

REDUCED AND PHRASAL COMPARATIVES

ABSTRACT. In this paper, I defend two hypotheses as to the derivation of phonologically reduced comparative constructions. On the one hand, I present evidence which supports an ellipsis analysis of phrasal comparatives over base-generation approaches. On the other hand, it is argued that the restrictions on deletion in comparatives are exhaustively determined by the principles governing Gapping, Right Node Raising and Across-The-Board movement in coordinate structures. It follows that construction specific reduction operations such as Comparative Ellipsis can be dispensed with. Evidence for these two hypotheses comes from generalizations about the surface shape of the comparative complement and its positional distribution inside the matrix clause. As for the reason why comparatives, which manifest instances of semantic subordination, can be targeted by processes widely held to be restricted to coordinate structures, it is proposed that optional extraposition of the comparative complement establishes a derived comparative coordination, which emulates the syntax of base-generated conjunctions. The results of this study furthermore indicate that (i) comparatives need to satisfy a hitherto unidentified condition which limits possible relations between the head of an empty operator movement construction and the operator, and that (ii) the Coordinate Structure Constraint has to be formulated as a genuinely syntactic restriction.

0. INTRODUCTION¹0.1. *Deriving Phrasal Comparatives*

In the clausal comparatives under (1), Comparative Deletion (CD; Bresnan 1973) has removed the gradable property from inside the comparative complement (*than*-XP). The overall of the *than*-XP is left intact – except for the application of CD:

- (1)a. John is older [*than*-XP than Mary is $\hat{\Delta}_{CD}$]. ($\hat{\Delta}_{CD}$ = d-old)
 b. John read more books [*than*-XP than Mary read $\hat{\Delta}$]. ($\hat{\Delta}$ = d-many books)

¹ This paper profited greatly from comments by Elena Anagnostopoulou, Roger Higgins, Kyle Johnson, Barbara Partee, Uli Sauerland, Hubert Truckenbrodt, three anonymous reviewers and audiences at the University of Pennsylvania, Utrecht University and the 7th Central European Summer School in Generative Grammar in Blagoevgrad, Bulgaria, who I would like to thank. All errors are my own.



- c. More people brought books [*than*-XP than $\hat{\Delta}$ bought magazines].
($\hat{\Delta}$ = d-many people)

Phrasal comparatives (PCs) differ from their clausal counterparts in that the comparative complement appears to have undergone further reduction in addition to CD. By definition, the *than*-XPs of PCs, exemplified by (2), superficially embed a single remnant only:

- (2)a. John is older [*than*-XP **than Mary**].
 b. John read more books [*than*-XP **than Mary**].
 c. More people bought books [*than*-XP **than magazines**].

The proper representation and interpretation of PCs, as well as the relation of PCs to their clausal variants is still subject to debate. The various approaches towards PC-formation roughly fall into two groups. According to *direct analyses*, PCs do not contain any elliptical structure, and are base-generated as PPs headed by the prepositional comparative marker *than* (Brame 1983; Napoli 1983; Hoeksema 1983, 1984; McConnell-Ginet 1973; Krifka 1987). Heim (1985) demonstrates that the parses postulated by such direct analyses can be assigned appropriate semantic translations on the assumption that the surface strings in (2) are modulated by a restricted number of LF-operations prior to entering the semantic computation.

An alternative view maintains that a proper subset of PCs are systematically related to a clausal source by Comparative Ellipsis (CE) or Comparative Stripping (Bierwisch 1989; Bresnan 1973; McCawley 1988; Pinkham 1982). On this conception, the PCs under (2) manifest truncated versions of their clausal counterparts in (2):

- (3)a. John is older than Mary ~~is~~ $\hat{\Delta}$. ($\hat{\Delta}$ = d-old)
 b. John read more books than Mary ~~read~~ $\hat{\Delta}$. ($\hat{\Delta}$ = d-many books)
 c. More people bought books than $\hat{\Delta}$ ~~bought~~ magazines.
($\hat{\Delta}$ = d-many people)

Pinkham (1982, p. 92ff) defines CE as an optional deletion rule that elides the verb, possibly along with other categories, inside the *than*-XP. The qualification above that CE can be made responsible only for a proper subset of PCs is instrumental to capturing the observation that some PCs

lack a well-formed underlying clausal source ((4)), and that some putative underlying sources cannot be reduced to a well-formed PC ((5); Brame 1983):

- (4)a. PC: John is older than **me**.
 b. Source: *John is older than **me** am.
- (5)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.

While the pair in (4) indicates that the CE account undergenerates, (5) demonstrates that ellipsis approaches also suffer from overgeneration, suggesting that there are at least some PCs that do not lend themselves to a reduction analysis. Since the theory of PC-formation should be as general as possible, this finding clearly seems to favor direct analyses over ellipsis accounts.

But a brief look at another defining property of PC reveals that direct analyses also encounter empirical problems. For one, Pinkham (1982, p. 108) reports that in English, PCs dependent on a subject comparative, unlike their clausal counterparts ((6b)), are confined to clause-final position ((6a) vs. (6c)):²

- (6)a. More people bought books **than magazines**.
 b. More people than bought magazines bought books.
 c. *More people **than magazines** bought books.

² Phrasal subcomparatives (i), examples with explicit standard of comparison (ii), and small clause comparatives (iii) represent systematic exceptions to this generalization:

- (i) More men than women saw the movie.
 (ii)a. More [than ten] men came.
 b. More men [than ten] came.
 (iii) A younger man [than Peter $\hat{\square}$] came. ($\hat{\square}$ = d-young man)

I will ignore subcomparatives throughout. The other two cases do not involve any other ellipsis operation apart from CD. In (ii), *ten* translates as a degree predicate in semantics, which is maximized by *than* (von Stechow 1984). Finally, (iii) represents a tenseless small clause headed by an empty AP (see section 4).

This ban on clause-internal *than*-XPs is not universal, though. In German, PCs may, e.g., surface in clause internal location ((7b)), leading to the appearance of *intraposed than*-XPs:

- (7)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

Moreover, the claim that *than*-XPs resist intraposition is too strong even for English. As documented by the contrast between (6c) and (8c) below, (some) object PCs are tolerated in-situ:

- (8)a. He gave more books to Mary **than you**.
- b. He gave more books than you gave to Sam and Mary.
- c. He gave more books **than you** to Mary.

Foreshadowing the results of section 2, it will turn out that direct analyses of PCs can capture the distribution of phrasal *than*-XPs inside the matrix clause only at the cost of an explicit stipulation. Ellipsis approaches on the other hand are more successful in handling positional restrictions on the surface location of the *than*-XP, but are challenged by the paradigms in (4) and (5).

Thus, a first survey demonstrates that CE-approaches and direct analyses tie in that both theories fail in empirical domains where the other one succeeds. The present paper defends the position that neither of the two accounts outlined above should be maintained. More specifically, I will present evidence from new empirical domains constituting strong support for an ellipsis analysis of PCs, and against direct accounts (following Pinkham 1982 and contra Napoli 1983). However, instead of adopting a theory incorporating CE, I will argue that the effects of CE can be entirely subsumed under *Conjunction Reduction* (CR) operations such as *Gapping*, *Right Node Raising* (RNR) and *Across-The-Board* (ATB) extraction. The remainder of the introduction expands on these two core hypotheses and explicates some preliminaries.

0.2. *Two Hypotheses*

It is a well-established assumption that the matrix clause of the comparative construction subordinates the *than*-XP semantically (see e.g., Kennedy 1997; von Stechow 1984). Still, comparatives also display selective syntactic properties of parataxis. This hybrid character of comparatives is most clearly reflected in the observation that they may be targeted by Gapping, RNR and ATB-movement, i.e., CR processes which are generally taken to affect coordinate structures only.³ For instance, main verb ellipsis can be attributed to Gapping in the comparatives (9a) and (10a) just as in the corresponding coordinate structures in (9b) and (10b) (examples from Napoli 1983, p. 676f):

- (9)a. (?)Mary loves Fellini more than John ~~loves~~ Bertolucci.
 b. Mary loves Fellini and John ~~loves~~ Bertolucci.
- (10)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 (11a) and the conjunction (11b) lend themselves to a uniform analysis in terms of RNR (from Napoli 1983, p. 677, fn. 4):

- (11)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:

- (12) **THE CR-HYPOTHESIS**
 CR operations can target comparatives.

In the *partially reduced comparatives* (PRCs) in (9a)–(11a) above, the *than*-XPs contain more than a single remnant. But the CR-Hypothesis also extends to PCs, as illustrated by the sample derivations in (13). In (13), CD

³ See Hankamer (1971), Hendriks (1995), McCawley (1988), Moltmann (1992), Napoli (1983), Pinkham (1982), Seuren (1983), and Smith (1961). Traditionally, ‘CR’ referred to ellipsis processes which apply to clausal coordinate structures only (Hankamer 1971; Postal 1974; Ross 1970). Here, I will use the term without committing myself to the view that the coordinated categories are full CPs.

removes the gradable property from inside the comparative complement, while Gapping deletes the verb, possibly along with other constituents:

- (13)a. Mary bought more books than Sam ~~bought~~ \triangle .
(\triangle - d-many books)
- b. More people bought books than \triangle ~~bought~~ magazines.
(\triangle = d-many people)
- c. Mary bought books more often than Sam ~~bought books~~ \triangle .
- d. Mary bought books more often than ~~Mary bought~~ magazines \triangle .
(\triangle = d-often)

The CR analysis entails that the same kind of reduction processes which are implicated in PC-formation in (13) should also be attested in conjunctions. That this is indeed the case is confirmed by the well-formedness of the coordinate correlates for (13) provided by (14):⁴

- (14)a. Mary bought books and Sam ~~bought~~ magazines.
- b. Mary bought books and Sam ~~bought~~ magazines.
- c. Mary bought books on Tuesday and Sam ~~bought books~~ on Friday.
- d. Mary bought books on Tuesday and ~~Mary bought~~ magazines on Friday.

