***each law***$_i$ *than* ***its***$_i$ *author could provide* ⌓*.*
b. **She offered a better description of* ***his***$_i$ *law than* ***each author***$_i$ *could provided* ⌓*.*
(⌓ = a d-good description of t)

(63) a. *Maria lieferte eine bessere Beschreibung von* ***jedem Gesetz***$_i$
Mary offered a better description of each law
als ***sein***$_i$ *Autor* ⌓ *vorgebracht hatte.*
than its author provided had
b. **Maria lieferte eine bessere Beschreibung von* ***seinem***$_i$ *Gesetz*
Mary offered a better description of its law
als ***jeder Autor***$_i$ ⌓ *vorgebracht hatte.*
than each author provided had
(⌓ = a d-good description of t)

Similarly, DP-internal pronouns which precede the *than*-XP can only be construed as disjoint in reference with names inside the *than*-XP, indicating once again that in NP-comparatives, right-peripherality correlates with low attachment within the DP:

(64) **Unfortunately, a better picture of* ***him***$_i$ *than* ***Peter***$_i$*'s mother had made is hard to come by.*

(65) **Leider wird sich ein besseres Bild von* ***ihm***$_i$
unfortunately, will itself a better picture of him
als ***Peters***$_i$ *Mutter gemacht hat kaum auftreiben lassen.*
than Peter's mother made has hardly acquire let

As far as this structural aspect is concerned, *than*-XPs do not behave in any way different from other terms embedded within the DP. Haider (1993b: 23), for instance, reports that precedence relations between DP-internal modifiers directly translate into c-command. For this reason, a quantifier is able to bind a pronominal variable contained within a PP to its right (dynamic binding can be excluded by the use of downward entailing quantifiers like *no substance*):

(66) *the dissection of* ***each substance/no substance***$_i$ *into* ***its***$_i$ *components*

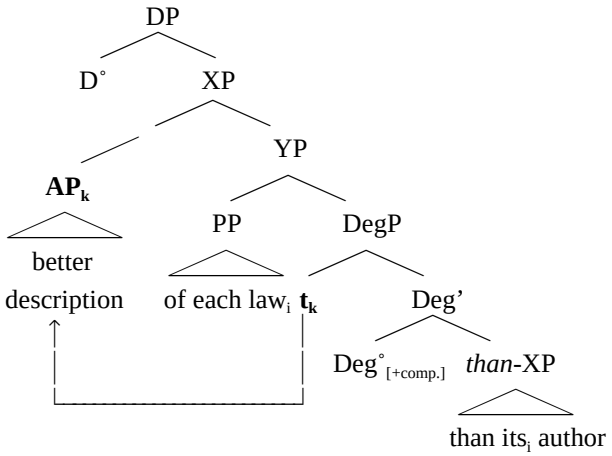
(67) *die Zerlegung* ***jeglicher Substanz***$_i$ *in* ***ihre***$_i$ *Bestandteile*
the dissection each substance$_{GEN}$ into its components
Haider (1993b: 23, (17a))

Haider takes this observation to support the assumption that the extended projection of the DP is uniformly right-branching, delivering for (66)/(67) the structure (68). In (68), the adnominal modifiers originate in specifier positions of functional projections. Overt raising of the common noun to the left of both modifiers results in the surface serialization:[24]

(68) [$_{DP}$ ... dissection$_i$ [$_{XP}$ [of each substance] [$_{YP}$ [into its components] t$_i$ ....]]]

Adopting the hypothesis that some - but not all (see section 5) - postnominal modifiers in comparatives are generated according to this algorithm, the NP-comparative (62) can be assigned the representation in (69). In (69), the PP-modifier *of each book* is merged in a functional specifier position of the extended DP-projection inbetween DegP and DP,[25] while overt word order is derived by movement of the string AP^NP:

(69)



The distribution of variable binding and disjoint reference effects observed above directly follows from the parse (69), because the *than*-XP is so deeply embedded inside the DP that it surfaces within the c-command domain of all preceding categories.

An additional favorable consequence of (69) is that it leads one to expect that the *than*-XP always has to follow other DP-internal modifiers. This prediction is borne out:

(70) a. *Hans lieferte eine bessere Beschreibung {eines jeden Buches/*
Hans provided a better description a each $book_{GEN}$/
von jedem Buch} als Peter.
of each book than Peter

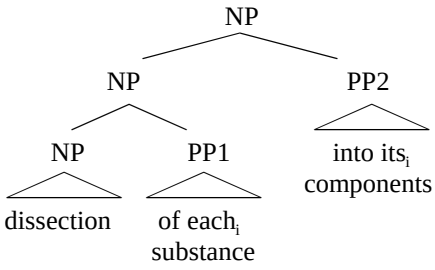
b. **Hans lieferte eine bessere Beschreibung als Peter*
Hans provided a better description than Peter
{eines jeden Buches/von jedem Buch}.
a each $book_{GEN}$ /of each book
'Hans provided a better description of each book than Peter.'

To summarize, the phrase marker (69) captures both c-command relations and word order in NP-comparatives in an adequate fashion.

Examples involving pronominal variable binding such as (66)/(67) do not only demonstrate the compatibility of the data with a right-branching DP, but they also provide the basis for the stronger claim that the traditional right-adjunction analysis of postnominal modifiers leads to empirically wrong results. In pursuing this goal, I will briefly discuss two potential strategies for amending the right-adjunction hypothesis and argue that none of them can be used to reconcile the tension between serialization and c-command, which lies at the heart of the problem. Since the NP-comparatives in (62) share all relevant properties of (66), it can be concluded that NP-comparatives have to be parsed into a right-branching tree, with the *than*-XP in the structurally lowest complement position, just as in (69).

To begin with, one might argue that the right-adjunction account for postnominal modifiers can be salvaged by relaxing the structural requirements for pronominal variable binding such that they are stated in terms of m-command instead of c-command. Given this change of assumptions, PP1 may obtain scope over PP2, licensing pronominal variable binding:

(71)



(= (66))

Crucially, the m-command analysis also predicts the scope relations between the two adjuncts to be symmetric. This prognosis is not supported by the facts, though. In particular, a postnominal, PP-internal quantifier cannot bind a pronoun embedded in a preceding PP, as shown by the b-examples below:[26]

(72) a. *the presentation* [$_{PP1}$ *of* ***each book***$_i$] [$_{PP2}$ *to* ***its***$_i$ *author*]
b. **the presentation* [$_{PP1}$ *of* ***its***$_i$ *book*] [$_{PP2}$ *to* ***each author***$_i$]

(73) a. *eine Beschreibung* [$_{PP1}$ *von* ***jedem Buch***$_i$] [$_{PP2}$ *durch* ***seinen***$_i$ *Autor*]
a description of each book by its author
b. **eine Beschreibung* [$_{PP1}$ *von* ***seinem***$_i$ *Buch*] [$_{PP2}$ *durch* ***jeden Autor***$_i$]
a description of its book by each author

It follows that a modification of the right-adjunction analysis which employs m-command is not tenable. More generally, the structural conditions which legitimate binding dependencies between PP1 and PP2 cannot be properly expressed by reference to the surface location of the relevant terms in a right-adjunction analysis of postnominal modifiers. The alternative parse in terms of a right-branching DP does not face any of the problems above, testifying to its superior empirical adequacy. The argument naturally carries over to NP-comparatives, in support of the hypothesis that the *than*-XP originates in a position structurally lower than preceding modifiers.

Turning to the second potential counter-argument against a right-branching structure for postnominal modifiers, observe that both approaches towards variable binding discussed so far were surface oriented. But there is an alternative view, according to which the satisfaction of the structural conditions on variable binding is deferred until LF. This position can furthermore be used to vindicate the orthodox right-adjunction analysis, since it allows quantifiers to covertly raise at LF before taking scope over the pronouns they bind. As illustrated by the new parse for (72)a given in (74), such an analysis essentially entails that the DP-internal relation between a pronoun and its binder is

construed in analogy to classic instances of Inverse Linking such as (75) (see e.g. Gabbay and Moravscik 1973; Hintikka 1974; Reinhart 1976; May 1985):

(74) a. Syntax: *the presentation* [$_{PP1}$ *of* ***each book***$_i$] [$_{PP2}$ *to* ***its***$_i$ *author*]
b. LF: [**each book**$_i$ ... [$_{DP}$ [$_{NP}$ [$_{NP}$ presentation] [of **t**$_i$]] [to **its**$_i$ author]]]]

(75) a. Syntax: *A barber from every city*$_i$ *likes it*$_i$.
b. LF: [**every city**$_i$ [$_{IP}$ [a barber from **t**$_i$] [$_{VP}$ likes **it**$_i$]]]

The structures in (74) and (75) are characterized by two common properties: First, the quantifier c-commands the pronoun only at LF. Second, even though the trace of the quantifier left by QR does not c-command the pronoun, the resulting configuration does not induce a Weak Crossover violation.

As it turns out, however, the similarities between (74) and (75) do not extend beyond this initial, observational level. In particular, it can be shown that (74) differs in two significant ways from Inverse Linking, and that these disparities render an Inverse Linking analysis for (74) - and thereby also for the NP-comparatives in (62) - highly implausible.

The first argument against an Inverse Linking construal for (74) rests on the observation that the descriptive conditions on pronominal variable binding minimally have to include a constraint along the lines of (76):[27]

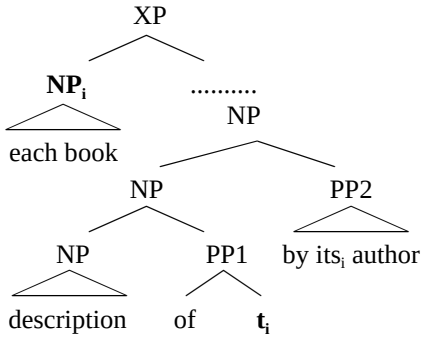
(76) A quantified term QP can bind a pronominal variable α iff there is no XP containing α which c-commands any chain link of QP.

(76) serves the purpose of preventing Inverse Linking from overgeneration by discriminating between well-formed examples such as (75) and illicit instances of Inverse Linking out of the object position, as illustrated by (77):

(77) a. Syntax: **His*$_i$ *mother visited a friend of every boy*$_i$.
b. LF: [$_{IP}$ **every boy**$_i$ [$_{IP}$ [$_{NP}$ **his**$_i$ mother] visited a friend of t$_i$]]

Condition (76) is clearly satisfied by the LF representation (75)b, because there is no maximal category that includes the pronoun and c-commands the trace of the quantifier: The VP-node includes the pronoun but does not c-command the trace, while IP dominates - but does not c-command - the trace. Moreover, restriction (76) correctly filters out the LF in (77)b, since the subject NP embeds the pronoun and at the same time c-commands the trace of *every boy*, in explicit violation of (76).

Similar structural relations are attested in the complex DP (74). As documented by the pertaining tree representation in (78), (74) also contains a node (PP2) which dominates the pronoun and simultaneously c-commands the trace of the quantifier:

(78) 

(= (74))

Thus, the parse in (78) fails to meet condition (76), and can accordingly not be taken to be the proper representation of the grammatical example (72)a, excluding an analysis of (72)a/(78) in terms of Inverse Linking.

A second argument against an Inverse Linking construal of (78) derives from a curious restriction on the construction. A quantifier cannot extend its scope domain if it has to cross over a negative determiner, as in (79):[28]

(79) a. **She didn't expect **any** description of each law$_i$ to characterize it$_i$ properly.*[29]
b. ****No** description of each law$_i$ succeeded in characterizing it$_i$ properly.*

As an approximation, this additional requirement on the contexts which tolerate Inverse Linking can be formulated as follows:

(80) A quantified term QP1 can be construed with wide scope over a dominating quantified term QP2 iff QP2 is not headed by a negative quantifier.

What is crucial for present purposes is the observation that quantifiers embedded within negative NP-comparatives *can* take scope over pronouns inside the *than*-XP, as in (81):

(81) a. *She couldn't come up with **any** better description of each law$_i$ than its$_i$ author (had provided)* ⌓.
(⌓ = a d-good description)
b. *There can be **no** better description of each law$_i$ than the one its$_i$ author provided* ⌓.
(⌓ = a d-good description)

Given that Inverse Linking is not able to operate across negative quantifiers, pronominal variable binding in (81) cannot be attributed to Inverse Linking. Consequently, the well-formedness of the strings in (81) can be taken to substantiate the assumption that the *than*-XP resides within the c-command domain of the postnominal quantifier already in surface syntax.

To summarize, the present section defended a right-branching structure for NP-comparatives such as (62), repeated below, against the contending standard theory according to which all postnominal categories originate as high adjuncts, which are right-adjoined to the common noun:

(62) *She offered a better description of **each law$_i$***
[*than **its$_i$** author had provided* ⌓].

The arguments for generating the *than*-XP in a hierarchically low, right-peripheral position resulted from evidence refuting specific premisses which were seen to be essential for the competing right-adjunction account. More precisely, the right-adjunction account failed for two reasons. First, the contextual restrictions on bound variable pronouns in contexts like (62) cannot be expressed in terms of surface m-command. Second, it was shown that these conditions cannot be stated as restrictions on LF (Inverse Linking), either, for the reason that bound variable readings emerge inside NP-comparative in contexts which otherwise do not licence Inverse Linking (Weak Crossover and negative contexts). It follows that (62) cannot be given an adequate treatment under the assumption that postnominal modifiers are right-adjoined to NP. This conclusion provides strong support for parsing the *than*-XP into a right-peripheral, hierarchically low position inside the extended projection of the DP, as in (69).

The next subsection contains a further piece of evidence in favor of low attachment of the *than*-XP, while the subsequent section will finally turn to the analysis of CD.

3.3.2. Low attachment of the degree variable

So far, the argumentation has exclusively focused on the internal architecture of the comparative DP in the matrix clause, which embeds the overt comparative AP. However, evidence for a right-branching organization of NP-comparatives can also be drawn from an inspection of the syntax of the comparative complement (i.e. the *than*-XP).

Following Chomsky (1977), comparatives are analyzed as empty operator movement constructions. The operator binds a degree variable, as indicated by the LF representation of the NP-comparative below:

(82) a. *Mary knows younger authors than Peter knows ⌓.*
(⌓ = d-young authors)
b. LF: ...than [$_{CP}$ **OP$_i$** Peter knows [$_{NP}$ **d$_i$** -young authors]]

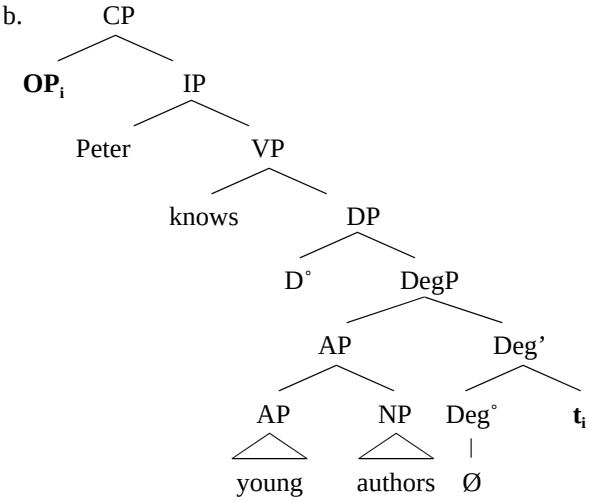
But there is an intriguing puzzle surrounding the relation between the operator and its trace, which has attracted some attention in the literature (Heim 1985:8; Moltmann 1992a,b). The problem presents itself in form of the observation that on conservative assumptions about the structure of prenominal modifiers (i.e. left-adjunction of AP), the operator trace is contained in a left-branch adjunct island (Left Branch Condition; Corver 1990; Ross 1967a):

(83) ... than [$_{CP}$ **OP$_i$** Peter knows [$_{NP}$ [$_{NP}$ [$_{AP}$ **d$_i$** -young] authors]]]]

The right-branching DP-structure defended here offers a natural solution to this long-standing complication in the analysis of NP-comparatives. To begin with, observe that the complement of Deg° in the matrix clause selects for a degree denoting term, the *than*-XP. Assuming that the s-selectional restrictions imposed by Deg° are constant, the functional Deg°-head inside the comparative complement should consequently also select for a degree expression. This leads to the parse for the *than*-XP as in (84), in which the empty operator binds a degree variable embedded under Deg':

(84) a. than [$_{CP}$ OP$_i$ Peter knows young authors d$_i$]

b.



In contrast to (83), the dependency between the empty operator and its trace in (84) can be construed locally and the operator movement chain does no longer incur a Left Branch Condition violation. Crucially for present purposes, the resolution of the conflict is contingent upon the degree variable in the complement position of Deg° being contained in a right branch, furnishing additional evidence in favor of a right-branching right periphery of NP-comparatives.

Section 2 introduced evidence which helped to identify the point in the derivation at which the CD-site is restored (during the syntactic derivation, and not in the semantic component). In the current section, I furthermore advocated a particular view on how comparatives are organized syntactically (right-branching DP-shell). The section to follow offers a synthesis of these preliminary results by presenting a new analysis of CD which adequately reflects syntactic constituency as well as accounts for the timing of CD-resolution.

3.4. A new analysis of Comparative Deletion

3.4.1. Head Raising

The relation between the comparative AP and its *than*-XP has occasionally been claimed to be similar to the one that defines the nexus between relative

clauses and the head nouns they modify (McConnell-Ginet 1973; Barbara Partee, p.c.). In looking for an alternative account of CD, it seems therefore natural to examine the solutions that have been explored in the analysis of relative clauses, and to investigate whether these alternatives might also be adapted for comparatives. As it will turn out, the specific implementation of CD I would like to propose has its predecessors in the so-called *head-raising* analysis of relative clauses, which I will for this reason briefly outline in the beginning of this section.

The strategy of head-raising has for the first time been explicitly employed in the analysis of relative clauses in Schachter (1973) and Vergnaud (1974), but can be traced back to Brame (1968) and Smith (1961). In its latest version, defended in Kayne (1994: section 8.4), the head-raising analysis relates the underlying representation of a relative clause such as (85)a to the observed surface order in (85)b by overt movement of the common noun into the SpecCP position of the relative clause (for recent discussion and extensions see Bhatt 1999; Bianchi 1999, 2000; Hoekstra 1997; Sauerland 1998):

(85) a. [$_{DP}$ *the* [$_{CP}$ *that Mary knows authors*]]
b. [$_{DP}$ *the* [$_{CP}$ *authors*$_k$ [*that Mary knows* t_k]]]

One immediate advantage of head-raising consists in its ability to provide a plausible explanation for reconstruction effects with Principle A in relative clauses and for the possibility to relativize parts of an idiom (Kayne 1994; Williams 1994: 224ff; Schachter 1973; see Bhatt 1999 and Sauerland 1998 for detailed discussion). For example, the anaphoric relation linking the reflexive to its antecedent in (86)b can be thought of as being licensed already in the underlying representation (86)a.[30] Idiomatic readings as in (87) lend themselves to a similar analysis:

(86) a. Source: *...that Bill*$_i$ *bought* [*book about himself*$_i$]
b. Output: *the* [*book about himself*$_i$]$_k$ *that Bill*$_i$ *bought* t_k

(87) a. Source: *...that Bill made headway*
b. Output: *the headway*$_k$ *that Bill made* t_k

Recently, however, this argument in favor of head-raising over the traditional empty operator approach towards relative clause formation has been undermined by the inception of the Copy Theory of movement (Chomsky 1992, 1995). If it is assumed that the empty operator chain in relatives is composed of copies which form an extended chain with the head of the relative, the interpretational effects in (86) and (87) can be accounted for without

reference to actual reconstruction of the head of the relative into its trace position (Munn 1994). In the alternative LF representation for (86)b in (88), the copy in SpecCP can be matched against the head of the construction, and Principle A can accordingly be computed on the basis of the lower copy of the operator chain (strikeout font indicates phonological suppression):

(88) *the* [$_{NP}$ [$_{NP}$ *book about himself*] [$_{CP}$ [~~*book about himself*~~]$_k$
that Bill$_i$ bought [~~*book about himself$_i$*~~]$_k$]] (= (86)b)

Thus, reconstruction for binding and idiom interpretation does not in itself furnish an argument for a head-raising analysis of relatives over the alternative matching account. This observation constitutes an important factor to be considered in the assessment of the merits of head-raising analyses in other domains, and will be taken up again below (see discussion surrounding (110)).

3.4.2. Head raising and comparatives

Turning to comparatives, recall to begin with that according to present assumptions, both the AP in the comparative complement and the AP constituting the CD-site reside in the specifier positions of DegPs, respectively. Moreover, both DegPs are contained in a uniformly right-branching tree. Thus, the phrasal architecture for NP-comparatives endorsed so far supports an implementation of the head-raising algorithm in that it supplies the structural configuration for the creation of a movement chain between the higher and lower occurrence of the AP. I would therefore like to suggest to analyze Comparative Deletion in accordance with the *AP-Raising Hypothesis* stated below:

(89) THE AP-RAISING HYPOTHESIS:
Comparative Deletion consists in overt raising of AP from SpecDegP of the comparative complement to SpecDegP of the matrix clause.

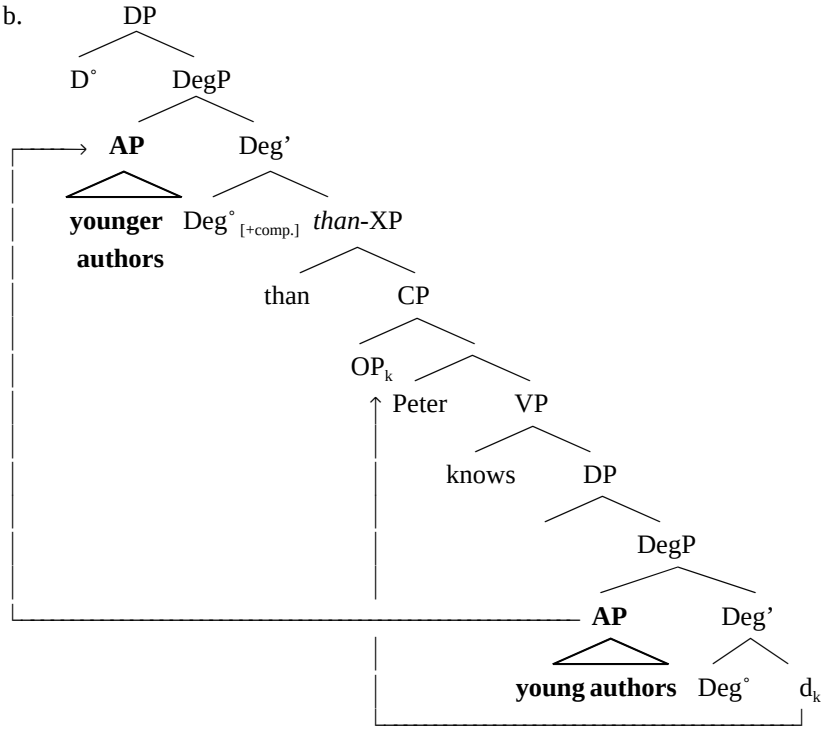
In the remaining part of this section, I will comment on the basic mechanics of the analysis and address a number of properties of AP-Raising, turning from there to some immediate consequences of the account (section 3.4.3). Further empirical evidence in defense of AP-Raising will be presented in section 5, once the compositional semantics for comparatives has been made explicit in section 4.

The details of the analysis are spelled out in (90). As illustrated by the tree in (90)b, the constituent affected by CD (*young authors*) is base-generated in

SpecDegP of the comparative complement, and overtly moves to SpecDegP of the matrix clause:

(90) a. *Mary knows younger authors than Peter knows ∅.* (= (1))

b.



Movement is motivated by the need to eliminate a [+comparative] feature on the higher Deg°-head. The analysis complies in this respect with the Minimalist assumption that movement processes are motivated by morphological properties of heads (Chomsky 1995). In addition, given that the [+comparative] feature on the matrix Deg° is semantically contentful, failure of AP-Raising to apply will result in an uninterpretable representation, and the derivation crashes at the LF-interface. A second movement process targets the empty operator which starts out as the complement of the lower degree head, and raises OP to the embedded SpecCP from where it binds a degree trace (for the compositional semantics see section 4).

A natural question arising in this context is whether the respective specification of the Deg° heads in the lower and higher DegP has to be stipulated, or

whether illicit combinations as e.g. the representations in (91) can be independently excluded:

(91) a. **Mary knows younger authors than Peter knows*
$[_{\text{DegP}}$ ⌂ *Deg*$^{\circ}_{\text{[+comparative/positive]}}]$
b. **Mary knows* $[_{\text{DegP}}$ *young authors Deg*$^{\circ}_{\text{[absolute/positive]}}$ *than Peter knows* ⌂]

Considering the options for the degree head inside the comparative complement ((91)a) first, the choice between a comparative, a positive and an absolute Deg$^{\circ}$ can be derived from principles of selection. Much in the same way that certain verbs select for either finite or non-finite sentential complements, a Deg$^{\circ}_{\text{[+comparative]}}$ realized as *-er* in the matrix clause will select for a *than*-XP with a semantically empty absolute Deg$^{\circ}$-head.

Similar considerations carry over to the potential specifications of the degree head in the matrix DegP ((91)b). Environments in which the matrix DegP is the projection of an absolute or positive Deg$^{\circ}$ can be blocked on the plausible assumption that only a comparative Deg$^{\circ}$ has the capacity of c-selecting for a *than*-XP. In addition, an absolute Deg$^{\circ}$ in the matrix DegP leads to an uninterpretable representation, because an absolute Deg$^{\circ}$ is semantically vacuous (or only takes the standard of comparison as an argument, as in Kennedy 1999), and the matrix clause can therefore not be combined with the denotation of the *than*-XP in a meaningful way.

The operation of AP-Raising possesses a number properties that deserve further comment, and will be addressed in turn below. To begin with, the assumption that the CD-site is related to its antecedent by movement immediately accounts for the observation that, in contrast to VP-ellipsis, CD is local (see (12); Kennedy 1999; Williams 1977). On this view, the unavailability of intersentential CD follows from the prohibition on sidewards movement.

But AP-Raising also differs in a crucial respect from other, orthodox movement processes: Whereas it is characteristic of other manifestations of XP and X$^{\circ}$-movement that all chain links except for one are erased at LF, both the higher and the lower AP-copy in (90) are submitted to semantic interpretation. AP-Raising represents in this sense an instance of *movement without chain formation* (Poole 1996; see section 7 for details). This difference between ordinary movement and AP-Raising does not have to be stipulated, though, but can be made to fall out from conditions on interpretability. More specifically, in regular argument chains, failure to delete all but a single copy results in uninterpretable LF representations which contain spurious arguments, in violation of Full Interpretation (see also Bach and Horn 1976):[31]

(92) a. Syntax: *What did you see?*
b. LF: *[$_{\text{Copy-1}}$ what] did you see [$_{\text{Copy-2}}$ what]

The situation is significantly different with AP-Raising, though, in that the interface conditions to semantics dictate that none of the AP-copies in (90) may be subjected to deletion. In particular, the higher AP-copy has to be interpreted, otherwise the higher degree head would fail to apply to a category of appropriate type (i.e. a gradable AP-denotation). The lower copy can on the other side not be deleted, since deletion would deprive the *than*-XP of a degree predicate which could take the foot of the operator chain as its internal argument (see section 4 for details of interpretation). Hence, the unorthodox relation between syntactic copies and their semantic exponents in contexts of AP-Raising naturally follows from principles which optimize information transfer between the syntactic and the semantic component.

The tree (90)b reveals another essential aspect of AP-Raising, which at first sight appears to encapsulate a problem for the analysis: There is conflicting evidence as to the label assigned to the category composed of the AP and the NP in SpecDegP (*young authors*). As far as its external distribution is concerned, the string AP^NP functions as an NP, which is embedded inside the DP subcategorized for by *know*. But in order to trigger AP-Raising, it is the AP which has to project its label, since the higher Deg° attracts a categorial adjective feature. Thus, internally to the DegP, the string AP^NP appears to behave like an AP. In what follows, I will briefly digress into a related phenomenon and then spell out a method for eliminating this complication.

Categorial indeterminacy of the above type is not restricted to comparatives, but is - in a somewhat different guise - also attested in a related construction, i.e. free relatives.[32] More precisely, the head of a free relative may - in certain environments - differ from the internal trace it binds in categorial status.

A first inspection of the external distribution of free relatives (see (93)) reveals that the head behaves like a complement DP or a bare complement CP (see (94)) which satisfies the subcategorization properties of the verb:[33]

(93) *I like* [$_{\text{Complement DP/Complement CP}}$ *how you described the problem*].

(94) a. *You liked* [$_{\text{Complement DP}}$ *the book*].
b. *You liked* [$_{\text{Complement CP}}$ *that she described the problem*].

There are two additional diagnostics which can be used to further specify the external distribution of free relatives, indicating that they have the categorial status of DPs, and not CPs. The first argument for the nominal nature of free

relatives is based on the observation by Koster (1978) that CPs are prohibited from appearing in the canonical subject position in English (see (95)a). Since free relatives are attested in SpecIP (see (95)b), it can be concluded that free relatives are DPs, and not CPs:

(95) a. **Did* [$_{CP}$ *that he arrived*] *interest you?*
b. *Did* [$_{DP}$ *how he arrived*] *interest you?*

Second, free relatives can be conjoined with DPs, as in (96)a, while examples in which the free relative is combined with a CP, such as (96)b, appear to be degraded:[34, 35]

(96) a. [$_{DP}$ *How you arrived*] *and* [$_{DP}$ *the way you took*] *interested Bill to the same extent/simultaneously.*
b. *?*[$_{DP}$ *How you arrived*] *and* [$_{CP}$ *that you took the wrong way*] *interested Bill to the same extent/simultaneously.*

The contrast can be related to the categorial and type-theoretic differences between DPs and CPs. In particular, assuming that the free relatives in (96) are parsed as DPs, and not as CPs, makes it possible to exclude (96)b by the Law of Coordination of Like Categories (Williams 1978) and/or the type parallelism requirement on conjunction (Partee and Rooth 1983).

The observations above provide strong evidence that externally, free relatives exhibit properties characteristic of argument DPs. Interestingly, this finding conflicts with the diagnostic criteria for the categorial status of the trace inside the free relatives, which mark the trace as anything *but* a complement DP (or complement CP, to be precise). As can be inferred from the contrast between (97)a vs. (97)b-d, the internal trace has to take the shape of a modifier. In addition, the modifier may surface as a DP only in the highly restricted class of cases exemplified by (97)e:

(97) a. **You described the problem* [$_{\text{Complement DP/Complement CP}}$ ....].
b. *You described the problem* [$_{AP}$ *accurately*].
c. *You described the problem* [$_{PP}$ *on the blackboard*].
d. *You described the problem* [$_{CP}$ *before Sally arrived*].
e. *You described the problem* [$_{DP}$ *that/this/some other way*].

Thus, while the distributional evidence unequivocally identifies free relatives as DPs externally, internally, their trace seems to serve the function of anything but a complement DP (or complement CP). Moreover, the relative clause internal modifier position can be realized as a DP only in a very limited set of

contexts (see (97)e), while there are no similar idiosyncratic occurrence restrictions on the external distribution of free relatives.

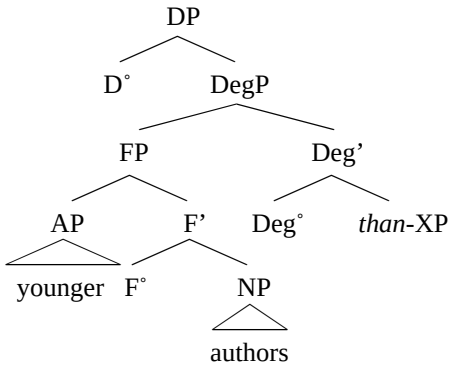
This situation is - to a certain extent - reminiscent of NP-comparatives, which exhibit properties of NPs externally, but at the same time need to be marked as APs in order to be able to serve as the target of AP-Raising:

(98)

	FREE RELATIVES	COMPARATIVES
External distribution:	Complement DP	NP
Internal distribution:	AP, PP, non-complement DP or CP	
Label for movement:		AP

Turning to a concrete proposal for the resolution of categorial indeterminacy, assume that the head of comparatives (*younger authors* in (99)) is embedded in an additional functional projection (FP), with the AP located in SpecFP, and the NP serving as the complement of F°:

(99)



FP can be thought of as the projection which establishes the appropriate structural relation for checking agreement morphology between prenominal adjectival modifiers and the head noun (Bernstein 1993; Corver 1997: 345ff; see also Kester 1996). On this view, the AP in SpecFP is expected to trigger pied-piping, just as other specifiers do in case of *wh*-movement:

(100) a. *Whose picture did she buy?*
b. *How tall a man do you think that he is?*

In comparatives, attraction of the categorial feature on A° will accordingly not lead to raising of the AP alone, but will induce movement of the whole superordinate FP. The categorial status of FP is on the other side determined

by the head of the extended projection (the NP) and not by the AP in the specifier position of FP. Hence, the assumption of an articulated structure for nominal comparatives as in (99) makes it possible to reconcile the at first sight conflicting categorial requirements imposed on the head of the construction.[36]

With this outline of the syntax of CD-resolution in the background, it becomes possible to consider an initial set of consequences encapsulated in the AP-Raising Hypothesis.

3.4.3. Four direct consequences of AP-Raising

The analysis of CD presented so far inherently includes the following four claims: First, it maintains that in NP-comparatives, AP and NP form a constituent to the exclusion of the degree head. Second, AP-Raising by assumption does not target full DPs, but only moves the subconstituent AP^NP, stranding the determiner. Third, comparative formation is claimed to result from movement, and not from ellipsis of the CD-site. Finally, it was argued that movement necessarily leaves a semantically interpretable copy in the CD-site. It can be shown that all four premises are empirically well supported.

To begin with, the claim that AP-Raising affects the string AP-NP to the exclusion of the degree head contributes to an understanding of why the antecedent AP and the AP which identifies the CD-site do not match in form or interpretation. Observe that while the AP in the matrix clause displays comparative marking (*young-**er** authors*), the CD-site is restored in its absolute form *young authors* both morphologically and semantically (see Heim 1985; Kennedy 1999; Moltmann 1992a,b; von Stechow 1984 among others). In the present system, this fact is accounted for in a straightforward way: Comparative morphology is a reflex of a checking relation between the head of AP and the [+comparative] degree head, while CD-resolution depends on a movement relation which targets the AP to the exclusion of the degree head.

Second, according to the AP-Raising analysis, the CD-site in NP-comparatives includes the head noun and its adjectival modifier, but excludes the determiner. Empirical support for this specific representation can be drawn from examples in which nominal comparatives combine with overt determiners, as in (101)a (see section 4 for the semantic details):[37]

(101) a. *Sam ran exactly two faster races than Bill has run ⌓.*
(⌓ = d-fast races)
b. $\exists X[|X|=2 \wedge \forall y \in X \rightarrow \exists d[fast(race)(d)(y) \wedge ran(y)(Sam) \wedge d > max\{d' | \exists z[fast(race)(z)(d') \wedge ran(z)(Bill)]\}]]$
'There are exactly two races x, and for each x, the degree d such that Sam ran d-fast in x is greater than the degree d' such that Bill ran d'-fast in any race y.'
c. LF: $[_{DP}$ exactly two $[_{DegP}$ [faster races] than OP_i Bill has run $[_{DP}$ $[_{DegP}$ [fast races] $t_i]]]]$

(101)a can - at least for some speakers - be assigned the reading in (101)b, which translates the LF representation (101)c. On this interpretation, (101)a maintains that exactly two races of Sam were faster than *any* race Bill has ever run, and does not entail the stronger claim that exactly two races of Sam were faster than *exactly two* races of Bill (this observation is also discussed in Pinkal 1995: 224f). Intuitions can be sharpened by considering the following scenario. Assume that Bill's personal record for 100m track is 10 seconds, but that he has only competed once in this discipline during his whole career. Suppose moreover that Sam ran two times 10.3 at some competition yesterday. (101)a appears to be judged false in this scenario. This result is expected on the assumption that the CD-site excludes the determiner *exactly two,* as illustrated by (102), and is treated as a bare plural which is existentially closed off, resulting in reading (101)b:

(102) LF: ...than $[OP_i$ $[\exists x$ [Bill has run $[_{DP}$ $[_{DegP}$ [fast $races_x]$ $t_i]]]]]$

It would, on the other side, come as a surprise if the CD-site included the determiner *exactly two*, as the alternative representation for the comparative complement in (103) suggests.

(103) a. ... than $[OP_i$ Bill has run $[_{DP}$ exactly two $[_{DegP}$ [fast races] $t_i]]]$
b. $[\![(103)a]\!] = max\{d' | \exists W[|W|=2 \wedge \forall z \in W \rightarrow fast(race)(z)(d') \wedge ran(z)(Bill)]\}$

On this interpretation, the truth conditions for the sentence should be undefined, or the proposition should be judged true, depending on the specific assumptions. More precisely, given that there is no pair of races in which Bill competed, the set of degrees to which these races were fast is empty. It follows that the complement of *than* either does not contain a maximum and ends up as undefined, or contains only a trivial maximum, i.e. the infimum. In the former case, the meaning of (101)a is undefined, in the latter case (101)a comes out as true.

Thus, the determiner position of the DP embedding the CD-site can - for at least a group of speakers - be semantically inert, indicating that the lower D° immediately embedding the CD-site does not have to take the same shape as the D° of the comparative NP. This observation directly supports the assumption that AP-Raising targets the string AP^NP to the exclusion of D°.[38]

Two remarks are in order. First, the data above supports the claim that the lower, *than*-XP internal, determiner *can* be semantically inert, but not that it *has* to be empty; in fact, for those speakers who accept (101)a, the string also possesses a reading which may be represented as in (103). Nothing that has been said so far excludes this option, in which the lower D° is filled by a phonetically empty head which anaphorically takes up the content of the antecedent in the position of the comparative NP. Second, as for the reason why this lower D° cannot be overtly realized, i.e. why examples such as (104) are ill-formed, one might speculate that strings of this shape fail to observe a surface condition of English which prohibits separating common nouns from their determiners (**Books were written two*).[39]

(104) **Sam ran exactly two faster race than Bill has run {exactly two/a/some/one/...}*

Turning to the third consequence of AP-Raising, the analysis rests on the assumption that the CD-site is removed by a movement operation, and not by ellipsis. This premise can be substantiated by comparing the contextual restrictions on the two processes.

In a study of cross-categorial ellipsis phenomena, Johnson (1996) points out that while ellipsis in English may affect (at least) VPs, IPs and N-bar constituents in such construction as VP-ellipsis, Sluicing and *one*-anaphora, as illustrated by (105)a-c, a similar process targeting APs is not attested. The examples under (106) are judged to be deviant:

(105) a. *Bill likes capers and Sam does too ∅.*
(∅ = [$_{VP}$ like capers])
b. *Bill likes capers and Sam knows which ones ∅.*
(∅ = [$_{IP}$ Bill likes])
c. *Bill likes the small capers from Spain and Sam likes the big ones ∅.*
(∅ = [$_{N'}$ capers from Spain])

(106) a. **Vivek made Nishi angry at Melissa and Sam made Carry ∅.*
(∅ = [$_{AP}$ angry at Melissa])
b. **I consider Betsy pretty and you consider Sam ∅.*
(∅ = [$_{AP}$ pretty]) (Johnson 1996: 18, (52))

Now, if comparative formation were an instance of ellipsis, one would be led to expect that examples which minimally differ from (106) in that the AP has been removed by CD instead of having undergone ellipsis should be equally ill-formed. This prediction is not supported by the data, though, the comparatives in (107) contrast with their elliptical counterparts in (106):

(107) a. *Vivek made Nishi angrier at Melissa than Sam made Carry ⌓.*
(⌓ = d-angry at Melissa)
b. *I consider Betsy prettier than you consider Sam ⌓.*
(⌓ = d-pretty)

This contrast constitutes evidence against the view that CD is a manifestation of syntactic ellipsis. Naturally, it does not establish beyond doubt that CD derives from movement.[40] However, given the absence of plausible alternatives and the similarities between CD and movement in their behavior w.r.t. reconstruction (see next paragraph and section 6), the assumption of AP-Raising appears to be well-founded.

Finally, the AP-Raising theory of CD has immediate repercussions on the analysis of the binding effects introduced in section 2. The AP is base-generated inside the comparative clause, and one therefore expects its content to be visible to the computation of the principles of Binding Theory. Example (24) - repeated as (108)a - and its underlying source prior to AP-Raising in (108)b confirm that this is indeed the case:

(108) a. **Mary is prouder of John$_i$ than he$_i$ is ⌓.*
(⌓ = d-proud of John)
b. than OP$_k$ he$_i$ is [$_{DegP}$ [$_{AP}$ proud of John$_i$] t$_k$]

In (108)b, the name resides within the c-command domain of the pronoun, triggering a violation of Principle C. Principle A effects and sensitivity of material inside the CD-site to the Coordinate Structure Constraint follow from the same mechanics.

At this point, an issue that might pose a potential threat for the analysis of (24)/(108) needs to be addressed. In the discussion of relative clauses in section 3.4.1, it was mentioned that the Copy Theory of movement provides a plausible alternative strategy for handling reconstruction phenomena, which does not have to resort to head-raising. Clearly, if such a matching analysis could be successfully adapted to comparatives, the reconstruction argument in favor of AP-Raising would be invalidated.

On a matching analysis, illustrated by the new parse for (24) in (109)b, the comparative operator in SpecCP is replaced by a movement copy which is

identified by the antecedent AP (or DegP) in the matrix clause; the CD-site itself is also occupied by a movement copy (see Kennedy 1999):

(109) a. *Mary is prouder of John than he is.*
b. *Mary is prouder of John than* [$_{CP}$ [*proud of John*]$_i$ *he is* [*proud of John*]$_i$]

But (109)b lacks now an empty operator in SpecCP, and the structure therefore needs to be supplied by a suitable binder for the degree variable inside the CD-site. This can in principle be achieved by deleting the descriptive content - but not the index - of the movement copy in SpecCP, as detailed by (110)a. Following Heim and Kratzer (1998), the isolated movement index ((110)b) can then be translated as a λ-binder of the degree variable ((110)c):

(110) a. LF: Mary is prouder of John than [~~proud of John~~]$_i$ he is [proud of John]$_i$
b. LF: Mary is prouder of John than [**i** he is [proud of John]$_i$]
c. Semantics: Mary is prouder of John than [**λi** he is [[proud of John]-**d**$_i$]]

However, a closer look disqualifies the derivations under (109) and (110) as viable alternatives to AP-Raising. In particular, (110) misrepresents and obscurs the binding relations that hold between the two occurrence of the AP (or DegP) on the one side, and the empty operator chain on the other. In syntax and at LF ((109) through (110)b), the AP copy in SpecCP is coindexed with an AP (or a DegP). In semantics however, the index of the copy must function as a λ-binder over degrees in order to render the structure interpretable ((110)c). Thus, the Copy Theory analysis would have to make the undesirable assumption that binding relations that are established in the syntactic component can be changed during the semantic computation. But such a move contradicts the idea of a transparent LF-interface that submits directly interpretable LF representations to semantics. This finding casts serious doubts on the feasability of combining a matching account of CD with the Copy Theory in the way outlined above.

Recapitulating the results of the current section, the main components of the analysis are listed in (111), while table 1 enumerates seven immediate consequences of AP-Raising:

(111) COMPONENTS OF ANALYSIS:
- CD consists in overt AP-Raising from SpecDegP of the comparative clause into SpecDegP of the matrix clause.
- Movement is triggered by the need to check off the [+comparative] feature of Deg° by a categorial A-feature.
- Both copies of the AP are interpreted.

Table 1. Seven consequences of AP-Raising

	Properties entailed by AP-Raising Hypothesis
I.	Locality of CD (section 1.2)
II.	Reconstruction and CSC effects (section 2)
III.	Basic word order of NP-comparatives matches interpretable word order (section 3.2)
IV.	Precedence translates into c-command (section 3.3.1)
V.	Locality of OP-Chain (section 3.3.2)
VI.	CD-site excluded determiner (section 3.4.3)
VII.	Mismatch antecedent - CD-site (section 3.4.3)

The LF representations for NP-comparatives which are to be submitted to the semantic component are finally complete. The next subsection specifies the compositional rules and lexical entries which are responsible for mapping NP-comparatives into a typed (extensional) formal language.

4. The semantics of NP-comparatives

Given the plethora of complex empirical phenomena that conspire in the semantics of comparatives and the variety of intricate factors which contribute to their derivation, designing a set of adequate translation rules for this construction has turned out to be a persistently challenging task for linguistic research. The group of largely unresolved issues surrounding comparative semantics includes such recalcitrant problems as the ontology of degrees and measurement, the proper truth conditional representation of comparatives, the scopal behavior and monotonicity properties of the comparative complement, the interaction of comparatives with other scope bearing operators and the integration of comparatives into a more general cross-categorial semantics of degree expressions (see Bierwisch 1989; Heim 1985, 2000; Hellan 1981; Kennedy 1999; Klein 1992; Larson 1988; Moltmann 1992; Rullmann 1995; Schwarzschild and Wilkinson 2002; von Stechow 1984, among many others).

The purpose of the present study does not consist in developing a new semantics for comparatives, but is restricted to explicating the compositional procedures which derive the correct interpretations for a subset of the construction (NP-comparatives). I will for this reason not go into a detailed discussion of the foundations, but will only briefly outline the fundamental

concepts of two existing major approaches towards the semantics of gradation. From there, I will proceed to a presentation of the compositional semantics for NP-comparatives.

4.1. The representation of gradable adjectives

In the literature, there is an ongoing debate about the ontological status of degrees in the analysis of gradable adjectives, which is reflected by the two basic approaches that have emerged during the last three decades. According to *vague predicate* theories - borrowing the terminology of Kennedy (1999) - gradable and non-gradable adjectives denote semantic expressions of the same semantic type and are interpreted as properties of individuals (Kamp 1975; Klein 1982, 1992; Larson 1988; McConnell-Ginet 1973; for criticism see Kennedy 1999; von Stechow 1984, among others). What makes gradable adjectives special according to vague predicate theories is that their domain is inherently organized as a partial (weak) ordering along some dimensional parameter. To exemplify: Let the domain D of some model be made up of John, Peter and Mary and assume that an ordering D according to the dimension of age results in the set {<John,10>, <Peter,25>, <Mary,33>}. A gradable adjective such as *old* partitions this ordered domain into subsets relative to a contextually given standard value s by dividing the domain into the set of individuals that are young w.r.t. the standard value s, and the set of individuals that do not qualify as young w.r.t. s in a given context.[41] The standard s determines here the delineation between these two subsets - the positive and the negative extension cell - and its value can vary from context to context. Mary could e.g. be old for a prodigy, but young for a Nobel Prize winner (on vagueness see e.g. Burns 1991; Keefe and Smith 1997). In the example at hand, *young* might impose a partitioning into the negative extension cell old_{neg} = {John} and the positive extension cell old_{pos} = {Peter, Mary}. Then, the proposition *Mary is old* comes out as true in the given context, because Mary $\in old_{pos}$.

Importantly, in the analysis sketched above, the relation between the subject of predication and the degree to which the AP-denotation holds of the subject is not directly encoded in the semantics of the adjective, but it is specified indirectly via the ordering of the domain and the contextual standard value. Thus, the degree variable is not an argument of the adjective.

Unlike vague predicate approaches, *relational theories* of gradability consider degrees to be part of a sorted domain of individuals. Most authors that opt for a relation account follow Cresswell (1976) in taking gradable adjectives to denote mappings between degrees and individuals (Bierwisch

1989; Hellan 1981; Lang 1989; Moltmann 1992; Rullmann 1995; Lerner and Pinkal 1992, 1995; von Stechow 1984).[42] On this conception, the degree variable is an argument of the lexical entry of the adjective, and a predicate such as *old* can accordinly be assigned the lexical entry $\lambda d \lambda x[old(d)(x)]$.[43]

For present concerns, I will adopt a relational theory, for the reason that it provides - unlike its competitor - a position for the syntactic representation of degree arguments. The analysis will be implemented in a fragment for the semantics of English comparatives based on aspects of Hellan (1981) and von Stechow (1984). The next two subsections are designed to demonstrate that the syntactic structures developed in section 3 are fully interpretable in such a framework under the assumption of the standard principles of compositionality (function application and predicate modification). Subsection 4.2 provides translation procedures for the *than*-XP clause, whereas section 4.3 concentrates on the relation between the comparative complement and the degree system.

4.2. Interpreting the comparative complement

In von Stechow (1984), the comparative clause (1) receives the semantic translation (112)a, paraphrased in (112)b:

(1) *Mary knows younger authors* [$_{than\text{-}XP}$ *than Peter knows* ∆].
(∆ = d-young authors)

(112) a. $\exists y \exists d[young(authors)(d)(y) \wedge know(y)(Mary) \wedge d > max\{d' | \exists x[young(authors)(x)(d') \wedge know(x)(Peter)]\}]$
b. 'Mary knows d-young authors and d is greater than the maximal degree d' such that Peter knows d'-young authors.'

The two major contributions of comparative semantics consist in 'nominalizing' the comparative complement by the maximality operator, and in establishing a relation of comparison between the degree argument in the matrix clause and the nominalized comparative complement. I will turn to the semantic rules generating the *than*-XP first, which translates into an expression denoting the maximal element of a set of degrees, as given below:

(113) $[\![[_{than\text{-}XP} ...]]\!] = max\{d | \exists y[author(y) \wedge young(y)(d) \wedge know(y)(Peter)]\}$

Construing the semantic translation of the *than*-XP step-wise in a bottom-up fashion, I will adopt Hellan's (1981) assumption that gradable adjectives

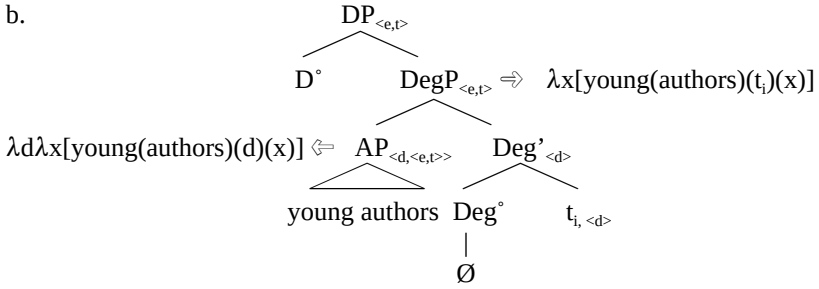
denote functions from common noun denotations to a relation between degrees and individuals (see also Lerner and Pinkal 1992, 1995). Thus, the basic meaning of a gradable adjective such as *young* is of the type of subsective AP-modifiers (extensional type <<e,t>,<d,<e,t>>>). Applied to the current phrase structure, this allows the adjective to combine with its sister NP-node in a straightforward way:

(114) $[\![[_{AP}\ \text{young}]]\!]\ ([\![[_{NP}\ \text{authors}]]\!]) = \lambda P \lambda d \lambda x[\text{young}(P)(d)(x)]\ (\text{authors}) =$
$= \lambda d \lambda x[\text{young}(\text{authors})(d)(x)]$

In section 3, it was assumed that the empty operator chain is footed in the complement position of Deg°. Given that the degree head inside the comparative clause is semantically vacuous, the AP may directly apply to this trace, resulting in the individual property of *being t_i-young authors* as the denotation of the DegP-node:

(115) a. $[_{DP}$ young authors $t_i]$

b.



In the absence of a semantically contentful determiner, the CD-site behaves like a bare plural weak indefinite (see section 6), denoting an individual property. Thus, the DP (*young authors*), which translates as a predicate, cannot be directly combined with the matrix verb (*know*), which selects for an e-type expression as its internal argument. In the literature, there are various proposals as to how to resolve this type incompatibility and as to how the bare plural can be compositionally integrated into the clause (Heim 1982, 1992; Diesing 1992; Diesing and Jelinek 1995; Lechner 1998a). Nothing hinges on the specific choice of theory. For reasons of concreteness, I will assume that the bare plural object undergoes QR to the IP-node, where it can be intersected with the predicate abstract formed by the movement index of the object (see (116)a; Heim and Kratzer 1998). Then, the free individual variable is bound off by existential closure (Heim 1982; Diesing 1992) at the IP-level (see (116)b):[44]

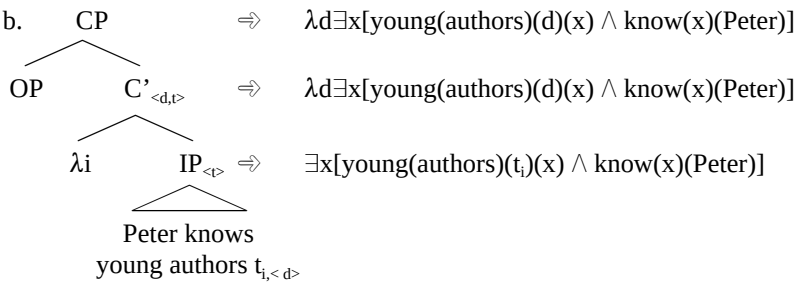
(116) a. $[\![[_{IP}$ [young authors t]$_x$ $[_{IP}$ Peter knows $t_x]]]\!]$ = *(Predicate Modification)*
= $\lambda y[young(authors)(t_i)(y)]$ $\lambda x[know(x)(Peter)]$ =
= $\lambda x[young(authors)(t_i)(x) \wedge know(x)(Peter)]$

b. $[\![[_{IP}$ $\exists x[_{IP}$ [young authors t]$_j$ $[_{IP}$ Peter knows $t_j]]]]\!]$ = *(Existential closure)*
= $\exists x[young(authors)(t_i)(x) \wedge know(x)(Peter)]$

In the next step, the IP-denotation combines with the empty operator binding the degree variable. Following standard assumptions (Heim and Kratzer 1998), the operator λ-abstracts over the degree variable via its movement index, passing this variable on to the CP-node.

(117) a. $[_{CP}$ OP_i Peter knows young authors $t_i]$

b.



On this view, the comparative operator is treated exactly in the same way as the empty operator in relative clauses, where it also serves as a functional abstractor. Note that this assumption ensues the favorable consequence that it is not necessary to define different operators for predicative and attributive NP-comparative: In both cases, the operator simply binds a degree term, the only difference being that NP-comparative additionally involve existential closure (see e.g. Rullmann 1995 for predicative comparatives).

Finally, the maximality operator *than* (von Stechow 1984; Rullmann 1995) applies to the CP-denotation and picks out the maximal element of the CP-denotation, yielding the interpretation for the comparative complement given in (119):

(118) $[\![than]\!]$ = $\lambda P_{<e,t>}$ $max\{d|P(d)\}$

(119) $[\![[_{than\text{-}XP}$ than $[_{CP}$ OP_i Peter knows young authors $t_i]]]\!]$ =
= $max\{d|\exists x[young(authors)(d)(x) \wedge knows(x)(Peter)]\}$

4.3. Interpreting the matrix clause

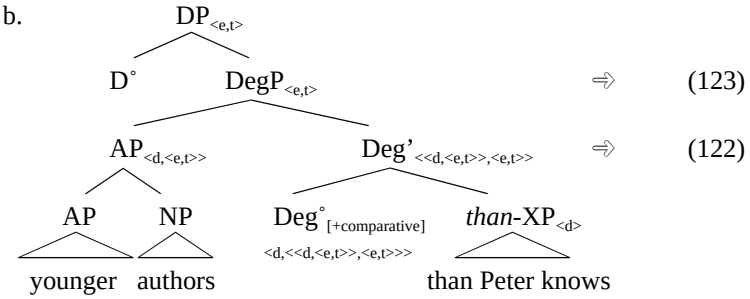
The functional Deg°-head of the matrix clause is not only the structural site which enables incorporation of the *than*-XP into the matrix clause, but it also encodes the comparison relation. A degree head endowed with a [+comparative] feature will be taken to denote a function from degrees to a function from AP-denotations to individual properties, essentially following von Stechow (1984). In its simplest form, such a $\text{Deg}^{\circ}_{[+\text{comparative}]}$ asserts that there is some degree of 'AP-ness' that is greater than the degree denoted by the *than*-XP:[45]

(120) $[\![\text{Deg}^{\circ}_{[+\text{comparative}]}]\!] = \lambda d \lambda P_{<d,<e,t>>} \lambda y \exists d'[P(d')(y) \wedge d' > d]$

The typed tree diagram (121) depicts the first two steps in the semantic processing of the matrix clause:

(121) a. [$_{DP}$ younger authors than Peter knows]

b.



In an initial step, the Deg°-denotation applies to the translation of the comparative complement, as illustrated by (122):

(122) $[\![\text{Deg}^{\circ}]\!]([\![\text{than OP}_i \text{ Peter knows young authors } t_i]\!]) =$
$= \lambda d \lambda P \lambda y \exists d'[P(d')(y) \wedge d' > d]$
$(\max\{d|\exists x[\text{young(authors)}(d)(x) \wedge \text{knows}(x)(\text{Peter})]\}) =$
$= \lambda P \lambda y \exists d'[P(d')(y) \wedge d' > \max\{d|\exists x[\text{young(authors)}(d)(x) \wedge \text{knows}(x)(\text{Peter})]\}]$

Next, the Deg'-denotation combines with the AP-denotation in SpecDegP. In course of the derivation, shown in (123), the degree variable introduced by the comparative AP (*younger authors*) is existentially closed off:

(123) ⟦[Deg° [than OP_i Peter knows young authors t_i]]⟧(⟦young authors⟧) =
= λPλy∃d'[P(d')(y) ∧ d' > max{d|∃x[young(authors)(d)(x) ∧ knows(x)(Peter)]}] (λdλx[young(authors)(d)(x)]) =
= λy∃d'[young(authors)(d')(y) ∧ d' > max{d|∃x[young(authors)(d)(x) ∧ knows(x)(Peter)]}]

The matrix DegP and DP receive interpretations identical to the ones assigned to the corresponding nodes in the comparative complement, they are taken to denote individual properties. Existential closure of the bare plural object yields the final semantic representation of the comparative (1) given below:

(124) ⟦Mary knows younger authors than OP_i Peter knows young authors t_i⟧ =
= ∃y∃d'[young(authors)(d')(y) ∧ d'>max{d|∃x[young(authors)(x)(d) ∧ knows(x)(Peter)]])]

As was illustrated in section 4, the LF representations supplied by the AP-Raising analysis are transparently interpretable in the relational theory of gradable adjectives. Now that the syntax and semantics of attributively modified NP-comparatives have been made sufficiently explicit, I will proceed to a discussion of further ramifications and consequences of the AP-Raising Hypothesis. More precisely, the following section demonstrates that the AP-Raising Hypothesis correctly describes the interdependencies between word order variation and interpretation in NP-comparatives.

5. Prenominal vs. postnominal comparatives

The AP-Raising Hypothesis entails four predictions which empirically manifest themselves in four systematic differences between prenominally and postnominally modified NP-comparatives. These four analyses, tho be presented and discussed in the following four subsections, will be seen to provide strong support for the basic tenets of the AP-Raising Hypothesis.

5.1. Variable size of the CD-site

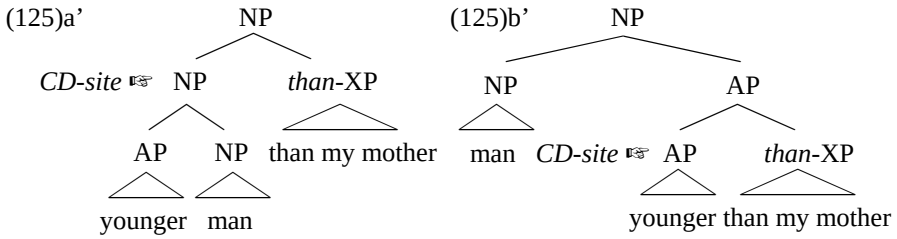
Bresnan (1973) and Stanley (1969) observed that the interpretation of certain NP-comparatives is sensitive to DP-internal word order. Prenominally modified structures differ from postnominally modified ones in that the former trigger an entailment which is absent in the latter. For instance, while (125)a implies that my mother is a man, (125)b represents a felicitous statement:

(125) a. *#She met a younger man than my mother.*
(⌂ = (is a) d-young man)
b. *She met a man younger than my mother.*
(⌂ = (is) d-young)

This asymmetry can be attributed to variation in the size of the respective CD-sites (Bresnan 1973). If the comparative precedes the head noun, as in (125)a, the ellipsis has to include both the gradable adjective and the common noun. If the AP on the other side follows the NP, as in (125)a, the missing category may be smaller, containing the common noun only:

(126) OBSERVATION: In the postnominal construction, the CD-site can be small (consisting of the AP only).

Bresnan (1973) hypothesizes that the CD-site corresponds in size to the sister node of the *than*-XP (subsequent to extraposition). In the prenominal construction, the *than*-XP adjoins to the NP, as illustrated by (125)a', and the ellipsis is restored as a modified common noun. Low attachment of the *than*-XP to the right of the AP, as in (125)b', leads to the postnominal structure, in which CD operates on the AP only.



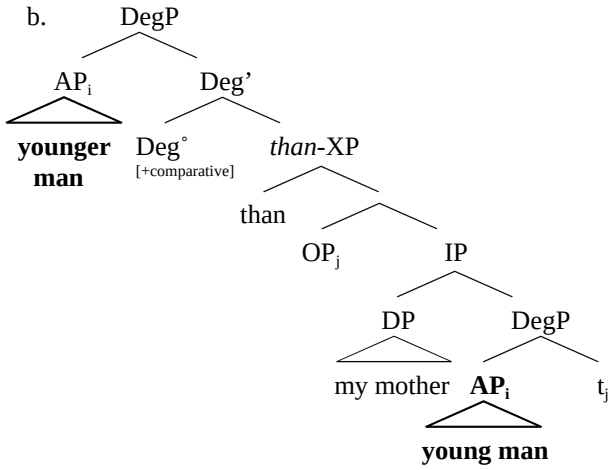
Thus, for Bresnan, the *than*-XP may adjoin to different nodes, depending upon serialization. But if the deliberations of section 3 are on the right track, there are good reasons to believe that the *than*-XP is invariably attached lowest within the DP. In particular, data from pronominal variable binding indicated that the prenominal construction does not lend itself to a representation in terms of the parse (125)a', in which the *than*-XP right-adjoins to the head noun.[46] Consequently, Bresnan's account for the pre- vs. postnominal asymmetry (125) cannot be maintained.

