

English Object Extraposition:
A Constraint-Based Approach

Jong-Bok Kim (Kyung Hee University)
and
Ivan A. Sag (Stanford University)

Proceedings of the HPSG05 Conference

Department of Informatics, University of Lisbon

Stefan Müller (Editor)

2005

CSLI Publications

<http://csli-publications.stanford.edu/>

Abstract

According to the Projection Principle (Chomsky 1981), expletives have no semantic content and thus cannot occur in theta-marked positions. However, there are many examples where expletive *it* appears as a direct object, in violation of the Projection Principle. The various attempts that have been made to account for such cases (e.g. the case-based analysis of Authier (1991), the predication analysis of Rothstein (1995), and the Specifier analysis of Stroik (1991, 1996)) all posit movement of the expletive from a non-theta marked position to direct object position. However, these analyses have so far been unsuccessful in capturing several important contrasts, e.g. variable optionality of the expletive *it*. This paper argues that such contrasts (and the complex behavior of expletive *it* more generally) follow straightforwardly from a lexicalist, constraint-based analysis in which lexical information and independently motivated constraints interact in subtle ways.

1 Extraposition: the Issue

English allows a pattern where a finite or infinitival clause appears in sentence-final (or ‘extraposed’) position (cf. Quirk et al. 1985):

- (1) a. I made it my objective [to settle the matter].
b. I owe it to you [that the jury acquitted me].

This pattern involves the introduction of expletive (or ‘dummy’) *it* which, though morphologically identical to the third person singular pronoun, is not referential, and hence is unable to be assigned any semantic role. Expletives also exhibit distinctive syntactic properties, as noted by Postal and Pullum (1988):

- (2) a. For him to smoke is itself illegal.
b. *It is itself illegal for him to smoke.
- (3) a. my observation/description of it falling
b. *my observation/description of it raining
- (4) a. The animal_i was now quite large, and it_i was tough to prevent from escaping.
b. *It was tough to prevent from becoming obvious that things were out of control.

An earlier version of this paper was presented at the 41st Chicago Linguistic Society at the the University of Chicago on April 8, 2005 and the HPSG 2005 at the University of Lisbon on Aug 24th, 2005. We thank the audiences of the two conferences. In particular, we thank Frank Van Eynde, Stefan Müller, Carl Pollard, and Peter Sells for suggestions and clarifications.

These contrasts illustrate the differences between anaphoric and expletive *it*. Unlike the anaphoric pronoun, the expletive in (2b) does not support an emphatic reflexive *itself*. In (3), we see that only referential *it* can appear in the nominalizations that are permitted in *of*-phrases. Finally, expletives cannot occur as the subject of a *tough*-predicate, as shown in (4b).

According to the Projection Principle (which was proposed essentially without argument by Chomsky (1981) and has been widely assumed within mainstream generative grammar), the expletive pronoun, which has no semantic content, cannot occur in any theta-position. This entails that expletives cannot appear in strictly subcategorized positions. However, it is well known that there are overt cases where the expletive *it* does occur in a strictly subcategorized object position, as in (5) [Postal & Pullum 1988]:

- (5) a. Sometimes I find it difficult to read my own writing.
- b. She's put it in their mind that it's going to be really tough.
- c. I take it for granted that there will be an appeal.

A number of attempts have been made to account for such cases, mainly from a transformational perspective. However, to our knowledge, none has provided a satisfactory account of the contrast that we find in examples like the following (cf. Authier 1991, Iwakura 1991, 1994):

- (6) Group I: I blame *(it) on you [that we can't go].
- Group II: Nobody expected (it) of you [that you could be so cruel].
- Group III: John thought (?it) to himself [that we had betrayed him].

With respect to the occurrence of the expletive *it* in object position, there exists a clear contrast here: the expletive is obligatory in Group I, optional in Group II, and of questionable status in Group III.

In this paper, we show that these contrasts, in addition to the distributional possibilities of *it* in object position, follow naturally from the interaction of diverse constraints in our lexicalist, constraint-based analysis.

2 Movement-Based Approaches

Small Clauses. Before presenting our analyses, we briefly review the most promising of the previous approaches that have been taken regarding object extraposition. As already mentioned, Postal and Pullum (1988) provided extensive evidence supporting the claim that expletive *it* can appear in subcategorized positions. The only way of saving the Projection Principle then seems to be to regard the expletive *it* in the object position as being the subject of a small clause. The small clause analysis seems to fit cases like the following:

- (7) a. I believe *SC*[it to be obvious that he has lost].
- b. We kept *SC*[it a secret that Jerome was insane].

However, as Postal and Pullum point out, the small clause account appears to be inconsistent with the existence of examples like (8):

- (8) a. They never mentioned *SC*[it [to the candidate] that the job was poorly paid].
- b. We can take *SC*[it [for granted] that there will be an appeal].

The matrix PP would have to somehow descend into the embedded clause.

There are additional cases where the expletive *it* functions as a subcategorized element of the main verb. For example, it is hard to deny that the particle *out* in (9a) is in construction with the main verb in Postal and Pullum's examples like (9b):

- (9) a. I figured [it out in about five minutes to be impossible to solve the problem].
- b. *I figured in about five minutes it out to be impossible to solve the problem.

Despite this fact, as the bracketings in (9a) indicate, the small clause forces us to separate the particle from the verb.