In light of the paradigms (13) and (14), the CR-Hypothesis can now be strengthened, leading to a new perspective on PC-formation as expressed by the PC-HYPOTHESIS:

- (15) **THE PC-HYPOTHESIS**
PCs derive from clausal comparatives by CR.

⁴ To be precise, the subjects in (13d) and (14d) are not actually deleted, but rather eliminated by ATB-movement (see section 3). ATB-movement accounts for the fact that the missing subject in (i) is interpreted as a bound variable and not as a narrow scope indefinite (see e.g., van Oirsouw 1987).

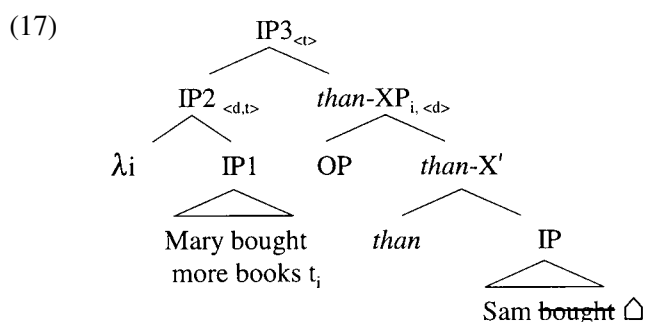
- (i) Somebody_i [_i bought books on Tuesday] and [_i magazines on Friday].

In contrast to the CR-Hypothesis, the PC-Hypothesis not only maintains that PRCs and PCs can *optionally* be parsed as the output of CR, but also contains the stronger claim that *all* PCs derive from an underlying clausal source by application of CR (see, however, the qualification in fn. 2).

Evidently, the PC-Hypothesis, which presupposes that comparatives are parsed as coordinate structures, conflicts with the orthodox assumption that the *than*-XP is semantically subordinated to the main clause, resulting in a paradox. The specific solution to this puzzle to be pursued here builds on the analysis of conjunction developed in Munn (1992, 1993), according to which the second conjunct of a coordinate structure is embedded under a functional *B(oolean)P(hrase)* which right-adjoins to the first conjunct (see also Thiersch 1993):

- (16) [IP₁ [IP₁ Mary bought books] [BP [B' and [IP₂ Sam bought magazines]]]]

Adopting the adjunction analysis for comparatives, I assume that the *than*-XP may extrapose and adjoin to a node which includes a full thematic clause, establishing a *comparative coordination*, as in (17). Extraposition is motivated by the same principles which for instance drive extraposition of relative clauses. On this view, comparative coordination differs from conjunction only in that (i) comparatives are embedded under a *than*-XP instead of a BP and (ii) comparative coordination is derived by extraposition of the *than*-XP, whereas conjunctions are base-generated.



Turning now to the resolution of the paradox, the typed tree-diagram in (17) contains two semantically interpretable chains. The lambda operator λi abstracts over the binder-index of the trace left behind by extraposition (Heim and Kratzer 1998), while the empty operator OP binds a degree variable inside the *than*-XP (Chomsky 1977). Given that the *than*-XP denotes a definite degree description of type d (Rullmann 1995; von Stechow 1984), 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 is automatically interpreted in its base-position as a semantic argument of the comparative morpheme *-er/more*, as sketched below:^{5,6}

$$\begin{aligned}
 (18) \quad & \llbracket_{IP_2} \lambda i [\text{Mary bought more books } \mathbf{t}_i] \rrbracket_{(d,t)} \\
 & (\llbracket [\text{OP}_{d'} \text{ than Sam bought } \mathbf{d}'\text{-many books}]_i \rrbracket_d) = \\
 & = \llbracket [\text{Mary bought [more books [OP}_{d'} \text{ than Sam bought } \mathbf{d}'\text{-} \\
 & \quad \text{many books}]] \rrbracket = \\
 & = \exists d [\text{Mary_bought_d-many_books} \ \& \\
 & \quad d > \max\{d' | \text{Sam_bought_d}'\text{-many_books}\}]
 \end{aligned}$$

Thus, conflicts between syntactic coordination and semantic subordination are resolved sequentially by overt extraposition and subsequent reconstruction of the *than*-XP.⁷

With these deliberations in the background, notice that even though examples (9)–(11) and (13)–(14) suggest that the deletion processes operative in comparatives and coordinate structures are similar in that they affect congruent strings, they do not serve as conclusive evidence that reduced comparatives are in fact derived by CR. This is so because the identity of the ellipses in comparatives and conjunctions could, of course, also be merely accidental. In defending the CR- and the PC-Hypotheses, I will therefore expand in the next section on properties of Gapping in conjunctions and in comparatives, substantiating the claim that the restrictions on CR in these two environments are indeed the same. In section 2, which focuses on RNR and the interaction between RNR, Gapping and ATB-movement, it will be argued that only the PC-Hypothesis proves capable of predicting the positional distribution of *than*-XPs. In the course

⁵ This leaves open the option of syntactic reconstruction prior to semantics by submitting the lower copy of the *than*-XP to interpretation. See 3.3 for a restriction on syntactic reconstruction.

⁶ 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:

$$(i) \quad \llbracket [-er/more] \rrbracket = \lambda AP \lambda d' \exists d [AP(d) \ \& \ d > \max(d')]$$

⁷ 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. This conception encounters severe problems in the face of the fact that comparatives are sensitive to the CSC, even though they qualify as subordinate structures at CS (see section 3).

of an exploration of the complex conditions which contribute to shaping the *than*-XP, section 3 will identify an additional factor discriminating between comparatives and base-generated conjunctions. Taken together, the results achieved in sections 1 to 3 lead to the conclusion that CE can be dispensed with. Finally, section 4 comments on classical counterexamples to reduction analyses such as (4) and (5).

1. INTERNAL CONDITIONS

It has been known at least since Ross (1970) that Gapping does not apply in an unrestricted fashion. In the schematic coordinate structure (19a), 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; for reasons of space, I revert to a flat, ternary notation for coordination):

(19)a. [A ... C ...] *and/or* [B ... D ...]

b. [A Sam [C read] a book] and [B Sally [D ~~read~~] magazines].

Pretheoretically, the numerous restrictions which have been identified for Gapping in the literature (Johnson 1996; Neijt 1979; van Oirsouw 1987; Ross 1970; Steedman 1990, 1996; Wesche 1995) can be grouped into *external conditions* governing the relation between the antecedent clause A and the Gapped clause B, and *internal conditions* which determine the shape of the Gapped clause B. External conditions will be discussed in section 2, while the current section expands on the internal conditions. To this end, I will review four diagnostics attesting to the fact that the internal conditions on Gapping also control the formation of partially reduced and phrasal comparatives, adducing a first piece of evidence in favor of the CR- and the PC-Hypotheses.⁸

1.1. *Isomorphism*

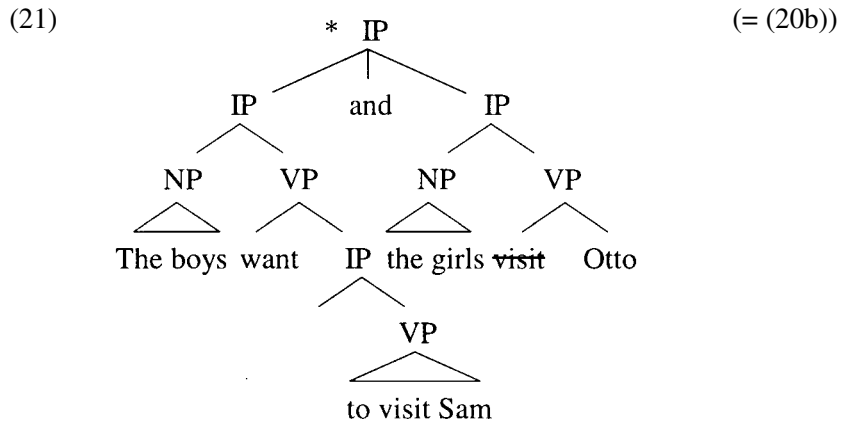
A first general condition (*Isomorphism*) on Gapping dictates that the antecedent and the Gap have to be embedded at the same depth inside their respective conjuncts (Hankamer 1971; Hudson 1976; Sag 1980). For instance, example (20) can be read as in (20a), but cannot be related to

⁸ For a detailed discussion of internal conditions see Hendriks (1995) and Lechner (1999). I am indebted to a reviewer for bringing to my attention Hendriks (1995), who addresses Gapping in comparatives, but endorses – essentially for the reasons reported in the introduction – a base-generation analysis of PCs.

the alternative underlying source (20b). (20) intuitively lacks a reading in which the second conjunct is understood as a report about the boys' actual habits, instead of their wishes.

- (20) The girls want to visit Sam and the boys Otto.
- a. [A The girls [C want to visit] Sam] and
[B the boys [D ~~want to visit~~] Otto].
- b. *[A The girls **want to** [C visit] Sam] and
[B the boys [D ~~visit~~] Otto].

Isomorphism prohibits Gapping in (20b), because the Gap is dominated by two maximal projections while the antecedent is embedded under four XPs, and the depth of embedding of the Gap consequently fails to match the depth of embedding of the antecedent:⁹



⁹ Note on the side that (20b) cannot be excluded by a matching requirement on finiteness between the Gap (*visit*) and its antecedent (*to visit*). As can be seen from (i) and the unavailability of reading (ib), a non-finite verb cannot antecede a non-finite Gap in contexts that violate Isomorphism, either:

- (i) Lisa wants to try to visit Sam and Otto.
- a. Lisa wants to try **to visit** [Sam and Otto].
- b. *Lisa wants [A to try [CP [C **to visit**] Sam]] and [B [D ~~to visit~~] Otto].
(intended reading: Lisa_i wants to try to visit Sam and she_i wants to visit Otto.)

