

English Comparative Correlative Construction: Interactions between Lexicon and Constructions*

Jong-Bok Kim
(Kyung Hee University)

Kim, Jong-Bok. 2011. **English Comparative Correlative Construction: Interactions between Lexicon and Constructions.** *Korean Journal of Linguistics*, 36-2, 307-336. The grammatical properties of the English comparative correlative construction have challenged both movement and non-movement approaches. In this paper, based on our corpus search, we claim that the distinctive properties of the construction as well as its sharing properties with other constructions can be better represented in terms of syntactic gradience couched upon the perspective of construction grammar. The construction is gradient in the sense that it lives a double life: it has both subordination and coordination properties. Developing the spirit of construction grammar set forth by Abeillé and Borsley (2008), the analysis shows the need to place more emphasis on the interaction between lexical properties and core constructions. (Kyung Hee University)

Key words: correlative, comparative, functor, gradient, coordination, subordination

1. Introduction

The so-called English comparative correlative (CC) construction, as exemplified in the attested corpus examples in (1), is well-known for its irregularities in many respects:

- (1) a. The more mistakes you make, the more interesting it becomes.
b. The more television you watch, the more depressed you seem to be.

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The construction evokes paired scales, for example, the number of mistakes and degree of interest in (1a), and conveys the idea that movement along the one scale correlates with proportional movement along the other.¹ The CC construction has raised several empirical and theoretical questions because of its *sui generis* constructional properties. For example, in terms of syntax, the construction seems to coordinate two identical clauses with no coordination marker like *and*. However, in terms of semantics, the first clause seems to serve as a subordinate clause to the second clause as seen from their paraphrases (e.g. *As you make more mistakes, it becomes more interesting* for (1a)). The construction also shares some properties with canonical filler-gap constructions like *wh*-interrogative (cf. Huddleston and Pullum 2002), but has its own unique properties not linked to these in many respects.

There have been two main approaches to the construction: construction-based view (Culicover and Jackendoff 1999, Abeillé and Borsley 2008) and Minimalist or Principles-and Parameters view (Den Dikken 2005, Taylor 2005, 2007, Iwasaki and Radford 2009). The former view assumes that English employs the special construction, comparative correlative (CC) construction, with its idiosyncratic properties while the latter view maintains that it is the interaction between functional projections and lexical properties rather than the constructional properties themselves that license the generation of the CC construction.

In this paper, we follow the spirit of the constructional grammar but minimize the postulation of the constructions while placing more emphasis on the interaction between lexical properties and core constructions. In doing so, we first review the basic grammatical properties of this construction and then do corpus search to better understand its uses in real-life.² We then provide a lexicalist and constructional analysis that can account for its unique as well as sharing properties with others, in addition to the construction's gradient

1 The construction has several names: comparative correlative (CC) (Culicover and Jackendoff 1999, Borsley 2004, Den Dikken 2005), correlative comparative construction (Huddleston and Pullum 2002), comparative conditional construction (Michaelis and Lambrecht 1996, Beck 1997, McCawley 1998), among others.

2 The corpora we use in this study include the ICE-GB (International Corpus of English, Great Britain), COCA (Corpus of Contemporary American English), and BNC (British National Corpus).

properties as subordination and coordination.

2. Grammatical Properties of the Construction

2.1 Morpho-syntactic Properties

The peculiarity of the CC construction starts from the obligatoriness of the definite article *the* in the internal syntax (developed from the OE instrumental of *that*, namely *þy* meaning 'by how much'). Each of the two clauses in CC must begin with the article *the* (cf. Den Dikken 2005, Taylor 2005):

- (2) a. The more politicians I read articles about, the more I dislike them.
 b. *Articles about the more politicians I read, the more I dislike them.

In terms of the structure, the canonical CC has thus two clauses which we call C1 and C2, respectively. Each clause has two main components: *the*-XP and a clause with a missing element. The *the*-XP represents a correlated degree, often called a DegP, while the sentence contains a gap associated with this *the*-XP, as represented in the following template:

- (3) [C₁ The more XP + clause/XP], [C₂ the more XP + clause/XP]

The degree XP is thus associated with the missing gap in the sentence. The gap in C1 or C2 can be either part of the complement of the main verb or an adjunct as seen from the following:

- (4) a. [The more applications [a college receives ___], [the more selective [it appears ___]].
 b. [The more incompetent [these people are ___], [the more [we like it ___]].

In (4a), the XP functions as the argument in each clause but in the second clause C2 in (4b) the XP is linked to an adjunct within the clause. In terms of the categorial status of the degree phrase linked to the missing gap, it can be an NP, AP, AdvP, or even a PP:

- (5) a. The [NP more hostages' stories] I hear __, the more confused I am __.
 b. The [AP more careful] we are __, the more we will find __.
 c. The [AdvP more carefully] we look __, the more we will find __.
 d. The [PP more in the center] you are __ of any line, the better your range of vision is __.

The gap can have a variety of grammatical functions: it can function as a predicative complement, an object of the verb in the clause, and even an adjunct:

- (6) a. The bigger they are __, the harder they fall __. (BNC: CFJ 366)
 b. The more television you watch __, the more depressed you seem to be __. (BNC KRG 1490)
 c. The more painting you do __, the more you realize you don't know __. (BNC CC0 344)

The corpus search also provides us with a variety of CC examples with a subject gap as seen from the following:

- (7) a. The more people __ arrive, the louder that it gets.
 b. The more people (that) you give beer to, the more people __ get sick.
 c. The more intelligent the students are, the more doubts __ develop in them.

The filler XP and the gap within the clause can have a long-distance dependency, as seen from the following example from the COCA:

- (8) [The more counterexamples] Mary says that Bill has helped Fred to discover __, the less I believe her.

Another unusual property of the construction is that unlike canonical filler-gap constructions like *wh*-questions, the CC does not allow a pied-piped preposition (Culicover and Jackendoff 1999):

- (9) a. *To the more people Kim talks, the more he learns.
 b. *Over the more people police pull, the more they're likely to seize.

The construction also allows the complementizer *that* immediately after the degree phrase XP, not found from canonical filler-gap constructions:

- (10) a. The longer that a person is deprived of oxygen, the bluer a person becomes. (BNC K5D 647)
 b. Now then the faster that we can do this, the faster we get on with the game. (COCA JA8)

Considering that canonical filler-gap constructions like *wh*-interrogatives or relatives do not allow the presence of *that* immediately after the filler as in *I wonder how much (*that) he can drink*, this is another unique property of the construction.

