

Essex Research Reports in Linguistics

Volume 57

Number 6

20 February, 2009

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Citation Information:

Eiichi Iwasaki and Andrew Radford. 'Comparative Correlatives in English: A Minimalist-Cartographic Analysis', Essex Research Reports in Linguistics, Vol. 57.6. Dept. of Language and Linguistics, University of Essex, Colchester, UK, February, 2009.

http://www.essex.ac.uk/linguistics/errl/errl57-6.pdf

Comparative Correlatives in English: A Minimalist-Cartographic Analysis

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Abstract

This article is concerned with the syntax of Comparative Correlative sentences like *The more you eat, the fatter you get* and offers a Minimalist-Cartographic analysis which combines insights from Chomsky's (2004, 2008) work on the Minimalist Program with insights from Rizzi's (1997) Split Projection analysis of the left periphery of the clause. It is argued that the first clause in Comparative Correlatives is a subordinate clause located within the left periphery (perhaps within a superordinate Topic projection), and that the second clause is a main clause. It is further maintained that *the* functions as a degree operator (linked to its correlative counterpart in the paired clause), and undergoes A-bar movement to the edge of a Focus Phrase projection, pied-piping *more* along with it.

Keywords: Comparative Correlative; Split-CP; Cartographic; Minimalist; Degree Operator; A' Movement

1 Introduction

Comparative Correlatives have been claimed to constitute an idiosyncratic construction or idiom with idiosyncratic properties which prove intractable to analysis within a Minimalist or Principles-and-Parameters framework: see Culicover (1999: 83), Culicover and Jackendoff (1999: 567; 2005: 517, 526; 2006: 416); Goldberg (2003: 219-220); Goldberg and Jackendoff (2004: 533); Jackendoff and Pinker (2005: 220), and Abeillé and Borsley (2008) for remarks of this ilk. There are, on the other hand, a number of linguists who maintain that it is possible to arrive at a principled description of Comparative Correlatives within a Principles-and-Parameters/Minimalist framework, including den Dikken (2003, 2005, 2006) and Taylor (2005, 2006, 2007). The former emphasises the 'crosslinguistic consistency' of Comparative Correlatives whereas the latter attempts to describe Comparative Correlatives within a recent version of the Minimalist framework. Taking Taylor's work as a starting point, the present article examines English Comparative Correlatives from a Minimalist-Cartographic perspective.

2 The Structure of English Comparative Correlatives

The target structure is called by various names, most commonly either the 'Comparative Correlative Construction' (e.g. Culicover and Jackendoff 1999, den Dikken 2005, Abeillé and Borsley 2008) or the 'Comparative Conditional Construction' (e.g. Beck 1997, McCawley 1988). It comprises two clauses¹ (which will be referred to for simplicity as C_1 and C_2 respectively, following Culicover and Jackendoff 1999), and it is generally assumed that the first of these clauses (= C_1) is a subordinate clause (often with a conditional interpretation), and the second clause is a main/root clause: e.g. den Dikken (2005: 498-504) calls the first clause the SUBCLAUSE and the second clause the HEADCLAUSE (2005: 511). Empirical evidence that C_2 is the main clause comes from the observations made by Culicover and Jackendoff (1999: 548) that subjunctive morphology appears on the verb in C_2 in embedded contexts in structures like (1) and a tag question is formed on the basis of C_2 in sentences like (2):

- (1) {It is imperative that / I demand that}
 - (a) the more John eats, the more he pay(s)
 - (b) *the more John eat, the more he pay(s)
- (2) (a) The more we eat, the angrier you get, don't you?
 - (b) *The more we eat, the angrier you get, don't we?
 - (c) *The more we eat, don't we, the angrier you get?

¹ Of course, either of these two clauses can itself be a co-ordinate clause, creating the impression that Comparative Correlatives can comprise more than two clauses. For example, C_1 is a [bracketed] co-ordinate structure in [The more burgers you eat and the more milkshakes you drink], the fatter you get.

These empirical findings lead Culicover and Jackendoff to conclude that C_1 is a subordinate clause and C_2 a main clause.