Isomorphism is computed in a parallel fashion in comparatives. This ensures that the comparative (22) can be assigned reading (22a) only. The non-isomorphic representation (22b) fails to converge for the same reason that (20b) is blocked:¹⁰

- (22) More girls want to visit Sam (on Monday) than $\hat{\Delta}$ Otto (on Friday).
- a. [A More girls [C want to visit] Sam (on Monday)] than
[B $\hat{\Delta}$ [~~D want to visit~~] Otto (on Friday)].
- b. *[A More girls **want to** [C visit] Sam (on Monday)] than
[B $\hat{\Delta}$ [~~D visit~~] Otto (on Friday)].

Observe also that Isomorphism treats PCs (...*than Otto*) and PRCs (...*than Otto on Friday*) alike, indicating that the derivation of both constructions proceeds along the same lines.

1.2. Locality

A second characteristic property of Gapping – *Locality* – consists of the generalization that a Gap has to include the highest verb inside its conjunct. Locality prohibits Gapping across higher overt verbal heads, and accounts for contrasts such as (23) (Hankamer 1971; Hudson 1976):¹¹

- (23)a. Some visited Sam and [B others ~~visited~~ Otto].
- b. *Some tried to visit Sam and [B others **promised to visit** Otto].

¹⁰ The core properties of Isomorphism can be most clearly studied in subject comparatives. Independent factors feed a wider range of readings for object and adjunct comparatives, as in (i):

- (i) John wants to eat more bread than Mary $\hat{\Delta}$
- a. $\hat{\Delta}$ = Mary wants to eat
- b. $\hat{\Delta}$ = Mary ate/eats

Roughly, the two readings of (i) correlate with differences in the scope of *than*-XP extraposition (matrix vs. embedded IP). I will ignore such contrasts, which go beyond the scope of the present paper (but see Lechner 1999).

¹¹ (23b) cannot be excluded by a general ban on Gapping of infinitivals, as Gapping may target non-finite verbs in contexts which observe Locality:

- (i) She came in order [PRO to introduce Bill to Mary] and
[PRO ~~to introduce~~ Sam to Bill].

The CR-Hypothesis leads one to expect that the effects of Locality are also visible in comparatives. That this prediction is borne out is illustrated by the (partially reduced) subject, object and adjunct comparatives in (24) and (25), respectively (see also Hendriks 1995, p. 50):

- (24)a. More people visited Sam on Monday than
[_B $\hat{\Delta}$ ~~visited~~ Otto on Friday].
- b. Some visited more people on Monday than
[_B others ~~visited~~ $\hat{\Delta}$ on Friday].
- c. Some visited Sam more often than
[_B others ~~visited~~ Otto $\hat{\Delta}$].
- (25)a. *More people tried to visit Sam than
[_B $\hat{\Delta}$ **promised to visit** Otto].
- b. *Some tried to visit more people than
[_B others **promised to visit** $\hat{\Delta}$].
- c. *Some tried to visit Sam more often than
[_B others **promised to visit** Otto $\hat{\Delta}$].

The assumption that comparatives are subject to Isomorphism and Locality also sheds light on a curious property of CE. Hankamer (1971, p. 376) notes that CE, as opposed to VP-ellipsis, may not target embedded clauses (26):

- (26)a. Some visited more people that **I claimed** Bart did.
- b. *Some visited more people than **I claimed** Bart.

On current views, (26b) is assigned the parse in (27a), which is structurally analogous to the one underlying the Gapped conjunction (27b):

- (27)a. *Some visited more people than [_B **I claimed** Bart ~~visited~~ $\hat{\Delta}$].
- b. *Some visited many people and [_B **I claimed** Bart ~~visited many people~~].

The idiosyncratic behavior of CE reduces then to the fact that only Gapping exhibits sensitivity to Locality and Isomorphism (for an account of why Gapping differs from VP-ellipsis in this respect, see e.g., Johnson 1996).

1.3. *Boundedness*

Thirdly, 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 larger than just the highest verb, the Gap may include a non-finite sentence boundary, as in (28a), but it must not contain a proper subpart of a finite embedded CP, as in (28b) (Johnson 1996; Neijt 1979; Pesetsky 1982; Vanden Wyngaerd 1993):¹²

- (28)a. Some promised to visit Sam and others ~~promised~~
 [CP[-finite] **to visit** Otto].
- b. *Some promised that they would visit Sam and others ~~promised~~
 [CP[+finite] **that they would visit** Otto].

Moreover, Johnson (1996) observes that long distance Gapping is limited to environments in which the affected string qualifies as a restructuring context (Evers 1975; Grewendorf and Sternefeld 1990; Haider 1993; Vikner 1995; Wurmbbrand 1998). While it is possible to elide an embedded infinitival together with a restructuring verb ((29a)), Gapping of a non-restructuring matrix verb and the verbal head of its complement leads to suboptimal results ((29b)):

- (29)a. Some promised/tried/wanted to visit Sam and
 others ~~promised/tried/wanted~~_[+restructuring] [CP **to visit** Otto].
- b. ??Some refused/avoided/pretended to visit Sam and
 others ~~refused/avoided/pretended~~_[-restructuring]
 [CP **to visit** Otto].

Contexts of long-distance Gapping also attest to the relevance of *Boundedness* in comparatives. To begin with, Gapping may eliminate verb

¹² Judgements are relative and subject to speaker variation. For Chao (1987), Pesetsky (1982) and an anonymous reviewer, long-distance Gaps which contain finite bridge verbs are only marked (ia). Chao (1987, p. 40: (19)) notes that they contrast with Gaps which include non-bridge verbs such as mutter (ib):

- (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.

All that matters for present purposes is that the judgements elicited for conjunctions and for the comparative examples presented below are congruent.

clusters that include a restructuring verb along with an embedded infinitival predicate, as in (30a). If the ellipsis site contains parts of a finite embedded CP, though, ill-formedness ensues ((30b); cf. (28b)):¹³

- (30)a. More people promised/tried/wanted to visit Sam (on Monday) than $\hat{\Delta}$ ~~promised/tried/wanted~~_[+restructuring] Δ _{[CP[-finite]]} **to visit** Otto (on Friday)].
- b. *More people promised that they would visit Sam (on Monday) than $\hat{\Delta}$ ~~promised~~_{[CP[+finite]]} **that they would visit** Otto (on Friday)].

Note that the status of (30) is not contingent on the number of remnants inside the reduced *than*-XP, confirming again that the derivations of PCs and PRCs are constrained by identical conditions.¹⁴

Next, comparatives also share the second property that was associated with Boundedness in coordination: they degrade rapidly when Gapping targets non-restructuring contexts.

¹³ Similar examples have been noted by Heim (1985, p. 4), who observed that the maximal distance between the remnant and its correlate is limited by standard island conditions:

- (i) ?*I spent more time with a woman that played the clarinet than the lute.

Heim, who explores a direct approach, accounts for (i) by postulating that the remnant raises covertly to the minimal IP containing the comparative. Given that the left and the right edges of long distance Gaps are restricted by bounding conditions, the direct analysis and the PC-Hypothesis are empirically indistinguishable in this domain.

¹⁴ Boundedness also correctly discriminates between (ia) and (ib) (Pinkham 1982, p. 106: (69)):

- (i)a. *Bill expected more people would come than Joe ~~expected~~_{[CP[+finite]]} $\hat{\Delta}$ ~~people would come~~.
- b. ?Bill expected more people to come than Joe ~~expected~~_{[CP[-finite]]} $\hat{\Delta}$ ~~to come~~.

Again, it is possible to find coordinate correlates for (i):

- (ii)a. *Bill expected many people would come and Joe ~~expected~~_{[CP[+finite]]} some ~~people would come~~.
- b. ?Bill expected many people to come and Joe ~~expected~~_{[CP[-finite]]} some ~~to come~~.

- (31) ??More people refused/avoided/pretended to visit Sam (on Monday) than $\hat{\square}$ ~~refused/avoided/pretended~~_[-restructuring] [_{CP} ~~to visit~~ Otto (on Friday)].

Again, the prohibition on long distance Gapping of non-restructuring verbs holds for PRCs and PCs alike. Thus, conjunctions, PCs and PRCs all behave on a par with respect to Boundedness, as predicted by the CR- and the PC-Hypotheses.

1.4. Subgapping

Finally, in V2-languages such as German and Dutch, Gapping can affect the finite verb in C° alone, stranding an infinitive ((32a)) or a participle ((32b)) as a remnant inside a non-initial conjunct (Maling 1972):¹⁵

- (32)a. Gestern wollten viele Sam besuchen und einige ~~wollten~~ Otto
yesterday wanted many S. visit and some wanted O.
 einladen.
invite
 yesterday, many people wanted to visit Sam and some Otto.
- b. Gestern haben viele Leute Sam besucht und einige ~~haben~~
yesterday have many people S visited and some have
 Otto eingeladen.
O. invited
 Yesterday, many people visited Sam and some invited Otto.

Subgapping is for most speakers restricted to V2-contexts, as witnessed by the degraded status of tensed verb deletion in the verb-final constructions in (33) (Evers 1975, p. 13; den Besten and Broekhuis 1989, 1992; Vanden Wyngaerd 1993, p. 8):¹⁶

¹⁵ Evers (1975: 11) judges an example similar to (32b) – but more complex in structure – to be ungrammatical, an assessment my informants do not share.