In general, C1 and C2 are parallel in terms of syntactic structures, but variations also exist with ellipsis as in (11):

- (11) a. The sooner, the better.
 b. The bigger the company (is), the bigger the tax (is).
 c. The more demanding the work, the sooner fatigue sets in.

When the internal clause of C1 and C2 can be recoverable, only two DegPs can appear as in (11a) or leaving out the copula as in (11b). Within the same condition, the categorical identity can be excused as given in (11c).

Further complexity arises from the SAI (subject-aux inversion) in the C2 clause:

- (12) a. The mightier you are, the more must you fear; the lowlier you are, the more must you take comfort. (COCA 2003 MAG)
 b. The older a person is (physically) the slower will his tissues grow in his serum. (Time)

In addition, our corpus search shows us that the C2 clause can have even an auxiliary cluster with the subject in the final position:

- (13) a. The more animals a household is obliged to sacrifice, the greater has been its misfortune. (COCA CJ1)
 b. The bigger these pictures have gotten, the simpler have been their basic sentiments. (Time)

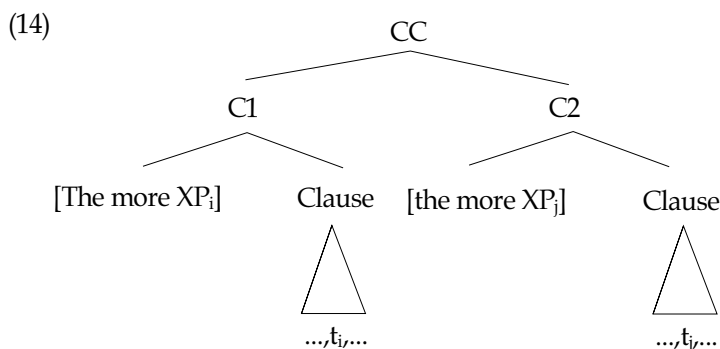
- c. The more organised you are the better will be the results. (COCA K2D)

These examples, together with the SAI examples, indicate that the C1 and C2 are not in the strictly identity in terms of syntactic structure, on contrary to the observations made in the previous literature.

2.2 Interdependency and Gradient Properties

2.2.1 Subordination Properties

The properties of the CC construction in the previous section show us that C1 and C2 are syntactically and semantically dependent upon each other and both are tightly connected. The canonical structure of the CC construction can be represented as following:



This canonical structure raises questions such as the size of each clause, dependency relation between the two, generation of each clause, and so forth. Consider the question of the size of each clause. As we have seen earlier, the optional appearance of the complementizer *that* in the clause indicates that its size may be bigger than CP. However, note that the CC can appear within a CP clause as in (15) or even within a subordination clause as in (16) (cf. Abeillé and Borsley 2008):

- (15) a. I'm shocked by the idea [that [the more you eat, the less you want]].
 b. It is not entirely clear [if/whether [the more you eat, the less

you want]].

- (16) a. Well do what you like **because** the more mistakes you make the more interesting it becomes. (ICE-GB: S1B-002)
 b. There is no great limit on pipe length, **though** obviously the further you go the greater will be the head and pump size needed. (COCA ACR)

In addition to the size of the clause, the relationship between C1 and C2 is questionable. There is enough evidence indicating that C1 is a subordinate clause while C2 is a main clause, as noted by Culicover and Jackendoff (1999), Abeillé and Borsley (2008) and others. The first piece of evidence comes from tag questions:

- (17) a. The more we eat, the angrier you get, don't you?
 b. *The more we eat, the angrier you get, don't we?

As given here, the auxiliary and subject in tag question agree with those of C2, not those of C1.

The second evidence concerns subjunctive morphology. Observe the following contrast:

- (18) 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).

We can observe that it is not the C1's main verb but the C2's main verb that is sensitive to the subjunctive morphology. Given that the subjunctive morphology needs to be on the main clause's main verb, this indicates that C1 is the subordinate clause.

A similar support can be found from the indicative tense found in C2:

- (19) 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.

Considering that in non-embedded clauses, the subjunctive tense

canonically appears in a subordinate clause while the indicative tense occurs in the main clause as illustrated in (20), the contrast in (19) indicates that C2 is a main clause while C1 is a subordinate one.

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

As we have seen in the previous section, C2 clause allows SAI, but not C1 (Culicover and Jackendoff 1999):

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

Since SAI is a main clause phenomenon, this contrast also leads us to assume that C2 is the main clause.

A similar fact is observed in forming questions. C2 can be a question, but not C1:

- (22) a. The harder (that) it has rained, how much faster a flow appears in the river?
 b. The harder (that) it rains, how much faster a flow do you see in the river?

Once again, the question formation is sensitive to the main clause, not the subordinate clause, indicating that C2 is the main clause.³

NPI licensing also shows that the two clauses behave differently:

- (23) a. The more anyone drinks, the faster we'll leave the party.

3 There is a caveat with respect to examples like the following:

- (i) a. How much harder has it rained, the faster a flow you see in the river?
 b. How much harder has it rained, when you see a faster flow in the river?

These examples at first glance seem to allow the question in C1. However, such examples are different from the CC, but related to the resemblant construction:

- (ii) a. Mary got angrier and angrier, the more pictures she looked at.
 b. It has rained really harder, the faster a flow you see in the river.

See Culicover and Jackendoff (1999) for further discussion.

b. The more Bill drinks, the faster anyone will leave the party.

Considering the *if*-subordinate clause also licenses an NPI with no negator as in (24), we can conclude that C1 is a subordinate clauses:

- (24) a. If anyone drinks, we will leave the party fast.
 b. *If Bill drinks, anyone will leave the party fast.

As such, there are enough empirical phenomena indicating that the two clauses C1 and C2 are tightly dependent, with C1 being a subordinate and C2 functioning as the main clause.

2.2.2 Coordination-like Properties

Further complication arises since the CC also displays paratactic (coordination-like) properties between the two clauses. It is not difficult to observe that the two clauses behave alike in many respects.

