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An Optimality-Theoretic Analysis of 'It'-Extraposition in English

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Abstract

The Extraposition phenomenon in English has been analyzed mainly through two approaches: a derivational approach under the Principles & Parameters framework (P&P) [1] and a representational approach under the early Minimalist framework (MP) [2]. The first one tries to understand the phenomenon as a result of the movement of a Big Subject first to the end of a sentence which is then followed by the insertion of an expletive 'it' to the empty Subject position. On the other hand, the second one tries to understand it by way of assuming a Big Subject originally base-generated at the end of a sentence which is followed by the insertion of an expletive 'it' to the empty Subject position. The two approaches, however, are not free from theoretical defects at all: the full derivational approach was under controversy in terms of (1) the failure of the Binding Theory and (2) its inability to suggest anything about the marginal reading issue. On the while, the representational approach has been argued (1) to violate the thematic hierarchy that should be kept in D-structure, and (2) to be also unable to suggest the slightest difference in marginal reading issue as the first one.

In this paper I focus mainly on analyzing the 'It'-Extraposition phenomenon in the Optimality Theory [3]. I will show that by way of (i) some newly developed constraints such as Subj., and AHSubj. and (ii) a constraint hierarchy of Subj.>>AHSubj., the controversies of 'It-Extraposition' such as (1) the analysis of construction and (2) the very closely related issue of 'marginal reading issue' can be explained properly.

Keywords*: *'It'-Extraposition, Optimality Theory (OT), Constraint Hierarchy, Constraints, Subj., AHSubj., Optimal candidates, Marginal reading issue

1. Introduction

The constructions provided in (1b & c) in the following have usually been analysed to result from the optional application of the syntactic operation called Extraposition to the D-structure (1a). Consider:

(1) a. That Mary is happy is true. (D-structure)
b. That Mary is happy is true. (S-structure without Extraposition)
c. It_i is true [that Mary is happy]$_i$. (S-structure with Extraposition)

Since the expletive 'it' is inserted at a later stage of computation on the way from D-Structure to S-structure into the Subject position which was occupied by the extra-posed sentential Subject, co-indexation between the inserted element and the moved one has been 'generally' assumed to occur as is illustrated in (1c). The whole operation of this type has been called Extraposition [1].

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This operation has generally been discussed in the two typical approaches Under the Principles & Parameters framework (henceforth P&P) [1], it is assumed that the big Subject movement takes place first from the initial position of a sentence to the end of a sentence, which is then followed by the expletive 'It'-Insertion operation to the empty Subject position. This is the derivational way of explaining the phenomenon. Under the Early Minimalist Program (henceforth MP) [2], it is assumed that the big Subject is originally base-generated at the end of a sentence, and no overt derivation is involved. The empty Subject position is replaced with the expletive 'It' later in computation. Since there has been no overt and major syntactic operation - movement - involved, this approach has been called "representation".

Irrespective of which approach to be employed, however, there has been no satisfactory explanation to the phenomenon under both syntactic approaches yet: for the derivational approach of P&P there has been a controversy concerning the proper landing site of the moved big Subject and its inability to suggest usage preference of sentences. For the representational approach of MP, there has also been a big controversy concerning the agreeable position of a semantic/grammatical Subject position at the first stage of syntactic derivation as well as its inability to identify the slightest difference of usage preference of sentences like the first approach.

In this paper I aim at analyzing the 'It-Extraposition' phenomenon mainly, which is the most simple of the 3 types of the Extraposition phenomena, in terms of the Optimality Theory (henceforth, OT) [3]. I will show that by way of (a) some newly devised constraints such as Subj. and AHSubj. and (b) a constraint hierarch such as Subj.>>AHSubj., this phenomenon of 'It'-Extraposition can be explained properly.

2. Discussion

The data I will analyze in this paper are shown in the following under (2) which includes those of (1) and more. Consider:

(2) It-Extraposition
a. *That Mary is happy* is true.
a'. *It* is true *that Mary is happy*. ⇨<an extra-posed clause>

b. *To be good at English* is not easy.
b'. *It* is not easy *to be good at English*. ⇨<an extra-posed infinitive>

c. *Walking alone at a countryside* is very pleasant.
c'. *It* is very pleasant *walking alone at a countryside*. ⇨<an extra-posed gerund>

The data in (2) are relatively "simple" cases of Extraposition. By "simple cases" I mean only the cases of 'It-Extraposition' as titled in (2), which will mainly be discussed in this paper. The other more complicated are those of the 'Extraposition from NP'. The cases of 'Extraposition from NP' can be classified further into three sub-types such as (i) Extraposition of a relative clause, (ii) Extraposition of an adjunct PP, and (iii) Extraposition of a complement PP, and they will be dealt with in a forthcoming article [5].