A further observation leading to the same conclusion is that C_1 (but not C_2) can contain the complementiser *that*: 2

- (3) (a) The more chocolate *that* you eat, the quicker you put on weight
 - (b) *The more chocolate you eat, the quicker that you put on weight

Since *that* in English can occur in subordinate (but not main) clauses, this provides additional evidence that C_1 is a subordinate clause and C_2 a main clause. Moreover, in stylised forms of English, C_1 can be a subjunctive clause and C_2 an indicative clause (in non-embedded contexts), but not conversely: cf.

- (4) (a) The more intractable a problem be, the more difficult it is to solve
 - (b) *The more intractable a problem *is*, the more difficult it *be* to solve

In non-embedded contexts, the subjunctive is typically found in subordinate rather than main clauses, as the examples below illustrate:

- (5) (a) However intractable a problem be, it can usually be solved
 - (b) Intractable though the problem be, it can be solved

Data such as (4) and (5) thus provide further evidence for taking C_1 to be a subordinate clause.

An additional piece of evidence leading to the same conclusion comes from the observation made by Jespersen (1940: 381-382) that C_2 (but not C_1) permits auxiliary inversion (in more formal/archaic styles of English, at least) in sentences such as the following:

- (6) (a) The more I know of the world, the more **am** I convinced (Austin S18 in Jespersen 1940: 382) [emphasis added]
 - (b) The more you praise him, the more willing **will** he be to cooperate with you (Fillmore 1989: 24-25) [emphasis added]
 - (c) ?The more often Janet leaves, the angrier **does** Fred become (Culicover and Jackendoff 1999: 559) [emphasis added]

There are potential parallels here with interrogatives, which allow auxiliary inversion in

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² Bob Borsley (pc) points out that some speakers allow *that* in the second conjunct as well as the first (e.g. *The more chocolate that you eat, the quicker that you put on weight*). This is arguably consistent with a main-clause analysis of C2, in that the complementiser *that* is also allowed by some speakers in main clause exclamatives such as *What a mine of useless information that I am!*

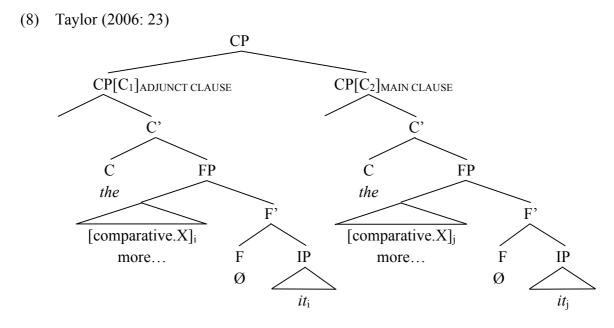
root but not non-root clauses – as illustrated by the sentence below:

(7) Why did he ask you [where you live]?

Data such as (1)-(6) make it plausible to suppose that C_1 is a subordinate clause and C_2 the main clause.

3 Taylor's (2006) Minimalist Analysis

Taylor (2006) offers an account of the syntax of Comparative Correlatives within the framework of Minimalism, and argues that they have the structure shown below, in which the subordinate clause C_1 is taken to be an adjunct to the main clause C_2 :



The central claim of her analysis is that *the* is a complementiser which selects a functional projection (FP) as its complement, and the *more*-constituent in each clause originates within IP and subsequently moves to the specifier position within each FP.

However, her central claim that *the* in Comparative Correlatives is a complementiser appears implausible. For one thing, *the* cannot serve as a complementiser in any other type of structure in English, and conversely cannot be substituted by a complementiser like *that* in correlatives. Moreover, Bob Borsley (pc) points out that the counterpart of English *the more* in other languages (e.g. Spanish and Polish) permits pied-piping of superordinate and subordinate material (e.g. a superordinate preposition and a subordinate noun expression): this suggests that *the* and the *more*-expression following it form a unitary constituent – and indeed pied-piping is marginally possible in English in sentences such as the following³:

³ Comparative Correlatives seem reluctant to allow pied-piping of superordinate material, and resemble *what*-exclamatives in this respect – cf. the awkwardness of ?*About what a lot of things he

- (9) (a) ?On the more occasions you practice a language, the more fluent you become
 - (b) ?By the bigger margin you win a race, the greater the satisfaction of winning it is
 - (c) ?Under the more difficult conditions you live, the more resilient you become

Borsley also notes that if *the* and *more*... did not form a constituent, then we would expect that a parenthetical expression could be positioned between the two in sentences as in (10), (11) below: however, the ungrammaticality of the (b) sentences below shows that this is not so.