We have seen that the two clauses C1 and C2 canonically have parallel syntactic structures even in the copula omission. The copula *be* in the CC construction can be omitted in a limited environment (Abeillé and Borsley 2008). The known conditions for the copula ellipsis are as follows:

- (25) Constraints of the Copula Ellipsis in CC:
 a. The complement of the copula is fronted
 b. The copula is the highest verbal element in the clause
 c. No *that* is present
 d. The subject of the clause has a nonspecific (generic or variable) interpretation (cf. McCawley 1998)

With these conditions, consider the following data set adopted from Abeillé and Borsley (2008):

- (26) 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 the marks.
 d. *The more intelligent the students, the better that the marks.
 e. *The more intelligent the students, the more pleased they.

Each of these violates the constraints given in (25): (26a) violates (25a), while both (26b) and (26c) violate (25b). (26d) is unacceptable due to the presence of the complementizer *that*. Finally, (26e) is unacceptable since the subject *they* is specific. The same conditions hold in C1, indicating that the two clauses are identical with respect to copula omission. If these constraints are sensitive to syntax, we may better treat the two clauses as a coordination-like construction.

Island constraints also do not differentiate the two clauses (Culicover and Jackendoff 1999):

- (27) Island Constraints in C1
- a. *[The more food] Mary knows a man that eats __, the poorer she gets. [CNPC]
 - b. *[The fatter] that [that he gets __] bothers him, the more he eats. [Subject Condition]
 - c. *[The more people] I ask what he will give __ to __, the more he reads. [*wh*-island]
- (28) Island Constraints in C2
- a. *The more he eats, [the poorer] he knows a woman that gets __. [CNPC]
 - b. *The more he eats, [the fatter] that [that he gets __] really bothers me. [Subject Condition]
 - c. *The more he reads, [the more people] I wonder what he will give __ to __. [*wh*-island]

As observed here, the two clauses both behave as islands, telling us the coordination-like properties of the two clauses.

C1 and C2 also behave alike with respect to extraction. Consider the following source sentence from Culicover and Jackendoff (1999):

- (29) The sooner you solve this problem, the more easily you'll satisfy the folks up at corporate headquarters.

As noted by Culicover and Jackendoff (1999), it is possible to form a relative clause from C1 or C2:

- (30) a. This is the sort of problem [which] the sooner you solve __, the more easily you'll satisfy the folks up at corporate headquarters.

[relativization in C1]

- b. The folks up at corporate headquarters are the sort of people [who] the sooner you solve this problem, the more easily you'll satisfy __. [relativization in C2]

Topicalization is also possible from either C1 or C2:

- (31) a. This problem, the sooner you solve __, the more easily you'll satisfy the folks up at corporate headquarters. [extraction from C1]
 b. The folks up at corporate headquarters, the sooner you solve this problem, the more easily you'll satisfy __. [extraction from C2]

We also observe that with respect to fixed word ordering, the CC behaves like coordination, different from subordination. Compare the following set of examples:

- (32) a. If Mary got angry, she looked at pictures.
 b. She looked at pictures if Mary got angry.
 (33) a. Mary listens to the Grateful Dead and she gets depressed.
 b. She gets depressed and Mary listens to the Grateful Dead.
 (34) a. The angrier Mary got, the more she looked at pictures.
 b. The more she looked at pictures, the angrier Mary got.

As given here, unlike the subordinate example in (32), the coordination and the correlative induce different meanings if the ordering of the two clauses is changed.

As seen from the observations, we can note that C1 and C2 behave alike in many respects, disregarding the subordination properties of C1. A proper treatment of the CC construction needs to reflect these properties too.

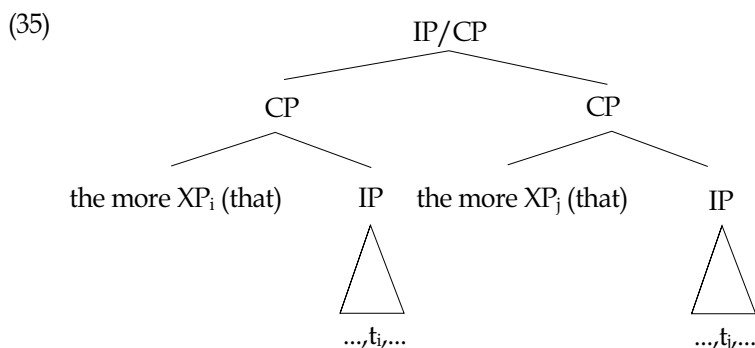
3. Movement Approaches

3.1 Construction-based Approaches

Based on the unique properties of the CC construction, some of which we have observed in the previous sections, Fillmore (1999), Culicover

and Jackendoff (1999), Borsley (2004), and Abeillé and Borsley (2008) suggest a construction-based approach. This view basically analogizes CCs to conditionals, based on the observation that the two share a great deal of properties, and at the same time, shows that CCs have their unique properties that cannot be predicted from general principles. This reasoning leads us to conclude that the construction is *sui generis*, and could be learned by the child as a type of another construction. That is, the view assumes that the properties of the CC cannot be explained with a system with a relative small number of parameters.

In particular, Culicover and Jackendoff (1999), claiming that the structure does not conform to the general patterns of X-bar theory, tease out the idiosyncratic properties of the construction with the following assumed structure:



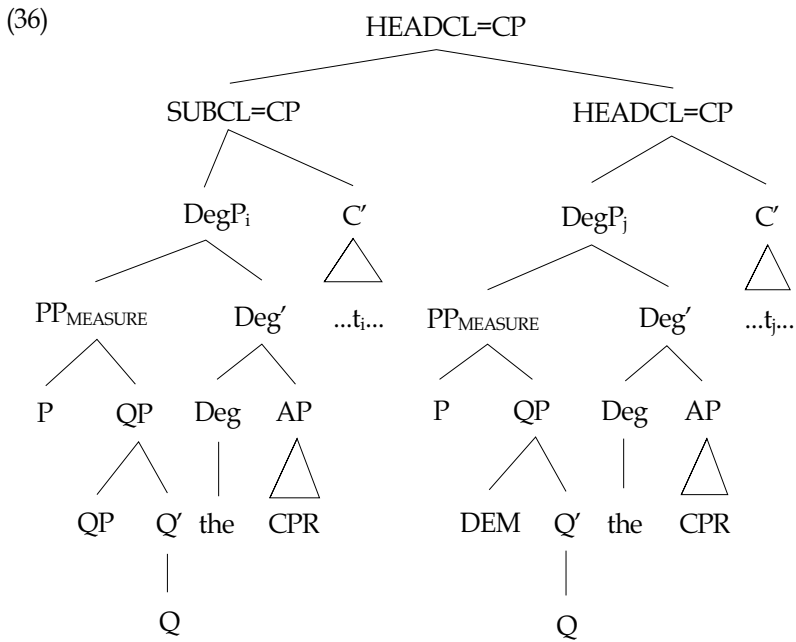
As represented here, the gap in the clause and its linkage to the degree XP are in a principled relation, but the specifier of the comparative XP phrase is unique in both clauses: we cannot take it that there is an operation like a canonical *wh*-movement. The construction is idiosyncratic in that 'syntactically' the structure of CCs is paratactic, i.e., the syntactic structure is two clauses conjoined with no coordinator while it is 'semantically' a subordinate construction with the C2 as the semantic main clause and C1 as a subordinate clause.