Turning now to the predictions that the AP-Raising Hypothesis generates for the pair (125), consider the prenominal structure (125)a first. On current views, *young man* originates in the comparative complement and moves as

one unit into the matrix clause. This forces the CD-site in (127) to be restored as *young man*, as desired:

(127) a. She met a [$_{DP}$ [$_{DegP}$ **[$_{AP}$ younger man]** [than my mother **[$_{AP}$ young man**]]]]

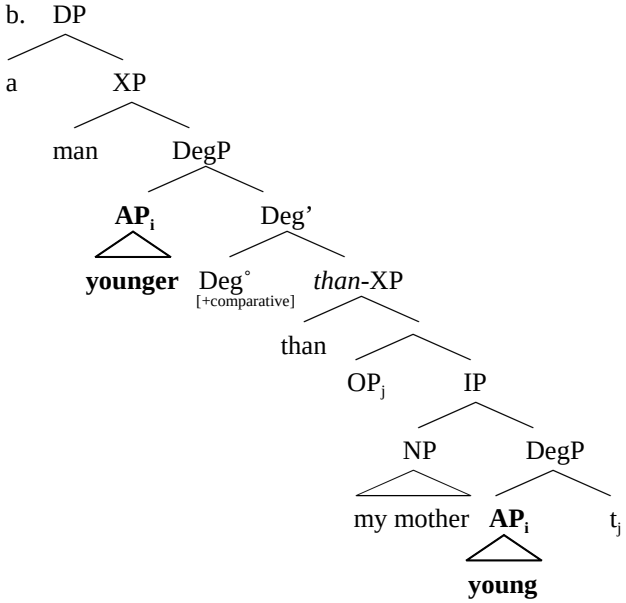
b.



The analysis of the postnominal construction (125)b proceeds as in (128):

(128) a. She met a [$_{DP}$ man [$_{DegP}$ **[$_{AP}$ younger]** [than my mother **[$_{AP}$ young]**]]]

b.



As illustrated by (128), the underlying source of the comparative *than*-XP in (125)b is a predicative clause headed by the AP *young*. AP-Raising therefore targets the AP only, with the result that combining the postnominal DegP (*younger than my mother*) with the NP *man*[47] yields a felicitous statement.

What is of specific significance for present purposes is the fact that the two serializations and their respective interpretations correspond to the two possible structures for the comparative clause sanctioned by the current theory. SpecDegP may either host an AP that modifies an NP, or a bare AP which predicates over the subject of the *than*-XP. These two different underlying structures automatically translate into the generalization that categories inbetween the comparative and the *than*-XP are included in the CD-site, while terms to the left of the comparative are not.[48]

An apparent problem for the analysis arises in form of the observation that in prenominal constructions, the CD-site does not always match its antecedent, but sometimes only contains a proper subpart thereof. For instance, the missing constituent in (129) is reconstructed in its singular form *young boy* ((129)a), and not as the plural *young boy-**s*** ((129)b), as can be inferred from the ungrammaticality of the clause (130), which underlies the *than*-XP of (129). This seems to suggests that the AP-Raising Hypothesis fails to provide the CD-site with an antecedent of the proper shape after all:

(129) *It is likely that younger boys than Peter ⌓ cannot solve this problem.*
a. ⌓ = d-young boy
b. *⌓ = d-young boy**s**

(130) **Peter is/are young boys.*

Contrary to this first impression, (129) does not falsify the account, though, but rather indicates that the structure of the DP containing the comparative requires further refinement. To be precise, assume that the DP embeds a Number Phrase (NumP), and that NumP dominates DegP (see Ritter 1995; Valois 1991, among others). Nominal plural morphology is moreover licensed by a privative feature on Num° which, if present, enters a agreement relation with the common noun, where plurality is spelled out on the head N°. Absence of this plural feature signals singularity. In addition to morphosyntactic number marking, Num° also encodes plural semantics.[49] On this view, plural morphology is not an exponent of the featural specification of N°, but reflects a property of a head external to the NP - and therefore also external to the CD-site. In conjunction with the assumption that AP-Raising creates two independently interpreted copies, this has the consequence that the CD-site and its antecedent do not have to match in number. Returning to the analysis of (129),

it is now possible to interpret the lower, *than*-XP-internal occurrence of *young boy* as a singular term (see (131)a), and at the same time have the higher copy surface as a plurality, licensed by agreement with $\text{Num}^{\circ}_{[\text{plural}]}$ (see (131)b):

(131) a. [than Peter [$_{\text{DegP}}$ [younger boy]]]
b. [$_{\text{NumP}}$ **Num**$^{\circ}_{[\textbf{plural}]}$ [$_{\text{DegP}}$ [younger boy-**s**]$_{\text{i, [plural]}}$ Deg$^{\circ}$ [than Peter [$_{\text{DegP}}$ [younger boy]$_{\text{i}}$]]]]

Thus, apparent mismatches between the CD-site and the antecedent in prenominal constructions can be accommodated in a system which adopts a more articulated syntax for the DP.

5.2. Upper bound on the size of the CD-site

The second interpretational disparity between pre- and postnominal comparatives is also based on a finding in Bresnan (1973):

(132) OBSERVATION: In the postnominal construction, the CD-site has to be small (consisting of AP only).

Whereas the contrast (125) demonstrated that the CD-site of a postnominal comparative can be small, example (133) attests to the fact that the ellipsis in postnominal comparatives may not remove a constituent larger than the AP. (133) lacks a wide, VP-ellipsis-like reading, in which *Sam* serves as the subject of *meet*:

(133) *She met a man younger than Sam* ⌓.
a. ⌓ = (is) d-young
b. *⌓ = met a d-young man

The generalization also extends to the ill-formedness of combinations of postnominal comparatives and genuine VP-ellipsis inside the *than*-XP:

(134) **She met a man younger than Sam did.*

The prenominal variant of (133), on the other side, displays ambiguity between the narrow, predicative and the wide, VP-ellipsis-like interpretation:

(135) *She met a younger man than Sam* ⌓.
a. ⌓ = (is) a d-young man
b. ⌓ = met a d-young man

The AP-Raising Hypothesis correctly excludes the wide reading for the postnominal construction (133), because it maintains that in the postnominal construction, only an AP is raised into the higher SpecDegP. Hence, the SpecDegP position of the comparative complement in (133) is occupied by an AP. But the selectional restrictions induced by the main predicate *meet* require that the verb take a DP-object as its internal argument. Thus, the wide reading (133)b violates subcategorization requirements, and is unavailable for the same reason that the underlying source (136) is ill-formed:[50]

(136) **She met a man younger than Sam met young.*

In the prenominal construction (135), on the other side, the CD-site consists of a DP (*young man*) which can satisfy the syntactic subcategorization of the elided predicate *meet* (for the predicative reading see (127)):

(137) She met a [$_{AP}$ younger man] [than Mary **[$_{VP}$ met a [$_{DegP}$ [$_{AP}$ d-young man**]]]]

5.3. Intersective and subsective readings

The third serialization asymmetry pertains to the semantics of the adjectival head. Word-order variation does not only influence the shape of CD, but it also interacts with the intersective-vs.-subsective dichotomy in a systematic way (Bennett 1974). The DP in (138) is ambiguous, it allows both for an intersective and a (non-intersective) subsective[51] interpretation (see Bernstein 1993; Siegel 1976).

(138) *an older friend than Peter*
  a. a friend who is more aged *(intersective)*
  b. a person who has been a friend for a longer time *(subsective)*

(139) *a friend older than Peter*
  a. a friend who is more aged *(intersective)*
  b. *a person who has been a friend for a longer time *(subsective)*

(138) contrasts in this respect with the postnominally modified DP (139), which only possesses an intersective reading.

(140) OBSERVATION: Prenominal AP's are ambiguous between an intersective and a (non-intersective) subsective reading, while postnominal adjectives can receive an intersective interpretation only.

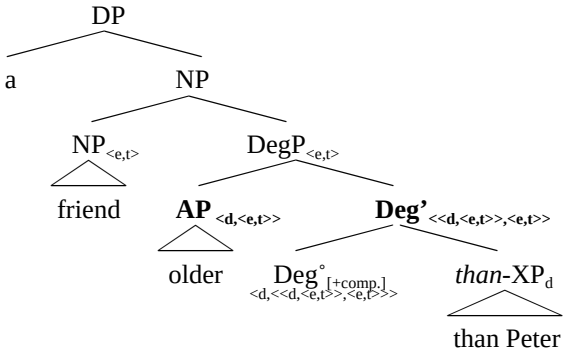
Following Bennett (1974) and Siegel (1976), I assume that the distinction between intersective and subsective modifiers is mirrored by a difference in types. More specifically, gradable intersective adjectives (extensionally) are taken to denote relations between individuals and degrees (<d,<e,t>>), while subsective ones translate into functions from properties to relations between individuals and degrees (<<e,t>,<d,<e,t>>>). Suppose furthermore that a type-shifting operator defined as in (141) can shift intersective adjectives to the type of subsective ones:[52]

(141) $[\![\uparrow]\!] = \lambda P_{<d,<e,t>>} \lambda Q_{<e,t>} \lambda d \lambda x [P(d)(x) \wedge Q(x)]$

Thus, while intersective adjectives are ambiguous between type <d,<e,t>> and type <<e,t>,<d,<e,t>>>, subsective adjectives are invariably assigned type <<e,t>,<d,<e,t>>>.

With this in the background, consider the semantic computation of the postnominal construction, which unambiguously induces an intersective reading. If the AP is headed by an intersective adjective, as in (142), the Deg'-denotation can successfully apply to the AP-denotation:

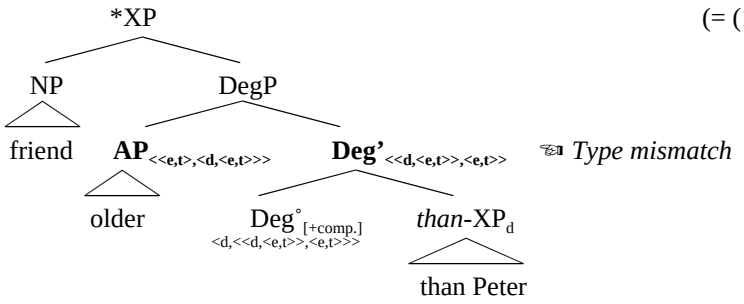
(142)



(= (139)a)

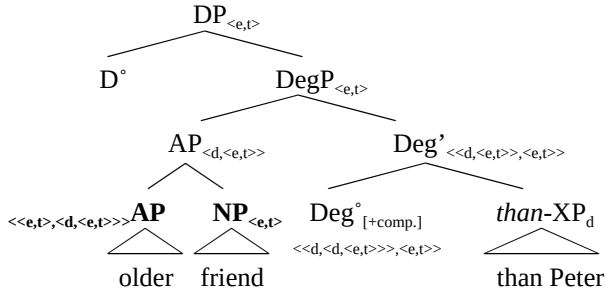
This accounts for the availability of the intersective reading with postnominal comparatives. If, on the other side, the entry for the subsective version of *old* (type <<e,t>,<d,<e,t>>>) is selected from the lexicon, as in (143), the AP and the Deg'-node can no longer be combined by any standardly employed semantic rule. The computation crashes due to type mismatch at the Deg'-level and the structure winds up as uninterpretable:

(143) (= (139)b)



The assumptions made so far also derive the ambiguity of prenominal NP-comparatives. In the prenominal construction, the adjective always combines with the common noun first, yielding a relation between individuals and degrees as the denotation for the higher AP-node (see (144)). It follows that prenominal adjectives always have to be parsed as subsective modifiers:

(144) (= (138)b)



But intersective adjectives can be lifted by the type-shifting operator ↑ defined in (141) from type <d,<e,t>> to the intersective type <<e,t>,<d,<e,t>>> ((145)a). Subsequent to type shifting, even an AP headed by a intersective adjective is therefore of suitable type to be combined with its NP-sister, as illustrated by (145)b:

(145) a. ⟦↑⟧(⟦old⟧) =
= λPλQλdλx[**P**(d)(x) ∧ Q(x)] (**λdλx[old(d)(x)]**) =
= λQλdλx[old(d)(x) ∧ Q(x)]

b. ⟦↑old⟧(⟦friend⟧) =
= λQλdλx[old(d)(x) ∧ **Q**(x)] (**λx[friend(x)]**) =
= λdλx[old(d)(x) ∧ friend(x)]

Thus, the distribution of intersective and (non-intersective) subsective readings in pre- and postnominal comparatives directly falls out from present

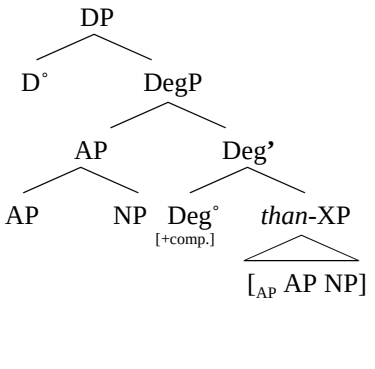
assumptions about the syntactic organization of DPs and a general rule of type shifting.[53]

The fourth and last asymmetry to be considered involves Principle C reconstruction inside the *than*-XP, and will be shown to attest to a fundamental structural difference between pre- vs. postnominal DegPs, which is also correctly encoded in the current analysis.

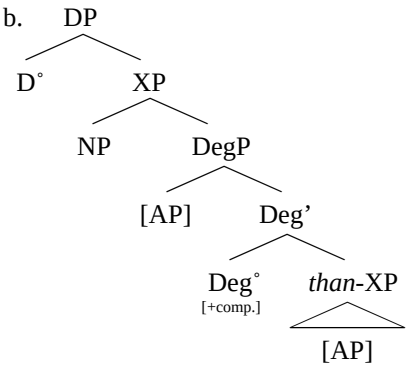
5.4. Reconstruction and Principle C

The present system contains the assumption that prenominal APs are functions which apply to the common noun argument, while postnominal ones act as adjuncts modifiers to the common noun. In accordance with this claim, the diagnostics for structure employed so far tested for the relation between the AP and the NP, and served as a probe for whether they form a constituent or not. But the structures assigned to the two serialization patterns also correlate with variation along a second syntactic parameter, they differ w.r.t. the subcategorization relation which the DegP bears to its sister node. More specifically, while the DegP in the prenominal construction functions as an argument of D° ((146)a), the DegP in the postnominal structure is an adjunct to the common noun ((146)b):

(146) a.



b.



One of the various empirical domains in which adjuncts and arguments exhibit distinct properties involves reconstruction of fronted R-expressions in contexts that potentially feed Principle C violations. In particular, names inside fronted arguments reconstruct for the computation of disjoint reference effects, as illustrated by the a-examples below, while no such disjointness requirement holds for the b-examples, in which the names are embedded inside adjuncts (Freidin 1986; Lebeaux 1988, 1990):

			STATUS OF XP
(147)	a.	**Which claim* [$_{XP}$ *that John$_i$ likes Mary*] *did he$_i$ later deny?*	*Argument*
	b.	*Which claim* [$_{XP}$ *that John$_i$ made*] *did he$_i$ later deny?*	*Adjunct*
(148)	a.	*?*Which pictures* [$_{XP}$ *of John$_i$*] *does he$_i$ like?*	*Argument*
	b.	*Which pictures* [$_{XP}$ *near John$_i$*] *does he$_i$ like?*	*Adjunct*
(149)	a.	*?*Which pictures* [$_{XP}$ *of John$_i$*] *does he$_i$ like?*	*Argument*
	b.	*Which pictures* [$_{XP}$ *that John$_i$ took*] *does he$_i$ like?*	*Adjunct*

A reflex of this disparity can also be detected in NP-comparatives. According to present assumptions, prenominal DegPs are arguments, while postnominal ones are treated as adjuncts. One is therefore led to expect that a name embedded inside a fronted comparative NP should incur a Principle C violation only if the name is contained in a prenominal DegP, as in (150)a. If the name is on the other hand part of a postnominal, right-adjoined DegP, as in (150)b, no disjoint reference effect should arise:

(150) a. Obligatory reconstruction:*[$_{DP}$ [$_{DegP}$ AP NP **name$_i$**]]$_k$ .. [**pronoun$_i$** .. [t$_k$]]
b. Optional reconstruction: [$_{NP}$ NP [$_{DegP}$ AP **name$_i$**]]$_k$ ... [**pronoun$_i$** ... [t$_k$]]

This prediction is borne out, as witnessed by the contrast in (151)[54]:

(151) a. **Near a taller man than John$_i$ he$_i$ put the basket.*
b. *Near a man taller than John$_i$ he$_i$ put the basket.*

In (151)a, the name has to be reconstructed along with the fronted PP, inducing a Principle C violation, because it is contained in the argumental DegP *taller man*. Unlike the DegP in (151)a, the DegP in (151)b acts as an adjunct modifier. As a result, the name contained in the postnominal DegP does not have to be submitted to obligatory reconstruction, and coreference becomes optionally available.

To recapitulater, reconstruction properties w.r.t. Principle C confirm the view that the DegP serves as an argument in the prenominal construction, but functions as an adjunct in postnominally modified NPs. This correlates with the DP-internal architecture proposed here, according to which the DegP in prenominal structures is the complement of D˚ (whose specifier hosts in turn the modified head noun), while postnominal DegPs are adjoined to the common noun at the NP-level.

In the present section, it was demonstrated that AP-Raising adequately accounts for a wide range of phenomena, including the influence of word-order variation on the size of ellipsis, the interpretation of attributive adjec-

tives and reconstruction effects. The section to follow proceeds to a discussion of two further pieces of evidence in support of the premise that the content of the CD-site is restored in syntax, and not in semantics. In particular, section 6 will focus on the different predictions that semantic and syntactic theories of CD make for the distribution of Strong Crossover and Weak Crossover in comparatives, and for the scopal properties of the CD-site.

6. Semantic properties of the CD-site

The present section deals with aspects of the interpretation of the CD-site and aims at establishing two points. First, I will demonstrate that the AP-Raising analysis offers an explanation for three interpretive properties of the CD-site in attributive NP-comparatives - its sensitivity to Strong Crossover (SCO), its behavior w.r.t. Weak Crossover (WCO), and its scopal characteristics. Second, it will be shown that semantic approaches to CD face difficulties in accounting for these three properties in a satisfactory way. This finding will be taken to constitute additional empirical evidence in favor of AP-Raising and against CD-resolution in the semantic component.

6.1. Weak and Strong Crossover

Bresnan (1975) observes that comparatives display sensitivity to SCO and WCO. If a pronoun is to be construed as referentially dependent on the CD-site, the CD-site has to c-command the pronoun, as in (152)a and (153)a.[55] Reversing the order of the CD-site and the pronoun as in (152)b and (153)b bleeds the bound reading:

(152) SCO:
a. *More students flunked than OP ⌓ thought **they** would flunk.*
b. **More students flunked than OP **they** thought ⌓ would flunk.*
(⌓ = d-**many students**) (Bresnan 1975: 29, (16))

(153) WCO:
a. *More students re-registered than ⌓ were given C's by **their** teachers.*
b. **More students re-registered than **their** teachers gave C's to ⌓.*
(⌓ = d-**many students**) (Bresnan 1975: 32, (25))

According to present assumptions, the empty comparative operator binds the degree argument of a gradable adjective, both syntactically and semanti-

cally. The index of the operator chain is therefore distinct from the referential index on the pronoun. This has the consequence that (152)b and (153)b - repeated in (154) - cannot be excluded as cross-over configurations involving the pronoun and the operator chain:

(154) a. **More students flunked than OP_k $they_i$ thought* [*many students* t_k] *would flunk.*
b. **More students re-registered than OP_k $their_i$ teachers gave C's to* [*many students* t_k].

Moreover, on current assumptions, the higher and the lower AP-copies do not form a chain, they are referentially independent. It follows that even though the AP has actually crossed over the pronoun in course of the derivation, the strings in (154) do not instantiate violations of WCO or SCO.

But current assumptions make it possible to envision an alternative analysis for the contrasts in (152) and (153). More precisely, (152)b and (153)b can be re-analyzed as instances of illicit coreference,[56] instead of as cross-over violations. In order to be able to substantiate this position, an independent property of comparatives headed by *more* - which I will henceforth refer to as *amount comparatives* - has to be addressed first, though.

To begin with, the CD-site of amount comparatives appears to display a strong tendency to be interpreted as a weak indefinite, indicating that the CD-site is represented by an NP headed by weak, cardinal *many* (on the semantics of *many* see e.g. Partee 1988 and Westerståhl 1985). For instance, (155)a seems to lack the strong, proportional reading for the occurrence of *many* embedded inside the CD-site, which can be formalized as in (155)b and paraphrased as in (155)c:

(155) a. *More students were given an A this year than were given an A last year.*
b. $\exists d \exists x[\text{students}(x) \wedge$
$|\{y|\text{students}(y)\} \cap \{y|\text{were\_given\_an\_A\_this\_year}(y)\}| =$
$d \cdot |\{y|\text{students}(y)\}| \wedge d > \max\{d'|\exists y[\text{students}(y) \wedge |\{z|\text{students}(z)\} \cap$
$\{z|\text{were\_given\_an\_A\_last\_year}(z)\}| = d' \cdot |\{z|\text{students}(z)\}|\}]$
c. 'The proportion of students that received an A this year is greater than the proportion of students that received an A last year.'

The intuitions can be sharpened by evaluating (155)a in the scenario (156). If it were possible to assign to (155)a the proportional interpretation (155)b, one should be able to use it as a felicitous description of (156):

(156)

	This year	*Last year*
Number of students:	500	1,000
Number of students with A:	75	100
Proportion of students with A:	0.15	0.1

In a situation such as depicted in (156), sentence (155)a is evaluated as true in its proportional reading, because the proportion of students which received an A this year (0.15) exceeds the proportion of students which received an A last year (0.1). Furthermore, the absolute number of last year's students with an A (100) surpasses the total of this year's students who received the highest grade (75), and scenario (156) therefore renders (155)a false in its cardinal interpretation. Crucially, it does not seem possible to use sentence (155)a as a truthful report of the situation (156), attesting to the fact that *many* can only be assigned a cardinal reading.[57]

Tentatively, the unavailability of strong *many* as the head of the CD-site can be related to the descriptive generalization that strong, presuppositional DPs are barriers for subextraction (Erteschik-Schir 1973; Fiengo 1974, 1987). More specifically, if the head of the CD-site were occupied by strong, proportional *many*, the containing DP would be turned into an opaque domain for movement, blocking formation of an empty operator chain and AP-Raising.

Consider next the pairs under (157) and (158), which are structurally similar to the comparatives (152) and (153), but involve overt instead of silent indefinites. Moreover, since the indefinites (*many students*) function as associates in the existential construction, they have to be read as weak indefinites, just as in the comparatives considered above. And, as with the comparatives in (152) and (153), coreference is contingent upon the order of the pronoun and its antecedent:

(157) a. *There are* ***many students***$_i$ *who thought* ***they***$_i$ *would flunk.*
b. ****They***$_i$ *thought that there were* ***many students***$_i$ *who flunked.*

(158) a. *There are* ***many students***$_i$ *who were given C's by* ***their***$_i$ *teachers.*
b. ****Their***$_i$ *teachers thought that there were* ***many students***$_i$ *who were given C's.*

Now, the ill-formedness of (157)b is standardly attributed to Principle C,[58] while (158)b can be analyzed as a violation of Heim's (1982) Novelty Condition, which holds that coreference between an indefinite and a pronoun is licit only if the antecedent precedes the pronoun.[59]

Returning at this point to Bresnan's original examples, notice that the AP-Raising Hypothesis assigns to the comparatives (152) and (153) the LF repre-

sentations (159) and (160), respectively, which structurally parallel the pattern of the declaratives (157) and (158), suggesting a common analysis of coreference resolution in both constructions.

(159) AMOUNT COMPARATIVES, PRINCIPLE C: (= (152))
  a. More students flunked than OP [$_{CD}$ **many students**] thought **they** would flunk.
  b. *More students flunked than OP **they** thought [$_{CD}$ **many students**] would flunk.

(160) AMOUNT COMPARATIVES, NOVELTY CONDITION: (= (153))
  a. More students re-registered than [$_{CD}$ **many students**] were given C's by **their** teachers.
  b. *More students re-registered than **their** teachers gave C's to [$_{CD}$ **many students**].

More precisely, the putative SCO violations in (152)b/(159)b can be re-analyzed in terms of Principle C, along the same lines as (157)b. Furthermore, the assumption that the CD-site of amount comparatives consists of a weak indefinite can be used to subsume apparent WCO effects in comparatives ((153)b/(160)b) under the Novelty Condition, which was also employed in the analysis of the ill-formed string (158)b.

Strong empirical support for the view that WCO/SCO effects in comparative are in fact reflexes of independent principles governing licit coreference relations is furnished by an additional contrast, which sets apart amount comparatives from regular attributive comparatives. Interestingly, attributive NP-comparatives differ from amount comparatives in that they are exempt from the Novelty Condition, and WCO effects are therefore obviated (in a possible context for (161), some author submitted an email abstract which was corrupted during its transmission):

(161) ATTRIBUTIVE COMPARATIVES, NOVELTY CONDITION:
  a. *The committee received a longer abstract than OP ⌓ was actually sent by **its**$_i$ author.*
  b. *The committee received a longer abstract than OP **its**$_i$ author wanted to send ⌓.*
  (⌓ = **d-long abstract**$_i$)

The same observation can be made for indefinites in non-comparative environments. Unlike weak indefinites headed by *many* ((162)a), bare plurals license coreference with embedded pronouns to their left, as is documented by (162)b.[60, 61]

(162) a. ***Their**$_i$ fans believe that **many basketball players**$_i$ are overpaid.*
b. ***Their**$_i$ fans believe that **basketball players**$_i$ are overpaid.*

Thus, attributive comparatives - just like bare plurals - are exempt from the Novelty Condition, and contrast in this respect with amount comparatives and indefinites headed by *many*.

However, attributive comparatives emulate the properties of amount comparatives in that they are also subject to Principle C (SCO). If a pronoun c-commands the CD-site, as in (163)b, disjoint reference effects suddenly re-emerge ((163)a serves as a control):

(163) ATTRIBUTIVE COMPARATIVES, PRINCIPLE C:
a. *(?)Better students flunked than OP Mary thought ⌓ would flunk.*
b. **Better students$_i$ flunked than OP **they**$_i$ thought ⌓ would flunk.*

Again, bare plurals in non-comparative contexts pattern along with attributive comparatives, they also retain sensitivity to Principle C:

(164) ***They**$_i$ believe that **basketball players**$_i$ are overpaid.*

Thus, the behavior of the CD-site in attributive comparatives mimics that of overt bare indefinites. Putative WCO effects are obviated both in attributive NP-comparatives ((161)b) and contexts of bare plurals ((162)b), while both constructions are subject to SCO ((163)b and (164)).[62]

To recapitulate, the observation that amount comparatives are subject to WCO has been reinterpreted as an effect of the Novelty Condition, which prohibits cataphoric dependencies between pronouns and NPs headed by weak determiners such as cardinal *many*. Attributive comparatives were assumed to be exempt from the Novelty Condition (and thereby from apparent WCO violations) for whatever reason bare plural indefinites are. Moreover, both amount and attributive comparatives display sensitivity to SCO, since the CD-site is subject to Principle C in both environments. Crucially for present purposes, the complex distribution of WCO and SCO effects is consistent with the AP-Raising Hypothesis, which construes the CD-site as a silent copy of a lexical NP, and therefore prognosticates parallel behavior for comparative NPs and lexical indefinites in isomorphic positions (see fn. 61 for a complicating factor regarding the taxonomy).

Finally, it can also be demonstrated that semantic approaches towards CD generate different predictions in this domain, which do not directly match with the empirical generalizations established above. The remainder of this section will briefly comment on this issue.

Existing semantic analysis of CD are characterized by one common property: The comparative operator does not bind a degree variable. While Lerner and Pinkal (1995) assume that the comparative operator in NP-comparatives binds an individual trace, which represents the CD-site, Kennedy (1999) treats the CD-site as a trace which is translated into a property type variable in semantics.[63] Thus, semantic analyses assign to the SCO and WCO-examples the LF representations (165) to (167), respectively, in which the operator is coindexed with the CD-site:

(165) SCO:
  a. *More students flunked than* OP_k $\triangle_k$ *thought they would flunk.*
  b. **More students flunked than* OP_k *they thought* $\triangle_k$ *would flunk.*

(166) AMOUNT COMPARATIVES, WCO:
  a. *More students re-registered than* OP_k $\triangle_k$ *were given C's by their teachers.*
  b. **More students re-registered than* OP_k *their teachers gave C's to* $\triangle_k$.

(167) ATTRIBUTIVE COMPARATIVES, WCO:
  a. *The committee received a longer abstract than* OP_k $\triangle_k$ *was actually sent by its author.*
  b. *The committee received a longer abstract than* OP_k *its author had intended to send* $\triangle_k$.

If the operator binds an individual trace (Lerner and Pinkal 1995), any coindexed dependency in which a pronoun intervenes between the operator and the CD-site is predicted to be ill-formed. Hence, the system undergenerates, because it is not able to account for the obviation of WCO in attributive comparatives. If the operator binds a predicate type trace (Kennedy 1995), the predictions are less straightforward and depend on specific assumptions. On the one hand, apparent WCO cases can - as in the individual trace approach - not be accounted for by checking licit coindexing relations between the predicate-type trace and the pronoun, because these relations are identical in attributive and amount comparatives. On the other hand, the only conceivable alternative - an analysis in terms of the Novelty Condition - seems to require that the CD-site is supplied with descriptive content at LF in order to make it possible to distinguish between amount and attributive comparatives. But this step contradicts the basic assumption of the semantic analysis. Thus, theories which restore the CD-site in semantics face problems in accounting for the alleviation of WCO effects in attributive comparatives.

Summarizing the results of section 6.1, I argued that the behavior of WCO and SCO in comparatives falls out from the AP-Raising analysis, but presents

a challenge for semantic approaches towards CD. The next subsection concentrates on further referential characteristics of the empty gradable property in NP-comparatives, which will be argued to furnish additional empirical support for the AP-Raising Hypothesis over its competitors.

6.2. *De dicto* readings

The present section addresses a second interpretive property of the CD-site. The CD-site does not only behave like a weak indefinite w.r.t. binding, but also exhibits a strong tendency to take scope below c-commanding intensional operators inside the *than*-XP. Sentence (168), for one, only lends itself to the *de dicto* interpretation paraphrased in (169)a, which is contingent upon the modal *want* taking scope over the CD-site:

(168) *Sally needs more books than she wants to buy ∆.*

The *de re* reading (169)b, according to which the number of books Sally needs exceeds e.g. the number of a specific group of books she has in mind is intuitively inaccessible:[64]

(169) a. *de dicto:* 'The number of books that Sally needs is greater than the maximal number d, such that she wants to buy d-many books.'
b. *de re:* 'The number of books that Sally needs is greater than the maximal number d, such that there are d-many books and she wants to buy them.'

(168) could for instance be felicitously used in a scenario in which Mary needs ten specific books (*de re)* for some course, but only wants to spend $100 on the entire purchase. Furthermore, she knows a discount book store in which the text books are sold for the flat rate of $20 each, and decides to go there in order to buy any five books.

A similar point can be made for comparatives in existential contexts, as in (170), and for the attributive comparatives in (171), which serve as objects of intensional verbs:

(170) a. *There are more people in Sweden than there are ∆ in the Vatican.*
b. *There are more people in Sweden than there seem to be ∆ in the Vatican.*

(171) a. *The real estate agent offered a larger house than Sam is looking for.*
b. *This is a larger house than Bill is looking for.*

Again, the CD-site obligatorily receives a weak interpretation and behaves in this respect like a weak indefinite.

On the AP-Raising Hypothesis, the CD-site is an open predicate, which is existentially bound off in exactly the same way as bare plurals or weak indefinites are. Thus, the existence of *de dicto* readings for the CD-site is not surprising:

(172) ... more books than [OP_i she wants [$_{CP}$ $\exists$x [$_{IP}$ to buy [many $books_x$] t_i]]].

The CD-site in (168) is in other words semantically indistinguishable from the overt NP *many books* in the *de dicto* interpretation of (173):

(173) *Sally wants to buy many books.*

The availability of *de dicto* readings for the CD-site appears to pose a problem for the semantic view of CD-resolution, though. In what follows, I will discuss three specific implementations of the semantic approach (sections 6.2.1 - 6.2.3), which differ in the semantic type they assign to the trace left by operator movement, and show that none of them proves capable of deriving *de dicto* readings without further refinements.

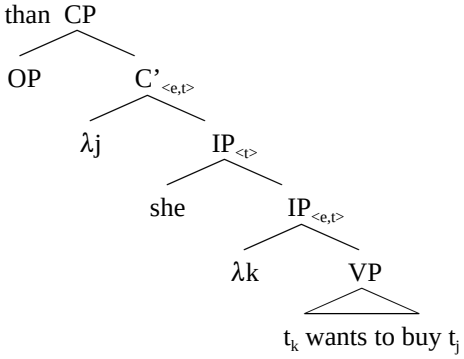
6.2.1. The operator binds an e-type trace

In the first theory to be considered, the CD-site is interpreted as an individual variable which is bound by the comparative operator (Lerner and Pinkal 1995). Lerner and Pinkal assign to the operator of NP-comparatives a translation which serves the purpose of (i) identifying the content of the NP-property via a contextual variable (P_o in (174)) and (ii) existentially closing off the nominal predicate (Lerner and Pinkal 1995: 229; (57)):

(174) $[\![OP]\!] = \lambda Q \lambda D \forall d[\exists y[P_o(d)(y) \wedge Q(y)] \rightarrow D(d)]$

Combining the operator denotation with the *than*-XP of (168) results in the typed tree and the semantic derivation below (for further details see Lerner and Pinkal 1995):

(175) Sally needs more books than



(176) $[\![[\lambda_j$ she $[t_k$ wants to buy $t_j]]]\!]$ = λx[wants to buy(x)(she)]
$[\![[$OP $[\lambda_j$ she $[t_k$ wants to buy $t_j]]]]\!]$ =
= $\lambda Q \lambda D \forall d[\exists y[P_o(d)(y) \wedge \mathbf{Q}(y)] \rightarrow D(d)](\mathbf{\lambda x[wants\ to\ buy(x)(she)]}) =$
= $\lambda D \forall d[\exists y[P_o(d)(y) \wedge$ wants to buy(y)(she)$] \rightarrow D(d)]$

Notice that the comparative operator has to take widest scope inside the *than*-XP, in order to connect the *than*-XP to the matrix clause, and that the CD-site is existentially bound by the operator. This has the consequence that the CD-site needs to take scope above other operators inside the *than*-XP. Thus, the *de dicto* construal remains unaccounted for, unless additional provisions are added.

6.2.2. The operator binds an <e,t>-type trace

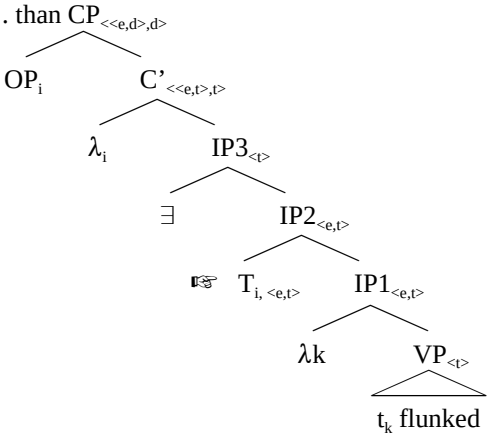
According to a second variant of the semantic approach, the operator is not coindexed with an individual trace, but binds a property type empty category in the position of the CD-site. The discussion will be based here on Kennedy (1997, 1999).[65] Even though Kennedy does not explicitly deal with NP-comparatives, and a contrastive comparison of theories is therefore not feasible, his account of predictive comparative can, I think, be extended to NP-comparatives on the assumption that the CD-site of NP-comparative is closed off by an unselective existential operator. To see how the predicate-type approach applies to NP-comparatives, consider Kennedy's definition of the comparative operator in (177) and the sample derivation in (178):

(177) $[\![$OP$]\!]$ = $\lambda P_{<<e,t>,t>} \lambda G_{<e,d>}$ [max(λd[P(λx[ABS(G(x))(d)])])]
(Kennedy 1997: 159)

In the NP-comparative (178), the operator (177) binds a property type variable, which in turn is coindexed with an VP-internal individual variable. Semantically, the operator abstracts over the trace into which the CD-site is λ-converted by Semantic Reconstruction at a later stage of the derivation (on Semantic Reconstruction see Cresti 1995; Rullmann 1995):

(178) a. *More students passed than OP flunked.*

b. ... than $CP_{<<e,d>,d>}$



Turning to the details of the computations, the property type trace (index 'i') is intersected with the IP1 node, and bound off at the IP3-level by existential closure (see (179)a). In the next step, the empty operator combines with the C'-denotation, yielding as the translation for the CP-node a predicate abstract over AP-denotations (variable 'G' in the last line of (179)a). The semantic computation for the CP is given in (179)a, and the derivation for the comparative *more (= more many) students* is provided by (179)b.[66] (179)c finally tracks the translation procedure for the matrix DP including the *than*-XP, in course of which the CD-site is restored:

(179) a. ⟦T⟧ = λy[T(y)]
⟦IP1⟧ = λy[flunked(y)]
⟦IP2⟧ = λy[T(y) ∧ flunked(y)]
⟦IP3⟧ = ∃y[T(y) ∧ flunked(y)]
⟦C'⟧ = λT∃y[T(y) ∧ flunked(y)]
⟦CP⟧ = λPλG[max(λd[**P**(λx[ABS(G(x))(d)])])]
(**λT∃y[T(y) ∧ flunked(y)]**)=
= λG[max(λd[λT∃y[**T**(y) ∧ flunked(y)](**λx[ABS(G(x))(d)]**)])]=
= λG[max(λd[∃y[λx[ABS(G(**x**))(d)](**y**) ∧ flunked(y)]])] =
= λG[max(λd[∃y[ABS(G(y))(d) ∧ flunked(y)]])]

b. ⟦more⟧ = λGλQλx[MORE(G(x))(Q(G))]
⟦more many students⟧ =
= λGλQλx[MORE(**G**(x))(Q(**G**))] (**many(students)**) =
= λQλx[MORE(many(students)(x))(Q(many(students)))]

c. ⟦more many students than flunked⟧ =
= λQλx[MORE(many(students)(x))(**Q**(many(students)))]
(**λG[max(λd[∃y[ABS(G(y))(d) ∧ flunked(y)]])]**) =
= λx[MORE(many(students)(x))
(λ**G**[max(λd[∃y[ABS(G(y))(d) ∧ flunked(y)]])(**many(students)**))]=
= λx[MORE(many(students)(x))
(max(λd[∃y[ABS(many(students)(y))(d) ∧ flunked(y)]]))]

Notice in particular that since the predicate trace T_i in (178)b is located lower than the existential closure operator, the CD-site is automatically λ-converted into the scope of existential closure. Given that the distribution of property type traces is free (subject to type driven interpretation), the trace can now also be embedded under intensional operators, deriving the *de dicto* interpretation for (168). As shown by the LF representation (180), the variable T_i - which is instantiated as *many books* in semantics - resides within the scope of *want* and the existential closure operator.

(180) She needs more books than [OP λi she wants [$_{CP}$ ∃x [$_{IP}$ T_i [λk [$_{VP}$ to buy t_k]]]]]

Thus, a semantic approach which employs <e,t>-type traces is capable of deriving the *de dicto* reading of NP-comparatives. This follows at least on the condition that the CD-site can be λ-converted back into the scope of existential closure. However, it seems as if exactly this type of interaction between <e,t>-type traces and existential closure leads to unwelcome consequences in other contexts. The argument against combining Semantic Reconstruction and existential closure in the way employed in (178) comes from the observation that λ-converting overtly fronted NPs back into the scope of an unselective existential operator feeds unattested readings in contexts of overt NP displacement. The details of the argument will be laid out in the next section.

6.2.3. Against existential closure in semantics

Essentially, the analysis for NP-comparatives outlined in the previous section predicts that it should be possible for all indefinites to undergo reconstruction into the scope of existential closure. If this were the case, one would be wrongly led to expect, though, that the interpretive effects generally associated

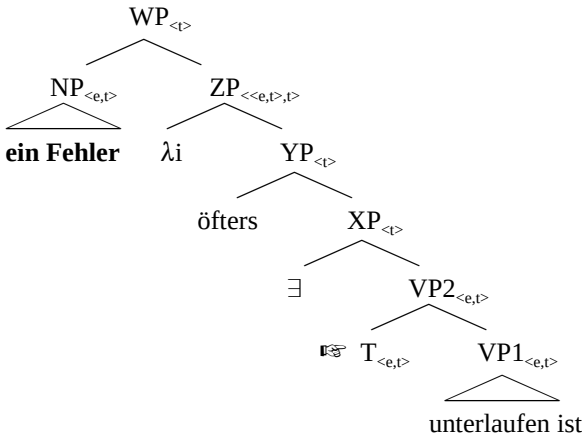
with the Mapping Hypothesis (Diesing 1992; Kratzer 1995a) can be undone in semantics.

A typical instance of a contrast which lends itself to an analysis in terms of the Mapping Hypothesis is documented in (181), where scrambling of an indefinite bleeds the weak/unspecific/non-presuppositional reading ((181)b):

(181) a. *weil dort öfters **ein Fehler** unterlaufen ist* *(weak)*
since there often a mistake happened has
'since a mistake has often occurred'
b. *weil dort* [***ein Fehler***]$_i$ *öfters* t_i *unterlaufen ist* *(strong)*

(181)b attests to the fact that once an indefinite has escaped the c-command domain of existential closure in syntax, the free variable it contains can no longer be captured by the unselective existential operator. Suppose now that the indefinite were allowed to bind a higher type trace of type <e,t> inside the scope of existential closure, and that existential closure unselectively binds free variables, as in the typed tree diagram below:[67]

(182)



As can be seen by the semantic computation under (183), the interaction between existential closure and a predicate type trace effectively leads now to the weak/unspecific/non-presuppositional reading for the indefinite by Semantic Reconstruction:

(183) ⟦T⟧ = λx[T(x)]
⟦VP2⟧ = λx[T(x) ∧ happened(x)]
⟦XP⟧ = ∃x[T(x) ∧ happened(x)]
⟦ZP⟧ = λT[often(∃x[T(x) ∧ happened(x)])]

⟦WP⟧ = λT[often(∃x[**T**(x) ∧ happened(x)])] (**λy[mistake(y)]**) =
often(∃x[λy[mistake(**y**)](**x**) ∧ happened(x)]) =
= often(∃x[mistake(x) ∧ happened(x)])

Clearly, this result conflicts with Diesing's and Kratzer's hypothesis, in that it leaves the sensitivity of the weak/strong (and existential/generic) distinction to the surface order relations in the tree unexplained. Before returning to the discussion of comparatives, let me briefly digress to sketch a possible account for why predicate type traces do not feed weak readings.

To begin with, there is evidence supporting the view that syntactic and Semantic Reconstruction are two strategies independently called for by the grammar. This decision is empirically motivated, and reflects the observation that there are contexts - instantiated by short scrambling chains in German - in which the syntactic and the semantic scope of a moved category diverge. These environments can be schematically rendered as in (184) (for details see Lechner 1996, 1998a,b):

(184) *[[$_{QP\text{-}1}$ ...XP$_k$ ...] ... [[QP-2$_k$ ... [$_\alpha$ $T_{QP\text{-}1}$ .... *(QP-2 > QP-1)*

Observationally, in scrambling chains matching the configuration above, QP-1 can be construed with narrow scope w.r.t. QP-2. However, QP-2 may not bind XP as a pronominal variable or anaphor, indicating that the syntactic scope of QP-1 is fixed in surface syntax. For instance, in sentence (185), the scrambled object *ein Bild von seinem Auftritt*/'a picture of his appearance' can be assigned narrow scope w.r.t. *keinem Kandidaten*/'no candidate', but the pronoun embedded inside the scrambled object cannot be interpreted as a variable bound by the indirect object:

(185) a. *weil der Quizzmaster* [$_{AgrIOP}$ **[*keinem Kandidaten*]$_i$**
since the talk show host no candidate
[$_{AgrOP}$ [*ein Bild von* ***seinem***$_i$ *Auftritt*] *überreichen wollte*]]
a picture of his appearance give wanted

b. *weil der Quizzmaster* [$_{AgrIOP}$ [*ein Bild von* ***seinem***$_{*i}$ *Auftritt*]$_{DO}$
since the talk show host a picture of his appearance
[$_{AgrIOP}$ **[*keinem Kandidaten*]$_i$** [$_{AgrOP}$ T_{DO} *überreichen wollte*]]]
no candidate give wanted
(∃ > no / no > ∃)
'since the talk show host didn't want to give any candidate a picture of his appearance'

The generalization in (184) can be interpreted as the result of the interaction of syntactic and Semantic Reconstruction. Assume that NPs which head short

scrambling chains may undergo Semantic Reconstruction, but resist syntactic reconstruction, and that binding relations have to be established at LF. Then, the overtly raised quantificational term QP-1 in (184) may leave a higher type trace in α, and its semantic scope accordingly is α, but QP-1 will still reside outside the syntactic scope domain of QP-2 at LF.

The behavior of scrambled NPs w.r.t. existential closure (see (181)) is amenable to an analysis along the same lines. To begin with, assume that scrambled NPs do not reconstruct syntactically (at least not for the computation of effects related to the Mapping Hypothesis). Suppose moreover that existential closure behaves just like A- and A'-Binding in that it is sensitive to the syntactic - and not the semantic - scope of an NP. An NP can then be interpreted as weak if and only if the descriptive content of that NP is located within the scope of existential closure at LF. This can be achieved by syntactic, but not by Semantic Reconstruction. On this view, scrambled NPs loose their weak readings, because they cannot be reconstructed in syntax (although they may undergo Semantic Reconstruction).

As far as I can see, there are now two strategies in order to account for this disparity between syntactic and Semantic Reconstruction in feeding weak (or more generally, bound) readings. First, a general ban on <e,t>-type traces for NPs. However, this solution is not only conceptually dubious but also amounts to an empirically debatable stipulation.[68] Second, one might postulate that existential closure has to be reflected in some way at LF, by making its application contingent upon the presence of the descriptive content of the predicate to be unselectively bound.[69] Technically, this can e.g. be achieved by eliminating the existential closure operator from the grammar, and by deriving weak indefinites in a compositional way from an LF operation which manipulates the weak NP (see Lechner 1998a).[70] On this conception, big traces will never feed weak readings, simply because higher type traces lacks syntactic content which can be targeted at LF. Whatever the precise formulation of such a theory of weak indefinites might be, I will henceforth assume that it has to have the virtue of being 'LF-oriented' in the way suggested above.

With this in the background, let me briefly return to the <e,t>-type analysis of *de dicto* readings of comparatives. Recall that the comparative (178) was derived by unselectively binding a property type trace in the position of the CD-site. But the evidence presented above indicated that the grammar must not allow existentially bound readings to be sponsored by Semantic Reconstruction. It follows now that the <e,t>-trace analysis of (178), which relies exactly on this sort of feeding relation between existential closure and Semantic Reconstruction cannot be maintained without the addition of further assumptions. In other words, the <e,t>-trace account of (178) is not sufficiently 'LF-oriented', and should be substituted by an analysis which provides a

syntactically projected predicate in the position of the CD-site, such as the AP-Raising Hypothesis.

6.2.4. The operator binds an <<e,t>,t>-type trace

So far, I have argued against two specific implementations of semantic theories of CD, according to which the comparative operator binds an individual variable or a property type trace, respectively. This final subsection on the *de dicto* interpretation of the CD-site deals with a third way of associating the operator with its trace, which equally leads to the effect of Semantic Reconstruction and in addition manages to avoid the problem discussed in the previous section, but is subject to criticism from another direction. For expository convenience, the discussion will be based on the semantic fragment of Lerner and Pinkal (1995), although the remarks generalize to other accounts.

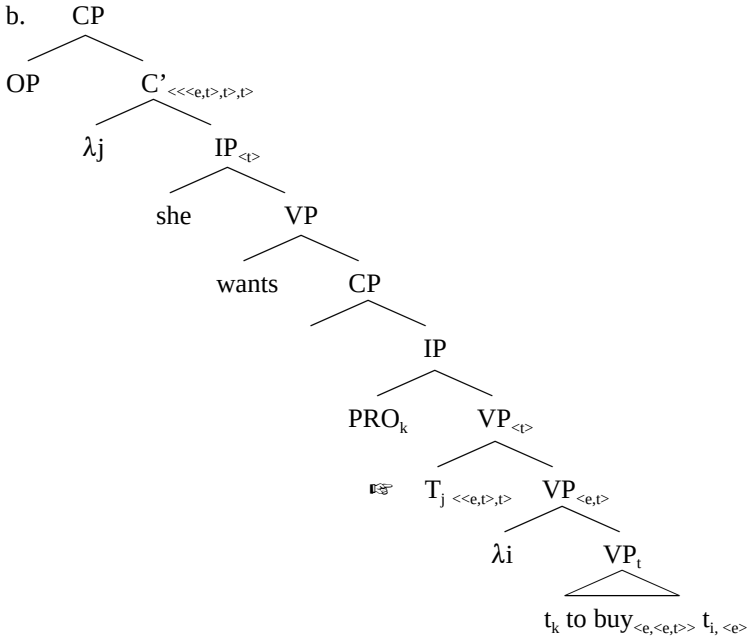
To begin with, assume Lerner and Pinkal's comparative operator is redefined as in (186):

(186) $[\![OP]\!] = \lambda\wp_{<<et,t>,t>}\, \lambda D \forall d[\wp(\lambda Q \exists x[P_o(d)(x) \wedge Q(x)]) \rightarrow D(d)]$
(orginally: $\lambda Q \lambda D \forall d[\exists x[P_o(d)(x) \wedge Q(x)] \rightarrow D(d)]$)

The reformulation in (186) allows the fronted operator to bind a trace of the type of a Generalized Quantifier (<<e,t>,t>; GQ) which instantiates the CD-site. The CD-site can now be λ-converted back into the scope of an intensional predicate by Semantic Reconstruction. The tree diagram (187)b and the computation (187)c spell out the relevant steps in the derivation of the *than*-XP:

(187) a. *Sally needs more books than she wants to buy.*

b.



c.

⟦C'⟧ = λT[want(T(λt[buy(t)(PRO)]))(she)]

⟦CP⟧ = λ℘λD∀d[**℘(**λQ∃x[P_o(d)(x) ∧ Q(x)]) → D(d)]
(**λT[want(T(λt[buy(t)(PRO)]))(she)]**) =

= λD∀d[λT[want(**T**(λt[buy(t)(PRO)]))(she)]
(**λQ∃x[P_o(d)(x) ∧ Q(x)]**) → D(d)] =

= λD∀d[[want(λQ∃x[P_o(d)(x) ∧ **Q**(x)](**λt[buy(t)(PRO)])**)**(she**)] → D(d)]=

= λD∀d[[want(∃x[P_o(d)(x) ∧ λt[buy(**t**)(PRO)](**x**)])(she)] → D(d)] =

= λD∀d[[want(∃x[P_o(d)(x) ∧ buy(x)(PRO)])(she)] → D(d)] =

= λD∀d[[want(∃x[**many(books)**(d)(x) ∧ buy(x)(PRO)])(she)] → D(d)]

As desired, the revised definition of the operator results in the narrow scope interpretation of the CD-site under (187)b.

However, this third implementation of the semantic approach presented above encounters independent problems. If the account in terms of Semantic Reconstruction were correct, the availability of *de dicto* readings should be dependent upon the same factors which govern the distribution of higher type traces in other contexts. It is now a well-known fact that Semantic Reconstruction is prohibited from applying in chains which cross negation (Inner Islands) or other weak islands such as extraposition-, factive- and *wh*-islands (Cresti

1995; Rullmann 1995). For instance, while example (188)a is ambiguous between a *de dicto* and a *de re* construal, (188)b only admits the wide scope *de re* reading and requires a D-linked interpretation of the common noun part of the *wh*-phrase (Cresti 1995; Heycock 1995; Rullmann 1995). For many speakers, amount *wh*-phrases extracted out of extraposed complements equally license a *de re* construal only:

(188) a. *How many books do you want to buy?* *(de re/de dicto)*
b. *How many books do you not want to buy?* *(de re/*de dicto)*

(189) *How many books is it possible to read in an hour?* *(de re/*de dicto)*

Similarly, negation, extraposition islands and other weak islands bleed the availability of a narrow scope reading for the fronted NP w.r.t. deontic operators:[71]

(190) a. *How many problems do you need to solve?* *(de re/de dicto)*
b. *How many problems do you not need to solve?* *(de re/*de dicto)*

(191) *How many books is it necessary to read?* *(de re/*de dicto)*

Another clear instance of the interaction between negation and Semantic Reconstruction can be observed with the German *brauchen* construction. In German, *brauchen*/'need' is a strong negative polarity item which is licensed by a clause-mate downward entailing operator ((192)a). Thus, amount questions with *brauchen* are grammatical only under the *de re* interpretation:

(192) a. **Wie viele Probleme brauchst du zu lösen?*
how many problems need you to solve
'How many problems do you need to solve?'
b. *Wie viele Probleme brauchst du nicht zu lösen?* *(de re/*de dicto)*
how many problems need you not to solve
'How many problems do you not need to solve?'

The relevant question to ask at this point is whether weak islands also bleed the *de dicto* reading of the CD-site in comparatives. If this were so, this finding would constitute strong evidence against the assumption that the CD-site is identified via a higher type trace. In what follows, I will address extraposition contexts first, turning from there to additional data from Inner Island configurations.

First, consider extraposition islands. The behavior of comparatives inside this type of weak island distinctly indicates that the relation between the CD-

site and its antecedent is subject to more liberal conditions than the dependency between a GQ-type trace and its binder. The sentences in (193) exhibit slightly degraded acceptability - probably due to Subjacency - but nonetheless license *de dicto* readings:

(193) a. *(?)Superman read more books in an hour than it should be possible to read ∆ in a day.*
b. *(?)Superman hat mehr Bücher in einer Stunde gelesen als es möglich sein sollte an einem Tag ∆ zu lesen.*

If the <<e,t>,t>-type trace account were correct, the structures under (193) should be plainly ungrammatical, because the CD-site could not be identified.

Next, let me turn to Inner Islands. Finding the pertinent set of data which combines comparatives with negation is not a trivial task here, as comparatives generally do not allow negation to intervene in the empty operator chain of the *than*-XP (Rullmann 1995; von Stechow 1984):

(194) a. *John weighs more than Bill weighs.*
b. **John weighs more than Bill doesn't weigh.*

(195) a. *Mary read more books than Bill read.*
b. **Mary read more books than Bill didn't read.*

Interestingly, though, there exists a systematic exception to this generalization:[72] If the matrix clause and the *than*-XP are identical in meaning *modulo* polarity (and the distinction pronoun vs. R-expression) the detrimental effect of negation all of a sudden disappears, as witnessed by (196)b:[73]

(196) a. *Mary read more books than Bill read.*
b. *Mary read more books than she didn't read.*

Note on the side that the most influential account of negative intervention effects in comparatives, which rests on the semantic incompatibility of the maximality operator and downward entailing contexts (Rullmann 1995; von Stechow 1984), does not extend to the intriguing exceptions such as (196)b. Consider the regular inner island effect in (195)b and its explanation in terms of maximality first. In (195)b, the CP inside the comparative complement denotes the set A = *{d|Bill didn't read d-many books}*. As this set A does not contain a maximal element, the maximality operator cannot return a value, though. For instance, in a scenario in which Bill read 50 books, the set A = {1,...49, 51,....} is infinite and therefore lacks a maximum. Thus, the maximality operator cannot be combined with its semantic argument in a

meaningful way, resulting in an undefined denotation for the *than*-XP. Crucially, by the same reasoning, (196)b should also come out as uninterpretable, though. If Mary read e.g. exactly the same 50 books as Bill, the negative *than*-XPs of (196)b and (195)b denote the same infinite set A = {1,...49, 51,....}.

Observationally, what appears to set apart (195)b from (196)b is the fact that (196)b induces a bi-partitioning on the domain of books in a given situation, while (195)b does not do so. In (196)b, the set of books is partitioned into the books which Mary read in a certain situation S1 and the set of books she didn't read in S1. In (195)b, the domain of books is on the other side grouped into four cells, along the two axes *books Mary read/didn't read in situation S1* and *books Bill read/didn't read in situation S1*. It is however unclear to me how exactly this difference can be employed in formally deriving the contrast observed.[74]

More relevant for present purposes, embedding configurations of Semantic Reconstruction into negative comparatives leads to a further indication that *de dicto* interpretations of the CD-site do not lend themselves to an analysis in terms of Semantic Reconstruction. On the semantic theory of CD, *de dicto* readings should not be licensed inside negative islands, because these contexts disallow Semantic Reconstructions. However, examples in which the CD-site is embedded under negation, as in (197) are perhaps hard to process, but fully grammatical:

(197) a. *Nobody needs to solve more problems than he doesn't need to solve.*
b. *Kein Student braucht mehr Probleme zu lösen als er nicht zu lösen braucht.*

(197) is truth conditionally equivalent to *No student is required to solve more than half of the problems*. Crucially, the CD-site in (197) is interpreted *de dicto* (compare e.g. (197)b to the *brauchen*/'need to' construction in (192)b, which forces a *de re* construal with interrogatives). That is, for (197) to be true, it is not necessary that there is some salient set of problems. Instead, the sentence is understood as a general rule which might for instance govern the degree requirements for the students of some department. Thus, the existence of *de dicto* readings in negative islands - contexts which do generally not tolerate higher type traces - poses a considerable problem for semantic analyses of CD, which restore the CD-site by means of Semantic Reconstruction.[75]

To summarize the results of section 6, it was argued that SCO/WCO asymmetries and the availability of *de dicto* readings for the CD-site directly fall out from a theory which adopts AP-Raising, but present a challenge for various versions of semantic approaches towards CD-resolution. Together with the findings of section 2, where it was argued that semantic analysis

cannot accommodate for Principle C reconstruction and CSC effects, this result constitutes strong support for a syntactic analysis of CD.

The next and final part of this chapter addresses the issue of how AP-Raising fits into the more general taxonomy of movement operations.

7. Move Alpha without Form Chain

Even though the evidence in favor of AP-Raising appears promising so far, there remains an important question to be answered: Why does the empty operator in SpecCP of the comparative complement not block movement of the AP by Relativized Minimality (RM; Rizzi 1990; Cinque 1990)?[76]

(198) Mary knows [younger authors]$_i$
[$_{CP}$ **OP$_k$** than Peter knows [$_{DegP}$ [$_{AP}$ young authors]$_i$ **t$_k$**]]

The solution to this puzzle requires a closer look at the strict cycle and the concept of movement. Turning to the cycle first, it has been hypothesized that typical RM effects such as the *wh*-island violation in (199) are detectable only in cyclic derivations (Chomsky 1993: 23; Chomsky 1995: 190; Kitahara 1995).

(199) **How$_i$ do you wonder what$_k$ John bought t_k t_i ?*

More precisely, example (199) is amenable to an analysis in terms of RM only if the embedded object moves to the embedded SpecCP first, where the potential antecedent *what* intervenes in the formation of the adjunct chain, as shown by (200):

(200) a. *you wonder* [$_{CP}$ ***what$_k$*** *John bought* ***t$_k$*** *how*]
b. ***How$_i$*** *do you wonder* [$_{CP}$ *what$_k$ John bought t_k* ***t$_i$***]

In the alternative, non-cyclic derivation for (199) sketched under (201), adjunct movement targets the higher SpecCP (see (201)a) first. Subsequent raising of *what* to the lower SpecCP now applies too late in order to block adjunct movement, and the RM violation is incorrectly predicted to be obviated:

(201) a. ***How$_i$*** *do you wonder* [$_{C'}$ *John bought what* ***t$_i$***]
b. *How$_i$ do you wonder* [$_{CP}$ ***what$_k$*** *John bought* ***t$_k$*** *t_i*]

Chomsky (1995: 295) therefore postulates that the grammar compares cyclic derivations such as (200) only. This requirement can be derived from the Minimal Link Condition (MLC; see also Kitahara 1995; Zwart 1993), which informally states that at any given stage, a shorter movement step is preferred over a longer one. Applying the metric of the MLC to (199), it is obvious that the cyclic derivation (200) is favored over its competitor (201), since initial movement of *what* in (200)a results in a shorter chain than long extraction of the adjunct in (201)a.[77] In addition, (200) blocks (201) because the latter derivation includes attraction over an intervening attractor. Thus, the RM analysis of (199) crucially rests on the assumption that Economy compares the lengths of movement chains.

The second central component of the explanation why AP-Raising is immune to RM pertains to the theory of movement. According to Chomsky (1995), movement does not constitute a primitive of the grammar, but is composed of the two operations Move α and Form Chain. While Move α creates copies of the foot of the chain in designated syntactic positions, Form Chain leads to the unification of the features of all copies and thereby ensures that the content of any given copy becomes recoverable from any other chain link. Then, at LF, all copies except for one are deleted, in order to discard superfluous and uninterpretable copies that would cause the derivation to crash. Form Chain is in this sense a prerequisite for the deletion mechanism to apply and for the derivation ultimately to converge at the interpretive interface: It ensures recoverability, which in turn is a precondition for deletion. Furthermore, whenever Form Chain applies, deletion will apply, too. Thus, in ordinary movement chains, the two concepts are tightly related to each other:

(202) [Form Chain → Deletion] ∧ [¬Form Chain → ¬ Deletion]

Now, in standard varieties of movement, Full Interpretation forces deletion of all but a single copy. The situation is significantly different with AP-Raising, in that the interface conditions require that in comparatives, both copies of the AP are submitted to semantics. Otherwise, the *than*-XP would either wind up without the main predicate, as in the predicative comparative (203)a or it would lack an argument, as in the NP-comparatives (203)b:

(203) a. **Mary is younger than Peter is.*
b. *Mary knows younger authors [$_{CP}$ OP_j than Peter knows t_j]

In addition, if the lower copy, which contains the predicate introducing the degree variable bound by the empty operator, is absent, it is not possible to establish an empty operator chain. This leads to a non-converging derivation

at the LF-interface because the maximality operator *than* per definition applies to a degree predicate, and the degree predicate in turn is the result of λ-abstraction by the empty operator.

