An approach to English comparative correlatives

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Abstract

Recent syntactic theory has highlighted the importance of peripheral constructions such as the comparative correlative construction. This construction involves a pair of filler-gap constructions with unusual properties, where the first is a subordinate clause and the second a main clause. The construction has a number of related constructions. A version of HPSG, which assumes hierarchies of phrase types, can provide satisfactory analyses both for the comparative correlative construction and for the related constructions. The two clauses in the construction can be analysed as non-standard head-filler phrases differing from standard head-filler phrases in certain respects. The construction as a whole can be analyzed as a non-standard head-adjunct phrase, in which the head and the phrase have different categories.

1. Introduction

A notable feature of recent work in syntactic theory is a new interest in the periphery of language.[†] Particularly important here is the detailed discussion in Culicover (1999). Culicover emphasizes the size of the periphery and argues that there is 'a continuum along which a full spectrum of possibilities can be found, from very idiosyncratic to very general' (1999: vi). If this is right, it is not possible for theories of syntax to ignore peripheral constructions. Rather, they must find ways of accommodating them, and how well a framework can accommodate such constructions is potentially an important matter. As Fodor (2001) notes, it is reasonable to suppose that peripheral constructions may help to choose between theories of syntax. Therefore, it is important to consider what sorts of analyses various theoretical frameworks can provide for such constructions.

In this paper I will look at one specific peripheral construction, the comparative correlative (CC) construction (also known as the comparative conditional construction), discussed *inter alia* by Ross (1967, 6.1.2.6), McCawley (1988) and Culicover and Jackendoff (1999). (1) is a typical example.

(1) The more books I read, the more I understand.

I will argue that HPSG and especially the version of HPSG developed in Ginzburg and Sag (2000) can provide a fairly straightforward account of the facts.

[†] Some of the ideas in this paper were included in a paper presented at the Spring Meeting of the Linguistics Association of Great Britain at the University of Sheffield in April 2003 and in another presented at FASL-12 at the University of Ottawa in May 2003. I have benefited from comments from and/or discussion with Anne Abeillé, Doug Arnold, John Beavers, Peter Culicover, Danièle Godard, Claudia Felser, Gereon Müller, Adam Przepiórkowski, Andrew Radford, Ivan Sag, Peter Sells and Nick Sobin. Any bad bits are my responsibility.

The fact that the framework can provide a satisfactory account of this one construction might be seen as not very significant. However, it is likely that HPSG could accommodate the other constructions discussed by Culicover (1999) equally well. Thus, there may be some important evidence here for HPSG.

2. Data and basic conclusions

The CC construction apparently contains two clausal constituents, each with an initial constituent containing *the* and a comparative word of some kind. In other words, it seems to have the following form:

(2) [[*the* comparative …] …] [[*the* comparative …] …]

I will call the clauses *the*-clauses and the initial constituents *the*-phrases. I will look first at the structure of the clauses and then consider the relation between them. Then I will look at some related constructions.

2.1. *The*-clauses

The first point to note about *the*-clauses is that *the*-phrases can be a number of categories. In the first clause in (1) the *the*-phrase is an NP. It can also be an AP, as in (3), or an AdvP, as in (4).

(3) The more careful we are, the more we will find.
(4) The more carefully we look, the more we will find.

Within HPSG assumptions it is doubtful whether either *the* or *more* is the head of the phrase in (1), (3) and (4). Consider also the following:

(5) The more hostages' stories I hear, the more confused I am.

This seems to have an interpretation in which *the more hostages'* is a possessive modifier of *stories*. On this interpretation, neither *the* nor *more* is the head of the whole initial constituent within any framework.

Culicover and Jackendoff (1999: 559) note that correlative *the* cannot be preceded by a pied piped preposition. Thus, while (6a) is fine, (6b) is ungrammatical.

(6) a. The more people Kim talks to, ...
    b. *To the more people Kim talks, ...

This contrasts with the situation in *wh*-questions, as the following illustrate:

(7) a. How many people did Kim talk to?
    b. To how many people did Kim talk?

The ungrammaticality of (6b) might lead one to think that *the*-clauses do not allow a PP in initial position. However, as Andrew Radford has pointed out to me, this is what we seem to have in the following examples:

(8) a. The more out of breath I am, ...
b. The more under the weather he is, ...

It seems that the real restriction is that *the* must appear in first position within the *the*-phrase.[1] Independent evidence for this comes from the following:

(9) a. The more politicians I read articles about, ...
b. *Articles about the more politicians I read, ...

Here both examples have an NP in initial position but only (9a) has *the* in first position within the NP.

The-phrases are associated with a gap. This may be in complement position, as in the first clause of (1) and (3), adjunct position, as in the first clause of (4), or subject position, as in the following:

(10) The more books they think are written, ...

Both Ross (1967) and Culicover and Jackendoff (1999) show that the relation between the *the*-phrase and the gap obeys island constraints. It seems, then, that the two clauses are filler-gap constructions broadly similar to *wh*-interrogatives, exclamatives and *wh*-relatives. However, they are different in some respects.

One unusual feature of *the*-clauses, noted by Culicover and Jackendoff (1999: 546), is the possibility of *that* after the *the*-phrase, illustrated by (11).

(11) The more books that I read, the more that I understand.

This is unlike the situation in *wh*-interrogatives, exclamatives and relative clauses, as the following show:

(12) a. I wonder how much (*that) he read.
b. I am surprised how smart (*that) he is.
c. the books which (*that) he read

Since Chomsky and Lasnik (1977) a great deal of effort has been devoted to explaining why a filler constituent cannot be followed by an overt complementizer in English. Examples like those in (12) show that this is normally impossible, but examples like (11) show that it is not always impossible.[2]

[1] This idea was originally suggested to me by Peter Sells.
[2] Another type of example in which a filler constituent appears to be followed by an overt complementizer is exemplified by the bracketed constituent in the following:

(i) [Clever though Kim is], he couldn't solve the problem.