Postal and Pullum's observations thus raise a fundamental challenge to the Projection Principle, one that has been responded to in an interesting paper by Rothstein (1995). In the next section, we review her conclusions briefly, but critically.¹

Rothstein 1995. Rothstein (1995) claims that the expletive *it* is licensed only as subject based on the following two assumptions:

- (10) Predication Condition: Every syntactic predicate must be syntactically saturated. (Rothstein (1995: (15)))
- (11) Pleonastics are licensed only as subjects of syntactic predicates that do not assign an external theta role. (Rothstein (1995: (26)))

In her analysis, a syntactic predicate is defined to be an open maximal projection that needs to be saturated by being linked to a syntactic argument, its subject. This approach thus implies that there is no pleonastic *it* in the object position; the pronoun *it* in the object position is either a subject or a referential pronoun. In examples like (12), for example, the expression following the expletive is to function as the extraposed clause's predicate:

¹There are two other movement-based approaches to the data in question that we are familiar with: the case-based approach of Authier (1991) and the 'SPEC of CP' analysis of Stroik (1991, 1996). These are also flawed in various respects, as noted in Kim and Sag forthcoming.

- (12) a. I consider *(it) obvious that you should have done that.
 b. I found *(it) stupid that Mary didn't say anything.

But it is unclear how to reconcile the predication analysis with examples where we can find no possible predicate at all or those where the object *it* is optional (examples from Rothstein 1995):

- (13) a. He regretted (it) that he was late.
 b. You just believed (it) that he would help.
 c. He never mentioned (it) to the candidate that the job was poorly paid.

Rothstein assumes that the pronoun *it* in (13a) is an event variable bound by the CP. This in turn means that the CP here is predicated of the event object of the matrix verb. And the pronouns *it* in (13b) and (13c) are linked to the right-dislocated CP.²

As many have pointed out (e.g. Collins (1994) and Huddleston and Pullum (2001)), it is quite difficult to differentiate extraposition (EX) from right dislocation (RD), though some differences are apparent. The prototypical RD construction has an NP shifted outside as in (14), and to the right of the governing clause, whereas the prototypical EX has a nominal clause shifted to the right of the predicate:

- (14) It causes him a lot of embarrassment, his receding hairline.

In addition, the pronoun *it* in RD has a referential function, whereas the one in EX has no referential power:

- (15) a. RD: It annoyed us both, having to do the calculations by hand.
 b. EX: It annoyed us both that we had to do the calculations by hand.

Prosody can also serve to differentiate the constructions in general. A RD sentence is normally spoken with two intonational phrases – the first with a primary accent on *fun* and the second with deaccenting of *parasailing*. This contrasts with the EX rendition, where there is only one such unit containing an accent on *parasailing*:

²Within her analysis, the *it* + CP sequences have at least two different types of analysis: one as event quantification; the other as right dislocation. Verbs like *regret*, *confirm*, *resent*, and *announce* receive the former analysis; verbs like *suspect*, *assume*, *suppose*, *expect*, *believe*, and *mention* get the latter. The claimed differences are that only the event-quantification verbs can take gerund complements or occur with an event quantifier:

- (i) a. Alexander regretted that he had destroyed the city/the prize/destroying the city/the destruction of the city.
 b. Alexander regretted it every time I had dinner with John.
 (ii) a. *They suspected/assumed/expected John's stealing the diamonds.
 b. *They suspected/assumed/expected/supposed it every time he told a lie.

- (16) a. RD: It was fun, parasailing.
 b. EX: It was fun parasailing.

In other words, the right peripheral element in RD is intoned as an afterthought.

And none of Rothstein's examples require the RD prosodic pattern. They all allow the primary accent to be realized within the *that*-clause, i.e. they allow the prosodic pattern that is characteristic of EX, not RD.³

In addition, as Huddleston and Pullum (2001) point out, right-dislocated material is required to be 'discourse old', whereas the extraposed constituent may be 'discourse new':

- (17) a. RD:#It's really interesting, a book I'm reading.
 b. EX: It now seems that there will be another price increase soon.

But there are certainly examples like Rothstein's in (13b,c) that allow indefinites introducing discourse-new referents, e.g. the following:

- (18) a. If you could just suppose it that there's a REAL FIRE downstairs.
 b. I want you to mention it to the class that there's a NEW KID there.

Rothstein must thus analyze as RD, examples that exhibit neither the prosodic properties nor the discourse properties of RD – a highly undesirable consequence.

Similarly, Rothstein's analysis implies that if the pronoun is obligatory then there must be a predication relation. However, there are quite a few examples where the pronoun *it* is obligatory without there being any predication relation:

- (19) a. I depend upon *(it) that their paper will expose crooked politicians.
 b. I figured *(it) out to be more than 300 miles from here to Tuscon.

Her analysis takes prepositional extraposition examples like (19a) as 'adjunct predicate constructions' analogous to examples like (20):

- (20) You can't count on/depend on him drunk. (Rothstein 1998: (91))

However, this neglects the fact that the CP in (19a) is not an optional element, unlike *drunk*. Extraposed CPs like those in (19) don't seem to share any properties with adjuncts.

In addition, we can easily find examples where the presence of the object *it* is obligatory, although nothing is plausibly analyzed as a predicative expression:

- (21) a. Optimistic leaks had it that the negotiators were making good progress on a statement of "principles".

³Note that RD also allows the pronoun *that*, which EX does not.

- b. I love it that you've asked me to go away.⁴

Such examples cast further doubt on Rothstein's proposal. All things considered, an analysis that can treat all of these examples as instances of expletive *it* is to be preferred.

3 A Lexicalist Analysis

Lexical Classes. As we have already seen, it is sometimes thought that the verbs allowing object *it*-extraposition form a restricted class. For example, it is clear (v. Authier 1991) that verbs that allow a choice between a clausal complement and an NP object will license object extraposition:

- (22) a. They didn't even mention his latest promotion/that he was promoted recently.
b. They demanded justice/that he should leave.
c. He said many things/that I was not the person he was looking for.
- (23) a. They never mentioned it to the candidate that the job was poorly paid.
b. They demand it of our employees that they wear a tie.
c. He wouldn't dare say it that I am not the right man for the job.