Above, it was observed that the operation Form Chain is linked to the deletion of copies by (202). More precisely, deletion of a movement copy is possible only after chain formation, and Form Chain leads to deletion. From (202) it now also follows that in a structure in which deletion is inhibited, as is the case with AP-Raising contexts, Form Chain becomes optional.[78] That is, comparatives are a manifestation of *Move α without Form Chain*, borrowing the terminology of Poole (1996). But the fact that AP-Raising does not induce chain formation also entails that AP-Raising can - in absence of a chain - not be evaluated by the MLC. This invisibility to the MLC has the further consequence that AP-Raising does not compete with other movement operations, and can therefore be ordered either before or after empty operator movement. Taken together with the results of the discussion about cyclicity and RM, this furthermore means that comparatives can either be construed in terms of a cyclic ((204)), or a non-cyclic derivation ((205)):

(204) CYCLIC DERIVATION:
  a. than Peter knows [$_{DegP}$ [$_{AP}$ young authors] **OP**]
  b. [$_{CP}$ than OP P. knows [$_{DegP}$ [$_{AP}$ young authors] **t**]
  c. [$_{DegP}$ **[young authors]** [$_{CP}$ than OP P. knows [$_{DegP}$ **[$_{AP}$ young authors]** t]

(205) NON-CYCLIC DERIVATION:
  a. than Peter knows [$_{DegP}$ [$_{AP}$ young authors] OP]
  b. [$_{DegP}$ **[young authors]** [$_{CP}$ than **OP** P. knows [$_{DegP}$ **[$_{AP}$ young authors] t]**
  c. [$_{DegP}$ [young authors] [$_{CP}$ than P. knows [$_{DegP}$ [$_{AP}$ young authors] **t**]

The grammar may now freely choose among (204) and (205). If derivation (205) is selected, the computation accordingly yields a converging output which conforms with RM, as desired. Thus, there is a plausible explanation for why AP-Raising is exempted from RM: Comparative formation does not involve chain formation and may therefore proceed in terms of a counter-cyclic, non-local derivation.

Chapter 3
Comparative Ellipsis

1. Introduction

The present chapter pursues two main empirical objectives: First, it presents arguments in support of an ellipsis analysis of *phrasal comparatives*, i.e. constructions in which the comparative marker *than* is followed by a single *remnant* only:

(1) a. *John is prouder of his dog than* [*Mary*].
b. *Mary read more books than* [*Sam*].
c. *More people bought books than* [*magazines*].

Second, it investigates the syntax of what will be called *partially reduced comparatives*, i.e. constructions in which parts of the comparative complement have been elided, but which still embed more than a single remnant:

(2) a. *John is prouder of his dog than* [*Mary*] [*of her cat*].
b. *Mary read more books on the train than* [*Sam*] [*on the plane*].
c. *More people bought books in Boston than* [*magazines*] [*in NY*].

In what follows, I will argue that the two types of comparatives exemplified by (1) and (2) lend themselves to a unified analysis. More specifically, the restrictions on deletion in comparatives will be seen to be exhaustively determined by the principles governing *Gapping*, *Right Node Raising* and *Across-the-Board* movement in coordinate structures. This implies that construction specific reduction operations such as *Comparative Ellipsis* (Bresnan 1975), which is widely held to be implicated in the formation of (2) - and possibly (1) - can be dispensed with.

The analysis also entails significant theoretical consequences. To begin with, it leads to the formulation of a hitherto unidentified condition on comparatives, which limits possible structural relations between the head of an empty operator movement construction and the operator. Furthermore, the specific perspective to be advocated lends strong support to the two assumptions that (i) verb second movement proceeds in overt syntax, and not at PF (contra Chomsky 2001; see also Zwart 2001) and that (ii) the Coordinate Structure Constraint has to be computed in the syntactic component, and

cannot be interpreted as a purely semantic restriction (contra Culicover and Jackendoff 1997, 1999 and Lakoff 1986, among others; see also Postal 1999).

Before proceeding, two remarks regarding the empirical scope of the study are in order. First, I remain agnostic as to the proper derivation of subcomparatives as in (3) (see Bresnan 1975; Corver 1994; George 1980; Kennedy 1998; Pinkham 1982, among others):

(3) a. *More men than ⌓ women like Wagner.*
b. *Bill knows more musicians than ⌓ cooks.*
(⌓ = d-many)

Even though it seems conceivable that the AP-Raising Hypothesis of the previous chapter can be extended to cover subcomparatives, I will not attempt an analysis here.

Second, I assume that comparatives with an explicit standard of comparison (Huddelston 1967) as in (4) can - at least optionally[79] - be parsed as genuinely phrasal comparatives, in which the comparative marker *than* is followed by an NP in all stages of the derivation:

(4) a. *She ran faster* [$_{\textit{than}\text{-XP}}$ *than* [$_{\text{NP}}$ *20mph*]].
b. *He is taller* [$_{\textit{than}\text{-XP}}$ *than* [$_{\text{NP}}$ *6 feet*]].

That is, the adverbial and predicative comparatives in (4) do not involve AP-Raising, but are directly interpretable from the representations indicated above.[80] Given that the sorted individual domain supplies degree terms, predicates such as *20 mph* and *6 feet* can be taken to denote sets of degrees on a scale of velocity and length, respectively. Hence, the denotation of the measure phrase may directly serve as the argument of the maximization operator *than*, which then picks out the maximal degree of the degree predicate. On this conception, the internal organization of the degree phrase is unexceptional, in that the complementation pattern of Deg° can be entirely made to follow from the type restrictions on the complement of the comparative marker *than*: *than* has to apply to a set of degrees, which can be syntactically realized either by a CP or an NP. Note that this view receives support from the observation that the explicit standard cannot be expressed by categories which do not denote predicates, such as the definite descriptions or the quantifiers in (5):[81]

(5) a. **She ran faster than the/each/most 20 mph.*
b. **He is taller than the/each/most 6 feet.*

1.1. Comparative Ellipsis: the CR-Hypothesis

The surface appearance of the comparative clause is not only shaped by the obligatory application of CD, which was analyzed in terms of AP-Raising in chapter 2, but it is also determined by an additional, optional reduction process, traditionally referred to as Comparative Ellipsis (CE; Bach et. al. 1974; Bresnan 1975; Hankamer 1971, 1973; Kennedy and Merchant 2000; McCawley 1988; Napoli 1983 and especially Pinkham 1982: 99ff). CE elides strings inside the comparative complement, generating partially reduced comparatives (PRC) such as (6):

(6) a. *John is prouder of his dog than Mary* $\triangle_{CE}$ $\triangle_{CD}$ *of her cat.*
($\triangle_{CE}$ = is, $\triangle_{CD}$ = d-proud)
b. *Mary read more books on the train than Sam* $\triangle_{CE}$ $\triangle_{CD}$ *on the plane.*
($\triangle_{CE}$ = read, $\triangle_{CD}$ = d-many books)
c. *More people bought books in Boston than* $\triangle_{CD}$ $\triangle_{CE}$ *magazines in NY.*
($\triangle_{CD}$ = d-many people, $\triangle_{CE}$ = bought)
d. *Mary saw the movie more often on video than Bill* $\triangle_{CE}$ $\triangle_{CD}$ *in the theater.*
($\triangle_{CE}$ = saw the movie, $\triangle_{CD}$ = d-often)

One of the leading themes of this chapter is the search for criteria which make it possible to decide whether CE should be granted independent status, or whether its effects can be subsumed under other principles of the grammar.

In particular, it has been noticed at various places in the literature that comparatives can serve as the target of *Conjunction Reduction* (CR) operations like Gapping, Right Node Raising (RNR) and Across-the-Board (ATB) extraction (Hankamer 1971; Hendriks 1995; McCawley 1988; Napoli 1983; Pinkham 1982; Truckenbrodt 1988). For instance, main verb ellipsis can be attributed to Gapping in the comparative (7)a, just as in the corresponding coordinate structures (7)b (examples from Napoli 1983: 676):

(7) a. *John spoke more vehemently against Mary than Tom ~~spoke~~ against Jane.*
b. *John spoke against Mary and Tom ~~spoke~~ against Jane.*

Similarly, the comparative (8)a and the conjunction (8)a lend themselves to a uniform analysis in terms of RNR (see Napoli 1983: 677, fn. 4):

(8) a. *I organize more ~~her life~~ than I actually run her life.*
b. *I organize ~~her life~~ and actually even run her life.*

The conjecture that CR may target comparatives can be cast in terms of the *CR-Hypothesis*:

(9) THE CR-HYPOTHESIS (weak version):
CR operations can target comparatives.

Even though the idea to let CR operate on comparatives is not new, the CR-Hypothesis has - with the exception of Hendriks (1995), who pursues diametrical goals, though - not been systematically evaluated in the literature, yet. That is, it has never been shown that the deletion processes which are attested in comparatives not only resemble CR, but also share all the relevant properties of CR and are therefore best interpreted as the actual result of CR. The first aim of this chapter consists in presenting evidence in support of precisely this claim (section 2). The CR-Hypothesis will then be revised, leading to a stronger version, according to which *all* deletion in comparatives can be explained as the reflex of CR. Thus, it will be argued that the (strengthened) CR-Hypothesis renders the assumption of a designated ellipsis operation for comparatives redundant, and that the effects of CE can be entirely subsumed under the CR processes of Gapping, RNR and ATB extraction.

1.2. Phrasal comparatives: the PC-Hypothesis

The second guiding topic of this chapter pertains to the proper treatment of phrasal comparatives (PC), exemplified below:

(10) a. *John is prouder of his dog than Mary.*
b. *Mary read more books than Sam.*
c. *More people bought books than magazines.*
d. *Mary saw the movie more often than Bill.*

While the existence of deletion operations targeting comparatives has in the light of PCRs such as (6) never been challenged, the question whether the PCs in (10) should also be derived by ellipsis from an underlying clausal source has been the subject of considerable debate in the literature. On the one side of the spectrum of opinions, proponents of a *direct analysis* maintain that the *than*-XPs of PCs do not contain any syntactic ellipsis site, but are base-generated as PPs headed by the prepositional comparative marker *than* (Brame 1983; Hendriks 1995; Hoeksema 1983, 1984; Krifka 1987; McConnell-Ginet 1973; Napoli 1983). Heim (1985) demonstrates that the parses postulated by the direct analysis can be assigned appropriate semantic translations on the assumption that the surface strings are modulated by a small number of LF operations prior to entering the semantic computation (see chapter 4 for

details). The direct analysis contrasts on the other side of the spectrum with theories endorsing what will be called the *PC-Hypothesis*, as given in (11):

(11) PC-HYPOTHESIS:
All PCs without explicit standards derive from a clausal source.

The PC-Hypothesis maintains that all PCs - with the exception of those mentioned in 3.1 - are the result of syntactic ellipsis. On this conception, the examples in (10) can be assigned the parses below, in which CE has deleted all but a single category inside the complement of a clausal comparative:

(12) a. *John is prouder of his dog than Mary is* $\triangle_{CE}$ $\triangle_{CD}$.
($\triangle_{CE}$ = is, $\triangle_{CD}$ = d-proud of his dog)
b. *Mary read more books than Sam* $\triangle_{CE}$ $\triangle_{CD}$.
($\triangle_{CE}$ = read, $\triangle_{CD}$ = d-many books)
c. *More people bought books than* $\triangle_{CD}$ $\triangle_{CE}$ *magazines.*
($\triangle_{CD}$ = d-many people, $\triangle_{CE}$ = bought)
d. *Mary saw the movie more often than Bill* $\triangle_{CE}$ $\triangle_{CD.}$
($\triangle_{CE}$ = saw the movie, $\triangle_{CD}$ = d-often)

A third, intermediate position is expressed in Hankamer (1973b) and Pinkham (1982). Pinkham, for one, adopts the PC-Hypothesis for examples like (10), which she derives by CE, while at the same time advocating a direct analysis for others. The qualification that CE can be employed only in the formation of a proper subset of PCs is instrumental for Pinkham to capture the observation that some PCs lack a well-formed underlying clausal source (see (13)), whereas some putative underlying sources cannot be paired with a well-formed corresponding PC (see (14); see Brame 1983 and section 5 for discussion):

(13) a. PC: *John is older than me.*
b. Source: **John is older than me am.*

(14) a. PC: **There couldn't have been any more people than there.*
b. Source: *There couldn't have been any more people than there were.*

It is mainly for this reason that a purely elliptical account of PCs, as implied by the PC-Hypothesis, has not been pursued in the literature.[82]

As a second major objective, the current chapter aims at establishing arguments in defense of the PC-Hypothesis, and at demonstrating that - contrary to the first impression - neither of the two competing accounts outlined above can be maintained. More precisely, it will be argued that it is the con-

junction of the CR-Hypothesis and the PC-Hypothesis which derives the sufficient and necessary conditions on the formation of PCs (and PRCs).[83] In that way, all reduced comparatives are derived from a clausal source, and the effect of surface reduction is always caused by CR-operations.

It should be pointed out in this context that the CR- and the PC-Hypothesis are mutually independent. While the former leaves open the option that there are PCs which are base-generated (in violation of the PC-Hypothesis), the latter is compatible with the view that PCs are the product of an ellipsis process distinct from CR (thereby contradicting the CR-Hypothesis).

1.3. Outline

The chapter is organized as follows: In section 2, I will present a first set of data indicating that one particular type of conjunction reduction (Gapping) behaves exactly alike in comparatives and in coordinate structures. Section 3 contains the core of the proposal to be advanced and lays our the logic of a number of tests which will eventually be employed in testing the PC-Hypothesis. In addition, section 3 expands the empirical range of CR-operations to RNR and ATB movement, and the complex interactions among these processes. As will become obvious, the assumption that Gapping, RNR and ATB movement may target comparatives is sufficient in order to account for all of the reduction phenomena which have traditionally been attributed to CE. In section 4, I address a problem for the analysis, which in turn motivates some important modifications and additions. Section 5 finally turns to a reassessment of various examples discussed in the literature which appear to pose a challenge for the PC-Hypothesis (among them (13) and (14) above).

As various properties of the constructions to be considered are obfuscated in English due to VO word order and lack of long verb movement, substantial parts of the evidence to be discussed will be based on the verb second OV language German.

2. The Weak CR-Hypothesis

2.1. Goals and preliminaries

The main objective of section 2 consists in establishing that an analysis of examples like (7)b in terms of Gapping does not only represent a viable

option, but should be taken to be the correct one, furnishing a first piece of support for the CR-Hypothesis:

(7) b. *John spoke more vehemently against Mary than Tom ~~spoke~~ against Jane.*

Starting with an investigation of the structural conditions on Gapping in coordination and comparatives, it will be shown that the restrictions on Gapping in these two constructions are identical. Before proceeding to the data section, three heuristic preliminaries need to be addressed.

First, CR-operations are generally thought to apply to coordinate structures only, whereas comparatives qualify as subordinate structures according to various criteria (e.g. subcategorization and semantic interpretation). In order to license CR in comparatives in the first place, I will therefore - for the moment without discussion - adopt the premise that comparatives can be assigned parses which are sufficiently similar to base-generated coordinate structures, resulting in what will be called a *comparative coordination.* Following Hankamer (1973b), I will moreover adopt the view that *than* may function as a syntactic coordinator in the same way that the conjunction operators *and* and *or* do (see also Hendriks 1995). Further ramifications of these assumptions and the issue of how to relate the coordinate to the subordinate structure will be addressed in chapter 4.

Second, the present subsection is concerned with the empirical validity of the CR-Hypothesis only, which is *a priory* independent from the PC-Hypothesis. Suppose now that the PC-Hypothesis turned out to be untenable, entailing that PCs would have to be base generated. Then, PCs would not provide a suitable diagnostic for testing the effects of CR on coordinate structures and comparatives, simply because PCs can - by assumption - not be targeted by CR. In order to guard against this potential interference, I will therefore for the time being ignore PCs, concentrating on PRCs instead.

Finally, it is instructive to clarify what kind of similarities between comparatives and conjunctions one expects to find in the first place. In the remainder of this introductory section, I will therefore briefly expand on CR in general and on two distinct criteria which can be used in characterizing CR operations in particular.

If two constituents A and B are combined by coordination into a larger constituent [A B], the resulting structures have been observed to be special in that the internal shape and organization of A and B enjoys a certain amount of freedom which does generally not carry over to contexts of subordination, or environments in which A and B are not part of the same clause. Empirically, this is reflected by the fact that identical substrings inside the coordinates may be targeted by CR, which optionally deletes substrings which are

shared by both conjuncts (Hankamer 1971, 1979; Neijt 1979; Postal 1974; Ross 1967b; Sag 1976). For instance, the appearance of phonological suppression - indicated by strikeout font - in the examples below is traditionally interpreted as the result of Gapping, *Stripping* and RNR, respectively:[84]

(15) a. *Some visited Millhouse and others visited Otto.*
b. *Some visited Millhouse and others ~~visited~~ Otto.*

(16) a. *Sam visited Millhouse and Sam visited Otto, too.*
b. *Sam visited Millhouse and ~~Sam visited~~ Otto, too.*

(17) a. *Some visited Otto and others invited Otto.*
b. *Some visited ~~Otto~~ and others invited Otto.*

Gapping in (15) removes a string that includes at least the finite verb from a non-initial conjunct, while RNR in (17) elides right-peripheral portions in a non-final conjunct. I will furthermore adopt the view that Stripping as in (16) constitutes an instance of 'radical Gapping', which deletes all but one constituent from a non-initial conjunct (for discussion see Wesche 1995). Given this assumption, all the examples in (15) to (17) are the result of either Gapping or backward CR by RNR. Throughout, I will use 'CR' as a theory-neutral, descriptive term, and will in particular not commit myself to the claim found in the earlier literature that CR only operates on full clauses (Chomsky 1957; for a summary of arguments against this restricted view see Lasersohn 1995; Oirsouw 1987; Wesche 1995; see Wilder 1994, 1995b for a diverging position).

Crucially for present purposes, it is possible to discern two different groups of constraints on the application of CR. On the one hand, there are principles governing the categorial specification, size and position of the elided strings affected by CR inside their respective conjuncts. For instance, Gapping typically involves deletion of the main predicate of a non-initial conjunct, possibly together with other constituents:

(18) a. *Some visited Millhouse on Monday and others ~~visited~~ Millhouse on Friday.*
b. *Some visited Millhouse on Monday and others ~~visited Millhouse~~ on Friday.*

There is on the other side no operation which resembles Gapping in that it targets non-initial conjuncts, but which exclusively affects NPs or PPs to the exclusion of the verb:

(19) a. **Some visited Millhouse on Monday and others ran into ~~Millhouse~~ on Friday.*
b. **Some visited Millhouse on Monday and others ran ~~into Millhouse~~ on Friday.*

I will refer to conditions of this type - one of which apparently prohibits Gapping of NPs and PPs - as *internal conditions*, since they shape the internal organization of the conjuncts.

A second set of factors influencing licit applications of CR restricts the possible structural relations between the antecedent clause and the ellipsis clause. I refer to these factors as *external conditions* on CR. For one, Gapping as well as RNR appear most naturally in contexts in which the coordinated terms are joined by the connectives *and* and *or* (and marginally *but*[85]), but are - with some notable exceptions for RNR to be discussed in section 3.4.2 - unattested in subordination, as can be seen from the contrasts between the a- and b-examples in (20) to (22) below (see Jackendoff 1972; Johnson 1997a, 2001; Oirsouw 1987):

(20) a. *Some visited Millhouse and others ~~visited~~ Otto.*
b. **Some visited Millhouse after/because others ~~visited~~ Otto.*

(21) a. *Sam visited Millhouse and ~~Sam visited~~ Otto too.*
b. **Sam visited Millhouse after/because ~~Sam visited~~ Otto (too).*

(22) a. *Some visited ~~Otto~~ and others invited Otto.*
b. **Some visited ~~Otto~~ after/because others had invited Otto.*

In the sections to follow, I will for the time being concentrate on internal conditions, contrasting Gapped comparatives and Gapped conjunctions. To this end, I will review a number of diagnostics attesting to the fact that the internal conditions on Gapping also control for the formation of PRCs, adducing a first piece of evidence in favor of the (weak) CR-Hypothesis.

2.2. Gapping in coordination and in comparatives

It has been known at least since Ross (1967b) that Gapping cannot remove any series of symbols in conjunctions. Schematically, these restrictions can be represented as conditions on the variables in (23)a, where Gapping corresponds to deletion of a string D which minimally has to include a finite verb inside a non-initial conjunct (B) under identity with an antecedent (C).

(23) a. [$_A$ .... C ....] and/or [$_B$ .... D ....]
b. [$_A$ *Some* [$_C$ *visited*] *Millhouse*] *and* [$_B$ *others* [$_D$ ~~*visited*~~] *Otto*].

Among others, the conditions on Gapping limit the structural distance between B and D, put an upper bound on the size of D, and severely restrict the relation between the distance A-C and the distance B-D. In current terminology, these are the internal conditions on Gapping, which look at the internal structure of the coordinated terms A and B but disregard the syntactic relation between A and B. Summarizing the results of the literature, it is possible to identify at least eight major internal constraints, which will serve as the basis of the further discussion (see Broekhuis 1992; Hankamer 1971, 1973; Goodall 1987; Jackendoff 1971; Johnson 1996, 2003; Moltmann 1992a; Munn 1993; Neijt 1979; Phillips 1996; Pesetsky 1982; Sag 1976; Sag et al. 1985; Steedman 1990, 1996; Stillings 1975; Wilder 1995; Wyngærd 1993; Zoerner 1995).

The CR-Hypothesis leads one to expect that the internal conditions apply to comparatives and coordinate structures alike. In what follows, I will demonstrate that this prediction is borne out by considering eight constraints on Gapping in English and German.[86] The presentation serves the purpose of establishing a catalogue of properties typical of Gapping; the development of a specific analysis of the various phenomena falls outside the scope of this study.

I. Locality

The first defining property of Gapping - *Locality* - consists in the generalization that a Gap has to include the highest verb inside its conjunct (Hankamer 1979; Hudson 1976). Locality prohibits Gapping across higher overt verbal heads, accounting for such contrasts as in (24). In (24)b, the Gap D is separated from the left edge of the coordinate B by another verbal projection:

(24) a. *Some visited Millhouse and* [$_B$ *others* ~~*visited*~~$_D$ *Otto*].
b. **Lisa said that some visited Millhouse and*
[$_B$ *Otto claimed* [$_{CP}$ *that others* ~~*visited*~~$_D$ *Bart*]].

This restriction holds for finite clause boundaries, as well as for infinitivals, as in (25):[87]

(25) a. *Bill fixed the sink and* [$_B$ *Mary* ~~*fixed*~~$_D$ *the door*].
b. **Bill tried to fix the sink and* [$_B$ *Mary promised* [$_{CP}$ ~~*to fix*~~$_D$ *the door*]].

The same contrast between embedded and non-embedded contexts can now be observed to hold in subject, object and adjunct comparatives, respectively, in line with the predictions of the CR-Hypothesis (see also Hendriks 1995: 50):[88]

(26) a. *More people visited Millhouse on Monday than* [$_{B}$ ∅ ~~*visited*~~$_{D}$ *Otto on Friday*].
b. *Some visited more people on Monday than* [$_{B}$ *others* ~~*visited*~~$_{D}$ ∅ *on Friday*].
c. *Some visited Millhouse more often than* [$_{B}$ *others* ~~*visited*~~$_{D}$ *Otto* ∅].

(27) a. **More people said that some visited Millhouse than* [$_{B}$ ∅ *claimed* [$_{CP}$ *that others* ~~*visited*~~$_{D}$ *Bart*]].
b. **Lisa said that some visited more people than* [$_{B}$ *Otto claimed* [$_{CP}$ *that others* ~~*visited*~~$_{D}$ ∅]].
c. **Lisa said that some visited Millhouse more often than* [$_{B}$ *Otto claimed* [$_{CP}$ *that others* ~~*visited*~~$_{D}$ *Bart* ∅]].

Furthermore, the effects of Locality are also visible in comparatives which embed an infinitival. The examples in (28) match the structurally parallel conjunction (25)b:

(28) a. **More people tried to fix the sink than* [$_{B}$ ∅ *promised* [$_{CP}$ ~~*to fix*~~$_{D}$ *the door*]].
b. **Bill tried to fix more appliances than* [$_{B}$ *Mary promised* [$_{CP}$ ~~*to fix*~~$_{D}$ ∅]].
c. **Bill tried to fix the sink more often than* [$_{B}$ *Mary promised* [$_{CP}$ ~~*to fix*~~$_{D}$ *the door*] ∅].

Thus, Gapping in comparatives and coordinate structures behaves alike in exhibiting sensitivity to Locality.

II. Boundedness

Second, in Gapping, the size of the deleted string D plays an important role in determining the well-formedness of the output. When Gapping removes a string which is larger than just the verb, the Gap may include a non-finite sentence boundary, as in (29)a, but it must not contain a proper subpart of a finite, embedded CP, as in (29)b (Johnson 1996: 78; Neijt 1979; Pesetsky 1982; Wyngærd 1993):[89]

(29) a. *Lisa promised to visit Millhouse and*
Sally ~~promised~~ [$_{\text{CP [-finite]}}$ *~~to visit~~ Otto*].
b. **Lisa promised that her mother will visit Millhouse and*
Sally ~~promised~~ [$_{\text{CP [+finite]}}$ *~~that her mother will visit~~ Otto*].

The CR-Hypothesis correctly leads one to expect that the effects of Boundedness are also manifest in comparatives. Observe to begin with that in principle, Gapping can remove verbs clusters from the comparative complement:

(30) a. *More people promised to visit Millhouse on Monday than*
∅ *~~promised~~* [$_{\text{CP [-finite]}}$ *~~to visit~~ Otto on Friday*].
b. *Some promised to visit more people on Monday than*
others ~~promised~~ [$_{\text{CP [-finite]}}$ *~~to visit~~* ∅ *on Friday*].
c. *Some promised to visit Millhouse more often than*
others ~~promised~~ [$_{\text{CP [-finite]}}$ *~~to visit~~ Bart* ∅].

It is however, in line with the CR-Hypothesis, impossible for Gapping to elide a string which includes a finite CP-node:

(31) a. **More people promised that their friends will visit Millhouse on Monday than* ∅ *~~promised~~* [$_{\text{CP [+finite]}}$ *~~that their friends will visit~~ Otto on Friday*].
b. **Some promised that their friends will visit more people on Monday than others ~~promised~~* [$_{\text{CP [+finite]}}$ *~~that their friends will visit~~* ∅ *on Friday*].
c. **Some promised that their friends will visit Millhouse more often than others ~~promised~~* [$_{\text{CP [+finite]}}$ *~~that their friends will visit~~ Bart* ∅].

As for a more precise explication of the restrictions on long-distance Gapping, Johnson (1996) notices that the operation is limited to environments in which the affected string qualifies as a restructuring context in scrambling languages such as Dutch and German.[90] On the one side, this generalization is reflected by the fact that neither long-distance Gaps nor scrambling chains may include finite sentence boundaries, as witnessed by the ungrammaticality of (29)b above and (32)b (from German) below:

(32) a. *weil Maria* [$_{\text{CP [+finite]}}$ *daß sie ihn besuchen würde*] *versprach*
since Mary that she him visit would promised
b. **weil* ***ihn***$_i$ *Maria* [$_{\text{CP [+finite]}}$ *daß sie* $\boldsymbol{t}_i$ *besuchen würde*] *versprach*
since him Mary that she visit would promised
c. *weil* ***ihn***$_i$ *Maria* [$_{\text{CP [-finite]}}$ $\boldsymbol{t}_i$ *zu besuchen*] *versprach*
since him Mary to visit promised
'since Mary promised that she would visit him'

On the other side, Scrambling chains as well as long-distance Gaps are licit only if the scrambling chain and the Gap contain a restructuring predicate, respectively. To begin with, Scrambling in German must not proceed across non-restructuring verbs (*refuse, recommend, continue, pretend,...*):

(33) *??weil* ***ihn***$_i$ *Maria* [$_{CP}$ ***t***$_i$ *zu besuchen*] *sich weigerte/fortfuhr/vorgab*$_{[\text{-restructuring}]}$
since him Mary to visit herself refused/continued/pretended
'since Mary refused/continued/pretended to visit him'

Moreover, German - just like English (see (30)) - permits long-distance Gapping in restructuring contexts:[91]

(34) *weil Hans versuchte Millhouse zu besuchen und*
since Hans tried Millhouse to visit and
Maria ~~*versuchte*~~$_{[\text{+restructuring}]}$ [$_{CP}$ *Otto* ~~*zu besuchen*~~]
Maria tried Otto to visit
'since Hans tried to visit Millhouse and Mary tried to visit Otto'

However, if the Gap includes a non-restructuring predicate, the results are sharply deviant:

(35) a. *??weil Hans sich weigerte Millhouse zu besuchen und*
since Hans himself refused M. to visit and
Maria ~~*sich weigerte*~~$_{[\text{-restructuring}]}$ [$_{CP}$ *Otto* ~~*zu besuchen*~~]
Maria herself refused Otto to visit
'since Hans refused to visit Millhouse and Mary refused to visit Otto'

b. *??weil Hans fortfuhr Millhouse zu besuchen und*
since Hans continued M. to visit and
Maria ~~*fortfuhr*~~$_{[\text{-restructuring}]}$ [$_{CP}$ *Otto* ~~*zu besuchen*~~]
Maria continued Otto to visit
'since Hans continued to visit Millhouse and Mary continued to visit Otto'

c. *??weil Hans vorgab Millhouse zu besuchen und*
since Hans pretended M. to visit and
Maria vorgab$_{[\text{-restructuring}]}$ [$_{CP}$ *Otto* ~~*zu besuchen*~~]
Maria pretended Otto to visit
'since Hans pretended to visit Millhouse and Mary pretended to visit Otto'

The same observation carries over to English, where Gapping of a non-restructuring verb along with its infinitival complement is generally blocked:[92]

(36) a. *??Mary refused to visit Millhouse and Bill* ~~*refused*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ *Otto*].
b. *??Mary continued to visit Millhouse and Bill* ~~*continued*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ *Otto*].
c. *??Mary pretended to visit Millhouse and Bill* ~~*pretended*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ *Otto*].

Crucially, comparatives also share this second defining property of Boundedness, they rapidly degrade when the long-distance Gap includes a non-restructuring infinitival. This is shown for subject, object and adjunct comparatives below, respectively (compare to (30)):

(37) a. *??More people refused to visit Millhouse on Monday than* ∅ ~~*refused*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ *Otto on Friday*].
b. *??Some refused to visit more people on Monday than others* ~~*refused*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ ∅ *on Friday*].
c. *??Some refused to visit Millhouse more often than others* ~~*refused*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ *Bart* ∅].

(38) a. *??More people continued to visit Millhouse on Monday than* ∅ ~~*continued*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ *Otto on Friday*].
b. *??Some continued to visit more people on Monday than others* ~~*continued*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ ∅ *on Friday*].
c. *??Some continued to visit Millhouse more often than others* ~~*continued*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ *Bart* ∅].

(39) a. *??More people pretended to visit Millhouse on Monday than* ∅ ~~*pretended*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ *Otto on Friday*].
b. *??Some pretended to visit more people on Monday than others* ~~*pretended*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ ∅ *on Friday*].
c. *??Some pretended to visit Millhouse more often than others* ~~*pretended*~~$_{[\text{-restructuring}]}$ [$_{CP}$ ~~*to visit*~~ *Bart* ∅].

Consequently, it can be concluded that Gapping respects Boundedness in coordinate structures as well as in comparatives.

*III. *Complementizer*

The environments that license long-distance Gapping and restructuring pattern along w.r.t. another property, which surfaces in Dutch and German (see also Hendriks 1995). If the complementizer position of the elliptical clause is lexicalized, both Gapping and restructuring are blocked (Evers 1975;

Wyngaerd 1993). For instance, the lexical complementizer of Dutch infinitivals (*om*) inhibits Gapping ((40)b) as well as Verb Raising ((41)b), which in turn is contingent on restructuring (examples adopted from van den Wyngaerd 1993):

(40) a. *dat Jan probeert de krant te lesen en Marie ~~probeert~~ de Viva ~~te lezen~~*
that Jan tried the newspaper to read and M. tried the Viva to read
b. **dat Jan probeert **om** de krant te lesen en Marie ~~probeert~~ **om***
that Jan tried C° the newspaper to read and M. tried C°
de Viva ~~te lezen~~
the Viva to read
'that Jan tried to read the newspaper and Mary tried to read Viva'

(41) a. *dat Marie de Viva t_i probeert* [*te lezen*]$_i$
that Marie the Viva tried to read
b. **dat Marie **om** de Viva t_i probeert* [*te lezen*]$_i$
than Marie C° the Viva tried to read
'that Mary tried to read Viva'

A similar blocking effect on Gapping is attested in German finite clauses. While Gapping can reduce verb second (V2) clauses ((42)a) and certain types of verb final adjunct clauses ((42)b), it may not affect sentential complements introduced by the lexical complementizer *daß*:[93]

(42) a. *Hans liest einen Artikel und Maria ~~liest~~ ein Buch.*
H. reads an article and M. reads a book
'John is reading an article and Mary a book.'
b. *weil Hans einen Artikel liest und Maria ein Buch ~~liest~~.*
since H. an article reads and M. a book reads
'since John is reading an article and Mary a book'
c. **Ich glaube daß Hans einen Artikel liest und daß Maria ein Buch ~~liest~~.*
I believe that H. an article reads and that M. a book reads
'I believe (that) John is reading an article and Mary a book.'

Moreover, some southern German dialects (Bavarian, Austrian German) tolerate the inclusion of an overt complementizer in clausal comparatives, as illustrated by the a-examples below. Interestingly, such strings can no longer be reduced by Gapping, as documented by the examples in b:

(43) a. *Ich glaube daß mehr Leute einen Artikel lesen als daß ∅ ein Buch lesen.*
I believe that more people an article read than that a book read
b. **Ich glaube daß mehr Leute einen Artikel lesen als daß ∅ ein Buch ~~lesen~~.*
'I believe that more people read an article than read a book.'

(44) a. *Ich glaube daß Hans mehr Artikel liest als daß Maria ∅ liest.*
I believe that H. more articles reads than that M. reads
b. **Ich glaube daß Hans mehr Artikel liest hat als daß Maria ∅ ~~liest~~.*
'I believe that John reads more articles than Mary reads.'

(45) a. *Ich glaube daß Hans öfter einen Artikel liest als*
I believe that H. more often an article reads than
daß Maria ∅ ein Buch liest.
that M. a book reads
b. **Ich glaube daß Hans öfter einen Artikel liest als*
daß Maria ∅ ein Buch ~~liest~~.
'I believe that John more often reads an article than Mary reads a book.'

Thus, a lexical complementizer prohibits Gapping in comparative just as in coordinate structures, contributing a third piece of evidence in support of the CR-Hypothesis.

IV. Isomorphism

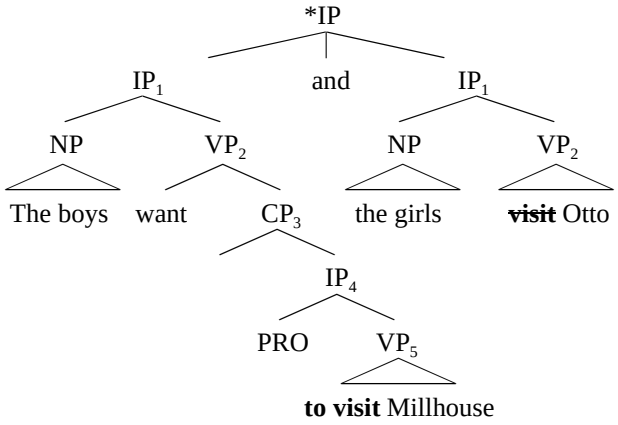
A fourth general condition dictates that Gapping only affect contexts which observe an *Isomorphism* constraint on the relative positions of the antecedent and the Gap inside their respective coordinates (Hankamer 1971, 1979; Hudson 1976; Sag 1976). Empirically, Isomorphism manifests itself in the observation that the antecedent and the Gap have to be embedded at the same depth.[94] For instance, the surface string (46) can be read as in (46)a, but cannot be related to the alternative underlying source in (46)b (similarly for the triple in (47)). (46) intuitively lacks a reading in which the second conjunct is understood as a report about the boys' actual habits, instead of their wishes:

(46) *The girls want to visit Millhouse and the boys Otto.*
a. [$_A$ *The girls* [$_C$ *want to visit*] *Millhouse*] *and*
[$_B$ *the boys* [$_D$ ~~*want to visit*~~] *Otto*]
b. *[$_A$ *The girls want to* [$_C$ *visit*] *Millhouse*] *and* [$_B$ *the boys* [$_D$ ~~*visit*~~] *Otto*]

(47) *The Germans let their children drink milk and the Russians Vodka.*
a. [$_A$ *The Germans* [$_C$ *let their children drink*] *milk*] *and*
[$_B$ *the Russians* [$_D$ ~~*let their children drink*~~] *Vodka*]
b. *[$_A$ *The Germans let their children* [$_C$ *drink*] *milk*] *and*
[$_B$ *the Russians* [$_D$ ~~*drink*~~] *Vodka*]

As illustrated by the tree in (48), Isomorphism prohibits Gapping in (46)b (and (47)b), because the Gap is dominated by (at least) two maximal projections, while the antecedent is embedded under (at least) four XPs. The depth of embedding of the Gap consequently fails to match the depth of embedding of the antecedent.[95, 96]

(48) (= (46)b)



Isomorphism is computed in a parallel fashion in comparatives. This ensures that the comparative (49) can be interpreted with wide ellipsis, as in (49)a, but lacks the narrow ellipsis reading (49)b.[97] The non-isomorphic representation (49)b fails to converge for the same reason that (46)b is blocked:

(49) *More girls want to visit Millhouse today than ∅ Otto on Monday.*

a. *More girls want to visit Millhouse today than ∅ ~~want to visit~~ Otto on Monday.*

b. **More girls want to visit Millhouse today than ∅ ~~visit~~ Otto on Monday.*

Once again, the identical behavior of conjunction and comparatives w.r.t. Isomorphism directly follows from the CR-Hypothesis, according to which forward verb deletion in comparatives represents an instance of Gapping.

V. Boundedness of Subgapping

Apart from main verb Gapping, forward Conjunction Reduction can in a restricted set of environments also affect the highest verb of a predicate cluster alone, stranding an embedded infinitival as a remnant. English attests to the

availability of this operation of *Subgapping* in contexts where finite modals or auxiliaries have been elided from a non-initial conjunct (Fodor 1974; Johnson 1996; Oehrle 1987; Siegel 1987):

(50) a. *Bill had bough a book and Mary ~~had~~ read the newspaper.*
b. *Some must buy a book and others ~~must~~ read the newspaper.*
c. *Mary can read scores and Sam ~~can~~ write poems.*
d. *John is sewing and Bill ~~is~~ knitting.*

As was initially observed by Fodor (1974), Subgapping differs from main verb Gapping in one important respect, the *Boundedness of Subgapping*: Only main verb Gapping has the option of eliding other constituents along with the finite verb ((51)a). Whenever it is only the auxiliary which undergoes phonological suppression, deletion of additional phrases in prohibited, as illustrated by (51)c:[98]

(51) a. *Bill had given a book to Sam and Mary ~~had given a book~~ to Sue.*
b. *Bill had given a book to Sam and Mary ~~had~~ sent a newspaper to Sue.*
c. **Bill had given a book to Sam and Mary ~~had~~ sent ~~a book~~ to Sue.*

Subgapping is not restricted to coordinate contexts, but also targets comparatives. That is, along with main verb deletion in (52)a, it is also possible to find instances of finite auxiliary ellipsis, exemplified by (52)b:

(52) a. *More people had given a book to Sam than ∅ ~~had given a book~~ to Sue.*
b. *More people had given a book to Sam than ∅ ~~had~~ sent a newspaper to Sue.*

And just like in conjunctions, Subgapping cannot be attended by ellipsis of other categories in comparatives. In (53), the auxiliary and the object have been removed to the exclusion of the main verb, in violation of *Boundedness of Subgapping*.

(53) **More people had given a book to Sam than ∅ ~~had~~ sent ~~a book~~ to Sue.*

The parallelism between (51)c and (53) constitutes a fifth argument for the CR-Hypothesis.

VI. Infinitival Prohibition

An additional, curious restriction on Subgapping is operative in German (and Dutch). To begin with, in German verb-final clauses, Subgapping[99] of modals or perception verbs leads to marked, but still acceptable results (Evers 1975: 13; Besten and Broekhuis 1989; Wyngaerd 1993: 8):

(54) a. *?weil wir* [*Maria ein Lied singen hörten*] *und*
since we M. a song sing heard and
[*Fritz ein Gedicht vortragen* ~~*hörten*~~]
F. a poem recite heard
'since we heard Mary sing a song and Fritz recite a poem'
b. ?weil [*einige ein Lied singen wollten*] *und*
since some a song sing wanted and
[*andere ein Gedicht vortragen* ~~*wollten*~~]
others a poem recite wanted
'since some wanted to sing songs and others wanted to recite poems'

Moreover, this type of Subgapping may for some reason not operate on auxiliaries, as is confirmed by the contrast between (54) and (55).[100, 101]

(55) **weil* [*einige ein Lied gesungen haben*] *und*
since some a song sung have and
[*andere ein Gedicht vorgetragen* ~~*haben*~~]
others a poem recited have
'since some have sung songs and others have recited poems'

The acceptability of Subgapping in German will accordingly be tested by relative judgements, using (55) as a negative control.

Evers's (1975: 13) reports now that Subgapping is limited to finite verbs. While regular Gapping may target non-finite verb clusters, as in the a-examples below, the b-examples demonstrate that Subgapping (i.e. partial deletion of a cluster) cannot affect a higher infinitive to the exclusion of a lower one.

(56) a. *Es wäre schön,* [*Maria ein Lied singen zu hören*] *und*
it would be nice M. a song sing to hear and
[*Fritz ein Gedicht* ~~*singen zu hören*~~]
F. a poem sing to hear
b. **Es wäre schön,* [*Maria ein Lied singen zu hören*] *und*
it would be nice M. a song sing to hear and
[*Fritz ein Gedicht vortragen* ~~*zu hören*~~]
F. a poem recite to hear
'It would be nice to hear Mary sing a song and Fritz recite a poem.'

(57) a. *ohne* [*ein Lied singen zu wollen*] *oder* [*ein Gedicht ~~singen zu wollen~~*]
without a song sing to want or a poem sing to want
b. **ohne* [*ein Lied singen zu wollen*] *oder* [*ein Gedicht vortragen ~~zu wollen~~*]
without a song sing to want or a poem recite to want
'without wanting to sing a song or reciting a poem'

As expected, the empirical scope of Ever's observation encompasses deletion in comparatives. First, Subgapping can also be found in comparatives, as documented by (58).[102] The resulting structures are on a par with the correlating coordinate constructions in (54):

(58) a. *?weil mehr Leute die Maria ein Lied singen hörten als*
since more people the M. a song sing heard than
⌓ *den Fritz ein Gedicht vortragen ~~hörten~~*
the F. a poem recite heard
b. *?weil mehr Leute ein Lied singen wollten als*
since more people a song sing wanted than
⌓ *ein Gedicht vortragen ~~wollten~~*
a poem recite wanted
'since more people heard Mary sing a song than Fritz recite a poem'

Second, comparatives pattern along with coordinate structures (cf. (56)) in prohibiting Subgapping of infinitival predicates:

(59) a. *Es wäre gut mehr Leute ein Lied singen zu hören als*
it would be good more people a song sing to hear than
⌓ *ein Gedicht ~~singen zu hören~~.*
a poem sing to hear
'It would benoce to hear more people sing a song than sing a poem.'
b. **Es wäre gut mehr Leute ein Lied singen zu hören als*
it would be good more people a song sing to hear than
⌓ *ein Gedicht vortragen ~~zu hören~~*
a poem recite to hear
'It would be nice to hear more people sing a song than recite a poem.'

Again, verb deletion in comparatives is regulated by exactly the same property which is characteristic of Gapping in coordinate contexts.

VII. V2 Restriction on Subgapping

As noted in the previous section, German V-final clauses resist Subgapping of auxiliaries and only marginally tolerate Subgapping of modals; (60) illustrates this point with a further set of examples:

(60) a. *?*[*weil viele Leute Sam besuchen wollten*] *und*
since many people S. visit wanted and
[*einige Otto einladen* ~~*wollten*~~]
some O. invite wanted
'since many people wanted to visit Sam and some to invite Otto'

b. *[*weil viele Leute Sam besucht haben*] *und* [*einige Otto eingeladen* ~~*haben*~~]
since many people S. visited have and some O. invited have
'since many people visited Sam and some invited Otto'

Interestingly now, Maling (1972) observes that Subgapping applies more liberally in V2 contexts, in that V-to-C raising improves on Subgapping of modals (compare (61)a to (60)a), and even feeds Subgapping of auxiliaries (compare (61)b to (60)b):

(61) a. [*Gestern wollten viele Leute Sam besuchen*] *und*
yesterday wanted many people S. visit and
[*einige* ~~*wollten*~~ *Otto einladen*].
some wanted O. invite
'Yesterday, many people wanted to visit Sam and some Otto.'

b. [*Gestern haben viele Leute Sam besucht*] *und*
yesterday have many people S. visited and
[*einige* ~~*haben*~~ *Otto eingeladen*].
some have O. invited
'Yesterday, many people visited Sam and some invited Otto.'

Descriptively, it appears as if Subgapping of auxiliaries and modals is fully acceptable only if the finite verb resides in C°.

A similar observation can be made for comparatives, where Subgapping generally leads to suboptimal results if the verb is construed in final position:

(62) a. *?*[*weil mehr Leute Sam besuchen wollten*] *als* [∅ *Otto einladen* ~~*wollten*~~]
since more people S. visit wanted than O. invit wanted
'since more people wanted to visit Sam than invite Otto

b. *[*weil mehr Leute Sam besucht haben*] *als* [∅*Otto eingeladen* ~~*haben*~~]
since more people S. visited have than O. invited have
'since more people visited Sam than invited Otto'

If, however, V2 movement has applied in the matrix clause, Subgapping all of a sudden generates perfectly well-formed output strings (modal constructions, which are not presented here, behave alike):

(63) [*Gestern haben mehr Leute Sam besucht*] *als* [⌓ *Otto eingeladen* ~~*haben*~~].
yesterday have more people S. visited than O. invited have
'Yesterday, more people visited Sam than invited Otto.'

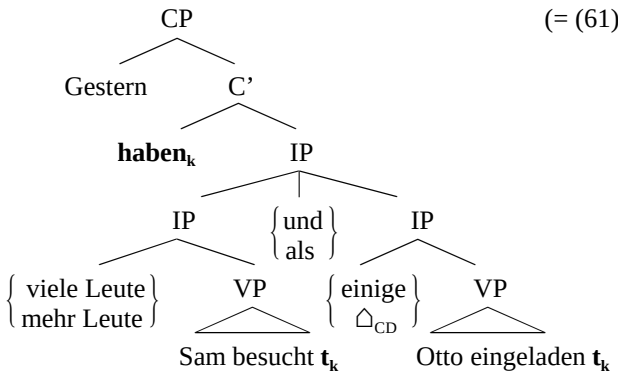
At first sight, the comparative in (63) and the coordinate structure (61)b seem to match as far as their relevant structural properties are concerned. What is surprising, though, is that (63) conflicts with the descriptive generalization above, according to which Subgapping is confined to auxiliaries in C°. This is so because *than*-XPs in German are invariably verb final constructions:

(64) a. *Gestern haben mehr Leute Sam besucht als ⌓ Otto eingeladen* ***haben***.
yesterday have more people S. visited than O. invited have
b. *[*Gestern haben mehr Leute Sam besucht*] *als*
[⌓ ***haben*** *Otto eingeladen*].

It follows that (63) cannot be analyzed as an instance of Subgapping operating on C°, raising the question of how to account for the well-formedness of (63).

The puzzle receives a natural explanation on the following two assumptions (the second of which has served as a guiding heuristics throughout): (i) Subgapping in V2 contexts does not represent an instance of Gapping, but rather a manifestation of ATB V2 movement and (ii) comparatives can optionally (and at least during parts of the derivation) be assigned parses which are sufficiently similar to coordinate structures in order to license ATB movement (see chapter 4 for further discussion). A reanalysis along these lines leads to the new, common parse for (61)b and (63) given in (65).

(65) (= (61)b/(63))



In (65), the first conjunct/the matrix clause and the second conjunct/the *than*-XP are coordinated at the IP-level (for a detailed discussion of which principles govern the height of coordination see section 4). Even though the *than*-XP lacks an independent trigger for V2, the Coordinate Structure Constraint (CSC) mandates that both auxiliaries undergo ATB movement to C°, deriving the surface word order. Thus, the analysis successfully resolves the conflict noted above, because the auxiliary in the second conjunct is no longer removed from C° by Subgapping.

Finally, since formation of a coordinate-like parse is optional for comparatives, the finite auxiliary inside the *than*-XP may also remain in *in-situ*, as in (64)a, repeated from above:

(64) a. *Gestern haben mehr Leute Sam besucht als ∅ Otto eingeladen* ***haben****.*
yesterday have more people S. visited than O. invited have

In (64)a, the *than*-XP is extraposed in the same way as complement CPs or relative clauses are, and V2 movement is therefore no longer subject to the CSC (on the position of extraposed clauses see e.g. Büring and Hartmann 1994; Haider 1995; Kayne 1994; Riemsdijk and Corver 1995).

To summarize, the *Subgapping Restriction* holds of structures involving conjunction as well as of comparatives. Apparent disparities between comparatives and coordination can be explained by adopting an ATB V2 analysis of Subgapping. Further aspects of ATB movement in comparatives will be dealt with in sections 3.6 and 4.

VIII. Disjoint Reference

The final property of Gapping to be considered pertains to restrictions on referential dependencies between nominal expressions inside the matrix clause and the comparative complement. Apart from being subject to complex syntactic constraints, Gapping has also been observed to influence the interpretive properties of DPs in the left periphery of the conjuncts. Johnson (1996: 35), for one, reports that Gapping widens the scope domain of quantificational subjects in conjunctions (see also Johnson 2003; McCawely 1993; Lin 2002). The pronoun inside the second conjunct of (66) can be assigned a bound variable interpretation once the verb has been Gapped:

(66) a. **No boy$_i$ joined the navy and his$_i$ mother joined the army.*
b. *No boy$_i$ joined the navy and his$_i$ mother ~~joined~~ the army.*

Similar effects can be replicated for the interaction between Gapping and disjoint reference effects in German. While a pronominal subject may be construed as coreferential with an R-expression in a preceding conjunct, as illustrated by (67)a, Gapping bleeds the coreferential reading between the name and the pronoun ((67)b):[103]

(67) a. *weil* ***Otto***$_i$ *Millhouse am Montag eingeladen hat und*
since O. M. on Monday invited has and
er$_i$ *Flanders (am Freitag) empfangen hat*
he F. on Friday welcomed has

b. **weil* ***Otto***$_i$ *Millhouse am Montag eingeladen hat und*
er$_i$ *Flanders (am Freitag)* ~~*eingeladen hat*~~
'since Otto$_i$ invited Millhouse on Monday and he$_i$ welcomed Flanders on Friday'

A reflex of this apparent widening of the (binding) scope domain by Gapping is also detectable in comparatives. Just as in the coordinate structures in (67), the coreferential reading between the pronoun and the name is reserved for the non-reduced structure (Bierwisch 1989: 147; see chapter 4, sections 2 and 3 for a detailed discussion of disjoint reference effects with PCs):[104]

(68) a. *Es ist möglich daß* ***Otto***$_i$ *mehr Leute am Montag eingeladen hat als*
it is possible that O. more people on Monday invided has than
er$_i$ ∅ *am Freitag empfangen hat.*
he on Friday welcomed has

b. **Es ist möglich daß* ***Otto***$_i$ *mehr Leute am Montag eingeladen hat als*
er$_i$ ∅ *(am Freitag)* ~~*eingeladen hat.*~~
'It is possible that Otto$_i$ invited more people on Monday than he$_i$ welcomed on Friday'

Notice on the side that *Disjoint Reference* - whatever its proper analysis may be - should not be dealt with in terms of a reformulation of the c-command relation for Gapped sentences. Strong evidence against such a move comes from the observation in Johnson (1996) that Gapping fails to license binding relations between reciprocals and their antecedents:

(69) **weil* ***sie***$_i$ *Millhouse am Montag eingeladen haben und*
since they M. on Monday invited have and
Freunde von ***einander***$_i$ *Flanders am Freitag* ~~*eingeladen haben*~~
friends of each other F. on Friday invited have

This clearly indicates that the asymmetry in (67) should rather be related to the specific focus requirements of Gapped clauses, and not to their structural properties. For present purposes it suffices that the contrast in (67) is indicative of Gapping, and that also the eighth and final internal condition on Gapping in coordinate structures can be shown to be operative in comparatives.

2.3. Résumé

To recapitulate, it has been demonstrated that eight prototypical properties of Gapping - the internal conditions - are also attested in reduced comparatives. While such a parallelism is expected under the CR-Hypothesis, which maintains that the internal conditions on Gapping in these two constructions are identical, it remains mysterious for analyses stipulating a separate process of Comparative Ellipsis (CE), unless CE is formulated in such a way that it mimics Gapping in all relevant aspects. Needless to say, such a move would require additional evidence for the independence of CE. As far as I am aware, such evidence does not exist. Table 2 schematically summarizes the results gained so far. (The descriptions in the 'Context' column refer to categories in the configuration *[$_A$....C...] and/or [$_B$ .... D ....]*, where A and B are the coordinated categories, D is the Gapped term and C represents the antecedent.)

Table 2. Selected properties of Gapping

	Constraint	*Context*
I.	Locality	Distance B - D
II.	Boundedness	Size of D (Gapping)
III.	*Complementizer	Lexicalization of C°
IV.	Isomorphism	Relation between A - C and B - D
V.	Boundedness of Subgapping	Size of D (Subgapping)
VI.	Infinitival Prohibition	Finiteness of D
VII.	V2 Restriction on Subgapping	Position of verb (V2 vs. V-final)
VIII.	Disjoint Reference	Coreference between NPs in A and B

3. The PC/CR-Hypothesis

In the present section, the weak CR-Hypothesis will be extended to the thesis that all - and not only some - manifestations of ellipsis in comparatives are the result of Conjunction Reduction (CR). As will become obvious, this step generates a new approach towards the derivation of phrasal comparatives (PCs). I then proceed to a discussion of empirical predictions of the PC/CR-Hypothesis (i.e. the conjunction of the PC-Hypothesis and the CR-Hypothesis), concluding that there is considerable empirical evidence against the CE-approach as well as against the direct analysis of PCs.

3.1. Introduction: the strong CR-Hypothesis

The weak CR-Hypothesis formulated in section 2 defended the claim that comparatives constitute a licit target for Gapping. This proposal was motivated by the observation that deletion inside the *than*-XP obeys the same eight constraints on Gapping that hold in coordinate contexts. In the present section, it will be demonstrated that the weak CR-Hypothesis can be strengthened, resulting in the revised version in (70):

(70) CR-HYPOTHESIS (strong and final version):
All deletion in comparatives[105] derives from Conjunction Reduction (Gapping, Right Node Raising and Across-the-Board-movement).

While the weak CR-Hypothesis still left open the option that some instances of ellipsis do not stem from CR, and might therefore be attributed to an independent rule of Comparative Ellipsis (CE), (70) makes the stronger claim that there is no such grammatical operation as CE.

In conjunction with the PC-Hypothesis, the CR-Hypothesis moreover implies that all PCs are the output of CR. To exemplify, this entails that all of the PCs under (71) are the result of the interaction of CD and CR:

(71) a. *Mary bought more books than Sam.*
b. *More people bought a book than a newspaper.*
c. *Mary bought books more often than Sam.*
d. *Mary bought books more often than newspapers.*

Schematically, PC-formation in (71) proceeds then as follows: first, CD removes the category containing the gradable property from inside the comparative complement. Then, CR deletes the verb, possibly along with other

constituents (as is e.g. the case with the adjunct comparatives (71)c and (71)d). On this conception, the examples under (71) are assigned the parses below, respectively:

(72) a. *Mary bought more books than Sam ~~bought~~ ⌓.*
(⌓ = d-many books)
b. *More people bought a book than ⌓ ~~bought~~ bread.*
(⌓ = d-many people)
c. *Mary bought books more often than Sam ~~bought books~~ ⌓.*
(⌓ = d-often)
d. *Mary bought books more often than ~~Mary bought~~ bread ⌓.*
(⌓ = d-often)

As a corollary, it follows that the same types of reduction processes which were made responsible for PC-formation in (71) should also show up in coordination. And in fact, each of the sentences in (71) can be paired with a suitable coordinate correlate, as in (73):

(73) a. *Mary bought books and Sam ~~bought~~ bread.*
b. *Mary bought books and Sam ~~bought~~ bread.*
c. *Mary bought books on Monday and Sam ~~bought books~~.*
d. *Mary bought books on Monday and ~~Mary bought~~ bread.*[106]

The current section is dedicated to testing the generality of this approach towards phrasal comparative formation by gradually expanding the empirical domain and increasing its complexity. Moreover, the discussion will also consider new evidence in support of the strong CR-Hypothesis from partially reduced comparatives (PRCs).

3.2. Categorizing the evidence

Before proceeding to the data section, it is instructive to delineate the various analyses of PCs and PRCs which have been advanced in the literature, and to establish to which extent and how they contrast with the specific proposal advocated here. Using the (strong) CR-Hypothesis and the PC-Hypothesis as basic criteria for dividing the space of analytic options, it is possible to use a binary matrix for categorizing the four distinct views on how to derive PCs and PRCs, depicted in table 3 (positive values indicate that the hypothesis is assumed to be valid, negative ones signal refutation):

Table 3. Interaction between the PC-Hypothesis and the CR-Hypothesis

	+ CR-Hypothesis		– CR-Hypothesis	
Derivation of	PCs	PRCs	PCs	PRCs
+ PC-Hypothesis	*by CR*	*by CR*	*by CE*	*by CE*
– PC-Hypothesis	*base generated*	*by CR*	*base generated*	*by CE*

Table 4 lists bibliographical references corresponding to the cells in table 3:

Table 4. The PC-Hypothesis and the CR-Hypothesis in the literature

	+ CR-Hypothesis	– CR-Hypothesis
+ PC-Hypothesis	*Present proposal*	Pinkham (1982); McCawley (1988); Bierwisch (1989)
– PC-Hypothesis	Napoli (1983)	Brame (1983); Hankamer (1973); Heim (1985); Krifka (1987); McConnnell-Ginet (1973); Pinkham (1982)

Horizontally, the position supported here stands in opposition to theories which derive reduced comparatives by CE, and not by CR (see e.g. Hankamer 1973; McCawley 1988; Pinkham 1982). A successful defense of the CE-analysis accordingly needs to demonstrate that there are reduced comparatives which cannot be accounted for in terms of CR. On the vertical axis, the present proposal contrasts with direct analyses, which maintain that PCs are base generated and which refute the PC-Hypothesis (see e.g. Brame 1983; Hoeksema 1983, 1984; Krifka 1987; Napoli 1983). In supporting this view, proponents of direct analyses usually point to the fact that there are systematic disparities between PCs and clausal comparatives (see (13) and (14) in section 1), which can be explained by reduction analyses only at the cost of over- and/or undergeneration. This argument inherently rests on the claim that PCs differ from full clausal comparatives as well as from PCRs in their basic syntactic properties.

In order to effectively vindicate the present proposal, it is therefore necessary to achieve the following two goals:

(74) GOALS:

A. Demonstrate that CR derives all the surface syntactic effects traditionally attributed to CE.

B. Demonstrate that the differences between PCs and clausal comparatives do not reflect an idiosyncratic property of PCs, but can be expressed in terms of more general disparities between non-reduced comparative on the one side and reduced comparatives (PCs and PRCs) on the other.

That is, it has to be shown that the PC/CR-Hypothesis not only accounts for the surface shape and location of the *than*-XP (A), but also avoids over- or undergeneration (B).

The remainder of chapter 3, I present arguments in support of these two objectives, and contrast the PC/CR-Hypothesis against competing accounts on the basis of a first set of empirical predictions which the present proposal entails for the surface syntax of reduced comparatives. (A second class of arguments is derived from binding properties of PCs; see chapter 4.) As for the individual types of arguments to be employed, they fall into three groups (where the third type is parasitic on the results of Group 1 and Group 2):

Group 1: Identity of internal conditions
Adopting the CR-Hypothesis leads to the expectation that PRCs as well as PCs are licit only in contexts which satisfy the internal conditions on CR (section 3.3). Neither the direct account nor the CE-analysis necessarily generate the same prediction.

Group 2: Identity of external conditions
On the CR-Hypothesis, the positional distribution of reduced *than*-XPs should be governed by exactly the same (external) conditions that are active in reduced coordinate structures. Anticipating the discussion of sections 3.4 and 3.5, PCs and PRCs should emulate the same linearization requirements which are characteristic of coordinated structures. Neither the direct account nor the CE-analysis lead to the same prediction without further stipulations.

Group 3: Taxonomy
In principle, it is possible to identify four different approaches towards optional deletion in comparatives, each of which supports its own taxonomy of the data: (i) the PC/CR-Hypothesis encapsulates the claim that unreduced comparatives should display properties that set them apart from PCs and PRCs. In contrast to that, (ii) direct analyses maintain that unreduced comparatives and PCRs form a class to the exclusion of PCs. Theories that employ

CE fall into two subgroups: (iii) approaches which base generate PCs, and therefore follow direct analyses in treating PCs as exceptional (in part Pinkham 1982); and (iv) theories which derive PCs by CE (Bierwisch 1987; McCawley 1988; in part Pinkham 1982), and therefore achieve the same predictions as the PC/CR-Hypothesis (at least given that CE is formulated in such a way that it mimics CR in all relevant respects). While the status of CE-theories of the latter type is contingent on further, independent - and hard to provide - evidence for CE, the former group of CE-approaches as well as the direct analysis are clearly empirically distinguishable from the PC/CR-Hypothesis. As will be seen below, only the PC/CR-Hypothesis succeeds in generating empirically adequate predictions, though.