¹⁶ Subgapping contexts improve with control verbs (see (i); Vanden Wyngaerd 1993), even though there is speaker variation:

- (i) ?weil viele versuchten Sam zu besuchen und einige ~~versuchten~~ Otto
since many tried S. to visit and some tried O.
 einzuladen.
to invite
 since many people tried to visit Sam and some to invite Otto

- (33)a. *weil viele Leute Sam besuchen wollen und einige Otto
since many people S. visit want and some O.
einladen **wollen**
invite want
since many people want to visit Sam and some to invite Otto*
- b. **weil viele Leute Sam besucht haben und einige Otto
since many people S. visited have and some O.
eingeladen **haben**
invited have
since many people visited Sam and some invited Otto*

A similar observation can be made for comparatives, which generally resist Subgapping if construed with the verb in final position:

- (34) **[weil mehr Leute Sam besucht haben] als [∅ Otto eingeladen
since more people S. visited have than O. invited
haben
have
since more people visited Sam than invited Otto*

If, however, V2 movement has applied in the matrix clause, Subgapping may all of a sudden elide the finite verb in the *than*-XP (modal constructions, which are not presented here, behave alike):

- (35) *[Gestern haben mehr Leute Sam besucht] als [∅ Otto
yesterday have more people S. visited than O.
eingeladen **haben**].
invited have
Yesterday, more people visited Sam than invited Otto.*

What is surprising in this context is that on the assumption above – Subgapping of auxiliaries is confined to C° – (35) should not constitute a licit

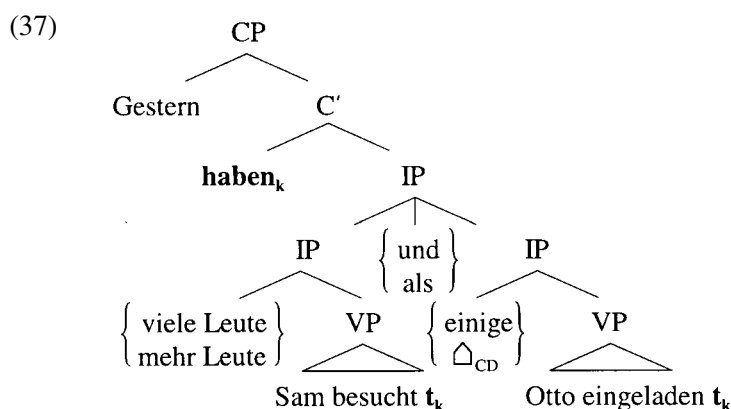
Crucially, all groups of informants confirm the parallelism between conjunction and comparatives reported below.

target for Subgapping. Note that in German, overt verbs inside the *than*-XP are invariably realized in clause final position:

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

It follows that (35) cannot be analyzed as an instance of Subgapping of C?, and the well-formedness of (35) remains unaccounted for.

The puzzle posed by (35) receives a natural explanation on the assumption that Subgapping in V2 contexts does not involve Gapping, but rather represents an instance of ATB-V2. A reanalysis along these lines for (35) and its coordinate correlate (32b) leads to the derivation in (37), which involves (comparative) coordination at the transition from IP to C' and attributes the effect of Subgapping to ATB-movement of both auxiliaries to C°:



The conflict for the analysis of (35) noted above can now be successfully resolved, because the auxiliary in the second conjunct is no longer removed from C° of the *than*-XP by Subgapping. Observe also that even though the *than*-XP lacks an independent trigger for V2, the Coordinate Structure Constraint (CSC) ensures that the *than*-XP-internal auxiliary in (35) has to be moved to C° along with the finite matrix verb. Finally, since formation of a comparative coordination is optional, the *than*-XP can also be construed as a V-final subordinate clause which attaches low at the right periphery of the VP, as in (36a) (see Haider 1993 and 3.3).

1.5. *Summary*

To summarize, it has been demonstrated that four properties typical of Gapping in conjunction are also manifest in 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 the CE-analysis, 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.

Furthermore, the data presented so far also generates a first piece of empirical evidence in favor of the PC-Hypothesis, according to which PCs are derived from a clausal source. Here, the burden of explanation for the identical behavior of PCs and PRCs is on the base generation approach, which fails to explain the attested parallelism without additional assumptions.

In the following section, I proceed to an investigation of the positional distribution of PCs and a discussion of the external conditions on CR, which will be shown to furnish strong independent support for the PC-Hypothesis.

2. EXTERNAL CONDITIONS ON CR

By ‘external conditions’ I refer to the principles which define the environments in which two clauses A and B form potential targets for CR applying to strings inside A and/or B. Minimally, these conditions have to include a condition that warrants satisfaction of the constraint **Embedding*, which can be defined as below (see Goodall 1987; Moltmann 1992, p. 338).

- (38) ***EMBEDDING_{DEF}**: Two nodes A and B satisfy **Embedding* if and only if A does not contain B and B does not contain A.

(38) should be seen as a descriptive generalization which captures one essential feature of the syntax of coordinated structures. The next subsection investigates reflexes of **Embedding* in English and German comparatives.

2.1. **Embedding*

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 (39):

- (39)a. More people bought magazines [than bought books].
 b. More people bought magazines [than ~~bought~~ books].
 c. More people [than bought books] bought magazines.
 d. *More people [than bought books] ~~bought~~ magazines.

The PC-Hypothesis attributes the contrast between (39a–c) and (39d) to the external condition **Embedding*, which holds that Gapping is possible only if the antecedent clause does not contain the Gapped clause or vice versa. **Embedding* straightforwardly excludes (39d) as one of the conjuncts (the *than*-XP) is contained inside the other one (the matrix clause).

But consider now the German PCs in (7), repeated from above, and their respective parses on the Gapping analysis in (40):

- (7)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
- (40)a. weil mehr Leute eine Zeitung gekauft haben [als ein Buch
~~gekauft haben~~]
 b. weil mehr Leute eine Zeitung [als ein Buch gekauft haben]
~~gekauft haben~~

Apparently, only (40a) satisfies **Embedding*, and the question materializes of how to relate (7b) to a suitable underlying representation. The solution presents itself in the form of the two alternative representations for the

string (7b) provided by (41), which do not involve Gapping but employ Backward Conjunction Reduction by RNR instead:

- (41)a. weil mehr Leute eine Zeitung [~~als ein Buch gekauft haben~~]
gekauft haben
- b. weil mehr Leute eine Zeitung ~~gekauft haben~~ [~~als ein Buch~~
gekauft haben]

In (41a), RNR removes the verbal cluster from inside an intraposed *than*-XP, while (41b) lets RNR operate on the *than*-XP subsequent to overt extraposition. However, given the reasonable premise that *Embedding not only constrains Gapping, but also extends to RNR (but see 2.3), any attempt to derive intraposed PCs from an intraposed *than*-XP as in (41a) is unlikely to succeed. And indeed, manifest evidence against an intraposition analysis for (7b) is adduced by the fact that the non-elliptical variant of (41a) is ill-formed:¹⁷

- (42) *weil mehr Leute eine Zeitung [als ein Buch gelesen
since more people a newspaper than a book read
haben] gekauft haben
have bought have

Thus, the CR-analysis derives intraposed PCs such as (7b) by the factorization (41b), which treats (7b) on a par with the conjunction in (43).¹⁸

- (43) weil [viele Leute eine Zeitung ~~gekauft haben~~] und [einige
since many people a newspaper bought have and some
ein Buch gekauft haben]
a book bought have
since many people bought a newspaper and some bought a book

¹⁷ *than*-XPs are by no means not exotic in this respect. Relative clauses equally resist stranding in clause internal position:

- (i)a. weil der Mann die Maria besucht hat [der das Buch gekauft hat]
since the man the Maria visited has who the book bought has
since the man who bought the book visited Mary

- b. *weil der Mann die Maria [der das Buch gekauft hat] besucht hat

¹⁸ (7b) also exhibits the intonational properties of RNR. The right edge of the matrix clause is marked by an intonational break (boundary tone), as is the right edge of the first conjunct in (43).

At this point, it becomes possible to address a number of arguments in favor of the PC-Hypothesis and against the direct approach towards PC-formation. In particular, the following two sections will elaborate on evidence from two (partially related) domains: the distribution of *than*-XPs in English and in German V-final clauses (2.2), and the interaction between PC-formation and verb movement in German V2 contexts (2.3).

2.2. Interaction of Gapping and RNR

PCs differ from unreduced clausal comparatives in that their well-formedness also depends on the location of the *than*-XP in the matrix sentence. English, for one, licenses subject PCs in clause-final location only, as witnessed by the contrast (6a) vs. (6c).

