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An Optimality-Based Analysis of Relative Positioning of Wh-related Prepositions in English

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Abstract

*In this paper, we discuss the relative positioning of Wh-related English prepositions in a Wh-interrogative construction within the Optimality Theory [1-2]. By employing the two key constraints such as *Prep-Str and Align which are developed for the positioning of Wh-related prepositions from Romance languages such as French and Italian [3] and for the positioning of Wh-related prepositions from the middle English prose from 1500 to 1900 [4-6], and by slightly modifying the constraint hierarchy of *Prep-STR >>Align into **Prep-STR <<>>Align, Choi argues that his new theory can properly explain the unique behaviors of English Wh-related prepositions being able to take two 'optional' operations such as pied-piping and stranding to find legitimate landing sites in a Wh-interrogative construction [7]. However, this new analysis again reveals the following critical problems: (1) Unlike the 'light' English Wh-related prepositions which can two optional operations for legitimate landing sites in a Wh-interrogative construction, 'heavy' Wh-related English prepositions are not allowed to have such two options: they take just one option of pied-piping only. Thus, (2) his argumentation based on the existing constraints and the modified constraint hierarchy is neither general enough nor proper to explain the issue of the relative positioning for all English Wh-related preposition cases. To include such exceptional syntactic property of the 'heavy' preposition cases within the Optimality Theory, we suggest a new constraint of *HPrep-STR ranked at the highest position of the constraint hierarchy to disallow a 'heavy' or multi-syllabic Wh-related English preposition to stay alone at the end of a sentence. The new final hierarchy of constraints we suggest to explain the exceptional positioning of 'heavy' Wh-related prepositions together with the other 'light' Wh-related prepositions in English Wh-interrogative construction will be as follows: *HPrep-STR>>Align<<>>*Prep-STR.*

Keywords: *Pied-piping, Preposition Stranding, Heavy Wh-Related Prepositions, Multi-syllabic Prepositions, Wh-interrogative Construction, Optimality Theory*

1. INTRODUCTION

Regarding the possible locations of a Wh-related preposition in a Wh-interrogative construction, English shows a property different from some Romance languages such as French, Italian, and others. Consider the following data from English and two other Romance languages.

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(1) English
a. *About* whom are you talking? ……Pied-piping (O)
b. Whom are you talking *about*? ……Preposition Stranding (O)

(2) French
a. *De* qui as-tu parle? ……Pied-piping (O)
about whom have-you talked
b. *Qui as-tu parle *de*? .....Preposition Stranding (X)
who have-you talked about

(3) Italian
a. *Di* cui hai parlato? .....Pied-piping (O)
about whom have-you talked
b. *Cui hai parlato *di*? .....Preposition Stranding (X)
whom have-you talked about

(Data (2) & (3) from Haegeman (1991: 342)) [8]

As we see from the data above, English allows a Wh-related preposition either to move to the beginning of a sentence (a pied-piping case of (1a)) or to be stranded alone at the end of a sentence (a preposition stranding case of (1b)). On the other hand, Romance languages like French and Italian allow a Wh-related preposition only to be pied-piped to the beginning of a sentence as shown in (2a) and (3a). The sole licit location for both Italian and French Wh-related prepositions in a sentence has been successfully discussed by assuming a strict ranking between the two main constraints of '*Prep-STR' and 'Align' in the Optimality Theory (OT, henceforth) [3-6]. By maintaining the main concepts of the two key constraints from Broadwell [3] and Yanez-Bouza [6], but taking one step further from them, Choi argues that their theories cannot explain the multiple licit locations of English Wh-related prepositions as in (1a&b). Thus, Choi suggests that to explain the unique property of English Wh-related prepositions being able to be located in multiple positions, un-ranking between the two constraints developed by Broadwell and Yanez-Bouza should be accepted [7].

