English Object Extraposition and Constraint Satisfaction*

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According to the Projection Principle (Chomsky 1981), expletives have no semantic content and thus cannot occur in theta-marked positions. However, there seem to exist overt cases where the expletive *it* appears in the theta-marked object position. Many attempts (Case-based analysis by Authier (1991), Predication analysis by Rothstein (1995), Spec analysis by Stroik (1991, 1996)) have been made to account for such cases, with the common postulation of generating the expletive in the non-theta marked position and moving to the object position. Though such movement operations could account for general cases, they have not been successful in capturing the contrast that happens with respect to various properties including the optionality of the expletive *it*. This paper claims that such a contrast, in addition to the distribution possibilities of *it* in the object position, easily follows from a lexical and constraint-based analysis couched upon tight interactions among various grammatical components such as lexicon, argument structure, syntax and semantics.

Key words: argument realization, constraint-based, expletive, HPSG, object extraposition, projection principle, type hierarchy

1. Introduction

English employs a process of extraposing a heavy constituent such as a finite or infinitival clause to the sentence final position (cf. Quirk et al. 1985):

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

As noted here, this extraposition process involves the introduction of the so-called expletive *it*. This expletive *it*, though morphologically identical to the third person singular pronoun, is not referential and devoid of any semantic role. Its non-referential properties can be observed from the following pairs of data 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. Neither he nor it were either difficult to find or easy to lose.
    b. *It and there were difficult to claim to be raining and to prove to be floods in the valley, respectively.

(4) a. my observation/description of it falling
    b. *my observation/description of it raining

(5) 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.

All these pairs show the differences between the anaphoric *it* and the expletive *it*. Unlike the anaphoric pronoun, the expletive in (2b) does not support an emphatic reflexive *itself*. Unlike the anaphoric *it*, the expletive in (3b) in does not coordinate with another expletive *there*. In (4), we also see the contrast: unlike the anaphoric *it* in (4a), the expletive in (4b) cannot occur in the nominalization of *of*-phrases. Finally, the expletive does not occur as the subject of the so called *tough* predicate as shown in (5b), whereas this is not the case with the anaphoric *it* in (5a).

According to the well-accepted Projection Principle (Chomsky 1981), the expletive, which has no semantic content, then cannot occur in any theta-positions. This implies that the expletive cannot appear in strictly subcategorized positions. However, there exist overt cases where the expletive *it* occur in the strictly subcategorized object position as in (6)

(Postal & Pullum 1988):

(6) 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.

Many attempts have been made to account for such cases, mainly from derivational perspectives. Though such derivational approaches can account for at least some of these examples, to our knowledge, none has provided a satisfactory answer to the contrast that we find in examples like the following (cf. Authier 1991, Iwakura 1991, 1994):

(7) a. Group I: I blame *(it) on you [that we can't go].
   b. Group II: Nobody expected (it) of you [that you could be so cruel].
   c. Group III: John said (*it) to his friends [that we had betrayed him].

As observed, with respect to the occurrence of the expletive *it* in the object position, there exists a clear contrast here: the expletive is obligatory in (7a), optional in (7b), and prohibited in (7c).

This paper claims that such a contrast, in addition to the distribution possibilities of *it* in the object position, easily follows from a lexicalist, non-derivational analysis that allows tight interactions among lexicon and English independent constraints.

2. Movement Approaches

Before we provide our analyses, let us briefly review several major previous analyses on English object extraposition. As noted earlier, Postal and Pullum (1988) have extensively provided examples where the expletive *it* appears in the subcategorized object positions with persuasive arguments. If these are true, the only way of saving the Projection Principle then seems to take the expletive *it* in the object position as the subject of a small clause. Such a small clause analysis appears to work for cases like the following:

(8) 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 noted by Postal and Pullum, the small clause account immediately runs into problems for cases like (9):

(9) 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].

As represented in the bracket structure, the small clause misses the clear fact that the PP *to the candidate* in (9a) is the subcategorized element of the verb *mentioned*, not an element in the small clause. The same issue arises from (9b) in the small clause analysis since it neglects the basic fact that *for granted* is directly linked to the verb t*ake*.

In addition, there exist more cases in which the expletive *it* functions as the subcategorized element of the main verb. For example, it is hard to deny the fact that the particle *out* in (10a) goes with the main verb as noted from the ungrammaticality of (10b):

(10) 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 noted in the bracket in (10a), the small clause forces us to separate the particle from the verb.

As such, Postal and Pullum's observations raise a fundamental question to the Projection Principle. There have been three main analyses that have tried to answer Postal and Pullum's arguments, while saving the Projection Principle. In what follows, let us briefly review these three, though it is beyond the scope of this paper to scrutinize them in detail.