- (6)a. More people bought books **than magazines**.
- b. More people than bought magazines bought books.
- c. *More people **than magazines** bought books.
- (44) *More people [than ~~bought~~ magazines] bought books. (= (6c))

The PC-Hypothesis correctly discriminates between (6a) and (6c), because (6c) cannot be produced by any standardly sanctioned ellipsis operation. In particular, both RNR and Gapping in (44) minimally violate *Embedding. On the other hand, direct analyses are – in absence of a principled reason for why phrasal *than*-XPs may surface dislocated from the degree heads they serve as arguments for, but not in-situ – forced to resort to a stipulation in order to exclude (6c). Reinhart (1991, p. 369) proposes for instance that PCs are base-generated right-adjoined to IP. However, this conception is clearly too restrictive, as it does not cover intraposed subject PCs in German such as (7b):

- (7)b. weil mehr Leute eine Zeitung **als ein Buch** gekauft haben
since more people a newspaper than a book bought have

Moreover, Reinhart's generalization is contradicted by the existence of in-situ object PCs:

- (45) weil Hans mehr Bücher **als Peter** gekauft hat
since H. more books than P. bought has

The examples above prove unproblematic for the PC-Hypothesis, though, which reduces the appearance of intraposition/in-situ location to the combined effects of extraposition and RNR, as detailed in (41b), repeated below, and (46). Note also that (41b) and (46) parallel the corresponding coordinate structure (47) in all relevant respects:

- (41)b. weil mehr Leute eine Zeitung ~~gekauft haben~~ [als ein
since more people a newspaper bought have than a
 Buch gekauft haben]
book bought have
- (46) weil Hans mehr Bücher ~~gekauft hat~~ [als Peter gekauft hat]
- (47) weil Hans ein Buch ~~gekauft hat~~ und Peter eine Zeitung
since H. a book bought has and P. a newspaper
 gekauft hat
bought has

Finally, the PC-Hypothesis makes a further prediction as to the serialization of PCs in English, which sets it apart from those direct accounts which confine PCs to clause-final location. More specifically, one is led to expect that in-situ PCs should be tolerated in environments like (48), in which Gapping and RNR conspire in such a way that Gapping deletes the verb, while RNR elides the string α at the right edge of the matrix clause:

- (48) [SUB ... V^o ... OBJ_{Comparative} ... ~~α~~ _{RNR}]
 [*than*-XP SUB ... ~~V~~_{Gapping} ... $\hat{\Delta}_{CD}$... α]

And indeed, such examples are fully acceptable, as illustrated by (49a) and its underlying representation (49b):¹⁹

- (49)a. He gave more books **than you** to Mary. (= (8)c)
- b. He gave more books ~~to Mary~~_{RNR} than
 you ~~gave~~_{Gapping} to Mary.

¹⁹ Note that (8c) 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 never extrapose to a position following the *than*-XP:

- (i)a. More people bought [a book about phlogiston theory] than a watch.
 b. *More people bought [a book t] than a watch [about phlogiston theory].

Again, this finding constitutes strong support for the PC-Hypothesis over competing direct analyses, as the latter fail to account for the fact that the distribution of PCs is contingent on the grammatical function and structural position of the comparative phrase.

To sum up, the PC-Hypothesis implies that (i) English licenses object PCs in-situ ((8b)); (ii) English does not permit subject PCs in-situ ((6d)); (iii) German licenses object PCs in-situ ((45a) and (iv) German permits intraposed subject PCs ((7b)). Each of these four generalizations poses a serious challenge for direct analyses, which would have to find an explanation not only for the complex positional distribution of *than*-XPs in English, but also for the cross-linguistic variance differentiating between English and German.

2.3. Interaction of ATB-V2 and RNR

A further pair of arguments corroborating the PC-Hypothesis is based on a curious property which in-situ comparatives share with in-situ relative clauses: Hudson (1976) observes that in a small group of contexts, RNR may also target non-coordinate structures which violate *Embedding (see also Phillips 1996; Wilder 1995, p. 28). (50) illustrates this point for German in-situ relative clauses:

- (50) ?weil viele Leute [die ein Buch ~~gekauft haben~~] auch eine
since many people who a book bought have also a
 Zeitung gekauft haben
newspaper bought have
 since many people who bought a book also bought a newspaper

Similar examples can also be found for comparatives. In (51), RNR operates on a subject comparative in-situ. The grammaticality status of the resulting structure matches the one of (50):

- (51) ?weil mehr Leute [als ein Buch ~~gekauft haben~~] ein
since more people than a book bought have a
 Zeitung gekauft haben
newspaper bought have
 since more people bought a newspaper than bought a book

Interestingly, though, backwards deletion is limited to configurations in which the finite matrix auxiliary remains in clause final location:

- (52) *Gestern haben viele [die ein Buch ~~gekauft haben~~] auch eine
yesterday have many who a book bought have also a
 Zeitung gekauft.
newspaper bought

Comparatives pattern once again along with relative clauses:

- (53) *Gestern haben mehr Leute [als ein Buch ~~gekauft haben~~]
yesterday have more people than a book bought have
 eine Zeitung gekauft.
a newspaper bought

Hence, the surface location of PCs is not only a function of the factors identified in the previous section (structural position of the comparative XP), but also sensitive to the syntax of the matrix clause (V2 vs. V-final). Direct analyses lack the means to express this correlation between matrix V2 and the location of the *than*-XP ((51) vs. (53)). Such a dependency is on the other hand expected on the PC-Hypothesis. While the RNRed strings find a matching clause-final 'antecedent' (*gekauft haben*) in (50) and (51), where the finite auxiliary stays in-situ, (52) and (53) fail to meet the identity requirement for RNR, since there is no overt occurrence of *haben* to the right of the elided string inside the bracketed constituent.

Additional and solid evidence that the *than*-XP in (51) is indeed elliptical can be drawn from the observation that PRCs are subject to the same restrictions as PCs. First, notice that in relative clauses, RNR may target the finite auxiliary to the exclusion of the participle if the matrix verb resides in-situ:

- (54)a. ? weil viele [die ein Buch gekauft ~~haben~~] eine Zeitung
since many who a book bought have a newspaper
 gelesen haben
read have
- b. * Gestern haben viele [die ein Buch gekauft ~~haben~~] auch eine
yesterday have many who a book bought have also a
 Zeitung gelesen.
newspaper read

Second, when applied to an in-situ subject comparative, the results of auxiliary RNR is a PRC ((55a)). Crucially for present purposes, in-situ subject

PRCs are controlled by the same condition on V2 ((55b)) which could be detected in PCs ((53)):

- (55)a. ? weil mehr [als ein Buch gekauft ~~haben~~] eine Zeitung
since more than a book bought have a newspaper
 gelesen haben
read have
- 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

This indicates that PCs and PRCs should be given a common analysis, which in turn entails that PCs embed a syntactically projected ellipsis.

Finally, let me address a potential problem for the PC-Hypothesis, which presents itself in the form of the alternative parse for (53b) sketched in (56):

- (56) *Gestern **haben_i** mehr Leute [als ein Buch ~~gekauft~~ **t_i**] ein
yesterday have more people than a book bought a
 Zeitung [gekauft **t_i**].
newspaper bought

(56) involves ATB-V2 and RNR. Recall from 1.4 that German licenses ATB-V2 of auxiliaries in ordinary conjoined main clauses ((57a)) as well as in comparatives ((57b)):

- (57)a. Gestern **haben_i** viele ein Buch [gekauft **t_i**] und einige eine
yesterday have many a book bought and some a
 Zeitung [gelesen **t_i**].
newspaper read
- b. Gestern **haben_i** mehr Leute eine Zeitung gekauft **t_i** [als
yesterday have more people a newspaper bought than
 ein Buch gelesen **t_i**].
a book read

Moreover, ATB-V2 interacts with RNR of participles which have been stranded by verb movement in the first conjunct (see Kühnel 1993):

- (58)a. Gestern haben_i viele ein Buch [~~gekauft~~ t_i] und einige eine
yesterday have many a book bought and some a
 Zeitung [gekauft t_i]
newspaper bought
- b. Gestern haben_i mehr Leute eine Zeitung ~~gekauft~~ t_i [als
yesterday have more people a newspaper bought than
 ein Buch gekauft t_i].
a book bought

Thus, nothing should in principle keep ATB-V2 from conspiring with participle RNR in (56), and one could accordingly object that the ellipsis analysis leads to overgeneration. As it turns out, however, (56) violates an independent general restriction on ATB-V2 which demands that ATB-V2 comply with *Embedding:

- (59) *Gestern haben_i mehr Leute [als ein Buch gelesen t_i] eine
yesterday have more people than a book read a
 Zeitung gekauft t_i.
newspaper bought

Hence, ATB-V2 may – in contrast to RNR – not apply in Hudson-type (in-situ) contexts, and the potential problem raised by representation (56) can therefore be successfully eliminated.

Recapitulating the results of section 2, three types of evidence related to the external conditions support the PC-Hypothesis over its competitors: First, the PC-Hypothesis correctly predicts the positional distribution of PCs in English and German by appealing to the interaction of Gapping and RNR. Second, the interplay between RNR and ATB-V2 successfully accounts for the influence of matrix V2 on the location of PCs. Third, PCs and PRCs were seen to pattern alike in all relevant respects, as prognosticated by the PC-Hypothesis. None of these generalizations are accounted for under a base generation approach without further stipulations.

3. RESTRICTIONS ON COMPARATIVE COORDINATION

3.1. *Empirical Inadequacy of 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 (60). In (60a), the two finite verb forms (*haben* and *hat*) are not string-identical, and (60b) can therefore not be derived from (60a) by RNR.²⁰ In addition, the contrast between (60b) and (60c) shows that the verb has to agree in ϕ -features with the matrix subject *wir* instead of with the local subject *Peter*:

- (60)a. weil wir_{1st pl} mehr Bücher gekauft **haben**_{1st pl} als Peter_{3rd sg}
since we more books bought have than P.
 gekauft **hat**_{3rd sg}
bought has
 since we bought more books than Peter bought
- 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}

At first sight, this finding seems to refute the Clausal Hypothesis, since it suggests that a subset of internal PCs – those which embed a subject remnant – resist an analysis in terms of RNR.²¹ 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

²⁰ I am indebted to an anonymous reviewer for bringing this problem (also reported in Truckenbrodt 1988, p. 17) to my attention.

²¹ 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 in (ii):

- (i) weil wir_{1st pl} mehr Bücher gekauft haben_{1st pl} als Peter_{3rd sg}
since we more books bought have than P.
~~gekauft hat~~_{3rd sg}
bought has
- (ii) weil wir_{1st pl} Bücher gekauft haben_{1st pl} und Peter_{3rd sg} Zeitungen ~~gekauft~~
since we books bought have and P. newspapers bought
 hat_{3rd sg}
has

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 (60b), 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 in comparatives.

3.2. 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.²² (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 1993; 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-

²² 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.

level.²³ However, as will become clear shortly, not all comparatives license all types of coordination. Two general well-formedness conditions severely limit the set of available parses.