The three types of arguments above each contribute to support the two overarching goals that have been identified in the previous discussion - eliminating CE and justifying an ellipsis account of PCs - in a systematic way. More precisely, the relation can be described as follows:

(75)
1. Identity of internal conditions ➜ Goal A
2. Identity of external conditions ➜ Goal A
3. Taxonomy (PCs and PRCs vs. unreduced comparatives) ⇨ Goal B

Since the empirical reflexes of the three types of arguments partially overlap in the same construction, they cannot be presented in three separate sections. Instead, I will proceed as follows. The next section (3.3) examines type-1 and type-3 arguments by elaborating on the internal conditions of PCs. Section 3.4 then spells out the external conditions (type-2 arguments), and expands the group of CR-operations by including RNR. In section 3.5, I explicate in more detail the interaction between internal and external condition. Finally, the last part of section 3 (3.6) addresses further reduction processes (ATB movement) that can affect comparatives, completing the account of 'Comparative Ellipsis' and PC-formation.

3.3. Internal conditions and the shape of the *than*-XP

The current section falls into two parts, both of which relate to the internal conditions. First, I present arguments in support of the PC/CR-Hypothesis which come from a comparison of Gapped PCs and PRCs. Second, it will be shown that the CR-Hypothesis offers a natural analysis for two at first sight mysterious properties of deletion in comparatives. The analyses of these paradigms contribute type-1 and type-3 arguments.

3.3.1. Internal conditions on Gapping: PCs vs. PRCs

The PC/CR-Hypothesis leads one to expect that PRCs and PCs should behave alike. Contrary to that, direct analyses predict that partially reduced and non-reduced comparative stand in opposition to PCs. Theories which postulate the existence of a designated operation of CE finally cannot be empirically distinguished from the CR-approach and owe independent legitimation for CE, in absence of which the PC/CR-Hypothesis theory is to be preferred. The present section tests these predictions, using the internal conditions as a diagnostic. This will establish type-1 and type-3 evidence for the PC/CR-Hypothesis according to the classification of page 117.

Due to independent factors, only a proper subset of the internal conditions provides a suitable testing ground for the claim that PCs and PRCs pattern along. This is so because the effects of certain internal conditions - Locality; Boundedness of Subgapping; the Infinitival Prohibition and the V2 Restriction on Subgapping - can only be isolated in PRCs. More specifically, one of these conditions - Locality - explicitly only applies to PCRs of a certain structure. The other three restrictions govern licit contexts of Subgapping, but are not operative in environments of main verb Gapping. It follows that their reflexes cannot be detected in PCs, because Subgapping always leads to configurations in which the *than*-XP contains at least two remnants - the main verb plus at least one additional remnant.[107] I will accordingly concentrate on those internal conditions relevant for present concerns which are manifest in PCs as well as in PRCs, restricting the attention to Boundedness, Isomorphism, *Complementizer and Disjoint Reference.

Boundedness

A first indication that PCs and PRCs fall in the same group comes from the observation that Boundedness does not discriminate between these two constructions. To begin with, note that long-distance Gaps with restructuring infinitivals are well-formed, irrespective of the number of remnants:

(76) a. *More people promised to visit Millhouse (on Monday) than* ∅ ~~*promised*~~$_{[+\text{restructuring}]}$ [$_{\text{CP}[-\text{finite}]}$ ~~*to visit*~~ *Otto (on Friday)*].
b. *Some promised to visit more people (on Monday) than others* ~~*promised*~~$_{[+\text{restructuring}]}$ [$_{\text{CP}[-\text{finite}]}$ ~~*to visit*~~ ∅ *(on Friday)*].
c. *Some promised to visit Millhouse more often than others* ~~*promised*~~$_{[+\text{restructuring}]}$ [$_{\text{CP}[-\text{finite}]}$ ~~*to visit*~~ *{*~~*Millhouse*~~*/Bart}* ∅].

Furthermore, Gapping of finite CP-boundaries leads to unacceptable results with PCs as well as with PRCs:

(77) a. **More people promised that their friends will visit Millhouse (on Monday) than ∅ ~~promised~~ [$_{CP\ [+finite]}$ ~~that their friends will visit~~ Otto (on Friday)*].
b. **Some promised that their friends will visit more people (on Monday) than others ~~promised~~ [$_{CP\ [+finite]}$ ~~that their friends will visit~~ ∅ (on Friday)*].
c. **Some promised that their friends will visit Millhouse more often than others ~~promised~~ [$_{CP[+finite]}$ ~~that their friends will visit~~ {~~Millhouse~~/Bart} ∅*].

Finally, large Gaps which include non-restructuring infinitivals are strongly deviant in all types of reduced comparatives:

(78) a. *??More people refused/continued/pretended to visit Millhouse (on Monday) than ∅ ~~refused/continued/pretended~~*$_{[-restructuring]}$ [$_{CP}$ ~~*to visit*~~ *Otto (on Friday)*].
b. *??Some refused/continued/pretended to visit more people (on Monday) than others ~~refused/continued/pretended~~*$_{[-restructuring]}$ [$_{CP}$ ~~*to visit*~~ *∅ (on Friday)*].
c. *??Some refused/continued/pretended to visit Millhouse more often than others ~~refused/continued/pretended~~*$_{[-restructuring]}$ [$_{CP}$ ~~*to visit*~~ *{~~Millhouse~~/Bart} ∅*].

Crucially, all judgements w.r.t. Boundedness are constant across PCs and PRCs, attesting to their common derivational history.

Isomorphism

Second, a common treatment of PCs and PRCs is also suggested by evidence based on an inspection of Isomorphism, the condition ensuring that the antecedent and the Gap are embedded at the same depth. Due to Isomorphism, the surface string (79) has e.g. to be assigned the wide ellipsis interpretation in (79)a, and cannot be construed as in (79)b:[108]

(79) *weil mehr Leute versuchen den Film zu verstehen als ∅ das Buch*
since more people try the movie to understand than the book
'since more people try to understand the movie than the book'

a. *weil mehr Leute versuchen den Film zu verstehen als*
since more people try the movie to understand than
∅ ~~*versuchen*~~ *das Buch* ~~*zu verstehen*~~
try the book to understand
'since more people try to understand the movie than try to understand the book'

b. **weil mehr Leute versuchen den Film zu verstehen als*
since more people try the movie to understand than
∅ *das Buch* ~~*verstehen*~~
the book understand
'since more people try to understand the movie than understand the book'

An appropriate context for testing the parallel behavior of PCs and PRCs w.r.t. Isomorphism is provided by the double object construction in (80):

(80) *weil mehr Leute versuchen der Maria den Film zu empfehlen als*
since more people try the M. the movie to recommend than
∅ *dem Peter das Buch empfehlen*
the P. the book recommend
'since more people try to recommend the movie to Mary than recommend the book to Peter'

Applying Gapping to the string in (80) either results in a PCR with two remnants, as in (81)a, or leads to the formation of a PC, as in (81)b and (81)c:

(81) a. *weil mehr Leute versuchen der Maria den Film zu empfehlen als*
since more people try the M. the movie to recommend than
∅ ~~*versuchen*~~ *dem Peter das Buch* ~~*zu empfehlen*~~
try the P. the book recommend
'since more people try to recommend the movie to Mary than the book to Peter'

b. *weil mehr Leute versuchen der Maria den Film zu empfehlen als*
since more people try the M. the movie to recommend than
∅ ~~*versuchen*~~ *dem Peter* ~~*den Film zu empfehlen*~~
try the P. the movie to recommend
'since more people try to recommend the movie to Mary than to Peter'

c. *weil mehr Leute versuchen der Maria den Film zu empfehlen als*
since more people try the M. the movie to recommend than
∅ ~~*versuchen der Maria*~~ *das Buch* ~~*zu empfehlen*~~
try the M. *the book to recommend*
'since more people try to recommend the movie to Mary than the book'

Isomorphism ensures now that all of the reduced strings in (81) obligatorily have to be interpreted with wide ellipsis, as indicated. That is, the Gap has to include the superordinate predicate *versuchen*/'try'. The alternative parses in (82), which construe the *than*-XP with a narrow ellipsis site, fail to observe Isomorphism and are intuitively inaccessible:

(82) a. **weil mehr Leute versuchen der Maria den Film zu empfehlen als*
since more people try the M. the movie to recommend than
⌓ dem Peter das Buch ~~empfehlen~~
the P the book recommend
'since more people try to recommend the movie to Mary than recommend the book to Peter'

b. **weil mehr Leute versuchen der Maria den Film zu empfehlen als*
since more people try to Mary the movie to recommend than
⌓ dem Peter ~~den Film zu empfehlen~~
the Peter the movie to recommend
'since more people try to recommend the movie to Mary than to Peter'

c. **weil mehr Leute versuchen der Maria den Film zu empfehlen als*
since more people try to Mary the movie to recommend than
⌓ ~~der Maria~~ das Buch ~~empfehlen~~
the Mary the book recommend
'since more people try to recommend the movie to Mary than recommend the book to Mary'

Crucially for present purposes, PRCs ((81)a and (82)a) and PCs ((81)b/c and (82)b/c) behave alike in that their interpretation is governed by *Isomorphism.* In all instances, the Gap and its antecedent have to match structurally, as predicted by the PC/CR-Hypothesis.

**Complementizer*

Third, the constraint *Complementizer captures the descriptive generalization that in (southern dialects of) German, lexical complementizers block Gapping in coordinate structures as well as in comparatives:

(83) a. *weil sie meinte daß viele Leute ein Buch kauften und*
since she claimed that many people a book bought and
(daß) einige eine Zeitung lasen
that some a newspaper read

b. *weil sie meinte daß viele Leute ein Buch kauften und*
since she claimed that many people a book bought and
*(*daß) einige eine Zeitung ~~lasen~~*
that some a newspaper read
'since she claimed that many people bought a book and that some read a newspaper'

(84) a. *weil mehr Leute ein Buch kauften als (daß) ∅ eine Zeitung lasen*
since more people a book bought than that a newspaper read

b. *weil mehr Leute ein Buch kauften als (*daß) ∅ eine Zeitung ~~lasen~~*
since more people a book bought than that a newspaper read
'since more people bought a book than read a newspaper'

The PCs and PCRs to be discussed will be contrasted with the control in (85), which at the same times serves as the target for reduction:

(85) *weil mehr Leute dem Fritz ein Buch zeigten als*
since more people the F. a book showed than
(daß) ∅ der Maria ein Bild schenkten
that the M. a picture gave
'since more people showed a book to Fritz than gave a picture to Mary'

Gapping of (85) now either maps the input to the PRC in (86)a, or to the representations in (86)b and (86)c, which manifest instances of PCs. What is of specific significance is the fact that variation in the size of the Gap does not alter acceptability judgements. This indicates that the *Complementizer constraint does not discriminate between PC vs. PRCs.

(86) a. *weil mehr Leute dem Fritz ein Buch zeigten als*
since more people the F. a book showed than
*(*daß) der Maria ein Bild ~~schenkten~~*
that the M. a picture gave

b. *weil mehr Leute dem Fritz ein Buch zeigten als*
since more people the F. a book showed than
*(*daß) der Maria ~~ein Buch schenkten~~*
that the M. a book gave

c. *weil mehr Leute dem Fritz ein Buch zeigten als*
since more people the F. a book showed than
*(*daß) ~~dem Frizt~~ ein Bild ~~schenkten~~*
that the F. a picture gave

Such a result is once again consistent with the prognoses of the PC/CR-Hypothesis, but not predicted by competing analyses.

Disjoint Reference

Finally, Disjoint Reference provides a further piece of evidence from the internal conditions that PCs and PRCs lend themselves to a common treatment. In both construction types, Gapping triggers a Principle B-like effect, as can be seen from the congruent behavior of (88)a and (88)b:

(87) *Es ist möglich daß* ***Otto***$_i$ *mehr Leute am Montag eingeladen hat als*
it is possible that O. more people on Monday invided has than
er$_i$ ∅ *am Freitag empfangen hat.*
he on Friday welcomed has
'Otto possibly invited more people on Monday than he welcomed on Friday'

(88) a. **Es ist möglich daß* ***Otto***$_i$ *mehr Leute am Montag eingeladen hat als*
it is possible that O. more people on Monday invided has than
er$_i$ ∅ *am Freitag* ~~*eingeladen hat.*~~
he on Friday invided has

b. **Es ist möglich daß* ***Otto***$_i$ *mehr Leute am Montag eingeladen hat als*
it is possible that O. more people on Monday invided has than
er$_i$ ∅ ~~*eingeladen hat.*~~
he invided has
'Otto possibly invited more people on Monday than he welcomed (on Friday)'

To summarize, the prediction inherent in the PC/CR-Hypothesis that PCs and PRCs form a group to the exclusion of non-reduced comparatives is corroborated by all internal conditions which are operative in these environments. Next, I will consider two further pieces of evidence in support of the PC/CR-Hypothesis. Both include a new set of data and confirm the claim that the internal conditions for Gapping in conjunctions also extend to PCs.

3.3.2. Hankamer's Puzzle

Hankamer (1971: 376) notes an interesting difference between comparative complements which are truncated by VP-ellipsis and comparatives reduced by CE. As illustrated by the paradigms (89) and (90), CE may - in contrast to VP-ellipsis - not apply to clauses embedded inside the *than*-XP:

(89) a. *John is smarter than I think Bill is.*
b. **John is smarter than I think Bill.*

(90) a. *John ate more bread than I claimed Mary did.*
b. **John ate more bread than I claimed Mary.*

Hankamer accounts for this puzzling observation by an explicit stipulation on the context of application of so called *Wipe-out Rules*, which include CE and Gapping (Hankamer 1973; see also Pinkham 1982, who adopts Hankamer's solution). Thus, CE has to be explicitly excluded from operating in embedded contexts, but the fact that both Gapping and CE are subject to the same restriction remains a mere coincidence.

Contrary to the CE analysis, the CR-Hypothesis straightforwardly handles the effects of Hankamer's puzzle. Recall that from an observational point of view, Gapping may not reach into a finite clause (Locality), and that the Gap has to be embedded at the same depth as its antecedent (Isomorphism). Embedded 'phrasal' comparatives are now ungrammatical for the same reason that their coordinate correlates are, they violate Locality and Isomorphism (see b-examples):

(91) a. *[$_{CP}$ *John is smarter*] *than* [$_{CP}$ *I think* [$_{CP}$ *Bill* ~~*is*~~ ∅]]
b. *[$_{CP}$ *John is smart*] *and* [$_{CP}$ *I think* [$_{CP}$ *Bill* ~~*is smart*~~]].

(92) a. *[$_{CP}$ *John ate more bread*] *than* [$_{CP}$ *I claimed* [$_{CP}$ *Mary* ~~*ate*~~ ∅]].
b. *[$_{CP}$ *John ate bread*] *and* [$_{CP}$ *I claimed* [$_{CP}$ *Mary* ~~*ate bread*~~]].

An alternative strategy that might conceivably be employed in the analysis of (89)b and (90)b consists in exploiting independent principles which are potentially implicated in comparative formation. That is, one might ask at this point whether the ill-formedness of (89)b and (90)b is indeed due to an illicit application of Gapping - as implied by the CR-Hypothesis -, or rather arises as the result of a violation of a further, independent constraint on comparatives (yet to be specified). I will briefly comment on this question in order to defend the CR-Hypothesis against potential objections from this direction.

According to (a version of) such an alternative account, the ill-formedness of (89)b and (90)b could be linked to a restriction on the maximal distance between the remnant and (the surface or scope position of) the comparative XP.[109] As a first approximation, suppose that the maximal distance between the remnant and the comparative NP/AP is restricted by the same principles that are responsible for scope assignment. Then, the deviance of (89)b and (90)b can be related to the fact that the finite complement domains of verbs

such as *think* and *claim* constitute scope islands, which block movement of *Bill* and *Mary* to the (scope position of) the comparative XP:

(89) b. **John is **smarter** than I think* [$_{CP}$ *Bill ~~is~~ ∅*].

(90) b. **John ate **more bread** than I claimed* [$_{CP}$ *Mary ~~ate~~ ∅*].

Even though this approach proves successful in handling the simple cases above, slightly more complex examples demonstrate that actually defining these locality conditions in a consistent way turns out to be a daunting task.

First, the movement account makes the wrong predictions for PCs embedded in ECM-contexts. It is known that ECM-subjects may e.g. take scope over subjects in the immediately dominating clause (May 1985, among others), indicating that the complement domain of ECM-verbs is transparent:

(93) *Someone expected everyone to like Sam.* *(∃ > ∀/ ∀> ∃)*

Now, if the maximal distance between remnant and comparative were indeed limited by the same principles which define quantifier scope, one would be led to expect that structures in which the remnant functions as an ECM-subject should radically improve. This prediction is not borne out, though, as shown by the deviance of (94):

(94) a. **More people came than ∅ expected Mary ~~to come~~.*
b. **Peter called more often than I expected Mary ∅ ~~to call~~.*

Thus, the alternative analysis faces the problem that the depth of embedding of the remnant is subject to locality principles which are not attested in other domains of covert XP-movement.

In contrast to the movement analysis, the CR-Hypothesis draws the right distinctions also for the ECM cases in (94). As can be seen from the underlying parses, Gapping in (94) has illicitly applied to a non-isomorphic context, in which the Gap is more deeply embedded than its antecedent. Moreover, coordinate structures are subject to the same kind of restriction:

(95) a. **Some people came and others expected Mary ~~to come~~.*
b. **Peter called often and I expected Mary ~~to call~~ sometimes.*

Finally, once Isomorphism is observed, as in the sentences below, the resulting comparatives and their coordinate correlates become perfectly well-formed again:

(96) a. *More people expected Bill to come than* ⌓ ~~*expected*~~ *Mary* ~~*to come*~~.
b. *Some expected Peter to call more often than others* ~~*expected*~~ *Mary* ~~*to call*~~ ⌓.

(97) a. *Some people expected Bill to come and others* ~~*expected*~~ *Mary* ~~*to come*~~.
b. *(?)Some people expected Peter to call occasionally and others* ~~*expected*~~ *Mary* ~~*to call*~~ *every day.*

From the contrasts (94) vs. (96), it is now also possible to derive a second argument against the movement analysis sketched above. Observe that in the ill-formed examples in (94), the remnants are actually structurally closer to the comparative NP than they are in the well-formed cases in (96). The movement account should therefore favor (94) over (96) - or at least treat them on a par, depending on specific assumptions. The CR-approach on the other side correctly captures the insight that the grammaticality of the output string is a function of the structural correspondence between the matrix clause and the *than*-XP (Isomorphism).

To summarize, the CR-Hypothesis successfully handles data related to Hankamer's Puzzle. An analysis in terms of CE on the other side requires that CE be defined in such a way that it duplicates the properties of Gapping. Independent justification for CE is missing, though. Furthermore, the discussion indicated that the unavailability of embedded PCs should be linked to an illicit application of ellipsis, and not to a violation of some independent principle implicated in the derivation of embedded phrasal comparatives.

3.3.3. The distribution of prepositions

The CR-Hypothesis also sheds light on a second puzzle, which surfaces in environments where the CD-site is construed as a prepositional complement. The first relevant paradigm is provided under (98). Sentence (98)a indicates that AP-Raising (i.e. CD) behaves like other left-ward movement processes in that it may strand a preposition:

(98) a. *Sam argued with more people than Mary talked with* ⌓_{CD}.
(⌓_{CD} = [$_{NP}$ d-many people])
b. **Sam argued with more people than Mary talked* ⌓_{CD}.
(⌓_{CD} = [$_{PP}$ with d-many people])
c. *Sam argued with more people than Mary* ~~*argued*~~ ⌓_{CD}.
(⌓_{CD} = [$_{PP}$ with d-many people])

The ill-formedness of (98)b shows that AP-Raising seems unable to pied-pipe prepositions along, and that the CD-site therefore cannot consist of a PP (*with d-many people*). That is, the CD-site may comprise of an AP, or an AP plus an NP, but it may not extend further to the left than the left edge of AP. Surprisingly, however, the prohibition on CD of PPs all of a sudden seems to be suspended in PCs. In the PC (98)c, the CD-site obviously *can* be construed as a PP. Thus, the question arises of how to reconcile the paradigm under (98) with a coherent set of assumptions concerning the size of the CD-site. Let me turn to a brief digression on pied-piping first, returning from there to a solution to the conflict mentioned above.

To begin with, note that the unavailability of pied-piping in comparatives is not an isolated phenomenon. Essentially the same restriction can be found in free relatives, which are also subject to an anti-pied-piping condition (Donati 1998):

(99) a. *Sam liked who Mary is talking with.*
b. **Sam liked with who Mary is talking.*

This can be taken as an indication that (98)b does not manifest an idiosyncrasy of comparatives.

Observe now that the anti-pied piping restriction for comparatives can be derived on plausible assumptions from the AP-Raising Hypothesis of chapter 2. According to the latter, the complex [AP NP] originates in SpecDegP. Moreover, AP-Raising is driven by the need to eliminate the [+comparative] feature on the head of the AP:

(100) $[_{PP}$ with $[_{DP}$ $[_{DegP}$ $[_{AP}$ many$_{[+comparative]}$ people] Deg°]]

Crucially, pied-piping moves along heads with their specifiers (*whose book*) and selecting heads with their complements (*with whom*). However, in (100), the comparative AP serves as the specifier of a category which is the complement of the complement of P°.[110] Similar configurations in which a *wh*-feature pied-pipes a PP across a comparable structural distance yield strongly ill-formed results:

(101) **She asked* $[_{PP}$ *with* $[_{DP}$ *a friend of* $[_{DP}$ *whose*$_{[+wh]}$ *father*]]] *he had talked.*

It can be inferred that pied-piping in (100) is equally excluded, accounting for the inability of AP-Raising to pied-pipe prepositions, as in (98)b.

Given that the considerations above are correct, AP-Raising should never be able to pied-pipe a higher preposition along. This entails that the CD-site in (98)c - repeated below - consists of a bare NP:

(98) c. *Sam argued with more people than Mary ~~talked~~ ⌓.*
(⌓ = [$_{NP}$ d-many people])

But then, it remains mysterious why example (98)c, in which the missing constituent appears to comprise a preposition, is nonetheless acceptable.

The solution to this conflict represents itself in form of the CR-Hypothesis on the assumption that in (98)c, the preposition has not been removed by CD, but by Gapping. That is, suppose that in (98)c, Gapping targets the verb together with the PP, which in turn contains the CD-site. The alternative parse looks now as follows:[111]

(102) *Sam argued with more people than Mary ~~talked~~* [$_{PP}$ ~~*with*~~ ⌓].

Moreover, since Gapping may not affect the PP without also eliding the verb, (98)b is effectively excluded.

On the present conception, comparatives differ from coordinate structures only in that comparatives involve the additional process of CD, which in NP-comparatives removes the complex [AP NP]. The analysis now also accounts for an interesting surface disparity between these two constructions. Consider (103), which provides the coordinate correlates for the examples under (98), and compare in particular (98)c with (103)c:

(103) a. *Sam argued with some people and Mary talked with others.*
b. **Sam argued with some people and Mary talked others.*
c. **Sam argued with some people and Mary others.*

(98)c and (103)c appear to be structurally identical in that the verb and the preposition have been elided in both examples, yet contrast in well-formedness.

Again, the CR-Hypothesis provides a simple answer to this surprising asymmetry. In (98)c, Gapping elides the verb together with the PP, resulting in a well-formed output string with a single remnant. In order to arrive at the surface representation (103)c, however, Gapping would have to operate on the verb and the prepositional head to the exclusion of the NP, thereby illicitly targeting a 'non-major' constituent (Hankamer 1971; Neijt 1979):

(104) **Sam argued with some people and Mary ~~talked~~* [$_{PP}$ ~~*with*~~ [$_{NP}$ *others*]].

Crucially, (98)c differs from (103)c in that in (98)c, the elided string is removed in two separate steps by (i) CD and (ii) Gapping of the string [V˚^P˚^$\triangle_{CD}$], resulting in the appearance of V˚^P˚-deletion.

Summarizing, the CR-Hypothesis directly accounts for the distribution of prepositions inside the *than*-XP, as well as a surface disparity between comparatives and conjunction. In both empirical domains, Gapping targets verbs, verbs together with PP, but not verbs and the head of a PP in isolation. These results can be taken as additional support for the claim that the internal conditions which define admissible contexts for Gapping in coordinate structures and comparatives are identical.

3.3.4. Résumé and outlook

The argumentation of section 3.3.3 both expanded the range of data and strengthened the empirical motivation for the assumption that PCs are a special form of PRCs which derive by the same principles. First, it was shown that the internal conditions treat PCs and PRCs alike. Second, the present approach straightforwardly accounted for a disparity between Gapped comparatives and comparatives subjected to VP-ellipsis (Hankamer's Puzzle). Finally, the CR-Hypothesis proved capable of handling missing prepositions in PCs and a surface difference between comparatives and coordinate structures.

The next section addresses two important new issues: First, it turns to an explication of what will be called the *external conditions* on Gapping. Second, the scope of the discussion will be extended to include an additional CR-processes apart from Gapping: Right Node Raising.

3.4. Identifying the external conditions

In contrast to the grammaticality status of clausal comparatives, the well-formedness of PCs (and PRCs) is also dependent upon the relative position of the *than*-XP in the matrix sentence. The present subsection demonstrates that these restrictions on the positional distribution fall out from the external conditions, which govern the structural relations between the matrix clause and the *than*-XP. Section 3.4 starts with a discussion of a simple paradigm from English, and proceeds then to data from German subject comparatives,[112] which display a wider variety than their English counterparts. The theoretical implications and further empirical ramifications of this finding will subsequently be the topic of a section of its own (see 3.5).

In English, Gapping may operate on a comparative only if the *than*-XP resides in clause-final location, as witnessed by the paradigm of subject comparatives in (105):

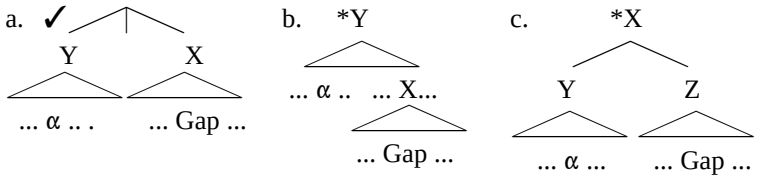
(105) a. *More people bought newspapers* [*than bought books*].
b. *More people bought newspaper* [*than ~~bought~~ books*].
c. *More people* [*than bought books*] *bought newspapers.*
d. **More people* [*than bought books*] *~~bought~~ newspapers.*

The CR-Hypothesis is able to reduce the contrasts between (105)a-c on the one side and (105)d on the other side to the observation that Gapping is subject to external conditions on CR. These external conditions define the environments in which two clauses X and Y are well-formed as coordinate structures, and minimally have to include a principle that ensures satisfaction of the constraint *Embedding of the coordinates (see also Goodall 1987; Moltmann 1992a: 338):

(106) *EMBEDDING:
A Gap in a clause X can find an antecedent α only if
(i) there is some clause Y containing α that does not embed X, and
(ii) X does not embed Y.

(106) requires that for two expressions to observe *Embedding, none may contain parts of the other, and should be seen merely as a descriptive generalization which captures one essential property of coordinated phrase markers. According to (106), the tree under (107)a below qualifies as a licit coordinate structure, while the ones under (107)b and (107)c fail to do so:

(107)



As will become obvious in course of the discussion, (106) suffices to separate the structures which can be reduced by CR from those which resist to serve as the target of the relevant group of deletion operations.

With this in the background, reconsider the paradigm in (105). Given that Gapping applies to *embedded structures only, and given that ellipsis in the comparatives ((105)b and (105)d) is the result of Gapping, the *in-situ* structure (105)d can be straightforwardly excluded due to its inability to satisfy *Em-

bedding: in (105)d, one coordinate (the *than*-XP) is contained inside the other (the matrix clause). Thus, the CR-Hypothesis offers a simple explanation for the ill-formedness of (105)d.

Paradigms such as in (105) have on the other side not received any attention from proponents of CE-analyses, for the reason that CE is an operation which by definition exclusively elides strings inside the *than*-XP. Consequently, CE-theories do not generate any predictions for the contrast (105)b vs. (105)d. Similarly, (105) falls outside the empirical domain of the direct analysis, which does not take a specific position on the derivation of (105)d. As the discussion proceeds, we will however encounter structures that make it possible to discriminate the current analysis from alternative approaches. In pursuing this goal, I will turn to a discussion of a wider range of data from German subject comparatives next, which at first sight pose a challenge for *Embedding and the CR-Hypothesis. Once these difficulties have been removed, it will become possible to systematically evaluate the three competing analyses (see section 3.5).

But consider subject PCs in German first. German apparently behaves more liberally than English (cf. (105)d) in that it also tolerates reduction if the *than*-XP resides in a non-peripheral location, as in (108)b, resulting in what looks like an intraposed PCs:

(108) a. *weil mehr Leute eine Zeitung gekauft haben* ***als ein Buch***
since more people a newspaper bought have than a book
b. *weil mehr Leute eine Zeitung* ***als ein Buch*** *gekauft haben*
since more people a newspaper than a book bought have
'since more people bought a newspaper than a book'

(109) a. *weil mehr Leute eine Zeitung gekauft haben* [*als ein Buch* ~~*gekauft haben*~~]
since more people a newspaper bought have than a book bought have
b. *weil mehr Leute eine Zeitung* [*als ein Buch gekauft haben*] ~~*gekauft haben*~~
since more people a newspaper than a book bought have bought have
'since more people bought a newspaper than a book'

(109) provides the underlying parses, which reflect the premise that PCs derive from Gapping, an ingredient of the analysis I will maintain for the moment for expository reasons. The derivation (109)a is unspectacular from this perspective. In (109)a, the *than*-XP is clause-final, and the reduced structure can therefore - as in English - be interpreted as an instance of Gapping. The intraposed PC (109)b, in which matrix and comparative clause fail to observe *Embedding, proves more problematic, though. Keeping the assumption that *Embedding represents a non-violable condition on Gapping which

also holds for Gapping in comparatives entails either of the following two consequence for German: (i) The CR-Hypothesis has to be abandoned for intraposed PC such as (108)b, thereby effectively returning to a CE-account or a direct analysis of PCs. (ii) The surface string (108)b has to be assigned an alternative parse in terms of CR which does not involve Gapping.

In what follows, I will demonstrate that the premise adopted above - i.e. *Embedding restricts Gapping in comparatives - receives strong empirical support, and should therefore be maintained. Then, I will turn to evidence for the view that (108)b indeed lends itself to an adequate and restricted alternative analysis in accordance with the CR-Hypothesis.

*3.4.1. Gapping and *Embedding*

A first indication that Gapping in comparatives is subject to *Embedding comes from the observation that German behaves like English in that it lacks Gapped *in-situ* comparatives:

(110) a. *weil mehr Leute* [*als ein Buch gekauft haben*] *eine Zeitung gekauft haben*
since more people than a book bought have a newspaper bought have
b. **weil mehr Leute* [*als ein Buch gekauft haben*] *eine Zeitung* ~~*gekauft haben*~~
since more people than a book bought have a newspaper bought have
'since more people bought a newspaper than a book'

(110)b can be excluded by the assumption that the *Embedding constraint holds, but remains unaccounted for otherwise.

Second, an inspection of ditransitive examples leads to the same conclusion. The double object constructions in (111) differ from (108)b essentially in that the matrix clause contains an additional NP, which aids to locate the exact position of the *than*-XP.

(111) a. *weil mehr Leute dem Fritz ein Buch gezeigt haben*
since more people the Fritz a book shown have
[*als der Maria eine Zeitung* ~~*gezeigt haben*~~]
than the Mary a newspaper shown have
b. **weil mehr Leute dem Fritz* [*als der Maria eine Zeitung gezeigt haben*]
since more people the F. than the Mary a newspaper shown have
ein Buch ~~*gezeigt haben*~~
a book shown have
'since more people showed Fritz a book than showed Mary a newspaper'

If the *than*-XP resides in extraposed location, an in (111)a, Gapping may apply freely. Moreover, in (111)b, a non-shared string (*ein Buch*) follows the *than*-XP, ensuring that the *than*-XP is actually contained inside the matrix clause. The observation that Gapping leads to ill-formedness in these environments, which unambiguously have to be parsed as intraposition structures, corroborates the assumption that Gapping is dependent on *Embedding. The examples under (112) repeat the same point for minimal variants of (108)b which include adverbials, and equally attest to the fact that intraposed *than*-XPs resist Gapping:

(112) a. *weil mehr Leute eine Zeitung gestern gekauft haben*
since more people a newspaper yesterday bought have
[*als ein Buch vorgestern* ~~*gekauft haben*~~]
than a book the day before bought have

b. **weil mehr Leute eine Zeitung* [*als ein Buch vorgestern gekauft haben*]
since more people a newspaper than a book the day before bought have
gestern ~~*gekauft haben*~~
yesterday bought have
'since more people bought a newspaper yesterday than bought a book the day before'

A further, third, effect of *Embedding in comparatives is manifest in contexts of Subgapping in V2 clauses. Recall from section 2.2 that in conjoined clauses, Subgapping - or, to be precise, ATB V2 movement - may delete the finite auxiliary, stranding the participle (cf. (65)):

(113) [*Viele Leute haben eine Zeitung gekauft*] *und*
many people have a newspaper bought and
[*einige ein Buch gelesen* ~~*haben*~~].
some a book read have
'Many people bought a newspaper and some read a book'

The same process was shown to be productive in comparatives, in that subject comparatives such as (114) were also seen to license Subgapping/ATB V2:

(114) *Gestern haben mehr Leute eine Zeitung gekauft* [*als ein Buch gelesen* ~~*haben*~~].
yesterday have more people a newspaper bought than a book read have
'Yesterday, more people bought a newspaper than read a book'

This holds at least as long as the *than*-XP is extraposed. If the *than*-XP is on the other side construed in intraposed location, as in (115), the finite verb can no longer be elided:

(115) **Gestern haben mehr Leute eine Zeitung* [*als ein Buch gelesen ~~haben~~*] *gekauft.*
yesterday, have more people a newspaper than a book read have bought

The contrast between intra- and extraposed comparatives falls out directly from the assumption that Subgapping/ATB V2 is restricted to (derived) coordinate structures (see (65) and chapter 4), and therefore subject to *Embedding. If *Embedding is not taken to confine the contexts of Subgapping/ATB V2, though, it remains mysterious why ellipsis is blocked in (115).[113]

Finally, apart from the three arguments in favor of *Embedding listed above, there is also *prima facie* evidence against an intraposition analysis of (108)b. More specifically, the PC (108)b lacks a well-formed underlying clausal source, and could therefore not have been derived by CR of an intraposed *than*-XP in the first place:[114]

(116) **weil mehr Leute eine Zeitung* [*als ein Buch gelesen haben*] *gekauft haben*
since more people a newspaper than a book read have bought have
'since more people bought a newspaper than read a book'

Note that *than*-XPs are by no means exotic in this respect. Their behavior is reminiscent of that of relative clauses, which equally resist stranding in clause internal position:

(117) a. *weil der Mann* [*der das Buch gekauft hat*] *die Maria besucht hat*
since the man who the book bought has the Maria visited has
b. *weil der Mann die Maria besucht hat* [*der das Buch gekauft hat*]
since the man the Mary visited has who the book bought has
c. **weil der Mann die Maria* [*der das Buch gekauft hat*] *besucht hat*
since the man the Mary who the book bought has visited has
'since the man who bought the book visited Mary'

Thus, any attempt to derive the PC (108)b from an intraposed clausal source is unlikely to succeed.

To summarize, the data attests to the fact that *Embedding represents a necessary condition on Gapping in comparatives, and that apparently intraposed PCs cannot be related to an intraposed source. Crucially for present purposes, it follows now that (108)b cannot be treated as the result of Gapping, as suggested by the parse in (109)b:

(109) b. *weil mehr Leute eine Zeitung* [*als ein Buch gekauft haben*] ~~*gekauft haben*~~
since more people a newspaper than a book bought have bought have
'since more people bought a newspaper than a book'

However, the strong CR-Hypothesis leads one to expect that the parallelism between coordination and comparatives is not restricted to Gapping, but also extends to other CR operations, such as Right Node Raising. This makes available two additional alternative derivations for (108)b (apart from (109)b):

(108) b. *weil mehr Leute eine Zeitung* ***als ein Buch*** *gekauft haben*
since more people a newspaper than a book bought have
'since more people bought a newspaper than a book'

(118) a. *weil mehr Leute eine Zeitung* ~~*gekauft haben*~~ [*als ein Buch gekauft haben*]
since more people a newspaper bought have than a book bought have
b. *weil mehr Leute eine Zeitung* [*als ein Buch* ~~*gekauft haben*~~] *gekauft haben*
since more people a newspaper than a book bought have bought have

The factorization in (118)a relates the surface string (108)b to an underlying clausal source by letting RNR target the matrix clause and an extraposed *than*-XP. In (118)b, RNR removes the verbal cluster from inside an intraposed *than*-XP.

A first indication that comparatives in general - and (108)a in particular - lend themselves to an analysis in terms of RNR is supplied by the observation that (118)a can be paired with a well-formed correlating coordinate structure:

(119) *weil* [*viele Leute eine Zeitung* ~~*gekauft haben*~~] *und*
since many people a newspaper bought have and
[*einige ein Buch gekauft haben*]
some a book bought have
'since many people bought a newspaper and some a book'

The parallelism between comparatives and conjunctions also extends to instances of 'Sub-RNR', an operation which elides only parts of the verbal cluster in a non-finite conjunct. Thus, backwards deletion in comparatives also shares the well-known property of RNR of being insensitive to constituency:

(120) *weil mehr Leute eine Zeitung gekauft* ~~*haben*~~ [*als ein Buch gelesen haben*]
since more people a newspaper bought have than a book read have
'since more people bought a newspaper than read a book'

(121) *weil* [*viele Leute eine Zeitung gekauft* ~~*haben*~~] *und*
since many people a newspaper bought have and
[*einige ein Buch gelesen haben*]
some a book read have
'since many people bought a newspaper and some read a book'

Observe at this point that only (118)a obeys *Embedding. One might therefore object that (118)b could not possibly represent a licit parse for (108)b. This conclusion is premature, though, since the external conditions on RNR are less severe than the ones which govern Gapping. RNR is - in a restricted group of contexts - exempted from *Embedding. I will present evidence to this effect in the following subsection, proceeding from there to arguments that lead to a decision between the two parses (118)a and (118)b (section 3.4.3). Finally, the RNR-analysis will be contrasted with competing accounts.

*3.4.2. RNR and *Embedding*

Further confirmation for the uniform behavior of coordinate structures and comparatives comes from a selective class of an unorthodox type of RNR, discussed by Hudson (1976). Hudson observes that (for poorly understood reasons) RNR may also apply to structures in which the elliptical clause serves as a relative clause modifier for the subject of the antecedent clause. In such environments, RNR is apparently exempt from *Embedding. (122) illustrates this phenomenon for German, where RNR affects the verb-cluster in a verb-final clause (for discussion see Phillips 1996: 55f; Wilder 1995: 28):

(122) *?weil viele Leute* [*die ein Buch ~~gekauft haben~~*] *auch eine Zeitung gekauft haben*
since many people who a book bought have also a newspaper bought have
'since many people who bought a book also bought a newspaper'

Interestingly, similar examples can also be found for comparatives. In (123), RNR operates on a comparative complement *in-situ.* The grammaticality status of the output string matches that of (122):

(123) *?weil mehr Leute* [*als ein Buch ~~gekauft haben~~*] *eine Zeitung gekauft haben*
since more people than a book bought have a newspaper bought have
'since more people bought a newspaper than a book'

Thus, the effects of *Embedding are not only neutralized in Hudson's contexts, but also in *in-situ* subject comparatives. As expected, these selective violations of *Embedding are also attested with Sub-RNR:

(124) *?weil viele Leute* [*die ein Buch gekauft ~~haben~~*] *eine Zeitung gelesen haben*
since many people who a book bought have a newspaper read have
'since many people who bought a book read a newspaper'

(125) *?weil mehr Leute* [*als ein Buch gekauft ~~haben~~*] *eine Zeitung gelesen haben*
since more people than a book bought have a newspaper read have
'since more people than read newspaper read a book'

However, RNR crucially differs from Gapping in that Gapping is precluded from applying in the environments identified by Hudson. This observation holds for comparatives as well as for relative clauses:

(126) **weil viele Leute* [*die ein Buch gekauft haben*] *auch eine Zeitung ~~gekauft haben~~*
since many people who a book bought have also a newspaper bought have

(127) **weil mehr Leute* [*als ein Buch gekauft haben*] *eine Zeitung ~~gekauft haben~~*
since more people than a book bought have a newspaper bought have

Naturally, this prohibition on Gapping in Hudson's contexts follows from the strict dependence of Gapping on *Embedding.

To recapitulate, Gapping and RNR vary in their sensitivity to the external conditions. *Embedding can be violated by RNR, but represents an inviolable constraint for Gapping. Building on these findings, the next section continues the search for the underlying source of (108)b.

3.4.3. Intraposition and extraposition

It finally becomes possible to revisit (108)b, addressing the question of which representation the string should eventually be assigned: a parse in terms of RNR and extraposition which observes *Embedding, as in (118)a, or a structure which violates *Embedding, as in (118)b:

(118) a. *weil mehr Leute eine Zeitung ~~gekauft haben~~* [*als ein Buch gekauft haben*]
since more people a newspaper bought have than a book bought have
b. *weil mehr Leute eine Zeitung* [*als ein Buch ~~gekauft haben~~*] *gekauft haben*
since more people a newspaper than a book bought have bought have
'since more people bought a newspaper than a book'

An initial consideration that comes to bear on that question has already been introduced in the discussion. An intraposition structure as in (118)b fails to account for the deviance of the non-reduced source ((116)), and is therefore incompatible with the CR-Hypothesis:

(116) **weil mehr Leute eine Zeitung* [*als ein Buch gelesen haben*] *gekauft haben*
since more people a newspaper than a book read have bought have
'since more people bought a newspaper than read a book'

The extraposition analysis on the other hand does not face any problems of this sort given the well-formedness of the non-truncated underlying source for (118)a:

(128) *weil mehr Leute eine Zeitung gekauft haben* [*als ein Buch gelesen haben*]
since more people a newspaper bought have than a book read have

In addition, there are also two theory neutral arguments that point to the correctness of the extraposition analysis.[115] First, the intraposition account has the undesirable consequence that it makes the availability of RNR appear to be dependent on the size of the elided string. It therefore conflicts with the standard view according to which variation in the size of RNR is only of epiphenomenal relevance (i.e. Sub-RNR and RNR are the same process).

Generally, the contexts that admit RNR also support Sub-RNR of auxiliaries. For instance, Sub-RNR yields well-formed results if the *than*-XP resides in right-peripheral location, and also represents a (marginally) licit option with *in-situ than*-XPs (Hudson's contexts):

(129) *weil mehr Leute eine Zeitung gekauft ~~haben~~* [*als ein Buch gelesen haben*]
since more people a newspaper bought have than a book read have
'since more people bought a newspaper than read a book'

(130) *?weil mehr Leute* [*als ein Buch gelesen ~~haben~~*] *eine Zeitung gekauft haben*
since more people than a book read have a newspaper bought have
'since more people bought a newspaper than read a book'

The latter finding was taken as an indication that Sub-RNR - just like RNR - is not restricted to *embedded positions. One might therefore expect that whatever principle permits Sub-RNR in structures such as (130), should also license Sub-RNR in intraposed location. In other words, an analysis which provides intraposed *than*-XPs, and at the same time allows RNR to target these intraposed *than*-XPs predicts on the null hypothesis that they may also serve as the target of Sub-RNR. As it turns out, however, Sub-RNR of intraposed comparatives is not attested:

(131) **weil mehr Leute eine Zeitung* [*als ein Buch gelesen ~~haben~~*] *gekauft haben*
since more people a newspaper than a book read have bought have
'since more people bought a newspaper than read a book'

The ill-formedness of (131) represents strong evidence against the intraposition analysis, which would be forced to adopt a (theoretically unjustified) nonuniform treatment for main verb RNR and Sub-RNR in order account for the absence of Sub-RNR in contexts with intraposed *than*-XPs.

Finally, a third argument against intraposition can be extracted from possible word order patterns of *than*-XPs and adverbials. (The test to be employed is essentially the same one which has already helped in deciding against an intraposition analysis of apparently Gapped comparatives.) If *than*-XPs could indeed be stranded in intraposed location, with subsequent application of RNR, one should be able to find adverbials intervening between the right edge of the *than*-XP and the matrix verb, as in (132)a. If on the other hand the extraposition analysis is on the right track (see (132)b), adverbials should always have to precede the *than*-XP. Once again, only the extraposition analysis makes the correct prediction:

(132) a. **weil mehr Leute eine Zeitung* [*als ein Buch vorgestern* ~~*gekauft haben*~~]
since more people a newspaper than a book the day before bough have
gestern gekauft haben
yesterday bought have

b. *weil mehr Leute eine Zeitung gestern* ~~*gekauft haben*~~
since more people a newspaper yesterday bought have
[*als ein Buch vorgestern gekauft haben*]
than a book the day before bought have
'since more people bought a newspaper yesterday than bought a book the day before yesterday'

To conclude, PCs in which the *than*-XP appears to reside internal to the matrix clause, as e.g. (108)b, are best analyzed as the product of RNR and extraposition, as in (118)a:

(108) b. *weil mehr Leute eine Zeitung als ein Buch gekauft haben*
since more people a newspaper than a book bought have

(118) a. *weil mehr Leute eine Zeitung* ~~*gekauft haben*~~ [*als ein Buch gekauft haben*]
since more people a newspaper bought have than a book bought have
'since more people bought a newspaper than a book'

More generally, the data above indicated that intraposition of *than*-XPs has the be excluded on principled grounds. Given that neither unreduced nor Gapped nor RNRed *than*-XPs are licit in intraposed locations, the ban on intraposition stipulated in course of the discussion of Gapping (section 3.4.1) can now retroactively be empirically justified.

The discussion up to this point led to the conclusion that apparently intraposed PCs can and must be parsed in terms of extraposition. However, this finding does not yet invalidate a base-generation analysis. In the following section, I will therefore contrast the two competing approaches, and demonstrate that there are compelling reasons for preferring the ellipsis account.

3.5. External conditions and the position of *than*-XPs

There are three reasons why the PC/CR-Hypothesis proves better equipped to account for the external conditions on PCs and PRCs than its competitors. First, it captures the positional distribution of the *than*-XPs in German as well as in English PCs. Second, PCs and PRCs can be shown to be subject to the same types of constraints on the position of the *than*-XP, signaling that they both share properties of elliptical constructions. Finally, only the PC/CR-Hypothesis provides an insight into a curious asymmetry between verb final and V2 comparatives in German.

3.5.1. The position of PCs

In English, phrasal subject comparatives are - with some limited but systematic exceptions[116] - restricted to clause-final location, as shown by (133) (Pinkham 1982: 108):

(133) a. *More people than bought books bought newspapers.*
b. **More people **than books** bought newspapers.*
c. *More people bought newspapers than bought books.*
d. *More people bought newspapers **than books**.*

Direct analyses are forced to resort to a stipulation in order to exclude (133)b. For instance, Reinhart (1991: 369) suggests that all PCs are base-generated, and originate in a position right-adjoined to IP. There is however no obvious reason why it should be possible to base-generate PCs at a distance, i.e. dislocated from the degree heads they serve as arguments for, but not *in-situ*. Moreover, Reinhart's view is challenged by the existence of 'intraposed' phrasal subject comparative in German such as (108)b, repeated below:[117]

(108) b. *weil mehr Leute eine Zeitung **als ein Buch** gekauft haben*
since more people a newspaper than a book bought have
'since more people bought a newspaper than a book'

In a similar vein, it is possible to find *in-situ* object PCs such as (134), which are equally incompatible with Reinhart (1991):

(134) *weil Hans mehr Bücher **als Peter** gekauft hat*
since Hans more books than Peter bought has
'since John bought more books than Peter bought'

Furthermore, the fact that *in-situ* PCs in Hudson's contexts are at best marked, but not ungrammatical, also resists a satisfactory explanation on the assumption that PCs always originate extraposed:

(135) *?weil mehr Leute* [*als ein Buch ~~gelesen haben~~*] *eine Zeitung gelesen haben*
since more people than a book read have a newspaper read have
'since more people read a newspaper than a book'

The problem which (133) and the data below present for proponents of CE is more of a conceptual nature. According to CE analyses, CE qualifies as a *Wipe-out Rule* (Hankamer 1971; Pinkham 1982), which happens to be subject to the same linearity restriction as Gapping in that is is prohibited from applying in a right-to-left fashion. Naturally, this raises the question why CE shares this property with Gapping, and why CE should - in absence of further evidence to the contrary - be granted an autonomous status in the first place.

The PC/CR-Hypothesis, which disputes the validity of the latter premise finally correctly discriminates between (133)b and (133)d, because (133)b cannot be produced by any standardly sanctioned ellipsis operation:

(136) **More people* [*than ~~bought~~ magazines*] *bought books.* (= (133)b)

In particular, Gapping in (133)b minimally violates *Embedding, whereas RNR is blocked by the peripherality requirement on RNR. The grammatical subject PC (133)d can, in contrast to that, be interpreted as the result of Gapping. Furthermore, the well-formed intraposed *in-situ* PCs (108)b and (134) lend themselves to an analysis in terms of RNR, as illustrated below:

(137) *weil mehr Leute eine Zeitung ~~gekauft haben~~* [*als ein Buch gekauft haben*]
since more people a newspaper bought have than a book bought have
'since more people bought a newspaper than a book' (= (108)b)

(138) *weil Hans mehr Bücher ~~gekauft hat~~* [*als Peter gekauft hat*] (= (134))
since H. more books bough has than P. bought has
'since John bought more books than Peter'

Note also that the deletion process which affects (108)b and (134) proceeds in a parallel fashion in the corresponding coordinate structure:

(139) *weil Hans ein Buch ~~gekauft hat~~ und Peter eine Zeitung gekauft hat*
since H. a book bought has and P. a newspaper bought has
'since John bought a book and Peter a newspaper'

But the PC/CR-Hypothesis also entails a further prediction for the distribution of PCs, which sets it apart from the CE analysis and the direct account. It prognosticates that *in-situ* PCs are not restricted to German, but should - under well-defined conditions, and in opposition to the explicit claims in Pinkham (1982: 109) and Reinhart (1991) - also exist in English. More precisely, *in-situ* PCs should be licit when Gapping and RNR cooperate in contexts in which the comparative NP is flanked by a verb to its left and a string (α in the scheme below) that may undergo RNR to its right:

(140) $[_{\text{Matrix clause}}$ Subject - Verb - Object$_{\text{Comp arative}}$ - ~~α~~$]$ $[_{\text{than-XP}}$ Subject - ~~Verb~~ - $\triangle$ - $\alpha]$

In (140), Gapping targets the verb inside the *than*-XP, while RNR elides the string α at the right edge of the matrix clause. Simultaneous application of RNR and Gapping has now the effect that even though the *than*-XP is in fact situated clause-finally, it is also string-adjacent to the comparative NP and contains shared material, resulting in the appearance of an *in-situ* word order. That such output strings are indeed well-formed is shown by (141)b, which is part of the paradigm of ditransitive object comparatives under (141).[118] (142) provides the structure underlying (141)b:[119]

(141) a. *He gave more books than you gave to Mary to Mary.*
b. *He gave more books than you to Mary.*
c. *He gave more books to Mary than you gave to Mary.*
d. *He gave more books to Mary than you.*

(142) *He gave more books ~~to Mary~~* [*than you ~~gave~~ to Mary*]. (= (141)b)

The interaction between RNR and Gapping also naturally explains the contrast between (141)b and instances of ill-formed *in-situ* subject comparatives such as (133)b (repeated as (143)a). (133)b cannot be assigned an underlying parse which obeys *Embedding. As shown by (143)b, application of Gapping in subject comparatives invariably leads to surface strings in which the verb precedes the *than*-XP:

(143) a. **More people* [*than* ~~*bought*~~ *a book*] *bought a newspaper.* (= (133)b)
b. *More people bought a newspaper* [*than* ~~*bought*~~ *a book*].

To summarize, the PC/CR-Hypothesis - unlike its competitors - offers an effective way of regulating the distribution of phrasal *than*-XPs inside the matrix clause. As elaborated above, cross-linguistic contrasts between English and German derive from a systematic source: In German, intraposed and *in-situ* word order can be derived by RNR of the verb, because German VPs are head-final ((108)b and (134)). This strategy is not available in verb-medial languages such as English, where *than*-XP internal verbs can only be removed by Gapping. Thus, intraposed subject PCs ((108)b) and *in-situ* object PCs ((134)) are restricted to German, whereas English tolerates *in-situ* PCs in ditransitives.

3.5.2. Comparing the distribution of PCs and PRCs

The inspection of the internal conditions led to a taxonomy which groups PCs and PRCs together. This parallelism between PCs and PRCs also extends to the positional distribution of *than*-XPs, generating another type-3 argument for the PC/CR-Hypothesis. More precisely, the external and internal conditions conspire in both constructions in the same way in fixing the location and shape of reduced *than*-XPs. I will consider data from English first, subsequently turning to German.

First, it can be observed that PCs and PRCs display the same distributional properties in subject comparatives. The contrasts between the a- and the b-examples below testifies that English resists RNR with *in-situ* comparatives, and that extraposition feeds Gapping, irrespective whether the result is a PC ((144), (145) and (146)) or a PRC ((147)):

(144) a. **More people* [*than* ~~*bought*~~ *a book*] *bought a newspaper.*
b. *More people bought a newspaper* [*than* ~~*bought*~~ *a book*].

(145) a. **More people* [*than* ~~*gave*~~ *a book* ~~*to Sue*~~] *gave a newspaper to Sue.*
b. *More people gave a newspaper to Mary* [*than* ~~*gave*~~ *a book* ~~*to Mary*~~].

(146) a. **More people* [*than* ~~*gave a book*~~ *to Sue*] *gave a book to Mary.*
b. *More people gave a book to Mary* [*than* ~~*gave a book*~~ *to Sue*].

(147) a. **More people* [*than* ~~*gave*~~ *a book to Sue*] *gave a newspaper to Mary.*
b. *More people gave a newspaper to Mary* [*than* ~~*gave*~~ *a book to Sue*].

Next, the situation is markedly different with object comparatives, where, for reasons to be exposed shortly, PCs enjoy a greater degree of freedom than PRCs. In object comparatives, the verb inside the *than*-XP invariably follows the matrix verb. If no overt material intervenes between the comparative NP and the left edge of the *than*-XP, a proper subset of object comparatives accordingly gives the appearance of licensing *in-situ* reduction (by Gapping). In principle, two structures fulfill this requirement. First, trivial cases in which the comparative NP marks the right-peripheral position in its clause:

(148) a. *?He gave books to more friends* [*than Bill ~~gave~~ newspapers*].
b. *He gave books to more friends* [*than Bill ~~gave books~~*].

Here, the external conditions treat PCs and PRCs alike, just as expected.

Second, in environments involving clause-internal comparative NPs, the properties of PC and PCRs are predicted to differ. Consider to begin with the PC (149) and its two potential sources in (149)a and (149)b. (149)a fails to satisfy the contextual conditions on CR. But (149) can - as was shown in the last section - be derived from (149)b by RNR, which eliminates overt material intervening between the comparative NP and the *than*-XP, yielding the effect of a phrasal *in-situ* comparative:

(149) *He gave more books than Bill to Sue.*
a. **He gave more books* [*than Bill ~~gave to Sue~~*] *to Sue.*
b. *He gave more books ~~to Sue~~* [*than Bill ~~gave~~ to Sue*].

Now, RNR is on the one side a prerequisite for obtaining the correct configuration for an *in-situ than*-XP (see (149)b). On the other side, PRCs can (in the structures under consideration) only be obtained if RNR fails to apply. Otherwise, the result would be a PC. These two conflicting requirements leave only one option for deriving *in-situ* PRCs: genuine intraposition, similar to (149)a. But an intraposition parse does not support reduction by Gapping or RNR. It is for this reason that the *in-situ* PRCs in the a-examples below, which differ from (149) only minimally in the presence of an additional dative and/or adjunct (*to Sue*, *to Sue yesterday*, *yesterday*), contrast sharply with the *in-situ* PC (149). The b-variants are finally well-formed due to extraposition:

(150) a. *?*He gave more books* [*than Bill ~~gave~~ to Sue*] *to Mary.*
b. *He gave more books to Mary* [*than Bill ~~gave~~ to Sue*].

(151) a. **He gave more books* [*than Bill ~~gave~~ to Sue*] *yesterday to Mary today.*
b. *He gave more books to Mary today* [*than Bill ~~gave~~ to Sue yesterday*].

(152) a. **He gave more books* [*than Bill ~~gave to Sue~~*] *yesterday to Sue today.*
b. *He gave more books to Sue today* [*than Bill ~~gave to Sue~~ yesterday*].

Thus, the PC/CR-Hypothesis does not only correctly capture the similarities between PCs and PRCs, but it also proves capable of handling systematic differences between the two constructions. Neither the base-generation analysis nor the CE account can offer an explanation for why English possesses *in-situ* PCs, but lacks *in-situ* PRCs.

Finally, in German, the distribution of clause internal PCs matches the one of PRCs. The task of demonstrating that RNR affects PCs and PRCs in the same way has (partially) already been accomplished in the previous section. I will for this reason only briefly recapitulate the results here. In particular, it was pointed out that (i) RNR may target any contiguous right-peripheral string in the matrix clause, irrespective of the size of ellipsis, and that (ii) the availability of RNR is a function of the distribution of the *than*-XP in the clause.

These generalizations correctly lead one to expect that RNR yields well-formed results if the *than*-XP is extraposed, disregarding whether the output is a PRCs ((153)a and (153)b) or a PC ((153)c):

(153) a. *weil mehr Leute dem Fritz ein Buch geschenkt ~~haben~~ als*
since more people the Fritz a book given have than
der Maria eine Zeitung gezeigt haben
than the Mary a newspaper shown have
'since more people gave a book to Fritz than showed a newspaper to Mary'
b. *weil mehr Leute dem Fritz ein Buch ~~gezeigt haben~~ als*
since more people the F. a book showed have than
der Maria eine Zeitung gezeigt haben
the M. a newspaper showed have
'since more people showed a book to Fritz than a newspaper to Mary'
c. *weil mehr Leute dem Fritz ~~ein Buch gezeigt haben~~ als*
since more people the F. a book showed have than
der Maria ein Buch gezeigt haben
the M. a book showed have
'since more people showed a book to Fritz than to Mary'

Furthermore, RNR out of *than*-XPs which remain *in-situ* (Hudson contexts) gives rise to degraded, yet still acceptable PCs and PRCs.

(154) a. *?weil mehr Leute als der Maria eine Zeitung gezeigt ~~haben~~*
since more people than the Mary a newspaper shown have
dem Fritz ein Buch geschenkt haben
the Fritz a book given have
'since more people gave a book to Fritz than showed a newspaper to Mary'

b. *?weil mehr Leute als der Maria eine Zeitung ~~gezeigt haben~~ dem Fritz ein*
since more people than the Mary a newspaper shown have the Fritz a
Buch gezeigt haben
book showed have
'since more people showed a book to Fritz than a newspaper to Mary'

c. *?weil mehr Leute als der Maria ~~ein Buch gezeigt haben~~ dem Fritz ein*
since more people than the Mary a book shown have the Fritz a
Buch gezeigt haben
book shown have
'since more people showed a book to Fritz than to Mary'

Again, the grammaticality status is not dependent on the size of the string affected by RNR.

The present section demonstrated that the positional distribution of PCs and PRCs follows from a set of simple assumptions, expressed in terms of the PC/CR-Hypothesis. In addition, the discussion revealed that the ellipsis analysis of PCs and PCRs results in an accurate taxonomy, which divides the three types of *than*-XPs along the axis PC and PRCs vs. non-reduced comparatives.

3.5.3. Influence of matrix V2

In this final subsection related to the external conditions, I proceed to a third empirical domain which distinguishes among the three theories of PC-formation. As will become clear shortly, only the RNR-analysis provides an explanation for a new contrast between reduced verb final and V2 comparatives.

It has already been mentioned at various occasions that RNR in German may affect relative clauses as well as comparatives that violate *Embedding, as exemplified by (155)a and (156)a. Interestingly, these environments, which support *in-situ* PCs and PRCs, have to meet the additional requirement that the matrix verb remain in its final position inside the VP. Combining an elliptical *in-situ than*-XP with a matrix V2 clause, as in (155)b and (156)b, leads to sharp ungrammaticality:

(155) a. *?weil viele Leute* [*die ein Buch* ~~*gekauft haben*~~]
since many people who a book bought have
auch eine Zeitung gekauft haben
also a newspaper bought have
'since many people who bought a book also bought a newspaper'
b. **Gestern haben viele* [*die ein Buch* ~~*gekauft haben*~~]
yesterday have many who a book bought have
auch eine Zeitung gekauft.
also a newspaper bought
'Yesterday, many who bought a book also bought a newspaper.'

(156) a. *?weil viele Leute* [*die ein Buch gekauft* ~~*haben*~~]
since many people who a book bought have
auch eine Zeitung gelesen haben
also a newspaper read have
'since many people who bought a book also read a newspaper'
b. **Gestern haben viele* [*die ein Buch gekauft* ~~*haben*~~]
yesterday have many who a book bought have
auch eine Zeitung gelesen.
also a newspaper read
'Yesterday, many who bought a book also read a newspaper'

The pattern of comparatives once again paralles that of their relative clause counterparts, irrespective whether the *than*-XP forms the target of RNR or Sub-RNR:

(157) a. *?weil mehr Leute* [*als ein Buch* ~~*gekauft haben*~~] *eine Zeitung gekauft haben*
since more people than a book bought have a newspaper bought have
'since more people bought a newspaper than bought a book'
b. **Gestern haben mehr Leute* [*als ein Buch* ~~*gekauft haben*~~]
yesterday have more people than a book bought have
eine Zeitung gekauft.
a newspaper bought
'Yesterday, more people bought a newspaper than bought a book'

(158) a. *?weil mehr Leute* [*als ein Buch gekauft* ~~*haben*~~] *eine Zeitung gelesen haben*
since more people than a book bought have a newspaper read have
'since more people read a newspaper than bought a book'
b. **Gestern haben mehr Leute* [*als ein Buch gekauft* ~~*haben*~~]
yesterday have more people than a book bought have
eine Zeitung gelesen.
a newspaper read
'Yesterday, more people read a newspaper than bought a book.'