2.1. Case-Based Approach

Authier (1991) claims that the expletive *it* occurs when Case is assigned to a position not filled by a thematic argument. The underlying assumption here is that if Case can be assigned, it must be assigned. In English object extraposition sentences, accusative Case is entered in the feature grid of a verb, and it must be phonetically realized as in (11):

(11) a. I consider it obvious that you should have done that.
    b. I resent it every time you say that.

Though the analysis has its own merit by treating extraposition as a V-governed phenomenon as the present approach does, it has one serious drawback concerning the optional status of the expletive *it.*

(12) a. I regretted (it) that he was late.
    b. They never mentioned (it) to the candidate that the job was poorly paid.

Since the realization of Case value is not optional, the analysis requires an additional mechanism for such cases. As Authier himself (1991) admits, such optional cases undermines the viability of his analysis.

2.2. Predication Approach

Meanwhile, Rothstein (1995) claims that the expletive *it* is licensed in order to observe the following 'Predication Condition':

(13) Predication Condition:
    Every syntactic predicate must be syntactically saturated.

This approach takes all the expletive in the object extraposition to be not the true object of the main predicate but the subject of a predicate. The merit of such an approach may be found from cases where the expression following the expletive functions as the extraposed clause's predicate:

(14) a. He considers it desirable that Pete leave.
    b. We found it frustrating that his policies made little impact on poverty.

Attractive though this analysis may be, it also meets difficulties in explaining cases where no possible predicate expression exists:

(15) a. They confirmed it that you had passed the exam.
    b. He resented it that his friends worked so hard.

c. They announced it that she had passed her exam.

In such cases, since there is nothing that can serve as the predicate of the expletive *it* here, one needs to take the *that*-clause as the expletive's predicate, departing from the traditional wisdom. Otherwise, we need to assume that such cases are not extraposition cases, but rather dislocation constructions, as her analysis eventually did.[1] With this assumption, we again then meet the question of why the expletive is optional in certain cases, as we can observe in the repeated Group II examples:

(16) a. Nobody expected (it) of you [that you could be so cruel].
     b. They never mentioned (it) to the candidate that the job was poorly paid.
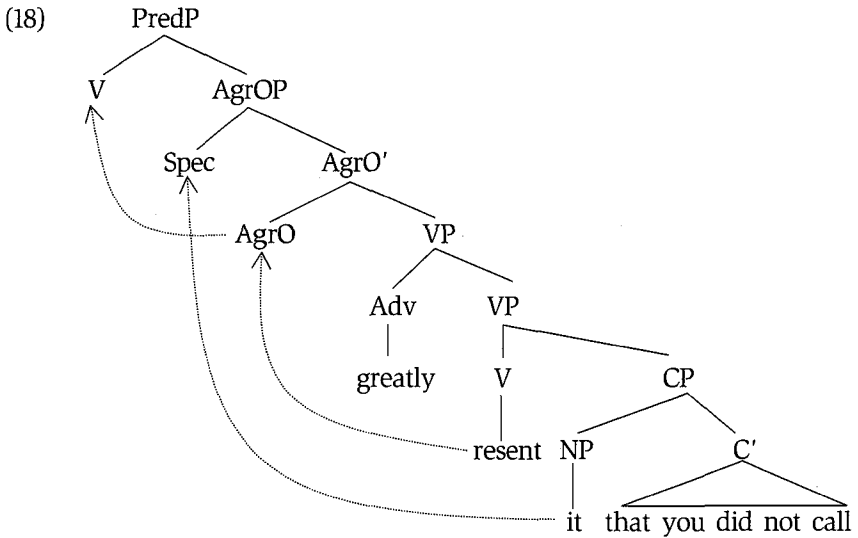
2.3. SPEC Approach

Different from these two previous views, Stroik (1991, 1996) suggests that the expletive is generated in the Spec of CPs at the base argument structure, and then moved into the Spec of an AGR projection to satisfy Case checking. His analysis starts from the assumption that object extraposition in (17a) is just like the subject-to-object raising construction in (17b):

(17) a. I should resent it$_i$ greatly [t$_i$ that you did not call].
     b. I believe Sue$_i$ quite sincerely [$_i$ to be the best candidate].

Similar to (17b), the subject expletive in (17a) undergoes leftward movement as represented in the following derivational structure:

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1) If not, her analysis needs to assume that the clause is a predicate. However, as noted in Stroik (1996), the clause does not behave like a canonical predicate in terms of questioning and extraction.

(18)

PredP
├─ V
│ └─ AgrOP
│   ├─ Spec
│   └─ AgrO'
│   ├─ AgrO
│   └─ VP
│   ├─ Adv
│   │ └─ greatly
│   └─ VP
│   ├─ V
│   │ └─ resent NP
│   │   └─ it
│   └─ CP
│   ├─ NP
│   └─ C'
│   └─ that you did not call

As noted here, the expletive *it* is first originated in the Spec of the extraposed CP and moved to the Spec of AGRoP with the verb's movement to check the V-features.