The first filter consists in the Comparative Deletion Scope Condition (CDSC) in (61), which encodes a structural condition on the scope of the comparative XP relative to the CD-site:

- (61) **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:

- (62)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**
- (63)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**
- (64)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

²³ 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.

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) 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., (73a) vs. (86) 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 ((65a)) or none of the ATB-traces ((65b)) reside in the topmost subject positions of their respective conjuncts (see also Goodall 1987; Pesetsky 1982, p. 447; Woolford 1987). Identical contrasts can be replicated for German.

- (65)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 (74) to (77) 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:²⁴

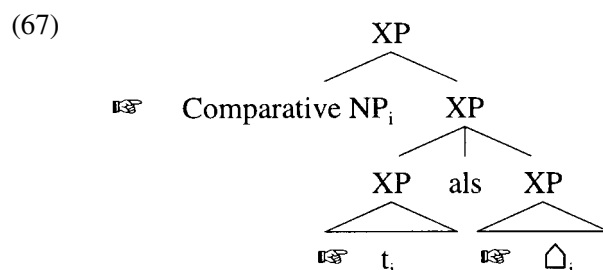
- (66) [XP_i ... [[t_i ...] *and/or* [... t_i ...]]]

Comparative coordination crucially differs now from ordinary conjunction in that comparatives obligatorily embed a trace which marks the target of CD.²⁵ This specific property leads to an interesting prediction: Asymmetric comparative extraction (ACE) as in (67) should not induce a CSC violation, because it results in a configuration which mimics the output

²⁴ See among others Barss (1986), Goodall (1987), Muadz (1991), Pesetsky (1982), and Williams (1977a, 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).

²⁵ For recent arguments that the content of the CD-site is not removed by ellipsis, but rather consists in a movement trace (possibly of an empty operator) see for instance, Kennedy (1997), Lechner (1999), and Williams (1977b).

representation of ATB-movement (66) in that the extractee binds a trace in all conjuncts:



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 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, p. 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, (67) 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.²⁶

²⁶ 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 which are obviated by case syncretism. In (ia), *ein besseres Angebot* (neuter) is syncretic for NOM and ACC. The CD-site and its antecedent may therefore serve distinct grammatical functions. In (ib), the ACC and NOM forms for *besserer Job* (masc.) are distinct, and a Matching Effect emerges:

- (i)a. Hans verdient [ein besseres Angebot]_{ACC} als $\hat{\Delta}$ _{NOM} ihm offeriert wurde.
H. deserves a better offer than him offered was
 Hans deserves a better offer than (the one) he was offered.

- b. *Hans verdient [einen besseren Job]_{ACC} als $\hat{\Delta}$ _{NOM} ihm offeriert wurde.
H. deserves a better job than him offered was
 Hans deserves a better job than (the one) he was offered.

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.

3.3. *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 (68): ATB-V2 may freely target periphrastic subject comparatives ((68a)), but it must not apply in object comparatives ((68b)):

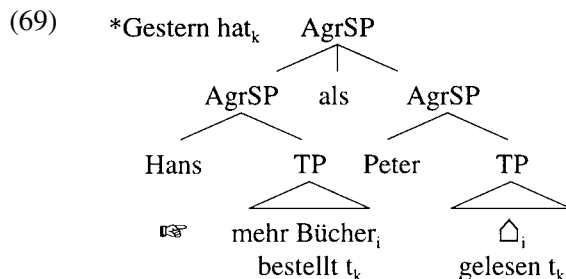
- (68)a. Gestern **haben**_k mehr Leute ein Buch bestellt **k**_k als $\hat{\cup}$ eine
yesterday have more people a book observed than a
*Zeitung gelesen t*_k.
newspaper read
 Yesterday, more people ordered a book than read a newspaper.

- b. * Gestern **hat**_k Hans mehr Bücher bestellt **t**_k als Peter $\hat{\cup}$
yesterday has H. more books ordered than P.
*gelesen t*_k.
read
 Yesterday, Hans 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 (69), the *than*-XP in (68b) projects an AgrSP which embeds an overt subject in SpecAgrSP and the trace of an ATB-moved finite auxiliary. From the Law of Coordination

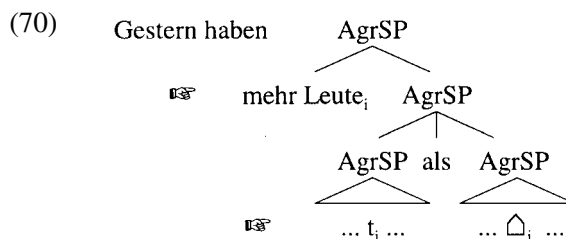
The evidence is not conclusive, though: (i) does not require coordination, as it does not involve reduction. For some reason, comparatives – just like free relatives – display a Matching Effect more generally. I have to leave this as an open problem.

of Like Categories it follows that (68b) has to be parsed as a symmetric AgrSP-coordination (AspP and further projections suppressed unless relevant):



But the object comparative *more* books in (69) is now located in a position from where it does not c-command the CD-site, in violation of the CDSC, thus (68b) is not part of the grammar.

In the well-formed subject comparative (68a), 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 (70):



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).²⁷

In (68b), ATB-V2 renders comparative coordination obligatory. If ATB-V2 fails to apply, as in (71), 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

²⁷ 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.

which allows extraposed relative clauses to be interpreted in their base position: reconstruction (as e.g., in Buring and Hartmann 1994) or low attachment (as e.g., in Haider 1993):

- (71)a. Gestern **haben** mehr Leute ein Buch bestellt als $\hat{\cup}$ eine
yesterday have more people a book ordered than a
 Zeitung gelesen **haben**.
newspaper read have
 Yesterday, more people ordered a book than read a newspaper.
- b. Gestern **hat** Hans mehr Bücher bestellt als Peter $\hat{\cup}$ gelesen
yesterday has H. more books ordered than P. read
hat.
has
 Yesterday, Hans ordered more books than Peter read.

Two important issues need to be addressed at this point. First, it is essential to ensure that (68b) 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 (72a), would have fatal consequences for the analysis. In the alternative family of representations in (72a), the comparative NP resides in the left periphery of the first conjunct. Thus, it may undergo string-vacuous ACE, obviating the CDSC effect ((72b)), and the original account for the contrast in (68) would be lost:

- (72)a. * Gestern hat Hans [[_{TP/AspP/VP} mehr Bücher bestellt] als
yesterday has H. more books ordered than
 [_{TP/AspP/VP} Peter $\hat{\cup}$ gelesen]]
P. read
 Yesterday, Hans ordered more books than Peter read.
- b. Gestern hat Hans [[**mehr Bücher**]_i [[_{TP/AspP/VP} **t_i** bestellt] als
 [_{TP/AspP/VP} Peter $\hat{\cup}$ gelesen]]]

It can be shown, however, that these three alternative structures, laid out in more detail in (73), are effectively excluded by the principles adopted in 3.2. Turning to (73a) first, TP-coordination is blocked because asymmetric EPP-driven subject raising to SpecAgrSP runs against the CSC. Second, in (73b), 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, (68b) cannot be factorised as a VP-coordination, either, as the first conjunct in (73c) is too small to contain a participle (recall that participles need to raise to Asp° overtly):

- (73)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.²⁸

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 (76)), 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 (68b) – 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).²⁹ Finally, strings like (71b), 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.

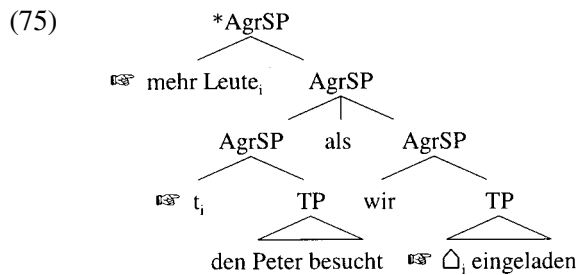
²⁸ It is also crucial that T' -coordination in (68b) is blocked (see fn. 23). Otherwise, the subject *Hans* could leave its conjunct by asymmetric Case-driven movement to SpecTP, which is exempted from the CSC (Johnson 1996). Subsequent subject raising to SpecAgrSP would free the way for *more books* to undergo ACE to a TP-adjoined location, and the resulting structure would harmonize with the CDSC.

²⁹ Thus, the CSC plays an important role in discriminating between (68b) and (71b) in that it blocks LF-reconstruction in (68b). Notice also that from a theoretical perspective, the analysis entails that V2 is a genuinely syntactic operation, and not merely a PF-phenomenon. This follows because the impact of an LF-condition (CDSC) on the applicability of V2 ((68a) vs. (68b)) cannot be expressed if V2 is assumed to proceed at a level (PF) which does not encode any information pertaining to LF.

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 3.2). 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 (74b) (ATB-V2 controls for comparative coordination):

- (74)a. Gestern haben_k mehr Leute_{Sub} den Peter_{Obj} besucht t_k als
yesterday have more people the P. visited than
 wir_{Sub} $\hat{\Delta}$ _{Obj} eingeladen haben.
we invited have
 Yesterday, more people visited Peter than we invited.
- b. *Gestern haben_k **mehr Leute**_{Sub} den Peter_{Obj} besucht t_k als
 wir_{Sub} $\hat{\Delta}$ _{Obj} eingeladen t_k.