In this section I will discuss how we select an optimal candidate out of many possible candidates of 'It-Extraposition'. First, I will get into the discussion of the traditional movement approach to the 'It-Extraposition' in order to establish my new OT theory to the question at hand. Then, I will see if my new theory can expand to explain the more recent MP approach which assumes a big Subject base-generated at the end of a sentence.

2.1 Discussing a Derivational Approach to Extraposition in OT

Let's first consider the following sentence (3), a repeat of (2a). The sentence of (3) has been considered as a structure prior to the application of Extraposition in the derivational syntactic approach, that is, a D-Structure. Note, however, that in OT on which our current discussion is being done, the sentence of (3) is just one of the possible surface structures - or candidates - which are produced simultaneously from an INPUT by way of the operation of GEN(erator). Consider:

(3) That Mary is happy is true

The GEN will have a set of words such as { that, Mary, is, happy, is, true } as an INPUT set. Using the given INPUT words, it will project some candidates based on the X'-schema. The possible candidates will be as follows;

(4) Possible Candidates
a. ??[$_{IP}$ [$_{CP}$ That Mary is happy] is true]]
b. *[$_{IP}$ Ø is true [$_{CP}$ that Mary is happy]]
c.☞[$_{IP}$ It$_i$ is true [$_{CP}$ that Mary is happy]$_i$]
d. *[$_{IP}$ t$_i$ is true [$_{CP}$ that Mary is happy]$_i$]

In order to get an optimal candidate (4c) by ruling out all the other less optimal candidates (4a, b & d), we need to do some careful comparison between an optimal candidate and the other less optimal ones.
First of all, we may need a constraint which requires the Subject position filled as observed in (4b) and (4c). Next, we may need a constraint that requires avoiding a heavy Subject, which is to be verified by comparison between (4a) and (4c).

Some might argue that (4a) should be accepted as an optimal candidate as well. However, it should not be ignored that there has been a strong preference for (4c) over (4a) in everyday usage, which point can be captured either by establishing a constraint selecting a 'light' Subject over a 'heavy' one or by adjusting constraint ranking or whatever. This point will be further discussed in the following section 2.1.2.

To sum up the discussion so far, the constraints we need for the selection of an optimal candidate out of the many less optimal ones will be as follows:

(5) Constraints
a. Subj. : A clause must have a surface Subject.
b. AHSubj. : Avoid a heavy Subject.

Let's apply constraints of (5) to see if the two constraints on a certain relative hierarchy are working for an optimal output selection among the many candidates correctly.

Tableau 1. Selection of an Optimal Candidate #1

Input : { that, Mary, is, happy, is true }
Output : "It is true that Mary is happy"

Candidates	Subj	AHSubj
a. [$_{IP}$ [$_{CP}$ That Mary is happy] is true]]		*!
b. [$_{IP}$ Ø is true [$_{CP}$ that Mary is happy]]	*!	

c.☞[$_{IP}$ It$_i$ is true [$_{CP}$ that Mary is happy]$_i$]	
d. [$_{IP}$ t$_i$ is true [$_{CP}$ that Mary is happy]$_i$]	*!

Tableau 1 shows clearly that with the help of the two constraints with no relative ranking fixed to each other, we can have an optimal candidate (c) without any problem.

Deciding on any fixed relative ranking between the two constraints, such as Subj>>AHSubj or the other way round, seems not necessary at all in selecting an optimal candidate above. This point is shown by the broken line between the two constraints, which indicates the two constrains in the tableau 1 are un-ranked to each other.

2.2 Explaining a Marginal Reading Issue in OT

At this point of discussion, let's consider a very controversial topic of 'preference in usage'. Note that OT may be able to suggest some insight into the explanation of 'the preference in usage' of sentences that could be considered to have "almost the same" meaning. Consider the following two candidates, which are a partial repeat of the candidates of Tableau 1 above.

(6) a.??[$_{IP}$ [$_{CP}$ That Mary is happy] is true]] (= T1a = (4a))

b.☞[$_{IP}$ It$_i$ is true [$_{CP}$ that Mary is happy]$_i$] (= T1c = (4c))

As marked by the double question '??', (6a) is a candidate which cannot easily be ruled out as an completely ungrammatical candidate as the other candidates of (T1 b&d). Rather, it should be accepted as a 'marginally optimal' one at least, indicating that it is not ungrammatical completely. On the other hand, (6b) is a completely optimal candidate. In this situation, the question we may raise is whether or nor OT is able to capture the slight difference in preference in usage between the two candidates (6a&b)?

