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The Triggering Nature of Scrambling in Simultaneous Interpretation

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Abstract. Scrambling is the unbounded movement of one or more than one of elements in a sentence. The placement of arguments and adjuncts in English is predominantly determined by prosodic constraints. Persian unlike English allows different types of scrambling. There is an overt operation in English called; silent scrambling that moves the direct object of the verb into the middle field. In the present study, scrambling was searched in some conversation in Persian which were interpreted simultaneously into English. Conversations were taken from some videos downloaded from the net and are transcribed by the researcher, in order to be analyzed. In conducting the research, first of all naturally occurring scrambling in English and Farsi is descriptively debated and second of all, scrambling in simultaneous interpretation is under study. Finding the frequency of scramble sentences in the collected data, by measuring chi square and based on data analysis, the study suggests that scrambled Persian forces English to be scrambled in simultaneous translation in some parts and there is a direct relationship between Scrambling and Simultaneous interpretation while interpreting from a language with the freedom of constituent order.

Keywords: Scrambling, Scrambling in Persian, Scrambling in English, Simultaneous interpretation

1. INTRODUCTION

According to oxford dictionary of linguistics, scrambling is a Syntactic process by which the order of words or phrases can optionally vary. As it is stated by Bailyn (2002) in some languages, like Persian, constituents can appear in a variety of surface orders, without changing the core meaning of the sentence. The term scrambling originates from Ross's dissertation on "constrains on variables on syntax" (1967). Ross placed scrambling in a component of Grammar other than a transformational component which he proposed to call the stylistic component.

1.1. Background; Scrambling In Simultaneous Interpretation

Scrambling in Persian and English:

The freedom of constituent order is attributed to languages such as Japanese, German, Dutch, Latin, Hindi, Persian, Russian, etc. to the existence of a stylistic reordering rule. According to Greenberg (1963) Persian is a SOV order, type III Language, typically verb-final and postpositional and unlike English allows different types of scrambling.

1.2. Simultaneous interpretation:

Simultaneous interpretation (SI) a service which allows participants at international meetings to speak in their own languages is widely viewed as an impressive form of rapid, instant translation. In Simultaneous interpretation unlike consecutive interpretation, interpreter begins to convey a sentence being spoken while the speaker is still speaking.

The scope of typological comparison is not languages in their entirety, but specific phenomena in the languages compared. When we say that English is an SVO language this

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represents no more than a comparison of a very small part of the grammars of English, the part that dictates the ordering of subject, object and verb. In other words, typological comparison is partial rather than holistic. In English I am wondering that it can be possible to scramble components of sentences.

On the other hand, in Rasekh Mahand's doctoral dissertation it is reminded that scrambling in Persian is just analyzed in two works of Karimi (1999 & 2003) and a work of Karimi and Browning (1994). So there is an absolute lack of Literature about scrambling in Persian. It should be reminded that scrambling itself is not analyzed within the area of simultaneous interpretation, and of course in translation from English to Persian and vice versa. There are lots of studies about the subjects "simultaneous interpretation" and also "scrambling (in other languages)". As it can be possible to scramble units of meaning in simultaneous interpretation, I saw it necessary to do a research concerning scrambling in simultaneous interpretation in my native language.

No survey of scrambling could hope to cover all published research on this important area of syntactic theory. Partly this is because discussion of scrambling has developed alongside general developments in syntactic theory and therefore had quite a different character in 1967 when Ross coined the term in his dissertation, to today, when the apparent optionality of scrambling presents an obvious dilemma for those invested in the "perfect" nature of the linguistic system. (Bailyn, 2002)

As it is clear from the title, here in this research I am wondering if and how word order of Persian and English turns into another in simultaneous interpretation. I am wondering if scrambling happens in the process of interpretation, meaning changes or not. In so doing, first of all, I analyse scrambling in Persian and English and then contrastively analyse data of a simultaneous conference interpretation. The aim of this study is to make a preliminary study of the process of scrambling in simultaneous interpretation.

Accordingly the present study aims at investigating:

Is it possible to scramble words in English and Persian?

How does scrambling happen in simultaneous interpretation?

Does simultaneous interpretation trigger scrambling?

Does scrambling help us in interpretation?

2. RESEARCH HYPOTHESIS

Null hypothesis: regarding the possibility of occurrence and the extent of use of scrambling in Persian or English, there is not any relationship between simultaneous interpretation and scrambling.