Unlike these, it seems, at least at first blush, that propositional object verbs like *hint* and *think*, which select a single CP complement, cannot undergo extraposition:

- (24) a. I think *(of) you all the time.
b. He hinted *many things/that I was not the person he was looking for.
- (25) a. I think (??it) that John had an accident.
b. He wouldn't dare hint (?it) that I am not the right man for the job.

However, more careful investigation reveals many naturally occurring examples of object extraposition with such verbs, as can be seen from the following examples found on the internet:

- (26) a. ...because he really obviously thought it that it was somehow going to work out to his benefit.⁵

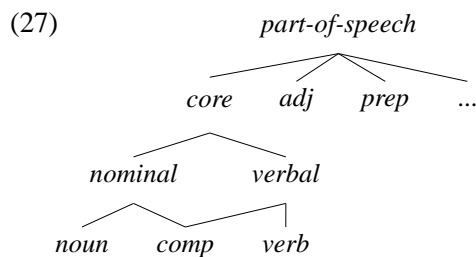
⁴From the BNC

⁵www.bazima.com/archives/before/2004/12/not-only-is-she.htm [April 15, 2005]

- b. The Auditor would not be able to pick it up unless somebody hinted it that the account existed.⁶

We speculate that the true generalization is that all verbs (modulo certain qualms about verbs taking interrogative complements) that allow CP (or sentential) objects also allow object *it*-extraposition.

To reflect such lexical patterns, we will assume, following much work in HPSG, that parts of speech come in families and can profitably be analyzed in terms of typed feature structures. The part-of-speech types we will assume form the hierarchy illustrated in (27):⁷



The type *nominal* is thus a supertype of both *noun* and *comp*. In accordance with the basic properties of systems of typed feature structures, an element specified as [HEAD *nominal*] can be realized either as [HEAD *noun*] or [HEAD *comp*]. These will correspond to the phrasal types NP and CP, respectively.

The hierarchy implies that the subcategorization pattern of English verbs will refer to (at least) each of these types. For example, we can easily identify verbs whose subcategorization restrictions make reference to *nominal*, *noun*, and *comp*:

- (28) a. She pinched [his arm] as hard as she could.
 b. *She pinched [that he feels pain].
- (29) a. We hope [that such a vaccine could be available in ten years].
 b. *We hope [the availability of such a vaccine in ten years].
- (30) a. Cohen proved the independence of the continuum hypothesis.
 b. Cohen proved that the continuum hypothesis was independent.

The *part-of-speech* type hierarchy in (27) allows us to formulate simple lexical constraints that reflect these subcategorization patterns. That is, we can assume that English transitive verbs come in at least the following three varieties:

⁶www.stkittsnevis.net/archives/commission/coiday70.html [April 15, 2005]

⁷Following Postal (1966), we assume that determiners are really pronouns that select common NP complements and hence have *noun* as their part of speech type.

- (31) a. [SUBCAT ⟨ NP , NP[HEAD *noun*],...⟩]
 b. [SUBCAT ⟨ NP , CP[HEAD *comp*] ,...⟩]
 c. [SUBCAT ⟨ NP , [HEAD *nominal*] ,...⟩]

In each class, the SUBCAT list specifies the dependent elements that the verbs select (in the order ⟨ Subject, Direct Object, ... ⟩). The HEAD value of a given element is the part-of-speech type that a word passes on to the phrases it projects. NP and CP are abbreviations for feature structure descriptions that include the information [HEAD *noun*] and [HEAD *comp*], respectively. Verbs like *hope* select either a CP, an S, or that the verbs select an infinitival VP. This means its complement is [HEAD *verbal*], whereas *try* selects only [HEAD *verb*] since it does not allow a CP clause.

HPSG: Background Assumptions. We assume here that complex phrases are licensed by grammatical constructions: schemata imposing constraints on how component signs can combine to build larger signs. The well-formed signs defined by our grammar are those that instantiate the mother of some construction. Two constructions of English will suffice for present purposes: the head-complement construction and the subject-predicate construction, given in the form of the construction types of Sag (2001, to appear), Sag et al. (2003), and related work:

- (32) a.
$$hd-comp-cxt \Rightarrow \left[\begin{array}{l} \text{MTR} \quad [SYN|CAT|SUBCAT \boxed{A}(\boxed{I})] \\ \text{DTRS} \quad \left\langle \boxed{0} \left[\begin{array}{l} \textit{word} \\ SS|C|SUBCAT \boxed{A} \oplus \boxed{B} \end{array} \right] \right\rangle \oplus \boxed{B} \\ \text{H-DTR} \quad \boxed{0} \end{array} \right]$$
- b.
$$subj-pred-cxt \Rightarrow \left[\begin{array}{l} \text{MTR} \quad [SYN|CAT|SUBCAT \langle \rangle] \\ \text{DTRS} \quad \left\langle \boxed{0} [SYN|CAT|SUBCAT \langle \boxed{I} \rangle] , \boxed{I} \right\rangle \\ \text{H-DTR} \quad \boxed{0} \end{array} \right]$$

These constructions interact with general principles and the various (partly parochial) linear precedence constraints to license complex phrasal signs:

- (33) Three English Linear Precedence Constraints:

- LP1: Hd-Dtr[word] < X
 LP2: \boxed{I} < [SYN|CAT|SUBCAT ⟨ \boxed{I} ⟩]
 LP3: NP < PP

LP1 says that a lexical head must precede all of its sisters, whereas LP2 ensures that a predicate selecting its subject follows that subject. Finally, LP3 requires that an NP precede any sister that is a PP.

