

## **A Contrastive Study of English, Persian and Turkish: Cross Over Effects at LF**

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### **Abstract**

**LF as the grammatical locus of semantic interpretation in Minimalism implies that LF is the only level at which any structural condition can be checked. Accordingly, Cross Over Effects provides some evidence for the existence of LF. To provide further evidence for the universality of Cross Over Effects at LF, a comparative research between Persian-English, Turkish-English and Persian-Turkish has been conducted. The subjects include two groups of Persian and Turkish speakers. Each group consists of 30 university students. For the purpose of the study, English examples are taken from original books in which the Cross Over Effects have been checked by the native speakers. Then they are translated into Persian and Turkish to be checked by Persian and Turkish native speakers. The analysis of the data indicates that there is a considerable consistency among three languages with regard to Cross Over Effects at LF.**

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## **Keywords:**

Cross Over Effect, LF, GB, Minimalism, Derivational View, Content Designation View, Deep-Structure, DS, SS, Move  $\alpha$ , PF, SCO, WCO, Principle C, Leftness Condition, QR.

## **Introduction**

The locus of the grammatical conditions within contemporary Government-Binding (GB) theory is the linguistic level called Logical Form (LF). GB organizes the grammar in a 'T-model', in which D-structure phrase markers are related to SS phrase markers by applications of transformations (Move  $\alpha$ ). At SS, the derivation splits into a track leading to Phonetic Form (PF) where phonological and phonetic information is ultimately encoded and a path leading to LF where interpretive-semantic information is represented.

There have been some GB arguments supporting the conclusion that a grammatical level like LF exists, (Hornstein 1996:10). They include a series of direct syntactic arguments that bear on the form and existence of LF in a GB-style theory.

On the other hand, the structure of LF has been defined differently in Minimalist program. Minimalism adopts a version of the T-model and so endorses the distinction between overt syntactic operations which have phonological effects and covert syntax which does not alter the phonological form of a sentence. In Minimalism, there is no DS or SS;

there are just two levels: PF and LF, (Hornstein 1996:3). This model requires that all output conditions (e.g. the theta criterion, subjacency, the case filter, the binding theory, be stated at LF).

Hornstein (1996:3) characterizes LF in terms of two different views: One of them is Derivational View which is defined in GB-style:

*LF is the phrase marker derived from S-structure by applications of 'move  $\alpha$ ' branches with respect to PF and is input to rules of interpretation.*

This definition identifies how the LF phrase marker is derivationally related to other significant levels of linguistic representation. It goes beyond this by suggesting that the same rule that is involved in generating overt syntactic structures, Move  $\alpha$ , is responsible for generating LF phrase markers from S-Structure.

Another is Content Designation View which is defined in minimalism:

*LF is the level of linguistic representation at which all grammatical structures relevant to semantic interpretation is provided.*

In Minimalist program, LF is the only level at which any structural condition can be checked. Thus LF is the unique grammatical level with phrase structure properties. As Hornstein (1996:4) points out, this clearly contrasts with a GB specification of LF given that SS and DS are significant levels in this sort of theory, in addition to LF.

Some evidence for the existence of LF comes from Cross Over Effects at LF. The term 'crossover' originates in Postal (1971) in which a variety of

ungrammatical strings were ruled out by a principle restricting the movement of certain phrases over certain other phrases. Consider the following examples:

**Table (1)**

Who<sub>i</sub> did he<sub>i</sub> give a book to t<sub>i</sub>

English	*[Whoi did [hei give a book to ti]]
Persian	*[Be-Kii [?ui ket ā b-r?a ti d ā d]] To-who he book gave-3rd
Turkish	*[Kim-?ai [?oui ket ā b-e ti ver-di]] who-to he book gave-3rd



**Table (2)**

Who<sub>i</sub> did his<sub>i</sub> mother give a book to t<sub>i</sub>

English	*[Who <sub>i</sub> did [his <sub>i</sub> mother give a book to t <sub>i</sub> ]]
Persian	*[Be-Kii [m <sup>ā</sup> dar-aš ketab-r <sup>ā</sup> t <sub>i</sub> d <sup>ā</sup> d]] To-who mother-his book gave-3rd
Turkish	*[Kim-?ai [ <sup>ā</sup> nasi ket <sup>ā</sup> b-e ti ver-di]] who-to mother-his book gave-3rd

Sentences in table 1 and 2 exemplify Strong Cross Over (SCO) and Weak Cross Over (WCO) respectively. The trace/variable t<sub>i</sub> in sentences in table (1) is bound by the pronoun *he* within the domain of their operator/quantifier. This is a violation of Principle C:

*i A variable must be free in the domain of its operator.*

The variable t<sub>i</sub> in table (2) is coindexed with a pronoun on its left.