3. OVERVIEW

Daniel Gile(2009) in his book "basic concepts and models for interpreter and translator training" pinpoints possible language-specific differences in the production phase of interpretation:

'Speech-producer dependent factors, selecting lexical items and grammatical decision-making maybe more difficult in some languages than in others because of differences in the variety of possible choices and in the flexibility of linguistic rules: a rigid lexical usage, the strength of collocations, the number of possible escape routes in sentence structuring in case the source language statements goes in an unexpected direction and force one to reconsider one's options. The subjective impression of many interpreters is that English is more flexible than French and that Japanese is more flexible than English, with convenient escape routes up to the end of the sentence, but I am not aware of research which has demonstrated that such differences have practical implications….. Another point regarding syntactic and informational similarities has to do with the order of presentation of information in the two languages involved. If it is different, this may involve higher workload for the short term memory effort, as information has to be stored for a while before it can be reformulated in the target language. Again, I am not aware of studies which have measured statistically the extent to which such factors change cognitive load during interpreting, but the existence and potential importance of these effects cannot be ruled out.'

2.2. Scrambling

Becker et al. (1992) defines that Scrambling is a word-order phenomenon which is doubly unbounded" in that more than one element can move, and movement can be unbounded. Becker et al. (1991) argue that scrambling is beyond TAG (tree adjoining grammar) by assuming that elementary trees express a complete predicate argument structure.

2.2.1. How does scrambling happen?

Simin karimi in her paper, "*A minimalist approach to scrambling: Evidence from Persian"* investigate the nature of scrambling within the minimalist program. She poses the following questions on the first page of her book: (i) what motivates the movement of various constituents within a clause? (ii) Is this movement optional? (iii) Does it have an effect on semantic interpretation?

Mamouro Saito in "*Further notes on the interpretation of scrambling chains*" which studies about scrambling in Japanese writes that the interdependence between word order, default accentuation, and information structure is only used in the interpretation of (un)scrambled syntactic structures in the absence of further context and actual accentuation. Contextual information as well as actual accentuation can result in the activation of a certain interpretation despite the violation of constraints on the relation between word order and interpretation. Furthermore, frequency of scrambling of certain types of noun phrases has a considerable impact on the production of scrambling, partly independent of discourse interpretation.

2.2.2. How does scrambling work?

Scrambling can affect quantifier scope and its application yields scope ambiguity. It should be pointed out that only clause-internal scrambling induces the scope ambiguity just discussed, is unambiguous and does not allow the wide scope. (Saito, 2005)

2.2.3. Object Movement

Some papers deal with the object position

Robin Setton in the theoretical framework of his book "simultaneous interpretation: a cognitive -pragmatic analysis" introduces a model of simultaneous interpretation which

"…draws on several bodies of theory. The primary sources are

1) Relevance theory

2) Cognitive or frame semantics (by Fillmore)

3) Mental models theory

4) Speech act theory.

1) RT offers what is so far the most coherent articulation of pragmatics and cognitive psychology in the account linking cognition and communication.

2) Cognitive semantics relates the role of lexical meanings in comprehension, rather than to a language-internal code. Specifically, the frame semantics provides an account of organization of concepts in long-term memory and the mechanism by which conceptual structures are recovered or evoked by items in texts.

3) Mental models theory provides a detailed hypothesis about the way in which text-based meanings and relevant context are integrated and organized in working memory and hence a basis for modeling the economy and efficiency of complex mental representation under pressure.

6) Interpreter recreates the speakers' intentionality through indications of illocution and propositional attitudes.

2.2.4. Scrambling in Persian versus English

Scrambling discontinuities are distinct from topicalization, wh-fronting, and extraposition discontinuities. Scrambling does not occur in English, but it is frequent in languages with freer word order, such as German, Russian and Persian. Simin karimi in her paper: "On Object Positions, Specificity, and Scrambling in Persian" firstly mentiones that Enç (1991) defines specificity in terms of *strong antecedent* and *weak antecedent*. Then she moves to scope. She states that according to Fodor and Sag (1982), a specific NP correlates with a scope operator: An NP is considered specific when it has wide scope over an operator. There are syntactic, semantic, and morphological asymmetries between specific and nonspecific objects in Persian. The nonspecific object and its specific counterpart exhibit distinct semantic relationship with respect to the verb. The nonspecific object (kind-level or existential) is part of the *event*, rather than the participant in the event.

As it is stated by Karimi, Persian data show that scrambling is in fact subject to the minimal link condition. However in English scrambling shows island effects due to topicalization.
In Siamak Rezaei's thesis, it is mentioned that in Persian, NP can move out of the embedded post verbal clause. It is possible to scramble more than one constitute out of an embedded clause.