The various SUBCAT constraints posited above for the different verb classes interact with the construction inventory, the general principles of HPSG theory, and with the LP constraints to account for the data we observed earlier. For example, *pinch* can select only an NP complement whereas *hope* can subcategorize only for a CP as its complement. Verbs like *prove*, *forget*, and *regret*, however, can cooccur with either NP or CP complements, because the part-of-speech type *nominal* subsumes both *noun* and *comp*. This basic picture sets the stage for our consideration of more complex data relevant to object extraposition.

Two Regularities of English. English exhibits a systematic alternation between pairs of non-extrapolated and extrapolated sentences like the following:

- (34) a. [That Chris knew the answer] occurred to Pat.
b. It [occurred [to Pat] [that Chris knew the answer]].

The relation is productive. As English acquires new expressions, e.g. *freak out*, *weird out*, *suck*, or *bite*, it acquires both extrapolated and non-extrapolated sentence types (cf. Jackendoff 2002):

- (35) a. It really freaks/weirds me out that we invaded Iraq.
b. That we invaded Iraq really freaks/weirds me out.
(36) a. It really sucks/bites that we invaded Iraq.
b. That we invaded Iraq really sucks/bites.

To capture the systematic relationship in subject extraposition, Pollard and Sag (1994) [see also Sag et al. 2003] introduced a lexical rule that turns the sentential subject in (35b) and (36b) into a sentential ‘complement’ of the verb in (35a) and (36a), respectively. However, as pointed out by Keller (1995), Bouma (1996), and van Eynde (1996), this complement analysis alone is incomplete. It does not allow for cases like the following:

- (37) a. They regret it [very much] [that we could not hire Mosconi].
b. It struck a grammarian last month, [who analyzed it], [that this clause is grammatical].

Given the general assumption that VP modifiers cannot intervene between the head and its complement, the intervening occurrence of the VP adjunct *very much* or the appositive clause *who analyzed it* argues against taking extrapolated clause as the complement. In addition, as noted in Van Eynde (1996), the complement analysis fails to account for the following well-known contrast in extractability:

- (38) a. That Kim would lose to Pat, nobody had expected _.
 b. *That Sandy snores, it bothers Kim more and more _.

The clausal complement can be freely topicalized from complement position, but not from extraposed position.

Following in critical respects Bouma (1996), we take English extraposition to be a nonlocal dependency and introduce the nonlocal feature EXTRA together with the following lexical construction:⁸

(39) Extraposition Construction

$$\left[\begin{array}{l} \text{MTR} \left[\begin{array}{l} \text{PHON } \boxed{0} \\ \text{S|C} \left[\begin{array}{l} \text{SUBCAT } \boxed{A} \oplus \langle \text{NP}[it] \rangle \oplus \boxed{B} \\ \text{EXTRA } \langle \boxed{1} \rangle \end{array} \right] \end{array} \right] \\ \text{DTRS} \left\langle \left[\begin{array}{l} \text{PHON } \boxed{0} \\ \text{S|C|SUBCAT } \boxed{A} \oplus \langle \boxed{1}[\textit{verbal}] \rangle \oplus \boxed{B} \end{array} \right] \right\rangle \end{array} \right]$$

This rule creates new words whose feature specifications are minimally different and systematically related to those of other words that select S and/or CP complements. These new words select their S or CP complement not via the SUBCAT feature, but rather via EXTRA, a separate selection feature that will also be used in the analysis of other kinds of extraposition phenomena. An expletive NP (NP[it]) holds the place of the extraposed complement in the new word's SUBCAT list.⁹

EXTRA specifications will be passed up to a higher structure and discharged by the following Head-Extraposition Construction:¹⁰

(40) Head-Extraposition Construction:

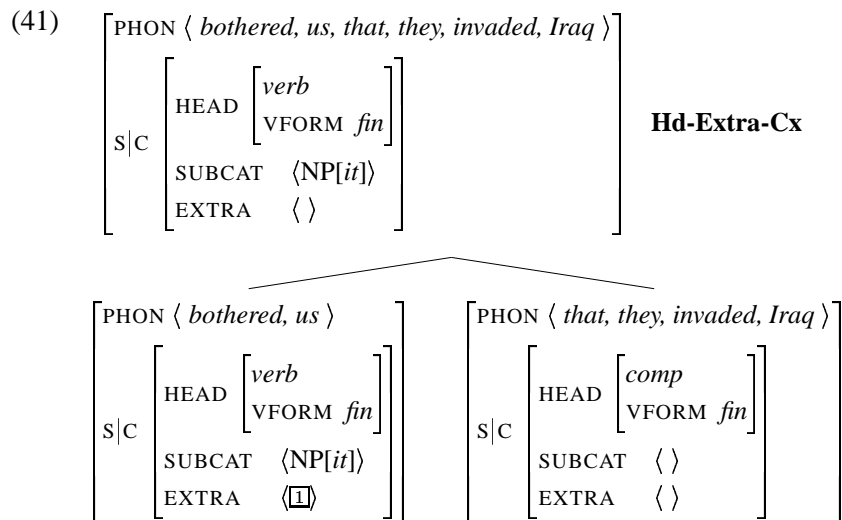
$$hd\text{-extra}\text{-cxt} \Rightarrow \left[\begin{array}{l} \text{MTR} \left[\text{S|C|EXTRA } \langle \rangle \right] \\ \text{DTRS} \langle \boxed{0}, \boxed{1} \rangle \\ \text{H-DTR} \left[\begin{array}{l} \boxed{0} \textit{phrase} \\ \text{S|C|EXTRA } \langle \boxed{1} \rangle \end{array} \right] \end{array} \right]$$

This construction reflects the fact that English independently allows phrases constructed by a head combining with an extraposed element, as illustrated in (41):

⁸Lexical constructions, as used here, are quite similar to phrasal constructions ('Phrasal Schemata' in the sense of Pollard and Sag 1994). For more discussion, see Sag et al. 2003, Chap. 16.