Broadwell and Yanez-Bouza are successful, as mentioned before, for Italian and French Wh-related preposition cases, and so is Choi for the English Wh-related preposition cases in his work. However, Choi reveals a serious problem with the following English data. Consider:

(4) English
a. *Beyond* which door was a narrow corridor that led off to the right? .....Pied-piping (O)
b. *Which door was a narrow corridor that led off to the right *beyond*? .....Preposition Stranding (X)

The data of (4a&b) above clearly show that unlike other '*light*' Wh-related prepositions such as 'in', 'on', 'from', 'about', etc., '*heavy*' Wh-related prepositions such as 'beyond', 'beside', 'except', 'toward', 'through', etc., do not go through preposition stranding in English Wh-interrogative sentences as shown in (4b), which observation immediately raises a serious question against the validity of Broadwell [3], Yanez-Bouza [6] and especially of Choi [7].

2. DISCUSSION

2.1 Pied-piping Only for Romance Language Data

Before we get into the main discussion of this research about the positioning of 'heavy' Wh-related prepositions let's review the final locations of Wh-related prepositions of Romance languages first, which attempt will lead us to the validity of the two crucial constraints of 'Align' and '*Prep-STR.' Consider the following data, which are a repeat of (2 & 3).

(5) French (= A Repeat of (2a&b))

a. *De*	qui	as-tu	parl e?	…….Pied-piping	(O)
about	*whom*	*have-you*	*talked*		
b. *Qui	as-tu	parl e	*de*?	.....Preposition Stranding	(X)
who	*have-you*	*talked*	*about*		

(6) Italian (= A Repeat of (3a&b))

a. *Di*	cui	hai	parlato?	.....Pied-piping	(O)
about	*whom*	*have-you*	*talked*		
b. *Cui	hai	parlato	*di*?	……..Preposition Stranding	(X)
whom	*have-you*	*talked*	*about*		

As observed in (5) and (6), Romance languages such as French and Italian, etc. allow Pied-piping only for a Wh-related preposition. A stranded preposition left alone at the end of a sentence leads to an immediate ungrammaticality. In order to capture this property of such languages, Broadwell (2005) and Yanez-Bouza (2006) develop constraints such as '*Prep-STR' and 'Align', definitions of which are described in (7) below. And they work perfectly for the data (5) and (6) of both languages. The detailed computational process for both data is shown in the following Table #1 of (8) and Table #2 of (9) respectively. Consider:

(7) Constraints (Broadwell, 2005: 10) & (Yanez-Bouza, 2006)

① Align: (WH, L, CP, L): Align the left edge of an interrogative with the left edge of CP.

② *Prep-STR: A preposition must be a sister to its object.

(8) Table #1 **Optimal candidate selection for French data (5)**

Input: { as-tu, parle, de, qui }

Output: "*De* qui as-tu parle?"

Candidates	*Prep-STR	Align
a. ☞ [$_{CP}$ *de* qui [$_{IP}$ as-tu parle?]]		*
b. [$_{CP}$ qui [$_{IP}$ as-tu parle *de*?]]	*!	
c. [$_{CP}$ [$_{IP}$ as-tu parle *de* qui?]]		**!*

(9) Table #2 **Optimal candidate selection for Italian data (6)**

Input: { hai, parlato, di, qui }

Output: "*Di* qui hai parlato?"

Candidates	*Prep-STR	Align
a. ☞ [$_{CP}$ *di* qui [$_{IP}$ hai parlato?]]		*
b. [$_{CP}$ qui [$_{IP}$ hai parlato *di*?]]	*!	
c. [$_{CP}$ [$_{IP}$ hai parlato *di* qui?]]		**!*

Both Tables above show in common that there is a strict dominance relation between the two constraints: '*Prep-STR' dominates 'Align', indicating that '*Prep-STR' is more important than 'Align.' Candidate (a) in both Tables is selected as optimal since Candidate (a) violates 'Align' one time which is less important than the other constraint '*Prep-STR'. When compared with Candidate (c), (a) violates the same constraint 'Align' fewer times than (c): (a) violates once, while (c) violates 3 times. So (a) is selected over (c) as optimal, which is a correct expectation for both computations (8) and (9). The two constraints and the hierarchy between two constraints such as *Prep-STR>>Align are verified.