3.2 Transformational Approaches

Different from the construction view, Den Dikken (2005), Taylor (2005, 2007), Iwasaki and Radford (2009), among others claim that the

construction is not unique and can be explained within the principles and parameters of UG.

Den Dikken (2005) assumes that constructions like CCs are not primitives but are rather derived from general principles. In particular, Den Dikken's position follows the view that CCs and conditionals have similar behaviors, indicating that the two share common lexical and functional heads. The lexical and functional components of a CC create the CC structure, as illustrated in the following structure:

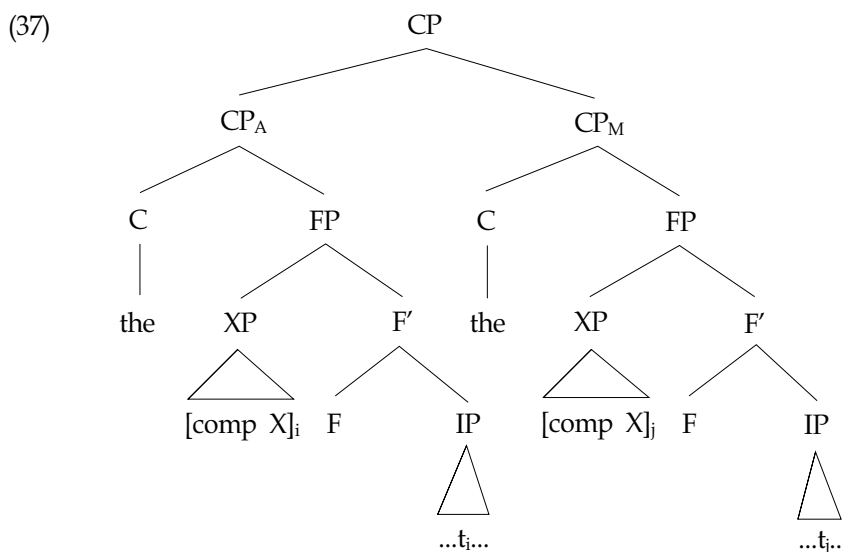


As given here, the first clause C1 is a subordinate clause (taken to be a relative clause), obligatorily positioning to the left of the head clause C2. The comparative phrase is fronted as a DegP and its specifier position is occupied by an optional PP measure phrase and its head Deg (spelled out as *the* in English) takes the comparative AP as its complement.⁴ With the determiner as the head degree expression, the C1 has an operator OP and the lexical item *the* occupies Deg while the

4 His postulation of the PP measure phrase is claimed to be supported by earlier English examples like *By how much the lesse he looked for this discourse, by so much the more he lyked it*. For detailed discussion, see Den Dikken (2005: 514).

lefthand edge of PP is empty in English. The claimed advantage of this skeleton structure is that it captures why the adjunct C1 must be in the first position and why there are only two clauses. Leaving aside the conceptual issues arising from this abstract structure, the most serious question is that the structure would predict that extraction out of either C1 or C2 is impossible, contrary to what we have observed. To be more critical, the assumption of structures like (36), does nothing but postulate an abstract level of CC structure.

A simpler structure is proposed by Taylor (2005) where *the* is taken to be a complementizer selecting an FP:



The FP has the comparative phrase in its specifier position while the complementizer *that* can optionally occupy the head F. The comparative phrase moves from its canonical position inside the IP to SpecFP and the adjunct clause (CP_A) is base-generated and adjoined in the structure as an adjunct to the matrix clause (CP_M). This structure is the result of the derivation satisfying the features of the lexical and functional heads and adhering to the constraints of the grammar.

One obstacle of the analysis is why *the* is in the complementizer position and why the simple clause can have the additional complementizer *that*. The structure also indicates that *the* does not form a constituent with the comparative phrase, predicting ungrammatical

examples like the following (cf. Iwasaki and Radford 2009):

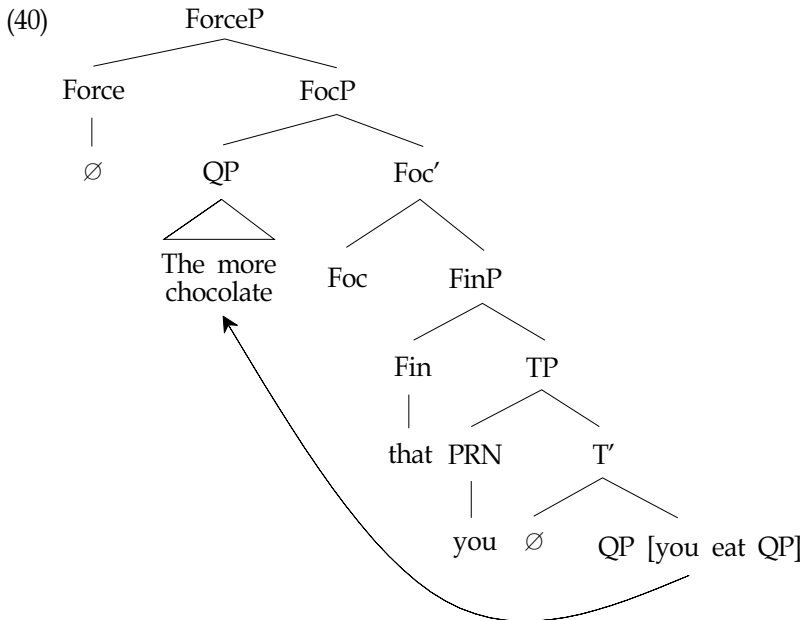
- (38) a. *The [in all probability] more I read, the more I understand.
 b. I think that [in all probability] they will read a lot.

A parenthetical expression can appear between the complementizer and its sentential complement, but this is not possible in CC, contrary to the prediction the structure in (37) makes.