⁹This lexical construction may need to include a semantic restriction on the extraposed clause.

¹⁰The percolation of the feature EXTRA is either guaranteed by the Generalized Head Feature Principle of Ginzburg and Sag 2000 or else, making slightly different theoretical assumptions, by the Valence Principle of Sag et al. 2003.



English freely employs this kind of construction for the extraposition of adjunct elements, as well (cf. Culicover and Rochemont 1990):

- (42) a. [[A man came into the room] [that no one knew]].
 b. [[A man came into the room] [with blond hair]].
 c. I [[read a book last week] [which was about Chomsky]].

All these examples are licensed by the Head-Extrapolation Construction.

One additional constraint relevant to extraposition phenomena involves the possible orderings of CPs and Ss with respect to other constituents. The essential insight was formulated by Kuno (1987) as his Ban on Non-sentence Final Clause (BNFC), which prohibits a CP or S from having any element to its right:

- (43) a. *Would [that John came] surprise you?
 b. Would it surprise you [that John came]?

- (44) a. *Would [to pay now] be better?
 b. Would it be better [to pay now]?

- (45) a. *I explained that the world is round to them.
 b. I explained to them that the world is round.

The BNFC constraint basically bars any argument from appearing after a sentential argument. In the present context, we can incorporate the insight of this functionally motivated constraint via a (language-particular) LP constraint:

(46) LP4: Complement \prec [SYN|CAT|HEAD *verbal*]

LP4 says that any sign whose HEAD value is *verbal* must occur after any of its complement sisters.

Group I. As noted earlier, verbs like *blame* require the presence of the expletive *it* in object position:

- (47) a. I blame [the case] on you.
 b. *I blame [that we can't go].
 c. *I blame [that we can't go] on you.
 d. I blame it on you [that we can't go].
 e. *I blame on you [that we can't go].

These data imply that verbs like *blame* will have the following SUBCAT information:

(48)
$$\left[\text{S|C|SUBCAT} \left\langle \text{NP}, \boxed{\text{S|C|HEAD } \textit{nominal}}, \left[\text{S|C} \left[\begin{array}{c} \text{PP} \\ \text{HD|PFORM } \textit{on} \\ \text{SUBCAT } \langle \boxed{\phantom{\text{NP}}} \rangle \end{array} \right] \right] \right\rangle \right]$$

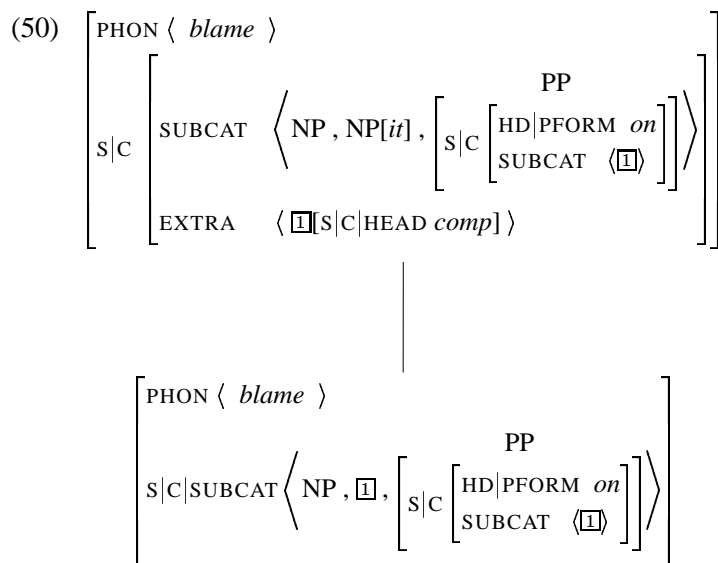
The verb *blame* selects for a *nominal* object and a PP[*on*] argument. Note that the PP is predicational, i.e. it has a single element on its SUBCAT list and this element is identified with the object, its (raising) controller. This analysis of PP[*on*]s is motivated by examples like (49a,b):

- (49) a. They placed the blame on us.
 b. The blame was on us.

In these examples, the predicational nature of PP[*on*] is clear and plays a key role in our semantic analysis, e.g. in explaining why (49a) entails (49b).

In (48), the object's part of speech is of type *nominal*. Hence that element can be resolved to NP, as in (47a). This can also be resolved to CP, yet this resolution cannot give rise to any linearization. The CP–PP ordering in (47c) is a violation of the BNFC constraint LP4 (see (46) above) and the PP–CP ordering in (47e) violates LP2, which requires a controller to precede any sister that it controls, e.g. the PP[*on*]. Hence any attempt to resolve the object in (48) to CP leads to a violation of some independently motivated constraint.

Notice here that when the *nominal* is realized as its subtype *comp* that can project into a CP, it can get 'pumped' by the Extraposition Construction (since *comp* is a subtype of *nominal*), as shown in (50):



The lexically constructed word (the mother) in (50) gives rise to the example in (47d) whose partial structure is given in Figure 1. As noted, in order for the verb *blame* to realize its complement as a clause (CP), it must first get pumped by the Extraposition Construction, which will ensure that an expletive *it* object is also present.