This is illicit. One of the principles which has been proposed to rule such structures out is called *Leftness Condition*.

*ii A variable cannot serve as the antecedent of a pronoun on its left.*

Koopman (2000) characterizes variables in the following way:

*iii A is a variable iff A is the trace of movement from an A-position to an (A-bar) position.*

By an *A*-position, we mean a position bearing a grammatical relation (subject of ....., object of ...). An (*A*-bar) position is a position which is not

an A position (COMP, adjunct ...). It is quite clear that the ungrammaticality of the sentences in tables (1) and (2) can be explained in terms of Leftness Condition.

The argument carries over to non-interrogative quantifiers, (Hornstein, 1990: 2).

**Table (3)**

he<sub>i</sub> gave every one<sub>i</sub> a book

English	*[Everyone <sub>i</sub> [he <sub>i</sub> gave t <sub>i</sub> a book]]
Persian	*[Be-hamei [?ui ti ye ket ā b d ā d]] To-everyone he a book gave-3rd
Turkish	* [H ā mmi-y ā i [?oui ti bir ket ā b ver-di]] Everyone-to he a book gave-3rd

**Table (4)**

hisi mother gave everone<sub>i</sub> a book

English	*[Everyone <sub>i</sub> [hisi mother gave t <sub>i</sub> a book]]
Persian	*[Be-hamei [m ā dar-aši ti ye ket ā b d ā d]] To-everyone mother-his a book gave-3rd
Turkish	* [H ā mmi-y ā i [ā n ā si i t i bir ket ā b ver-di]] Everyone-to mother-his a book gave-3rd

The sentences in table (3) cannot be interpreted as meaning 'everyone gave himself a book' nor can sentences in table 4 mean 'everyone's mother

gave him a book'. At LF, after Quantifier Raising (QR) has applied, the following assumption as expressed by Borsley (1999:221) can account for the ungrammaticality of the sentences:

*iv A quantified NP cannot be the antecedent of a pronoun on its left.*

In this paper our main concern is to examine the relevance of Leftness Condition into Persian and Turkish. Thus a comparison has been made among English, Persian and Turkish. In order to confirm the universality of LF rules the following research question is posed: Does Leftness Condition universally hold in Persian and Turkish as well as English?

### **Method and Procedure**

First, ungrammatical English sentences which represent Leftness Condition and are checked by native speakers have been collected from original books. Then they are translated to Persian and Turkish to be answered in a multiple-choice questionnaire by 30 Persian and 30 Turkish native speakers. All the subjects were university students at MA level. Finally, the percentage of the responses were calculated (See Appendix).

### **Results**

The subjects' judgments regarding the ungrammaticality of the sentences with a high percentage show the fact that Leftness Condition supplies in both Persian and Turkish. When the pronoun is on the left of the trace, they cannot be coindexed. If so, the result is ungrammatical. The

percentage of the responses for both Persian and Turkish is presented in the following tables:

**Table (5)**

No.	Persian Percentage of responses
2	80%
5	95%
8	83%
11	93%
14	70%
17	89%
20	69%
23	63%
26	69%
Total	7.11

**Table (6)**

No.	Turkish Percentage of responses
3	90%
6	96%
9	89%
12	91%
15	75%
18	83%
21	65%
24	60%
27	60%
Total	7.09

As can be seen, the total percentage in Persian and Turkish is very close, which indicates the universality of the Leftness Condition.

### **Discussion**

In this article, we have looked at what is known as Leftness Condition-an LF rule. That is the ungrammaticality of the sentences which were discussed was not because of violation of subjacency, or other rules related to S-Structure; it was because of Leftness-Condition which can, be determined at LF. Having accounted for LF from both GB theory and Minimalist program perspective, we considered how Cross Over Effects at LF can be used for interpretation effectively.