The generalization that *in-situ* PRCs and PCs resist V2 environments receives an immediate explanation on the assumption that both structures derive from RNR. As documented by the b-examples above, the underlying representations do not provide a proper context for the application of RNR. German V2 clauses behave in this respect just like subject *in-situ* comparatives in English, which resist RNR essentially for the same reason:

(141) b. **More people* [*than* ~~*bought*~~ *a book*] *bought a newspaper.*

In (141)b, neither the ellipsis site nor the overt antecedent are located in a suitable (i.e. right peripheral) position for RNR.

Crucially for present purposes, the dependence of PC-formation on the absence of matrix V2 represents a considerable challenge for direct analyses, which lack the means to express this correlation between matrix V2 and the location of the *than*-XP ((155) to (158)). CE-accounts fare no better, unless they stipulate that CE is restricted to contexts in which the *than*-XPs is associated with a verb final matrix clause.

A brief digression is in order here, which serves the purpose of removing a potential source of overgeneration for the CR-Hypothesis. The problem arises in the shape of the alternative parse for (157)b illustrated in (159) (the problem carries over to (158)b):

(159) **Gestern* ***haben***$_i$ *mehr Leute* [*als ein Buch* ~~*gekauft*~~ $\boldsymbol{t}_i$] *eine Zeitung* [*gekauft* $\boldsymbol{t}_i$].
yesterday have more people than a book bought a newspaper bought
'Yesterday, more people bought a newspaper than bought a book.'

(159) involves ATB V2 and RNR. Recall from above that German licenses ATB V2 of auxiliaries in ordinary conjoined main clauses as well as in comparatives:

(160) a. *Gestern* ***haben***$_i$ *viele ein Buch* [*gekauft* $\boldsymbol{t}_i$] *und*
yesterday have many a book bought and
einige eine Zeitung [*gelesen* $\boldsymbol{t}_i$].
some a newspaper read
'Yesterday, many people bought a book and some read a newspaper.'

b. *Gestern* ***haben***$_i$ *mehr Leute eine Zeitung gekauft* $\boldsymbol{t}_i$
yesterday have more people a newspaper bought
[*als ein Buch gelesen* $\boldsymbol{t}_i$].
than a book read
'Yesterday, more people bought a newspaper than read a book.'

Moreover, ATB V2 interacts with RNR of participles which have been stranded by V2 movement in the first conjunct (see Kühnel 1993 for detailed discussion of (161)a):

(161) a. *Gestern haben$_i$ viele ein Buch* [~~*gekauft*~~ *t$_i$*] *und*
yesterday have many a book bought and
einige eine Zeitung [*gekauft t$_i$*].
some a newspaper bought
'Yesterday, many people bought a book and some a newspaper.'

b. *Gestern haben$_i$ mehr Leute eine Zeitung* ~~*gekauft*~~ *t$_i$*
yesterday have more people a newspaper bought
[*als ein Buch gekauft t$_i$*].
than a book bought
'Yesterday, more people bought a newspaper than a book.'

Thus, nothing should in principle keep ATB V2 from conspiring with RNR of participles in other contexts, and the ill-formedness of (159) therefore comes, at least at first sight, as a surprise.

As it turns out, though, (159) violates an independent general restriction on ATB V2, which dictates that ATB V2 has to observe *Embedding:

(162) **Gestern haben$_i$ mehr Leute* [*als ein Buch gelesen t$_i$*] *eine Zeitung gekauft t$_i$*.
yesterday have more people than a book read a newspaper bought
'Yesterday, more people bought a newspaper than read a book.'

Hence, ATB V2 may - in contrast to RNR - not apply in Hudson-type (*in-situ*) contexts, and the potential problem raised by the representation in (159) can therefore be successfully eliminated.

Recapitulating the results of this section, the PC/CR-Hypothesis proves empirically more adequate than competing analyses in three domains related to the external conditions: First, it accounts for the distribution of elliptical *than*-XPs in English and German, and for the fact that the position of a *than*-XPs is a function of the size of its ellipsis site. Second, the PC/CR-Hypothesis groups PCs together with PRCs, and thereby derives their generally congruent positional distribution. Thirdly, unlike theories employing CE or base generation, the PC/CR-Hypothesis successfully handles contrasts between V-final and V2 comparatives in German.

The next section supplements the picture presented so far by a discussion of further manifestations of ATB movement in comparatives. In the last part of this chapter, I will finally address a complication for the analysis, which will be taken to indicate the presence of an additional, hitherto unidentified restriction on comparatives.

3.6. ATB movement

So far, the data elicited evidence for the assumption that the surface shape of comparatives can be modulated by Gapping, RNR and ATB V2. In the current section, I will comment on a further process - ATB scrambling - which also conforms with the CR-Hypothesis in that it targets coordinate, but not subordinate structures. Reflexes of this fourth reduction process will be detectable both in surface syntax as well as in the interpretive domain.

Recall to begin with that Gapping affects at least a finite verb, and that ellipsis can optionally be accompanied by phonological suppression of further constituents which match a category in the antecedent clause ((163)c; *bel-cap:* abbreviation for *believe to be capable of*):

(163) a. *weil mehr Leute der Maria einen Sieg zutrauen als*
since more people the M. *a victory bel-cap than*
[*dem Peter eine Niederlage wünschen*]
the P. a defeat wish
'since more people believe Mary to be able to win than want to see Peter defeated'

b. *weil mehr Leute der Maria einen Sieg* ***zutrauen*** *als*
since more people the M. a victory bel-cap than
[*dem Peter eine Niederlage* ~~*zutrauen*~~]
the P. a defeat bel-cap
'since more people believe Mary to be able to win than Peter to be able to loose'

c. *weil mehr Leute der Maria* ***einen Sieg zutrauen*** *als*
since more people the M. a victory bel-cap than
[*dem Peter* ~~*einen Sieg zutrauen*~~]
the P. a victory bel-cap
'since more people believe Mary to be able to win than Peter'

As can be seen from above, it is characteristic of Gapping that shared overt phrases (bold face) are realized in the matrix clause, and not inside the *than*-XP. The reverse holds of examples involving RNR, where shared strings are positioned inside the comparative complement.

(164) *weil* [*mehr Leute der Maria* ~~*einen Sieg zutrauen*~~] *als*
since more people the M. a victory bel-cap than
[*dem Peter* ***einen Sieg zutrauen***]
the P. a victory bel-cap
'since more people believe Mary to be able to win than believe Peter to be able win'

Interestingly, it is now also possible to find comparatives which cannot be analyzed as the output of Gapping, but which nonetheless contain a shared constituent inside the matrix clause. An instance of such a slightly more complex structure is supplied by the PC in (165):

(165) *weil **der Maria** mehr Leute einen Sieg als eine Niederlage zutrauen*
since the M. more people a victory than a defeat bel-cap
'since more people believe Mary to be able to win than to lose'

The problem that (165) poses at first sight is that Gapping would have to affect an NP in an environment in which the finite verb has not been elided. That is, in the putative source of (165), the shared NP *der Maria* apparently has been deleted from a final 'conjunct' which still overtly projects the finite predicate, as detailed below:

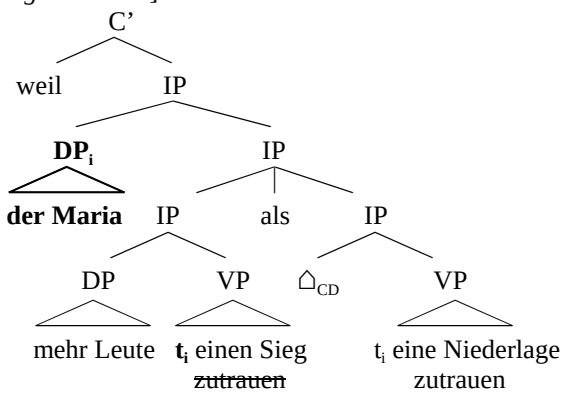
(166) *weil* [***der Maria*** *mehr Leute einen Sieg* ~~*zutrauen*~~] *als*
since the M. more people a victory bel-cap than
[~~*der Maria*~~ *eine Niederlage zutrauen*]
the M. a defeat bel-cap

It therefore seems as if (165) cannot be produced by regular CR processes, pointing to the limitations of the CR-Hypothesis.

However, (165) receives a natural explanation on the assumption that in addition to RNR and Gapping, full XPs in comparatives can also be elided by ATB scrambling. On this conception, the dative NP *der Maria* undergoes ATB scrambling to the left of the matrix subject, accompanied by RNR of the verb, as depicted by the tree diagram below:

(167) a. *weil **der Maria**$_i$* [*mehr Leute* ***t***$_i$ *einen Sieg* ~~*zutrauen*~~] *als*
[***t***$_i$ *eine Niederlage zutrauen*]

b.



Parallel examples involving ATB scrambling and RNR are also attested in contexts of coordination:

(168) *weil* ***der Maria***$_i$ [*viele Leute* $\mathbf{t}_i$ *einen Sieg* ~~*zutrauen*~~] *und*
since the M. many people a victory bel-cap and
[*manche* $\mathbf{t}_i$ *eine Niederlage zutrauten*]
some a defeat bel-cap
'since some believe Mary to be able to win and some believe her to be able to lose'

Apart from aiding in the description of surface syntactic phenomena, ATB scrambling (and ATB movement of phrasal nodes more generally) is also involved in the analysis of a semantic property that comparatives share with base-generated coordinate structures. It is a well-known fact that subject ellipsis in clausal conjunctions cannot be attributed to phonological deletion, because the missing subject can be interpreted as a bound variable (see, among others, Höhle 1991; Lasersohn 1995; Partee and Rooth 1983; Wilder 1994, 1995a). For instance, while the non-reduced clause (169)a may describe a scenario in which two different individuals are involved in the respective buying events, the interpretation of the missing subject in the second conjunct of (169)b has to covary with the value assigned to the matrix subject:

(169) a. *Somebody bought books on Monday and somebody bought bread on Friday.*
⟦CP⟧ = ∃x[bought_books_on_Monday(x)] ∧ ∃x[bought_bread_on_Fr.(x)]
b. *Somebody bought books on Monday and bread on Friday.*
⟦CP⟧ = ∃x[bought_books_on_Monday(x) ∧ bought_bread_on_Friday(x)]
c. *Somebody bought books on Monday and* ~~*somebody bougth*~~ *bread on Friday.*

Thus, the reduced clause (169)b cannot be derived from (169)a by ellipsis, as in (169)c, since the elliptical sentence (169)b fails to preserve the truth conditions of its putative underlying source (169)c. This observation has been taken to signal that structures such as (169)b should be analyzed either in terms of property-conjunction and low VP-coordination, as in (170)a, or in terms of ATB subject raising, illustrated by (170)b.[120]

(170) *Somebody bought books on Monday and bread on Friday.*
a. *Somebody* [[$_{\text{VP, <e,t>}}$ *bought books on Monday*] *and*
[$_{\text{VP, <e,t>}}$ ~~*bought*~~ *bread on Friday*]]
b. *Somebody*$_i$ [[$_{\text{XP}}$ t_i *bought books on Monday*] *and*
[$_{\text{XP}}$ t_i ~~*bought*~~ *bread on Friday*]]

Comparatives pattern along with coordination in that missing quantifiers inside the second conjunct are necessarily interpreted as bound variables, as documented by the contrast between the unreduced comparative (171)a and its phrasal variant in (171)b:[121]

(171) a. *Somebody spent more money on reindeers than somebody spent on gifts.*
⟦CP⟧ ≈ ∃x∃d[x spent d-much money on reindeers ∧
d>max({d'|∃y[y spent d'-much money on gifts})]
b. *Somebody spent more money on reindeers than on gifts.*
⟦CP⟧ ≈ ∃x∃d[x spent d-much money on reindeers ∧
d>max({d'|x spent d'-much money on gifts})]

Unlike conjunction, though, comparatives do not lend themselves to two different analyses (VP-coordination or ATB subject extraction). This is so because on current assumptions, the comparative complement invariably denotes a property of degrees, maximized by *than*. The types of the *than*-XP and the CP-complement of *than* - which functions as the second 'conjunct' - are therefore fixed, they denote a degree expression (type <d>) in the first case, and a predicate of degrees (<d,t>) in the latter. Given that type parallelism is a necessary condition on coordination[122] (Partee and Rooth 1983; Sag et. al 1985), the *than*-XP or its CP-complement can accordingly not be combined with a standard VP-denotation (type <e,t>) in a meaningful way. That is, mapping (171)b to a parse in terms of property-conjunction and low VP-coordination, as in (172)a, leads to an uninterpretable output representation:

(172) *Somebody spent more money on reindeers than ⌓ on gifts.*
a. *Somebody [[$_{VP, <e,t>}$ spent more money on reindeers] than
[$_{CP, <d,t>}$ ~~spent~~ ⌓ on gifts]]
b. **Somebody$_i$** [[$_{IP, <t>}$ **t$_i$** spent more money on reindeers] than
[$_{IP, <t>}$ **t$_i$** ~~spent~~ ⌓ on gifts]]

Example (171)b is however compatible with the subject ATB analysis outlined in (172)b, which I will adopt in what follows. In (172)b, the IP of the comparative complement forms a derived coordination with the matrix IP, which is headed by *than* (Hankamer 1973) and licensed by type parallelism between the two IPs (for further conditions on the coordinate structure of comparatives see chapter 4). Moreover, ATB extraction ensures that the missing subject inside the *than*-XP is interpreted as a bound variable.

Appendix: Object and adjunct comparatives

This appendix complements the data provided so far by listing the relevant cases of RNR and Gapping[123] from object and adjunct comparatives which have not been considered yet. Both constructions behave - with one notable exception - in all relevant aspects on a par with subject comparatives. I will present the uncontroversial derivations first (section 1), and address the disparity alluded to above in section 2.

1. Regular object/adjunct comparatives

In object and adjunct comparatives, extraposition of the *than*-XP feeds Gapping of the whole verbal cluster, as witnessed by the paradigms under (173)-(175). The b-examples provide the corresponding coordinate structures, documenting once again the parallel behavior of comparatives and coordinate structures:

(173) GAPPING, OBJECT COMPARATIVES:
a. *weil Hans mehr Bücher gekauft hat als Peter ~~gekauft hat~~*
since H. more books bought has than P. bought has
'since Hans bought more books than Peter'
b. *weil Hans ein Buch gekauft hat und Peter eine Zeitung ~~gekauft hat~~*
since H. a book bough has and P. a newspaper bought has
'since Hans bought a book and Peter bough a newspaper'

(174) GAPPING, ADJUNCT COMPARATIVES:
a. *weil Hans öfter ein Buch gekauft hat als Maria eine Zeitung ~~gekauft hat~~*
since H. more often a book bought has than M. a newspaper bought has
'since Hans bought books more often that Mary bought newspapers'
b. *weil Hans oft ein Buch gekauft hat und*
since H. often a book bought has and
Maria manchmal eine Zeitung ~~gekauft hat~~
M. sometimes a newspaper bought has
'since Hans has often bought books and Mary has sometimes bought newspapers'

(175) GAPPING, ADJUNCT COMPARATIVES:
a. *weil Hans öfter ein Buch gekauft hat als Maria ~~ein Buch gekauft hat~~*
since H. more often a book bought has than M. a book bought has
'since Hans has bought books more often than Mary'

b. *weil Hans oft ein Buch gekauft hat und*
since H. often a book bought has and
Maria manchmal ~~ein Buch gekauft hat~~
M. sometimes a book bought has
'since Hans has often bought books and Mary has sometimes bought books'

RNR is equally attested in object and adjunct comparatives with extraposed comparative complements, accounting for cases in which shared lexical material is realized at the right edge of the *than*-XP. If RNR affects all constituents except for one, as in (176)a and (178)a, it yields the appearance of an *in-situ* PC:

(176) RNR, OBJECT COMPARATIVES:
a. *weil Hans mehr Bücher ~~gekauft hat~~ als Peter gekauft hat*
since H. more books bought has than P. bought has
'since Hans bought more books than Peter'
b. *weil Hans ein Buch ~~gekauft hat~~ und Peter eine Zeitung gekauft hat*
since H. a book bought has and P. a newspaper bought has
'since Hans bought a book and Peter bought a newspaper'

(177) RNR, ADJUNCT COMPARATIVES:
a. *weil Hans öfter ein Buch ~~gekauft hat~~ als Maria eine Zeitung gekauft hat*
since H. more often a book bought has than M. a newspaper bought has
'since Hans has bought books more often than Mary has bought a newspaper'
b. *weil Hans oft ein Buch ~~gekauft hat~~ und*
since H. often a book bought has and
Maria manchmal eine Zeitung gekauft hat
M. sometimes a newspaper bought has
'since Hans has often bought books and Mary has bought newspapers sometimes'

(178) RNR, ADJUNCT COMPARATIVES:
a. *weil Hans öfter ~~ein Buch gekauft hat~~ als Maria ein Buch gekauft hat*
since H. more often a book bought has than M. a book bought has
'since Hans has bought books more often than Mary'
b. *weil Hans oft ~~ein Buch gekauft hat~~ und*
since H. often a book bought has and
Maria manchmal ein Buch gekauft hat
M. sometimes a book bought has
'since Hans has often bought books and Mary has bought books sometimes'

Turning to Sub-RNR and Subgapping of auxiliaries, it can be observed that these structures do not encapsulate any further complications, either. Both constructions license - like subject comparatives - Sub-RNR, but do not allow Subgapping to target V-final matrix clauses:

(179) SUB-RNR AND SUBGAPPING, OBJECT COMPARATIVES:
a. *weil Hans mehr Bücher gekauft ~~hat~~ als Maria gelesen hat*
since H. more books bought has than M. read has
'since Hans bought more books than Mary has read'
b. *weil Hans ein Buch gekauft ~~hat~~ und Maria eine Zeitung gelesen hat*
since H. a book bought has and M. a newspaper read has
'since Hans bought a book and Mary read a newspaper'

(180) SUB-RNR AND SUBGAPPING, OBJECT COMPARATIVES:
a. **weil Hans mehr Bücher gekauft hat als Maria gelesen ~~hat~~*
since H. more books bought has than M. read has
'since Hans bought more books than Mary read'
b. **weil Hans ein Buch gekauft hat und Maria eine Zeitung gelesen ~~hat~~*
since H. a book bought has and M. a newspaper read has
'since Hans bought a book and Mary read a newspaper'

(181) SUB-RNR AND SUBGAPPING, ADJUNCT COMPARATIVES:
a. *weil Hans öfter ein Buch gekauft ~~hat~~ als*
since H. more often a book bought has than
[*Maria eine Zeitung gelesen hat*]
M. a newspaper read has
'since Hans has bought books more often than Mary has read newspapers'
b. *weil Hans oft ein Buch gekauft ~~hat~~ und*
since H. often a book bought has and
Maria manchmal eine Zeitung gelesen hat
M. sometimes a newspaper read has
'since Hans has often bought books amd Mary has sometimes read newspapers'

(182) SUB-RNR AND SUBGAPPING, ADJUNCT COMPARATIVES:
a. **weil Hans öfter ein Buch gekauft hat als*
since H. more often a book bought has than
[*Maria eine Zeitung gelesen ~~hat~~*]
M. a newspaper read has
'since Hans has bought books more often than Mary has read newspapers'

b. **weil Hans oft ein Buch gekauft hat und*
since H. often a book bought has and
Maria manchmal eine Zeitung gelesen ~~hat~~
M. sometimes a newspaper read has
'since Hans has often bought books amd Mary has sometimes read newspapers'

Finally, consider contexts which fail to observe *Embedding. Since Gapping is precluded from targeting these environments, forward reduction should invariably lead to deviant results. This expectation is born out, as illustrated by the reduced *in-situ* object and adjunct comparatives in (183) and (184):

(183) GAPPING AND SUBGAPPING, OBJECT COMPARATIVES:
a. *weil Hans mehr Bücher* [*als Peter gelesen hat*] *gekauft hat*
since H. more books than P. read has bought has
'since Hans bought more books than Peter has read'
b. **weil Hans mehr Bücher* [*als Peter gelesen hat*] *gekauft ~~hat~~*
since H. more books than P. read has bought has
'since Hans bought more books than Peter read'
c. **weil Hans mehr Bücher* [*als Peter gelesen hat*] *~~gelesen hat~~*
since H. more books than P. read has read has
'since Hans read books than Peter'

(184) GAPPING AND SUBGAPPING, ADJUNCT COMPARATIVES:
a. *?weil Hans öfter* [*als Maria eine Zeitung gelesen hat*]
since H. more often than M. a newspaper read has
ein Buch gekauft hat
a book bought has
b. **weil Hans öfter* [*als Maria eine Zeitung gelesen hat*]
since H. more often than M. a newspaper read has
ein Buch gekauft ~~hat~~
a book bought has
'since Hans has more often bought books than Mary has read newspapers'
c. **weil Hans öfter* [*als Maria eine Zeitung gelesen hat*]
since H. more often than M. a newspaper read has
ein Buch ~~gelesen hat~~
a book read has
'since Hans has more often read books than Mary has read newspapers'
d. **weil Hans öfter* [*als Maria eine Zeitung gelesen hat*]
since H. more often than M. a newspaper read has
~~eine Zeitung gelesen hat~~
a newspaper read has
'since Hans has more often read newspapers than Mary'

Note that the asterisks in (183)d and (184)d pertain to the specific parses only. The same strings can also be derived by extraposition, though. *Prima facie* evidence against the alternative *in-situ* factorizations (183)d and (184)d can be drawn from adverbially modified examples, which fail to license ellipsis:

(185) a. *weil Hans mehr Bücher* [*als Peter gelesen hat*] *gestern gekauft hat*
since H. more books than P. read has yesterday bought has
'since Hans bought more books yesterday than Peterhas read'
b. **weil Hans mehr Bücher* [*als Peter gelesen hat*] *gestern ~~gelesen hat~~*
since H. more books than P. read has yesterday read has
'since Hans read more books yesterday than Peter has read'

(186) a. *weil Hans öfter* [*als Maria eine Zeitung gelesen hat*]
since H. more often than M. a newspaper read has
abends ein Buch gelesen hat
in the evening a book read has
'since Hans has more often read a book in the eveing than Mary has read a newspaper'
b. **weil Hans öfter* [*als Maria eine Zeitung gelesen hat*]
since H. more often than M. a newspaper read has
abends ~~eine Zeitung gelesen hat~~
in the evening a newspaper read has
'since Hans has more often read a newspaper in the eveing than Mary has read a newspaper'

Now that the parallel behavior of the three types of comparatives w.r.t. the external conditions has been established, the final section will eventually address the disparity between subject and object/adjunct comparatives announced in the outset.

2. Irregular subject comparatives

The picture which has emerged from the discussion of subject comparatives does not completely carry over to object and adjunct comparatives. Recall from the discussion in section 3.4.2 that RNR may marginally operate on subject-related relative clauses and subject comparatives *in-situ*. The relevant pair of examples is repeated below:

(122) *?weil viele Leute* [*die ein Buch ~~gekauft haben~~*] *auch eine Zeitung gekauft haben*
since many people who a book bought have also a newspaper bought have
'since many people how have bought a book also have bought a newspaper'

(123) *?weil mehr Leute* [*als ein Buch ~~gekauft haben~~*] *eine Zeitung gekauft haben*
since more people than a book bought have a newspaper bought have
'since more people have bought a newspaper than have bought a book'

Interestingly, comparable examples with relative clauses that modify objects such as (187)a are strictly ungrammatical, while reduced object comparatives in which the *than*-XP apparently remains *in-situ* are well-formed:

(187) a. **weil Hans viele Bücher* [*die Peter ~~gekauft hat~~*] *gekauft hat*
since H. many books that P. bought has bought has
'since Hans bought many books that Peter bought'
b. *weil Hans mehr Bücher* [*als Peter ~~gekauft hat~~*] *gekauft hat*
since H. more books than P. bought has bought has
'since Hans bought more books than Peter bought'

In conjunction with the CR-Hypothesis, the contrast between (122) and (187)a commits one now to the view that *in-situ* object comparatives can - in contrast to *in-situ* subject comparatives - not be derived by RNR of an *in-situ than*-XP, as indicated by the bracketing. It remains therefore at first sight unclear how to analyze (187)b.

However, the problem dissolves if it is taken into consideration that there is also an alternative parse for (187)b. Suppose that the *than*-XP in (187)b is in fact extraposed, as shown by (188):

(188) *weil Hans mehr Bücher ~~gekauft hat~~* [*als Peter gekauft hat*]
since H. more books bought has than P. bought has
'since Hans has bought more books than Peter has bought'

On this conception, RNR leads to the appearance of an *in-situ* location for the comparative complement. (The situation resembles the one encountered with apparently intraposed subject comparatives, which also could be reanalyzed in terms of extraposition.)

First hand evidence that (187)b has to be reanalyzed in terms of extraposition and that object comparatives *in-situ* indeed behave on a par with object related relative clauses - as predicted by the CR-Hypothesis - comes once again from structurally unambiguous examples. In the pair under (189), extraposition and *in-situ* location of the *than*-XP covaries with word order permutation:[124]

(189) a. *weil Hans mehr Bücher gestern ~~gekauft hat~~*
since H. more books yesterday bought has
[*als Peter vorgestern gekauft hat*]
than P. the day before bought has
b. **weil Hans mehr Bücher* [*als Peter vorgestern ~~gekauft hat~~*]
since H. more books than P. the day before bought has
gestern gekauft hat
yesterday bought has
'since Hans bought more books yesterday than Peter bought the day before'

(189)a is well-formed, since the *than*-XP is extraposed. The ill-formedness of (189)b on the other side clearly demonstrates that CR may not target intraposed object *than*-XPs. (189)b violates the same principles that block CR of object relative clauses in examples such as (187)a. Thus, RNR treats object comparatives and object relatives in a congruent fashion.

In a similar vein, adjunct *in-situ* comparatives emulate the behavior of relative clauses modifying adjuncts. Both constructions license RNR only (very) marginally:

(190) a. *??weil Hans an dem Tag* [$_{CP}$ *an dem Maria eine Zeitung ~~gelesen hat~~*]
since H. on the day on which M. a newspaper bought has
ein Buch gelesen hat
a book read has
'since Hans read a book on the same day when Mary read a newspaper'
b. *??weil Hans öfter* [*als Maria eine Zeitung ~~gelesen hat~~*]
since H. more often than M. a newspaper read has
ein Buch gelesen hat
a book read has
'since Hans has read books more often than Mary has read newspapers'

As by now expected, RNR leads to perfectly well-formed results as soon as the adjunct related *than*-XP is extraposed:

(191) *weil Hans öfter ein Buch gelesen hat* [*als Maria eine Zeitung ~~gelesen hat~~*]
since Hans more often a book read has than Maria a newspaper read has
'since Hans has more often read books than Maria has read newspapers'

4. Additional restrictions on Comparative Coordination

In the preceding sections, it was seen that the conjunction of the PC/CR-Hypothesis and the assumption that comparatives can be parsed into a coordinate phrase marker (*comparative coordination*) accounts for a wide range of observations about the shape and the interpretation of elliptical comparatives. The present section, which follows Lechner (2001), expands on a problem for the PC/CR-Hypothesis which materializes in certain types of PCs in German. The solution to this problem will motivate the assumption of a new algorithm for determining the actual height of coordination in comparatives, which severely limits the set of possible comparative coordinations. As theoretical byproducts, the analyses to be endorsed (i) entail that V2 is not a PF-phenomenon (contra e.g. Chomsky 2001) and (ii) provide additional evidence for the view that the CSC filters syntactic (as opposed to semantic) representations.

4.1. A problem for the analysis

Even though successful in correctly predicting the positional distribution of *than*-XPs, the analysis of clause internal PCs cannot be quite correct as it stands. Consider the paradigm in (192). In (192)a, the two finite verb forms (*haben* and *hat*) are not string-identical, and (192)b can therefore not be derived from (192)a by RNR.[125] In fact, the contrast between (192)b and (192)c shows that the verb not only can but even has to agree in Φ-features with the matrix subject *wir*:

(192) a. *weil wir*$_{1st\ pl}$ *mehr Bücher gekauft* ***haben***$_{1st\ pl}$ *als Peter*$_{3rd\ sg}$ *gekauft* ***hat***$_{3rd\ sg}$
since we more books bought have than P. bought has
b. *weil* ***wir***$_{1st\ pl}$ *mehr Bücher als Peter*$_{3rd\ sg}$ *gekauft* ***haben***$_{1st\ pl}$
c. **weil wir*$_{1st\ pl}$ *mehr Bücher als* ***Peter***$_{3rd\ sg}$ *gekauft* ***hat***$_{3rd\ sg}$
'since we bought more books than Peter bought'

At first sight, this finding seems to refute the PC-Hypothesis, since it suggests that a subset of internal PCs - those which embed a subject remnant - resist an analysis in terms of RNR.[126] In what follows, I will contend however that the problem of Φ-feature mismatch does not invalidate the reduction analysis of PCs as such, but rather signals the presence of additional factors involved which, once identified, will motivate a revision of the account of internal PCs presented so far. More specifically, it will be argued that in principle, comparatives can be parsed as coordinate structures at any node which dominates a full thematic clause (i.e. VP and up). Anticipating somewhat, the well-

formedness conditions determining the height of coordination in each individual case will be shown to ensure that in (192)b the second conjunct (the *than*-XP) is too small to contain the auxiliary. Thus, *Peter* need not and cannot agree with the finite verb, resulting in the appearance of Φ-feature mismatch. In addition, the analysis will provide an explanation for a number of new phenomena relating to ellipsis inside the comparative complement.

4.2. Assumptions: clause structure, CDSC and CSC

The current section introduces the background behind which the core ingredients of the revised account will be laid out. Turning to the clausal architecture of German first, I will adopt the following hypotheses, which have been extensively argued for in the literature: (i) VP is dominated by at least AspP, TP and AgrSP.[127] (ii) Nominative case is checked in SpecTP, while EPP-driven movement to SpecAgrSP eliminates EPP and agreement features on AgrS° (Alexiadou and Anagnostopoulou 1998; Bobaljik and Jonas 1996; Embick 1997). (iii) Participles originate inside VP, and overtly raise to Asp° in the course of the derivation (driven by the need to check aspectual features), while auxiliaries are base-generated in T° (Baker and Stewart 1999; von Stechow 1999). (iv) Finally, participles are subject to a surface linearity condition which requires them to be located in a string-adjacent position to T° (Haider 1993b; van Riemsdijk 1998). On an orthodox interpretation of this constraint, this means that participles undergo overt head movement to T°, forming a verb cluster with *in-situ* auxiliaries (V2 of the auxiliary may of course disrupt adjacency).

The assumptions above interact with the PC-Hypothesis in an important way: The PC-Hypothesis entails that PCs derive from full thematic clauses, but it does not specify how much functional structure these clauses have to contain. Given that VP is the minimal node embedding the main predicate and all its arguments, the matrix clause and the extraposed *than*-XP can enter into a comparative coordination at the VP, AspP, TP or AgrSP-level.[128] However, as will become clear shortly, not all comparatives license all types of coordination. Two general well-formedness conditions restrict the set of available parses.

The first filter consists in the Comparative Deletion Scope Condition (CDSC) in (193), which encodes a structural condition on the scope of the comparative XP relative to the CD-site:

(193) THE COMPARATIVE DELETION SCOPE CONDITION (CDSC)
The comparative has to take scope over (c-command) the CD-site at LF.

The CDSC represents a subcase of a more general restriction on empty operator constructions (relative clauses, comparatives, *tough*-movement, etc.) which requires that the gap and the operator be c-commanded by their respective licensing category. Relative clauses, *than*-XPs and complements of *tough*-adjectives can for instance be fronted only if the head of the construction (in boldface) pied-pipes the category containing the empty operator chain:

(194) a. *John saw a* ***man*** [*OP who t wore a green cap*].
b. *A* ***man*** [*OP who t wore a green cap*], *John saw*
c. *[*OP Who t wore a green cap*], *John saw a* ***man***

(195) a. *John bought more* ***books*** [*than OP Mary had read t*].
b. *More* ***books*** [*than OP Mary had read t*], *John bought*
c. *[*OP Than Mary had read t*], *John bought more* ***books***

(196) a. *John is* ***tough*** [*OP to beat t in chess*].
b. *(... and)* ***tough*** [*OP to beat t in chess*], *John is*
c. **(... and)* [*OP to beat t in chess*], *John is* ***tough***

The CSC and three strategies to obviate its effects contribute the second essential component of the analysis. I will comment on the latter three aspects in turn. To begin with, I will follow Johnson (1996) in assuming that Case driven subject movement out of the first conjunct is exempt from the CSC if the second conjunct is reduced (due to limitations of space, I have to refer to Johnson 1996, 2003 for details of the argumentation). As will be illustrated below, this premise legitimates movement dependencies between first-conjunct subjects inside an AspP/VP conjunction and SpecTP, but for instance excludes subject raising out of a TP-coordination to SpecAgrSP (see e.g. the derivations in (205)a vs. (222) below).

Second, Williams (1978) reports that in conjunctions, the CSC is alleviated in a well-defined set of contexts involving ATB movement. More precisely, ATB movement may target clausal conjunctions only if either all traces ((197)a) or none of the ATB traces ((197)b) reside in the topmost subject positions of their respective conjuncts (see also Goodall 1987; Pesetsky 1982: 447; Woolford 1987). Identical contrasts can be replicated for German.

(197) a. *Tell me who* [***t*** *admires John*] *and* [***t*** *hates Peter*].
b. *Tell me who* [*John admires* ***t***] *and* [*Peter hates* ***t***].
c. **Tell me who* [*John admires* ***t***] *and* [***t*** *hates Peter*].

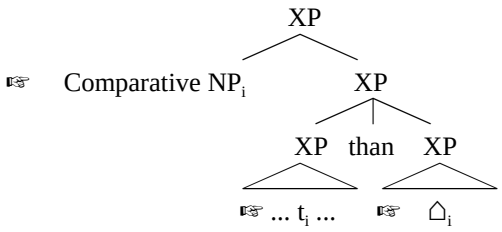
The parallelism requirement for ATB extraction will re-emerge in the discussion below as a heuristic for assessing the correctness of the analysis to be proposed (see (206) to (209) below).

Third, there is an imbalance in the way in which the CSC applies to base-generated conjunctions and comparative coordinations. On most accounts, ATB extraction creates 'forking paths,' i.e. representations in which the extractee binds a trace in all conjuncts:[129]

(198) [XP_i ... [[... t_i ...] and/or [... t_i ...]]]

Comparative coordination crucially differs now from ordinary conjunction in that comparatives obligatorily embed a trace which marks the target of CD. This specific property leads to an interesting prediction: Asymmetric comparative extraction (ACE) as in (199) should not induce a CSC violation, because it results in a configuration which mimics the output representation of ATB movement (198) in that the extractee binds a trace in all conjuncts:

(199)



In the next three subsections, I will present empirical support for ACE, and demonstrate that this unorthodox movement operation interacts with the CDSC in such a way as to yield a consistent and natural account of a variety of puzzles in German and English, including the Φ-feature mismatch in PCs.

Note on the side that this line of reasoning is straightforwardly compatible with a representational version of the CSC, which holds that if a category external to a coordination binds a trace inside one conjunct, it has to bind a trace inside all of the conjuncts (see e.g. Postal 1999: 52). If the CSC is interpreted as a derivational constraint, the ATB requirement can be derived from the implicit universal force in the formulation of Closest Attract (Chomsky 1995), which mandates that an attractor attract *all* closest appropriate features. On this conception, (199) observes the CSC, since the attractor external to the coordination attracts the features of the comparative NP (pied-piping its lexical content) as well as the features of the (silent) CD-site.[130]

As for the level of application of ACE, I adopt the null-hypothesis that in a given language, it observes the same restrictions which define other scope

fixing operations in that language. That is, in scope rigid languages such as German, which are commonly held to lack QR, ACE may only proceed overtly, while it may also operate covertly in languages which employ covert scope shifting operations such as English.

For expository convenience, the implementation of the proposal will proceed according to a tripartite taxonomy based on the size of the second conjunct (i.e. the *than*-XP) in a comparative coordination. In the first type of construction, the *than*-XP is coordinated at the AgrSP-level, in the second type, the derived coordination is established at the TP-node, and in the last one (represented by PCs), the *than*-XP coordinates at the AspP/VP-level.

4.3. Big conjuncts: AgrSP-coordination

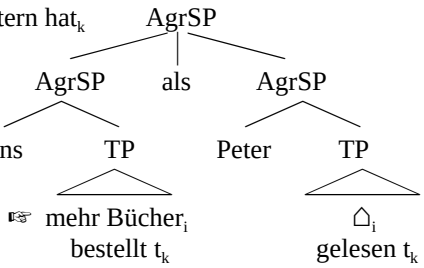
German comparatives which are complete except possibly for a finite auxiliary are subject to a curious restriction exemplified by the contrast in (200): ATB V2 may freely target periphrastic subject comparatives ((200)a), but it must not apply in object comparatives ((200)b):

(200) a. *Gestern* ***haben***$_k$ *mehr Leute ein Buch bestellt* $\mathbf{t}_k$ *als*
yesterday have more people a book ordered than
⌓ *eine Zeitung gelesen* $\mathbf{t}_k$.
a newspaper read
'Yesterday, more people ordered a book than read a newspaper.'

b. **Gestern* ***hat***$_k$ *Hans mehr Bücher bestellt* $\mathbf{t}_k$ *als Peter* ⌓ *gelesen* $\mathbf{t}_k$.
yesterday has H. more books ordered than P. read
'Yesterday, John ordered more books than Peter read.'

Under the present set of assumptions, the contrast above is explained as a reflex of the CDSC. As detailed by (201), the *than*-XP in ((200)b) projects an AgrSP which embeds an overt subject in SpecAgrSP and the trace of an ATB moved finite auxiliary. From the Law of Coordination of Like Categories it follows that ((200)b) has to be parsed as a symmetric AgrSP-coordination (AspP and further projections suppressed unless relevant):

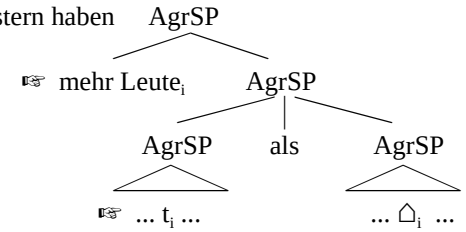
(201) *Gestern hat_k



But the object comparative *more books* in (201) is now located in a position from where it does not c-command the CD-site, in violation of the CDSC, thus ((200)b) is not part of the grammar.

In the well-formed subject comparative ((200)a), the comparative NP occupies the highest position inside the first AgrSP-conjunct. This in itself does not suffice yet in order to satisfy the CDSC, because SpecAgrSP does not c-command the second conjunct. However, the subject *mehr Leute* has the option of undergoing short asymmetric scrambling (ACE) out of the first conjunct, as seen in (202):

(202) Gestern haben



Crucially, this movement operation has the effect of widening the scope domain of the comparative NP, resulting in a structure which meets the CDSC (on non-string-vacuous ACE see 3.4).[131]

In ((200)b), ATB V2 renders comparative coordination obligatory. If ATB V2 fails to apply, as in (203), nothing forces a coordinate parse, and the *than*-XP can be treated analogously to extraposed relative clauses. That is, the comparative NP obtains scope over the CD-site by the same strategy which allows extraposed relative clauses to be interpreted in their base position: reconstruction (as e.g. in Büring and Hartmann 1994) or low attachment (as e.g. in Haider 1993):

(203) a. *Gestern **haben** mehr Leute ein Buch bestellt als*
yesterday have more people a book ordered than
*∅ eine Zeitung gelesen **haben**.*
a newspaper read have
'Yesterday, more people ordered a book than read a newspaper.'
b. *Gestern **hat** Hans mehr Bücher bestellt als Peter ∅ gelesen **hat**.*
yesterday has H. more books ordered than P. read has
'Yesterday, John ordered more books than Peter read.'

The analysis presented above has an immediate and important consequence for the formulation of the CSC. Semantically, all comparatives are subordinate structures, they may be parsed into a comparative coordination during (parts of) the syntactic derivation, though (on this issue see e.g. chapter 2 and chapter 4, section 4). Which strings exactly may do so is furthermore co-determined by a syntactic scope condition, the CDSC. Hence, the coordinate properties of comparatives are defined in at least two ways by syntax (via CSC and CDSC). Given now that the life span of the comparative coordination is restricted to the syntactic part of the derivation, it can be inferred that all CSC effects which can be detected in comparatives have to be computed in syntax, too. Thus, the CSC has to be formulated as a genuinely syntactic restriction, and cannot be reduced to an exclusively semantic constraint or a requirement on Conceptual Structure. This conclusion contradicts e.g. Culicover and Jackendoff (1997, 1999), and adds further support to Postal (1999).

Moreover, the present conception is only compatible with a certain - traditional - interpretation of the V2 phenomenon. In particular, it entails that V2 has to be seen as a *bona fide* syntactic operation, and that V2 cannot be delegated to PF (contra Chomsky 2001: 37). This follows because the successful application of ATB V2 is contingent on the formation of a comparative coordination, which in turn is licensed only if a genuinely syntactic condition, i.e. the CDSC, is met. A syntactic requirement accordingly determines whether verb movement may target the *than*-XP, or not. Moreover, on the most natural assumption, scope information (expressed in terms of the CDSC) is not encoded at PF. Thus, PF lacks the relevant scope information which underlies the contrast in (200), and it is therefore impossible to explain why V2 is licit in subject, but not in object comparatives exclusively by reference to PF-conditions.

Two important issues need to be addressed at this point. First, it is essential to ensure that ((200)b) is indeed parsed as an AgrSP-coordination, because permitting the comparative coordination to be established at the TP-, AspP- or VP-node instead, as in (204)a, would have fatal consequences for the analysis. In the alternative family of representations (204)a, the comparative

NP resides in the left periphery of the first conjunct. Thus, it may undergo string-vacuous ACE, obviating the CDSC effect, as shown in (204)b, and the original account for the contrast in (200) would be lost:

(204) a. **Gestern hat Hans* [[$_{TP/AspP/VP}$ *mehr Bücher bestellt*] *als*
yesterday has H. more books ordered than
[$_{TP/AspP/VP}$ *Peter* ∅ *gelesen*]]
P. *read*

b. *Gestern hat Hans* [**[*mehr Bücher*]$_i$** [[$_{TP/AspP/VP}$ ***t$_i$*** *bestellt*] *als*
[$_{TP/AspP/VP}$ *Peter* ∅ *gelesen*]]]
'Yesterday, John ordered more books than Peter read.'

It can be shown, however, that these three alternative structures, laid out in more detail in (205), are effectively excluded by the principles adopted in 3.2. Turning to (205)a first, TP-coordination is blocked because asymmetric EPP-driven subject raising to SpecAgrSP runs against the CSC. Second, in (205)b, the participle inside the first conjunct lacks a T°-head to its right, in violation of the adjacency condition on participles and T° (van Riemsdijk 1998). Finally, (200)b cannot be factorized as a VP-coordination, either, as the first conjunct in (205)c is too small to contain a participle (recall that participles need to raise to Asp° overtly):

(205) a. TP: [$_{AgrSP}$ **Hans$_k$** [[$_{TP}$ **t$_k$** mehr Bücher bestellt] als [$_{TP}$ Peter gelesen]]]
b. AspP: [$_{TP}$ Hans$_k$ [[$_{AspP}$ t$_k$ mehr Bücher **bestellt**] als [$_{AspP}$ Peter gelesen]] **T°**]
c. VP: [Hans$_k$ [[[$_{VP}$ t$_k$ mehr Bücher **bestellt**] als [$_{VP}$ Peter gelesen]] **Asp°**]

Thus, independently motivated assumptions conspire to limit the space of analytical possibilities, thereby preventing overgeneration.[132]

Second, the account creates specific expectations as to the interaction between the CDSC, which applies at LF, and operations modulating the LF input like reconstruction and ACE. In particular, it should be possible to construct examples in which surface CDSC violations are repaired at LF. As it turns out, though, while such paradigms are attested in English (see discussion surrounding (208)), LF operations apparently never conspire with the CDSC in German. Partially, this is so as German is a scope rigid language and therefore lacks covert ACE. Furthermore, independent considerations rule out *than*-XP reconstruction for all those cases - exemplified by ((200)b) - which involve overt ATB movement. In these contexts, reconstruction is prohibited as it would break up the ATB configuration and therefore induce a CSC violation at LF (for arguments that the CSC is operative at LF see e.g. Pesetsky 1982).[133] Finally, strings like (203)b, in which satisfaction of the

CDSC could in principle be postponed to LF subsequent to *than*-XP reconstruction also lend themselves to an empirically indistinguishable analysis in terms of low attachment of the *than*-XP.

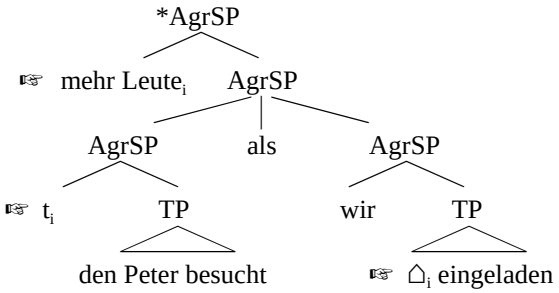
Proceeding to further empirical ramifications of the account, it was argued that ACE is sanctioned by the same mechanisms which license ATB dependencies. Direct evidence in support of this claim comes from the observation that ACE also displays sensitivity to the familiar parallelism constraint on ATB extraction (see section 4.2). More specifically, ACE is prohibited from applying whenever the comparative NP has to bind a matrix subject and a non-subject, as documented by the ill-formedness of (206)b (ATB V2 controls for comparative coordination):

(206) a. *Gestern haben$_k$ mehr Leute$_{Sub}$ den Peter$_{Obj}$ besucht t_k als*
yesterday have more people the P. visited than
wir$_{Sub}$ ⌓$_{Obj}$ eingeladen haben.
we invited have

b. **Gestern haben$_k$ **mehr Leute**$_{Sub}$ den Peter$_{Obj}$ besucht t_k als*
yesterday have more people the P. visited than
wir$_{Sub}$ ⌓$_{Obj}$ eingeladen t_k.
we invited
'Yesterday, more people visited Peter than we invited.'

In (206)b, two requirements are at conflict. The CDSC enforces movement of *mehr Leute* to a position external to the conjunction. But ACE results now in a representation in which the extractee illicitly ATB binds a matrix subject (t_i) and an object (⌓$_i$), as shown below:

(207)



As usually, the non-reduced variant (206)a meets the CDSC by low attachment or reconstruction of the *than*-XP.[134]

Reflexes of the parallelism requirement for ATB extraction are not limited to German, but can also be detected in English PCs, where they also furnish evidence for covert ACE. As reported in Hankamer (1973a: 63), PCs are

subject to the interesting requirement that the comparative NP and the CD-site must not serve distinct grammatical functions ((208)b). No such restriction holds for unreduced comparatives ((209)):

(208) *The girls know more bands than the boys.*
a. ... than the boys ~~know~~ ⌓
b. *... than ⌓ ~~know~~ the boys
(⌓ = d-many bands)

(209) a. *The girls know more bands than the boys know ⌓.*
b. *The girls know more bands than ⌓ know the boys.*
(⌓ = d-many bands)

On current views, the derivation of (208) involves a comparative coordination at the IP-level and Gapping. The CDSC consequently requires that the comparative NP undergo ACE in order to obtain scope over the CD-site. Moreover, while ACE may this time be postponed to LF (English sanctions covert scope shifting operations), it must still comply with the parallelism condition on ATB extraction. This criterion distinguishes now between (208)a and (208)b: Structure (208)a observes parallelism, because *more bands* and the CD-site both originate as objects. Reading (208)b is missing, though, since subsequent to ACE, *more bands* ends up binding its own trace in object position and the CD-site in matrix subject position.[135] Thus, paradigm (208) not only corroborates the existence of covert ACE, but also substantiates the hypothesis that ACE generates instances of ATB configurations.

4.4. Intermediate conjuncts: TP-coordination

A second class of constructions in German, which will be seen to involve TP-coordination, is characterized by the absence of one or more XPs inside the *than*-XP. Focusing for the moment on object comparatives, ellipsis of the subject has the effect that ATB V2 is all of a sudden not only tolerated, but even obligatory:

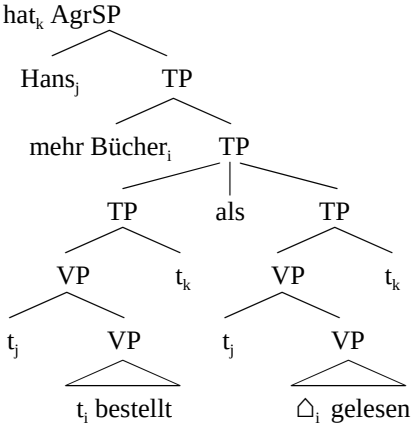
(210) a. *Gestern* ***hat***$_k$ *Hans mehr Bücher* $\mathbf{t}_k$ *bestellt als ⌓ gelesen* $\mathbf{t}_k$.
yesterday has H. more books ordered than read
b. **Gestern* ***hat***$_k$ *Hans mehr Bücher* $\mathbf{t}_k$ *bestellt als ⌓ gelesen* ***hat***.

Hence, comparatives with subjectless *than*-XPs contrast with constructions that project a subject in two respects: First, ATB V2 is not confined to subject

comparatives, but may also target object comparatives ((210)a vs. (200)); second, ATB V2 is even obligatory ((210)b vs. (203)b).

Let me begin by demonstrating why ATB V2 in (210)a is possible in the first place. On present assumptions, auxiliaries reside in T°, and participles are generated VP-internally. Furthermore, the adjacency requirement for participles and T° implies that prior to V2, the VP-internal participle and the auxiliary in T° are adjacent and minimally contained in TP. The presence of two overt participles, as in (210)a, signals then that there are two TP projections, each hosting a participle and an auxiliary. As X'-coordination is generally prohibited (see note 128), it follows that conjunction has to be formed at least as high as at the TP-node:

(211) Gestern hat_k AgrSP (= (78a))



In course of the derivation, the subject ATB raises to SpecTP, and moves on to SpecAgrSP, while the auxiliaries undergo ATB V2. Moreover, since the subject has been removed from the first conjunct, the object *mehr Bücher* can string-vacuously extract and adjoin to TP. The comparative thereby gains scope over the CD-site, satisfying the CDSC.

The picture emerging so far looks as follows: Whenever comparative formation implicates an ATB movement process such as ATB V2, the structure has to be parsed as a comparative coordination. Comparative coordination can in turn satisfy the CDSC only if the comparative XP is the highest overt category inside the first conjunct (((200)a)/(210)a vs. ((200)b)). Only then can the comparative NP take scope over the CD-site by string-vacuous ACE out of the first conjunct. This conception generates two empirical predictions, on which I will elaborate below. First, if ATB movement triggers a comparative coordination, the CSC demands that further movement operations to a position above the node minimally dominating the coordination have to proceed in an

ATB fashion, too. Second, ACE does not necessarily have to proceed string-vacuously, but may in theory also lead to permutation in overt syntax.

Turning to ATB movement and its implications first, recall that in (210), ATB V2 is not only tolerated, but even obligatory. This fact directly supports the reduction analysis:

(210) b. **Gestern* ***hat***$_k$ *Hans*$_j$ [$_{TP}$ *mehr Bücher*$_i$ [$_{TP}$ [$_{TP}$ t_j t_i *bestellt* $\mathbf{t_k}$] *als*
yesterday has H. more books ordered than
[$_{TP}$ t_j ∅ *gelesen* ***hat***]]]
read has

In (210)b, ATB subject extraction is indicative of a comparative coordination. Thus, additional movement processes to TP-external positions have to target both conjuncts, prohibiting asymmetric V2 in (210)b.

The same explanation naturally extends to two related observations. To begin with, it captures an at first sight puzzling contrast between (210)a and its ill-formed past tense variant (212):

(212) **Gestern* ***bestellte***$_k$ *Hans*$_j$ [$_{TP}$ *mehr Bücher*$_i$ [$_{TP}$ [$_{TP}$ t_j t_i $\mathbf{t_k}$] *als* [$_{TP}$ t_j ∅ *las*]]]
yesterday ordered H. more books than read

As remarked above, the presence of an ATB subject trace in (212) forces additional movement operations to observe the CSC. Failure of V2 to affect both conjuncts, as in (212), accordingly results in ungrammaticality. If the V2 requirement is canceled by construing the matrix clause with the verb in final position, the output is impeccable, as expected:[136]

(213) *weil Hans*$_j$ [$_{TP}$ *mehr Bücher*$_i$ [$_{TP}$ [$_{TP}$ t_j t_i ***bestellte***] *als* [$_{TP}$ t_j ∅ ***las***]]].
since H. more books ordered than read

Furthermore, the CSC successfully discriminates between object comparatives ((212)) and their subject counterparts ((214)), which behave more liberally in that they license matrix V2 in combination with a finite verbal remnant:

(214) *Gestern* ***bestellten*** *mehr Leute eine Zeitung* [*als* ∅ *ein Buch* ***lasen***].
yesterday ordered more people a newspaper than a book read
'Yesterday, more people ordered a newspaper than read a book.'

Again, this difference directly follows from the ATB analysis. The derivation of (214) does not involve ATB subject movement, and comparative coordination is therefore not obligatory. It follows that the *than*-XP can be parsed in

the same way as extraposed relative clauses, with the comparative NP taking scope over the CD-site either subsequent to reconstruction or by low attachment of the *than*-XP.[137]

Effects of the CSC also materialize in (verb-final) contexts which exclusively involve XP-movement, as opposed to verb movement. In particular, the CSC leads one to expect that when XPs undergo scrambling, shared constituent (bold face) always have to precede non-shared constituents (italics). This prediction is corroborated, as illustrated by the contrast between (215)b and (215)c.[138]

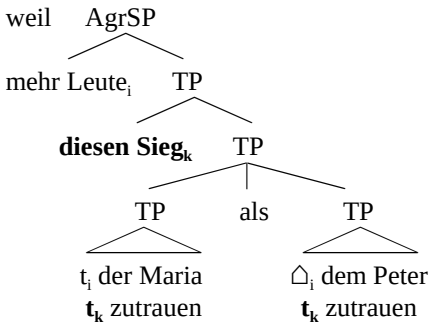
(215) a. *weil* [*mehr Leute der Maria einen Sieg* ~~*zutrauen*~~] *als*
since more people the M. a victory bel-cap than
[⌓ *dem Peter einen Sieg zutrauen*]
the P. *a victory bel-cap*
'since more people believe Mary to be able to win than Peter'

b. *weil mehr Leute* ***diesen Sieg***$_k$ [*der Maria* ***t***$_i$ ~~*zutrauen*~~] *als*
since more people this victory the Mary bel-cap than
[⌓ *dem Peter* ***t***$_k$ *zutrauen*]
the P. bel-cap
'since more people believe Mary to be capable of this victory than Peter'

c. **weil mehr Leute* [*der Maria* ***diesen Sieg***$_k$ ~~*zutrauen*~~] *als*
since more people the M. this victory bel-cap than
[⌓ *dem Peter* ***t***$_k$ *zutrauen*]
the P. bel-cap
'since more people believe Mary to be capable of this victory than Peter'

The well-formed string (215)b lends itself to an analysis in terms of ATB scrambling of *diesen Sieg*/'this victory' to the left of the coordinating node:

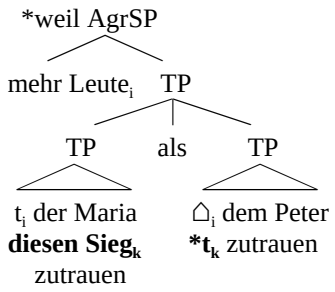
(216)



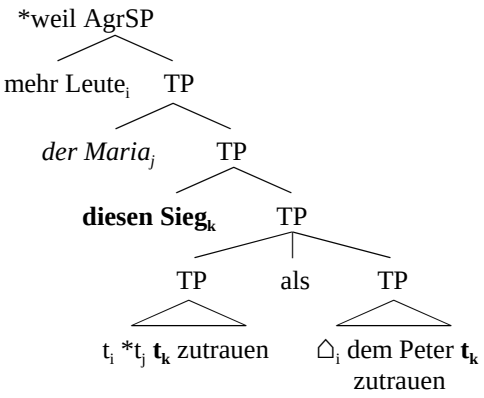
(215)b can on the other side be assigned two alternative parses, as detailed by the trees in (217), both of which fail to observe one of the well-formedness

conditions on traces. In (217)a, *diesen Sieg*/'this victory' remains inside the 1st conjunct, and can for this reason not properly bind the trace inside the second conjunct. (217)b on the others side violates the CSC, which prohibits asymmetric scrambling of *der Maria*/'Mary':

(217) a. T_K NOT BOUND



b. CSC-VIOLATION



Furthermore, exactly the same analysis correctly discriminates between licit and illicit PCs; the PC variants in (218)b/c minimally differ from (215)b/c only in that ATB scrambling combines with RNR of the finite verb in the former group of examples:

(218) a. *weil* [*mehr Leute der Maria einen Sieg* ~~*zutrauen*~~] *als*
since more people the M. a victory bel-cap than
[∆ *dem Peter einen Sieg zutrauen*]
the P. a victory bel-cap
'since more people believe Mary to be able to win than Peter'

b. *weil mehr Leute* ***diesen Sieg$_k$*** [*der Maria* ***t$_i$*** ~~*zutrauen*~~] *als*
since more people this victory the Mary bel-cap than
[∆ *dem Peter* ***t$_k$*** *zutrauen*]
the P. bel-cap
'since more people believe Mary to be capable of this victory than Peter'

c. **weil mehr Leute* [*der Maria* ***diesen Sieg$_k$*** ~~*zutrauen*~~] *als*
since more people this victory the Mary bel-cap than
[∆ *dem Peter* ***t$_k$*** *zutrauen*]
the P. bel-cap
'since more people believe Mary to be capable of this victory than Peter'

Second, the current account entails that in scrambling languages (German), it should be possible to find manifestations of overt, non-string-vacuous ACE.

In testing this prediction, it is instructive to consider the behavior of ditransitive constructions first, which will supply the empirical basis for assessing the correctness of this corollary.

Ditransitive constructions provide additional support for the generalization that ATB V2 in comparatives is tolerated only if the comparative NP surfaces in the left periphery of the first conjunct. In paradigm (219), the comparative NP serves as the indirect object. If the *than*-XP is construed only with an accusative remnant alongside the participle, as in (219)b, the dative is leftmost within the first conjunct, and may obtain scope over the CD-site by overt, string-vacuous ACE. If, however, the *than*-XP contains an overt subject, as in (219)c, the structure has to be parsed as an AgrSP-coordination (just as in ((200)b), TP-coordination would enforce asymmetric subject movement from SpecTP to SpecAgrSP, in offense of the CSC). This has the effect that the subject separates the dative from the left edge of the first conjunct and a CDSC violation ensues:

(219) a. *Leider hat Hans mehr Leuten Geld abgeknöpft als*
unfortunately has H. more people money wrangled out than
Maria ∅ Schulden hinterlassen hat.
M. debts left behind has
'Unfortunately, John wrangled money out of more people than Mary left behind debts'

b. *Leider hat Hans*$_j$ [$_{TP}$ ***mehr Leuten***$_i$ *Geld* [$_{TP}$ t_j t_i *abgeknöpft*] *als*
unfortunately has H. more people money wrangled out than
[$_{TP}$ t_j *∅ Schulden hinterlassen*]]
debts left behind
'Unfortunately, John wrangled money out of more people than he left behind debts.

c. **Leider hat* [$_{AgrSP}$ *Hans*$_j$ ***mehr Leuten*** *Geld abgeknöpft*] *als*
unfortunately has H. more people money wrangled out than
[$_{AgrSP}$ *Maria ∅ Schulden hinterlassen*]
M. debts left behind
'Unfortunately, John wrangled money out of more people than Mary left behind debts.'

Furthermore, the analysis correctly leads one to expect that ATB V2 constructions with accusative comparatives are licit just in case all arguments to the left of the accusative (subject and indirect object) have been removed from inside the *than*-XP by ATB scrambling, as documented by the contrast (220)b,c vs. (220)d. Examples (220)b and (220)c fail to conform with the CDSC because the accusative (*mehr Geld*/'more money') is not leftmost in its conjunct, whereas in (220)d, *mehr Geld* may undergo string-vacuous ACE

subsequent to ATB scrambling of the nominative (*Hans*) and the dative (*der Firma*/'the firm'):

(220) a. *Leider hat Hans der Firma mehr Geld abgeknöpft als*
unfortunately has H. the firm more money wangle out than
er den Erben ∅ hinterlassen hat.
he the heirs left behind has
'Unfortunately, Hans wangled more money out of the firm than he left behind for his heirs.'

b. **Leider hat* [$_{AgrSP}$ *Hans der Firma* ***mehr Geld*** *abgeknöpft*] *als*
unfortunately has H. the firm money wrangled out than
[$_{AgrSP}$ *er den Erben ∅ hinterlassen*]
he the heirs left behind
'Unfortunately, Hans wangled more money out of the firm than he left behind for his heirs.'

c. **Leider hat Hans*$_j$ [$_{AgrSP/TP}$ t_j *der Firma* ***mehr Geld*** *abgeknöpft*] *als*
unfortunately has H. more people money wrangled out than
[$_{AgrSP/TP}$ t_j *den Erben ∅ hinterlassen*]
'Unfortunately, Hans wangled more money out of the firm than he left behind for his heirs.'

d. *Leider hat* [$_{AgrSP}$ *Hans*$_j$ [$_{TP}$ *der Firma*$_k$ [$_{TP}$ ***mehr Geld***$_i$
unfortunately has H. more people money wrangled out than
[$_{TP}$ t_j t_k t_i *abgeknöpft*] *als* [$_{TP}$ t_j t_k *∅ hinterlassen*]]]]
'Unfortunately, Hans wangled more money out of the firm than he left behind for the firm.'