Leaving aside the issue of what motivates the generation of the expletive *it* in the Spec of the CP, this analysis still does not capture the contrast among the three different Groups. Just like the other two analyses, this SPEC analysis has no clear way of accounting for the three different groups of English object extraposition in (7). For example, this analysis provides no answer to the optionality of the expletive *it*.

As we have seen so far, even though the existing three derivational analyses provided some insights into English object extraposition, they have not been successful in fully accounting for the contrast and variations we find in English object extraposition. In what follows, we provide a nonderivational analysis that can provide a streamlined analysis of these.

3. A Lexicalist, Constraint-Based Approach

3.1. A Lexically-controlled Properties

The first property of English object extraposition we need to consider

is that the overt expletive in the object position is possible only with some verbs taking clausal complements but not with others (Authier 1991). The verbs taking clausal complements can also take an NP object or allows the expletive object. As noted in the following, the verbs selecting either an NP or a CP can undergo extraposition:

(19) 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.

(20) 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.

However, verbs like *hint* select only a CP complement and cannot undergo extraposition:

(21) a. I think *(of) you all the time.
   b. I wonder *(about) that.
   c. He hinted *many things/that I was not the person he was looking for.

(22) a. I think (*it) that John had an accident.
   b. I wondered (*it) how he did on the test.
   c. He wouldn't dare hint (*it) that I am not the right man for the job.

Considering that the propositional meaning of *say* is not significantly different from that of *hint* (both involve an action of telling something to somebody), this contrast implies that English object extraposition is somewhat lexically controlled.

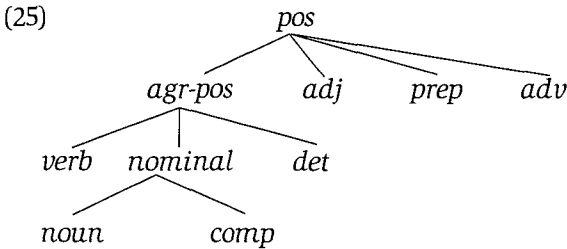Another general observation we can make is that many verbs can take either NPs or CPs as their complements:

(23) a. Cohen proved the independence of the continuum hypothesis.

   b. Cohen proved that the continuum hypothesis was independent.

(24) a. We forgot our invitations.
   b. We forgot that we needed invitations.

As suggested by Sag et al. (2003), one simple, effective way of specifying such a lexical property is to introduce a new part-of-speech type that subsumes both NP and CP, as represented in the following:[2]

(25)

```
                           pos
                  _____/_____
                 /          |        \          \
          agr-pos          adj       prep       adv
         ___/\___
        /   |    \
     verb nominal  det
        ___/\___
       /        \
    noun        comp
```

As given in the type hierarchy, the type *nominal* is thus a supertype of both *noun* and *comp*. In accordance with the basic properties of multiple inheritance hierarchy system, an element specified with [HEAD *nominal*] then can be realized either as [HEAD *noun*] or [HEAD *comp*].[3]

   In addition to the type of verbs like *prove* that can combine either with a CP or an NP, some transitive verbs take only NP complements, others select only CP complements:

(26) a. She pinched [his arm] as hard as she could.
   b. *She pinched [that he feels pain].

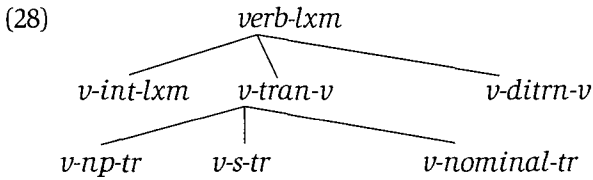(27) a. We hope [that such a vaccine could be available in ten years].
   b. *We hope [the availability of such a vaccine in ten years].

Reflecting these subcategorization patterns, we can assume that English

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2) The type *agr-pos* is relevant for the agreement feature. That is, verbs, nouns, and determiners are sensitive to agreement features such as number, gender, and person.