When taking a careful look at the two candidates of (6), both satisfy Constraint of 'Subj'. The only difference in optimality comes from whether each candidate violates Constraint of 'AHSubj' or not. (6a) commits one violation against Constraint Subj, while (6b) does none. The difference in violating Constraint 'AHSubj' is marked as shown in T1. And this difference could show the difference in optimality between the two candidates.

A crucial problem, however, immediately arises here. Consider each cell with * marks in T1. By maintaining the un-ranking hierarchy between the two Constraints, as shown by a broken line between the two, (a), (b) and (d) of T1 become all tied for Constraint violation. Note that the three of them violate one Constraint 'once' in total computation respectively. This indicates that the optimality - or grammaticality - of the three candidates except (T1c) should be the same, and (T1a) cannot be said to be better in optimality than the other two candidates of (T1b&d), which is never satisfactory for our study at all.

One way to get out of this dilemma is relatively simple to find: to replace the broken line in T1 with a continuous line. The continuous line between the two Constraints of T1 represents that one Constraint in the left of the line is more important than the other in the right of the line. Consider the following T2 with a continuous line between the two Constraints.

Tableau 2. Selection of an Optimal Candidate #2

Input : { that, Mary, is, happy, is true }

Output : “It is true that Mary is happy”

Candidates	Subj	AHSubj
a. [$_{IP}$ [$_{CP}$ That Mary is happy] is true]]		*!
b. [$_{IP}$ Ø is true [$_{CP}$ that Mary is happy]]	*!	
c.☞[$_{IP}$ It$_i$ is true [$_{CP}$ that Mary is happy]$_i$]		
d. [$_{IP}$ t$_i$ is true [$_{CP}$ that Mary is happy]$_i$]	*!	

As is shown in T2, (a) is ok with Constraint ‘Subj’, a higher-ranked Constraint than the second one, as is (c). The other two candidates (b & d), on the other hand, are violating a higher-ranked Constraint of ‘Subj’, which indicates that (a) is more optimal than the other two of (b & d), though each of the three candidates is showing the same number of constraint violation, that is, one time violation in total computation. Shortly speaking, (a) is better in optimality than (a&c). But (a) is less optimal than (c), since (c) has violated no constraints at all. Thus, when we group the four candidates of T2 according to the degree of optimality, it will be like (7) below.

(7) Gradation of Optimality and a Marginal Reading Issue

Optimal	Less Optimal	Least Optimal
(T2 c)	(T2 a)	(T2 b & d)

When we assume ‘Optimal’ in the leftmost cell means ‘grammatical’ and ‘Least Optimal’ in the rightmost cell means ‘ungrammatical’, then ‘Less Optimal’ in the middle cell would be good enough to mean ‘marginal’. Thus, we may say safely that the marginal-reading issue of (T2a) can be said to be explained properly and clearly.

What about changing the relative ranking between the two Constraints like AHSubj >> Subj..
Consider the following Tableau 3 on the hierarchy of AHSubj >> Subj..

Tableau 3. Selection of an Optimal Candidate #3

Candidates	AHSubj	Subj
a. [$_{IP}$ [$_{CP}$ That Mary is happy] is true]]	*!	
b.??[$_{IP}$ Ø is true [$_{CP}$ that Mary is happy]]		*!
c.☞[$_{IP}$ It$_i$ is true [$_{CP}$ that Mary is happy]$_i$]		
d.??[$_{IP}$ t$_i$ is true [$_{CP}$ that Mary is happy]$_i$]		*!

According to T3 on a new Constraint ranking, there will be no problem in selecting an optimal candidate of (T3c). However, (T3b&d) will be selected as marginal candidates in comparison to (T3a), and (T3a) will be ruled out as the least optimal candidate, which is against reality. This means we cannot maintain the constraint hierarchy of AHSubj >> Subj. for our discussion. Thus, the Constraint hierarchy of (T2) such as Subj. >> AHSubj. has proven to be correct.

2.3 Discussing a Representational Approach to Extraposition in OT

At this point of time, it may be useful to try to discuss the representational - or non-derivational - approach to the Extraposition case in terms of OT. Note that the representational - or non-derivational - approach to the

Extraposition phenomenon was explored and adopted by the recent syntactic theory of the early Minimalist program [2].