Finally, ditransitives also attest to the fact that ACE is not confined to contexts of string-vacuous movement. As illustrated by (221), the CDSC violation of (220)c can be remedied by overtly fronting the comparative NP (*mehr Geld*) to the left of the coordinating node, from where it c-commands the CD-site:[139]

(221) *Leider hat* [*Hans*$_j$ [***mehr Geld***$_i$ [$_{TP/AgrSP}$ t_j t_i *der Firma abgeknöpft*] *als*
unfortunately has H. more money the firm wangle out than
[$_{TP/AgrSP}$ t_j *den Erben ∅ hinterlassen*]]]
the heirs left behind
'Unfortunately, Hans wangled more money out of the firm than he left behind for his heirs.'

Thus, there are also contexts in which overt permutation serves as a diagnostic for ACE.

4.5. Small conjuncts: AspP/VP-coordination

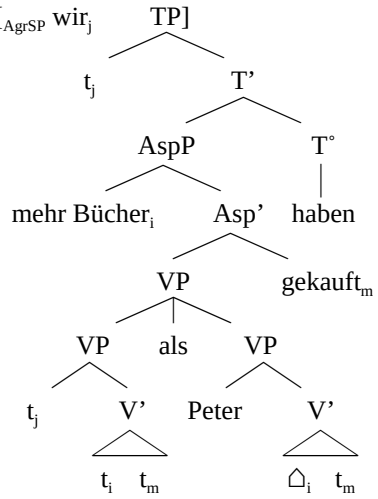
Turning finally to the third type of construction - i.e. PCs - and the problem of Φ-feature mismatch, recall that in internal PCs such as (192)b, the finite verb does not agree with the subject remnant, but with the matrix subject:

(192) b. *weil* ***wir***$_{1st\ pl}$ *mehr Bücher als Peter*$_{3rd\ sg}$ *gekauft* ***haben***$_{1st\ pl}$
since we more books than P. bought have
'since we bought more books than Peter'

This led to the conclusion that (192)b cannot be derived by RNR. The revised theory, which incorporates the CDSC, straightforwardly accounts for this idiosyncrasy, though.

Starting by narrowing down the analytical possibilities, (192)b can neither be parsed in terms of AgrSP nor in terms of TP-coordination: AgrSP-coordination violates the CDSC, since the object comparative cannot string-vacuously extract to a position c-commanding the *than*-XP (see the tree in (201)). TP-coordination, on the other hand, is excluded by the CSC, because the matrix subject would have to undergo asymmetric, EPP-driven raising from SpecTP to SpecAgrSP (for details see (205)a). This leaves AspP- or VP-coordination. Even though both options derive the desired results, I will for reasons of space only expand on VP-coordination here. As shown by (222), the two VPs contain one participle each, but the structure embeds only a single T°-node, which hosts the auxiliary prior to V2. Since participles have to be adjacent to T°, they ATB move to a shared Asp°:

(222) weil [$_{AgrSP}$ wir$_j$ TP]



On this view, main verb-auxiliary ellipsis, which was initially attributed to RNR, is reanalyzed as an instance of ATB movement.

Moreover, case-driven A-movement of subjects is by assumption exempted from the CSC (Johnson 1996), and the matrix subject is therefore free to undergo asymmetric raising to SpecTP, from where the nominative NP moves on to AgrSP. Crucially, the Φ-feature mismatch in (192)b now receives a natural explanation. The finite verb enters into a Spec-head configuration with the matrix subject, and not with the subject remnant inside the *than*-XP, yielding the effect of first conjunct agreement.[140] Finally, the subject remnant does not check Case under Spec-head agreement, but bears default nominative case[141] (see Halle 1989; Marantz 1991; Schütze 1997: 52f for some recent discussions of default case).[142]

To summarize, it has been argued that a variety of well-formedness conditions on reduced comparatives falls out from the CDSC and the default hypothesis that the height of a comparative coordination is not predetermined by the grammar. The analysis was also shown to provide an account for the at first sight puzzling phenomenon of ϕ-feature mismatch in clause internal PCs. The next and final section of chapter 3 proceeds to a re-evaluation of counter arguments against reduction analyses of PCs which can be found in the literature.

5. Re-evaluation of counter arguments

Various authors have pointed out that ellipsis theories of PCs which are based on the simple equation 'PC equals clausal comparative minus X' are challenged by cases where there either is no well-formed clausal comparative that might serve as a target for ellipsis to be begin with, or where the resulting PC is ill-formed (Hankamer 1973b; Hendriks 1995; Pinkham 1982; see Brame 1983 for an overview). In what follows, I will briefly address five such problems of under- and overgeneration and demonstrate how the PC-Hypothesis deals with them.

First, PCs with accusative remnants such as (13)a - repeated from above - appear to lack a well-formed underlying clausal source (Brame 1983; McConnell-Ginet 1973; Napoli 1983). However, comparatives are not unique in licensing accusative remnants ((223)a), they are also attested in conjunctions. Crucially, accusative remnants are limited to contexts involving reduction by CR (Gapping):

(13) a. PC: *John is older than me.*
b. Source: **John is older than me am.*

(223) a. Gapped CP: *John is eager to see the movies, and me too.*
b. Source: **John is eager to see the movies, and me is eager to see the movie, too.*

Thus, the morphological alternation of remnants in PCs and Gapped coordinate clauses is conditioned by identical conditions, as predicted by the CR-Hypothesis. (On how accusative is assigned to remnants see e.g. Zoerner 1995).[143]

Second, it is sometimes impossible to pair a grammatical clausal comparative with a well-formed PC-correlate, indicating that the CR-Hypothesis apparently overgenerates. A point in case is the ill-formed PC in (14)a, which embeds an expletive remnant (Brame 1983). However, (14)a can again be analyzed as a violation of a more general condition on Gapping. More specifically, expletives cannot be focused while Gapping remnants have to bear focus. It is for this reason that Gapping in coordination never leaves expletive remnants, either (see (224)a).

(14) a. **There couldn't have been any more people than there ~~were~~.*
b. *There couldn't have been any more people than there were.*

(224) a. **There were some good solutions to the first problem and there ~~were~~ some interesting ones to the last one.*
b. *There were some good solutions to the first problem and there were some interesting ones to the last one.*

Note also that once the expletive is substituted by a full NP (while keeping the size of the Gap and the structure of the clause constant), the result is fully acceptable:

(225) *Some were innocent and others ~~were~~ guilty.*

Third, it is well-known that PCs license reflexive remnants bound from the matrix clause ((226)a), while clausal comparatives don't ((226)b; Hankamer 1973b).

(226) a. *John couldn't possibly be taller than himself.*
b. **John couldn't possibly be taller than himself is.*
c. *John$_i$ couldn't possibly be taller than he$_i$ is.*

Example (13)b revealed that remnants in PCs may bear accusative case. This in turn indicates that the *than*-XP of PCs does not (necessarily) contain finiteness features. Adopting the widely-shared assumption that binding domains

are defined in terms of finiteness, it follows that the *than*-XP of PCs does not constitute a binding domain, and the anaphor in (226)a can therefore be licensed by an external antecedent.

On one implementation of this idea, which I will adopt here, the anaphor in (226)a acts as a small-clause subject of the predicate which resides in the position of the CD-site. Under this analysis, the derivation of (226)a does not involve Gapping at all, but only ellipsis of the predicative gradable property by CD, resembling in this respect small clauses such as (228):

(227) *John couldn't possibly be taller than himself* ⌓.
(⌓ = d-tall)

(228) *John considers himself tall.*

The small clause analysis receives support from the observation that reflexive remnants are limited to contexts where the remnant functions as a small clause subject. For this reason, (229) is unambiguously associated with the narrow ellipsis reading, in which the anaphor serves as small clause subject of *d-tall* ((229)a). The wide ellipsis construal (229)b is missing because - in absence of finiteness features - the remnant cannot be parsed as the subject of a transitive clause, bleeding the context for the application of Gapping. Moreover, one is correctly lead to expect that ambiguity re-emerges if the subject position is filled by a full NP, as in (230); the wide ellipsis interpretation is derived by Gapping:

(229) *John couldn't possibly know a taller man than himself* ⌓.
a. ⌓ = d-tall man
b. *⌓ = know a d-tall man

(230) *John couldn't possibly know a taller man than Sam* ⌓.
a. ⌓ = d-tall man
b. ⌓ = know a d-tall man

The small clause analysis also naturally extends to pre- and postnominal NP-comparatives (see chapter 2, section 5). Consider cases with intraposed *than*-XPs first:

(231) a. *A taller man* [*than Peter* ⌓] *knew Sam.*
(⌓ = d-tall man)
b. *A man taller* [*than Peter* ⌓] *knew Sam.*
(⌓ = d-tall)

The examples under (231) are special in that (i) they are PCs even though the *than*-XPs remain *in-situ*, and in that (ii) (231)a lacks a wide ellipsis reading with *Peter* in object position (i.e. *A taller man than the man who knew Peter knew Sam*).[144] Both facts directly fall out from the present account, according to which wide ellipsis is contingent upon extraposition and CR, whereas a narrow reading implicates CD only, thereby licensing *in-situ than*-XPs.

The last two differences[145] between PCs and clausal comparatives to be addressed once again tie in with small clause comparatives and pertain to PCs which - as pointed out by Brame (1983) - appear to lack a clausal source:

(232) a. *She ran faster than the world record.*
b. **She ran faster than the world record ran.*

(233) a. *To be taller than John would be quite amazing.*
b. **To be taller than John to be would be quite amazing.*

First, (232)a can be subsumed under the small clause analysis, according to which *the world record* functions as a small clause subject, and the *than*-XP does not contain any ellipsis site apart from CD (following a suggestion by Heim 1985). The same considerations carry over to infinitival comparatives in (233). Given that the underlying source of (233)a looks as in (234) rather than in (233)b, the problem of undergeneration can be successfully resolved.

(234) *To be taller than John ⌓ would be quite amazing.*
(⌓ = d-tall)

To recapitulate, a number of apparent disparities between PCs and clausal comparatives which have traditionally been taken to constitute arguments against an ellipsis analysis of PC fall out from the PC/CR-Hypothesis. It was argued that the assumption that PCs can (in certain contexts) be assigned a small clause construal leads to an understanding of binding, Case and interpretive properties. Even though the analysis of the counter evidence is not complete yet and requires further investigation (especially in the domain of extraction; see note 145), the evidence discussed in the present section does not support the base-generation approach, either.

6. Summary

In chapter 3, I argued that PCs are derived from clausal comparatives, and that the PCs and PRCs lend themselves to an analysis in terms of CR (Gapping,

RNR and ATB movement). It was demonstrated that CR displays identical behavior in comparatives and in base-generated coordinate structures. The analysis accounted for the distribution as well as for the internal organization of reduced comparatives in German and English. That is, the CR-Hypothesis correctly derives the relative location of PCs and PRCs in the matrix clause, and captures the generalization that the shape of the ellipsis site is determined by the position of the *than*-XP. Competing analyses - in particular the direct analysis - fail to account for these observations without further stipulations.

Theoretically, the findings supported the assumption of a new restriction on the relation between the comparative category and the CD-site, which functions as a filter on comparative coordination (CDSC). In addition, it was seen that the analysis elicits an argument for the view that V2 movement is a PF-phenomenon (Chomsky 2001), and entails a syntactic interpretation of the CSC.

Chapter 4
Comparative Coordination

1. Introduction

In chapter 3, I argued that the CR-Hypothesis offers the fundament for an empirically adequate and restrictive theory of reduction processes in comparatives in general, and PC-formation in particular. Now, the CR-Hypothesis inherently relies on the assumption that at some point of the syntactic derivation, comparatives are assigned a parse similar to the one commonly associated with coordinate structures. This conception conflicts however with the AP-Raising analysis of CD presented in 2, according to which the *than*-XP serves as an internal argument of the comparative degree head in the matrix clause semantically (following von Stechow 1984). Thus, if the deliberations of chapter 2 and the CR-Hypothesis are on the right track, comparatives have to be treated as hybrid constructions with properties of both sub- and coordination (Moltmann 1992; Smith 1961). The present chapter expands on these obviously competing syntactic and semantic requirements for the comparative complement.

The chapter falls into three parts. In the first part, I introduce a systematic disparity between comparatives and coordinate structures (section 2), whose analysis will subsequently lead to a resolution of the antagonism between the hypotactic and the paratactic structure of comparatives. The second part (section 3) presents tests for the predictions the theory makes for the interaction between binding scope and ellipsis scope. The results of these tests will be seen to contribute further evidence for the assumption that the *than*-XP of PCs contains syntactically projected structure, in accordance with the PC-Hypothesis. Finally, in the last part (section 4), I will comment on some further empirical aspects of the coordinate properties of comparatives and their ramifications for the theory of coordination.

2. Deriving the coordinate parse

The evidence which materialized so far led to the conclusion that reduction in comparatives and conjunction can be characterized by the same set of restrictions. But there is also a number of systematic differences between the two constructions, one of which will serve as the basis for the discussion here.

2.1. Structural ambiguity and TR

The relevant asymmetry pertains to the internal conditions governing the relation between the elided string and its antecedent. It has already been pointed that Gapping strictly obeys *Isomorphism* and may for this reason not reach into the first conjunct when looking for an antecedent (Johnson 1996, 2003; Sag 1976). Example (1) is for instance unambiguously associated with the wide reading under (1)a:

(1) *John wanted to write plays and Sam ⌓ poems.*
   a. ⌓ = wanted to write
   b. *⌓ = wrote/writes

Notice now that in contrast to Gapping, VP-Ellipsis (VPE) is not governed by Isomorphism and may therefore choose its antecedent rather freely from the discourse (Hankamer 1971; Hardt 1993; Hudson 1976; Sag 1976). For instance, the missing VPs in (2) and (3) can be recovered from the higher or the lower VP in the first conjunct, respectively:

(2) *John wanted to write a play, and he did ⌓ (too).*[146]
   a. ⌓ = wanted to write a play *(John ≠ he)*
   b. ⌓ = write a play *(John = he)*

(3) *John didn't want to write a play, but he did ⌓.*
   a. ⌓ = wanted to write a play *(John ≠ he)*
   b. ⌓ = write a play *(John = he)*

The same observation has been made for Antecedent Contained Deletion (ACD), where a broad reading for the quantifier containing the ellipsis site is compatible with reconstruction of the embedded VP (Larson and May 1990; Fiengo and May 1994: 254):

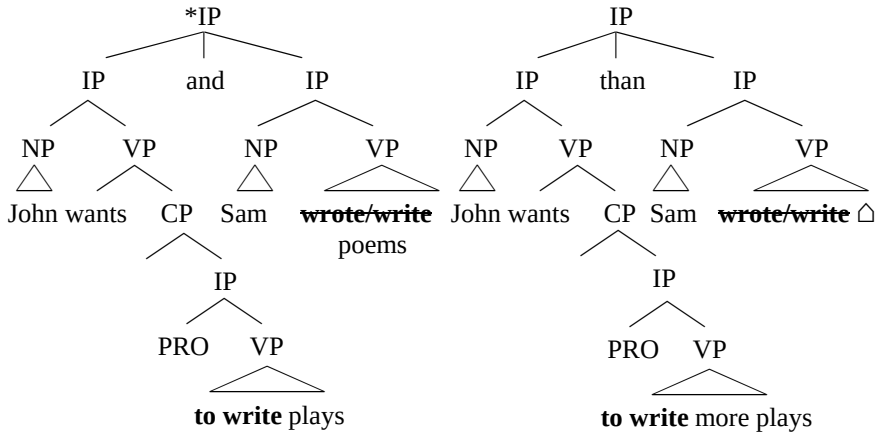
(4) *John wants to visit a certain city that you did ⌓.*
   a. ⌓ = visited
   b. ⌓ = wanted to visit

Interestingly, deletion in comparatives does - contrary to expectation - not pattern along with Gapping in conjunction, but displays the same freedom in choosing an antecedent that was seen to be characteristic of VPEs. The object comparative (5) allows the narrow reading (5)b in addition to broad ellipsis, as in (5)a, contrasting in this respect with the conjunction (1)b:[147, 148]

(5) *John wants to write more plays than Sam* ⌂.
a. ⌂ = wants to write d-many plays
b. ⌂ = writes/wrote d-many plays

The trees in (6) provide more detailed representations of (1)b and (5)b:

(6) a. CONJUNCTION (= (1)b) b. COMPARATIVE (= (5)b)



Clearly, this disparity between verb ellipsis in comparatives and conjunction does not follow from the tenets of the PC/CR-Hypothesis.

The parallelism between VPE and deletion in comparatives is of a very limited nature, though. It is a further well-known fact about VPE that it is also licensed in contexts which violate Locality (in addition to Isomorphism). Locality was made responsible for the inability of Gapping to operate across clause boundaries:

(7) **John wrote plays and Sam wanted to ~~write~~ poems.*

Unlike Gapping in (7), VPE may also elide strings at a distance, as shown by (8) (see Johnson 1996, 2003 and references therein; (8) is identical to (2) above, with the exception that the relations between the ellipsis site and the antecedent have been reversed):

(8) *John wrote a play, and Sally wanted to* ⌂*, too.*
(⌂ = write a play)

Thus, VPE not only fails to obey Isomorphism, but also proves to be immune to Locality. Crucially, this greater tolerance toward Locality does not carry

over to comparatives, which fail to license ellipsis in embedded contexts (see chapter 3, section 2.2):

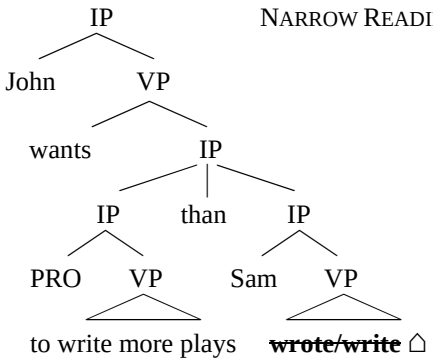
(9) **John* [$_{VP}$ *wrote more plays*] *in a month than Sam wanted to* ⌂ *in a year.*
(⌂ = write d-many plays)

The same result is obtained with isomorphic examples that violate Locality only. In (10), the Gap and its antecedent are both embedded, but they are embedded at the same depth. Nonetheless, the output is deviant:

(10) **John wants* [$_{VP}$ *to write more plays in a week*] *than Sam tried* ⌂ *(in a year).*
(⌂ = to write d-many plays)

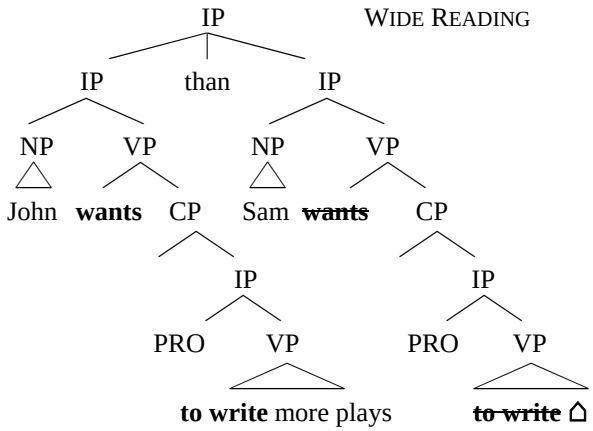
In sum, while elliptical object comparatives appear to be exempt from Isomorphism, patterning along in this respect with VPE, they observe Locality (and more generally pass all the other tests diagnostic of Gapping; see chapter 3, section 2.2). This finding directly leads to the following conclusion. If the CR-Hypothesis is to be maintained, the phrase marker (6)b cannot be the proper parse for the narrow reading of (5), as (6)b violates Isomorphism. Instead, the CR-Hypothesis requires that the narrow reading (5)b is derived from a structure in which the antecedent and the Gapped string are in a strictly isomorphic relations. It follows that the *than*-XP has to enter a comparative coordination with the lower IP-node, instead of the higher one, as shown by the new parse for (5)b under (11):

(11) NARROW READING (= (5)b)



By parity of reasoning, the wide reading (5)a has to be assigned a structure involving high matrix-IP coordination (as already suggested by (6)b):

(12) WIDE READING (= (5)a)



A remark is in order here regarding the scope of the *than*-XP in (11) w.r.t. the intensional verb *want*. Even though the *than*-XP resides within the syntactic scope of *want* in the narrow reading, the content of the *than*-XP is not part of John's wishes. (11) compares the number of plays John wants to write with the number of plays Sam actually wrote, and not with the number of plays which John wants Sam to complete. Thus, it must be ensured that the world variable of the *than*-XP is bound by the matrix world variable w_0, as in (13)a/b and not by the bouletic alternatives (w) provided by the predicate inside the *than*-XP, as in (13)c/d:

(13) a. *John wants$_{w0}$ to write$_{w}$ more plays than Sam wrote$_{w0}$*

b. $\forall w[w\ R_{\text{bouletic alternative for John}}\ w_0 \rightarrow \exists d[\text{John\_writes\_d-many\_plays\_in\_}\mathbf{w} \wedge d > \max\{d'|\text{Sam\_wrote\_d'-many\_plays\_in\_}\mathbf{w_0}\}]$
'for all worlds w which are consistent with John's wishes in w_0, John writes more books in w than Sam wrote in w_0'

c. **John wants$_{w0}$ to write$_{w}$ more plays than Sam wrote$_{w}$*

d. $\forall w[w\ R_{\text{bouletic alternative for John}}\ w_0 \rightarrow \exists d[\text{John\_writes\_d-many\_plays\_in\_}\mathbf{w} \wedge d > \max\{d'|\text{Sam\_wrote\_d'-many\_plays\_in\_}\mathbf{w}\}]$
'for all worlds w which are consistent with John's wishes in w_0, John writes more books in w than Sam wrote in w'

This aspect of the analysis proves largely unproblematic, though. It has been observed by various authors that world variables associated with predicates inside comparative complements can be anchored to the actual world by double indexing,[149] resulting in a *de re* reading without scoping of the *than*-XP (Heim 1985; Hoeksema 1984; Kennedy 1995; Postal 1974; Rullmann 1995). What needs to be added is the proviso that if the *than*-XP contains a Gap, the

double indexing strategy (13)a/b is not only optional, but even obligatory.[150] (See below and Lechner, to appear, for more detailed discussion of this issue).

As was explicated above, the CR-Hypothesis correlates ellipsis ambiguity in PCs with ambiguous syntactic representations. Consider now the initial and final steps in the derivation of the wide reading of (5): Initially, the *than*-XP is base-generated in the complement position of the degree head, resulting in a subordinate parse. The output structure (12) on the other side locates the *than*-XP in a position in which it can enter a comparative coordination with the matrix clause. This strongly suggests that the two structures are related by a movement operation. I will henceforth adopt this derivational strategy of conflict resolution between subordination and coordination. More precisely, I will assume that (12) derives from the base-generated subordinate structure via extraposition of the *than*-XP to the right periphery of the matrix clause, yielding a configuration which is sufficiently close to the convergence of properties which define coordinate structures in order to license CR processes. In what follows, I will refer to the movement process sponsoring the comparative coordination as *than*-XP *Raising* (TR).

TR resembles extraposition, in that it is optional. However, if the *than*-XP is targeted by Gapping, the *than*-XP and its matrix clause are subject to *Embedding, with the direct consequence that TR is forced to apply. Furthermore, TR is restricted to comparatives. Conjunctions do not license movement of a non-initial conjunct, presumably because conjuncts *per se* satisfy *Embedding in their base generated position.[151]

In the next section, I will examine the empirical ramifications of these assumptions, presenting evidence in favor of TR and ambiguity of attachment. In pursuing this goal, two sorts of diagnostics will turn out to be central: (i) conditions on syntactic chain formation (section 2.2) and (ii) correlations between ellipsis scope and the binding scope of the remnant (section 3). I will take up these issues in turn, delegating some speculations on the more fine-grained structure of the comparative coordination to the end of this chapter (section 4).

2.2. TR and the size of ellipsis

According to the CR-Hypothesis, ellipsis resolution in (Gapped) comparatives is contingent upon the possibility to parse the matrix clause and the *than*-XP into a derived comparative coordination which observes isomorphism. On the TR-analysis, these contexts are supplied by overt extraposition (TR). Thus, if the bounding conditions on extraposition make available more than a single landing site for the *than*-XP, one is led to expect that each of these discrete

output representations is paired with a single interpretation (*qua* Isomorphism).

Empirically, this view is supported by the behavior of object comparatives such as (5), which were seen to be structurally ambiguous. In deriving the narrow reading for object comparative, TR coordinates the *than*-XP with the embedded IP first, as in (14)b. Subsequent application of Gapping yields the final output (14)c:

(14) OBJECT COMPARATIVES, NARROW ELLIPSIS:
- a. [$_{IP}$ *John wants* [$_{IP}$ *to write* [*more plays* [*than Sam write* ∅]]]] ⇨
- b. [$_{IP}$ *John wants* [[$_{IP}$ *to write* [*more plays* $\boldsymbol{t_k}$]] *than* **[$_{IP}$ *Sam write* ∅]$_k$**]]
- c. [$_{IP}$ *John wants* [[$_{IP}$ *to* ***write*** *more plays*] *than* [$_{IP}$ *Sam* ~~*write*~~ ∅]]]

(15) tracks the steps in the derivation of the wide ellipsis interpretation. As demonstrated by (15)b, the *than*-XP raises into the matrix clause, resulting in a matrix comparative coordination. The surface representation (15)c can then be obtained by Gapping of the complex *want to write*:

(15) OBJECT COMPARATIVES, WIDE ELLIPSIS:
- a. [$_{IP}$ *John wants to write* [*more plays* [*than Sam wants to write* ∅]]] ⇨
- b. [[$_{IP}$ *John wants to write* [*more plays* $\boldsymbol{t_k}$]] *than* **[$_{IP}$ *Sam wants to write* ∅]$_k$**]
- c. [[$_{IP}$ *John* ***wants to write*** *more plays*] *than* [$_{IP}$ *Sam* ~~*wants to write*~~ ∅]]

Crucially, the two different construals correlate with distinct structures, as required by Isomorphism. Coordination with the lower IP leads to the narrow reading, while high IP coordination translates into the wide ellipsis interpretation.

The analysis naturally extends to ambiguous structures in which the comparative serves as a temporal adverb in the matrix clause:

(16) *The boys want to go to the movies more often than the girls* ∅.
- a. ∅ = went to the movies d-often
- b. ∅ = want to go to the movies d-often

If the *than*-XP coordinates with the embedded IP, as in (17)b, the ellipsis site corresponds to the lower VP only, resulting in narrow ellipsis. If the *than*-XP moves on the other side into the higher clause, and is coordinated with the matrix IP, as in (17)c, the wide reading ensues:

(17) ADJUNCT COMPARATIVES, NARROW AND WIDE ELLIPSIS:
a. [$_{IP}$ *The boys want* [$_{IP}$ *to go to the movies* [*more often than the girls* ∅]]]
b. [$_{IP}$ *The boys want* [[$_{IP}$ *to go to the movies more often* t_k] *than*
[$_{IP}$ *the girls* ~~*go to the movies*~~ ∅]$_k$]]
c. [[$_{IP}$ *The boys* ***want to go to the movies*** *more often* t_k] *than*
[$_{IP}$ *the girls* ~~*want to go to the movies*~~ ∅]$_k$]

A second prediction immediately immanent in the TR-analysis is that TR has to raise the *than*-XP to a position from where it c-commands its trace. It follows that examples in which the functions as a (matrix) subject - instead of an (embedded) object or adjunct - should lack ambiguity. The correctness of this claim is confirmed by the behavior of subject PCs such as (18), which only license a wide ellipsis interpretation:[152]

(18) *More people want to write a play than* ∅ *a poem.*
a. *∅ = d-many people write
b. ∅ = d-many people want to write

As detailed by (19)a, the *than*-XP of (18) originates inside the matrix subject. Subsequent to TR, which is executed in the transition from (19)a to (19)b, the *than*-XP enters a comparative coordination with the matrix IP node, as in (19)b. Finally, Isomorphism guarantees that the application of Gapping in (19)c gives rise to the wide ellipsis interpretation:

(19) a. [$_{IP}$ [*More people* [*than* ∅ *want to write poems*]] *want to write plays*] ⇨
b. [[$_{IP}$ [*More people* ***t$_k$***] *want to write plays*] *than*
[$_{IP}$ ∅ *want to write poems*]$_k$]
c. [[$_{IP}$ *More people* ***want to write*** *plays*] *than* [$_{IP}$ ∅ ~~*want to write*~~ *poems*]]

The narrow reading (18)a cannot be produced, because Gapping of the embedded predicate to the exclusion of the higher verb would require the *than*-XP to 'sink' into the subordinate clause, in violation of the ban on downward movement:

(20) a. [$_{IP}$ [*More people* [*than* ∅ *write/wrote poems*]] *want to write plays*] ⇨
b. *[$_{IP}$ [*More people* ***t$_k$***] *want* [[$_{IP}$ *to write plays*] *than*
[$_{IP}$ ∅ *write/wrote poems*]$_k$]]

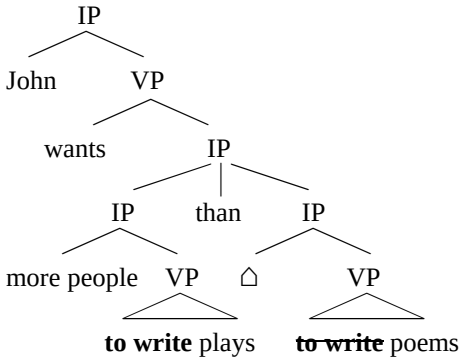
Thus, the TR-analysis reduces an at first sight puzzling inhomogeneity found in PCs w.r.t. Isomorphism (subject vs. object PCs) to a general property of syntactic movement operations.

The analysis also covers the slightly more complex behavior of examples in which the comparative NP serves as an ECM-subject. Observationally, these types of PCs license wide ellipsis interpretations ((21)b), but lack a narrow construal ((21)a):

(21) *John wants more people to write plays than ⌂ poems.*
a. *⌂ = d-many people write/wrote
b. ⌂ = (John) wants d-many people to write

Turning to the derivation of the wide construal (21)b first, ECM-comparatives differ from other cases of wide ellipsis considered so far in an important respect. Somewhat surprisingly, the underlying source for the wide reading (21)b does not involve TR to the matrix IP level, but comparative coordination at the embedded IP-level, as shown by (22). Gapping in (22) targets now the embedded predicate *to write*. The impression of wide ellipsis arises because unlike in object comparatives ((11), repeated below), the *than*-XP in (22) is construed within the scope of the matrix predicate *want*, and its content is therefore understood to be part of John's wishes, yielding (21)b.

(22) WIDE READING



(11) *John wants to write more plays than Sam* (*narrow reading*)
⌂ = write/wrote d-many plays

Observe at this point that in order to arrive at the intended reading, the world variable of the embedded predicate *to write* in (22) has to be locally bound. This seems to contradict the generalization, reached in the discussion of (11), that the world variable of the elided verb is identified by double indexing, and accordingly non-locally bound. However, there is an additional restriction regulating the binding of word variables in elliptical comparatives,

which will be seen to draw the correct distinction between (11) and (22). More precisely, double indexing seems to be contingent on the curious condition that the comparative NP reside in a structurally lower position than the correlate of the remnant (or, equivalently, that the remnant c-command the CD-site). This condition is evidently satisfies by (11), where the object comparative NP *more plays* is structurally lower than the correlate *Sam*, which serves as the subject. Thus, double indexing is licit, and the content of the *than*-XP in (11) can be (and probably even has to be; see note 150) construed as not being included in John's bouletic alternatives. In (22), on the other side, the comparative NP (*more people*) realizes the ECM-subject, whereas the correlate of the remnant (*plays*) occupies the object position of the ECM predicate. The context for double indexing is therefore not met, and the elided predicate *write* in (22) needs to be locally bound, as witnessed by the intuition that the sentence expresses a relation between two events in John's wish worlds.

Interesting independent evidence for this condition on local vs. non-local binding is provided by the distribution of temporally underspecified readings, which seem to be subject to the same - or a very similar - requirement. To begin with, notice that the event time of the elided verbs in examples such as (11) and (23) is not fixed w.r.t. the matrix predicate. Moreover, these atemporal readings only arise if the comparative NP is structurally lower than the correlate of the remnant, as in (11) or (23). If it is the comparative NP which c-commands the correlate, atemporal readings are blocked, as documented by the lack of ambiguity in (24):

(23) *John will visit more friends than Sam ⌓.*
  a. ⌂ = will visit d-many friends
  b. ⌂ = visited d-many friends

(24) *More friends will visit John than ⌓ Sam.*
  a. ⌂ = d-many friends will visit Sam
  b. *⌂ = d-many friends visited Sam

The observation also generalizes to contexts in which the relevant c-command relations are read off internal arguments. Only the *than*-XP in (25) can be understood as a report about John's past activities, the missing verb in (26) needs to be specified as a future predicate, exactly matching its antecedent:

(25) *John will subject this year's students to a harder exam than ⌓ last year's students.*
  a. ⌂ = John will subject (last years students) to a d-hard exam
  b. ⌂ = John subjected (last years students) to a d-hard exam

(26) *John will subject more students to this year's exam than ⌂ to last year's exam.*
a. ⌂ = John will subject d-many students
b. *⌂ = John subjected d-many students

Descriptively, atemporal readings result from 'sloppily' reconstructing the missing verb in such way that it does not contain the full temporal information of the antecedent. There are at least two ways to implement this intuition technically: variation in the size of the *than*-XP and non-local binding of temporal variables.

On the first account, temporally underspecified examples such as (23) are ambiguous between a parse in which the Gap includes the temporal operators of the antecedent (the future operator in the case at hand), and a smaller structure, in which the ellipsis consists of the main predicate only (the temporal variable would then have to be bound by whatever strategy fixes event time in the matrix clause). An analysis along these lines would work for the contrast in (23) vs. (24), where it can be assumed that TR out of objects may proceed either to a node containing the future operator ((27)a), or to a lower node, which only includes the predicate ((27)b). Isomorphism ensures that the two different parses correlate with different content of the *than*-XP:

(27) a. [John will FUT visit more friends] [than Sam FUT ~~visit~~ ⌂] (= (23)a)
b. $John_k$ will FUT [t_k visit more friends] [than Sam ~~visit~~ ⌂] (= (23)b)

Since movement must not result in lowering, and given that temporal operators reside below the subject, TR out of subjects is moreover correctly predicted to sponsor temporally fully specified readings only:

(28) a. [More friends will FUT visit John] [than ⌂ FUT ~~visit~~ Sam] (= (24)a)
b. *More $friends_k$ will FUT [t_k visit John] [than ⌂ ~~visit~~ Sam] (= (24)b)

The analysis for the contrast between the subject and object comparatives in (23) and (24) exploits the widely shared assumption that subjects and temporal information are anchored to closely related positions in the syntactic tree (SpecTP and T°, respectively). Such an account cannot be extended to (25) and (26), though, because in these contexts, the *than*-XP invariably originates inside an object, falsely leading one to expect temporal underspecification for both cases. In particular, the algorithm fails to exlude an atemporal reading for (26), which can be represented as in (29)b:

(29) a. [John will FUT submit more students to this year's exam] (= (26)a)
[than ~~John~~ FUT ~~submit~~ ⌂ to last year's exam]
b. $John_k$ will FUT [t_k submit more students to this year's exam] (= (26)b)
[than t_k ~~submit~~ ⌂ to last year's exam]

Thus, a successful analysis cannot be exclusively based on the structural information provided by the underlying parses.

But there is an alternative strategy for the analysis of atemporal readings, which consists in non-local binding. Assume that the elliptical *than*-XP contains the same temporal information as its antecedent clause, including temporal operators for future and past. On this conception, the 'strict' reading (23)a, in which the Gap strictly matches the antecedent, results from locally binding the temporal variable of the main verb by the future operator.[153] The 'sloppy' reading (23)b, in which the Gap is reconstructed as a non-future predicate, must then derive from some device which licenses non-local binding, such as contextual identification of the variable - which shares with double indexing the property of being able to evade binding by the most local suitable binder (λ-operater or temporal operator).

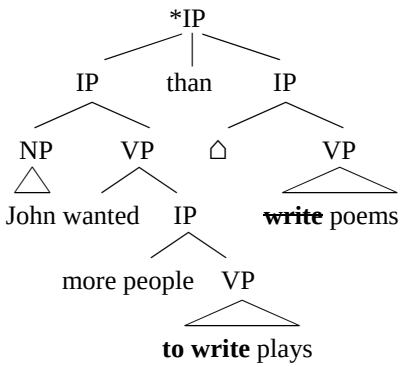
What is of specific significance for present purposes is that the restriction on temporal underspecification is closely related to the condition on double indexing. In both cases, a covert (temporal or world) variable can be non-locally bound only if the correlate of the remnant c-commands the comparative NP. Although a more complete analysis still has to supply the details of the mechanisms involved in atemporal readings and double indexing, the intriguing parallelism between the licensing conditions on the two properties can be seen as a promising sign that the apparently aberrant behavior of comparatives w.r.t. double indexing ((11) vs. (22)) is reducible to a more general requirement on the identification of covert variables in PCs.

Returning finally to further relevant characteristics ECM-comparatives, it has already been pointed out that (21) cannot be assigned the narrow reading (21)a, which is the product of mapping the string (21) to the tree in (30):

(21) *John wants more people to write plays than ⌂ poems.*
a. *⌂ = d-many people write/wrote
b. ⌂ = (John) wants d-many people to write

In order to arrive at construal (21)a, the *than*-XP would have to raise outside the scope of the matrix predicate *want*, as indicated by (30).

(30) NARROW READING



But wide TR conflicts now with Isomorphism, which prohibits Gapping of the embedded verb *write*, and the wide non-isomorphic reading is consequently blocked.

Moreover, (21) cannot be associated with a third, potentially available interpretation either, which can be paraphrased as in (31):

(31) *John wants more people to write plays than ⌂ want PRO to write poems.*

Technically, the PC (21) could be related to its putative source (31) by TR into the matrix clause - as in (22)a - with subsequent application of Gapping to the string *want PRO to write*. So the question arises, why interpretation (31) is missing.

There are two possible venues to pursue. First, note that Gapping in (31) would have to remove the control verb *want*, while the antecedent is construed as an ECM-predicate, violating the identity requirement for the ellipsis site and its antecedent (Sag 1976). Second, the CD-site and the comparative NP in (31) bear distinct grammatical functions - the CD-site serves as the matrix subject, while the NP-comparative takes up the role of an ECM-subject. However, as observed by Hankamer (1973), such a mix is generally illicit in PC (see also chapter 3, section 4). For instance, while an object CD-site is compatible with a subject antecedent in unreduced comparatives, as illustrated by (32)b, PCs such as (33)b systematically lack this mixed interpretation:

(32) a. *More boys know Sam than ⌂ know the girls.*
b. *More boys know Sam than the girls know ⌂.*

(33) a. *More boys know Sam than ⌂ ~~know~~ the girls.*
b. **More boys know Sam than the girls ~~know~~ ⌂.*

On this view, the absence of reading (31) falls out from a more general restriction on PCs (see chapter 3, section 4 for an analysis of this condition in terms of the CD Scope Condition).

Summarizing briefly, object and adjunct PCs exhibit ambiguity between a wide and a narrow ellipsis construal, while subject and ECM-subject comparatives fail to do so. Table 5 lists the distribution of data:

Table 5. Ellipsis ambiguity in comparatives

Grammatical function of comparative	Wide reading	Narrow reading
Object	✓	✓
Adjunct	✓	✓
Subject	✓	*
ECM-subject	✓	*

Theses contrasts were traced back to the assumptions that (i) the PCs under consideration are Gapped clauses, that (ii) extraposition (TR) feeds the isomorphic configurations required for Gapping and that (iii) TR must proceed upward.

3. Testing the TR-analysis

In the previous section, it was argued that Isomorphism ensures that in PCs, the height of comparative coordination directly determines the size of the Gap. This leads one to expect that the height of attachment of the *than*-XP (i.e. its scope) should also have repercussions on other c-command and scope sensitive phenomena. In the current section, I will address this general prediction which the TR analysis and the PC-Hypothesis generate by means of an investigation of the interaction between ellipsis scope and the syntactic binding scope of the remnant embedded inside the *than*-XP. Since quantifier scope and anaphoric dependencies in comparatives are subject to various interfering factors[154], I will restrict myself here to a discussion of disjoint reference effects (Principle B and C).

3.1. Binding scope and the size of ellipsis

According to current assumptions, the target position of TR corresponds to the scope of the ellipsis site contained in the comparative complement. The scope of ellipsis should therefore also match the syntactic binding scope of remnants inside the *than*-XP. It follows that variation in the size of ellipsis should directly translate into variation in the scope of the remnant w.r.t. terms contained in the matrix clause. This correlation can now be used in order to substantiate the TR-analysis of PCs by evaluating the correctness of a number of specific empirical predictions. The tests to be employed use disjoint reference effect triggered by R-expressions and pronouns inside the comparative complement as diagnostics for the scope of the remnant (on the interaction of binding scope and extraposition see also Fox and Nissenbaum 1999).

A first prediction calculates the effects of varying the locating of the remnant on the binding scope of categories inside the remnant. More specifically, variation along these lines is captured by Prediction I:

(34) PREDICTION I: Raising a remnant out of the c-command domain of a term in the superordinate clause correlates with wide ellipsis.

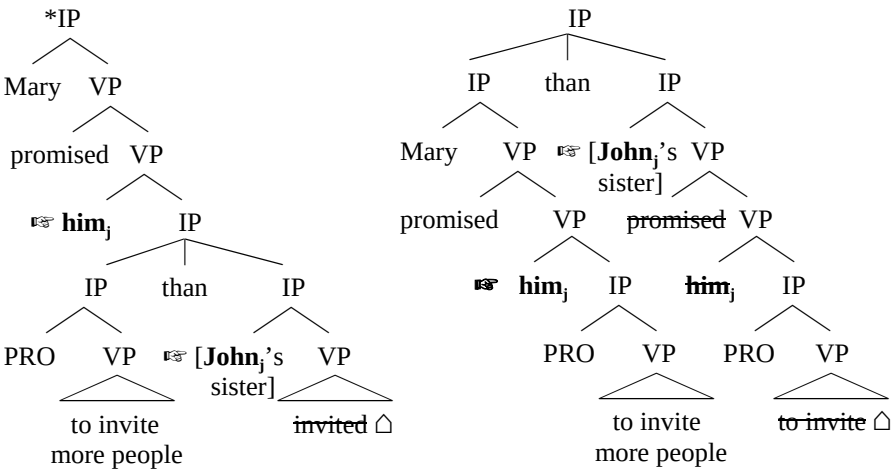
Prediction I can be tested in environments which meet the structural requirements of the following test context, such as example (36).[155]

(35) TEST CONTEXT: The remnant contains an embedded name, and the matrix predicate contains a pronoun.

(36) *Mary promised* ***him***$_j$ *PRO to invite more people than* [***John***$_j$*'s sister*] ⌓.
a. *⌓ = invited d-many people
b. ⌓ = promised **him**$_j$ to invite d-many people

In (36), the intended referential dependency between *John* and *him* eliminates one of the two potentially available readings for the surface string. In particular, given the concrete indexing, (36) can only be assigned the wide ellipsis interpretation (36)b, whereas the narrow reading (36)a is blocked by Principle C. Importantly, this finding constitutes a corollary of Prediction I. As documented by (37)a, the narrow reading derives from local TR and comparative coordination at the lower IP-node. The name contained in the remnant (*John*) therefore remains within the syntactic scope of the pronoun (*him*), triggering a disjoint reference effect:

(37) a. NARROW READING b. WIDE READING



In the wide reading (37)b, the *than*-XP enters a comparative coordination with the matrix IP. The embedded R-expression, which is promoted along with the *than*-XP, is for this reason able to escape the c-command domain of the pronoun, and a coreferential construal becomes permissible.

Essentially the same contrast can be replicated for object control contexts, providing additional reinforcement for Prediction I:

(38) *We convinced* ***him**$_j$ PRO$_j$ to donate more money than* [***Bill Gates**$_j$'s sister*] ∆.
a. *∆ = donated d-much money
b. ∆ = convinced **him**$_j$ to donate d-much money

In the string (36), the remnant embedded a pronoun, while the matrix clause contained the trigger for a Principle C violation. If the positions of binder and bindee are reversed, one expects this change to be systematically mirrored by the correlation between disjoint reference effects and scope of ellipsis, as explicated by Prediction II:

(39) PREDICTION II: Reconstruction of a term in the superordinate clause into the c-command domain of the remnant correlates with wide ellipsis.

The relevant test context can be described as follows:

(40) TEST CONTEXT: The remnant is a pronoun, and the matrix clause contains a name.

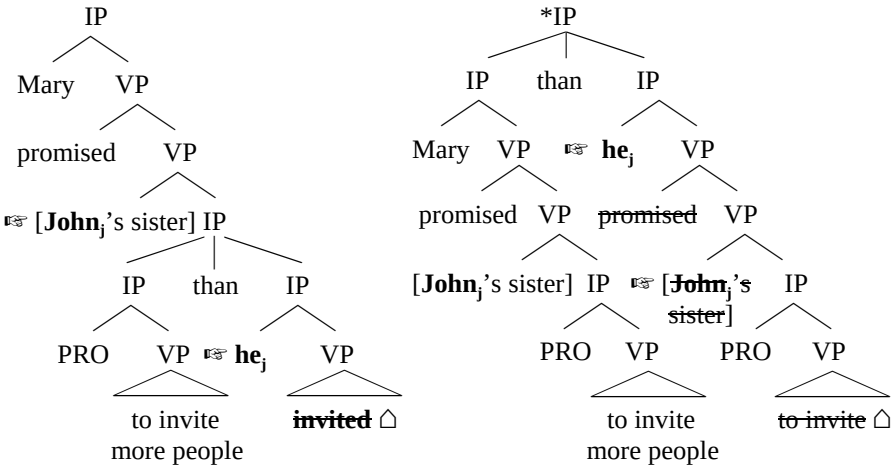
The accuracy of Prediction II is confirmed by examples such as (41) and (42) (since pronouns do not make good remnants in English, (42) also provides the German version):[156]

(41) *Mary promised* [***John**$_j$'s sister*] *to invite more people than* ***he**$_j$*.
a. ⌂ = invited d-many people
b. *⌂ = promised [**John**$_j$'s sister] to invite d-many people

(42) *Maria hat* [*der Schwester von* ***Hans**$_j$*] *versprochen mehr Leute einzuladen*
M. has the sister of H. promised more people to invite
als ***er**$_j$*.
than he
a. ⌂ = promised to invite d-many people
b. *⌂ = promised [**John**$_j$'s sister] to invite d-many people

Under the narrow interpretation, the *than*-XP in (41)/(42) is coordinated with the embedded IP, as in (43)a, and the pronoun fails to c-command the name. The coreferent reading is therefore correctly predicted to be available. If the PC is on the other hand construed with wide ellipsis, Isomorphism ensures that comparative coordination targets the matrix IP-node, as in (43)b. The Gapped name is now located in the c-command domain of the pronoun at LF (via ellipsis reconstruction), inducing a violation of Principle C:

(43) a. NARROW READING b. WIDE READING



Again, it is possible to find examples involving object control which attest to the correctness of Prediction II:

(44) *We convinced* [***Bill Gates***$_j$*'s sister*] *to donate more money than* ***he***$_j$ ⌂.
a. ⌂ = donated d-much money
b. *⌂ = convinced [**Bill Gates**$_j$'s sister] to donate d-much money

(45) *Maria hat* [*die Schwester von* ***Hans***$_j$] *überredet mehr Leute einzuladen als* ***er***$_j$.
M. has the sister of H. convinced more people to invite than he
a. ⌂ = convinced to invite d-many people
b. *⌂ = convinced [**John**$_j$**'s** sister] to invite d-many people

Taken together, the first two predictions yield probes for the structural relations between the remnant and a term inside the matrix clause subsequent to the application of TR. But Prediction I and II are limited in their scope in that they only generate specific prognoses for the *c-command* relations which obtain between these two terms, ignoring their *distance.* It is also possible, though, to design a more fine grained diagnostic which tests for this property by signaling whether the terms are part of the same local binding domain or not. Such a diagnostic can be obtained from an inspection of Principle B, and is empirically reflected in the effects of Prediction III, stated below:

(46) PREDICTION III: Reconstruction of a term in the lower clause into the same binding domain as the remnant correlates with narrow ellipsis.

The pertaining test context for Prediction III can be defined as follows:

(47) TEST CONTEXT: The remnant is a name, and the embedded predicate contains a pronoun.

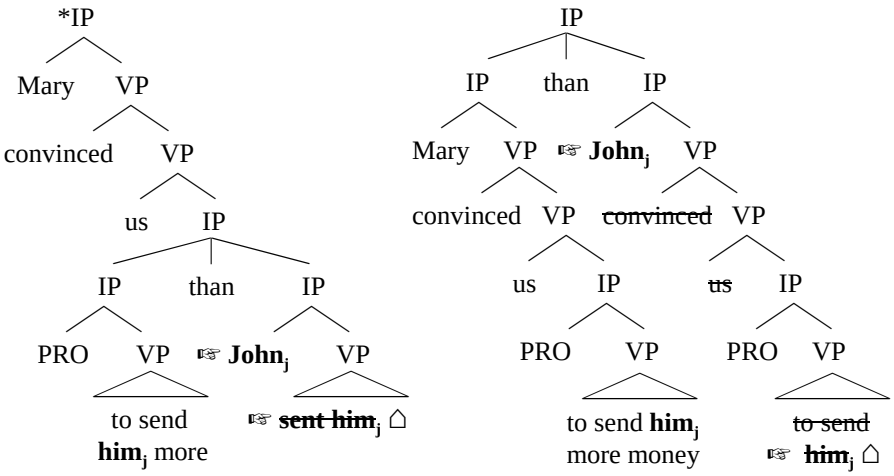
The relevant examples display exactly the properties anticipated, they clearly indicate that narrow ellipsis correlates with the emergence of a Principle B effect:

(48) *Mary convinced us to send* ***him***$_j$ *more money than* ***John***$_j$.
a. *⌂ = sent **him**$_j$ d-much money
b. ⌂ = convinced us$_k$ PRO$_k$ to send **him**$_j$ d-much money

(49) *Maria hat uns überredet* ***ihm***$_j$ *mehr Geld zu senden als* ***der Hans***$_j$.
M. has us convinced him more money to send than the H.
a. *⌂ = sent **him**$_j$ d-much money
b. ⌂ = convinced us$_k$ PRO$_k$ to send **him**$_j$ d-much money

If Gapping operates only on the embedded clause, as in (50)a, the pronoun is reconstructed into the local binding domain of the name, with the result that the name and the pronoun can only be read as disjoint in reference. Broad ellipsis, as in (50)b, is on the other side symptomatic of the reconstruction of an additional binding domain which separates the name from the pronoun. The pronoun in (50)b is accordingly free in its minimal clause, licensing coreference:[157]

(50) a. NARROW READING b. WIDE READING



To summarize, predictions I to III furnish strong support in favor of TR and the assumption that ellipsis resolution is subject to Isomorphism. It was illustrated that the height of coordination interacts with the interpretive component in three ways: First, TR can move an NP out of the scope of a c-commanding and potentially offending binder. Second, TR indirectly leads to a widening of the c-command domain of the remnant by extending the size of the ellipsis to be reconstructed. And finally, the scope of TR also determines whether a reconstructed pronoun inside the ellipsis site is provided with a local or a non-local antecedent.

In the final section of this chapter, I will compare the PC-Hypothesis with (aspects of) an exemplary proponent of direct analyses. Based on a further set of data involving the interaction between ellipsis sand binding scope, I argue that the present account can be successfully defended against approaches which refute an ellipsis analysis of PCs.

3.2. The PC-Hypothesis and direct analyses

The current section begins with an outline of the semantic analysis of PCs proposed in Heim (1985; section 3.2.1). Heim (1985) is representative of direct accounts of PCs in that in her theory, the *than*-XP is submitted to semantic interpretation without prior LF reconstruction of the ellipsis site (see also Kennedy 1999; Krifka 1987). In section 3.2.2, I argue that direct analyses face empirical problems apart from the ones related to surface syntax discussed in chapter 3, and that these problems do not arise on the premises of the PC-Hypothesis.

3.2.1. Heim (1985)

Heim (1985) develops a semantic analysis of PCs which is not dependent upon the reconstruction of a full-fledged clausal source for the *than*-XP. Instead of treating the comparative morpheme *-er* as a function which relates two degrees, Heim assumes that *-er* denotes a function which combines pairs of individuals <a,b> with an open predicate P, and then compares the degree to which individual a is P to the degree to which individual b is P. On this view, the predicative AP-comparative (51)a is decomposed into (51)b:

(51) a. *Mary is taller than Bill.*
b. ⟦-er⟧ (<⟦Mary⟧, ⟦Bill⟧>) (λxιy[⟦x is y-tall⟧])

Given the semantics for the comparative morpheme in (52), the representation (51)b can be assigned the desired final interpretation as in (53):

(52) ⟦-er⟧ (<a,b>)(f) = 1 iff f(a) > f(b)

(53) ⟦-er⟧ (<⟦Mary⟧, ⟦Bill⟧>) (λxιy[⟦x is y-tall⟧]) =
= λxιy[⟦x is y-tall⟧](Mary) > λxιy[⟦x is y-tall⟧](Bill) =
= ιy[Mary_is_y-tall] > ιy[Bill_is_y-tall]

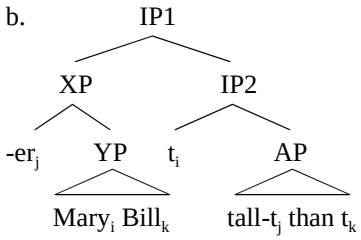
Comparing (53) to the semantic output of the sentence in a maximality analysis adopted here shows that both formulas are equivalent in all aspects relevant for present purposes:[158]

(54) ∃d[Mary_is_d-tall ∧ d > max{d'|Bill_is_d'-tall}]

As for the derivation of the transparent logical form which relates the surface string (51)a to the semantic representation (51)b, Heim assumes that the comparative morpheme *-er* covertly raises and adjoins to IP first, followed by movement of the correlate and the remnant, which adjoin to *-er*. The LF representation for (51)a accordingly is internally organized as in (55):

(55) a. *Mary is taller than Bill.* (= (51)a)

b.



The relation *λx ιy[x is y-tall]* is formed by abstraction over the correlate of the remnant at the level of IP2. That is, raising of the correlate *Mary* at LF is interpreted as λ-abstraction.[159]

Since the correlate, the remnant and the comparative *-er* morpheme undergo movement at LF, the analysis leads one to expect that the maximal span of these raising processes is limited by island constraints. More specifically, the account makes two predictions, which are, as Heim points out, supported by the data. First, since the correlate has to raise to the comparative morpheme at LF for reasons of interpretability, one should be able to detect a reflex of this movement operation by inspecting its sensitivity to standard locality conditions. And in fact, separating the correlate and the comparative by an island results in a deviant output. Consider e.g. (56)a and its LF representation (56)b:

(56) a. *?*I spent more time with a woman that played the clarinet than the lute.*
(Heim 1985: 49, (52))

b. ...[[[more time] **the clarinet$_i$**] the lute$_k$] with a woman [$_{CP}$ that played **t$_i$**] than t_k

In order to arrive at the desired translation (57) below, the correlate has to adjoin to the comparative as illustrated by (56)b above.

(57) ⟦-er⟧(<clarinet, lute>)(λxιy[⟦I spent y-much time with a w. that played x⟧]) =
= 1 iff ιx[I spent x-much time with a woman that played the clarinet] >
ιy[I spent y-much time with a woman that played the lute]

However, LF movement of the correlate in (56)b crosses a complex NP, in violation of syntactic island conditions. The ill-formedness of (56)a therefore constitutes strong independent evidence in favor of Heim's claim that the correlate undergoes semantically motivated raising.

A second argument in favor of movement brought forward by Heim pertains to the boundedness of the movement relating the surface position of the comparative morpheme *-er* to its location at LF (see (55)b). More precisely, *-er* has to adjoin to the minimal propositional node containing the remnant and the correlate. The remnant and the correlate subsequently raise, too, adjoining to *-er*. It follows that structures in which only *-er* - but not the correlate or the remnant - are embedded inside an island should be unacceptable. Once again, the prediction is borne out:

(58) a. **Someone* [$_{CP}$ *who could answer* ***fewer*** *questions*] *made a good impressions on Bill than on Fred.* (Heim 1985: 47, (38))

b. *[$_{IP}$ [**-er$_j$** [Bill$_i$ Fred$_k$]] [someone [$_{CP}$ who could answer little-**t$_j$**-many questions] made a good impressions on t_i than on t_k]]

In (58), *-er* is trapped inside a complex NP, and the LF configuration (58)b, in which *-er*, the correlate and the remnant all target the same IP-node, accordingly fails to comply with the well-formedness conditions on chains formation.

Note at this point that the deviant structures (56)a and (58)a are also excluded by the assumptions underlying the PC/CR-Hypothesis. Turning to (56)a first, on the PC/CR-Hypothesis, (56)a constitutes the output of Gapping. However, as the underlying source given under (56)c reveals, the Gap illicitly contains a finite CP-node and therefore incurs a violation of Boundedness:

(56) c. *I spent more time with a woman [$_{CP}$ that played the clarinet] than ~~I spent~~ ⌂ ~~with a woman~~ [$_{CP}$ ~~that played~~ the lute]

Thus, according to the PC/CR-Hypothesis, the ill-formedness of (56) is reduced to an illegitimate application of CR, and not to a violation of the bounding conditions on movement.

Similar and additional considerations apply to (58). Deriving (58) by Gapping would once again lead to an illicit instance of CR. As is illustrated by (58)c, ellipsis fails to observe Boundedness, because the Gap contains a (finite) CP-node:

(58) c. *Someone [$_{CP}$ who could answer fewer questions] made a good impression on Bill than ~~someone~~ [$_{CP}$ ~~who could answer ⌂~~] ~~made a good impression~~ on Fred

Additionally, (58) falls short of satisfying the conditions on extraposition, which are by assumption governing possible surface locations of the *than*-XP. For (58)c to be well-formed, the *than*-XP would have to move out of its base position right-adjacent to the comparative NP *fewer questions*. However, extraposition of categories of comparable status such as relative clauses out of complex NPs in subject position is impossible (see Culicover 1990):

(59) **Someone* [$_{CP}$ *who could answer the question* t_i] *made a good impression on Bill* [*which had been asked in class*]$_i$.

Thus, sentence (58)a violates both Boundedness and the Right Roof Constraint, resulting in a strongly deviant output. The intermediate status of (56)a can furthermore be correlated to the fact that its derivation only fails to obey Boundedness.

With this brief comparison between the two approaches in the background, it becomes now possible to turn to a more detailed evaluation of the direct analysis and the PC-Hypothesis, which will be based on the different predictions that these two analyses generate for the scopal properties of the remnant.

3.2.2. An argument against a direct analysis

In section 3.1, I argued that the binding scope of the remnant is sensitive to the height of attachment of the *than*-XP inside the matrix clause. The evidence in support of this view was drawn from complex clauses in which the *than*-XP was free to coordinate either with the embedded IP or with the matrix IP node. In the present section, I will demonstrate that the determination of licit binding relations between the remnant and a term inside the matrix clause - henceforth *M(atrix)-term* - is not only dependent upon the scope of TR, but also upon the relation between the correlate of the remnant and the M-term. That is, there are additional restrictions on licit binding relations which are also manifest in simple, unambiguous comparatives.

First, I will present evidence that even in simple comparatives, the principles of Binding Theory cannot be directly read off surface syntax, but need to refer to a more abstract level of representation such as LF. Based on this conclusion, it will become possible to develop an argument in favor of the PC-Hypothesis, which derives from the distinct positions which the direct analysis

and the PC-Hypothesis take on the issue of ellipsis resolution in simple NP-comparatives. According to the direct approach, the *than*-XP does not embed any syntactically projected material which could influence the computation of licit referential dependencies. In contrast to that, the PC-Hypothesis postulates that the *than*-XP contains syntactically visible but phonologically null categories which might interact with Binding Theory. As will be shown, the distribution of facts is directly compatible with the PC-Hypothesis only.

Turning to some preliminary remarks about disjoint reference effects in PCs first, it has been observed by various authors that the *than*-XP of PCs does not create an opaque binding domain (Bierwisch 1989; Hellan 1981; Napoli 1983: 685). While the comparative complement of clausal comparatives forms a complete functional complex ((60)), the governing domain of the remnants in (61) appears to be the embedded clause, and not just the *than*-XP:

(60) a. **It is not possible that John$_i$ is taller than himself$_i$ is.*
b. *It is not possible that John$_i$ is taller than he$_i$ is.*

(61) a. *It is not possible that John$_i$ is taller than himself$_i$.*
b. **It is not possible that John$_i$ is taller than him$_i$/he$_i$.*

On this conception, (61)b fails to obey Principle B of Binding Theory.

Notice now that a name inside the matrix clause cannot enter into a coreference relation with a pronominal remnant in examples such as (62)[160]:

(62) **Maria schenkte **dem Peter**$_i$ mehr Aufmerksamkeit als **er**$_{NOM/i}$.*
M. gave the P. more attention than he
'Mary paid more attention to Peters than he (did).'

Given the assumption that (61)b instantiates a Principle B effect, it is tempting to attribute the deviance of (62) to a Principle B violation in surface syntax - that is, without prior ellipsis reconstruction - too. However, the situation is more complicated, as evidenced by (63). (63) differs from (62) in that the name has been substituted by a pronoun, and the pronoun has been replaced by an embedded name:

(63) *Maria schenkte **ihm**$_i$ mehr Aufmerksamkeit als* [***Peters**$_i$ Schwester*]$_{NOM}$.
M. gave him more attention than Peter's sister
'Mary paid more attention to him than Peters sister (did).'