In Rasekh Mahand's doctoral dissertation it is reminded that scrambling in Persian is just analyzed in two works of Karimi (1999 & 2003) and a work of Karimi and Browning (1994). So there is an absolute lack of review of Literature about this subject.

Rasekh Mahand defines two kinds of movement in scrambling: A' movement and A-movement. And they are two reasons that force scrambling: scrambling for information focus and contrastive focus.

2.2.5. Reconstruction in the Minimalist Program

Descriptively, reconstruction (or connectivity) refers to a phenomenon in which a dislocated phrase in a sentence behaves as though occupying some position lower than the one in which it

appears at S-structure (Chomsky 1976, 1986, 1995, Barss 1986, Huang 1993, Heycock Hornstein, 1995)

2.3. Simultaneous interpreting

In Simultaneous interpretation interpreter orally translate a speaker's speech in the time of production of that speech. In "The Origins of Simultaneous Interpretation" by Francesca Gaiba (1998), it is provided the first complete analysis of the emergence of simultaneous interpretation that is in the Nuremburg Trail. It is also mentioned in this book that in simultaneous interpretation the information is transferred into the second language as soon as interpreters understand a unit of meaning. The word simultaneous is misleading because interpreters have to understand a minimum of information before they can translate into the target language.

2.3.1. An effort model of simultaneous interpreting by Gile

"Simultaneous interpreting can be modeled as a process consisting of the three core efforts described above, namely the listening and analysis effort L, the short term memory effort M and the speech production effort P, plus a coordination effort C which corresponds to resources required to coordinate the three other efforts (Eysenck & Keane 1990)

2.3.2. The sequential linearity simplification

'It is convenient to think of the Listening, Production and Memory efforts as handling sequentially Translation Units or 'speech segments' which can vary in length from one to several words forming a clause or even a sentence in the order in which they were uttered by the speaker… Generally, with the exception of anticipated segments, source-speech segments can be reproduced in the Target Text (effort P) only after they have been understood (Effort L).

Reality is more complex, if only because of syntactic differences between the source and target language which naturally lead to information-order changes in the target speech. Other phenomena can lead to similar results. For instance, when the initial words in a speaker's sentence are not clear, the interpreter may need to keep them in memory until they are well understood. By that time, more than one Translation Unit is stored in short-term memory and it is not clear which will be rendered first. Finally, linguistic and semantic anticipation as alluded to earlier occur frequently n speech comprehension and interpreters sometimes find themselves voicing in their target speech ideas or information which the speaker has not expressed verbally yet, at least not fully.

The linearity assumption remains a useful simplification for the purpose of explaining strategies and tactics in daily practice of interpreting.'

As it is mentioned before in doing this research, I am analyzing information-order changes in the target speech in simultaneous interpretation. So I collected bodies of speeches in conferences which are mentioned in next chapters, to find out how scrambling happens.

3. HOW THE RESEARCH WAS CONDUCTED:

This research tries to describe naturally occurring scrambling in simultaneous interpretation without experimental manipulation. This research will be conducted analytically and is quantitative by measuring chi square.

In the data collection, as I mentioned before I wrote some interviews down and searched the scrambled sentences if there is any. Data collection process here is done through observing and

writing data, deciding on the data and analyzing the data and then writing reports and comments.

3.1. Data Analysis

In doing research I was searching in first and second language transcript for scrambled sentences. According to Rasekh Mahand(2003) Persian has scrambling and according to Hinterhölzl(2012) English has silent scrambling. Given the idea that this study concern translation from Persian to English, I was wondering about papers written by Hinterhölzl on English word order.

I found it inevitable to produce a disciplined word order of second language in simultaneous interpretation, even in translation to English. Look at the following sentences:
1. I say hello first of all to you
2. But unfortunately for a period of one hundred years the British Empire influenced the process
3. That war only brought for us poverty and losses
4. They imposed for another twenty five years a tough Dictatorship on us
5. Following the victory of the Islamic revolution and our freedom an eight year old war was imposed on us
6. People in the United States, are they happy
7. No we are not concerned about it, who's gonna attack us

3.2. Chi square

If we set the 2 x 2 table to the general notation shown below in Table 1, using the letters a, b, c, and d to denote the contents of the cells, then we would have the following table:

Table 1. General notation for a 2 x 2 contingency table.
Variable 1

Variable 2	Data type 1	Data type 2	Totals
Category 1	a	b	a + b
Category 2	c	d	c + d
Total	a + c	b + d	a + b + c + d = N

For a 2 x 2 contingency table the Chi Square statistic is calculated by the formula:

$$\chi^2 = \frac{(ad - bc)^2(a + b + c + d)}{(a + b)(c + d)(b + d)(a + c)}$$

Table 2. Collected data

Variable1	Complex sentences of Translated text	Complex sentences of Not translated text	Totals
Scrambled complex sentences	16	10	26
Not scrambled complex sentences	52	58	110
Total	68	68	136

Before we can proceed we need to know how many degrees of freedom we have. When a comparison is made between one sample and another, a simple rule is that the degrees of freedom equal (number of columns minus one) x (number of rows minus one) not counting the totals for rows or columns. For our data this gives (2-1) x (2-1) = 1.

We now have our chi square statistic (x^2 = 1.71), our predetermined alpha level of significance (0.05), and our degrees of freedom (df = 1). Entering the Chi square distribution table with 1 degree of freedom and reading along the row we find our value of x^2 (1.71) lies between 2.706 and 0.455. The corresponding probability is between the 0.10 and 0. 5 probability levels. That means that the p-value is less than 0.05. Since a p-value of 0.65 is less than the conventionally accepted significance level of 0.05 (i.e. p > 0.05) we reject the null hypothesis. In other words, there is a direct relationship between Scrambling and Simultaneous interpretation while interpreting from a language.

Table 3. Probability level (alpha).

Df	0.5	0.10	0.05	0.02	0.01	0.001
1	0.455	2.706	3.841	5.412	6.635	10.827
2	1.386	4.605	5.991	7.824	9.210	13.815
3	2.366	6.251	7.815	9.837	11.345	16.268
4	3.357	7.779	9.488	11.668	13.277	18.465
5	4.351	9.236	11.070	13.388	15.086	20.517

According to the data collected, English transcribed text was even more scrambled in complex sentences rather than Farsi which has more freedom in constituent order. Therefore as a result of this research it would be useful to consider simultaneous interpretation as one of the factors in forcing scrambling. And this can be analyzed in future researches as in the suggestion for further studies sections of this paper is mention as well.

4. RESULTS

The researcher in this study has tried to find possible scrambling in simultaneous interpretation. In conclusion chapter of this study, first of all, research questions are reconsidered, wondering if the study has led to answer or not.

Regarding the first research question, analysis of the data revealed that even in translation from Persian to English simultaneous interpretation trigger scrambling. According to Rasekh Mahand(2003) Persian has scrambling and according to Hinterhölzl(2012) English has silent scrambling.

In order to probe the research questions predicting the reason behind scrambling, it can be stated that LPR,(Laryngopharyngeal Reflux), that is, VP-intraposition moves light adjuncts into the middle field in English. In translating from Persian to English, when Persian is scrambled itself, this scrambling forces the target language scrambling as there is no time for interpreter to put the words in the common word order of second language.

The purpose of this study was to investigate the occurrence of scrambling in simultaneous translation in translation from Persian to English. This research seeks to define and explain

scrambling in Persian and English in simultaneous interpretation. By introducing simultaneous interpretation the study a simultaneous interpretation was selected as an instance. In discussion section I collected some information which is in line with the findings of the current study. The results of this research will be interpreted and discussed, chasing the following information and in compliance with the research findings of this study.

4.1. English word order

Roland Hinterholzl in his paper, "Studies on Basic Word Order, Word Order Variation and Word Order Change in Germanic" argued that the older Germanic languages displayed mixed OV/VO word orders. Furthermore, heavy and focused elements appear post-verbally in Old English and proposed that it is this factor – a type of stylistic rule – that is responsible for the *post-verbal placement of event-related adjuncts in modern English*, since these adjuncts are typically realized as rather heavy NPs and PPs.

Focus movement, a functionally motivated displacement, is a feature driven operation due to the fact that it is subject to a number of principles and conditions that govern the displacement property in language. If focus movement is feature driven, the feature triggering it must be uninterpretable, as assume within the Minimalist Program framework.

LPR,(Laryngopharyngeal Reflux), that is, VP-intraposition will become obligatory triggering the need for a new stylistic (peripheral) rule that optionally moves light (non-branching) adjuncts into the middle field in Modern English.