3) As an anonymous reviewer questioned, the type *nominal* here is used to indicate the phrases projected from 'noun' and 'comp' both can occur in canonical NP positions. However, phrases projected from an adjective or a verb (except nonfinite) cannot be in the NP position.

transitive verbs *v-tran-v* at least have the following three subtypes:

(28)

$$
\begin{array}{c}
verb\text{-}lxm \\
\diagdown \\
v\text{-}int\text{-}lxm \quad v\text{-}tran\text{-}v \qquad v\text{-}ditrn\text{-}v \\
\\
v\text{-}np\text{-}tr \quad v\text{-}s\text{-}tr \qquad v\text{-}nominal\text{-}tr
\end{array}
$$

Of the types in the hierarchy, the relevant three types will have at least the following constraints with respect to the ARG-ST:

(29) a. $\begin{bmatrix} v-np-tr \\ \text{ARG-ST } \langle \text{X}, \text{NP}, ... \rangle \end{bmatrix}$

b. $\begin{bmatrix} v-s-tr \\ \text{ARG-ST } \langle \text{X}, \text{CP}, ... \rangle \end{bmatrix}$

c. $\begin{bmatrix} v-nominal-tr \\ \text{ARG-ST } \langle \text{X}, \text{HEAD}[nominal], ... \rangle \end{bmatrix}$

The type *v-np-tr* represents the lexical information of verbs (e.g., *devour, pinch, elude*) selecting only NPs. The type *v-s-tr* is for those verbs selecting only CPs (e.g., *hope, hint, wonder*). These two types explain the data in (26) and (27): *pinch* can select only an NP whereas *hope* can subcategorize only a CP as its complement.

The type *v-nominal-tr* represents verbs selecting both NPs and CPs (e.g., *prove, forget, regret*). Note here that even if verbs like *regret* will have the lexical information in (29c), they can be realized as either of the following due to the status of *nominal*:

(30) a. $\begin{bmatrix} \text{PHON } \langle regret \rangle \\ \text{ARG-ST } \langle \text{NP}, \text{NP}[\text{HEAD } noun] \rangle \end{bmatrix}$

b. $\begin{bmatrix} \text{PHON } \langle regret \rangle \\ \text{ARG-ST } \langle \text{NP}, \text{CP}[\text{HEAD } comp] \rangle \end{bmatrix}$

These two realizations can project sentences like the following in which *regret* combines with an NP or a CP complement:

(31) a. We regret [any confusion which may have been caused].
     b. For the first time in his life, he regretted [that he had no faith].

As noticed, the type hierarchy system thus can offer us with a simple way of representing the lexical information for the verbs selecting either an NP or a CP argument. This 'realization' system also plays an important role in English object extraposition.

3.2. Grammar Rule and Independent Constraints

Before we move on to our constraint-based analysis, let us consider some basic theoretical assumptions we make.

The first general constraint that works in the grammar is Argument Realization Constraint (cf. Sag et al. 2003). This constraint makes sure that the elements in the ARG-ST will be realized as the subject and complements in syntax. For example, this constraint ensures that the two arguments of the verb *kicks* are realized as SUBJ and COMPS, respectively:

$$
(32) \begin{bmatrix} word \\ \text{PHON } \langle kicks \rangle \\ \text{HEAD } \begin{bmatrix} verb \\ \text{FORM } fin \end{bmatrix} \\ \text{SUBJ } \langle \boxed{1} \rangle \\ \text{COMPS } \langle \boxed{2} \rangle \\ \text{ARG-ST } \langle \boxed{1}\text{NP}[nom], \boxed{2}\text{NP}[acc] \rangle \end{bmatrix}
$$

The second general constraint concerns the systematic alternation between non-extraposed and extraposed sentences like the following pair:

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

Even if we assume an imaginative word *f-found* (intended to mean 'functionally-found'), English speakers can systematically link (34a) to (34b) (cf. Jackendoff 2002):

(34) a. I *f-found* [the problem] very difficult.
  b. I *f-found* [it] very difficult [to solve the problem].

To capture the systematic relationship in subject extraposition, Pollard and Sag (1997) and Sag et al. (2003) introduce a lexical rule that turns the sentential subject in (33a) into a sentential 'complement' of the verb *occurred* in (33b). However, this complement approach, as pointed out by Keller (1995), Bouma (1996), and Van Frank (1996), encounters problems for cases like the following:

(35) 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].

If the extraposed *that*-clause here is the complement of *regret*, we would not expect the intervention of the adverbial elements *very much* in (33a), nor would this approach expect the relative clause in (33b).

Departing from the traditional complement approach but adopting Bouma (1996) and others, we take English extraposition to be a nonlocal dependency and introduce the nonlocal feature EXTRA together with the following lexical rule:[4]

(36) Extraposition Lexical Rule:

$$\begin{bmatrix} v-nominal-tr \\ \text{ARG-ST } \boxed{A} \oplus \langle \boxed{1}[nominal]\rangle \oplus \boxed{B} \end{bmatrix} \rightarrow \begin{bmatrix} extraposed-w \\ \text{ARG-ST } \boxed{A} \oplus \langle \text{NP}[\text{FORM } it]\rangle \oplus \boxed{B} \\ \text{EXTRA } \langle \boxed{1}[\text{HEAD } comp]\rangle \end{bmatrix}$$

This rule basically turns a *v-nominal-tr* into an *extraposed-w* that selects an expletive NP with the CP as the nonlocal feature EXTRA value.[5]