2.2 Two Options for English Data

Employing the concepts of two Constraints which are developed by Broadwell [3] and Yanez-Bouza [4-6] for the positioning of Italian and French Wh-related prepositions, Choi modifies the relative ranking between two Constraints to explain the English cases [7]. Table #3 of (11) below shows that the constraint hierarchy of Table #1 of (8) and #2 of (9) established for Romance languages does not work properly for the English cases at all. English data (1) is repeated for convenience of discussion as (10) below. Consider the wrong selection of an optimal candidate for English in Table #3 of (11)

(10) English (= A repeat of (1))
a. *About* whom are you talking? ……Pied-piping (O)
b. Whom are you talking *about*? ……Preposition Stranding (O)

(11) Table #3 **'Wrong' candidate selection for English data (10)**
Input: { you, are, talking, about, whom }
Output: "*About* whom are you talking?" & "Whom are you talking *about*?"

Candidates	*Prep-STR	Align
a. ☞ [$_{CP}$ *about* whom are [$_{IP}$ you talking?]]		*
b. [$_{CP}$ whom are [$_{IP}$ you talking *about*?]]	*!	
c. [$_{CP}$ are [$_{IP}$ you talking *about* whom?]]		**!*

English allows Wh-related prepositions either to be pied-piped or stranded. So not only Candidate (a) but also Candidate (b) of Table #3 should be selected as optimal. However, such insight has not been satisfied properly on the constraint hierarchy of Table #3. As long as *Prep-STR strictly dominates the other constraint of Align, Candidate (b) of a preposition being stranded at the end of a sentence cannot become an optimal one. Based on this observation, Choi [7] changes the existing constraint hierarchy of Table #3 into *Prep-STR<<>>Align in which both constraints are in un-ranking relation against each other. That is, both constraints are equal to each other in importance.

Consider the computation on the new constraint hierarchy in Table #4 of (12) below.

(12) Table #4 **'Correct' candidate selection for English data (10)**
Input: { you, are, talking, about, whom }
Output: "*About* whom are you talking?" & "Whom are you talking *about*?"

Candidates	*Prep-STR	Align
a. ☞ [$_{CP}$ *about* whom are [$_{IP}$ you talking?]]		*

b. ☞ [$_{CP}$ whom are [$_{IP}$ you talking *about*?]]	*	
c. [$_{CP}$ are [$_{IP}$ you talking *about* whom?]]		**!**

The only difference in the constraint hierarchy between Table #3 and Table #4 is the un-ranking between the two constraints which is represented by the broken line. Candidate (a) and Candidate (b) both show one violation for 2 constraints: they are tied in violation. However, Candidate (c) shows 4 violations since there are 4 grammatical units - words - before a Wh-word, *whom*. That's why we have 4 asterisk (*) marks in the cell. The second violation of 'Align' determines Candidate (c) to be a non-optimal candidate, which is represented by an exclamation mark just after the second asterisk mark.

The computation demonstrates that Choi's newly developed constraint hierarchy between *Prep-STR and Align as represented in Table #4 is working properly for the English Wh-related preposition data [7]. However, the story has not been done yet. His work does show a serious problem for a certain group of English Wh-related prepositions.

2.3 A New Solution for Extended English Data

Let's take a look at the data below which has an English Wh-related preposition 'beyond' and its position in a sentence.

(13) Heavy English Wh-Related Prepositions (= A repeat of (4))
a. *Beyond* which door was a narrow corridor that led off to the right? .....Pied-piping (O)
b. *Which door was a narrow corridor that led off to the right *beyond*? .....Preposition Stranding (X)

A glance at the English data in (13) above clearly shows that Choi's analysis [7] is not working properly for them. Unlike the English Wh-related prepositions in (10) and in Table #3, '*beyond*' in (13) is not allowed to be located stranded alone at the end of a sentence. It is not difficult for us to find a certain group of such English prepositions which show the same property as '*beyond*' in (13). We can easily list '*except*', '*during*, '*beneath*', 'in front of', and many more. And when they are related to a Wh-word, the optimal selection of their 'sole' licit landing site in a Wh-interrogative construction cannot be properly explainable by the constraints and the constraint hierarchy that are working in Table #4 of (12).