Under the surface account, one expects (63) to be as ill-formed as (62) in the given indexing, because in both cases a non-reflexive NP is - by assumption -

locally c-commanded by a coindexed NP. Crucially, however, no Principle C effect can be detected in (63). This initial contrast demonstrates that the Binding conditions cannot be directly read off surface syntax. Thus, any adequate theory of PCs has to look for another principled explanation for the unacceptability of (62). In what follows, I will discuss the two solutions to this problem offered by the PC-Hypothesis and the direct analysis in turn.

First, the PC-Hypothesis provides a straightforward account for the ill-formedness of example (62). As witnessed by the underlying parse below, the pronoun c-commands the name inside the Gapped constituent in violation of Principle C:[161]

(64) **Maria schenkte* ***dem Peter***$_i$ *mehr Aufmerksamkeit als*
M. gave the Peter more attention than
er$_i$ ~~***dem Peter***$_i$~~ ∅ ~~*schenkte*~~
he the Peter gave
'Mary paid more attention to Peters than he (did).' (= (62))

Moreover, (63) is correctly ruled in, because the name and the pronoun are both locally free inside the *than*-XP (recall that the *than*-XP attaches at the IP-level, and therefore resides outside the c-command domain of categories in the matrix clause):

(65) *Maria schenkte* ***ihm***$_i$ *mehr Aufmerksamkeit als*
M. gave him more attention than
[***Peters***$_i$ *Schwester*] ~~***ihm***$_i$~~ ∅ ~~*schenkte*~~
Peter's sister him gave
'Mary paid more attention to him than Peters sister (did).' (= (63))

Second, the direct analysis has in principle two options in order to capture the disjoint reference effect manifest in (62), and its absence in (63): Either it appeals to Principle C, assuming that the LF position of the remnant counts for the computation of Binding Theory. This option correctly distinguishes between (62) and (63) because the name is c-commanded by a pronoun only in the LF representation for (62), relevant portions of which are provided by (66). In (67), on the other side, which depicts the LF for (63), all binding requirements are satisfied:

(66) *[$_{IP}$ [*Maria*$_k$ ***er***$_i$] [$_{IP}$ t_k *schenkte* ***dem Peter***$_i$ *d-viel Aufmerksamkeit als* t_i]]
M. he gave the Peter d-much attention than
'Mary paid more attention to Peter than he (did).' (= (62))

(67) [$_{IP}$ [*Maria*$_k$ [***Peters***$_i$ *Schw.*]$_j$] [$_{IP}$ t_k *schenkte* ***ihm***$_i$ *d-viel Aufmerksamkeit als* t_j]]
M. Peter's sister gave him d-much attention than
'Mary paid more attention to him than Peter's sister (did).' (= (63))

Alternatively, the direct analysis can resort to an explanation in terms of SCO, exploiting the observation that the trace of the remnant is c-commanded by a coindexed name in (66), but not in (67). More precisely, in (66), a fronted pronoun (*er*) has illegitimately crossed over a coindexed name (*der Peter*), while (67) fails to meet the context for SCO, because the fronted term (*Peters*) is embedded inside the crossing category.[162] In the remainder of this section, a systematic extension of the range of the data will demonstrate, though, that none of the two strategies available to the direct account can be maintained.

In general, the two terms whose binding properties have to be accounted for are represented by the remnant, or some NP embedded inside the remnant, and an NP contained in the matrix clause, the *M-term*. As will become apparent shortly, an effective method for testing the legitimate referential dependencies between these two terms consists in inspecting the structural relations between the M-term and the *correlate* of the remnant, i.e. the category whose grammatical function inside the matrix corresponds to that of the remnant inside the *than*-XP. In the example below, *Mary* is the correlate of the remnant *Peter's sister*, and *him* represents one possible instantiation of the M-term:

(68) *Mary paid more attention to him than* [*Peter's sister*]$_{NOM}$.

More specifically, it is possible to construe the M-terms in four different positions relative to the correlate. Either the M-term is identical to the correlate, or it is embedded in the correlate, or it is located higher or lower than the correlate:

(69) POSSIBLE RELATIONS BETWEEN M-TERM AND CORRELATE:
I. The M-term is identical to the correlate.
II. The M-term is embedded in the correlate.
III. The M-term is lower than the correlate.
VI. The M-term is higher than the correlate.

As will be argued below, data which can be grouped under context I falls outside the domain of Binding Theory proper, while examples which meet context II can be accommodated by the direct analysis as well as by the PC-Hypothesis. Contexts III and IV will be shown to include complications for the direct analysis, though, which do not manifest themselves on the assumption of the PC-Hypothesis. For ease of exposition, I will address for each case

the predictions generated by the PC-Hypothesis first, turning from there to the analysis of the data in terms of the direct analysis.

Contexts in which the M-term is identical to the correlate have already been introduced in the discussion of Gapping chapter 3. What is of significance is that in reduced comparatives, a pronominal remnant necessarily has to be construed disjoint in reference from a name in the position of the correlate (Napoli 1982; Bierwisch 1989):

(61) b. **It is not possible that **Peter**$_i$ is taller than **him**$_i$.*

(70) ****Fritz**$_i$ *wirft den Ball so weit wie* ***er***$_i$ *den Speer.* (Bierwisch 1989: 147)
Fritz throws the ball so far as he the javelin.
'Fritz$_i$ throws the ball as far as he$_i$ throws the javelin.'

Now, the names in (61)b and (70) c-command the pronoun neither on the premises of the direct analysis, nor according to the assumptions of the PC-Hypothesis. This could be taken as an argument against the effectiveness of Binding Theory in handling referential dependencies in PCs in the first place. However, it seems as if the Principle B violations manifest above are not so much due to an illicit syntactic binding configuration, but rather triggered by focus on the two terms to be construed coreferentially. Since note that essentially the same effects are also attested with Gapping (Kuno 1976; see *Disjoint Reference* condition on Gapping in chapter 3, section 2.2):

(71) ****Fritz**$_i$ *wirft den Ball 10m, und* ***er***$_i$ *den Speer 70m.*
Fritz throws the ball 10m and he the javelin 70m
'Fritz$_i$ throws the ball 10m, and he$_i$ throws the javelin 70m.'

Moreover, the unreduced versions of (61)b, (70) and their coordinate correlates are perfectly well-formed (see chapter 3, section 2.2). Thus, the data above does not invalidate a binding theoretic approach towards disjoint reference effects in PCs *per se*, but indicates that the analysis has to be supplemented by an adequate theory of focus. I will have to relegate this issue to further research. In what follows, the interfering factor of focus will be controlled for by embedding the M-term inside another DP, thereby removing the focal accent from the NP to be tested.

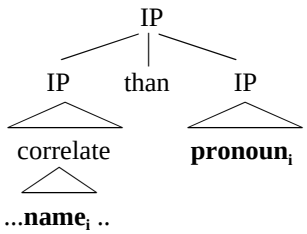
One type of environments which satisfies this condition is represented by comparatives in which the M-term is included in the correlate. For this class of cases, the PC-Hypothesis entails the following prediction:

(72) PREDICTION IV: An M-terms embedded inside the correlate does not enter into c-command relations with the remnant.

Prediction IV is a corollary of the assumption that only material outside the correlate is reconstructed into the ellipsis site. Relevant test contexts can be characterized as in (73), and spelled out by the scheme under (74):[163]

(73) TEST CONTEXT: The M-term is a name embedded in the correlate, and the remnant is a pronoun.

(74)



In environments such as (74), it should not be possible to detect a Principle C violation, because the name is not reconstructed into the scope of the pronoun. Prediction IV is confirmed by the group of examples (78) to (80), which all permit the name inside the correlate to enter a coreference relation with the pronominal remnant ((78)b to (80)b provide the underlying structures; the examples are drawn from German in order to avoid the 'pronominal remnant prohibition' in English):

(75) NOMINATIVE REMNANT:
a. [*Die Frau des* ***Präsidenten***$_j$]$_{NOM}$ *schätzt die Öffentlichkeit mehr als*
the wife of the president appreciates the public more than
er$_{NOM/j}$.
he
'The wife of the president appreciates the public more than he.'
b. [Die Frau des **Präsidenten**$_j$] schätzt die Öffentlichkeit mehr als
er$_j$ ~~die Öffentlichkeit~~ ⌂ ~~schätzt~~

(76) DATIVE REMNANT:
a. *Sie schenkten* [*der Schwester von* ***Peter***$_j$]$_{DAT}$ *mehr Aufmerksamkeit als*
they spent the sister of P. more attention than
ihm$_{DAT/j}$.
him
'They paid more attention to Peters sister than (to) him.'
b. *Sie schenkten* [*der Schwester von* ***Peter***$_j$] *mehr Aufmerksamkeit als*
~~*sie*~~ ***ihm***$_j$ ⌂ ~~*schenkte*~~

(77) ACCUSATIVE REMNANT:
a. *Die Wähler schätzen* [*die Frau des* ***Präsidenten***$_i$]$_{ACC}$ *mehr als* ***ihn***$_{ACC/i}$.
the voters appreciate the wife of the president more than him
'The voters appreciate the wife of the president more than him.'
b. Die Wähler schätzen [die Frau des **Präsidenten**$_i$] mehr als
~~die Wähler~~ **ihn**$_i$ ⌂ ~~schätzen~~

As for the direct analysis, it can be observed that the SCO account still fares well in light of the examples above. The direct analysis assigns to (75) to (77) the LF representations given under (78) to (80), respectively:

(78) [$_{IP}$ [[*die Frau des* ***Präsid.***$_i$]$_k$ ***er***$_i$] [$_{IP}$ t_k *die Öffentlichkeit d-viel schätzt als* t_i]]
the wife of the president he the public d-much appreciates than
'The wife of the president appreciates the public more than he.'

(79) [$_{IP}$ [[*der Schwester von* ***Peter***$_i$]$_k$ ***ihm***$_i$][$_{IP}$ *Maria schenkt* t_k *d-viel*
the sister of Peter him M. gave d-much
Aufmerksamkeit als t_i]]
attention than
'They paid more attention to Peters sister than (to) him.'

(80) [$_{IP}$ [[*die Frau des* ***Präsidenten***$_i$]$_k$ ***ihn***$_i$] [$_{IP}$ *die Wähler* t_k *d-viel schätzen als* t_i]]
the wife of the president him the voters d-much appreciate than
'The voters appreciate the wife of the president more than him'

In all of (78) to (80), the index on the trace of the remnant (*er/ihm/ihn*) is distinct from the index which is associated with the fronted correlate embedding the name. Thus, examples (75)-(77) do not constitute SCO violations (*salve* Secondary SCO; see note 162), and are correctly predicted to be licit.[164]

Finally, the last part of this section turns to contexts which prove central for identifying the differences between the syntactic ellipsis approach and the direct analysis. For these environments, in which the M-term is located outside of the correlate, the PC-Hypothesis generates the prediction below:

(81) PREDICTION V: An M-term is reconstructed into the c-command domain of the remnant if the correlate c-commands the M-term.

Prediction V can be tested on the basis of two scenarios: cases in which the M-term is construed as an embedded name, while the remnant surfaces as a pronoun, and cases which reverse the relations (the M-terms is realized by a pronoun, and an embedded name instantiates the remnant). Moreover, for each scenario, two specific sub-contexts can be distinguished, which will be pre-

sented in tun: trees in which the category embedding the M-term c-commands the correlate, and structures in which the correlate scopes over the M-term.

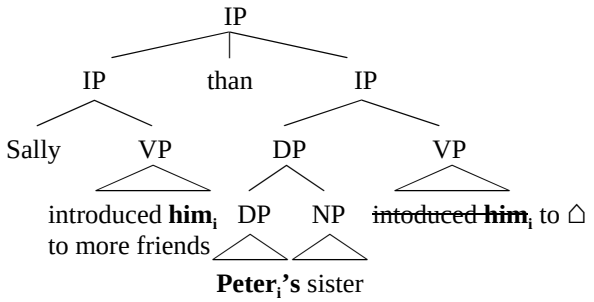
To begin with, consider environments which include a pronominal M-term and in which the remnant is realized as an embedded name:

(82) TEST CONTEXT A: The M-term is a pronoun non-identical with the correlate and the remnant contains a name.

In the first of the two possible scenarios compatible with context A, exemplified by (83), the correlate (*Sally*) is generated higher than the pronominal. Principle C violations should consequently be obviated, since the name is reconstructed in a position above the pronoun, as can be read off the representation in (84). This expectation is borne out by the data:

(83) a. *Sally introduced* ***him***$_i$ *to more friends than* [***Peter***$_i$***'s*** *sister*]$_{NOM}$.
b. Sally introduced **him**$_i$ to more friends than
[**Peter**$_i$**'s** sister] ~~introduced **him**$_i$ to~~ ⌂
(⌂ = d-many friends)

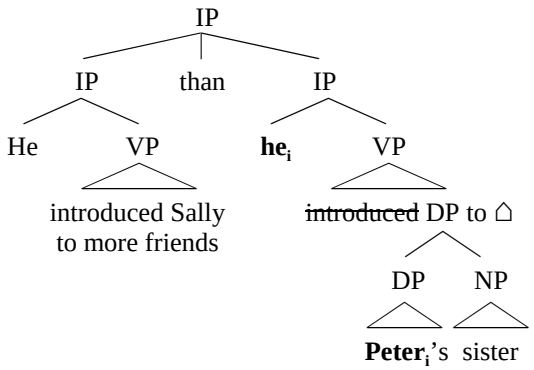
(84)



Next, if the correlate is located lower than the pronoun, as in (85), the PC-Hypothesis prognosticates a disjoint reference effect, because the pronoun is reconstructed into a position from where it c-commands the name (see (86)):

(85) a. ****He***$_i$ *introduced Sally to more friends than* [***Peter***$_i$*'s sister*]$_{ACC}$.
b. ***He**$_i$ introduced Sally to more friends than
~~**he**$_i$ introduced~~ [**Peter**$_i$'s sister] ~~to~~ ⌂
(⌂ = d-many friends)

(86)



Again, speakers' intuitions support the prediction made by the PC-Hypothesis. Identical results can be reproduced for German:

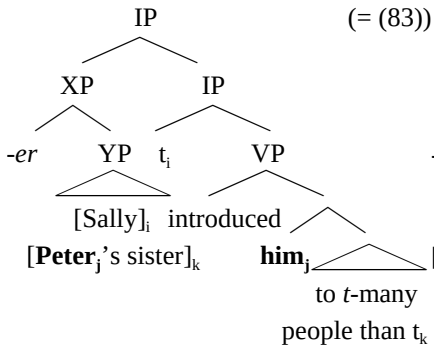
(87) a. *Sie hat **ihm**$_i$ mehr Leute vorgestellt als **Peters**$_i$ Schwester$_{NOM}$.*
she has him more people introduced than Peter's sister
'She introduced more people to him than Peter's sister did.'

b. ***Er**$_i$ hat ihr mehr Leute vorgestellt als **Peters**$_i$ Schwester$_{DAT}$.*
he has her more people introduced than Peter's sister
'He introduced more people to her than to Peter's sister.'

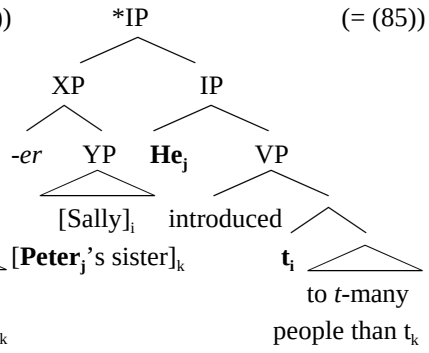
Thus, the PC-Hypothesis succeeds in capturing the impact of the relation between the correlate and the M-term on licit coreference patterns.

Crucially, now, sentences (83) and (85) should be on a par according to the direct account, because LF movement of the correlate and the remnant results in structurally indistinguishable LF representations (*modulo* the position of the pronominal M-term), as documented by the trees in (88):

(88) a. Sally introduced him$_j$ to more friends than Peter$_j$'s sister (= (83))



b. *He$_j$ introduced Sally to more friends than Peter$_j$'s sister (= (85))



Irrespective whether the pronoun originates below the correlate (*Sally*), as in (88)a, or above, as in (88)b, the remnant (*Peter's sister*) crosses over the pronoun and thereby escapes its c-command domain. Depending on the particular perspective one takes on which positions of the remnant chain are visible to Binding Theory, the pronoun should therefore either trigger a Principle C effect in both structures, or in none of them. Moreover, it is not possible to discriminate between (88)a and (88)b by (Secondary) SCO (see note 162), because the embedded name (*Peter*) has crossed over a coindexed pronoun in both cases. Hence, the direct analysis does not account for the fact that the structure of the ellipsis site factors in the determination of legitimate coreference dependencies without the aid of additional assumptions.

The second group of contexts which permits an evaluation of Prediction V reverses the occurrences of pronouns and names, but also attest to the fact that only the representations derived by the PC-Hypothesis encode enough structural information in order to yield an exact description of the data. More specifically, this final class of environments to be considered can be characterized as follows:

(89) TEST CONTEXT B: The M-term is an embedded name non-identical with the correlate, and the remnant is a pronoun.

Once again, two subclasses have to be distinguished: If the correlate is located lower than the embedded name, as in (90), the PC-Hypothesis correctly leads one to expect that Principle C effects are suspended. As can be seen from the underlying parse in (90)b, the pronoun and the name do not enter in a c-command relation, thereby licensing coreference.

(90) a. [*Die Frau* ***des Präsidenten***$_j$]$_{\text{NOM}}$ *schätzt die Öffentlichkeit mehr als* ***ihn***$_{ACC/j}$.
the wife of the president appreciates the public more than him
'The wife of the president appreciates the public more than him.'

b. [Die Frau des Präsidenten$_j$] schätzt die Öffentlichkeit mehr als [~~die Frau~~ ~~**des Präsidenten**~~$_i$] **ihn**$_i$ ⌓ ~~schätzt~~
(⌓ = d-much)

If the correlate is on the other hand situated higher than the embedded name, as in (91), disjoint reference effects should re-emerge, because the name is reconstructed into the c-command domain of the name. Even though judgements are subtle for this last group of examples, there seems to be a clear contrast between (90) and (91):[165]

(91) a. *??Die Öffentlichkeit schätzt* [*die Frau* ***des Präsidenten***$_i$**]**$_{\text{ACC}}$ *mehr*
the public appreciates the wife of the president more
als ***er***$_{NOM/i}$.
than he
'The public appreciates the wife of the president more than he (does).'

b. Die Öffentlichkeit schätzt [die Frau des Präsidenten$_j$] mehr als
er$_i$ [~~die Frau **des Präsidenten**$_i$~~**]** ⌂ ~~schätzt~~
(⌂ = d-much)

Finally, the LF parses for the direct analysis are provided by (92)b and (93)b. Just like in test context A, the two LF representations are not sufficiently distinguishable by structural criteria. In both representations, the pronoun c-commands the name at LF, and the sentences are therefore incorrectly predicted to exhibit identical behavior:

(92) a. [*Die Frau* ***des Präsidenten***$_i$**]**$_{\text{NOM}}$ *schätzt die Öffentlichkeit mehr*
the wife of the president appreciates the public more
als ***ihn***$_{ACC/i}$.
than him
'The wife of the president appreciates the public more than him.'

b. [$_{\text{IP}}$ [[*die Öffentlichkeit*]$_k$ ***ihn***$_i$] [$_{\text{IP}}$ [*die Frau* ***des Präsidenten***$_i$**]**
the public him the wife of the president
[t_k *t-viel schätzt als* t_i]]]
d-much appreciates than

(93) a. *??Die Öffentlichkeit schätzt* [*die Frau* ***des Präsidenten***$_i$**]**$_{\text{ACC}}$ *mehr*
the public appreciates the wife of the president more
als ***er***$_{NOM/i}$.
than he
'The public appreciates the wife of the president more than he (does).'

b. [$_{\text{IP}}$ [[*die Öffentlichkeit*]$_k$ ***er***$_i$][$_{\text{IP}}$ t_k [[*die Frau* ***des Präsidenten***$_i$**]** *t-viel*
the public he the wife of the president d-much
schätzt als t_i]]]
appreciate than

To recapitulate, the data falling under Predication V pose a problem for direct analyses, which posit that the ellipsis site does not contain any syntactic structure. The PC-Hypothesis on the other side straightforwardly captures the contrasts by the assumption that the ellipsis site of phrasal comparatives is endowed with syntactic structure that is accessible to computation of the binding conditions.

In the last section of chapter 4, I will finally consider the nature of the relation between the subordinate and the coordinate parse for comparatives,

elaborating on the theoretical implications of the current view on the analysis of coordination.

4. Coordination vs. subordination

The CR-Hypothesis encapsulates the two claims that (i) comparatives can be assigned coordinate-like parses at some point of their derivation, and that (ii) these structures constitute the output of TR, a process similar to extraposition. There are now two important questions pertaining to TR and the coordinate-like properties of comparatives which have not been addressed so far. First, what are the general implications of the CR-Hypothesis for the theory of coordination? There are approaches which locate the crucial licensing criteria for coordination in syntax, and others which pursue a semantic definition. How does the position taken here align with these different views? In particular, the CR-Hypothesis attributes the partial overlap of comparatives and base-generated conjunctions mainly to the ability of comparatives to emulate the syntactic structure of conjunctions *via* the derivational operation of TR. A successful defense of the CR-Hypothesis therefore requires to demonstrate that the constraints which operate on these structures are also syntactic in nature. Section 4.1. takes up this issue.

Second, it has not been clarified yet whether the structural requirements of the AP-Raising Hypothesis of chapter 2, according to which the *than*-XP is syntactically as well as semantically subordinated to the matrix clause, are compatible with the CR-Hypothesis, which postulates a coordinate parse for the construction. In section 4.2, I will outline how syntax and semantics interact in solving the subordination vs. coordination paradox, and briefly speculate on semantic requirements on comparative coordination.

4.1. Coordination: syntactic vs. semantic conditions

At the present point, there is no general consensus in the literature as to whether the set C which characterizes the properties which coordinate structure formation consists of *syntactic* representations, or *semantic* restrictions, or a mix thereof. This dispute extends to the proper characterization of the constraints on movement out of coordinate contexts (CSC and the ATB requirement on movement).

On the one side, it has been suggested that coordination owes its special status to certain properties of the phrase marker (Goodall 1987; Moltmann

1992a; Pesetsky 1982: 433; Ross 1967a; Sag et al. 1985). On this conception, C can be characterized in purely structural terms, such as sisterhood of two categorially identical maximal or minimal projections. Categorial (and bar-level) identity is usually enforced by an explicit ban on boordination of unlike categories (Williams 1978; but see Sag et al. 1985). On the other side, it has been proposed that C should make reference to restrictions on the semantic types of the coordinates (Keenan and Faltz 1985; Munn 1993; Partee and Rooth 1983). Partee and Rooth (1983) show for instance that Boolean conjunction is limited to categories which can be assigned identical <t>-reducible types (<t>, <e,t>, <<e,t>,t>, etc...). One of the merits of this view is that it leads to an immediate understanding of why certain examples of asymmetric coordination, such as (94), fail to obey the ban on boordination of unlike categories, but are nonetheless well-formed:

(94) a. *She is* [$_{NP}$ *a doctor*] *and* [$_{AP}$ *proud of it*].
b. *He is* [$_{AP}$ *afraid of snakes*] *and* [$_{VP}$ *avoiding snails*].
c. *They are* [$_{NP}$ *doctors*] *and* [$_{VP}$ *avoiding their patients*].

In (94), the conjoined predicates are of type <e,t>, and therefore constitute licit targets for coordination by Boolean *and*. Type parallelism is however not a sufficient condition on coordination, as can be seen from the fact that in coordinate structures, all individual conjuncts have to satisfy the syntactic subcategorization of the selecting predicate (Sag et al. 1985):

(95) a. *He is* [*a Republican*] *and* [*proud of it*].
b. *He is* [*a Republican*] *and* [*of the opinion that Clinton is a liar*].
c. *He became* [*a Republican*] *and* [*proud of it*].
d. **He became* [*a Republican*] *and* [*of the opinion that Clinton is a liar*].

Sag et al. observe that only complements of *be* allow the full range of mixed category coordination. (95)b demonstrates that NPs may in principle conjoin with *of*-PPs, indicating type compatibility. But this also implies that the ill-formedness of (95)d cannot be attributed to a type restriction.

An even stronger argument for the necessity of syntactic restrictions is based on the contrasts in (96), discussed in Chomsky (1957: 36). In (96)c, the two conjuncts are (predicate) modifiers, and therefore trivially fulfill the subcategorization conditions:[166]

(96) a. *The scene* [*of the movie*] *was in NY.*
b. *The scene* [*that I wrote*] *was in NY.*
c. **The scene* [*of the movie*] *and* [*that I wrote*] *was in NY.*

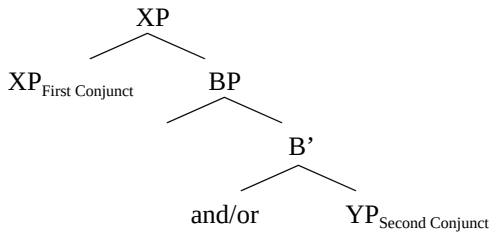
Thus, conjunction appears to be subject to semantic as well as syntactic restrictions.

Related to the question of whether C instantiates a bundle of semantic or syntactic properties is the search for the proper analysis of the islandhood of coordinate structures, exemplified by (97):

(97) a. *the person* [$_{CP}$ *you invited t*] *and* [$_{CP}$ *Mary liked t*]
b. **the person* [$_{CP}$ *you invited the guest*] *and* [$_{CP}$ *Mary liked t*]
c. **the person* [$_{CP}$ *you invited t*] *and* [$_{CP}$ *Mary liked the guest*]

Again, it is possible to distinguish syntactic from semantic solutions in this domain. Most syntactic theories cast the prohibition on asymmetric extraction in terms of the CSC (Ross 1967a; Chomsky 1977; Postal 1999; Williams 1978).[167] But the ATB requirement can also be linked to semantic properties. An influential idea along these lines is advanced in Munn (1993), who proposes that (some) CSC violations are not the result of a non-converging syntactic derivation, but rather lead to uninterpretable LF representations. According to Munn, coordinate structures arise if a *Boolean Phrase* (BP), which embeds the second conjunct and is headed by the coordinator, is adjoined to the first conjunct, as shown in (98) (the same idea is also formulated in Thiersch 1993). In addition, both conjuncts need to match in type.

(98)



Since the second conjunct is an adjunct, the ban on extraction out of the second conjunct (see (97)b) can be made to follow from the Adjunct Condition (Huang 1982). But this view also entails that typical instances of ATB extraction cannot involve movement out of both conjuncts, as illustrated by (99)a, since extraction out of the second conjunct would induce an island violation. Therefore, Munn proposes that the forking chains created by ATB movement in contexts such as (97)a should be decomposed into two separate dependencies, with the additional requirement that the two chains be referentially identical, as schematized in (99)b:

(99) a. *[ZP$_i$ ... [$_{XP}$ [$_{XP}$ ...t$_i$ ...] [$_{BP}$ and [$_{YP}$ ... t$_i$ ...]]]]
b. [ZP$_i$ ... [$_{XP}$ [$_{XP}$ ...t$_i$ ...] [$_{BP}$ and [$_{YP}$ OP$_k$ ... t$_k$ ...]]]] (*where i = k*)

In (99)b, the trace in the second conjunct is not ATB bound, but coindexed with an empty operator. ATB movement is thereby effectively subsumed under the phenomenon of parasitic gaps.[168] Finally, asymmetric extraction out of the first conjunct, as in (97)b, is excluded by the ban on vacuous quantification along the following lines. The condition on type parallelism requires that in (97)b, the first conjunct CP, which denotes the derived λ-abstract *λx[you invited x]*, has to be conjoined with a predicate of identical type. As in the first conjunct, predicate formation in the second conjunct is achieved by λ-abstraction over the trace bound by the relative operator. However, if the second conjunct does not contain such a trace, as illustrated by the LF representation (100)b, the operator *OP$_k$* fails to bind a variable inside the second conjunct, in violation of the ban on vacuous quantification:[169]

(100) a. **the person OP$_i$ you invited t$_i$ and OP$_k$ Mary liked the guest* (= (97)b)
b. *[the person ... [$_{CP1}$ [$_{CP1}$ ... t$_i$ ....][$_{BP}$ and [$_{CP2}$ **OP$_k$** ... NP...]]]

In sum, the hypothesis that CSC-effects are amenable to an alternative, partially semantic, explanation makes it possible to eliminate both the CSC and ATB movement from the grammar. Clearly, this position is incompatible with the syntactic approach defended in the present study, according to which CR-processes, which operate on a derived coordination in overt syntax, are restricted by syntactic restrictions such as the CSC. There are however good reasons to doubt that the parasitic gap strategy is general enough in order to cover all instances of ATB movement.

A first argument against the parasitic gap analysis comes from ATB extraction out of simple predicative comparatives as in (101)a. Under Munn's analysis, the individual trace t$_j$ in the second conjunct is not ATB bound by *who*, but is bound by an empty operator inside the *than*-XP (*OP$_j$*), as detailed by the LF (101)b:

(101) a. *a person who Mary is more proud of than Peter is* ⌓
(⌓ = [$_{AP}$ proud of t$_j$])
b. a person who Mary is more proud of t$_i$
[$_{\textit{than}\text{-XP, <e,d>}}$ **OP$_j$** [$_{<d>}$ than [$_{CP, <d,t>}$ OP$_k$ Peter is [d$_k$-proud of **t$_j$**]]]]

The problem presents itself in form of the observation that the operator OP$_j$ introduces a λ-binder over individuals, with the effect that the *than*-XP denotes now a measure function (type <e,d>). But then, the *than*-XP cannot

combine with the matrix Deg°, which selects for degree terms, in a meaningful way. Thus, the parasitic gap account of ATB movement is inherently incompatible with the standard version of the empty degree operator analysis of comparatives. (At least, it would make it necessary to define a second version for the degree head, which is only used in contexts of extraction.)

Naturally, this finding might also be taken as an argument against the empty operator analysis of comparatives (in its present form). However, comparatives are not the only construction which provides a reason to doubt the feasibility of reducing all ATB extraction to empty operator movement. More specifically, the assumption that head movement is equally subject to the CSC is instrumental to the analysis of a number of phenomena in coordinate structures (as well as in comparatives). For instance, ATB V2 in German leads to well-formed outputs (see (102)a), while asymmetric V-to-C movement results in sharp ungrammaticality:[170]

(102) a. *Hans hat ein Buch gelesen und eine Zeitung gekauft.*
H. has a book read and a newspaper bought
[$_{CP}$ *Hans*$_k$ [$_{C'}$ ***hat***$_i$ [[$_{IP}$ t_k *ein Buch gelesen* $\boldsymbol{t}_i$] *und*
[$_{IP}$ t_k *eine Zeitung gekauft* $\boldsymbol{t}_i$]]]]

b. **Hans hat ein Buch gelesen und eine Zeitung gekauft hat.*
H. has a book read and a newspaper bought has
*[$_{CP}$ *Hans*$_k$ [$_{C'}$ ***hat***$_i$ [[$_{IP}$ t_k *ein Buch gelesen* $\boldsymbol{t}_i$] *und*
[$_{IP}$ t_k *eine Zeitung gekauft* ***hat***]]]]

What is important for present purposes is that it is rather implausible that ATB verb movement can also be construed in terms of a parasitic empty operator movement chain. An operator analysis for (102) would roughly yield the representations in (103), in which an empty operator binds the verbal trace, and in which the second conjunct has to adjoin to a node - yet to be specified - of identical type:

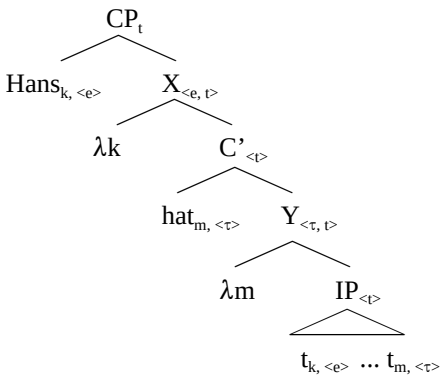
(103) a. *Hans*$_k$ *hat*$_m$ *ein Buch gelesen* [$_{BP}$ *und* [*OP*$_j$ *OP*$_i$ t_j *eine Zeitung gekauft* t_i]]
H. has a book read and a newspaper bought

b. **Hans*$_k$ *hat*$_m$ *ein Buch gelesen* [$_{BP}$ *und* [*OP*$_i$ t_j *eine Zeitung gekauft hat*]]

First, consider possible options for the semantic type of the second conjunct in (103)a. In order to avoid unwarranted assumptions, suppose that auxiliaries leave traces of type τ. It follows that the second conjunct is of type $<\tau,<e,t>>$ (assuming that the subject trace is bound by a lower operator) or $<e,<\tau,t>>$ (assuming that the operator which binds the subject is located higher than the one binding the auxiliary). It also follows now that there must be a node inside

the first conjunct of matching type which can serve as the adjunction site for the second conjunct. But it is not obvious where this node should be located. On standard assumptions about the transition from syntax to semantics (see Heim and Kratzer 1998), each moved category is followed by a λ-binder of matching type to its immediate right, as documented for the first conjunct of (103) by (104) below.

(104)



For moved categories with descriptive content, this has the consequence that nodes which have been abstracted over twice - i.e. *λkλm[....k...m..]* in (104) - are never generated. Only LF representations which include multiple adjacent empty operators, such as the second conjunct of (103)a, can be translated into derived multiple abstracts. As a result, the second conjunct of (103)a, which involves multiple abstraction (yielding <τ,<e,t>> or <e,<τ,t>>), cannot be combined with the first conjunct, because (104) lacks an attachment site of suitable type. Thus, a parasitic gap analysis of ATB V2 would require substantial changes in the syntax - semantics interface.[171]

A second, related problem for the empty operator analysis of ATB V2 comes from the observation that verb movement - in particular V2 of auxiliaries - is semantically vacuous and undone in the semantic component (this would follow e.g. from (104); Bittner 1994). Thus, the chain between the matrix verb and its trace is not represented in semantics; similar considerations apply to the empty operator chain in the second conjunct. But how could the ban on vacuous quantification, which filters out semantic representations, then distinguish between licit and illicit applications of V2, given that the parasitic gap dependency is undone in both cases?

Thirdly, according to a widely held belief, empty operators are maximal projections; one might therefore wonder how the operator can match the X-bar status of the verbal trace. Finally, the syntactic motivation for empty operators

derives from the observation that certain constructions observe the bounding conditions typical of A'-movement, even though no overt movement has taken place. But verb movement is subject to much stricter locality conditions than operator movement.

In sum, the deliberations above strongly support the view that a syntactic constraint such as the CSC is operative in regulating licit instances of verb movement (see chapter 2, section 2.3, chapter 3, section 4, and Postal 1999 for further arguments in defense of a syntactic CSC). Taken together with the complication the parasitic gap analysis faces with comparatives, this constitutes solid evidence against a general reanalysis of the CSC in terms of empty operator movement. Crucially, this result is in line with the CR-Hypothesis, which builds on the premise that movement restrictions in comparatives can be defined syntactically.

4.2. Conditions on subordination and coordination

Returning to comparatives, this final section explicates aspects of the relation between the matrix clause and the *than*-XP during the course of the derivation. I will also present some preliminary remarks on type restrictions in contexts of comparative coordination.

The PC/CR-Hypothesis presupposes that comparatives can be parsed into a comparative coordination in overt syntax, which is maintained throughout the covert part of the derivation at LF, as is testified by the correlation between binding scope and scope of TR discussed in section 4.3. This assumption conflicts with the orthodox position - also adopted in chapter 2 - that the *than*-XP is semantically subordinated to the main clause. In addition, there is a theory-internal conflict which needs to be addressed. The AP-Raising Hypothesis of chapter 2 entails that the *than*-XP is located inside the matrix clause during at least parts of the syntactic derivation, because the head of the relative is related to the CD-site by a movement chain. Hence, comparatives exhibit properties of syntactic subordination, too. The various requirements on the *than*-XP which have been identified in the previous chapters are summed up in (105):

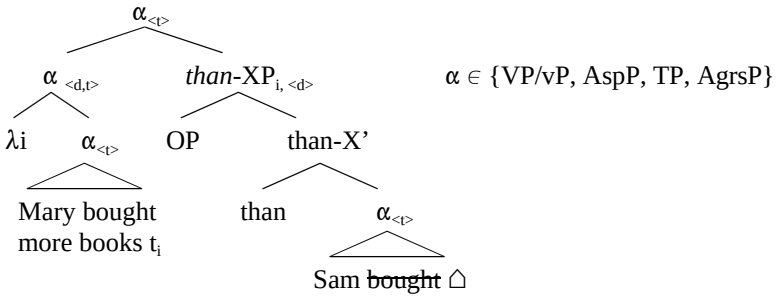
(105) *I. SYNTAX*
Subordination:
" Selection
" AP-Raising
Coordination:
" CR-Operations (ATB movement, Gapping, RNR)
" Binding scope
II. SEMANTICS
Subordination

It appears as if the theory embodies conflicting claims, resulting in a paradox.

One part of the solution to this paradox, the step from subordination to coordination in syntax has already been delegated to a derivational mechanism (TR). A further problem for the analysis is removed by the natural assumption that nothing blocks syntactic reconstruction of the *than*-XP in case the string has not been affected by CR. That is, comparative complements which surface separated from their base position and which have not taken part in CR-operations are free to undergo syntactic reconstruction; they therefore should behave in the same way as extraposed categories in general (see Haider 1995 for evidence to that effect). What remains to be seen is (i) how the comparative coordination is represented, and (ii) that the syntactically derived coordinate structure is semantically interpreted in the appropriate fashion.

The solution to (i) builds on Munn's and Thiersch's analysis of conjunction, according to which the second conjunct of a coordinate structure is embedded under a functional projection (a BP) right-adjoined to the first conjunct. Adopting the adjunction analysis for comparatives, suppose that the *than*-XP extraposes and may freely adjoin to any node which includes a full thematic clause and denotes a proposition,[172] as exemplified by (106). Empirical reflexes of this freedom of attachment were detected in restrictions on PC-formation, discussed in detail in chapter 3, section 4.

(106) *Mary bought more books than Sam*



On this view, comparative coordination differs from conjunction only in that comparatives are embedded under a *than*-XP instead of a BP; and comparative coordination is derived by extraposition of the *than*-XP, whereas conjunctions are base-generated.

Turning now to the answer to problem (ii), observe that the typed tree-diagram in (106) contains two semantically interpretable chains. The lambda operator *λi* abstracts over the index of the trace left behind by TR, while the empty operator OP binds a degree variable inside the *than*-XP. Given that the *than*-XP denotes a definite degree description of type <d>, the present account has the desirable consequence that extraposition is obligatorily undone in the semantic component, yielding the effect of semantic subordination. That is, the compositional principles ensure that the *than*-XP, which is scopeless, is automatically interpreted in its base-position as a semantic argument of the comparative morpheme *-er/more*:[173]

(107) $[\![[_{IP2}\ \boldsymbol{\lambda i}$[Mary bought more books $\mathbf{t_i}$]]]$]\!]_{<d,t>}$
($[\![[\mathbf{OP_{d'}}$ **than Sam bought d'-many books**$]_i]\!]_{<d>}$) =
= $[\![$[Mary bought [more books [$OP_{d'}$ than Sam bought d'-many books]]]$]\!]$ =
= ∃d[Mary_bought_d-many_books ∧
d > max{d'|Sam_bought_d'-many_books}]

Moreover, since TR is not undone until the derivation reaches the semantic component, the *than*-XP may remain in its extraposed position throughout LF. Recall in this context from chapter 3 that independent principles regulate the option of *than*-XP reconstruction at LF. In particular, syntactic reconstruction is excluded for those cases which involve overt ATB movement, since this would break up the ATB configuration, inducing a CSC-violation. (Similar considerations might carry over to Gapping, in particular if Gapping is interpreted as an instance of ATB movement; see Johnson 1996, 2003). Hence, one is led to expect that the LF-sensitive tests for reduced comparatives, such as the binding scope of categories inside the *than*-XP, apply to the *than*-XP in its extraposed position (see also Fox and Nissenbaum 1999). As was demonstrated in section 3, this prediction is also in line with the generalization that the interpretive properties of the *than*-XP are determined by surface oriented criteria (such as the Isomorphism condition on Gapping.) In sum, a number of conflicts posed by the competing requirements of syntactic coordination and semantic subordination can be resolved sequentially by overt extraposition and subsequent (trivial) semantic reconstruction of the *than*-XP.[174]

Finally, the present analysis, on which comparative coordination is modeled after Munn's and Thiersch's structures for conjunction, also ensures type parallelism of the two 'conjuncts' which enter into the derived coordination.

More specifically, in base-generated conjunctions, the type parallelism requirement is computed on the basis of (i) the complement of the BP and (ii) the adjunction site to which the BP attaches. That is, the semantic contribution of the BP itself is ignored. Applying this algorithm to comparatives yields now an interesting result. Given that the *than*-XP in comparatives corresponds to the BP in conjunctions, type parallelism in comparatives is predicted to restrict possible values for (i) the complement of the *than*-XP and (ii) the node to which the *than*-XP attaches. This finding harmonizes well with the analysis of chapter 3, where it was argued that reduced *than*-XPs, which by definition are underlyingly clausal and denote *propositions*, enter into a comparative coordination with categorially identical - hence also *propositional* - nodes (where "nodes" range over VP/vP, AspP, TP, AgrsP, and possibly others). Thus, comparatives satisfy semantic type parallelism in that the comparative coordination always involves two propositional nodes, as is revealed by the adjunction analysis in (106).[175]

To summarize, it was argued that level ordering conflicts in comparative formation are naturally resolved derivationally (TR, followed by semantic reconstruction; optional syntactic reconstruction for non-reduced comparatives). Moreover, the PC/CR-Hypothesis was seen to be compatible with theories that consider coordination to be dependent on semantic type parallelism. Finally, it was shown that the existence of ATB extraction out of comparatives and ATB V2 poses a serious challenge for analyses which attempt to eliminate the CSC from the grammar.

Chapter 5
Conclusion

1. The AP-Raising Hypothesis

In chapter 2, I presented an analysis of comparatives which primarily intended to account for the nature of the process identifying the CD-site, the variation in size of the ellipsis, and the factors which determine its interpretation. Based on the observation that the CD-site chooses its antecedent locally and in course of the syntactic derivation, I argued that the empty gradable property *d-tall* in comparatives such as *Otto is taller than Sally* is related to its antecedent *taller* by an overt movement operation. This process of *AP-Raising* is motivated by the need to eliminate a morphological (semantically meaningful) feature on the functional Deg° of the matrix clause by Spec-head agreement with an AP.

Given the assumptions above, comparative formation is effectively subsumed under the larger group of feature-driven dislocation processes, rendering the stipulation of a designated operation of CD superfluous. But AP-Raising also displays an unorthodox property which separates it from other manifestations of movement, and makes it instead look like other types of ellipsis: It leaves behind two interpretable copies, instead of one. I argued that this hallmark follows from considerations of interpretability, and that AP-Raising represents an instance of movement without chain formation. On this conception, the fact that CD is located at the border between ellipsis processes (*qua* generating two interpretable copies) and movement operations (*qua* being bounded and sensitive to c-command) is attributed to the disassociation of the two concepts of movement and chain formation. If correct, the AP-Raising analysis can therefore also be taken to support the view that movement and chain formation constitute two independent primitives of the grammar, as e.g. argued by Chomsky (1995).

The second main objective of chapter 2 consisted in providing an account for the syntax of NP-comparatives. I proposed that a new perspective on how prenominal adjectival modifiers are joined with the common noun and the comparative complement - following aspects of Abney (1987) - leads to a principled analysis of a variety of phenomena, among them the descriptive generalization that in NP-comparatives, the size and interpretation of the CD-site systematically covaries with word order permutation. In particular, I suggested that prenominal comparative adjectives should invariably be treated as subsective modifiers embedding the common noun they modify, and that

the constituent [AP NP] is generated in specifier position of a functional DegP, which in turn serves as the complement of a higher D°. Given this non-standard DP-structure, AP-Raising in prenominal attributive comparatives targets the complex [AP NP] as illustrated by the scheme (108)a, while CD in postnominally modified comparatives as in (108)b affects the adjectival predicate only:

(108) a. $[_{DegP}$ [AP-er NP] $[_{D'}$ Deg° $[_{than\text{-}XP}$ .... $[_{DegP}$ [**AP NP**] $[_{D'}$ Deg°]]]]]
b. $[_{NP}$ NP $[_{DegP}$ [AP-er] $[_{D'}$ Deg° $[_{than\text{-}XP}$ .... $[_{DegP}$ [**AP**] $[_{D'}$ Deg°]]]]]

The new DP-internal phrasal architecture was shown to entail the following consequences: First, the CD-site in prenominal comparatives behaves like an NP, whereas it is an AP in postnominal constructions. Second, the AP may function as a subsective modifier in prenominal structures only. Third, the DegP on top of the *than*-XP exhibits properties of an argument w.r.t. Principle C reconstruction in prenominal, but not in postnominal comparatives. Fourth, parsing [AP NP] as a constituent to the exclusion of nodes in the right periphery of the DP made it possible to construe the empty operator chain in NP-comparatives locally, solving an old problem for the analysis of this construction. In addition, pronominal variable binding was seen to furnish solid evidence in favor of the specific phrase structure assigned to NP-comparatives. Fifth, AP-Raising directly accounts for the mismatch between the antecedent and the CD-site, because morphological marking on the antecedent is interpreted as a reflex of checking by a higher head, and not as a property of the antecedent or the CD-site *per se*. Finally, the analysis sheds light on the scope properties of the CD-site and its behavior in SCO/WCO contexts.

The AP-Raising account also generates a number of open ends and unresolved issues, three of which will be briefly addressed below. For one, it is not entirely clear how to account for constructions such as (109), in which AP-Raising affects an AP to the exclusion of its adjectival complement:

(109) *She is prouder of him than he is ⌓ of her.*
(⌓ = $[_{AP}$ d-proud t])

(109) proves problematic in that the occurrence of the AP-internal trace in the base position (i.e. inside the *than*-XP) would have to be re-indexed in order to get properly bound by the PP *of him* after the application of AP-Raising. This property of comparatives is now reminiscent of ellipsis processes like Pseudogapping, which equally license re-indexing under structural identity (see also Rooth 1992 on a focus theoretic analysis of indexical identity):

(110) *She bought a book and he did ⌓ a newspaper.*
(⌓ = [$_{VP}$ buy t])

Descriptively speaking, the ellipsis-like behavior of CD is related to the fact that AP-Raising generates two referentially independent copies, which are not treated as copies in a movement chain, and whose interpretation is accordingly subject to the looser identity conditions found e.g. in VP-ellipsis. An adequate and more comprehensive analysis of (109) requires further research, though.

Second, a theory-internal problem arises in connection with comparative constructions in which the *than*-XP is not phonologically realized:

(111) a. *He took the smaller one.*
b. *I don't know whether Sam or Mary is taller.*
c. *We still have more work to do.*

At first sight, the AP-Raising Hypothesis seems to require that in all such cases, a silent *than*-XP is syntactically projected, which provides the source of the gradable property. In absence of positive evidence, a modification along these lines appears poorly motivated, though.

But it is not clear whether the conclusion that all comparative APs are paired with a (covert or overt) *than*-XP is even compelling. If the categorial feature in the matrix Deg° can also be checked by directly merging an AP into SpecDP, instead of raising it from the lower SpecDegP, AP-Raising in itself is not a prerequisite for comparative formation. As a consequence, the *than*-XP does not need to be projected. Moreover, the internal argument position of the degree head could be filled by an empty, contextually determined degree variable. On this view, the examples in (110) cease to pose a problem. Note finally that AP-Raising will still remain the preferred option in contexts which provide an overt *than*-XP, given the plausible assumption that movement, which involves lexical insertion once, is less costly than merging an AP two times from the numeration.[176]

Thirdly, in languages such as German and French, the CD-site can optionally - and subject to certain conditions - be phonologically realized (Moltmann 1992a: 327ff; Pinkham 1982). In predicative AP-comparatives in German, the CD-site takes the shape of an expletive ((112)a). In NP-comparatives, it is either filled by an indefinite which bears the overt ϕ-features assigned to the CD-site ((112)b), or a demonstrative which is - somewhat archaic - marked by partitive genitive Case ((112)c):

(112) a. *Maria ist grösser als Hans (**es**) ist.*
M. is taller than H. it is
'Mary is taller than John.'

b. *Maria kennt einen besseren Koch$_{ACC}$ als Peter (**einen**$_{ACC}$) kennt.*
M. knows a better cook than P. one knows
'Mary knows a better cook than Peter knows (one).'

c. *Der Krieg ist darin schlimm dass er mehr böse Menschen$_{ACC}$ macht*
the war is therein evil that he more bad people make
*als er (**deren**$_{GEN\ PL}$) wegnimmt*
than he thereof take away
'War is evil in that it creates more bad people than it takes away.'
(Immanuel Kant: *Zum Ewigen Frieden*, 1795)

While the AP-Raising Hypothesis can account for the presence of an overt determiner in (112)b on the assumption that the indefinite is located in D°, the proper treatment of the expletive and partitive examples is less obvious. In both remaining cases, the pronominal would have to contain internal structure in order to be able to host the CD-site. I have to delegate this issue to further research.

2. The PC/CR-Hypothesis

While chapter 2 was concerned with the analysis of the obligatory ellipsis process of CD, chapter 3 submitted a novel perspective on the formation of phrasal comparatives (PCs) and partially reduced comparatives (PRCs), which are the product of optional deletion. I argued that the assumption of the two hypotheses that (i) all reduced comparatives[177] derive from a clausal source (*PC-Hypothesis*), and that (ii) comparatives can be optionally parsed as coordinate structures (*Conjunction Reduction Hypothesis*) makes it possible to dispense with the construction specific operation of Comparative Ellipsis. In pursuing this goal, it was demonstrated that the conditions which restrict Gapping, Right Node Raising, and Across-the-Board scrambling (in English and German) are identical in comparatives and coordinate structures. Second, it was shown that the CR-Hypothesis exhaustively accounts for the shape of reduced *than*-XPs, as well as for their distribution inside the matrix clause. Finally, the resulting system correctly predicted that the behavior of PCs should emulate the one of PRCs. From these three observations, it was concluded that PCs should not be treated as being base-generated (contra e.g. Napoli 1983).

Furthermore, I proposed to mediate the subordinate parse for comparatives enforced by the AP-Raising Hypothesis and the coordinate structure required

in order to provide the syntactic basis for the application of CR by overt extraposition of the *than*-XP via *than*-XP-Raising (TR; section 2.1). TR moves the *than*-XP to the right periphery of the matrix clause, resulting in formation of a comparative coordination. It could be shown that the assumption of such a two-level model receives support from two empirical domains: First, the postulation of an upward movement operation led to a straightforward explanation for the observation that while ellipsis resolution in examples such as *John wanted to write more plays than Sam* leads to ambiguous results, object PCs such as *More people want to write plays than poems* unambiguously have to be parsed with broad ellipsis. A second piece of evidence for TR was drawn from the interaction between ellipsis scope and the scope of TR in PCs which displayed ambiguity between a narrow and a wide ellipsis construal (an example of which is *Mary promised him to invite more people than John's sister*). There, high attachment of the *than*-XP was observed to directly correlate with wide ellipsis and broad binding scope of the remnant, while narrow ellipsis corresponded with narrow binding scope of the remnant, attesting to the fact that the phonologically reduced string in PCs cannot be recovered freely from the discourse (as e.g. in VP-ellipsis), but has to be identified under strict syntactic parallelism by a local antecedent.

Finally, an additional argument against base-generating PCs could be derived from an inspection of the binding scope of the remnant w.r.t. potential A-binders within the minimal antecedent clause. In contexts which do not license ellipsis ambiguity, the c-command relations between the remnant and some term inside the matrix clause were shown to match the c-command relations between the correlate of the remnant and the matrix term. This generalization is directly compatible with the CR-Hypothesis, according to which the ellipsis site contains syntactic structure, but proved to present a challenge for direct analyses of PCs.

Notes

1. I take *more than* comparatives as an exponent of the group of degree constructions comprising equatives and comparatives (Bresnan 1973). Subcomparatives will be ignored from here on.
2. In von Stechow (1984), the matrix degree is existentially bound; nothing bears on this issue here, though (see Bartsch and Vennemann 1972; Kennedy 1999 and Klein 1980, among others, for alternatives.)
3. These two criteria are not intended to form the base of a complete taxonomy of ellipsis, but will be employed here for expository reasons only. 'Locality' and 'level of identification' are concepts extracted from Hankamer and Sag (1976), who lump them together in the dichotomy *Surface Anaphora* vs. *Deep Anaphora* (see also Sag and Hankamer 1984 and Chao 1987; see also Hankamer 1971 on unbounded *Target Rules* and bounded *Blanket Rules*). For recent discussion of ellipsis phenomena see, among others, Fox (2000); Johnson (1996, 1997a); Kehler (2002); Klein (1993); Lobeck (1995); Merchant (2001); Wesche (1995) and Wilder (1995b).
4. This is only a rough approximation. Many open issues surround the exact nature of the identity condition, and ellipses appear to fall in more than two groups. Gapping is for instance more permissive than RNR in that it does not necessarily require complete surface identity (see Lasnik 1995a for discussion of a related phenomenon in the domain of VP-ellipsis):
   (i) a. *They live in London and Peter ⌓ in Paris.* (⌓ = live-**s**)
   (Wilder 1994: 19, (82))
   b. *??Peter live-**s** in London and they ⌓ in Paris.* (⌓ = live)
   But Gapping is at the same time more restrictive than VP-ellipsis in that it demands an overt linguistic antecedent, which agrees in voice, as illustrated by the contrast (ii) vs. (iii) (Hankamer and Sag 1976: 409f):
   (ii) a. Botanist: *That can all be explained.*
   b. Mr. Spock: *Please do ⌓.* (⌓ = explain) (Sag 1980: 75, fn. 2)
   (iii) **Some of the phenomena were explained at the symposium and some of the speakers ⌓ [their analysis] afterwards.* (⌓ = explained)
   (Johnson 1996: 17, (51))
5. This observation is also made in Williams (1977: 102).
6. In Kennedy (1997, 1999), adjectives denote measure functions from individuals to degrees, thus APs denote expressions of type <e,d>. The comparative operator is defined as in (i) (Kennedy 1997: 159):
   (i) $[\![OP]\!] = \lambda P_{<<e,t>,t>} \lambda G_{<e,d>} [\max(\lambda d[P(\lambda x[ABS(G(x))(d)])])]$
   That is, the operator applies to the predicate abstract over AP-denotations first, and the result serves then as an argument for the comparative AP of the matrix clause. ABS stands here for the absolute value of the adjectivem, defined in (ii):
   (ii) $[\![ABS(d)(d')]\!] = 1$ iff $d \geq d'$ (Kennedy 1997: 125)
   For further details see Kennedy (1997: 156-162, 1999).

7. (24) improves if the pronoun is focused, a behavior typical of Principle C (Reinhart 1983).
8. The same conclusion can also be reached if the view is adopted that Principle C is an interface condition and not part of Binding Theory (Reinhart 1983; Reinhart 1995: 51f; Reinhart and Grodzinsky 1993: 79). Roughly, for Reinhart, Principle C effects arise if replacing a name by a bound variable (as in (i)a vs. (i)b) yields an indistinguishable interpretation in a given context (*Rule I*):
   (i) a. **He$_i$ said that Max$_i$ touched the animal.*
   b. *He$_i$ said that he$_i$ touched the animal.* ($\approx$ λx[x said that x ...](he$_i$))
   If the structural conditions for variable binding are not met, coreference between a name and a pronoun is accordingly licit:
   (ii) *The bear near Max$_i$ touched him$_i$.*
   On Reinhart's analysis, the interface conditions compare strings containing names with competing structures in which the names have been substituted by variables (it does not matter for present purposes whether these variables are linguistic expressions or not). Crucially, the algorithm has to operate on the LF representation of these competitors, in order to be able to assess whether the structural conditions for variable binding (c-command) are met. For the case at hand (comparatives) it follows that the computation of possible binding relations in (24) involves the construction of the LF of a competitor in which the name has been replaced by a (term which can be translated as a) variable, as in (iii):
   (iii) *Mary is prouder of him than he is* ⌂.
   (⌂ = d-proud of him)
   This in turn entails that the CD-site is - at least in the case of the competitor - already projected at LF.
9. Some speakers judge (38) to be marginally acceptable, acknowledging though a clear contrast between (38) and (35). This might be due to the fact that CSC-violations in English improve under certain (poorly understood) conditions (see Lakoff 1986; Ross 1967a; Williams 1994). Note however that in languages which do not license exemptions from the CSC such as German, the equivalent of (38) is plainly ungrammatical:
   (i) a. **eine Person auf die Maria stolzer ist als der Peter auf den Hans ist*
   a person of which Mary prouder is than the Peter of the John is
   b. **eine Person auf die Maria stolzer auf den Hans ist als der Peter ist*
   a person of which Mary prouder of the John is than the Peter is
10. In addition, while PPs resist parasitic gap formation, as shown by (i) (Browning 1987), extraction out of comparatives is attested also with PPs, as in (ii):
   (i) a. *a person who Mary is proud of without being envious of*
   b. **a person* [$_{PP}$ *of whom*] *Mary is proud without being envious*
   (ii) *a person* [$_{PP}$ *of whom*] *Mary is more proud than Peter is* ⌂
   (⌂ = proud of t)
11. For instance, Napoli (1982) observes that subcomparatives are sensitive to the CSC (note that in (i), the trace is not part of the CD-site):

(i) a. **Who did you see more pictures of t than you read books about Ronald Reagan.* (Napoli 1982: 687: fn 16, (iii)a)
b. **Who did you see more pictures of Nancy Reagan than you read books about t.* (Napoli 1982: 687: fn 16, (iii)b)
c. *Nancy Reagan, I've see more pictures of t than I've read books about t.* (Napoli 1982: 683, (15c))

12. On this conception, the class of (marginally) acceptable instances of CSC violations discussed in the literature such as (i) has to be treated in terms of a structure different from the one assigned to prototypical cases of coordination (for discussion see Culicover 1972; Culicover and Jackendoff 1997; Goldsmith 1985; Kehler 2002; Williams 1994).
(i) *?What did you go to the store and buy t?*
This is not implausible, given that the exceptions to the CSC involve some temporal or event ordering, or something akin to causation, and can therefore not be merely analyzed in terms of Boolean conjunction. Tentatively, (i) might be given a treatment similar to purpose clauses (ii), or temporal adjuncts (iii), which are well known to license NP-extraction out of the adjunct (see Browning 1987 for discussion):
(ii) a. *?What did you go to the store to buy t?*
b. *?the friend who you fired to make room for t*
(Browning 1987: 117, (145b))
(iii) *?the mean who you left London without speaking to t*
13. I am indebted to Roger Higgins (p.c.) for pointing this out to me.
14. An alternative factorization in terms of C'-coordination observes the CSC:
(i) *Who [$_{C'}$ [$_{C'}$ **is$_i$** Mary **t$_i$** proud of t] and [$_{C'}$ Peter **is** proud of t]]
(i) can be excluded along two lines. First, there is reason to believe that X'-coordination - just like X'-adjunction - is blocked more generally (see chapter 3, section 4). Second, the two coordinates of (i) arguably violate the type parallelism requirement on coordination. In English, matrix non-subject interrogatives need to be supported by I-to-C movement (e.g. Rizzi 1990). Thus, while the first conjunct in (i) qualifies as a question, the second conjunct, where I-to-C has failed to apply, is specified as [-wh].
15. More specifically, Abney (1987) treats the *than*-XP as an argument of Deg°, which is adjoined to Deg' (see also Corver 1997: 304). Kennedy and Merchant (1997: 3) argue that the *than*-XP is an adjunct at the Deg'-level, because it is opaque for overt adjunct extraction. Note however that in a Barriers-style theory (Chomsky 1986), adjunct extraction is expected to be prohibited even if the *than*-XP serves as an argument. This is so because Deg° is a functional head, and therefore does not L-mark its complement. Moreover, given that the *than*-XP serves as the internal argument of Deg°, adjunction to *than*-XP should be blocked, turning the *than*-XP into a barrier. Thus, adjunct extraction across *than*-XP leads to an ECP-violation, because no antecedent government chain can be established. Argument extraction is on the other side still expected to be licit, since only a single Subjacency barrier is crossed in this configuration.

16. In periphrastic comparatives, the degree marker *mehr*/'more' arguably moves from Deg° into a higher functional projection, marked QP in (i)b (see Corver 1997 on the distinction between DegP and QP):
    (i) a. *Mary is more interesting than Peter is.*
        b. ....[$_{QP}$ **more$_i$** [$_{DegP}$ [$_{AP}$ interesting][$_{Deg'}$ **t$_i$** [$_{than\text{-}XP}$ than Peter is]]]]
17. See the discussion of lexical vs. phrasal passivization in Abney (1987), Jackendoff (1977) and Kratzer (1995b).
18. Any version of the DegP-hypothesis - not only the specific one propagated here - faces this problem, since the DegP-hypothesis entails that the AP and the *than*-XP are generated under the same DegP node.
19. Sentences (55)a and (56)a are marginal due to center embedding.
20. Given the most permissive assumptions, i.e. V° remains VP-internal in a verb-final VP (Haider 1993b).
21. The structure incurs a 'weak' violation of endocentricity, in that the DP is not the Extended Projection of the common noun NP (on Extended Projections see Grimshaw 1991). Note that frameworks such as LFG and HPSG explicitly deny 'weak' endocentricity (Sag et al. 1985) for empirical reasons, indicating that the concept is not grounded in an irreducible empirical generalization.
22. Although the tree in (61) is right-branching (in the sense of Kayne 1994), I do not adopt a reduced relative analysis of prenominal attributive modifiers, as in Kayne (1994) and Smith (1961) (see Bolinger 1967 and Siegel 1976 for arguments against such a view).
23. PPs will be ignored throughout for the computation of c-command. See Pesetsky (1995) for discussion.
24. Haider (1993b) actually assumes that inversion comes about by head-movement of the noun, and does not explicitly address English. I will leave open the question of which exact mechanism drives movement (see Hoekstra 1997; Johnson 1997b and Kayne 1994 on deriving DP-internal word-order). On a plausible view, raising is triggered by the need to eliminate agreement features of a higher, DP-internal AgrP (see Corver 1997 and Ritter 1995).
25. This view presupposes that nouns do not select for arguments, and that apparently argument-like modifiers are joined to the head noun in a Neo-Davidsonian fashion (see e.g. Dowty 1991; Parsons 1990; Stowell 1981).
26. Barbara Partee (p.c.) cautions that examples such as in (i) below are acceptable in English:
    (i) *the listing* [*of its$_i$ contents*] [*on the cover of every journal$_i$*]
    (i) might involve inverse linking. At the moment, I do not have an explanation for this contrast between English and German. Note however that while the right-adjunction/m-command account captures (i), it is also substantially challenged by the fact that postnominal PPs may not bind into SpecDP, as shown by (ii) and (iii):
    (ii) **his$_i$ brother's book by every author$_i$*
    (iii) **seines$_i$ Bruders Buch von jedem Autor$_i$*
27. See also Stowell (to appear), who adds the proviso that the pronoun may not be contained in an argument.