Another unusual feature of *the*-clauses, highlighted by Culicover and Jackendoff (1999: 554), is that they allow the omission of a copula under certain circumstances. It seems that it is possible to omit the copula if: (a) its complement is fronted, (b) it is the main verb of the construction, and (c) *that* is not present. All three conditions are met in (13), but (14a) violates the first, (14b) and (14c) violate the second, and (14d) violates the third.

(13) The more intelligent the students, the better the marks.
(14) a. *The more intelligent the students, the more marks given.
b. *The more intelligent the students, the better the marks will.
c. *The more intelligent the students, the better it seems that the marks.
d. *The more intelligent that the students, the better that the marks.

The subject must also have a non-specific interpretation. Among other things, this means that it may not be a pronoun, as (15) demonstrates.

(15) *The more intelligent they, the more pleased we.

Obviously, it is not normally possible to omit the copula even if it is a main verb and its complement is fronted. Hence the following are ungrammatical:

(16) a. *The students very intelligent.
b. *How intelligent the students?

It seems, then, that the *the*-clauses are filler-gap constructions with some unusual properties. These properties are one reason why the construction might be seen as peripheral.

2.2. The relation between the two clauses

The CC construction contains two similar clauses. There is evidence, however, that the first clause is a subordinate clause and the second a main clause.

Culicover and Jackendoff (1999: 549-550) show that the second clause influences and reflects the external environment of the construction in ways that suggest that it is a main clause. First, it is possible to have a tag question which reflects the second clause but not one which reflects the first clause.

(21) The more we eat, the angrier you get, don't you?
(22) *The more we eat, the angrier you get, don't we?

Second, in the right context, the verb in the second clause may have subjunctive morphology, but this is not possible with the verb in the first clause.

Here *clever* appears to be a filler constituent and *though* appears to be a complementizer. I am grateful to Danièle Godard for bringing such examples to my attention.

(23) $\left\{\begin{array}{l}\text{It is imperative that}\\ \text{I demand that}\end{array}\right\}$ $\left\{\begin{array}{l}\text{the more John eats, the more he pay}\\ \text{* the more John eat, the more he pays}\end{array}\right\}$

Culicover and Jackendoff also note (1999: 559) that subject-auxiliary inversion is possible in the second clause but not the first. Thus, (24a) seems acceptable, but not (24b).

(24) a. ?The more Bill smokes, the more does Susan hate him.
b. *The more does Bill smoke, the more Susan hates him.

Given that subject-auxiliary inversion does not normally occur in subordinate clauses but occurs in various types of main clause, this seems to provide further evidence that the first clause is a subordinate clause and the second a main clause.

It seems, then, that the CC construction consists of a subordinate clause and a main clause. However, the subordinate clause is obligatory although it is not a complement of some lexical head. Hence, (25) is not possible.

(25) *The more I understand.

On the other hand, it cannot appear with an 'ordinary' main clause.

(26) a. *The more books I read, I understand philosophy.
b. *The more books I read, I go to sleep.
c. *The more books I read, it's a nice day.

This is another reason why one might see the construction as peripheral.

2.3. Related constructions

There are a number of constructions with which the CC construction shares certain properties. One is what McCawley (1988) calls the reversed CC construction, exemplified by the following:

(27) I understand more, the more I read.

Here the second clause is a *the*-clause and the first clause contains a bare in-situ comparative element. The first clause can vary in form in ways that show clearly that it is a main clause. The following illustrate:

(28) I expect him to understand more, the more he reads.
(29) I am impressed by his understanding more, the more he reads.
(30) Does he understand more, the more he reads?
(31) How much more does he understand, the more he reads?

An important fact about this construction, noted by McCawley (1988), is that the main clause need not contain a comparative element.[3] All that is required is that it has a certain kind of comparative semantics. Thus, (32) and (33) are acceptable, but not (34)

(32) My knowledge increases, the more I read.
(33) My grades improve, the more I work.
(34) *My grades are good, the more I work

Unlike in the CC construction, the main clause can appear without the subordinate clause, as (35) shows.

(35) I understand more.

Notice, however, that this has a broader range of interpretations than when it appears in the reversed construction. (35) can mean 'I understand more than X', where X is some individual given by the context, whereas the main clause in (27) can only mean something like 'I understand more than previously'. Thus, while (36) is fine, (37) is very odd.

(36) Kim understands a lot, but I understand more.
(37) *Kim understands a lot, but I understand more, the more I read

The reversed construction seems to be simpler than the standard CC construction. It is quite like various constructions in which a main clause combines with an adjunct clause. All that is special about it is that the main clause is required to have a certain kind of semantics and the subordinate clause cannot be 'fronted', as (38) shows.

(38) *The more I read, I understand more.

More like the CC construction in some ways are the *if-then* construction, also highlighted by McCawley (1988), and the *as-so* construction, highlighted by den Dikken (2003). The following illustrate:

(39) If I read more, then I understand more.
(40) As I read more, so I understand more.

In both cases it is fairly clear that the first clause is a subordinate clause, but in both cases this clause is obligatory although it is not a complement of some lexical head. Thus, the following are not possible unless *then* and *so* have some different interpretation:

(42) *Then I understand more.
(42) *So I understand more.

[3] In earlier work, e.g. Borsley (2004), I assumed that the main clause must contain a comparative element and used the feature that I use to handle *the*-phrases for this purpose.

Both constructions have simpler related constructions, as the following illustrate:

(43) I understand more if I read more.
(44) I understand more as I read more.

These are quite like the reversed CC construction. The subordinate clauses are optional adjuncts like the *the*-clause in reversed construction. However, unlike a *the*-clause they can be fronted, as the following show:

(45) If I read more, I understand more.
(46) As I read more, I understand more.

To summarize, it seems that we have three constructions, which we might call correlative clauses, and that each has a related construction, in which a main clause combines with an adjunct clause. Thus, we have the following situation:

Correlative clause	**S + adjunct construction**
Standard CC construction	Reversed CC construction
If-then construction	S + *if*-clause
As-so construction	S + *as*-clause

This classification suggests that the term 'reversed CC construction' is not an ideal one. However, I will continue to use it.