Most of the object extraposition examples, in addition to an object argument, subcategorize for a predicative XP complement. If this predicative XP is obligatory and the object complement is realized as a CP, then we expect the object will have to be extraposed in order to avoid the effects of the BNFC Constraint – LP4. This prediction is borne out:

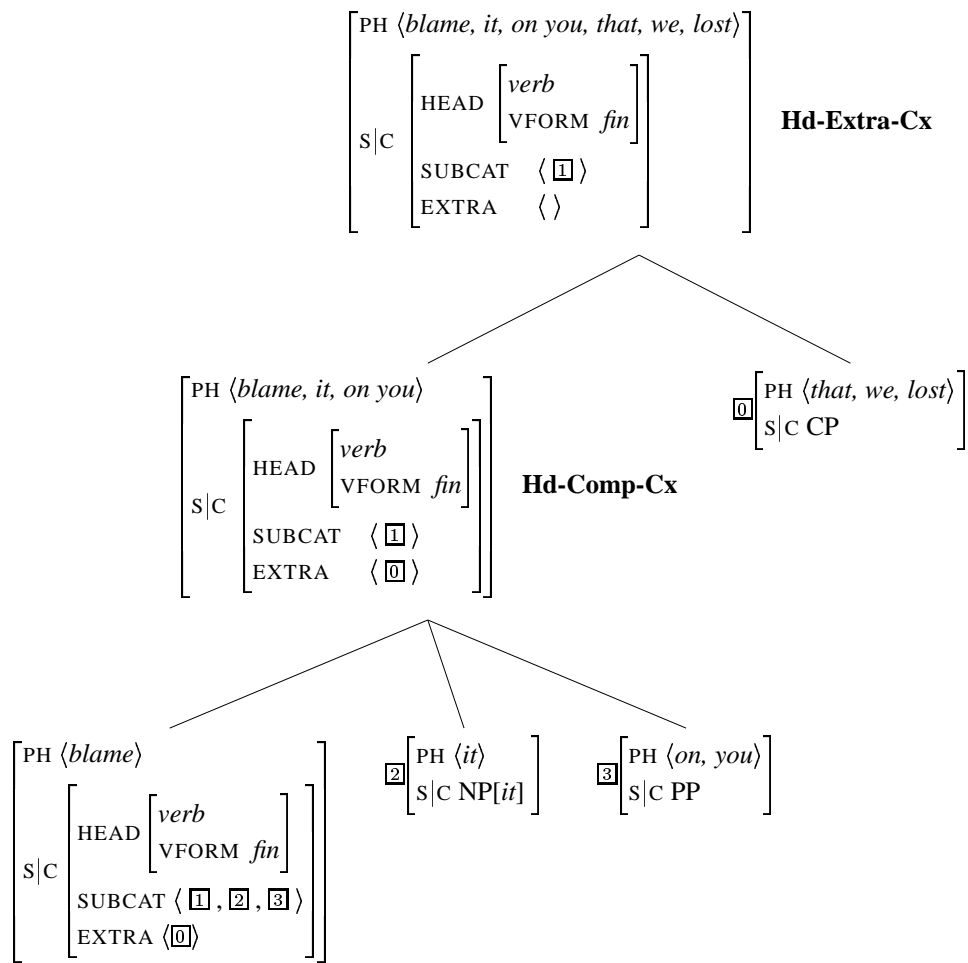
- (51) a. I made it my objective [to settle the matter].
 b. *I made [to settle the matter] my objective.
 c. I made [the settlement of the matter] my objective.
- (52) a. I owe it to you [that the jury acquitted me].
 b. *I owe [that the jury acquitted me] to you.
 c. I owe [my acquittal] to you.

Verbs like *made* and *owe* select an object and a non-optional predicative XP. This means that when the object is realized as a CP and extraposed to the sentence final position, the expletive also must occur.

Group II. In the Group II examples, expletive *it* is optional, as noted earlier. The behavior of a verb in this group is illustrated by the following data set:

- (53) a. Nobody expected [his success].

Figure 1: An Object-Extrapolation Structure



- b. Nobody expected [anything] of me.
- c. Nobody expected [that you could be so cruel].
- d. *Nobody expected [that you could be so cruel] of you.
- e. Nobody expected it of you [that you could be so cruel].
- f. Nobody expected of you [that you could be so cruel].
- g. Nobody expected [you could be so cruel].
- h. *Nobody expected [you could be so cruel] of you.
- i. ?Nobody expected of you [you could be so cruel].
- j. ?Nobody expected it of you [you could be so cruel].

These examples suggest that the lexical entries of verbs like *expect* include the following specification:

$$(54) \left[\text{S|C|SUBCAT} \langle \text{NP}, [\text{S|C|HEAD } \textit{core}] (, \text{PP}[\textit{of}]) \rangle \right]$$

According to the SUBCAT information in (54), the verb *expect* takes three arguments: a subject NP, an object whose part of speech is specified only as *core*, and an optional PP. Given this information, and depending on the resolution of the [HEAD *core*] value, we will have the following three realizations:

- $$(55) \text{ a. } \left[\text{S|C|SUBCAT} \langle \text{NP}, \text{NP} (, \text{PP}[\textit{of}]) \rangle \right]$$
- $$\text{ b. } \left[\text{S|C|SUBCAT} \langle \text{NP}, \text{CP} (, \text{PP}[\textit{of}]) \rangle \right]$$
- $$\text{ c. } \left[\text{S|C|SUBCAT} \langle \text{NP}, \text{S} (, \text{PP}[\textit{of}]) \rangle \right]$$

Let us first consider the predictions when the PP is not realized. (55a) will allow for sentences like (53a); (55b) will accommodate sentences like (53c); and (55c) will accommodate sentences like (53g). When the PP is realized, the options are more limited, as LP4 will rule out (53d) and (53h).

How then can we generate examples like (53f), whose Group I analogues are ungrammatical? These are possible with Group II verbs, since no LP rule blocks the PP-CP sequence when the PP is nonpredicative (i.e. when the PP's SUBCAT value is the empty list rather than a singleton list). As we saw earlier PP[*on*] is predicative as the complement of *blame*. PP[*of*] is different, however, as the following contrast indicates:

- $$(56) \text{ a. } \text{The blame was on me.}$$
- $$\text{ b. } * \text{The expectation is of me.}$$

There is thus no constraint barring the order instantiated by (53f). The difference in functional type of the PP interacts with other aspects of our analysis to explain this difference between Group I and Group II. Nothing rules out (53i), though it is judged somewhat less acceptable by many speakers, a fact we would explain by appeal to interacting nonsyntactic factors.