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4) Two things are in order. This formulation is a slight modification of the one given in Kim (2005). In addition, the boxed A and B are variables over a list. In addition, the feature EXTRA is a nonlocal feature whose value is percolated up to its mother until it is discharged.
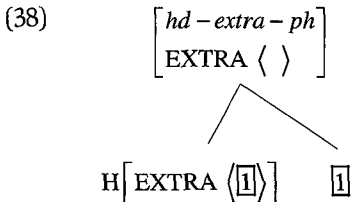
5) The lexical rule may need to place a semantic restriction on the extraposed clause such that the message type of the semantic content be *fact*. As noted by Menzel (1975) and Bolinger (1976), nonfactives or suppositions do not allow the object extraposition.

The nonlocal feature EXTRA will be passed up to a higher structure and discharged by the following Head-Extra Rule:

(37) *hd-extra-ph:*

$$\left[\text{EXTRA} \langle \ \rangle \right] \rightarrow \text{H} \left[\text{EXTRA} \langle \boxed{1} \rangle \right], \boxed{1}$$

This grammar rule reflects the fact that English independently allows a phrase in which the head combines with an extraposed element as represented in the following:

(38)
$$\left[\begin{array}{l} hd - extra - ph \\ \text{EXTRA} \langle \ \rangle \end{array} \right]$$

$$\text{H} \left[\text{EXTRA} \langle \boxed{1} \rangle \right] \qquad \boxed{1}$$

We could observe that English freely employs this kind of well-formed phrase condition even in the extraposition of an adjunct element (cf. Culicover and Rochemont 1990):

(39) 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 during the vacation] [which was written by Chomsky]].

All these examples are licensed by the Head-Extra Rule that allows the combination of a head element with an extraposed element.

The EXTRA element should be the sentence final element in English in accordance with the Head-Extra Rule. This means that extraposition is different from leftward movement:

(40) a. That Lou intends to fire me, I find (*it) deplorable.

(i) a. *I resent it that she did that, if she did.
   b. I resent it that she did that.

(ii) a. I was the one who guessed (it) that you would win.
    b. *I guess it that you will win.

   b. That Lou left me, I resent (*it).
   c. That Lou likes me, (*it) bothers me.

As noted here, the left dislocation here requires no expletive, whereas the extraposition in Group I cannot do away with the expletive.

   (41) We didn't really find **it**/*_ $_i$ very interesting [that he had solved the problem]$_i$.

One additional language independent constraint relevant in English extraposition is that English independently prohibits a CP from having any element to its right (cf. Kuno's (1987) Ban on Non-sentence Final Clause (BNFC):6)

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

   (43) a. I believe strongly [that the world is round].
       b. *I believe [that the world is round] strongly.

This BNFC constraint basically bars any argument from appearing after a sentential argument. In the present context this means that there exists no word whose COMPS list contains something to its CP complement.7)

3.3. Sum

The basic grammar we set up so far allows tight interactions among the following:

   • Type *nominal*: This type, being a supertype of *noun* and *comp*, is

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6) As an anonymous reviewer points out, there are cases where adjuncts can appear before a complement as in *Tom depended for most of his life on his aunt Jane*. This implies that the BNFC constraint we assume here is sensitive between an adverbial element and a sentential element.

7) One way of implementing this negative constraint in a type hierarchy is not to allow such lexeme types to be mapped onto *word*-level types only which can appear in syntax. This in turn means that the BNFC constraint is a constraint on *word*, not on the type *lexeme* or *stem*.

introduced to capture the similarities between NP and CP and clas-
sifying transitive verbs.

- English Extraposition Lexical Rule: The rule captures the systematic relationships between canonical and extraposed cases.
- Head-Extra Rule: This well-formed condition allows various types of combination between a head phrase and an extraposed element.
- Ban on Non-sentence Final Condition (BNFC): This functional constraint is independently required to block any elements from appearing to the right of a clause.

These basic assumptions play crucial roles in explaining the contrast among the three Groups and other related phenomena.

4. Explaining the Contrast

4.1. Group I

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

(44) 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.