3. An HPSG analysis

I will now show that it is not too difficult to provide an analysis of the standard CC construction and the related constructions within the version of HPSG developed in Ginzburg and Sag (2000), in which grammars include hierarchies of phrase types, subject to various constraints. I will look first at *the*-clauses and then consider the CC construction and the related constructions as a whole.

3.1. *The*-clauses

A satisfactory analysis of *the*-clauses requires an analysis of *the*-phrases, so I will consider *the*-phrases first.

The-phrases are rather like *wh*-phrases, but whereas *wh*-phrases are required to contain just one element, a *wh*-word, *the*-phrases are required to contain two elements, *the* and a comparative word. A NONLOCAL feature ensures that a *wh*-phrase contains a *wh*-word. An obvious approach to *the*-phrases is to use a NONLOCAL feature to ensure that one of the necessary elements appears and to let this element require the appearance of the other. To implement this idea I will assume that correlative *the* and constituents that are required to contain it have the value *the* for a NONLOCAL feature FILLERFORM (FFORM for short) and that

all other constituents have the value *none* for this feature.[4] Some languages have two different elements corresponding to *the*. One example is Polish, which has examples like the following:

(47) Im więcej książek czytam, tym więcej rozumiem.
IM more books I-read TYM more I-understand
'The more books I read, the more I understand.'

In such a language FFORM will have two values apart from *none*. The evidence that FFORM is a NONLOCAL feature is not strong. However, some motivation for this assumption comes from the fact that speakers do not generally allow an in-situ *the*-phrase. If FFORM is a NONLOCAL feature, filler and gap will not have the same value for FFORM, and we can say that non-filler positions are [FFORM *none*], thus excluding an in-situ *the*-phrase. There is an alternative view of FFORM that one might consider. Some work in HPSG, e.g. Tseng (2003), has employed EDGE features, which always appear at the edge of a phrase. FFORM behaves like an EDGE feature when it has the value *the*. However, there is at least one language, Polish, where FFORM cannot be an EDGE feature. Polish has sentences in which a counterpart of English *the* is not in initial position, for example the following:

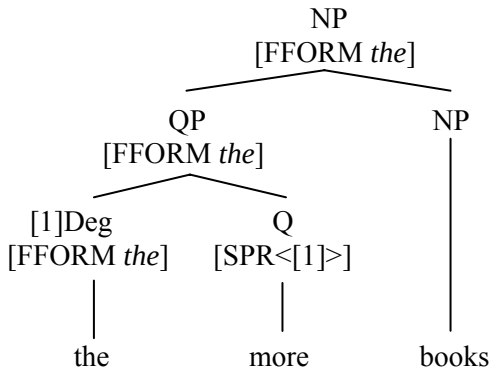
(48) Z im dawniejszych epok pochodzi próbka badana tą
from IM earlier epochs comes sample investigated this.INS
metodą, tym błąd jest większy.
method.INS TYM error is greater
'The earlier the origin of the sample examined by this method, the greater is the error.'

I will assume, then, that FFORM is a NONLOCAL feature subject to a special linear precedence (LP) constraint, formulated below, when it has the value *the*.

If *the*-phrases are [FFORM *the*] and correlative *the* is the only word that is [FFORM *the*], *the*-phrases will necessarily contain correlative *the*. To ensure that they also contain a comparative word of some kind we can assume that correlative *the* can only appear as a specifier of a comparative word. Given these assumptions, the *the*-phrase in (1) will have something like the following structure:

[4] In earlier work, e.g. Borsley (2004), I used the name CORREL for this feature. It now seems better to me to use this name for a feature which distinguishes *the*-clauses from other sorts of clauses.

(49)



To allow such phrases, we will need a lexical description like that in (50) for *the*, and lexical descriptions of the form in (51) for a comparative word which combines with *the*.

(50)

$$\begin{bmatrix} \text{PHON } \textit{the} \\ \text{HEAD } \textit{deg} \\ \text{NONLOCAL}[\text{FFORM } \textit{the}] \end{bmatrix}$$

(51)

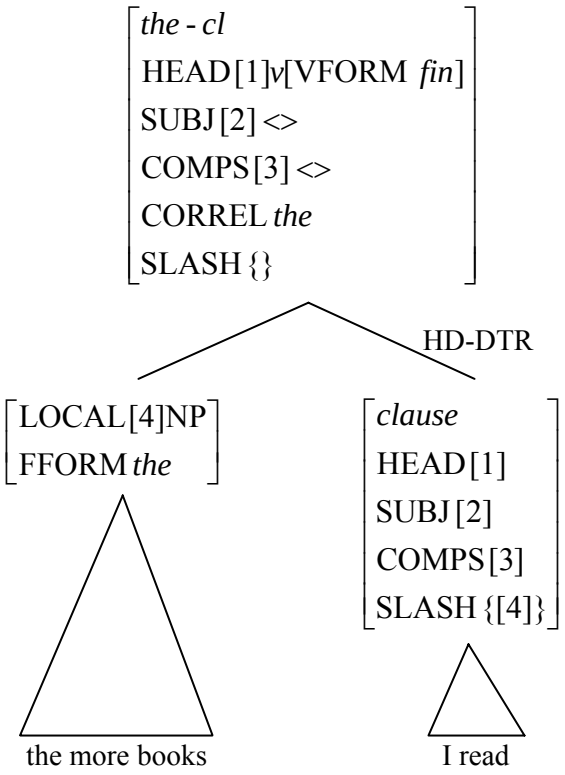
$$\begin{bmatrix} \textit{correlative - comparative} \\ \text{HEAD}[\text{AFORM } \textit{comparative}] \\ \text{SPR} < [\text{NONLOCAL } [\text{FFORM } \textit{the}]] > \end{bmatrix}$$

An ordinary comparative word will have a rather different lexical description, not allowing a specifier but allowing a *than* phrase or clause. The two descriptions can be analyzed as different ways of fleshing out a basic, partially specified lexical description, and only the latter need appear in the lexicon.