- (10) (a) I think that in all probability they'll read a lot
 - (b) *The *in all probability* more I read, the more I understand
- (11) (a) I think that and this is really important John is going to resign
 - (b) *The and this is really important more I read, the more I understand

A further problem with analysing *the* as a complementiser comes from the observation (made by Culicover and Jackendoff 1999: 546, Taylor 2006: 60, Abeillé and Borsley 2008: 1142) that Comparative Correlative clauses can contain an overt complementiser such as *that* – as in (3a) above, repeated below:

(12) The more chocolate *that* you eat, the quicker you put on weight

Such data fatally undermine any suggestion that correlative *the* is a complementiser.

However, they do not as such undermine the spirit of Taylor's derivational approach. There would seem to be two alternative ways of capturing the spirit of her analysis. One would be to suppose that correlative clauses (as their name might suggest) are genuine *relative* clauses – e.g. *that you eat* is a relative clause modifying *chocolate* in (12). However, this seems unlikely, since correlatives don't allow relative pronouns, as can be seen from the ungrammaticality of:

(13) *The more people to whom you talk, the more problems into which you get

An alternative possibility is that *the more* originates within TP and then raises to spec-CP in each of the two clauses, and so ends up positioned in front of the

talks! It would seem that speakers like comparative correlative sentences to begin with a degree operator in much the same way as they like *what*-exclamatives to begin with a wh-operator.

complementiser *that* in sentences like (12). This would mean that C_1 in (12) involves the A-bar movement operation shown in simplified form below⁴:

[CP the more chocolate [C that] [TP you [T
$$\emptyset$$
] eat the more chocolate]]

Such sentences would then have a derivation parallel to that of interrogatives structures like that bracketed below:

(15) %I wonder [$_{CP}$ what kind of deal [$_{C}$ that] they have in mind]⁵

However, any such analysis would raise the question of why *the more* should undergo movement to spec-CP in correlatives. This is a question addressed in the next section.

4. The as a Degree Operator

A-bar movement in sentences like (7) involves movement of a *wh*-operator to the edge of a clause, pied-piping subordinate material along with it. However, it is clear from sentences like those below that A-bar movement can also involve movement of a degree operator (See also Abney 1987):

- (16) (a) So drunk was he that they had to carry him to his room
 - (b) Such gallantry did he show that he was awarded a medal

Sentences like (16) involve movement of a degree operator (*so/such*) to the edge of a clause, pied-piping subordinate material along with it. Radford (1989, 2009) points out that a degree operator can also move to the edge of a nominal expression, so that alongside sentences like (17a) below we also find (17b):

- (17) (a) I've never had [a quite so unpleasant experience]
 - (b) I've never had [quite so unpleasant an experience]

In sentences like (17b), it would seem that the degree operator *so* triggers movement to the lefthand edge of the bracketed nominal constituent. In the light of this, consider the following:

(18) (a) It was rendered [an *all the more delicate* situation] by the presence of the President

⁴ Simplified, *inter alia*, by ignoring the possibility that the moved phrase moves to the edge of vP before moving to the edge of CP.

⁵ Speakers who restrict *that* to use in non-interrogative clauses will typically reject sentences such as (15) while accepting sentences such as (14).