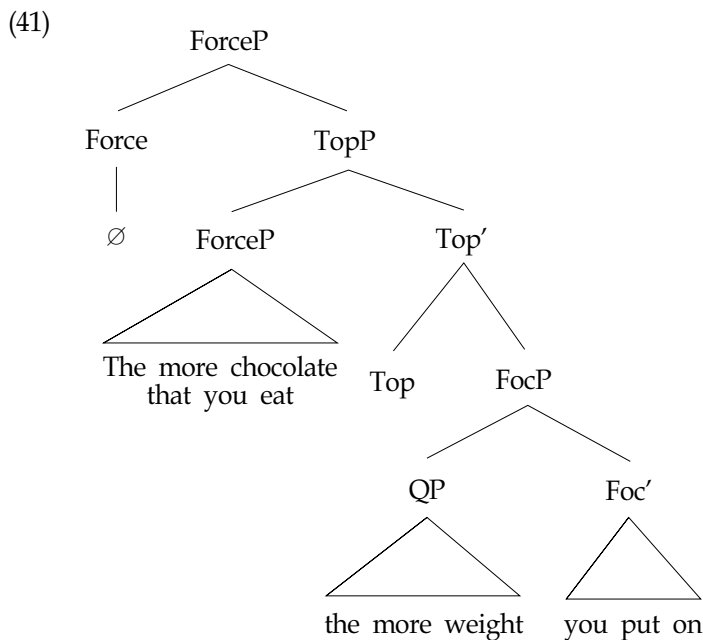
Departing from this 'complementizer' analysis, Iwasaki and Radford (2009) treats *the* as a degree operator, motivated from examples like the following:

- (39) 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.

Their approach hinges on the assumption that *the*, just like *so* or *such* in (39), functions as a degree operator and undergoes movement to the lefthand edge of the clause as represented in the following:



The analysis starts with the assumption that the degree phrase is a QP in which *the* is in its specifier, *more* is the head, and the remaining phrase is the head. This QP moves to the Spec of FocP. In addition, as a way of linking the two clauses C1 and C2, they introduce a Topic Projection:



This structure thus assigns a topic property to C1 and a focus property to C2. Even though this analysis can explain why C1 precedes C2, it does not clearly answer many unique properties of the CC construction. As admitted by Iwasaki and Radford (2009), for example, it does not answer why C2 can be an SAI, why the complementizer *that* is allowed, why C1 induces a conditional meaning, and so forth.

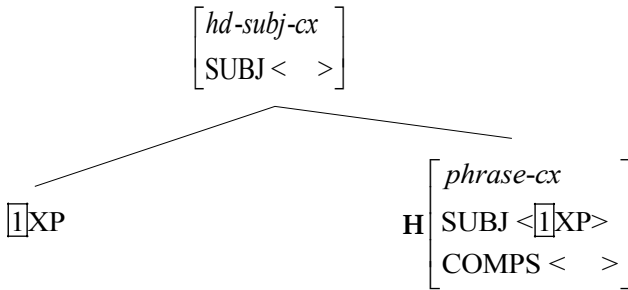
4. Interaction between Lexical and Constructional Properties

4.1 Head and Head-Functor Constructions

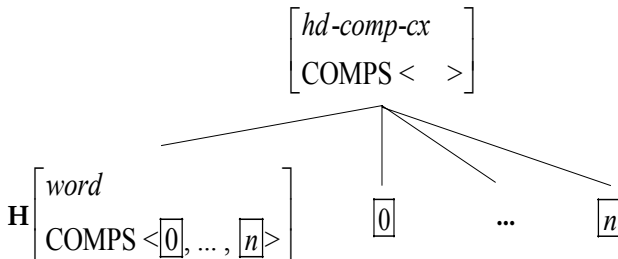
In the version of HPSG that we assume here, complex phrases are licensed by grammatical constructions, which are schemata imposing

constraints on how component signs can combine to build larger signs. Two constructions of English will suffice for our purposes here, the head-subject construction and the head-complement construction, given both in the form of Pollard and Sag's (1994) schemata and the construction types of Fillmore (1999), Sag et al. (2003), Kim and Sells (2008), and related work:⁵

(42) a. Head-Subject Construction:



b. Head-Complement Construction:



The Head-Subject Construction in (42a) allows the combination of a VP with its subject whereas the Head-Complement Construction in (42b) licenses the combination of a lexical head and its phrasal complements. These constructions interact with the Head Feature Principle and the various (partly parochial) linear precedence (LP) constraints to license complex phrasal signs:⁶

5 The feature abbreviations we use here include SUBJ (subject), COMPS (complements), SEL (select), MKG (marking), POS (parts of speech), IND (index), INV (inversion) and so forth.

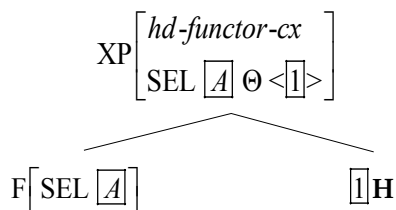
6 See Sag et al. (2003) for detailed discussion of the linear precedence constraints.

(43) The Head Feature Principle:

In a headed construction, the HEAD value of the mother must be identical to the HEAD value of the head daughter.

In addition to these constructions, following Van Eynde (2007) Kay and Sag (2009), and Kim and Sells (2011), we assume that specifiers and modifiers are both functors that 'select' their head. More specifically, we accept the view that English employs the head-functor construction in (44) as one of the well-formed phrasal combinations as represented in the following:

(44) Head-Functor Construction (First Version):

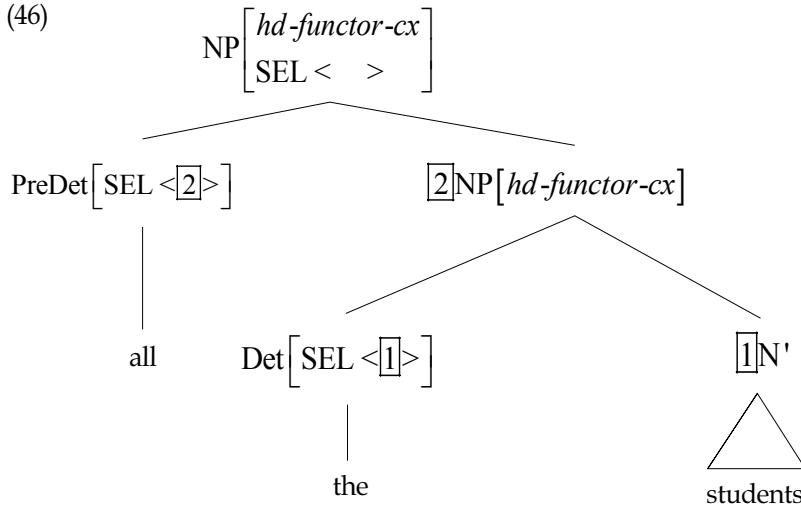


What this constructional constraint specifies is that the combination of a head and a functor selecting this head forms a well-formed *hd-functor-cx*. The functor can select more than one element and combine with one argument at a time (as indicated by the \ominus operation). In English, various functor elements can serve as nonhead daughters in a local tree and 'select' their head sister through the feature SEL (SELECT). The feature specifies what kind of head a functor (encompassing both modifier and specifier) can combine with in syntax.⁷ Examples like the following are all head-functor combinations in which either a modifier or a specifier combines with its semantic head argument:

- (45) a. [[_F big] [_H mess]]
 b. [[_F the] [_H big mess]]
 c. [[_F all] [_H the students]]

⁷ The feature SEL is different from canonical valence features such as SUBJ and COMPS in HPSG. In addition, differently from Van Eynde (2007) and Kay and Sag (2009), the feature SEL as we articulate it here is not a head feature, but a non-head feature inherited to the mother when it is not discharged. See Kim (2010) for an application too.

As an illustration, consider the structure of (45c):



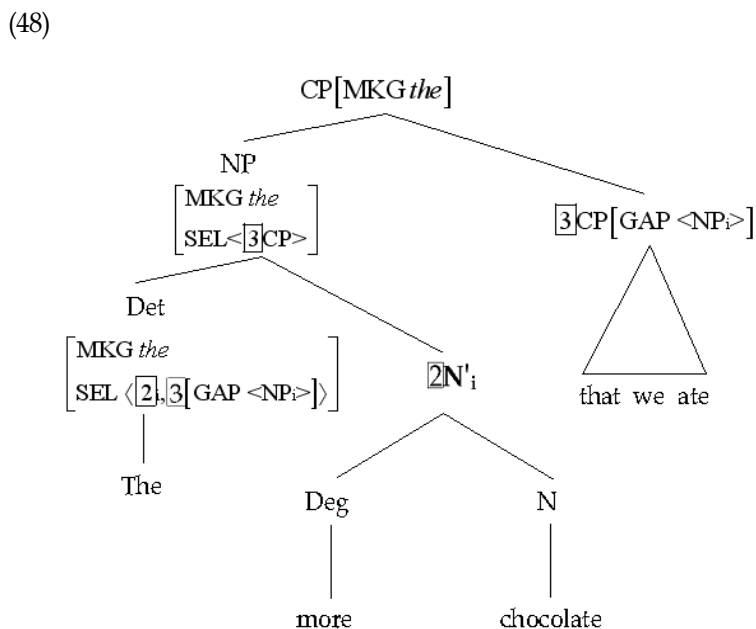
As shown here, both *all* and *the* are functors that select an argument head. The functor *the* first combines with the head *students*, and the resulting phrase then serves as the SEL value of the functor *all*. Both combinations are well-formed head-functor constructions.

4.2 Correlative Constructions

As we have seen, the most intriguing property of the CC is the obligatoriness of the definite *the* in both clauses, motivating to take it as a complementizer or a degree operator. With respect to placing its importance in forming the CC, we take the same road, but do not assign a different category other than determiner. We assume that the difference lies in the function of the determiner *the*. That is, unlike the canonical *the* combining with a nominal head, the one in CC, performing the role of a functor, takes a comparative phrase as well as a clausal element:

- (47)
$$\left[\begin{array}{l} \langle \text{the} \rangle \\ \text{SYN} \left[\begin{array}{l} \text{POS } \textit{det} \\ \text{MKG } \textit{the} \\ \text{SEL } \langle \text{XP}[\text{DEG } +], (\text{S/CP}[\text{GAP } \langle \text{YP} \rangle]) \rangle \end{array} \right] \end{array} \right]$$

This lexical information indicates that there is a special determiner *the* which selects as its argument a degree phrase and a sentential element (S or CP) with a missing element. The selected degree phrase XP and the missing element are coindexed. This lexical information first can project a C1 structure like the following:



As given in the structure, *the*, as a functor, selects two elements: a degree phrase N' and a CP with a nonempty GAP value. The Head-Functioner Construction licenses the definite article to combine with this degree phrase and the result to combine with the CP. The MKG (marking) value *the*, inherited from the nonhead daughter, is also passed up to the final clause. Note that the second element in the SEL value is optional as

indicated by the parentheses, licensing examples like the following which we find a lot in real usages:

- (49) a. The sooner, the better.
 b. The more expensive, the more we want to get.

The following question is then what licenses the combination of two clauses C1 and C2 in which semantically C1 modifies C2 and syntactically the two behave like a coordination. Following the construction view adopted by Culicover and Jackendoff (1999) and Abeillé and Borsley (2008), we assume that the English grammar employs the following correlative construction:

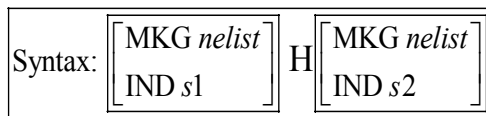


Figure 1: Correlative Construction (*correlative-cx*) in English

This construction, consisting of two main clauses with each having a nonempty MKG (marking) value, encompasses at least the three different types of correlative constructions:

- (50) a. *if-then-cx*:
 If Chris went to the store after school, (then) he will buy something.
- b. *as-so-cx*:
 As interest rates are rising, (so) consumer and producer prices have risen.
- c. *comp-correl-cx*:
 The fewer mistakes you make, the better your mark is.

The construction tells us that it is the second clause C2 that functions as the syntactic head, even though the first and second clauses are in a paratactic relationship. Of these three correlative constructions, each has its own constructional properties while sharing some properties. For example, the correlative marker is different in each (*nelist* means *nonempty list*) and as indicated in (50), the correlative marker of C2 in

if-then-cx (construction) and *as-so-cx* is optional, but the one in the CC (*comp-correl-cx*) is obligatory. In addition, the C1 in the two constructions is optional, but the one in CC is obligatory:

- (51) a. *(The more pizza you eat), the fatter you will become.
 b. (If you eat more pizza), you will become fatter.