28. I am indebted to Kyle Johnson and Uli Sauerland for drawing my attention to this restriction.
29. The ill-formedness of (79)a can be explained as a violation of the *Immediate Scope Constraint* of Linebarger (1980), which prohibits operators from intervening between Negative Polarity Items and their negations at LF:
    (i) *She doesn't budge for everybody* (Linebarger 1980: 29; (7a))
        a. *¬ > ∀ > budge
        b. #∀ > ¬ > budge (subject to dialectal variation; see Linebarger 1980: 63, fn.4)

    The assumption that NPI's are licensed at LF - as opposed to surface syntax - is supported by observation that NPI-licensing is computed subsequent to reconstruction (Linebarger 1980):
    (ii) [A doctor with any reputation] is not likely t to be available

    A possible re-analysis of (79)a along these lines does not affect the validity of the argument in the main text.
30. If Reinhart and Reuland (1993) are correct, anaphors in picture-noun context are logophors that do not require c-commanding antecedents (on non-local anaphors see also Hestvik 1992; Thráinsson 1991). Note however that not all properties of reconstruction seem amenable to an account in terms of logophoricity. Chomsky (1992) reports e.g. that reflexives in a fronted *wh*-phrase as in (i)a can be construed at a distance, while anaphors which reside *in-situ* as in (i)b have to be bound locally:
    (i) a. *John$_i$ wondered which picture of himself$_{i/k}$ Bill$_k$ bought.*
        b. *John$_i$ wondered who$_k$ bought which picture of himself$_{*i/k}$.*

    (Chomsky 1995: 205)

    It is not clear how a logophoric approach, which denies the relevance of structural conditions on the licensing of picture-noun reflexives, can capture the contrast manifest in (i).
31. Full Interpretation does not filter out all instances of illicitly interpreted copies. In particular, independent principles have to ensure that in successive cyclic adjunct chains, none of the copies except for the tail and the head are visible to semantics. Otherwise, it should e.g. be possible to assign to (i)a the parasitic gap like interpretation (i)b:
    (i) a. *Why did you say that she left?*
        b. *LF: why$_i$ did you say t$_i$ that she left t$_i$
        'What is the reason x, such that you said because of x that she left because of x?'

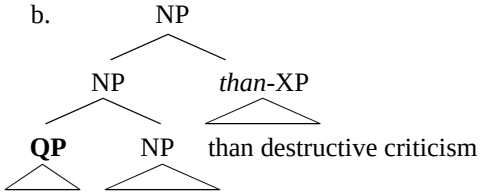
    Thus, it must be ensured that only one copy of the chain in (i) is translated into a variable. Note that the reverse situation, illustrated in (ii), in which more than one copy is translated into a *wh*-quantifier semantically, is excluded by the assumption that each *wh*-phrase can only check a single *wh*-feature. It is for this reason that the fronted adjunct in (ii) cannot satisfy the selectional restrictions of the higher and the lower [+wh] C° simultaneously.
    (ii) a. **When did you ask Bill arrived?*
        b. LF: [$_{CP}$ [When] did you ask [$_{CP}$ [when] Bill arrived]]

32. Free relatives and comparatives share a number of properties *via* their coordinate-like behavior (see chapters 3 and 4 for extensive discussion of coordinate-like properties of comparatives and Citko 1998, among others, for free relatives). Moreover, some comparatives also seem to be subject to the surface matching requirement well-documented for free relatives, demanding that the external and the internal copy can be assigned distinct Case only if the case forms are syncretic (Bresnan and Grimshaw 1978; Groos and Riemsdijk 1981). (i)a is degraded, since the masculine accusative form *besser-**en** Wein*/'better wine' does not match the nominative *besser-**er** Wein*, while (i)b, where accusative and nominative forms for neuter are identical (*besser-es Bier*/'better beer'), is judged to be impeccable:
    (i) a. *?*Hans verlangte* [*einen besseren Wein*]$_{ACC}$ *als*
        Hans demanded a better wine than
        $\triangle_{NOM}$ *ihm angeboten wurde*
        him offered was
        'Hans demanded a better wine than he was offered.'
    b. *Hans verlangte* [*ein besseres Bier*]$_{ACC}$ *als*
        Hans demanded a better beer than
        $\triangle_{NOM}$ *ihm angeboten wurde.*
        him offered was
        'Hans demanded a better beer than he was offered.'
33. I am indebted to Luigi Burzio (p.c.) for drawing my attention to this fact.
34. Kajita (1977) provides a example similar to (96)a involving 'indefinite' free relatives:
    (i) *He served* [$_{DP}$ *wine*] *and* [$_{DP}$ *what the Italians call prosciutto*].
    For further discussion of the Law of Coordination of Like Categories see chapter 4, section 4.
35. The presence of the collective adverbial guards against a conjunction reduction analysis, as in (i), which involves Right Node Raising applied to two clauses. On this derivation, the free relative can be parsed as a CP, and the argument for the nominal status of the free relative would be lost:
    (i) [$_{CP}$ [$_{DP/CP}$ How you arrived] ~~interested Bill~~] and
        [$_{CP}$ [$_{DP}$ the way you took] interested Bill].
    In addition, reliable tests can be based on contexts such as (ii)a, which do not lend themselves to a conjunction reduction analysis for the reason that the underlying putative source (see (ii)b) is ill-formed (Jorge Hankamer, p.c.):
    (ii) a. *I found* [$_{DP}$ *how you arrived*] *and* [$_{DP}$ *the way you looked*] *disturbing.*
        b. **I found how you arrived disturbing and*
        the way you looked disturbing.
36. The analysis extends to free relatives on the assumption that the non-nominal, overt head (*how*) resides in the complement position of F°, where it determines the internal distribution, while SpecFP is filled by an empty NP, which triggers pied-piping. I have to relegate the question of how the (empty) NP in SpecFP accounts for the external nominal behavior of free relatives to further research.

37. Not all speakers judge attributive comparatives with overt determiners, such as (101)a, to be well-formed.
38. Additional evidence for the assumption that the CD-site is smaller than a DP comes from the observation that in German, AP-Raising appears to license parasitic gaps:
    (i) *Mehr Schüler haben versagt als ∆-1 geglaubt haben*
    more students have failed than thought have
    dass ∆-2 versagen würden.
    that fail would
    'More students failed than ∆ thought that they would fail.'
    Given that (i) indeed qualifies as a parasitic gap configuration, the anti-c-command condition on parasitic gaps dictates that ∆-1 in (i) cannot c-command ∆-2. From this it follows that the CD-site is embedded inside a DP, and does not consist of the whole DP, which c-commands ∆-2.
39. On this view, one expects the equivalent of (104) to be well-formed in languages like German which license NP-Split of the relevant type. Interestingly, in German, the lower determiner position may indeed surface, but only on the condition that both the higher and the lower D° are filled by the indefinite *ein*/'a' (judgements are subject to interpersonal variation):
    (i) *Sam ist ein schnelleres Rennen gelaufen als Bill eines ∆ gelaufen ist*
    Sam is a faster race ran than Bill a run is
    (ii) **Sam ist zwei schnellere Rennen gelaufen als Bill eines/zwei ∆ gelaufen ist*
    Sam is two faster races ran than Bill a/two run is
    (iii) **Sam ist ein schnelleres Rennen gelaufen als Bill zwei ∆ gelaufen ist*
    Sam is a faster race ran than Bill two run is
    'Sam ran {a faster race/two faster races} than Bill ran {one/two}'
    I have to delegate a solution to this puzzle to further research.
40. As is pointed out by Johnson (2003: 21), APs can be removed by Gapping:
    (i) *I consider Liz fond of chocolates and Sam ~~fond~~ of pies.*
    Adopting Johnson's approach, according to which Gapping does not consist in ellipsis, but in ATB-movement of the elided categories and their antecedents, this observation dovetails with the argument that AP-Raising involves movement.
41. To be precise, Klein (1982, 1992) partitions the domain in three cells, the third one being the extension gap.
42. It has also been proposed to integrate measure functions into the semantics of gradability. Bartsch and Vennemann (1972) pioneered e.g. the idea of translating adjectives as measure functions from objects to scales, while Kennedy (1999) argues for a reconstruction of adjectives as functions from objects to degrees.
43. I will ignore differential degrees, such as *5 years* in *Mary is 5 years younger than Peter*.
44. Given VP-internal subjects, QR could also proceed to VP-adjoined position. This conception would be more in line with Diesing (1990), according to whom existential closure demarcates the left edge of VP.

45. No substantive changes ensue if Kennedy (1999) is adopted, who argues against quantifying over degrees in the lexical entry for the comparative morpheme. On this alternative view, the degree argument could e.g. be treated as a definite description. See Heim (2000) for critical discussion of this issue.
46. Bresnan's assumption that the CD-site corresponds to the sister node of the *than*-XP faces an additional, theory-internal problem in the light of subcomparatives such as (i). Bresnan falsely predicts that the ellipsis in (i) comprises of the whole sister NP-node to the *than*-XP, instead of the head of the QP *d-much*

    (i) a. *She gave me more helpful advice than ⌓ destructive criticism.*
    (Bresnan 1973: 312)

    b.
    

    Since I am not sure at the moment of how exactly to incorporate subcomparatives into the AP-Raising analysis, I leave this issue for further research.
47. Nothing bears on the specific syntactic representation for the nexus between the DegP and the NP in the postnominal construction. As far as I can see, the present proposal is compatible with a variety of assumptions, such as right-adjunction, as in (128), or low embedding (following Haider 1995; Kayne 1994).
48. The generalization also extends to cases involving stacked adjectival modification, as below (I am indebted to Jason Merchant for providing the examples):

    (i) *Paul wrote a brilliant, very liberal, more persuasive OpEd piece than Bill wrote ⌓.* (⌓ = d-persuasive OpEd piece)

    (ii) *Paul wrote a more persuasive, fire-breathing, fact-filled OpEd piece than Bill wrote ⌓.*
    (⌓ = d-persuasive *(fire-breathing) *(fact-filled) *(OpEd) piece)

    This observation follows straightforwardly from present assumptions about phrase structure: In (i), the APs preceding the comparative left-adjoin to DegP, which dominates the landing site for AP-Raising (SpecDegP), and are accordingly only part of the matrix DP. In (ii), all APs originate inside SpecDegP, and are therefore also included in the CD-site.
49. It is immaterial for present purposes whether only the head noun or the whole common noun is pluralized in semantics.
50. Irene Heim (p.c.) pointed out that, given the semantics in section 4, even the ill-formed structure (136) would be interpretable. This is so as the CD-site is translated as an individual property, irrespective of whether SpecDegP is occupied by an AP or a modified common noun. One therefore has to assume that (136) is precluded already in syntax, due to a failure to satisfy c-selectional requirements of the verb.

51. The standard definitions of intersectivity and subsectivity are given in (i) and (ii):
    (i) AP is intersective iff: ⟦AP^NP⟧ = ⟦AP⟧∩⟦NP⟧
    (ii) AP is subsective iff: ⟦AP^NP⟧ ⊆ ⟦NP⟧
    Thus, all intersective adjectives, such as *blue*, or *Greek* are also subsective (all blue flags are blue as well as flags). In what follows, I reserve the term 'subsective' for the non-intersective class of subsective adjectives.
52. See Abney (1987: 329) for a similar operator and Partee (1987) on type-shifting more generally.
53. Strings as in (i) are not ruled out by type mismatch, but have to be excluded by whatever principle accounts for the ill-formedness of examples such as (ii), which involve a second, spurious occurrence of the common noun inside the postnominal modifier:
    (i) **Olga is a friend* [*older friend than Peter*].
    (ii) a. **Olga is a person* [*proud person of her dog*].
    b. **The stars* [*visible stars*] *were beautiful.*
54. I am indebted to Tom Roeper for providing me with the data.
55. Following Bresnan (1973), I assume that *more* is the comparative form of *many* or *much*.
56. Bresnan (1975: 28f) considers but discards this option based on an argument by Postal (1971), who notes that the contrast in (i) falls out from the cross-over condition, but not from Principle C applying prior to movement:
    (i) a. **You said that she$_i$ hated one of the men that Sally$_i$ dated.*
    b. *Which of the men that Sally$_i$ dated did you say that she$_i$ hated?*
    For this reason, Bresnan concludes, cross-over solutions are to be preferred over Principle C analyses. Since Postal's data can nowadays be treated in terms of reconstruction - fronted relative clause do not reconstruct (Lebeaux 1988, 1990) - the argument is no longer compelling, however.
57. For some mysterious reason, the proportional reading re-emerges in the minimal variant (i):
    (i) *Proportionally (seen), more students were given an A this year than were given an A last year*.
58. (157) also demonstrates that R-expressions do not have to be individual terms (names or definite descriptions) semantically, but can also be instantiated by weak indefinites.
59. Heim (1982) quotes the following examples:
    (i) a. **He likes it$_i$ and she hates a cat$_i$.* (Heim 1982: 152)
    b. *He likes a cat$_i$ and she hates it$_i$.*
    (ii) **As Mary mentioned his$_i$ name, we saw a magician$_i$.* (Heim 1982: 216)
60. I am grateful to Chris Kennedy for helping me to construct and judge these examples.
61. For some reason, singular indefinites do not share the more liberal behavior of singular attributive NP-comparatives ((161)b) and bare plurals ((162)b) w.r.t. WCO. (i) contrasts e.g. with (161)b and (162)b:
    (i) **Its$_i$ author had to recognize that the committee had never received a long abstract$_i$.*

This creates a somewhat peculiar taxonomy, which groups together singular attributive comparatives and bare plurals to the exclusion of singular indefinites. It appears tempting to correlate sensitivity to WCO to the absence of a lexical determiner in the antecedent noun phrase. Note that the antecedent is a DP headed by a lexical determiner in (i) (*a long abstract*), but only an NP in the singular comparative (161)b (*long abstract*) and in the bare plural example (162)b (*basketball players*). I have to delegate this problem to further research.

62. The exceptional behavior of attributive comparatives w.r.t. WCO cannot be explained as a manifestations of Weakest Crossover (Lasnik and Stowell 1991). According to this analysis, the trace in Weakest Crossover configurations (non-restrictive relative clauses, parasitic gaps, *tough*-movement, etc...) is a null R-expression, which is locally A'-bound by an empty operator, and may corefer with a pronoun to its left. On this view, (161)b, repeated under (i)a, is predicted to be well-formed for the same reason that the relative clause in (i)b is:

    (i) a. *The committee received a longer abstract than* [OP_i ***its***$_i$ *author had actually sent* $\boldsymbol{t}_i$]. (= (161b))
    b. *The committee received a long abstract* [OP_i *that* ***its***$_i$ *author had sent* $\boldsymbol{t}_i$].

    But the parallelism breaks down once amount comparatives and their non-comparative counterparts are taken into consideration:

    (ii) a. **More students re-registered* [OP_i *than* ***their***$_i$ *teachers gave C's to* $\boldsymbol{t}_i$].
    b. *Many students*$_i$ *re-registered* [OP_i *that* ***their***$_i$ *teachers gave C's to* $\boldsymbol{t}_i$].

    In (ii), the antecedents are NPs headed by *many*, instead of singular indefinites. If the CD-site in (ii)a were now indeed a null R-expression, it would remain unclear why null R-expressions can corefer with embedded pronouns to their left in relative clauses, but not in comparatives. The AP-Raising analysis removes this obstacle by re-analyzing (ii)a as in (iii), relating its ill-formedness to the deviance of (iv):

    (iii) **More students re-registered than* ***their***$_i$ *teachers gave C's to* [***many students***$_i$ *t*].
    (iv) ****Their***$_i$ *teachers gave C's to* [***many students***$_i$ *t*].

63. Kennedy (1999) does not explicitly deal with NP-comparatives. But his system can, as far as I can see, be extended to NP-comparatives by assuming that the operator trace denotes either an individual or a property. See also Kennedy (2002).
64. What actually matters for the further argumentation is the availability of a *de dicto* reading; the question whether *de re* readings are blocked more generally is orthogonal to present concerns.
65. The fact that Kennedy reconstructs gradable adjectives as functions from individuals to degrees, instead of as relations between individuals and degrees, as assumed here, does not bear on the argument.
66. I assume that *many* denotes a non-intersective measure function of type <<e,t>,<e,d>>.
67. It does not matter where exactly ∃-closure is located. I assume the VP-internal subject hypothesis.

68. Empirical evidence against such a move can be drawn from an extension of Zimmermann's (1992) work, who argues that intensional verbs may directly apply to their property type objects, if they are indefinite. Assume now that indefinites may strand <e,t>-type traces in their object position. Then, one prognosticates that amount questions such as under (i) should allow for a *de dicto* reading, a prediction which I believe is borne out.
    (i) *How many unicorns do you seek?*
    a. *de re*: 'What is the number d, such that there are d-many unicorns x and you seek x.'
    b. *de dicto:* 'What is the number d, such that you seek d-many unicorns x.'
69. This view conflicts with Kamp (1981) and Heim (1982), who both write existential force into the semantic rules for satisfaction condition. Note however that Heim (1982: 360f) eliminates ∃-closure from LF representations for purely theory-internal reasons pertaining to the overall architecture of the theory.
70. In Lechner (1998a), weak readings are derived by subextraction of the weak (possibly silent) determiner, which is translated as an unrestrictive quantifier, following Heim (1992).
71. For some speakers, extraposition does not affect the availability of *de dicto* readings. The part of the argument below which involves extraposition is not supported by data from this group.
72. Rullmann quotes Seuren's (1973) example from Cockney English for another instance of a grammatical comparative with negation:
    (i) *She did a better job than what I never thought she would.*
73. That the coreference requirement affects all XPs - and not only subjects - is shown by (i) and (ii):
    (i) a. *Mary showed Sam more pictures than she didn't show him.*
        b. **Mary showed Sam more pictures than she didn't show Bill.*
    (ii) a. *Mary read more books on November 17th than she didn't read on this day.*
        b. **Mary read more books on November 17th than she didn't read on February 25th.*
74. Three further potentially relevant observations: First, the behavior of attributive comparatives supports the view that bi-partitioning of the domain indeed seems to play a role in suspending Inner Island violations:
    (i) **Mary read longer articles than she didn't read.*
    (i.e. 'Some articles that Mary read were longer than the ones she didn't read')

    In (i), the set of articles is not bi-partitioned, but divided along two axes: first, into equivalence classes of 'd-long books', and second into books that Mary read vs. books she didn't read.

    Second, for many speakers, alleviations of Inner Island effects are not attested with NP-comparatives headed by *much* and with predicative AP-comparatives. This indicates that Inner Island obviation is contingent on a bi-partition on the individual *count* domain (as opposes to the individual mass domain as in (ii) or degree domain as in (iii)):

(ii) **Mary read more poetry than she didn't read.*
(iii) **Mary is taller than she isn't.*

Finally, *less-than* comparatives point to an additional puzzling property of the construction, they equally fail to license exceptions to Inner Island violations:
(iv) **Mary read fewer books than she didn't read.*

75. One might object that (197) does not show that the CD-site cannot contain a higher type trace, but rather that the exceptional class of comparatives does not establish Inner Islands, presumably because the denotation of the comparative CP contains a (in some way pragmatically inferred) maximum. Note first that this still leaves extraposition islands unaccounted for. Second, it is not clear whether the restrictions on higher type traces can be cast in terms of interpretability and maximality. Beck and Rullmann (1997) point e.g. out that the maximality account undergenerates in sentences such as (i)a, which can be paraphrased as in (i)b:
(i) a. *She bought more eggs than were necessary.*
b. 'She bought more eggs than the *minimal* number of eggs necessary.'
This indicates that one needs to postulate a minimality operator. However, assumption of a minimality operator leaves inner islands such as (ii)a unaccounted for, since the set denoted by the *than*-XP of (ii)a has a minimum, i.e. zero:
(ii) a. **She bought more eggs than were not necessary.*
b. 'She bought more eggs than the *minimal* number of eggs that were not necessary.'
Thus, the most general and also adequate definition of Inner Islands still seems to require reference to a negative context. Given that these considerations are correct, (197) instantiates an Inner Island.
76. A trivial answer could exploit the differences in the kind of movement processes involved. While the operator chain was formed by A'-movement, one might be tempted to argue that AP-Raising does not from an instance of A'-movement. I will - in absence of evidence - not pursue this issue further.
77. The account rests on the assumption of local Economy (Collins 1997). The combined length of both overt *wh*-chains is the same in both derivations, and global Economy would therefore not choose one over the other.
78. Given the plausible assumption that it represents a computationally costly operation, chain formation will even be prohibited from targeting the higher and lower AP in comparatives. Nothing hinges on the issue of optionality vs. obligatoriness of chain formation, though.
79. Barbara Partee (p.c.) points out that measure expressions also allow for a clausal construal, as in (i):
(i) a. *It is longer than a foot used to be.*
b. *It is more expensive than a doubloon was.*
80. NP-comparatives also allow for explicit standards, but their syntax is more complex. For instance, there is a puzzling contrast between amount NP-comparatives and attributively modified NP-comparatives in prenominal modifier languages such as German. Note to begin with that *more* can be decomposed into *-er many* (Bresnan 1973). *More* therefore should behave on a par with compara-

tive adjectives. However, in NP-comparatives with explicit standards, ordinary comparative adjectives precede the head noun, ((i)a), while *more* follows the nominal ((ii)b):

(i) a. *(um) 10 Jahre älterer Wein*
for 10 years older wine
'wine which is 10 years older'
b. **(um) 10 Jahre Wein älterer*

(ii) a. *10 Weine mehr*
10 wines more
'10 more (glasses/bottles) of wine'
b. **10 mehr Weine*

Tentatively, this disparity can be linked to the assumption that *more* manifests an overt realization of a [+comparative] Deg°, while APs are invariably located in SpecDegP. Providing an appropriate compositional semantics for *more*, which retains the insight that it derives from adjectival *many*, proves a difficult task, though (on related issues see Hackl 2000).

81. This leaves open the question why NPs headed by weak determiners, which are widely held to denote predicates, may not serve as explicit standards:
(i) **She ran faster than some 20 mph.*

82. An exception is Bierwisch (1987: 146), who *a priori* assumes that all degree complements are underlying sentences, but does not provide any further argumentation or discussion of potential counter arguments.

83. Various authors offer arguments for or against one of the hypotheses without further commitment to the status of the other. For instance, Lerner and Pinkal (1995) assume that (some) PCs are underlyingly clausal, but remain undecided on whether an operation such as CE is also called for. As for the PC-Hypothesis, Heim (1985) shows that base generated PCs are interpretable, and discusses arguments in favor of base generation, but eventually does not endorse one approach over the other.

84. I assume that *Stripping*, an ellipsis operation which leaves a single overt remnant, represents a radical case of Gapping. Other operations that have sometimes (mistakenly) been lumped under the label of CR include Pseudogapping and Sluicing, as in (i) and (ii), respectively:
(i) *Some visited Millhouse and others did ⌂ Otto.*
(⌂ = visited)
(ii) *Somebody visited Millhouse and Sally knows who ~~visited Millhouse~~.*
However, both Sluicing and Pseudogapping display properties clearly distinct from Gapping and RNR - they are e.g. more freely distributed in subordinate contexts - and will therefore be ignored from here on (on Sluicing, see Chung, Ladusow and McCloskey 1995; Merchant 2001; Neijt 1979; Romero 1997; on Pseudogapping see Jayaselaan 1990; Johnson 1997a; Lasnik 1995b; Levin 1978; Sag 1976).

85. Oirsouw (1987: 91, fn. 27) quotes the following example:
(i) *John bought a Porsche, but Mary ~~bought~~ a Ferrari.*

86. Two of the eight constraints (Locality and *Complementizer) are also discussed in Hendriks (1995). Hendriks endorses - for the reasons reported in the introduction - a base-generation analysis of PCs, though. For discussion of German data see also Truckenbrodt (1988).
87. Observe that Gapping may target non-finite verbs, if these verbs are not governed (in the GB-sense) by some higher predicate:
    (i) *She came in order* [*PRO to introduce Bill to Mary*] *and* [*PRO* ~~*to introduce*~~ *Sam to Bill*].
    Thus, (25)b cannot be excluded by a general prohibition on Gapping of non-finite verbs.
88. It is irrelevant for present purposes whether the CD-site resides inside the matrix clause of B, as in (27)a, or is further subordinated inside the *than*-XP, as in (27)b/c. This is so because CD is unbounded, and all the examples therefore test - as desired - only for Locality of Gapping. Note for instance that object comparatives in which the CD-site resides at the highest level of B, while the Gap is embedded, are just as bad as (27)b:
    (i) **Millhouse assured more people that he fixed the sink than* [$_{B}$ *Otto had told* ∅ [$_{CP}$ *that he* ~~*fixed*~~ *the door*]].
89. The judgements are relative rather than absolute. For Chao (1987) and Pesetsky (1982), finite long-distance Gaps which contain bridge verbs are only marked, and preferable to Gaps which include non-bridge verbs such as *mutter* (examples from Chao 1987: 40, (19))
    (i) a. *?This doctor said that I should buy tuna and that doctor* ~~*said that I should buy*~~ *salmon.*
        b. **This doctor muttered that I should buy tuna and that doctor* ~~*muttered that I should buy*~~ *salmon.*
    The group of more permissive speakers which marginally accept (i)a should also be more permissive in judging corresponding comparatives (see below in text). I have not had the opportunity yet to test this prediction.
90. On the definition of 'restructuring contexts' see Evers (1975); Grewendorf and Sternefeld (1990); Haider (1993); Stechow and Sternefeld (1988); Vikner (1990) and Wurmbrand (2001), among many others.
91. The use of examples with extraposed sentential complements aids to avoid center embedding. None of the properties of Gapping to be discussed in this context are contingent on extraposition, though.
92. This does not mean that the class of restructuring predicates is extensionally identical in German and English. On cross-linguistic variance in restructuring verbs in Western Germanic see e.g. Vikner (1990).
93. German lacks infinitival complementizers and therefore examples parallel to (41).
94. It is possible to collapse Locality and Isomorphism under a single 'Generalized Locality' constraint, stating that neither the antecedent nor the Gap may be separated by a sentence boundary from the left edge of the respective conjunct. For reasons of exposition, I will however keep these two constraints apart.

95. (46)b obeys Locality, because no CP-node intervenes between the left edge of the conjunct and the Gap. Examples in which the Gap is embedded deeper than the antecedent, as in (i), are equally bad, but cannot by used in order to establish Isomorphism, since they violate Locality in addition to Isomorphism:
    (i) **The girls visit Millhouse and the boys want to ~~visit~~ Otto.*
96. Alternatively, one might try to exclude (46)b by a matching requirement on finiteness between the deleted verb and its antecedent - the Gap in (46)b is finite, while its antecedent is not. But there are contexts that discriminate between these two options. Consider e.g. sentence (i), which can be read as in (i)a, but not as in (i)b:
    (i) Lisa wants to try to visit Millhouse and Otto.
        a. *Lisa wants PRO to try PRO to visit* [*Millhouse and Otto*]
        b. **Lisa wants* [$_A$ *PRO to try* [$_{CP}$ *PRO to visit Millhouse*]] *and* [$_B$ *PRO ~~to visit~~ Otto*]
           (intended reading: 'Lisa$_i$ wants to try to visit Millhouse and she$_i$ wants to visit Otto.')

    In (i)b, both the antecedent and the Gapped verb are non-finite, satisfying the matching condition, but reside in positions which are embedded at different depths, in violation of Isomorphism. This can be taken as an indication that Isomorphism is the relevant constraint.
97. The core properties of isomorphism can be best observed with subject comparatives. Independent factors feed a wider array of readings for (some) object and adjunct comparatives. See chapter 4, section 2 for detailed discussion.
98. In fact, Fodor formulates the descriptive generalization for Pseudogapping (her Main Verb Deletion; see (i)a) and Subgapping (her Tense Deletion; see (i)b/c), based on paradigms such as:
    (i) a. *Bill gave a book to Sam and Mary did ~~give a book~~ to Sue.*
        b. *Bill had given a book to Sam and Mary ~~had~~ sent a newspaper to Sue.*
        c. **Bill had given a book to Sam and Mary ~~had~~ sent ~~a book~~ to Sue.*

    She observes that only Main Verb Deletion licenses large Gaps. However, for Fodor both Pseudogapping and Subgapping are implicated in the classic examples of Gapping. Given now that Gapping involves Pseudogapping, and given that Pseudogapping may optionally delete more than just the verb, one is lead to expect that Gapping is equally able to do so. Thus, the statement in the text is merely an extension of Fodor's generalization.
99. Subgapping in German is subject to a number of complex conditions, which have only been sporadically dealt with in the literature (den Besten and Broekhuis 1989, 1992; Evers 1975; Fodor 1974; Kroch and Santorini 1991). Also, speaker intuitions vary considerably. I will here merely introduce the properties of Subgapping which directly bear on the general goal leading this section.
100. It should be noted that my informants and I disagree with the assessment of the data given in Evers (1975: 11), who judges an example similar to (54)b - but more complex in structure - to be ill-formed.

101. The unifying property of the class of matrix verbs that license Subgapping in V-final clauses (modals and perception verbs) seems to be that they select for bare infinitival complements (as opposed to control infinitival with *zu*/'to' or participles). For some speakers, Subgapping is also marginally permissible with control verbs that trigger optional restructuring such as i(a), preferably so if the clausal complement is extraposed, as in (i)b:

(i) a. *??weil Maria das Lied zu singen versuchte und*
since Maria the song to sing tried and
Fritz das Gedicht vorzutragen ~~*versuchte*~~
Fritz the poem to recite tried

a. *?weil Maria versuchte das Lied zu singen und*
since Maria tried the song to sing and
Fritz ~~*versuchte*~~ *das Gedicht vorzutragen*
Fritz tried the poem to recite

Obligatory restructuring verbs such as *vermögen*/'be able to' and *wagen*/'dare' disallow extraposition and are therefore judged marginal at best when they head an environment of Subgapping:

(ii) *??weil Maria das Lied zu singen vermochte/wagte und*
since Maria the song to sing was able to/dared and
Fritz das Gedicht vorzutragen ~~*vermochte/wagte*~~
Fritz the poem to recite was able to/dared

Finally, Subgapping in non-restructuring contexts headed by predicates like *bedauern*/'regret' and *vorgeben*/'pretend' is not attested:

(iii) **weil Maria vorgab das Lied zu singen und*
since Maria pretended the song to sing and
Fritz ~~*vorgab*~~ *das Gedicht vorzutragen*
Fritz pretended the poem to recite

I have to delegate the proper analysis of these intricacies to further research.

102. Subgapping may not target object or adjunct comparatives. The subject comparative (58)a contrasts e.g. sharply with the Subgapped object comparatives in (i)b; for some pertinent discussion see section 4.

(i) a. *weil wir Maria mehr Lieder singen hörten als*
since we Mary more songs sing heard than
der Hans den Fritz ∅ ~~*vortragen hörten*~~
the Hans the Fritz recite heard
'since we hear Mary sing more songs than John heard Fritz recite'

b. **weil wir Maria mehr Lieder singen hörten als*
der Hans den Fritz ∅ *vortragen* ~~*hörten*~~

103. This type of disjoint reference effect is only manifest with Gapping, and does not show up in other ellipsis constructions. For instance, Disjoint Reference is not attested with RNR (or is at least much weaker there):

(i) *(?)weil Otto$_i$ Millhouse am Morgen ~~eingeladen hat~~ und*
since Otto Millhouse in the morning invited has and
er$_i$ Flanders am Abend eingeladen hat
he Flanders in the evening invited has
'since Otto invited Millhouse in the morning and he invited Flanders in the evening'

Moreover, the effect also fails to show up in VP-ellipsis, as witnessed by the following minimal pair:

(ii) a. *Bill$_i$ forced Sam to drink soy milk, but he$_i$ didn't/wouldn't.*
(⌂ = drink soy milk)
b. **Bill$_i$ forced Sam to drink soy milk, and*
he$_i$ ~~forced~~ Sally ~~to drink soy milk~~.

Finally, Disjoint Reference also seems to be absent with Pseudogapping (an operation which arguably involves VP-ellipsis; see Jayaseelan 1990; Lasnik 1995b; Levin 1986). Levin (1986) notes that Pseudogapping even displays a strong tendency towards coreferential subjects:

(iii) a. *They$_i$ treated me with less consideration than they$_i$ would an animal.*
(Levin 1986: 15, (6))
b. *People in Greece$_i$ drink more ouzo than they$_i$ do Brandy.*
(Levin 1986: 16, (17))

Compare e.g. (iii)b to the Gapped variant in (iv) which is deviant in the reading indicated:

(iv) **People in Greece$_i$ drink a lot of ouzo and they$_i$ ~~drink~~ a lot of brandy.*

Hence, Disjoint Reference seems to be a diagnostic singling out Gapping.

104. Comparatives differ from conjoined clauses in that the availability of pronominal variable binding in comparatives is not contingent on CR. Both (i)a and (i)b seem to be on a par in licensing a bound reading:

(i) a. *No student$_i$ attended more conferences than his$_i$ professor ~~attended~~.*
b. *No student$_i$ attended more conferences than his$_i$ professor attended.*

Compare to the coordinate correlates in (ii) (Johnson 1996):

(ii) a. *No student$_i$ attended a conference and*
his$_i$ professor ~~attended~~ a workshop.
b. **No student$_i$ attended a conference and*
his$_i$ professor attended a workshop.

One could account for this disparity by assuming that variable binding is computed after reconstruction of the *than*-XP into its base position. Note however that reconstruction fails to account for variable binding in all contexts, as can be inferred from (iii). If the *than*-XPs in (iii) indeed underwent reconstruction into their subject-internal base, both (iii)a and (iii)b should lack a bound reading:

(iii) a. *More students know every professor$_i$ than ~~know~~ his$_i$ mother.*
b. *More students know every professor$_i$ than know his$_i$ mother.*

This indicates that extraposed *than*-XPs can be attached low at the right periphery (Haider 1993a, 1995; Kayne 1994). (iii)a - which by assumption involves 'coordination', and not low extraposition - remains problematic.

105. Excluding independently attested ellipses such as VP-ellipsis and Pseudogapping.

106. On the interpretation of the silent subject see section 3.6.
107. I assume that the core cases of PCs consist of PCs which contain a nominal remnant. There are also PCs with verbal remnants, which have however never been explicitly argued to be base generated, and therefore do not support the CR-Hypothesis over competing accounts. See sections 4.4 and 4.5 for discussion.
108. Since the data involves Gapped double object constructions, which are known to be subject to severe restrictions in English (Jackendoff 1971; Kuno 1976), examples will be drawn from German.
109. Heim (1985) argues for the existence of such conditions for PCs on independent grounds (see chapter 4, section 3.2). It should be noted that Heim's theory of PCs accounts for 'embedded PCs', as they are not interpretable in her system.
110. If the more refined structure including functional FPs suggested in chapter 2, section 3.4.2 is adopted, the AP is even more deeply embedded under the prepositional head.
111. A problem arises with German, a language which disallows preposition stranding (see (ib)), while at the same licensing PCs in which the CD-site is embedded in a PP, as in (i)c:
    (i) a. **Sam hat mit mehr Leuten gesprochen als Maria mit ∆ gestritten hat.*
        Sam has with more people talked than Mary with ∆ argued has
        'Sam talked with more people than Mary argued with ∆.'
        b. **Sam hat mit mehr Leuten gesprochen als Maria ∆ gestritten hat.*
        c. *Sam hat mit mehr Leuten gestritten als Maria ~~mit ∆ gestritten~~.*

    The problem is that it is at first sight unclear why an NP may not escape an overt PP, as in (i)a, but still retains the capability to raise out of a covert PP, as in (i)c. I will tentatively follow here Kennedy and Merchant (2000), who propose that certain islands (for them left-branch islands) are not syntactic in nature, but constitute barriers at PF. For critical discussion see Merchant (2001, chapter 3).
112. German object and adjunct comparatives will be considered in an appendix to chapter 3, since they do not pose any new problems of theoretical significance.
113. In section 2.2, Subgapping in V2 contexts was re-analyzed as ATB verb movement to C°. Thus, the data in the text indicates the sensitivity of ATB movement to *Embedding. The same point can however be replicated for Subgapping proper on the basis of examples involving Subgapping of modals in verb-final contexts, such as in (i):
    (i) a. *?weil mehr Leute den Peter ein Lied singen hörten als*
        since more people the Peter a song sing heard than
        den Fritz ein Gedicht vortragen ~~hörten~~
        the Fritz a poem recite heard
        b. **weil mehr Leute den Peter ein Lied* [*als den Fritz ein Gedicht*
        since more people the Peter a song than the Fritz a poem
        vortragen hörten] *singen ~~hörten~~*
        recite heard sing heard
114. The winding argumentation is justified by the potential existence of grammars which license reduced *than*-XPs, but do not allow unreduced clausal *than*-XPs

in intraposed position. In this scenario, the ill-formedness of (116) does not entail the ill-formedness of (109)b.

115. As with Gapping, the discussion of further alternatives is justified by the possible existence of a restriction which blocks unreduced *than*-XPs in intraposed position, but at the same time admits reduced ones. If such a restriction could be found, the deviance of (116) could not be used to exclude the parse (118)b.
116. These exceptions are manifest in phrasal subcomparatives, as in (i), examples where the standard of comparison is explicit, as in (ii), and instances of Small Clause comparatives as in (iii):
    (i) *More men than women like Wagner.*
    (ii) a. *More men than 10 came.*
    b. *More than 10 men came.*
    (iii) *Younger men than Peter ⌓ came.*
    (⌓ = d-young men)
    Subcomparatives fall outside the scope of the present investigation. In the other two cases, the *than*-XP has not been affected by CR, and may therefore remain *in-situ* (vacuously satisfying the external conditions). More precisely, the *than*-XP in (ii) can be analyzed as base-generated (see section 1.1). And in section 5 it will be argued that the only constituent missing in (iii) is the CD-site.
117. There is an alternative analysis for German, according to which PCs are adjoined to a lower projection (e.g. VP), while word order is derived by verb movement to the right (V-to-I). On arguments why *than*-XPs have to have the option of attaching higher than at the VP-level see discussion in section 4.
118. Pinkham (1982: 109; (79b)) considers (141)b to be ill-formed, a judgement none of the native speakers I contacted agree with (cf. also the contrast between (141)b and (133)b).
119. (141)b cannot be analyzed as the result of extraposition of the indirect object PP to the right of a base-generated PC. This is so because PPs can more generally not be dislocated to the right of *than*-XPs:
    (i) a. *More people bought* [*a book about phlogiston theory*] *than an expensive watch.*
    b. **More people bought* [*a book t*] *than an expensive watch* [*about phlogiston theory*].
120. A third option consists in employing Larsonian shells (Larson 1988).
    (i) *Somebody bought*$_i$ [$_{VP}$ *books* t_i [*on Monday*]] *and* [$_{VP}$ *bread* t_i [*on Friday*]].
    In (i), coordination targets constituents excluding the verb. The verb would presumably have to ATB reconstruct prior to semantics. It is not clear, though, how the right-branching structure (i) can be compositionally interpreted.
121. This has sometimes been taken as an argument against ellipsis analyses of PCs (see e.g. Hendriks 1995).
122. I will assume that this requirement carries over to derived coordinations such as the one established in comparatives. See chapter 4, section 4.2 for discussion.
123. For ATB V2 in object/adjunct comparatives see section 4.

124. Mysteriously, (189)b improves, if Sub-RNR applies. The same holds of relative clauses, as in (i)a:
    (i) a. *??weil Hans mehr Bücher* [*als Peter vorgestern gelesen* ~~*hat*~~]
        since H. more books than P. the-day-before read has
        gestern gekauft hat
        yesterday bought has
        b. *??weil Hans viele Bücher* [*die Peter vorgestern gelesen* ~~*hat*~~]
        since H. many books that P. the-day-before read has
        gestern gekauft hat
        yesterday bought has

    Even though judgements are subtle, (i)a still seems to be slightly worse than RNR with extraposed than-XPs:

    (ii) *?weil Hans mehr Bücher heute gekauft* ~~*hat*~~ [*als Peter gestern gelesen hat*]
        since H. more books today bought has than P. yesterday read has
125. I am indebted to Chris Kennedy for bringing this problem - also reported in Truckenbrodt (1988: 17) - to my attention. Section 4 was previously publishes as Lechner (2001)
126. Peripheral PCs, which equally display matrix subject agreement ((i)), do not cause any further complications, since clause final PCs are derived by Gapping, and Gapping tolerates ϕ-feature mismatch of the antecedent and the Gap, as shown by (ii):
    (i) *weil wir*$_{1st\ pl}$ *mehr Bücher gekauft haben*$_{1st\ pl}$ *als Peter*$_{3rd\ sg}$ ~~*gekauft hat*~~$_{3rd\ Sg}$
        since we more books bought have than P. bought has
    (ii) *weil wir*$_{1st\ pl}$ *Bücher gekauft haben*$_{1st\ pl}$ *und*
        since we books bought have and
        Peter$_{3rd\ sg}$ *Zeitungen* ~~*gekauft hat*~~$_{3rdSg}$
        P. newspapers bought has
127. Whether clauses also contain vPs/VoicePs is immaterial for present purposes. See Alexiadou and Anagnostopoulou (1998); Bobaljik and Jonas (1996); Chomsky (1995); Pollock (1989) on AgrSP and TP; see Baker and Stewart (1999) and von Stechow (1999) on AspP.
128. The Law of Coordination of Like categories (Williams 1978) warrants that the respective conjuncts bear identical labels. Moreover, given an adjunction analysis of coordination (Munn 1992, 1993) and given that adjunction of X'-projections is generally prohibited (Chomsky 1986, 1995; Kayne 1994), coordination must not involve X'-nodes.
129. See among others Barss (1986); Goodall (1987); Muadz (1991); Pesetsky (1982); Williams (1977, 1978). For a differing position see Munn (1992, 1993). See Postal (1999) for arguments that the CSC applies in syntax (contra Culicover and Jackendoff 1997, 1999; Lakoff 1986).
130. Under this analysis, Case of the CD-site and its antecedent is checked in the same position. That this might be correct is indicated by the fact that, for many speakers, comparatives display Case Matching Effects (Groos and Riemsdijk 1981) which are obviated by case syncretism (see also note 130). In (ia), the neuter form *ein besseres Angebot* is syncretic for nominative and accusative. The CD-

site and its antecedent may therefore serve distinct grammatical functions. In (ib), the nominative and accusative forms for *besserer Job* (masc.) are distinct, triggering a Matching Effect:

(i) a. *Hans verdient* [*ein besseres Angebot*]$_{ACC}$ *als*
H. deserves a better offer than
$\triangle_{NOM}$ *ihm offeriert wurde.*
him offered was
John deserves a better offer than (the one) he was offered.

b. **Hans verdient* [*einen besseren Job*]$_{ACC}$ *als* $\triangle_{NOM}$ *ihm offeriert wurde.*
H. deserves a better job than him offered was
John deserves a better job than (the one) he was offered.

The evidence is not conclusive, though: (i) does not require coordination, as it does not involve reduction. For some reason, comparatives - just like free relatives - display a Matching Effect more generally. I have to delegate this issue to further research.

131. Observe that the empty operator cannot move to SpecCP, but has to adjoin to the XP minimally dominated by the sister node of *than.* As far as I can see, this modification does not have any adverse effects, though.

132. It is also crucial that T'-coordination in (200)b is blocked (see note 128). Otherwise, the subject *Hans* could leave its conjunct by asymmetric Case-driven movement to SpecTP, which is exempted from the CSC (Johnson 1996). Subsequent subject raising to SpecAgrSP would free the way for *more books* to undergo ACE to a TP-adjoined location, and the resulting structure would harmonize with the CDSC.

133. Thus, the CSC plays an important role in discriminating between (200)b and (203)b in that it blocks LF reconstruction in (200)b.

134. Movement out of non-parallel positions is possible as long as none of the ATB traces is a matrix subject ((i) from Woolford 1987: 166):

(i) *Tell who* [*Sarah likes t*] *and* [*Jill thinks t is a jerk*].

This type of examples cannot be duplicated for comparatives, though, as in the relevant environments, V2 (targeting *hat* in (ii)) would illicitly have to proceed across a sentence boundary.

(ii) **Gestern hat*$_k$ [$_{AgrSP}$ *Hans mehr Leute getroffen* t_k] *als*
yesterday has H. more people met than
[$_{AgrSP}$ *wir glauben* [$_{CP}$ *dass* $\triangle$ *ihn eingeladen* t_k]].
we believe that him invited
'Yesterday, John met more people than we believe that invited him.'

135. As mentioned in note 134, ATB extraction may target categories in non-parallel position, if none of the ATB traces is a matrix subject. Interestingly, however, ATB movement is subject to a stronger condition, requiring all traces to reside in *strictly* parallel positions, if the second conjunct has been affected by ellipsis (Gapping, ATB movement). The reduced minimal variant of (i) in (ii) is for instance sharply deviant:

(i) *the people who*$_i$ [*Peter introduced* t_i *to Jack*] *and*
[*Steve introduced John to* t_i]

(ii) **the people who$_i$* [*Peter introduced t_i to Jack*] *and*
[~~*Peter introduced*~~ *John to t_i*]

The current analysis prognosticates now that mixed extraction should be equally unavailable for reduced comparatives and PCs, whereas full comparatives should tolerate violations of strict parallelism. And in fact, the PC in (iii) lacks the mixed reading (iiib), which construes *John* as the prepositional object. The second part of the prediction cannot be tested, as in the non-reduced structure (iv), the CDSC can be satisfied by reconstruction without invoking ACE:

(iii) *Peter introduced more girls to Jack than John.*
a. Peter introduced more people to Jack than ~~he introduced~~ ⌂ ~~to~~ John.
b. *Peter introduced more people to Jack than ~~he introduced~~ John ~~to~~ ⌂.

(iv) *Peter introduced more people to Jack than he introduced ⌂ to John.*

I have to relegate the solution to the puzzle why additional reduction enforces strict parallelism on ATB movement to further research. ((i), (iii) and (iv) were provided by an NLLT reviewer as a challenge for the parallelism account.)

136. At first sight, the ungrammaticality of (i) might pose a problem here, as pointed out by an anonymous reviewer for NLLT (Lechner 2001).

(i) **weil Hans mehr Bücher kaufte als lesen kann*
since H. more books bought than read can
'since John bought more books than he can read'

In fact, the contrast between (213) and (i) provides further evidence that ACE is subject to the stricter parallelism constraint for ATB movement characteristic of reduced comparative (see note 135). In (i), the subject has undergone ATB movement, and comparative coordination is therefore obligatory:

(ii) *weil Hans [$_{TP}$ t [$_{VP}$ mehr Bücher kaufte]] als [$_{TP}$ t [$_{VP1}$ [$_{VP2}$ ⌂ lesen] kann]]]

In order to satisfy the CDSC, the object would have to asymmetrically extract and adjoin to TP. But ACE would result in a violation of the parallelism constraint, because the CD-site is more deeply embedded than the trace of its antecedent (two VPs vs. one VP).

137. An NLLT reviewer called attention to the interesting pair in (i) (see also McCawley 1988: 733ff), which is also captured by the analysis:

(i) a. *??Did$_i$* [$_{IP}$ *more people t_i give flowers* ~~*to John*~~] *than*
[$_{IP}$ *gave books to John*]*?*
b. *Did$_i$* [$_{IP}$ *more people t_i give flowers* ~~*to John*~~] *than*
[$_{IP}$ *t_i give books to John*]*?*

In (i), RNR triggers comparative coordination, and T°-to-C° movement therefore has to apply ATB, indicating that ATB movement can also be forced by RNR.

138. That the base-order of the internal arguments is indeed dative-accusative can be seen from the fact that *wh*-indefinites, which resist scrambling, only surface in this order (for this test see Haider 1993):

(i) a. *weil ich wem$_{DAT}$ was$_{ACC}$ zutraue*
since I somebody something bel-cap
b. *??weil ich was$_{ACC}$ wem$_{DAT}$ zutraue*
'since I believe that somebody is capable of something'

139. The effects of fronting are less drastic in monotransitive structures, even though some informants confirm a contrast between (i) and (ii). This seems to be related to a more general tendency of object comparative NPs to resist scrambling to the left of the subject ((iii)).
    (i) **Eigentlich hat gestern Maria **mehr Probleme** gelöst als Hans gelöst.*
        actually has yesterday M. more problems solved than H. solved
        Actually, Mary solved more problems yesterday than Hans
    (ii) *??Eigentlich hat gestern **mehr Probleme** Maria gelöst als Hans gelöst.*
    (iii) *??Eigentlich hat gestern **mehr Probleme** Maria gelöst als Hans gelöst hat.*
140. If (192)b is analyzed as an AspP-coordination, both conjuncts contain a participle, but only the second one is (left-) adjacent to T°. On this parse, the only way to fulfill the adjacency requirement between participles and T° consists in deletion (i.e. genuine RNR) of the participle in the left conjunct, as schematized below:
    (i) $[_{TP}\ [_{T'}\ [_{AspP}\ [_{AspP\text{-}1}\ [_{VP}\ ....]\ \text{~~gelesen~~}_{RNR}]$ als $[_{AspP\text{-}2}\ [_{VP}\ ....]$ gelesen] T°]
141. Default case is nominative for German, but accusative for English, as for instance witnessed by the morphological form of the subject of nexus constructions (for further language specific differences see Schütze 1997: 58f and 82f):
    (i) *Ich_{NOM} dumm? / *$Mich_{ACC}$ dumm?*
        I stupid/ me stupid
    (ii) *I_{NOM} worry? / Me_{ACC} worry?
    The distribution of default case marking in English and German correlates with the case which subject remnants of PCs bear in that language, respectively. While subject remnants of PCs receive default accusative case in English (iii), they are marked by default nominative in German (see (iv) and (60b)):
    (iii) *#John is taller than I_{NOM}. / John is taller than me_{ACC}.*
    (iv) *Hans ist grösser als ich_{NOM}. / *Hans ist grösser als $mich_{ACC}$.*
142. In the non-periphrastic form (i), the main verb ATB moves to Asp°, and raises on to T° and AgrS°:
    (i) *weil wir mehr Bücher als Peter lasen*
        since we more books than P. read
    Φ-feature mismatch can be explained in two ways: (i) Given that verbs are inserted as bare forms, the roots ATB move to higher functional projections of the matrix clause and combine with the inflectional head agreeing with the matrix subject (Pollock 1989). (ii) Alternatively, if verbs are assumed to be inserted with full feature specifications, both verbs have to bear identical feature bundles in order to be checked against the matrix subject. Φ-feature mismatch follows from the fact that the subject of the *than*-XP - in the absence of functional structure inside the *than*-XP - does not enter into a checking relation with the verb.
143. Nominative PC-remnants are also attested with PCs, but restricted to hyper correct speech:
    (i) *#John is taller than I.*
144. The wide reading is independently excluded for (231)b since in postnominal comparatives, the CD-site consists of an AP only, which does not support wide ellipsis (see Bresnan 1973 and chapter 2 for discussion).

145. I am agnostic as to the proper treatment of extraction out of *than*-XPs, which raises various puzzles for the current as well as for competing analyses, and does therefore not decide among approaches. For instance, Hankamer (1973b) reports that while PCs are transparent for extraction, clausal comparatives constitute islands:
    (i) a. *Who are you taller than t?*
        b. **Who are you taller than is t?*
    Hankamer argues that *than* in PCs should be analyzed as a preposition, but as a complementizer in clausal comparatives. Clearly, (i) poses a problem for the PC-Hypothesis, according to which (ia) derives from Gapping; asymmetric subject extraction out of the *than*-XP should therefore violate the CSC. However, other examples point in the opposite direction, casting doubt on the prepositional analyses. For one, extraction out of clausal comparatives suddenly becomes possible if it obeys the CSC (see Brame 1976: 87; Napoli 1983):
    (ii) a. *a person who more people liked t than disliked t*
        b. **a person who more people liked t than disliked Millhouse*
    The acceptability of (ii)a is unexpected for the prepositional approach, which only allows extraction of PC-remnants, but compatible with the PC-Hypothesis, which does not make any claims as to the syntax of non-reduced comparatives. Finally, to complicate matters even more, extraction out of clausal comparatives may violate the CSC with adverbial comparatives:
    (iii) *Who* [*t saw Mary earlier*] *than* [*Bill saw Sue*]*?*
    (Moltmann 1992: 338, ex. (196))
    As far as I know, there is no consistent theory capable of handling all the contrasts above.
146. The presence or absence of *too* disambiguates the structures (see Kaplan 1984 on *too*).
147. Similar ambiguities are discussed in McCawley (1988: 688) and Pinkham (1982: 130). McCawley observes examples similar to (5), but relates the ambiguity to two different deep structures. Pinkham considers examples like (i), and concludes that reading (i)a derives from CE, while (i)b indicates a base-generated PC:
    (i) *John seems taller than Bill* $\triangle$.
        a. $\triangle$ = seems d-tall
        b. $\triangle$ = is d-tall
148. In addition, the elided verb can be underspecified for tense; see section 2.2 for further discussion.
149. I borrow here the terminology of Postal (1974). One of the classical examples motivating double indexing in comparatives is (i), which combines pronominal variable binding with a consistent, *de re* reading for the *than*-XP (Heim 1985; Hoeksema 1984; Kennedy 1995; Rullmann 1995).
    (i) *We believed*$_{w0}$ *that every problem was*$_{W}$ *harder* [*than it*$_{i}$ *was*$_{w0}$]
    Variable binding controls for the LF position of the *than*-XP, ensuring that it cannot take scope above *believe*. However, in the *de re* reading, the world variable of the *than*-XP needs to be anchored to the matrix world w. These apparently conflicting requirements for the position of the *than*-XP can satisfied by

anchoring the embedded world variable directly to w_0 (see Kennedy 1995 and references therein).

150. Maribel Romero (p.c.) notes that (11) might also have a reading in which the world variable is bound off locally. If this intuition turns out to be correct, no stipulatory device needs to be added.
151. Relatives clauses speculatively do not license a derived coordination, as they lack a suitable category corresponding to *than* which could serve as the head of the coordinated structure.
152. McCawley (1988) notes the contrast, but does not offer an analysis.
153. The strict reading could equally well be analyzed as a special instance of non-local binding by contextual identification of the temporal variable. Nothing bears on that matter.
154. For one, quantifiers inside the *than*-XP show a strong - but not absolute (see Rullmann 1995) - tendency toward taking scope at least higher than the existential operator binding the degree variable (see Heim 1985, 2000; Hoeksema 1984; Kennedy 1999; Rullmann 1995; Schwarzschild and Wilkinson 2002). This has the consequence that the relative scope of quantificational terms inside the *than*-XP cannot be taken to directly reflect the position of the *than*-XP. Moreover, *than*-XPs containing pronominal variables seem to undergo reconstruction prior to the computation of licit dependencies (but see note 104). Finally, the binding domain of anaphors inside phrasal *than*-XPs extends in many cases into the matrix clause (Brame 1983; Hankamer 1973b; see also chapter 3, section 5):
    (i) a. *Mary$_i$ can't be possibly taller than herself$_i$.*
        b. **Mary$_i$ can't be possibly taller than her$_i$.*

    Thus, disjoint reference effects offer the most reliable test for the scope of remnants inside the *than*-XP.
155. The remnant has to be construed as an embedded name in order to avoid a Principle B effect after reconstruction of the pronoun. See also section 2.2.2 for discussion.
156. One could also have chosen a non-embedded name for the purposes of the present test. The empirical results are the same.
157. It is not possible to design a similar test with subject control verbs, because the pronoun would inevitably be locally bound by PRO even in the wide reading.
158. The only difference being that the matrix degree is existentially bound off in the standard maximality account, but treated as a definite degree description in Heim (1985).
159. Heim does not discuss the internal structure of the adjunction complex or how exactly the degree variable is compositionally combined with the ι-operator. It e.g. needs to be specified why the correlate serves as the first member of the pair, and the remnant as the second one, and how the node which translates into a pair semantically is syntactically represented.
160. Pronouns in remnant position lead to somewhat degraded results in (some contexts in) English, and the relevant examples will therefore be substituted by equivalent structures from German.
161. I will disregard the option of vehicle change throughout (Fiengo and May 1994).

162. The SCO account can be replaced by an analysis which checks whether the trace observes Principle C. Moreover, note that (67) manifests a violation of *Secondary SCO* (Postal 1971, 1993), which prohibits movement of an embedded term over a coindexed category, as illustrated by (i):
    (i) *[*Whose*$_j$ *sister*] *did they inform him*$_j$ *that Joan would call?*
    For further discussion of the direct analysis and Secondary SCO see below.
163. Cases where the M-term is a pronoun, and the remnant is a name display the same behavior.
164. A challenge for the direct analysis arises from the observation that the adjoined pronoun c-commands the adjoined correlate, and therefore also the embedded name. However, defenders of the direct approach might relate the absence of Principle C effects in (78) to (80) to the assumption that the name is contained in a derived position inaccessible for Binding Theory.
165. The absence of a strong disjoint reference effect can tentatively be related to the fact that the pronoun bears focus. It has been observed at various points in the literature that focus on a pronoun leads to weakening of Principe C effects (see e.g. Chao 1987: 96f; Horvath and Rochemont 1986: 765; Reinhart 1983; Roberts 1987).
    (i) *Everybody likes John. Even HE*$_i$ *likes John*$_i$*.*
    (Horvath and Rochemont 1986: 765, (21))
166. Note on the side that (96)c can be taken as an argument for a head-raising analysis of relative clause. Assuming that the head of the relative binds a trace only in the second conjunct, (96)c violates the CSC.
167. For a path-theoretic account see Pesetsky (1982). For a reanalysis of the CSC in terms of three dimensional phrase markers see, among others, Goodall (1987), Moltmann (1992) and Muadz (1991).
168. For a theory which adopts the reverse line of reasoning and subsumes parasitic gaps under ATB constructions see Huybregts and Riemsdijk (1985).
169. Alternatively - and possibly more transparently - (100) fails because it lacks an empty operator chain, and therefore does not denote an expression of the right type in order to be coordinated with the first conjunct (a predicate). This conception might also safeguard against Potts (2002) arguments against admitting a ban on vacuous quantification in the grammar.
170. At first sight, (102)b could also be excluded under the assumptions that coordinate structures in which the subject is missing from the second conjunct involve coordination below some node XP, and that auxiliaries are generated higher than XP. That this view cannot be upheld can be seen from the existence of V-final variants such as (i), in which the second conjunct contains an overt auxiliary, but no subject:
    (i) *weil Hans* [$_{XP}$ *ein Buch gelesen hat*] *und* [$_{XP}$ *eine Zeitung gekauft hat*]
    since Hans a book read has and a newspaper bought has
171. This does not mean that such changes are impossible to motivate. See e.g. Nissenbaum (2001), who derives semantically transparent LFs for multiple parasitic gaps, which present related problems.

172. I assume the VP-internal subject hypothesis and ignore event arguments, but everything which has been said would also be compatible with a Neo-Davidsonian semantics and Kratzer (1995b), who assumes that external arguments are introduced by nodes above VP.
173. Since *than* is located below the operator, maximality has to be built into the definition of *-er/more*, and cannot be attributed to the meaning of *than*, as in Rullmann (1995). Nothing hinges on this modification, though:
    (i) $[\![\textit{-er/more}]\!] = \lambda AP \lambda d' \exists d[AP(d) \wedge d > \max(d')]$
174. This strategy of conflict resolution diverges from the one advocated by Culicover and Jackendoff (1997, 1999) for syntax-semantics mismatches. For them, hybrid constructions (e.g. Comparative Correlatives) are coordinated in syntax, but subordinated at Conceptual Structure (CS). Moreover, they argue that the Coordinate Structure Constraint (CSC) exclusively applies at CS. To mention just one problem this conception encounters, comparatives are sensitive to the CSC, even though they qualify as subordinate structures at CS. For discussion of syntax-semantics mismatches see also Yuasa and Sadock (2002).
175. Klein (1980, 1982) presents a semantic analysis of comparatives which makes them resemble coordinate structures to an even larger extent. Klein translates a sentence such as *Mary is taller than Sam* roughly into *tall(Mary)* $\wedge$ $\neg$*(tall)Sam.* However, Klein's analysis is, as far as I can see, not compatible with the AP-Raising analysis, according to which the antecedent and the CD-site are related by movement, which requires subordination. It is therefore e.g. not obvious how Klein can account for the disparities between CD and typical instances of ellipsis in coordinate structures (VP-ellipsis). For further discussion and criticism of Klein (1980; 1982) see Bierwisch (1989) and von Stechow (1984).
176. Note that this is not an instance of Merge over Move (Chomsky 1995), since Merge over Move involves competition between a single application of Move and a single application of Merge.
177. Apart from subcomparatives, comparatives with explicit standards and small clause comparatives (see chapter 3, section 1.1). Constructions such as (i), involving *als umgekehrt*/'than v.v.', do not lend themselves to a reduction analysis, either, but are presumably lexicalized to a certain degree:
    (i) *Es kann besser sein 400$ für Saatgut auszugeben und*
    it can better be $400 for seeds to spend and
    100$ für den Rasenmäher als umgekeht.
    $100 for the lawn mower than v.v.
    'It can be better to spend $400 on seeds and $100 on a lawn-mower than vice versa.'

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