In (74b), 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 ($\hat{\Delta}_i$), as shown below:



As usual, the non-reduced variant (74a) meets the CDSC by low attachment or reconstruction of the *than*-XP.³⁰

Reflexes of the parallelism requirement on ATB-extraction are not limited to German, but can also be detected in English PCs, where they also

³⁰ Movement out of non-parallel positions is possible as long as none of the ATB-traces is a matrix subject ((i) from Woolford 1987, p. 166):

- (i) Tell who [Sarah likes t] and [Jill thinks t is a jerk].

furnish evidence for covert ACE. As reported in Hankamer (1973a, p. 63), PCs are subject to the interesting requirement that the comparative NP and the CD-site must not serve distinct grammatical functions ((76b)). No such restriction holds for unreduced comparatives ((77)):

- (76) The girls know more bands than the boys.
 a. ... than the boys ~~know~~ $\hat{\Delta}$
 b. *... than $\hat{\Delta}$ ~~know~~ the boys ($\hat{\Delta}$ = d-many bands)

- (77)a. The girls know more bands than the boys know $\hat{\Delta}$.
 b. The girls know more bands than $\hat{\Delta}$ know the boys.
 ($\hat{\Delta}$ = d-many bands)

On current views, the derivation of (76) 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 (76a) and (76b): Structure (76a) observes parallelism, because *more bands* and the CD-site both originate as objects. Reading (76b) 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.³¹

Thus, paradigm (76) not only corroborates the existence of covert ACE, but also substantiates the hypothesis that ACE generates instances of ATB-configurations.

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 [_{AgrSP} wir
yesterday has H. more people met than we
 glauben [_{CP} dass $\hat{\Delta}$ ihn eingeladen t_k]].
believe that him invited
 Yesterday, Hans met more people than we believe that invited him.

³¹ As mentioned in fn. 30, 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

3.4. *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:

- (78)a. Gestern **hat**_k Hans mehr Bücher **t**_k bestellt als $\hat{\square}$ gelesen **t**_k.
yesterday has H. more books ordered than read
- b. *Gestern **hat**_k Hans mehr Bücher **t**_k bestellt als $\hat{\square}$ 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 ((78a) vs. (68)); second, ATB-V2 is forced to apply ((78b) vs. (71b)).

Let me begin by demonstrating why ATB-V2 in (78a) is possible in the first place. On present assumptions, auxiliaries reside in T^o, and participles are generated VP-internally. Furthermore, the adjacency requirement for participles and T^o implies that prior to V2, the VP-internal participle and the second conjunct has been affected by ellipsis (Gapping, ATB-movement). The reduced minimal variant of (i) in (ii) is for instance sharply deviant:

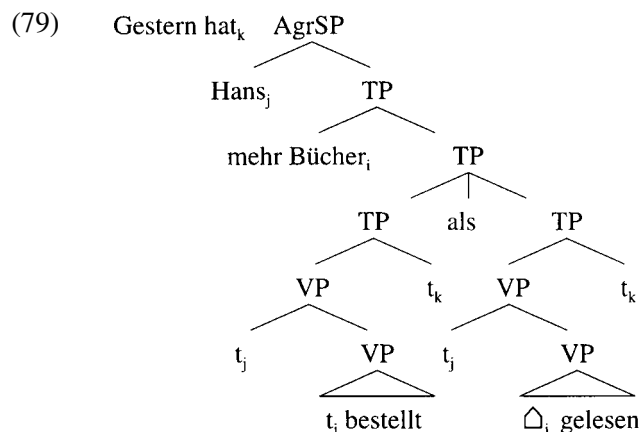
- (i) the people who_i [Peter introduced t_i to Jack] and
 [Steve introduced John to t_i]
- (ii) *the people who_i [Peter introduced t_i to Jack] and [~~Peter introduced~~ John to t_i]

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~~ $\hat{\square}$ to John.
 b. *Peter introduced more people to Jack than ~~he introduced~~ John to $\hat{\square}$
- (iv) Peter introduced more people to Jack than he introduced $\hat{\square}$ 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 a reviewer as a challenge for the parallelism account.)

the auxiliary in T° are adjacent and minimally contained in TP. The presence of two overt participles, as in (78a), signals then that there are two TP projections, each hosting a participle and an auxiliary. As X' -coordination is generally excluded (see fn. 23), it follows that conjunction has to be formed at least as high as at the TP-node:



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 ((68a)/(78a) vs. (68b)). 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 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 (78), ATB-V2 is not only tolerated, but even obligatory. This fact directly supports the reduction analysis:

- (78)b. * Gestern **hat**_k Hans_j [_{TP} mehr Bücher_i [_{TP} [_{TP} t_j t_i bestellt t_k]
yesterday has H. more books ordered
 als [_{TP} t_j $\hat{\Delta}$ gelesen **hat**]]
than read has

In (78b), 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.

The same explanation naturally extends to two related observations. To begin with, it captures an at first sight puzzling contrast between (78a) and its ill-formed past tense variant (80):

- (80) * Gestern **bestellte**_k Hans_j [_{TP} mehr Bücher_i [_{TP} [_{TP} t_j t_i t_k]
yesterday ordered H. more books
 als [_{TP} t_j $\hat{\Delta}$ las]]]
than read

As remarked above, the presence of an ATB-subject trace in (80) forces additional movement operations to observe the CSC. Failure of V2 to affect both conjuncts, as in (80), accordingly results in ungrammaticality. If the V2 requirement is cancelled by construing the matrix clause with the verb in final position, the output is impeccable, as expected:³²

³² At first sight, the ungrammaticality of (i) might pose a problem here, as pointed out by an anonymous reviewer:

- (i) *weil Hans mehr Bücher kaufte als lesen kann
since H. more books bought than read can
 since Hans bought more books than he can read

In fact, the contrast between (81) and (i) provides further evidence that ACE is subject to the stricter parallelism constraint for ATB-movement characteristic of reduced comparative (see fn. 31). 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 [_{VP}₁ [_{VP}₂ $\hat{\Delta}$ 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).

- (81) weil Hans_j [_{TP} mehr Bücher_i [_{TP} [_{TP} t_j t_i **bestellte**] als [_{TP} t_j $\hat{\Delta}$
since H. more books ordered than
las]]].
read

Furthermore, the CSC successfully discriminates between object comparatives ((80)) and their subject counterparts ((82)), which behave more liberally in that they license matrix V2 in combination with a finite verbal remnant:

- (82) Gestern **bestellten** mehr Leute eine Zeitung [als $\hat{\Delta}$ ein
yesterday ordered more people a newspaper than a
Buch lasen].
book read
 Yesterday, more people ordered a newspaper that read a book.

Again, this difference directly follows from the ATB-analysis. The derivation of (82) 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.³³

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 (83), the comparative NP serves as the indirect object. If the *than*-XP is construed only with an accusative remnant alongside the participle, as in (83b), the

³³ An anonymous reviewer called attention to the interesting pair in (i) (see also McCawley 1988, p. 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]?
 a. Did_i [_{IP} more people t_i give flowers ~~to John~~] than [_{IP} t_i give books to John]?

In (i), RNR triggers a comparative coordination, and T^o-to-C^o movement therefore has to apply ATB, indicating that ATB-movement can also be forced by RNR.

dativ is left-most 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 (83c), the structure has to be parsed as an AgrSP-coordination (just as in (68b), 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:

- (83)a. Leider hat Hans mehr Leuten Geld abgeknöpft als
unfortunately has H. more people money wrangled out than
 Maria \triangleleft Schulden hinterlassen hat.
M. debts left behind has
 Unfortunately, Hans 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 [_{TP} t_j \triangleleft Schulden hinterlassen]]
- c. *Leider hat [_{AgrSP} Hans_j **mehr Leuten** Geld abgeknöpft] als
 [_{AgrSP} Maria \triangleleft Schulden hinterlassen]

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 (84b,c) vs. (84d). Examples (84b) and (84c) fail to conform with the CDSC because the accusative (*mehr Geld* ‘more money’) is not leftmost in its conjunct, whereas in (84d), *mehr Geld* may undergo string-vacuous ACE subsequent to ATB-scrambling of the nominative (*Hans*) and the dative (*der Firma* ‘the firm’):

- (84)a. Leider hat Hans der Firma mehr Geld abgeknöpft
unfortunately has H. the firm more money wrangle out
 als er den Erben \triangleleft hinterlassen hat.
than he the heirs left behind has
 Unfortunately, Hans wrangled more money out of the firm than
 he left for his heirs.
- b. *Leider hat [_{AgrSP} Hans der Firma **mehr Geld** abgeknöpft] als
 [_{AgrSP} er den Erben \triangleleft hinterlassen]

- c. *Leider hat Hans_j [_{AGRSP/TP} t_j der Firma **mehr Geld** abgeknöpft] als [_{AGRSP/TP} t_j der Erben $\hat{\Delta}$ hinterlassen]
- d. Leider hat [_{AGRSP} Hans_j [_{TP} der Firma_k [_{TP} **mehr Geld**_i [_{TP} t_j t_k t_i abgeknöpft] als [_{TP} t_j t_k $\hat{\Delta}$ hinterlassen]]]]]

Finally, ditransitives also attest to the fact that ACE is not confined to contexts of string-vacuous movement. As illustrated by (85), the CDSC violation of (84c) 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:³⁴

- (85) Leider hat [Hans_j [**mehr Geld**_i [_{TP/AGRSP} t_j t_i der Firma
unfortunately has H. more money the firm
 abgeknöpft] als [_{TP/AGRSP} t_j den Erben $\hat{\Delta}$ hinterlassen]]]
wrangled out than the heirs left behind

Thus, there are also contexts in which overt permutation serves as a diagnostic for ACE.