In terms of semantics, the three all express a correlation between two scales. However, the CC construction is different from *if-then* clauses in the sense that it does not allow counterfactuals or superlatives:

- (52) a. If/*As you had eaten more, you would want less.
 b. If/*As you eat the most, you want the least.
 c. *The more you would want, the less you would eat.
 d. *The most you want, the least you eat.

In terms of the meaning relation between C1 and C2, the three behave differently. While *if-then-cx* and CC constructions are similar in that the two are in a conditional relation, the two clauses in *as-so-cx* are in a cause-effect relation. These properties thus indicate that the CC (*comp-correl-cx*) has its own syntactic and semantic properties as specified in Figure 2:

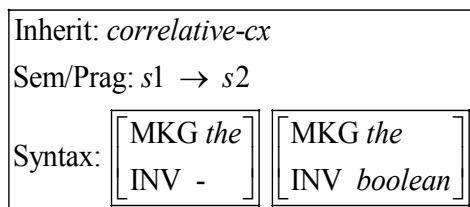
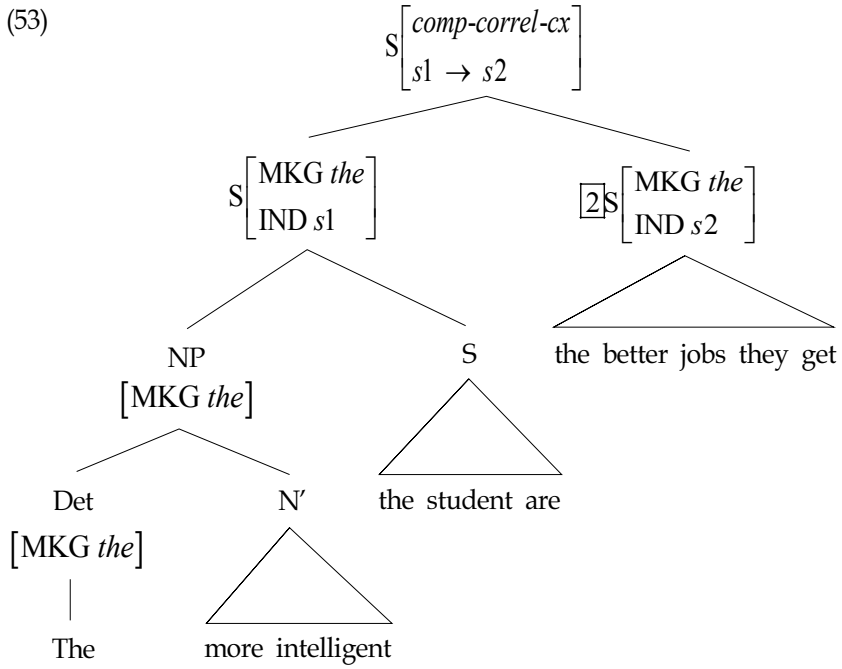


Figure 2: Comparative Correlative Construction (*comp-correl-cx*)

The constructional constraints tell us that the comparative correlative has two main components (C1 and C2), both of which are specified to have *the* as their MRK value. Note here that the two C1 and C2 are semantically conditional ($s1 \rightarrow s2$), whose semantic relation can be evoked only by the constructional property. Meanwhile, syntactically the two components are in paratactic relation whose property is

inherited from its supertype 'correlative':



Note that in Figure 2, unlike the first clause C1, the second clause C2 has its INV value as *boolean*, implying that it can be optionally inverted, just like the *as-so* correlative construction (e.g., *As interest rates are rising, so have consumer and producer prices risen*). This will license examples like (54a), but not those like (54b) where C1 is inverted:

- (54) a. The older a person is, the slower will his tissues grow in his serum.
- b. *The older is a person, the slower his tissues will grow in his serum.

As noted earlier, in CC, inversion is much more flexible in C2. Consider the attested examples again:

- (55) a. The longer he was excluded from power, the darker became his premonitions. (COCA HXU W_bigraphy)

- b. The more organized you are, the better will be the results.
(COCA K2D)

These examples display an extraposition process where the subject is placed in the sentence final position. Assuming that extraposition is a main clause phenomenon, this is expected in the present analysis where C2 is the syntactic head, though C1 and C2 are in a paratactic relation. The structure we assume here is that the subject undergoes an extraposition process. For example, the source of C2 in (55b) will look like (56a) from which the subject is extraposed to the sentence final position as shown in (56b):

- (56) a. [the better [the results will be]].
b. the better [[_i will be] [the results]_i]

4.3 More on Comparative Correlative Constructions

We have also seen that the degree phrase that the determiner *the* selects need not be a complement. It can be a modifier too:

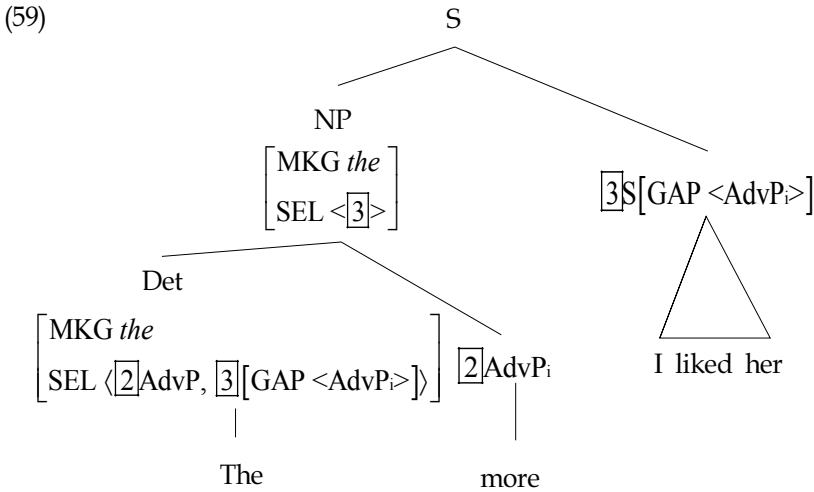
- (57) a. The longer the week went on, the more I liked her.
b. The more you use them, the more easily they will come to you.

Note that we cannot have a degree phrase within the clause:

- (58) a. *The longer the week went on two days, the more I liked her a lot.
b. *The more you use them often, the more easily they will come to you easily.

These indicate that even with an adverbial degree phrase, there is a gap within the clause.⁸

⁸ To be more precise, we assume that a main verb can introduce a degree phrase as its complement when it is realized as a gap. The space limit does not allow us to elaborate this here. For a similar analysis, see Ginzburg and Sag (2000).