(b) It was rendered [all the more delicate a situation] by the presence of the President

It would appear that in (18b) the italicised adjectival expression is moved to the edge of the bracketed nominal expression. It seems plausible to suppose that the word *the* here functions as a degree operator which undergoes movement to the lefthand edge of the nominal and pied-pipes all other constituents of the italicised adjectival expression along with it. If so, it provides evidence that *the* (when used as a degree operator modifying *more*) can serve as an operator triggering A-bar movement. This in turn opens up the possibility that correlative clauses like *the more chocolate that you eat* involve a form of operator movement like that shown in schematic form in (14) above. Particularly instructive in this respect are sentences such as (19) below, in which the degree expression undergoes movement both to the edge of its containing nominal (and so comes to precede the indefinite article *a*) and to the edge of its containing clause (and so comes to precede the complementiser *that*):

(19) The more difficult a situation that you get into, the harder it is to extricate yourself

5 A Cartographic Approach to Comparative Correlatives

Hitherto, it has been assumed that *the more* moves to the edge of CP. However, within the Cartographic approach to syntax developed by Rizzi (1997), CP is 'split' into a number of different projections, including Force Phrase, Topic Phrase, and Finiteness Phrase constituents. Within such a framework, the question that arises is which projection *the more* moves into. There is evidence to suggest that Degree Operator expressions move to spec-FocP.⁶ Operator expressions have the property that they show Weak Crossover (WCO, hereafter) effects, as illustrated by the following example:

*Who; does his; mother really love?

Hatakeyama (2004: 208 fn. 27) claims that a focalisation element functions as an operator because focalisation shows the WCO effect, citing the following examples from Culicover (1992).

- (21) (a) *JOHN_i his_i mother loves t_i
 - (b) *ROBIN_i his_i mother really appreciates t_i

As illustrated in the examples below, *the more*... expressions in C_1 and C_2 alike both show WCO effects:

_

⁶ This possibility was suggested by Sung-Ho Ahn (pc).

- (22) (a) *[The more research projects]_i that its_i members can concentrate on t_i , the happier they are
 - (b) [The more research projects]_i that its_j members can concentrate on t_i , the happier they are $(i\neq j)$
- (23) (a) *The more money the University has, [THE MORE RESEARCH PROJECTS]_i its_i members can concentrate on t_i
 - (b) The more money [the University]_j has, [THE MORE RESEARCH PROJECTS]_i its_j members can concentrate on t_i ($i\neq j$)
- (24) (a) ??The more books_i their_i covers misrepresent t_i , the worse it is
 - (b) ??The more you complain, the more books_i their_i covers will misrepresent (Bob Borsley, pc)

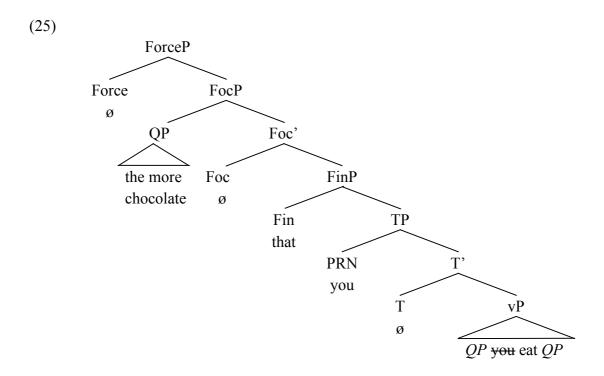
This lends plausibility to the claim that *the more* in Comparative Correlatives is a focused operator expression which moves to spec-Foc P.

Having laid out the foundations of our analysis, we now turn to sketch the derivation of a typical correlative clause.

6. The Derivation of Comparative Correlative Clauses

In this section, we consider the derivation of our earlier comparative correlative sentence (3a) *The more chocolate that you eat, the quicker you put on weight*. Given that the two clauses in the sentence have essentially the same structure, we consider only the derivation of the first clause in order to avoid unnecessary repetition.