In the MP, the cases of 'It-Extraposition)' in (2) are dealt with differently from those in the previous syntactic framework of the P&P [1]. MP analyzes the cases of 'It-Extraposition' not in a derivational way but in a representational way. Consider the following analysis of 'It-Extraposition' from each framework individually:

(8) a. $[_{IP}\ [_{CP}$ that Mary is happy] is true] .....< a P&P analysis >
a'. $[_{IP}$ Ø is true $[_{CP}$ that Mary is happy]]
a''. $[_{IP}$ It_i is true $[_{CP}$ that Mary is happy$]_i$]

b. $[_{IP}$ Ø is true $[_{CP}$ O_i that $[_{IP}$ Mary is happy$]_i$]] .....< an MP analysis >
b'. $[_{IP}$ It is true $[_{CP}$ O_i that $[_{IP}$ Mary is happy$]_i$]]

By some theory-internal reason, MP assumes that the embedded CP is base-generated at the end of the whole sentence, and the main sentence starts to derive with the Subject position being empty, as described in (8b). Then, the empty Subject position of the main clause is filled at the final stage of computation with an expletive 'it', probably at the Logical Form (LF) - or in the phonology component - as shown in (8b'). Note that the expletive 'it' is not assigned with any index.

(8b') shows a more detailed analysis inside the CP which is base-generated at its surface structure. The embedded IP has the same index as the empty operator in the Spec of CP. The index-sharing process between the embedded IP and the empty operator in the Spec of CP is assumed to be 'automatic' from its start, and "arguably" no derivation is assumed, except for the expletive 'It'-insertion to the empty Subject position.
If we want to include this representational approach of MP as shown in (8b~b') in the OT framework in which our discussion is undergoing, since this argumentation of MP could be as reasonable and important as that of PP, then we have to add another candidate of (8b') to the candidate set of Tableau 1, as well as an additional and more complicated reasoning to the previous one for Tableau 1. The extended candidate set with a newly added candidate will be like in Tableau 4 in the following.

Tableau 4. Selection of an Optimal Candidate #4

Input : { that, Mary, is, happy, is true }
Output : "It is true that Mary is happy"

Candidates	Subj	AHSubj
a. $[_{IP}\ [_{CP}$ That Mary is happy] is true]]		*!
b. $[_{IP}$ Ø is true $[_{CP}$ that Mary is happy]]	*!	
c.☞$[_{IP}$ It_i is true $[_{CP}$ that Mary is happy$]_i$]		
d. $[_{IP}$ t_i is true $[_{CP}$ that Mary is happy$]_i$]	*!	
e.☞$[_{IP}$ It is true $[_{CP}$ O_i that Mary is happy$]_i$]		

Tableau 4 above has a newly added candidate (e), but the others from (a) to (d) are the same as before in Tableau 3. Tableau 4 shows two optimal candidates selected based on the same constraint ranking of T2. Is this situation acceptable in OT?

First off, as seen from T4, the two selected candidates of (c) and (e) are perfectly compatible to each other.

Whether an empty operator is assumed or not, whether the big Subj. is assumed to be base-generated or not, or whether movement – or derivation - is assumed or not, the surface forms coming out as a result of Gen(erator) of OT are as optimal as possible. The empty operator in the Spec of CP and the base-generated big Subj. assumed at the end of a sentence in (T4e) is just (an) instances of the Theory-internal argumentation of MP just as the movement assumed to take place in (c) is just as an instance of the theoretical issues of P&P. To sum up, selection of two optimal candidates from Gen is not a problem to be avoided in theory at all.
Secondly, with all the newly introduced candidate of (e) in T4 above, OT is still working properly to suggest that (a) is marginally acceptable with the same reason as before.

3. Conclusion

In this paper I have shown that one of the controversial syntactic phenomena, called 'It'-Extraposition, can be properly dealt with by adopting two newly devised constraints such as Subj. and AHSubj. and a constraint hierarchy of Subj.>>AHSubj. in the Optimality Theory. Many attempts have been tried to explain the 'It'-Extraposition phenomenon either derivationally in P&P or representationally in MP. Whatever approaches employed, however, most of the attempts have not been very successful in explaining the phenomenon properly mostly due to their theory-internal reasons. In this respect, we can say that as far as the topic of 'It'-Extrapposition is concerned, the Optimality Theory (OT) that I have employed for the discussion of this paper has surely advantages over the previous approaches, especially in solving the marginal reading issue..

<The Constraints Needed>
Subj., AHSubj.

<The Constraint Hierarchy>
Subj. >> AHSubj.

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