We can now consider *the*-clauses. One thing we need is some feature specification to distinguish such clauses from all other types of clause. As I will show below, we cannot use the feature specification which identifies *the*-phrases for this purpose. Therefore we need some other feature specification. It is in fact standard within HPSG for filler-gap constructions to be identified by a different feature specification from that which identifies their filler constituent. Thus, in Ginzburg and Sag's (2000) analysis, *wh*-interrogatives are identified by their semantic properties while their fillers are identified by the WH feature. Similarly, in Sag's (1997) analysis, relative clauses are identified by having a certain value for MOD but when they contain a filler it is identified by the REL feature. It seems unlikely that *the*-clauses can be distinguished by their semantic properties or by the value of MOD. At least some *the*-clauses will presumably have a value for the MOD feature which indicates that they modify a clause with what we might call an implicit comparison interpretation. However, other sorts of adjunct

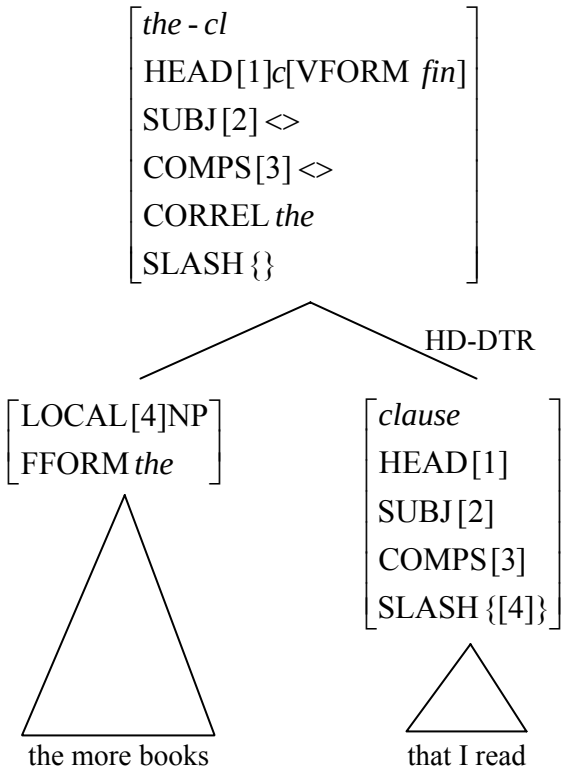
clause will have the same value for MOD when they modify a clause with the relevant semantic properties. The *if*-clause in (43) is a relevant example. I will assume, therefore, that *the*-clauses, and also *if*-, *then*-, *as*-, and *so*-clauses, are identified by an appropriate value for a CORREL(ative) feature. (Other sorts of clause will be [CORREL *none*].) Assuming this feature, we can propose the following structure for the subordinate *the*-clause in (1):

(52)



Here and subsequently, I ignore the fact that all the features are part of the value of CATEGORY and the fact that FFORM and SLASH are part of the value of NONLOCAL. I am also ignoring the possibility that the clause should have a MOD feature, something to which I return. The main *the*-clause in (1) will have essentially the same structure. For the subordinate *the*-clause in (11), we can propose the structure in (53). This is identical to (52) except that the value of HEAD in the phrase and its head is *c*[VFORM *fin*] rather than *v*[VFORM *fin*].

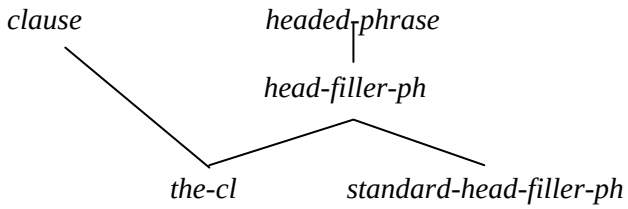
(53)



These are complex structures, but their various properties can be attributed to a small number of constraints.

Before we can present the necessary constraints, we need some phrase types. I will assume the following:

(54)



This indicates that a *the*-clause is both a clause and a head-filler-phrase, the latter being one type of headed phrase. It also indicates that a standard-head-filler-phrase is another type of head-filler phrase.

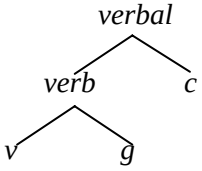
The first constraint that we need is the following:

(55)

$$clause \rightarrow \begin{bmatrix} \text{HEAD } verbal \\ \text{SUBJ } list(noncanon\text{-}ss) \\ \text{COMPS } \langle\rangle \end{bmatrix}$$

This ensures that a clause is a verbal constituent which is either 'saturated', i.e. contains a full set of dependents, or has an unexpressed subject. Following Ginzburg and Sag (2000: 24), *verbal* is a type with the subtypes *verb* and *c* (complementizer). *Verb* in turn has the subtypes *v* (pure verb) and *g* (gerund). Thus we have the following situation:

(56)



Given this, it follows from (55) that a clause may be headed by a pure verb, a gerund or a complementizer. In (52) we have a *the*-clause headed by a pure verb and in (53) we have a *the*-clause headed by a complementizer.

(55) accounts for some basic properties of (52) and (53). Some others are accounted for by the Generalized Head Feature Principle of Ginzburg and Sag (2000: 33), which we can formulate as follows:

(57)

$$\textit{hd-ph} \rightarrow \begin{bmatrix} \text{SYNSEM} /[1] \\ \text{HD - DTR} \ [\text{SYNSEM} /[1]] \end{bmatrix}$$

This is a default statement, as indicated by the slash notation. It requires a headed phrase and its head-daughter to have the same syntactic and semantic properties unless some other constraint requires a difference.