3.5. Small Conjuncts: AspP/VP-coordination

Focusing finally to the third type of construction – i.e., PCs – and the problem of ϕ -feature mismatch, recall that in internal PCs such as (60b), the finite verb does not agree with the subject remnant, but with the matrix subject:

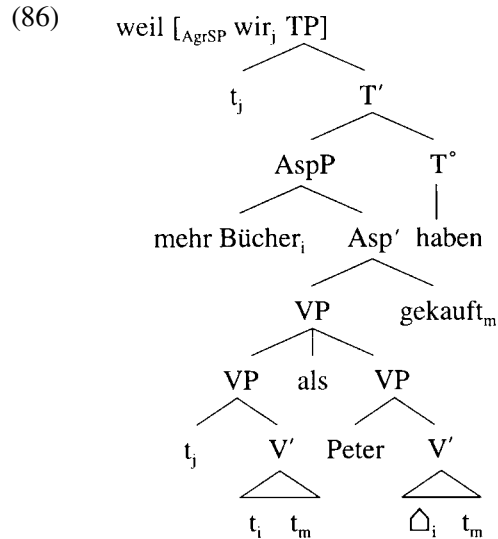
- (60)b. weil **wir**_{1st pl} mehr Bücher als Peter_{3rd sg} gekauft **haben**_{1st pl}
since we more books than P. bought have

³⁴ 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.

This led to the conclusion that (60b) 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, (60b) 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 (69)). 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 (73a)). 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 (86), 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°. Thus, 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 (60b) 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 agree-

ment.³⁵ Finally, the subject remnant does not check Case under Spec-head agreement, but bears default nominative case³⁶ (see Halle 1989; Marantz 1991; Schütze 1997, p. 52ff for some recent discussions of default case).³⁷

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

³⁵ If (60b) 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-1 [VP ...] ~~gelesen~~]_{RNR}] als
[AspP-2 [VP ...] gelesen] T°]

³⁶ 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, p. 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}.

³⁷ 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.

for the at first sight puzzling phenomenon of ϕ -feature mismatch in clause internal PCs. In the next and final section, I will re-evaluate various counterarguments against reduction analyses of PCs from the literature.

4. RE-EVALUATION OF COUNTERARGUMENTS

It has been pointed out by various authors that ellipsis theories of PCs are challenged by the existence of strings which either lack a well-formed phrasal variant, or for which there is no plausible clausal source (Brame 1983; Hankamer 1973b; Pinkham 1982). In what follows, I will briefly elaborate on five such problems of over- and undergeneration and demonstrate that they are accommodated under the PC-Hypothesis.

First, PCs with accusative remnants such as (4a), repeated from above, cannot be paired with a well-formed clausal correlate (Brame 1983; McConnell-Ginet 1973; Napoli 1983). However, comparatives are not unique in licensing accusative remnants, they are also attested in conjunctions ((87a)). Crucially, in both constructions, accusative remnants are limited to contexts involving CR (Gapping):

(4)a. PC: John is older than **me**.

b. Source: *John is older than **me** am.

(87)a. Gapped CP: John is eager to meet them, and **me** too.

b. Source: *John is eager to meet them and **me** is eager to meet them, too.

Thus, the morphological alternation of remnants in PCs and coordinate structures is conditioned by identical environments, as predicted by the PC-Hypothesis. Second, some clausal comparatives lack a correlating PC, as illustrated by (5). But note that (5a) is an instance of a more general condition on Gapping, which prohibits expletive remnants also in conjunctions ((88)).

(5)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.

- (88) *There were some good solutions to the first problem and **there**
~~were~~ some interesting ones to the last one.

Intuitively, the conflicts in (5a) and (88) are due to the fact that while remnants of Gapping have to be focused, expletives cannot bear a focal accent.

Third, reflexive remnants inside the *than*-XP can be bound from the matrix clause in PCs ((89a)), but not in clausal comparatives ((89b)). Now, example (4a) 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 (89a) can therefore be licensed by an external antecedent:

- (89)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.

More specifically, the remnant in (89a) functions as the subject of a small clause headed by the CD-site. On this view, (89a) contains no other ellipsis apart from the CD-site.³⁸

- (90) John couldn't possibly be taller [*than*-XP than himself $\hat{\Delta}$].
 ($\hat{\Delta}$ = d-tall)

Independent evidence supports the small clause analysis for PCs with reflexive remnants. Example (91) displays ambiguity between a narrow and a wide ellipsis interpretation, the latter being derived by Gapping. (92), on the other hand, is unambiguously associated with the narrow reading (92a). The wide ellipsis construal (92b) is missing because – in absence of finiteness features – the remnant cannot be parsed as the subject of a transitive clause, bleeding the context of application for Gapping:

- (91) John couldn't possibly know a taller man than Sam $\hat{\Delta}$.
 a. $\hat{\Delta}$ = d-tall man
 b. $\hat{\Delta}$ = know a d-tall man

³⁸ The analysis fails to account for (i), as pointed out by a reviewer.

- (i) *John is angrier with Mary than [himself with his mother $\hat{\Delta}$].

- (92) John couldn't possibly know a taller man than himself $\hat{\Delta}$.
 a. $\hat{\Delta}$ = d-tall man
 b. * $\hat{\Delta}$ = know a d-tall man

Furthermore, the small clause construal also underlies the pair of *in-situ* PCs (see also fn. 2, (iii)).

- (93)a. A taller man [**than Peter** $\hat{\Delta}$] knew Sam. ($\hat{\Delta}$ = d-tall man)
 b. A man taller [**than Peter** $\hat{\Delta}$] knew Sam. ($\hat{\Delta}$ = d-tall)

The examples under (93) are special in that (i) they are phrasal comparatives even though the *than*-XPs remain *in-situ*, and in that (ii) (93a) lacks a wide ellipsis reading with Peter in object position (i.e., *than a d-tall man knows Peter*).³⁹ Both facts directly fall out from the present account, according to which wide ellipsis is contingent upon extraposition and CR, whereas narrow readings implicate CD only, and therefore license *in-situ* *than*-XPs.

The last two differences between phrasal and clausal comparatives to be addressed tie in with small clause comparatives once again and pertain to PCs which – as pointed out by Brame (1983) – appear to lack a clausal source:

- (94)a. She ran faster [than the world record].
 b. *She ran faster [than the world record ran].
- (95)a. To be taller [than John] would be quite amazing.
 b. *To be taller [than John to be] would be quite amazing.

First, (94a) can be subsumed under the small clause analysis, according to which *the world* record functions as small clause subject of the CD-site

³⁹ The wide reading is independently excluded for (93b), since the CD-site consists of an AP only (Bresnan 1973; Lechner 1999). For this reason, postnominal comparatives lack a wide reading, even if they are extraposed:

- (i) Sam met a man taller [than Peter $\hat{\Delta}$]. ($\hat{\Delta}$ = d-tall)
 a. ... than Peter is d-tall
 b. *... than Peter met a d-tall man

(following a suggestion by Heim 1985). The same considerations carry over to the infinitival comparatives in (95). Given that the underlying source of (95a) looks as in (96) rather than in (95b), the derivation of the PC does not involve any ellipsis (apart from CD), and the problem of undergeneration can be successfully resolved:

(96) To be taller [than John $\hat{\Delta}$] would be quite amazing. ($\hat{\Delta}$ = d-tall)

To recapitulate, apparent disparities between PCs and clausal comparatives correctly fall out from the PC-Hypothesis and the plausible premise that comparative complements can – under well-defined conditions – be parsed as small clauses.⁴⁰

5. CONCLUSION

In this paper, I advocated a novel perspective on the formation of phrasal and partially reduced comparatives. I argued that the assumption of two hypotheses about the relation between comparatives and coordinate structures makes it possible to dispense with the construction specific operation

⁴⁰ I am agnostic as to the proper treatment of extraction out of *than*-XPs, which raises various puzzles for the current analysis as well as for competing ones, and therefore does not decide among the 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, and 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 all of a sudden becomes possible if it obeys the CSC (Brame 1976, p. 87; Napoli 1983):

- (ii)a. a person **who** more people **t** liked than disliked **t**
- b. *a person **who** more people liked **t** than disliked **Sam**

(ii) is compatible with the PC-Hypothesis, but not with the prepositional approach. Finally, to complicate matters even more, movement out of clausal comparatives may violate the CSC in adverbial comparative constructions:

- (iii) Who saw Mary earlier than Bill saw Sue. (Moltmann 1992, p. 338)

As far as I know there is so far no theory capable of handling all the contrasts above.

of Comparative Ellipsis. The first hypothesis (CR-Hypothesis) maintained that comparatives can be targeted by CR-operations. According to the second hypothesis (PC-Hypothesis), phrasal comparatives are – with a few systematic exceptions (see section 4 and fn. 2) – the output of CR-operations targeting a clausal comparative. These two hypotheses entail that the syntactic properties characteristic of coordinate structures converge with those which define comparatives at one point of the derivation. It was argued that the coordinate properties of comparatives are encoded in overt syntax. More specifically, extraposition of the *than*-XP results in a configuration of comparative coordination, which mimics the structure of coordination developed in Munn (1992, 1993) and displays sensitivity to the CSC. Comparative coordination is later undone by reconstruction at LF or in the semantic component, leading to the effect of semantic subordination. (The choice between these two options is subject to independent factors: Extraposition can be undone at LF only if reconstruction does not destroy an ATB-context.) That is, comparatives are coordinate-like structures in syntax which exhibit reflexes of conditions on coordination (CSC), but hypotactic constructions semantically. Note incidentally that this view differs from the one expressed in Culicover and Jackendoff (1997, 1999), according to which the CSC is operative at the same level of the grammar (Conceptual Structure) which determines the semantic properties of the construction (sub- vs. coordination).

Empirically, the PC-Hypothesis and the CR-Hypothesis were supported by three larger generalizations: First, the internal and external conditions which restrict Gapping, RNR and ATB-Scrambling in English and German are identical in comparatives and coordinate structures. Second, it was shown that the CR-Hypothesis accounts for the shape of reduced *than*-XPs, as well as for their positional distribution inside the matrix clause. Third, the resulting system correctly predicted that the behavior of PCs should emulate that of PRCs, and not that of clausal comparatives.

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