Of course a feature structure like the one in (54) can be pumped by the Extraposition Construction, just as the Group I verbs were. The result is sketched in (57):

$$(57) \left[\begin{array}{l} \text{PHON} \langle \textit{expected} \rangle \\ \text{S|C} \left[\begin{array}{l} \text{SUBCAT} \langle \text{NP}, \text{NP}[\textit{it}] \langle, \text{PP}[\textit{of}] \rangle \rangle \\ \text{EXTRA} \langle [\text{S|C|HEAD} \textit{verbal}] \rangle \end{array} \right] \end{array} \right]$$

This can then give rise to both (53e) and (53j). The latter type is somewhat less acceptable (*that*-less clauses prefer to be adjacent to the verb), but nonetheless occurs in spoken language data.

Verbs like *mention* and *require* also belong to this group. As noted in (58), these verbs can combine with either an NP or a CP complement:

- (58) a. They never mentioned the issue before/*that* he liked contemporary music.
 b. They require further information/*that* the information be available soon.

Just like *expect*, the expletive NP[*it*] is also optional with these verbs:

- (59) a. They never mentioned (it) to the candidate *that* the job was poorly paid.
 b. We require (it) of our employees *that* they wear a tie.

The present analysis predicts that when a verb selects a [HEAD *verbal*] element as its SUBCAT element, we allow sentences where nothing intervenes between the expletive *it* and the extraposed clause. Such verbs will have the SUBCAT value shown in (60) and hence can be pumped by the Extraposition Construction, as shown in (61):

$$(60) \left[\text{S|C|SUBCAT} \langle \text{①NP}, \text{②[S|C|HEAD} \textit{verbal}] \rangle \right]$$

$$(61) \left[\text{S|C} \left[\begin{array}{l} \text{SUBCAT} \langle \text{①NP}, \text{NP}[\textit{it}] \rangle \\ \text{EXTRA} \langle \text{②[HEAD} \textit{verbal}] \rangle \end{array} \right] \right]$$

$$\left[\text{S|C|SUBCAT} \langle \text{①NP}, \text{②[S|C|HEAD} \textit{verbal}] \rangle \right]$$

In addition, the expletive would then be optional in such cases. As shown in the following examples, such verbs can select an NP alone or else a sentential complement with an optional expletive *it*:

- (62) a. I regretted the comments/regretted (it) that he was late.
 b. I should resent their loss of power/resented (it) that you did not call.
 c. They suspected the gesture/suspected (it) that he was a spy.

In such examples, even when nothing separates the expletive from the clause, the clause is treated as extraposed in our analysis.¹¹

Group III. Group III verbs appear not to allow object extraposition, given the unclear status of examples like (63):

- (63) a. John thought to himself that Mary was coming.
 b. ?John thought it to himself that Mary was coming.

However, when the PP complement does not appear, we can find clear examples of object extraposition:

- (64) I thought it that it would be nearly impossible for the filmmakers to sustain such a level of excitement through the rest of the movie¹²

And there are also attested examples with a parenthetical that is probably best analyzed as extraposition with the PP present, e.g.:

- (65) - and I think it's great when Nessa says (or maybe she just thinks it to herself) that Eyvind, unlike Somerled, is wise.¹³

Note that, unlike Group II verbs, these verbs do not allow an NP, but select a VP[*inf*] or a CP clause as object:

- (66) a. *John thought the problem.
 b. He didn't think to find him in the kitchen.
 c. Everyone thinks that they're going to get their lyrics.

These observations imply that such verbs have the SUBCAT information shown in (67):

- (67)
$$\left[\begin{array}{l} \text{PHON } \langle \text{think} \rangle \\ \text{S|C } \left[\text{SUBCAT } \langle \text{NP}, [\text{HEAD } \textit{verbal}] (, \text{PP}[\textit{to}]) \rangle \right] \end{array} \right]$$

Group III verbs can get pumped by the Extraposition Construction, which allows our grammar to generate sentences like (64) and (65).

¹¹Rothstein (1995) takes such cases as dislocation of the clause rather than extraposition. We believe that there are no significant differences between such cases and those with something separating the two phrases.

¹²<http://www.peyups.com/article.khtml?sid=2504> [April 3, 2005]

¹³<http://www.council-of-elrond.com/forums/showthread.php?t=1055> [April 15, 2005]

4 Some Further Consequences

The analysis sketched here first of all allows a wider coverage of true extraposition. Since the daughter of the Extraposition Construction can be any verb selecting [HEAD *verbal*], we expect not only CP, but also S complements to undergo extraposition. The corpus examples attest this:¹⁴

- (68) a. It's to debate whose scheme is best... (S1B-034-1)
b. It's now known they took a rucksack of clothes with them. (S2B-009-43)
c. It is anticipated a final decision will be made in the New Year. (W2C-011-96)

There is in fact evidence supporting the idea that EXTRA might be better treated as a nonlocal feature, on a par with the SLASH feature. If the percolation of SLASH specifications were governed by the Nonlocal Feature Principle, then we would expect cases like the following:

- (69) She [[[kept] [regretting it] [for years]] [that she had not turned him down]].

Here the extraposed clause and the expletive are not in the same clause: the expletive *it* is within the complement clause of the verb *kept*, suggesting that inheritance of EXTRA specifications is general, and in the fashion of nonlocal feature specifications.