We assume that *the more chocolate* is a QP which originates as the direct object complement of the verb *eat*, arguably with the quantifier *more* as its head, the noun *chocolate* as its complement and the degree operator *the* as its specifier. This QP first moves to the edge of vP (in order to avoid violation of the Phase Impenetrability Condition of Chomsky 2000), and thereafter to the edge of a superordinate Focus Projection. Since the complementiser *that* is not a canonical Focus head, we follow Rizzi (1997) in assuming that it can be the spellout of the head of a Fin(iteness) Projection positioned immediately below FocP. If so, the clause *the more chocolate that you eat* contains the substructure shown in simplified form below (where the italicised QP constituents denote null copies of the moved QP *the more chocolate*):



It may well be that the Force head in C_1 is conditional in nature (whereas the Force head in C_2 is declarative in nature). This would account for the observation made by Fillmore (1989: 24) that polarity items like *anyone* are licensed in C_1 but not in C_2 – as the following examples illustrate:

- (26) (a) The more *anyone* complains, the more you get irritated
 - (b) *The more you complain, the more *anyone* gets irritated

This is because conditional clauses create an "affective" context (in the sense of Klima 1964) in which polarity items are licensed⁷.

An interesting property of the Focus head in (25) is that it is weak and so does not trigger auxiliary inversion/do-support (unlike the Focus head in root interrogative clauses, for example). However, the Focus head is also weak in structures such as (21) above, so it is by no means implausible to suppose that a Focus head can be weak. After all, it may be that Foc is only a strong head when it attracts a specific type of operator expression (perhaps one containing what Branigan 2005 calls a 'monotonically decreasing operator'). However, as already noted, auxiliary inversion is allowed in C_2 (though not in C_1) in more formal/archaic styles of English in sentences such as (6) above, and if C_1 is a root and C_2 a subordinate clause, there are potential parallels here with the occurrence of auxiliary inversion in root but not embedded interrogative

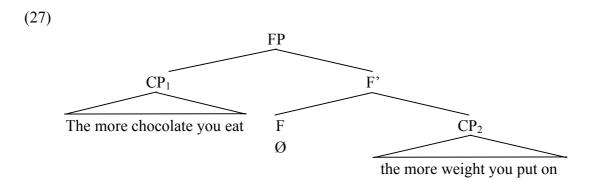
⁷ A possibility raised by the structure in (25) but not pursued here is that the moved phrase *the more* moves to spec-ForceP rather than spec-FocP (so that the clause contains no FocP constituent). Since Force is a weak head, this would account for why auxiliary inversion does not occur in C₁.

clauses in English, as illustrated earlier in (7) above.

7. The Syntactic Relation between C_1 and C_2

One of the most obscure aspects of Comparative Correlatives is the syntactic relation between C₁ and C₂. Taylor's analysis (outlined in Section 3 above) treats C₁ as an adjunct to C₂: however, the problem posed by this (as Abeillé and Borsley 2008: 1145 note) is that (since adjuncts are optional and can generally be linearised to the right or left of the constituent they are adjoined to), it fails to account either for the fact that C_1 is obligatory or for the fact that C_1 must precede C_2 . However, it may be possible to account for the obligatory presence of both C₁ and C₂ by supposing that the (in the relevant use) is a correlative operator which must be linked (perhaps via some form of binding) to another occurrence of the same operator⁸. This is far from implausible, as correlatives typically involve lexical linking of this kind. For example, in Old English, we have swa...swa and in AR se...se, so...so (Jespersen 1940). German has je...desto (Beck 1997: 229), Greek oso....toso (Bhatt 2008: 5), Hindi-Urdu jitnii...utniii (Bhatt 2008: 5), Hindi jitney...utne or jitnii...utnaa (Taylor 2005). Basque Gero eta...gero eta (Taylor, 2005), Dutch Hoe...hoe or Hoe...des te or Des te...Des te (den Dikken, 2003: 2), Polish im...tym (Borsley, 2004). However, while a lexical linking approach would account for the need for correlatives to contain more than one clause, it would not account for why the adjunct clause has to precede the main clause.