The differences between the phrase and its head daughter in (52) and (53) are a consequence of the following constraint:

(58)

$$\textit{head-filler-ph} \rightarrow \begin{bmatrix} \text{SLASH} \{\} \\ \text{DTRS} < [\text{LOC}[1]], [2] \begin{bmatrix} \textit{phrase} \\ \text{SLASH} \{[1]\} \end{bmatrix} > \\ \text{HD - DTR} [2] \end{bmatrix}$$

This ensures that a head-filler-phrase is SLASH {} and has a head daughter which is a phrase and a non-head daughter, whose LOCAL value is the local feature structure within the value of SLASH on the head daughter. It accounts for some of the main properties of (52) and (53). (58) imposes no constraints on the HEAD value of the head daughter. Hence, it may be a complementizer-headed phrase, as in (53). Obviously, most head-filler constructions cannot be headed by a complementizer. We can assume that this is because they are instances of the type *standard head-filler-phrase*, which is subject to the following constraint:

(59) *standard-head-filler-ph* → [HD-DTR [HEAD *v*]]

This requires a standard-head-filler-phrase to have a head-daughter which is [HEAD *v*]. It accounts for the impossibility of *that* in the examples in (12).

The main distinctive properties of English *the*-clauses can be accounted for by the following constraint:

(60)

$$\textit{the-cl} \rightarrow \begin{bmatrix} \text{HEAD}[\text{VFORM } \textit{fin}] \\ \text{CORREL } \textit{the} \\ \text{DTRS} < [\text{FFORM } \textit{the}], [] > \end{bmatrix}$$

This ensures that a *the-clause* is finite, is [CORREL *the*] and has a non-head daughter which is [FFORM *the*]. One consequence of this constraint is that a *the*-clause cannot be a gerund.

We need one further constraint to ensure that *the* appears in first position in the initial constituent. We can propose the following informal LP constraint here:

(61) [FFORM *the*] < [FFORM *none*]

I have not included [FFORM *none*] in any of the trees that I have presented above, but I assume that constituents which are not correlative *the* or required to contain correlative *the* are [FFORM *none*]. The ungrammatical examples in (6b) and (9b) both contain a [FFORM *none*] constituent before a [FFORM *the*] constituent. Hence they violate this constraint. A consequence of the constraint is that we cannot use [FFORM *the*] to identify *the*-clauses. If *the*-clauses were marked as [FFORM *the*], the reversed construction would violate the constraint.

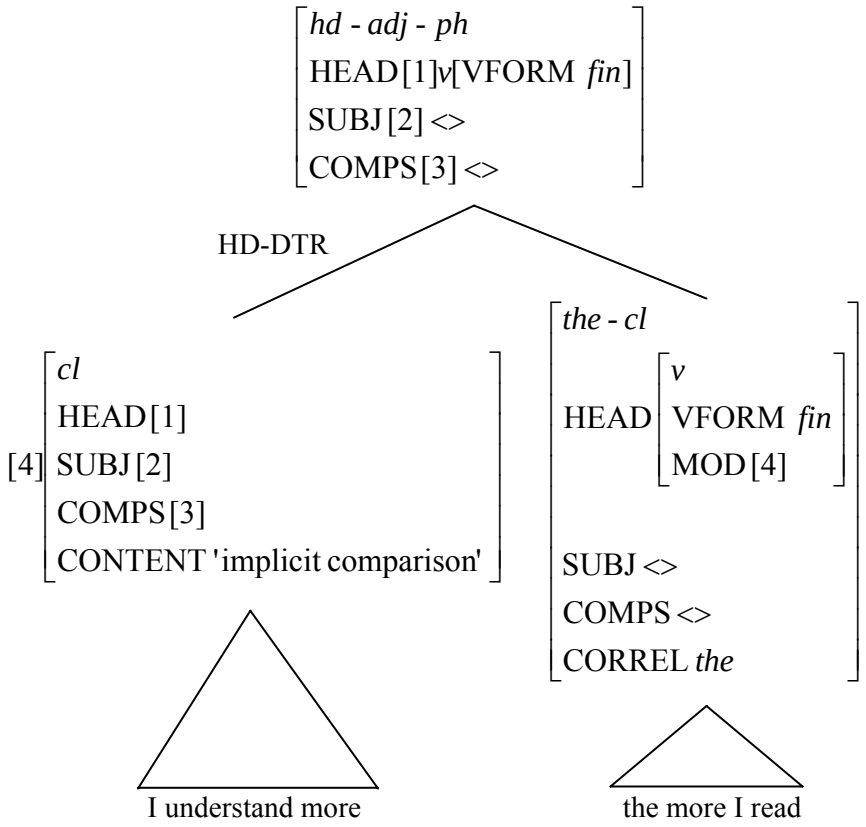
We have now accounted for the properties of *the*-clauses. They have some properties because they are clauses, some because they are headed phrases, some because they are head-filler-phrases, some because they are *the*-clauses, and some because they contain a [FFORM *the*] constituent. Most of their properties are shared with other constructions of one kind or another. Only those embodied in (60) and (61) are specific to *the*-clauses.

3.2. The constructions

We can now consider the constructions as a whole. We suggested at the end of section 2 that the standard CC construction is one of three correlative constructions, each of which has a related S + adjunct construction. I will look first at the latter and then consider the former.

An S + adjunct construction is one type of head-adjunct-phrase, in which an adjunct combines with an expression off some kind to form a larger expression of the same kind. If we assume that what kind of expression an adjunct combines with is encoded by the MOD feature, (24) will have something like the following structure:

(62)