Another implication of our approach is that if extraposition is dependent upon the properties of lexical heads, then we would expect certain lexical idiosyncrasies (restrictions that cannot be predicted on general syntactic grounds). In fact there are peculiar cases in which the presence of *it* is obligatory:

- (70) a. We would appreciate *(it) (very much) if we were left alone from now on.
b. I like *(it) that she has good manners.
c. Rumor had *(it) that Spain my support the bill as well.¹⁵

These verbs select just an NP, not a CP: We thus cannot take them to be instances of the GROUP II class. Thus there is a limited set of verbs that simply allow the same subcategorization information as that produced by the Extraposition Construction:¹⁶

¹⁴These examples are from the ICE-GB (International Corpus of English) corpus. S1B and S2b mean spoken texts whereas W2c means written texts.

¹⁵from the BNC corpus

¹⁶Similar lexical idiosyncrasies are found with respect to passivization (e.g. *rumored*, *alleged*) and *wh*-extraction (e.g. *assure*, cf. Kayne 1981-82).

$$(71) \left[\begin{array}{c} \text{S|C} \left[\begin{array}{l} \text{SUBCAT} \langle \text{NP}, \text{NP}[it] \rangle \\ \text{EXTRA} \langle \text{CP} \rangle \end{array} \right] \end{array} \right]$$

Our approach allows a straightforward lexical account of these lexical idiosyncrasies.

5 Conclusion

We have reconsidered English object extraposition sentences in light of recent attempts to defend Chomsky's Projection Principle. We have seen that there is no extant transformational analysis that offers satisfactory answers to the various properties of English object extraposition constructions discussed in the literature, including the three lexical classes we have isolated.

These verbal classes display a number of intriguing patterns with respect to object extraposition constructions, as we have shown. As a way of accounting for these patterns, we have suggested that English object extraposition is lexically modulated and that the lexical variations interact with other independently motivated constraints, some of which are particular to English, and some of which are more deeply embedded in the lexicalist, constraint-based approach to language that we assume.

References

- Authier, J. Marc. 1991. V-Governed Expletives, Case Theory, and the Projection Principle. *Linguistic Inquiry* 22.4: 721–740.
- Bouma, Gosse. 1996. Complement clauses and expletives. In G. Durieux, W. Daelemans and S. Gillis (eds), CLIN VI. Papers from the Sixth CLIN Meeting, pp. 1-17.
- Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- Collins, Peter. 1994. Extraposition in English. *Functions of Language* 1.1: 7–24.
- Culicover, Peter W. and Michael S. Rochemont. 1990. Extraposition and the Complement Principle. *Linguistic Inquiry* 21.1: 23–47.
- Ginzburg, Jonathan and Ivan Sag. 2001. *Interrogative Investigations* CSLI Publications, Stanford.
- Huddleston, Rodney D. and Geoffrey K. Pullum. 2001. *The Cambridge Grammar of the English Language*. Cambridge University Press.
- Iwakura, Kunihiro. 1991. Expletive *it* and CP-Trace. *Linguistic Analysis* 21: 97–115.
- Iwakura, Kunihiro. 1994. The Distribution of CP-Trace and the Expletive *it*. *Linguistic Analysis* 24.2: 122–141.

- Jackendoff, Ray. 2002. *Foundations of Language*. Cambridge: Cambridge University Press.
- Kayne, Richard. 1981. ECP extensions. *Linguistic Inquiry* 12.1:93–133. [Reprinted in: Kayne, Richard. 1984. *Connectedness and Binary Branching*. Dordrecht: Foris Publications.]
- Keller, Frank. 1995. Towards an Account of Extraposition in HPSG. *Proceedings of the EACL*.
- Kuno, Susumo. 1987. *Functional Syntax*. Chicago: The University of Chicago Press.
- Pollard, Carl, and Ivan A. Sag. 1994. *Head-driven Phrase Structure Grammar*. Chicago University Press and CSLI Publications.
- Postal, Paul M. and Geoffrey K. Pullum. 1988. Expletive Noun Phrases in Subcategorized Positions. *Linguistic Inquiry* 19.4: 635–670.
- Postal, Paul M. 1966. On so-called ‘pronouns’ in English. In F. Dinneen, ed., *The 19th monograph on Languages and Linguistics*. Washington, D.C.: Georgetown University Press. Reprinted 1969 in D. A. Reibel & S. A. Schane (eds.) *Modern studies in English: Readings in transformational grammar*. Englewood Cliffs, NJ: Prentice-Hall. Pp. 201–224.
- Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech, and Jan Svartvik. 1985. *A Comprehensive Grammar of the English Language*. London: Longman.
- Rothstein, Susan D. 1995. Pleonastics and the Interpretation of Pronouns. *Linguistic Inquiry* 26.3: 499–529.
- Sag, Ivan A. 2001. Six Dimensions of Natural Language Locality. Invited Presentation: Eighth Annual Conference on Head-Driven Phrase Structure Grammar. NTNU. Trondheim, Norway.
- Sag, Ivan A. to appear. Remarks on Locality. *Ohio State Working Papers in Linguistics*, edited by Detmar Meurers and Robert D. Levine.
- Sag, Ivan, Tom Wasow, and Emily Bender. 2003. *Syntactic Theory: A Formal Introduction*. 2nd Edition. Stanford: CSLI Publications.
- Stroik, Thomas S. 1991. Expletives Revisited *Linguistic Analysis* 21.1: 23–33.
- Stroik, Thomas S. 1996. Extraposition and Expletive-Movement: A Minimalist Account. *Lingua: International Review of General Linguistics* 99.4: 237–251.
- Van Eynde, Frank. 1996. A monostratal treatment of it extraposition without lexical rules. In G. Durieux, W. Daelemans and S. Gillis (eds), *Papers from the Sixth CLIN Meeting*, 231-248.