Abeillé and Borsley (2008: 1154) suggest that 'a fairly obvious approach' to capturing the structural dependency and linear ordering within the Principles-and-Parameters model would be in terms of a structure such as the following:

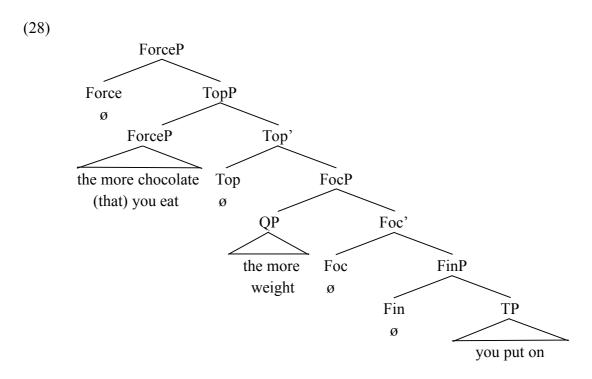


Such an analysis assumes that the overall structure is headed by an abstract functional head F which selects C_2 as its complement and C_1 as its specifier. If FP is part of the left periphery of the clause, we can maintain the generalisation that CP_2 is the main clause and CP_1 a subordinate clause.

An analysis consistent with this line of thinking (suggested by Shigeo Tonoike, pc) would be to suppose that FP is a Topic Projection: this would be consistent with the

⁸ It would also seem marginally possible for *it* to be linked to a wh-operator in a sentence such as ?*However much more difficult a language is, the greater the pleasure of mastering it is.*

view suggestion made by Jan Koster (pc) that 'satellite' (in the sense of Koster 1978) constituents are typically topics, and with the view in Alrenga (2005) that clauses can be topics. If non-defective clauses are ForceP projections (Rizzi 1997), a sentence such as (3a) (=(12)) will have a structure such as that shown in simplified form below:



Such a structure accounts for the fact that C_1 is positioned before C_2 . If the degree operator *the* has to be lexically linked to another occurrence of the same operator, we can also account for why correlatives involve at least two different clauses (and if they are topic-comment structures, it follows that they must contain both a topic clause and a comment clause)⁹.

8. Concluding Remarks and Loose Ends

This paper has sought to sketch a Minimalist-Cartographic account of the syntax of English Comparative Correlatives like *The more chocolate (that) you eat, the more weight you put on.* We argued that the first clause in such structures is a subordinate clause (often conditional in interpretation) which is located within the left periphery of the clause (perhaps within a superordinate Topic projection), and that the second clause is a main clause. We further maintained that *the* functions as a degree operator (linked to its correlative counterpart in the paired clause), and undergoes A-bar movement to the edge of a Focus Phrase projection, pied-piping *more* (and any constituent modified by *more*) along with it. We hope to have shown that a principled analysis of Comparative Correlatives can be developed within the Minimalist-Cartographic

⁹ Speakers like those referred to in footnote 2 seemingly allow Fin to be spelled out as *that* in C2 as well as in C1.

framework used here.

This is not of course to deny that there are a number of loose ends which need to be tied up. One is why (in more formal styles) auxiliary inversion can occur in C_2 but not in C_1 : an interesting possibility to explore in future research (adumbrated in fn.7) is that the *more* phrase may move to spec-ForceP in the subordinate clause C_1 , but to spec-FocP in the main clause C_2 (in much the same way that interrogative *wh*-constituents move to spec-FocP in root clauses and to spec-ForceP in subordinate clauses according to Rizzi 1997). A second loose end which remains to be tidied up is why comparative correlatives allow COPULA-DROP in sentences such as (29a) below with a definite subject, but not in (29b) with an indefinite subject:

- (29) (a) The more difficult the problem (is), the more intractable the solution (is)
 - (b) The more difficult a problem *(is), the more intractable the solution (is)

However, we leave these and other questions for future research.

Acknowledgement

We are grateful to helpful suggestions made by a number of people, most notably Bob Borsley but also Sung-Ho Ahn, Noam Chomsky, Marcel den Dikken, Claudia Felser, Yuji Hatakeyama, Alison Irvine-Sobers, Jennifer Jenkins, Jan Koster, Diane Massam, Akira Morita, Ian Roberts, Sumio Sakomura, Heather Taylor, Shigeo Tonoike, and Shigenori Wakabayashi among others. This article is a substantially modified version of Iwasaki (2008), amended while the first author was at Cambridge as a Visiting Scholar of St Edmund's College from September 2008 to January 2009.

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