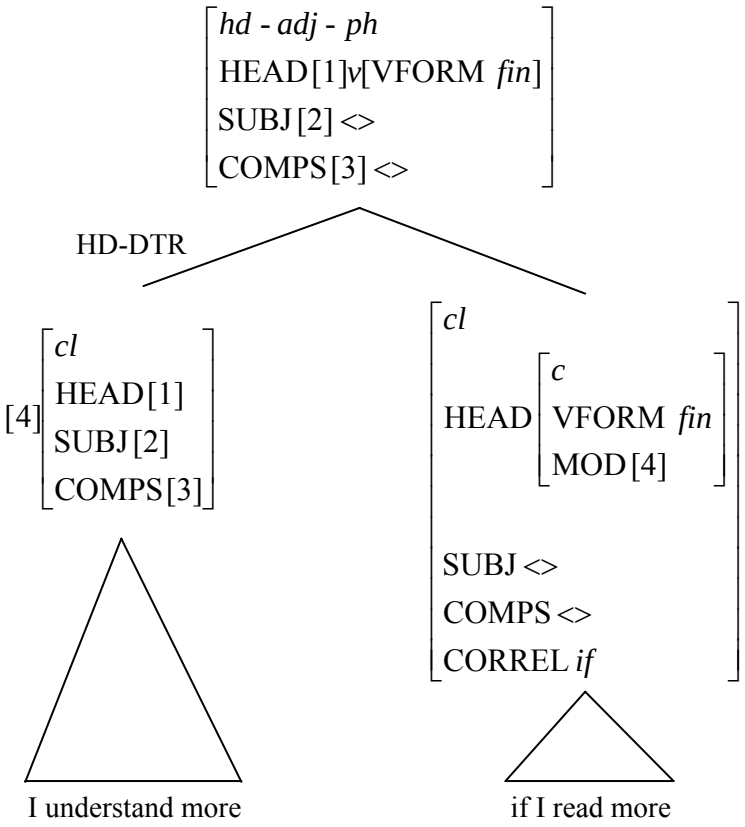
Given such structures, a *the*-clause must be able to have an appropriate value for the MOD feature, which I will represent as 'S[imp-comp]'. I will assume that *the*-clauses which are non-heads have this value but that a *the*-clause which is a head is [MOD *none*]. This means that the constraint in (60) must be replaced by something like the following:

(63)

$$\textit{the-cl} \rightarrow \begin{bmatrix} \text{HEAD} \begin{bmatrix} \text{VFORM } \textit{fin} \\ \text{MOD } \text{'S[imp - comp]'} \vee \textit{none} \end{bmatrix} \\ \\ \text{CORREL } \textit{the} \\ \text{DTRS} < [\text{FFORM } \textit{the}], [] > \end{bmatrix}$$

Whereas *the*-clauses combine with a clause with certain semantic properties, *if*-clauses and *as*-clauses combine with more or less any clause. It follows that they will have a MOD feature which does not restrict the CONTENT of the clause with which they combine. They will also have different values for CORREL, *if* and *as*, respectively. (43) will have something like the following structure:

(64)



(44) will have a similar structure. I assume that the MOD and CORREL features of *if*- and *as*-clauses are inherited from *if* and *as*, respectively, which are presumably complementizers. If this is right, there is no need for any special phrase types here.

These analyses require appropriate restrictions on head-adjunct-phrases. We can assume something like the following constraint:

(65)

$$\textit{hd-adj-ph} \rightarrow \begin{bmatrix} \text{DTRS} < [1][\text{SS}[2]], [\text{HEAD}[\text{MOD}[2]]] > \\ \text{HD - DTR}[1] \end{bmatrix}$$

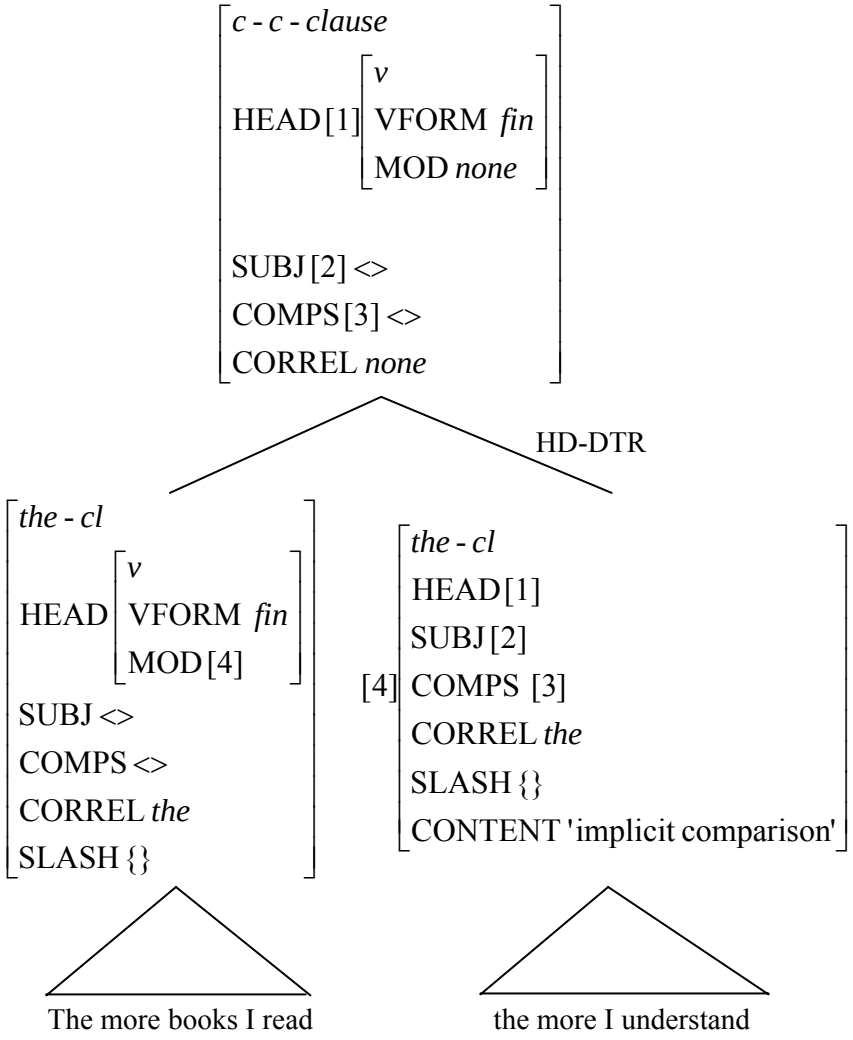
This poses no restrictions on the phrase itself, only on its daughters. It follows from the Generalized Head Feature Principle that head-adjunct phrases are the same type of phrase as their head. It follows from this that this type of phrase must be licensed in other positions and hence that adjuncts are optional. As we have seen, this is the case in the three S + adjunct constructions.