The data imply that *blame* will have the following lexical entry:[8]

(45) $$\begin{bmatrix} v-nominal-tr \\ \text{ARG-ST } \langle \boxed{1}\text{NP}, \boxed{2}[\text{HEAD } nominal], \boxed{3}\text{PP}[\text{FORM } on] \rangle \end{bmatrix}$$

The verb *blame* selects a *nominal* and a PP as its arguments. By definition, the *nominal* element can be an NP as in (46a), allowing cases like (44a). The [HEAD *nominal*] can also be its subtype [HEAD *comp*] as

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8) The boxed integer here is introduced to show the relationships with related lexical entries as in (46) or (47).

in (46b), yet this realization violates the BNFC, as noted from the example (44c).[9]

(46)

a. $\begin{bmatrix} v-nominal-tr \\ \text{ARG-ST } \langle \boxed{1}\text{NP}, \boxed{2}[\text{HEAD } noun], \boxed{3}\text{PP}[\text{FORM } on]\rangle \end{bmatrix}$

b. $*\begin{bmatrix} v-nominal-tr \\ \text{ARG-ST } \langle \boxed{1}\text{NP}, \boxed{2}\text{CP}, \boxed{3}\text{PP}[on]\rangle \end{bmatrix}$

One escape hatch for (46b) to be mapped onto a legitimate *word* is to apply the Extraposition Lexical Rule to it, generating an *extraposed-w* as given in the following:
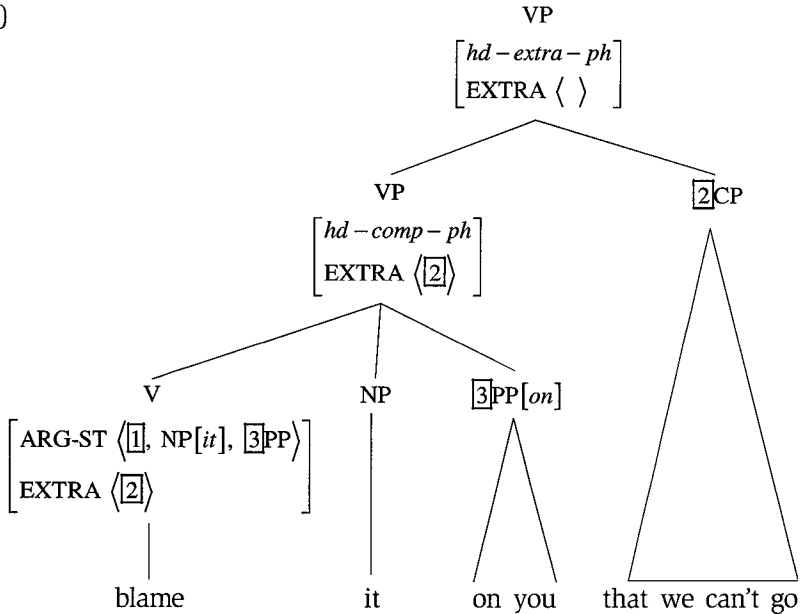
(47)

$\begin{bmatrix} extraposed-w \\ \text{ARG-ST } \langle \boxed{1}, \text{NP}[\text{NFORM } it], \boxed{3}\text{PP}\rangle \\ \text{EXTRA } \langle \boxed{2}[\text{HEAD } comp]\rangle \end{bmatrix}$

The output in (47) then can be projected into sentences like (44d) whose partial structure is given in (48):[10]

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9) As an anonymous reviewer points out, the functional BNFC constraint can be more clearly represented as an LP (linear precedence) constraint.

10) As an anonymous reviewer pointed out, this analysis, in addition to this structure, allows the extraposed CP to be attached to the top S, raising a spurious ambiguity. This ambiguity can be resolved if we assume that the *hd-extra-ph* can be combined only with a VP, not with an S.

(48)

$$
\begin{array}{c}
\text{VP} \\
\left[\begin{array}{l} hd-extra-ph \\ \text{EXTRA } \langle \ \rangle \end{array}\right]
\end{array}
$$

VP
$$\left[\begin{array}{l} hd-comp-ph \\ \text{EXTRA } \langle \boxed{2} \rangle \end{array}\right]$$

$\boxed{2}$CP

V
$$\left[\begin{array}{l} \text{ARG-ST } \langle \boxed{1}, \text{NP}[it], \boxed{3}\text{PP}\rangle \\ \text{EXTRA } \langle \boxed{2} \rangle \end{array}\right]$$

NP

$\boxed{3}$PP[on]

blame   it   on you   that we can't go

The verb *blame*, as an *extraposed-w*, requires an expletive object and a PP as its complements together with a clausal element as its EXTRA element. The VP, as a type of *hd-comp-ph*, has a nonempty EXTRA value projected from the verb. This VP then forms a well-formed *hd-extr-ph* with the CP clause.

Most of the object extraposition examples, in addition to an object argument, subcategorizes a predicative XP complement. If this predicative XP is obligatory and the object complement is realized as the [HEAD *comp*], we expect that the object is obligatorily extraposed to observe the functional constraint BNFC. This prediction is borne out:

(49) 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.

(50) 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.

4.1.1. Group II

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

(51) a. Nobody expected the case of you.
    b. Nobody expected that you could be so cruel.
    c. *Nobody expected [that you could be so cruel] of you.
    d. Nobody expected it of you [that you could be so cruel].
    e. Nobody expected of you [that you could be so cruel].