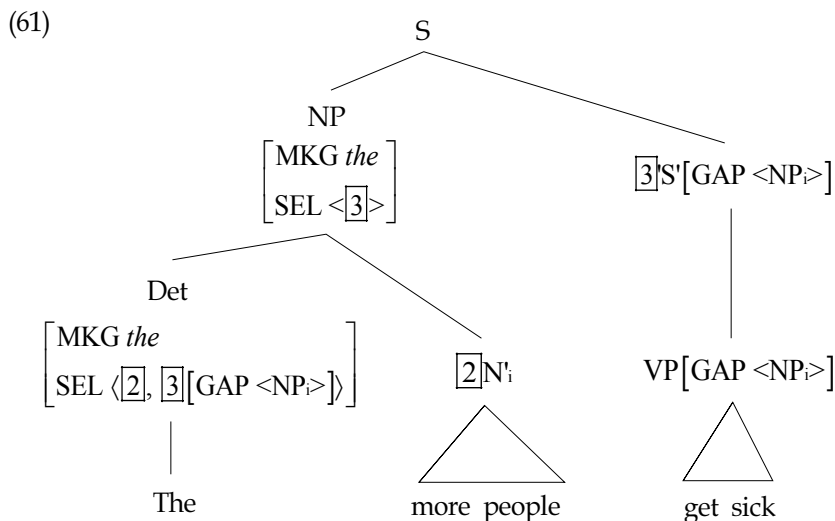


We have also seen that the degree phrase can function as the subject as repeated here again:

- (60) a. The more people arrive, the more people get sick.
 b. The smaller shops closed down, the larger ones put up their shutters.

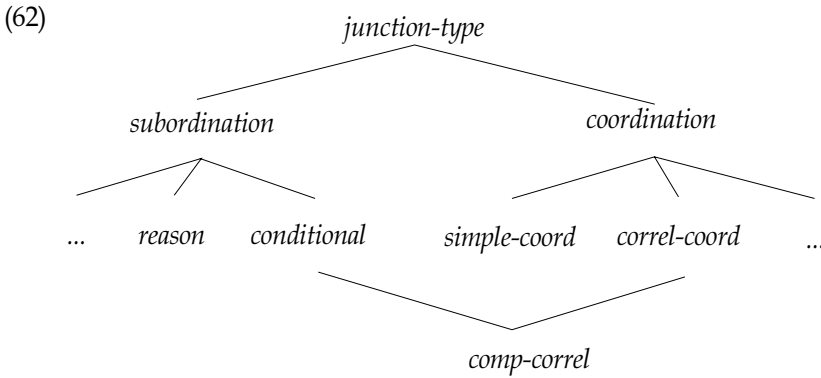
Following Kim and Sells (2008), we allow the subject to be realized as a gap element too. This will then generate a structure like the following:⁹

⁹ The notation 'S' means a sentence whose subject value is realized as a gap. See Kim and Sells (2008) for further discussion.



The present analysis thus can provide a uniform analysis for all the CC examples whether the gap is a complement, a subject, or an adverbial phrase.

The remaining properties we haven't discussed are the gradient properties of CC constructions: that is, CC constructions display both coordination and subordination properties. As seen in Figure 2, the headness of C2 can explain most of the subordination properties. Since C2 is the head, we can expect C2 will be sensitive to main clause phenomena such as tag questions, subjunctive mood, question formation, and so forth. In addition, since C1 has a conditional meaning, we can expect it will behave like *if*-clause with respect to NPI licensing too. However, as we have seen, the two clauses C1 and C2 behave like a coordination type. The constructional constraints in Figure 2 also reflect this, but in addition, we assume that this gradient property is also due to the fact that English CC is cross-classified as the subtype of both subordination and coordination, as represented in the following inheritance network of constructions (cf. Fillmore 1999, Goldberg 2006):



This inheritance system can tell us why CC constructions have both subordination and coordination properties.¹⁰ The CC (*comp-correl*) will inherit its semantically conditional properties from its supertype *conditional* and syntactically coordinating properties from its supertype *correl-coord* generating coordination examples like *either A or B* or *both A and B*. This cross-classification explains why the CC constructions live a double life: subordination and coordination. For example, properties like island constraints refer to the construction's coordination properties while those like adjunct-head relations refer to its subordination properties. Note that English employs a similar cross-classified construction, though slightly different from the CC (cf. Culicover and Jackendoff 1997):

- (63) a. You drank one more can of bear, and I will leave immediately.

¹⁰ The present analysis can provide an analysis for copula elided CC constructions. As we have noted earlier, the copula can be elided in limited environments as repeated here:

- (i) a. The more intelligent the students, the better grades they get.
 b. *The more intelligent they, the better grades they get.

What the contrast entails is that the determiner *the* in CC places further restrictions on its SEL values. That is, the degree argument must be definite and nonspecific and the second argument must be the external argument. Another option we can take is to assume that English introduces an abstract, unpronounced copula verb whose subject needs to be definite, nonspecific. We leave open the detailed elaboration of this analysis for future research.

- b. You miss the class one more time, and I will remove you from the list.

These examples are syntactically coordination sentences, but semantically the first clause is interpreted as conditional. The existence of such an additional construction supports the inheritance network of English constructions.

5. Conclusion

The English comparative correlative construction displays several distinctive properties with some sharing properties with other constructions. The main issue has been how we can deal with such an idiosyncratic construction with general principles or need to posit a special construction.

We have argued that distinctive properties of the construction can be better represented in terms of the tight interaction between lexical and constructional properties. In terms of lexical properties, the definite article *the* has a special use in English, in addition to its canonical use. We have shown that this *the* can select two arguments: a degree phrase and a clause with the nonempty GAP value coindexed with the degree phrase. In terms of constructional properties, English employs at least three types of correlative constructions, each of which has its own properties while sharing some. The CC construction is unique in several respects. For example, the two clauses are conjoined without any conjunction marker but the first clause behaves like an antecedent *if*-clause in terms of meaning. The behavior of *the* is also peculiar. It can combine with a degree phrase which can be syntactically nominal or adjectival or adverbial or even prepositional. In our head-functor treatment, this even selects an additional CP element as its dependent.

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[130-701] School of English, Kyung Hee University
1 Hoegi-dong, Dongdaemoon-gu, Seoul, Korea
E-mail: jongbok@khu.ac.kr

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