We noted in 2.3 that the *the*-clause in the reversed CC construction cannot be fronted. We can ensure this with the following LP constraint:

(66) [DTRS <[1][CORREL *none*], [2][CORREL *the*]>] → [1] < [2]

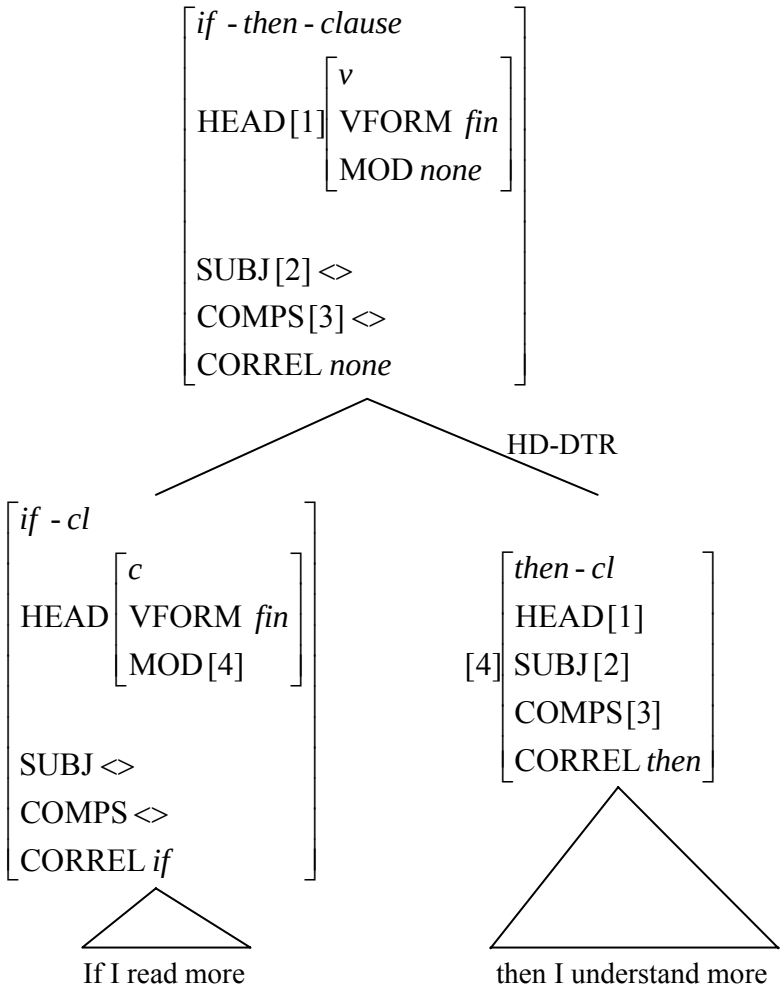
We can now consider the correlative constructions. They differ from the corresponding S + adjunct constructions in that the main clause has some distinctive marking and cannot appear on its own. I assume that the distinctive marking is a reflection of the value of CORREL and that this is why these clauses cannot appear on their own. I assume that the constructions are [CORREL *none*] like most clauses. Thus, what we have here are non-standard head-adjunct-phrases, in which the phrase and its head differ in certain respects. Given these assumptions, (1) will have something like the following structure:

(67)



For the *if-then* construction we can propose the structure in (68).

(68)



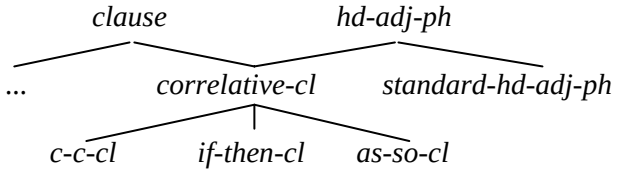
The *as-so* construction will have a very similar structure. I will not try to decide what the internal structure of *then-* and *so*-clauses is.[5]

To provide an account of the constructions, we need some further phrase types as follows:

[5] One complication, brought to my attention by Anne Abeillé, is that *then*-clauses are relatively unconstrained. For example, they can be both interrogatives and imperatives.

(i) If you see Kim, then what will you say?
(ii) If you see Kim, then ask him about the project.

(69)



Here we have a type *correlative-clause*, which is a subtype of *clause* and *head-adjunct-phrase* and has the subtypes *c-c-clause*, *if-then-clause* and *as-so-clause*. We also have a type *standard-head-adjunct-phrase*.

Again, various properties of the constructions follow from (55) and (57). Others follow from the following constraint:

(70)

$$\textit{correlative-cl} \rightarrow \begin{bmatrix} \text{HEAD } v \\ \text{CORREL } \textit{none} \\ \text{DTRS} < [1][\text{MOD } \textit{none}], [] > \\ \text{HD - DTR } [1] \end{bmatrix}$$

This ensures that a correlative clause is [HEAD *v*] and [CORREL *none*], and has a head daughter, which is [MOD *none*], and a non-head daughter. It is fairly clear that we must require the construction to be [CORREL *none*] and the head to be [MOD *none*], but one might wonder if the [HEAD *v*] stipulation is necessary. However, in an example like (11) the head daughter is [HEAD *c*], but the construction should presumably be [HEAD *v*]. If this is right, the [HEAD *v*] stipulation is necessary.

We can account for the distinctive properties of the three subtypes of correlative-clause with the following constraints:

(71) a. *c-c-cl* → [DTRS <[CORREL *the*], [CORREL *the*]>]
b. *if-then-cl* → [DTRS <[CORREL *then*], [CORREL *if*]>]
c. *as-so-cl* → [DTRS <[CORREL *so*], [CORREL *as*]>]

We also need to ensure that the main clause comes second in these constructions. Here we can propose the following constraint:

(72) [DTRS <[1][CORREL ¬*none*], [2][CORREL ¬*none*]>] → [2] < [1]

This ensures that where two sisters have a value other than *none* for the feature CORREL, the non-head comes first.