The examples imply that verbs like *expect* will have the following ARG-ST value:

(52) $\begin{bmatrix} v-nominal-tr \\ \text{ARG-ST } \left\langle \boxed{1}\text{NP}, \boxed{2}[\text{HEAD } nominal], \left(\boxed{3}\text{PP}[\text{FORM } of]\right) \right\rangle \end{bmatrix}$

According to the lexical entry in (52), the verb *expect* takes a *nominal* and an optional PP. Depending on the instantiation of the [HEAD *nominal*] value, we will have the following two realizations.

(53) a. $\begin{bmatrix} v-nominal-tr \\ \text{ARG-ST } \left\langle \boxed{1}\text{NP}, \boxed{2}\text{NP}, \left(\boxed{3}\text{PP}[\text{FORM } of]\right) \right\rangle \end{bmatrix}$
   b. $\begin{bmatrix} v-nominal-tr \\ \text{ARG-ST } \left\langle \boxed{1}\text{NP}, \boxed{2}\text{CP}, \left(\boxed{3}\text{PP}[\text{FORM } of]\right) \right\rangle \end{bmatrix}$

(53a) will be able to generate sentences like (51a) when the PP appears. When the PP complement does not appear, we will have sentences like (51b). As for the lexical entry (53b), if the PP does not appear, we will have sentences like (51b). However, with the PP argument, the entry, if realized as a *word*, will violate the BNFC constraint as noted from the ungrammatical sentence (51c). The only way this lexeme can be mapped

onto a legitimate syntactic *word* is through the application of the Extraposition Lexical Rule in (36). The rule then generates an *extraposed-w* that selects an expletive object and places the CP argument into the value of the nonlocal feature EXTRA as given in the following:

(54)
$$
\begin{bmatrix}
extraposed-w \\
\text{ARG-ST } \langle \boxed{1}, \text{NP[NFORM } it], (\boxed{3}\text{PP[FORM } of]) \rangle \\
\text{EXTRA } \langle \boxed{2}[\text{HEAD } comp] \rangle
\end{bmatrix}
$$

The output lexical entry in (54) will then allow sentences like (51d) with the following structure:

(55)

As represented here, the verb *expected* selects three arguments with the clausal element in the nonlocal EXTRA value: the first one is realized as the SUBJ whereas the remaining two arguments (expletive NP and PP[on]) are realized as its COMPS. The lexical head *expected* combines

with the two complements, forming a VP with a nonempty EXTRA value. This VP then forms a well-formed, saturated VP when combing with the extraposed CP clause.

One main difference we observe between Group I and Group II comes from (44e) and (51e). (44e) cannot be licensed since it violates the BNFC constraint. We cannot apply this to the (51e). The difference comes from the property of the PP:

(56) a. The blame is on you.
     b. *The expectation is of you.

As noted here *on you* functions as a predicative phrase whereas *of you* does not. If this is the case, we can specify that the BNFC constraint is relevant to a predicative phrase only.

Verbs like *mention* and *require* also are Group II verbs. As noted in (57), these verbs can combine either with an NP or with a CP as its complement.

(57) a. They never mentioned the issue before/that he liked con-
        temporary music.
     b. They require further information/that the information be avail-
        able soon.

Just like *expect*, these verbs also allow the optionality of the expletive in extraposed cases, supporting the existence of such verbs as an in-dependent group of verbs.

(58) 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 *v-nominal-tr* selects just a [HEAD *nominal*] element, we would allow sentences where nothing in-tervenes between the expletive *it* and the extraposed clause. Such lexical elements will have the ARG-ST value as in (59a). This then can serve as an appropriate input to the Extraposition Lexical Rule, generating entries like (59b):

(59)　a.　$\begin{bmatrix} v-nominal-tr \\ \text{ARG-ST } \langle \boxed{1}\text{NP, } \boxed{2}[\text{HEAD } nominal] \rangle \end{bmatrix}$

　　　b.　$\begin{bmatrix} extraposed-w \\ \text{ARG-ST } \langle \boxed{1}\text{NP, NP } [it] \rangle \\ \text{EXTRA } \langle \boxed{2}\text{CP}[\text{HEAD } nominal] \rangle \end{bmatrix}$

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

(60)　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 if no element is followed by the expletive, the clause is in a sense extraposed.[11]

4.1.2. Group III

Group III verbs do not allow object extraposition: No expletive is possible in such a case even though such verbs can select a CP complement:

(61)　a. John thought to himself that Mary was coming.
　　　b. *John thought it to himself that Mary was coming.