The data presented in this article is evidence to show the inadequacy of SS interpretation and a need for a higher level at which interpretation is determined., i.e. LF. This is why, with regard to interpretation there has been a shift from earlier theories of grammar by Chomsky: From deep structure to S-structure and finally to LF.

Summing up, we assume that the Leftness Condition holds universally. Furthermore, this comparative study confirms the universality of LF as the grammatical locus of semantic interpretation.

### Appendix

Out of 27 English, Persian and Turkish sentences, 12 sentences were analyzed and reported. The other sentences used in the analysis are as follow:

- |    |   |      |
|----|---|------|
| E. | *Who i does he i think is clever  |      |
| P. | *?u i fekr minkone ki i b $\bar{a}$ -hooš-e<br>he pr-think-3rd who clever is-3rd                                | 80 % |
| T. | * ?ou i fekr ?elier kimi hoošli-di<br>he pr-think-3rd who clever is-3rd   | 90%  |
| E. | *his i mother loves everyman i  |      |
| P. | *M $\bar{a}$ dar-aši har- $\bar{a}$ dame i -r $\bar{a}$ doost d $\bar{a}$ re<br>mother-his everyman pr-like-3rd | 95 % |

T.	* A n <sup>ā</sup> -sii har- <sup>ā</sup> d <sup>ā</sup> mei soy-er	96 %
	Mother-his everyman pr-like-3rd	
E.	*Who <sub>i</sub> does his <sub>i</sub> mother love	
P.	* M <sup>ā</sup> dar-aš <sub>i</sub> ki <sub>i</sub> -r <sup>ā</sup> doost d <sup>ā</sup> re	83 %
	mother-his who pr-like-3rd	
T.	* A na-si <sub>i</sub> kim-i <sub>i</sub> soy-er	89 %
	Mother-his who pr-like-3rd	
E.	*Who <sub>i</sub> did he <sub>i</sub> give a book to	
P.	*?u <sub>i</sub> ket <sup>ā</sup> b-r <sup>ā</sup> be-ki <sub>i</sub> d <sup>ā</sup> d.	93 %
	He book to-who gave-3rd	
T.	*?Oui ket <sup>ā</sup> b-e kim <sub>i</sub> -a ver-di	91 %
	He book who gave-3rd	
E.	*Who <sub>i</sub> did his <sub>i</sub> mother give a book to	
P.	* M <sup>ā</sup> dar-aš <sub>i</sub> ket <sup>ā</sup> b-r <sup>ā</sup> be-kii d <sup>ā</sup> d.	70 %
	mother-his book to-who gave-3rd	
T.	* A na-si <sub>i</sub> ket <sup>ā</sup> b-e kimi-a ver-di	75 %
	mother-his book who gave-3rd	

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- E. \*He<sub>i</sub> gave everyone<sub>i</sub> a book
- P. \* ?u<sub>i</sub> be-hame<sub>i</sub> ye ket ā b d ā d 89 %  
He to- everyone a book gave-3rd
- T. \*?oui h ā mmi-y ā i bir ket ā b ver-di 83 %  
He everyone-to a book gave-3rd
- E. \*His<sub>i</sub> mother gave everyone<sub>i</sub> a book
- P. \* M ā dar-aš<sub>i</sub> be-hame<sub>i</sub> ye ket ā b d ā d 69%  
Mother-his to-everyone a book gave-3rd
- T. \* A n ā -si<sub>i</sub> h ā mmi-y ā ; bir ket ā b ver-di 65 %  
Mother-his everyone-to a book gave-3rd
- E. \* Whoi did hisi mother help
- P. \* M ā dar-aš<sub>i</sub> be-ki<sub>i</sub> komak-kard 63%  
Mother-his to-who helped-3rd
- T. \* A n ā -si<sub>i</sub> kim<sub>i</sub>-a komak-eladi 60 %  
Mother-his who-to helped-3rd
- E. \*Whoi did heri mother kiss

P.	* Mā dar-aši ki <sub>i</sub> -rā <sub>i</sub> boosid	60%
	Mother-her who-to kissed-3rd	
T.	* Anā -si <sub>i</sub> kim i <sub>i</sub> ?oup-di	62 %
	Mother-her who-to kissed-3rd	

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