We saw in 2.2 that, it is possible to have a tag question which reflects the second clause of the CC construction but not the first clause and that in the right context, the verb in the second clause but not the verb in the first clause may have subjunctive morphology. These facts follows from the fact that the second clause is the head with the same syntactic and semantic properties as the construction except where some constraint requires a difference.

We also saw in 2.2 that subject-auxiliary inversion is possible in a main *the*-clause. If we don't say anything special, it will be possible. We need, however, to say something to prevent subject-auxiliary inversion in subordinate *the*-clauses. We can propose the following constraint here:

(73)

$$\begin{bmatrix} \textit{the - cl} \\ \text{MOD} \neg \textit{none} \end{bmatrix} \rightarrow \text{[INV -]}$$

Notice that we cannot say that subject-auxiliary inversion is impossible in all adjunct clauses given the possibility of counterfactual conditionals like that in (74)

(74) Had he been there, we would have seen him.

What about the other clauses that we are concerned with here? If *if* and *as* are complementizers, there is no need to specify a value for INV on *if*-clauses and *as*-clauses. Whether it is necessary to mark the *then* and *so* clauses as [INV -] will depend on how *then* and *so* are analysed, a matter which I am not considering here.

I suggested earlier that the main clause in a correlative construction cannot appear on its own because of the value it has for the CORREL feature. The idea here is that root clauses are [CORREL *none*]. In fact with the exception of the adjunct position in a head-adjunct-phrase and the two daughters in a correlative-clause all clausal positions must be [CORREL *none*]. I will not try to decide how this restriction should be imposed, but as long as it is imposed, it will be impossible for the main clause in a correlative construction to appear on its own.

We now have an account of the main properties of the standard CC construction and the other correlative constructions. They have some properties because they are clauses and headed phrases, some because they are correlative-clauses, some because they are one of the subtypes of correlative-clause, and some because of the daughters they contain. Only the constraints in (71a) and (73) are specific to the standard CC construction.

3.3. Copula omission

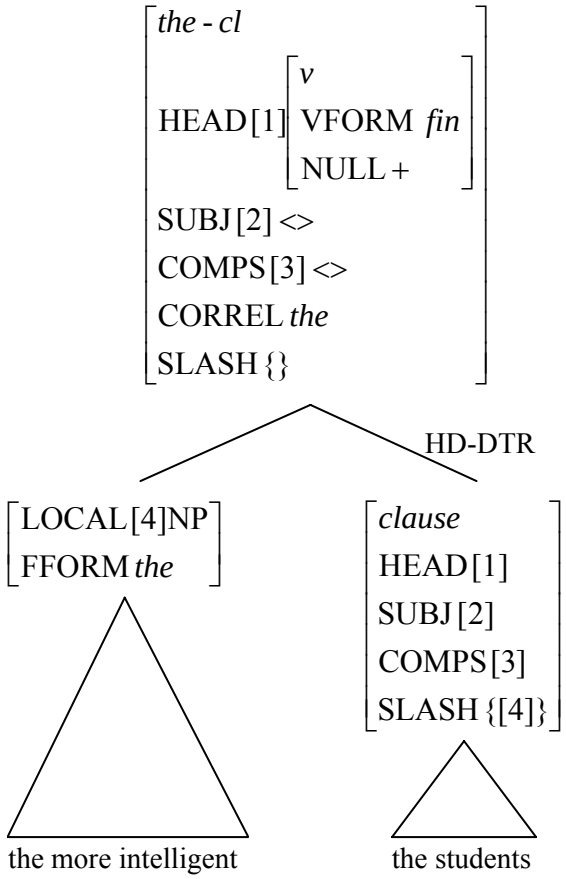
We must now consider how copula-omission might be accommodated. I will suggest that it is the result of the special properties of one verb, *be*, and one construction, the head-filler-phrase.

I propose that head-filler phrases but not other types of phrase can have a null head and that only *be* has a phonologically null form. Assuming that phonologically null forms are [NULL +], we can propose the lexical description in (75) for the null form of *be*, which will give structure in (76) for the first clause in (13).

(75)

$$\begin{bmatrix} \text{PHON} <> \\ \text{HEAD} \begin{bmatrix} v \\ \text{VFORM } \textit{fin} \\ \text{NULL} + \end{bmatrix} \\ \text{SUBJ} < [1]\text{NP}[\text{'F'}] > \\ \text{COMPS} <> \\ \text{SLASH} \{\text{AP}[\text{SUBJ} < [1] >]\} \end{bmatrix}$$

(76)



I use 'F' here to stand for whatever restrictions need to be placed on the subject. The important features of (75) are the [NULL +] feature, the COMPS feature, which ensures that this form does not have an in-situ complement, and the

SLASH feature, which ensures that it has a fronted complement.[6] (76) is just like (52) except that the construction and hence its head is [NULL +]. Assuming that only head-filler-phrases can have a null head, the ungrammatical examples in (14) are ruled out. In (14a) the null copula has an in-situ complement, which is not allowed by (75). In (14b), (14c) and (14d) the null copula is not the head of a head-filler-phrase. In (14b) *will* is the head of the head-filler-phrase, in (14c) *seems* is, and in (14d) *that* is.

5. Concluding remarks

In this paper I have provided an HPSG analysis of the CC construction and related constructions. I have treated *the*-clauses as non-standard head-filler phrases, similar in some ways to standard head-filler-phrases but with some distinctive properties, and I have treated the standard CC construction as a non-standard head-adjunct-phrase, similar in some ways to standard head-adjunct-phrases but with some distinctive properties. The analysis captures both the distinctive properties of the construction and the properties it shares with other constructions. This is not really surprising, given that hierarchies of phrase-types are designed to allow constraints of any level of generality from the very general to the very specific. Thus, they can accommodate the peculiar properties of peripheral constructions without missing generalizations. It seems likely that they will be able to accommodate other peripheral phenomena equally well. There may well be some important support for HPSG here.

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[6] The null copula is not the only English verb that does not allow an in-situ complement. Another is illustrated by the following:

(i) a. What he may do is go home
    b. * He may do go home
(ii) a. What he is doing is going home
    b. * He is doing going home

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