In order to explain such critical counter-examples against Choi [7] within the OT, we may attempt to modify either the constraints or the constraint hierarchy, or both. Note that this phenomenon of (13) cannot be due to the intrinsic property of CP, a landing site of a Wh-word. Neither is it likely to be explainable by slightly or dramatically modifying the established constraint hierarchy of (12). That is to say, as far as we maintain the two constraints only like (12), there is no way for us to properly predict the optimal selection of just one pied-piped preposition case of (13).

Note that the prepositions showing a different positioning property from 'ordinary' or 'light' ones such as 'in', 'at', 'about', etc. are all 'heavy' or 'multi'-syllabic. This observation leads us to develop a new constraint: the constraint that should be based on such unique morphological properties as those heavy prepositions. The following is a newly developed constraint to cover such unique property of 'heavy' prepositions. Consider:

(14) A New Constraint
**HPrep-STR*: No heavy preposition should be stranded alone anywhere.
What is required by Constraint **HPrep-STR* of (14) is quite simple: a 'heavy' or 'multi-syllabic' preposition

should not be stranded alone at the end of a sentence or anywhere. When its related Wh-word moves to the Spec of CP - that is, the front position of a sentence -, the Wh-related heavy preposition must go with it together. This constraint should be obeyed anytime since any sentence violating **HPrep-STR* of (14) will automatically lead to ungrammaticality of a sentence.

Let's see if the new constraint **HPrep-STR* together with the two existing constraints and a newly established constraint hierarchy are working properly. Consider:

(15) Table #5 **Candidate selection for English data (13)**
Input: { beyond, which door ……to the right }
Output: "*Beyond* which door was a narrow corridor that led off to the right?"

Candidates	*HP-STR	*Prep-STR	Align
a. ☞ [$_{CP}$ *Beyond* which door was [$_{IP}$ …..to the right?]]			*
b. [$_{CP}$ Which door was [$_{IP}$ …..to the right *beyond*?]]	*!	*	
c. [$_{CP}$ [$_{IP}$ …A narrow door ...to the right *beyond* which door?]]			**!...*

**HPrep-STR* should be located at the highest on the constraint hierarchy as seen from Table #5 above since it must be obeyed anytime in English. Concerning the relative ranking between **HPrep-STR* and the other two constraints, either solid dominance by **HPrep-STR* as shown by the continuous line in Table #5 or un-ranking among the three constraints will be good enough to predict an optimal candidate of (a) correctly.

As seen from Table #5 above, Candidate (a) violates Align only and just once. Candidate (b) violates **HPrep-STR* and *Prep-STR once respectively. Candidate (c) satisfies the first two constraints, but violates Align many times. So with all the computations in mind, Candidate (a) should be selected as optimal, and it has been done correctly.

Note that the three constraints on the new constraint hierarchy of **HPrep-STR* at the highest as in (15) will work perfectly for the English data (10) as well as for the Romance data.

3. CONCLUSION

In this paper, we have argued that, unlike the 'light' Wh-related English prepositions which show two optional movements such as pied-piping and stranding as argued for by Choi [7], the 'heavy' – or multi-syllabic - prepositions like 'beyond' and 'except', etc. have one Wh-related movement only. That is, 'heavy' Wh-related prepositions are required to move together with their Wh-words to the Spec of CP in English. This is a serious problem against Choi [7] and other researches [3-6, 9, 11]. To solve this problem, we have argued for the introduction of a new constraint '*HP-STR' which requires that a 'heavy' English Wh-related preposition cannot stay stranded at the end of a sentence. This constraint may be considered absolute since it should be obeyed anytime in English. In this respect, it may belong to one of the intrinsic properties of Gen(erator) for English. The three constraints and the new constraint hierarchy that have been explored in this discussion can successfully explain the issue of the relative positioning of all Wh-related prepositions of English.

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