This model of language change in terms of the distinction between core grammar and periphery explain a change in unmarked word order without invoking word order parameters. The model relies on optional rules that are triggered by prosodic requirements (no heavy elements may occur in the middle field.) If a peripheral rule like LPR is extended and more and more widely used (when it becomes popular), it will be less and less marked and may, when crossing a certain (statistical) threshold give rise to a new or an additional unmarked word order. When this happens a peripheral rule will be reanalyzed as a rule of the core grammar.

In this context, it is interesting to note that the Germanic languages started out from a similar basis and developed into different directions. In Old High German, Old Norse and Old English light elements tended to precede the thematic verb while heavy (branching constituents) followed the verb (cf. Behaghel 1932). While the placement of arguments and adjuncts in modern German is thoroughly scope transparent (also PP stranding by vP-movement serves to preserve pre-existing c-command relations among adjuncts) and their placement in modern English is predominantly determined by prosodic constraints, Icelandic has opted for a split solution: referential DPs are spelled out in a low position obeying the prosodic condition, while quantificational DPs (including negative quantifiers) are spelled out in their scope positions in the middle field.

4.2. Silent Scrambling in English

Roland Hinterholzl in his paper, "Studies on Basic Word Order, Word Order Variation and Word Order Change in Germanic" argued that arguments that undergo scrambling for reasons of scope taking spell out the lower copy as well. This type of movement was called *silent scrambling*. Now we have to assume that also licensing movement of argumental DPs and PPs is silent in English. On the other hand, vP-external adjuncts must be taken to undergo scrambling (for reasons of scope taking) that spells out the higher copy, a locative PP can take scope over a temporal PP that is base-generated in a higher position. Like: They met students in each university on a different day.

Hinterhölzl (2001, 2003) proposes that English has *silent* scrambling. Silent scrambling means that there is an overt operation that moves the direct object of the verb into the middle field but spells out the lower copy in the VP.

Hinterhölzl (2002b) proposes that silent scrambling moves the direct object to a c-commanding position above the adjunct in the middle field, but spells out the lower copy in the VP. VP intraposition will then establish the correct word order V-DO-Adjunct.

Silent scrambling was argued to be necessary to account for the fact that postverbal complements demonstrate evidence of c-command relations into postverbal adjuncts. In order to account also for cases of c-command exerted by argument and adjunct PPs, Hinterhölzl (2009b) proposes that there is also silent scrambling within PPs.

Null hypothesis of this research is rejected. It means that scrambling can happen in simultaneous interpretation even in translation from Persian to English. It is possible to state that there is a direct relationship between simultaneous interpretation on translation from Persian to English and vice versa and scrambling.

In the present chapter, the researcher has tried to provide an accurate analyze of the main findings of the study by first having a quick look at the questions which inspired the present study, and then continued by answering them. Finally here I mention the pedagogical implications of this research, providing some suggestions for further research topics in this area.

Searching scrambled sentences in second language text, I found some sentences which are not scrambled but are translated word by word and are structurally Persian rather than English. Therefore I infer that it is researchable to investigate that in simultaneous interpretation, sentences are mostly interpreted word by word or not.

The simultaneous conversation which was translated orally and I analyzed it with its interpreted transcript in English was scrambled itself. As it was previously shown in the present study Persian is more tending to be scrambled and English does not have this tendency. However in methodology section, some of sentences became scrambled in the process of simultaneous interpretation. According to the first paragraph of conclusion, in 5.2, as simultaneous interpretation is done at the time when speaker speaks, sometimes word by word translation is forced to simultaneous interpretation trigger scrambling.

4.3. Suggestions for Further Studies

According to data collected, English transcribed text was even more scrambled in complex sentences rather than Farsi which has more freedom in constituent order. Therefore as a result of this research it would be useful to consider simultaneous interpretation as one of the factors in forcing scrambling.

For further studies it can be recommended to investigate scrambling in simultaneous interpretation in translation from English to Persian. As it was previously stated in the present study, Persian has this tendency to be scrambled. Consequently, it can be under studied that simultaneous interpretation triggers it further or not.

I declare that finding simultaneous interpretation of an oral speech from English to Persian by professionals is a time-consuming and hard job and I, myself, preferred to choose an interpretation from Persian to English. I think that the reason behind this, is that the media concern about English audience to be quickly informed, and tries to keep itself updated. So conversations in different Languages e.g. Persian are simultaneously translated into English. On

the other hand speeches in English are not interpreted when speakers are making the speeches and most of available speeches translated from Persian to English are dubbed or are translated subtitles through and so are not suitable for studies about simultaneous translation.

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