This fact simply follows from the lexical specification: Such a verb lexically requires a PP and a *nominal* argument in order which can be realized either as an NP or a CP as represented in (62):

---

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

(62)
$$\begin{bmatrix} v-lxm \\ \text{PHON } \langle \text{think} \rangle \\ \text{ARG-ST } \langle \text{NP, (PP), CP} \rangle \end{bmatrix}$$

This lexical entry cannot serve as an input to the Extraposition Lexical Rule. Since such a lexical element does not select a [HEAD *nominal*] element, it cannot not be realized as an *extraposed-w.*

5. Some Further Consequences

One advantage of treating extraposition as nonlocal dependency with the feature EXTRA is that it can allow adverbial elements to occur before the extraposed clause.

(63) They [[regret it] very much] that we could not hire Mosconi.

This would be unexpected if the extraposed clause is a complement.
In addition, since we treat the extraposition as a nonlocal dependence, we expect even cases like the following:

(64) 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.*
The analysis also can hint a way of explaining cases where the expletive serves as the prepositional object:

(65) a. We may depend upon it that we won't abandon him.
b. John will see to it that you have a reservation.

As noted here, it is not the preposition itself but the verb that triggers the object extraposition. If we just accept the assumption that the preposition selected by such as verb can select [HEAD *nominal*], and that English does not allow a CP as an prepositional object, we can expect that when this *nominal* is [HEAD *comp*], the extraposition of this is

obligatory.

One peculiar property of such verbs is that they form a strong syntactic unit in such as passive constructions:

(66) a. In his own way, he was depended upon by her.
b. Oil and gas extraction is depended upon by local economy.

In dealing with such a passive is to assume that the prepositional object NP is syntactically 'type-raised' as the verb's complement (cf. Sag et al. 2003). For example, we can allow prepositional verbs like *depend* basically select a PP[*on*] complement as in (67a), but through a type constraint or a lexical rule can be turned into those like (67b).

(67) a. $\left[\text{ARG-ST} \left\langle \text{NP, PP} \begin{bmatrix} \text{FORM } on \\ \text{P-OBJ } \boxed{1} \end{bmatrix} \right\rangle \right]$

b. $\left[\text{ARG-ST} \left\langle \text{NP, P}[\text{FORM } on], \boxed{1}[nominal] \right\rangle \right]$

The output in (67b) then can serve as an input verb for a Passive Lexical Rule that promotes the noninitial second argument as the subject of a passive verb (cf. Sag et al. 2003). Note here that (66b) also can serve an input to the Extraposition Lexical Rule when the type *nominal* is realized as *comp*. The application of the Lexical Rule will generate something like the following:

(68) $\begin{bmatrix} extraposed - w \\ \text{ARG-ST} \left\langle \text{NP, P}[\text{FORM } on], \text{NP}[it] \right\rangle \\ \text{EXTRA} \left\langle \text{CP} \right\rangle \end{bmatrix}$

Given the general constraint that English preposition cannot allow its object to be a CP, the application of this lexical rule is then obligatory. This output then can easily project sentences like (65a).

Another implication this approach brings us is that if the Extraposition is dependent upon the properties of lexical head, we would then expect certain lexical idiosyncracies that can hardly be predicted from syntax. In fact there are peculiar cases in which the presence of *it* is obligatory:

(69) 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 may support the bill as well [from
        the BNC corpus].

These verbs select just an NP, not a CP: We thus cannot take them to be
instances of the type *v-nominal-tr*. This implies that there exists a lim-
ited set of verbs that lexically belongs to the type *extraposed-w*.[12)]

(70) $\begin{bmatrix} \textit{extraposed} - w \\ \text{ARG-ST } \langle \text{NP, NP}[\textit{it}] \rangle \\ \text{EXTRA } \langle \text{ CP } \rangle \end{bmatrix}$

6. Conclusion

We have noted that English object extraposition sentences can chal-
lenge the well-assumed Projection Principle. Though a derivational anal-
ysis with movement operations could save this principle, as pointed out
in the paper, there exists no viable derivational analysis that can offer
us with satisfactory answers to various intriguing properties of English
object extraposition constructions, including the contrast we observe in
three different groups.

These three identified groups of verbs with respect to the presence of
the expletive *it* in the object position display intriguing patterns of
English object extraposition constructions that have to be taken into con-
sideration in any grammar theory. As a way of explaining these, the pa-
per has suggested that the possibility of English object extraposition is
lexically controlled, interacting with other English independent constraints.
As theoretical apparatus, in addition to the type *nominal* as a supertype
of the canonical types *noun* and *comp* (following Sag et al. (2003)), the
Extraposition Lexical Rule, the Head-Extra Rule, and the functional con-
straint, BNFC. We have seen that all these are tightly interacting in li-

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12) Similar lexical idiosyncrasies are also found in passive. For example, verbs like *rumor* are
    used only in passive whereas those like *resemble* occurs only as active.

censing English object extraposition. This paper once again appeals to the importance of grammatical interactions among various grammatical components.

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