

On the Unbounded Movement of Wh-Elements in Arabic: Evidence Against Successive Cyclicity

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Abstract

Chomsky (1973, 1977) argues that the movement of Wh-elements from the embedded clauses to the beginning of the matrix clauses is successive-Cyclic. First the movement is to the Comp of the embedded clause and this is followed by another (other) movement (s) to the comp of the matrix clause. The need for this is dictated by the adherence to the general principle of subadjacency that governs movement in syntax. Arabic presents evidence for the opposite. The movement of Wh-elements in Arabic is unbounded-i.e., It is done in one step rather than successively. Structures Showing this are of the following structural configuration.

$$[[[Comp_1]]S_1[....[S_1[Comp_2]S_1[[Topic][[Comp_3]...[Wh]...]]]]$$

No movement to comp₂ is possible since Wh-elements cannot precede Topics in Arabic and therefore Comp₂ is not a suitable place for the movement of Wh-elements. The movement of Wh-elements must therefore be from comp₃ to comp₁ in one step, a process which violates subadjacency. The problem is solved by adhering to an alternative analysis suggested by Bresnan and Grimshaw (1978). There, they argue for unbounded deletion that is governed by a coindexing Process. I suggest our extension of this analysis by letting movement processes be unbounded. The grammaticality or otherwise of the outputs would be explained by the bounded nature of the following coindexing device subadjacency is thus a function of coindexing and not of movement.

It has been observed that some languages exhibit unbounded movement of elements in sentences, such as Wh-elements and NP's. This movement has long been acknowledged in the literature of transformational generative Grammar. At first, it was assumed to be the product of transformations applying across unbounded distance (cf. Ross 1967). An alternative account of this phenomenon was later proposed by Chomsky in which this seemingly unbounded movement of elements is produced by successive application of cyclic transformations; transformations that obey the principle of cyclicity (cf. Chomsky 1973, 1977). Behind this lies the attempt to account for all dependencies -e.g. relation between antecedent and trace- in a similar fashion in Universal Grammar. This is also implied in the position taken by Bresnan (1976) and Bresnan and Grimshaw (1978) who argue, in addition to other such as Postal (1972), that transformations should not be bounded.

In this paper I shall present evidence for unbounded movement of Wh-elements in Arabic complex sentences. The evidence involves sentences in which a wh-element has moved from the deeply embedded clause to the beginning of the matrix clause. In such sentences the movement of this element seems to be achieved in one step, crossing over the cyclic categories, a mode of movement which violates the general principle of subjacency that governs movement rules as has been stipulated in the literature within Extended Standard Theory.

Chomsky (1977 and earlier publications cited therein) argues that major non-root transformations whose order of application has to obey the principle of the strict cycle can move elements only one step up the hierarchy of the cyclic domains in the sentence following the principle of subjacency defined as in ⁽¹⁾

1. In a structural configuration of the following form

$${}_c \left[\dots Y \dots {}_b \left[\dots {}_a \left[\dots X \dots \right] {}_a \dots \right] {}_b \dots \right] {}_c$$

no rule may move the constituent **X** which is in the cyclic category **a** to a position **Y** in the cyclic category **c** if **c** includes a cyclic category **b** which includes **a**.

Many apparent violations to this principle have been noted in languages that exhibit wh-raising as in the case of (2).

2. What did John believe that Mary said that Nancy bought?
Given a phrase marker like (2').

$$2'. S_1 \left[\text{comp}_1 \text{ what} \right] S_1 \left[\text{John believe } S_2 \left[\text{Comp}_2 \text{ that} \right] S_2 \text{ Mary said } S_3 \left[\text{comp}_3 \text{ that} \right] \right]$$

S_3 [Nancy bought t]]]]]]]

the movement of the wh-element **what** in (2) from the embedded s_3 to comp_1 of s_1 violates subadjacency since it has moved over the two cyclic domains; s_2 and s_1 taking s_1 to be the cyclic domain in English. The solution to this apparent violation was to stipulate that the movement of wh-elements from s_3 to comp_1 of s_1 is successive. (2') is not the direct derivation of (3).

3. s_1 [comp_1 []] s_1 [John believe s_2 [comp_2 [that] S_2]]]]]]]
 [Mary said S_3 [comp_3 [that] S_3 [Nancy bought what]]]]]]]

Rather, the wh-element moves first to comp_3 of S_3 , then to comp_2 of s_2 and finally to comp_1 of S_1 . This successive cyclic application of the rule abides by subadjacency.

The subadjacency-abiding application movement transformation is evidenced in the ungrammaticality of sentences where the wh-element has moved over a complex Noun phrase as in (4):

4. *What did you believe the claim that Mary bought?
 with an initial phrase marker like (4')

4. ' S_1 [comp_1 []] S_1 [you believe $_{NP1}$ [the claim S_2 [comp_2 [that] S_2]]]]]]]
 [Mary bought what]]]]]]]

The movement of the wh-element to comp_1 of the matrix clause is blocked because it violates subadjacency; after the first movement to Comp_2 of S_2 , it has to cross over cyclic domains: NP_1 and S_1 .

One other reason that dictated this successive cyclic application of wh-movement stems from the requirement in the logical form of semantically interpretable sentences that anaphors be bound to their antecedents, which broadly means that an anaphor such as (trace) or PRO, and its antecedent may not be interrupted by a major category. with a step-by-step movement of the wh-element the intermediate comps that the wh-element passes through will be indexed through the traces that this element leaves behind. This ensures the necessary proper binding (cf. Chomsky 1977).

Turning to Arabic,² we find that Arabic may exhibit the same phenomenon of wh-movement and raising that we find in English. In complex sentences the wh-element moves from its original place in the embedded clause to the beginning of the matrix clause. We shall assume that the movement of the wh-element is to the comp node in Arabic without going into the details of the arguments for this assumption. In Bakir (1979), it is argued, on grounds of mutual exclusion of complementizers and wh-element in Comp position, that wh-movement in Arabic is to the Comp position at the beginning of the sentence. Thus in (5) and (6)

5. maaʔaa ʔaraada zayd-un ʔan yastariya muhammad-un?3
 what wanted Zayd-nom that buys Muhammed-nom?
 'what did Zayed want Muhammad to buy?'
6. man talab-ta ʔ an taraa faatimat-u?
 who asked-you that sees Fatima-nom?
 'who did you ask Fatima to see?'

with the following phrase markers,

$$5'. S_1 \left[\text{comp}_1 \left[\text{maaʔaa} \right] S_1 \left[? \text{ araada zaydun } S_2 \left[\text{comp}_2 \left[? \text{ an} \right] S_2 \left[\text{yastariya muhamadun } t \right] \right] \right] \right]$$

$$6'. S_1 \left[\text{comp}_1 \left[\text{man} \right] S_1 \left[\text{talabta } S_2 \left[\text{comp}_2 \left[? \text{ an} \right] S_2 \left[\text{taraa faatimatu } t \right] \right] \right] \right]$$

one can assume that the wh-elements **maaʔaa** and **man** in the above sentences have moved from their original places indicated as *t* in the embedded clauses to Comp_1 or S_1 in two steps abiding by subadjacency. First, they move to Comp_2 of S_2 , and from this position they move to comp_1 . The sentences will receive proper semantic interpretation since the moved elements will have left traces in the intermediate comps, and thus there would not be any free anaphor: all traces will be bound.

Moreover, there is another class of sentences in Arabic in which this mode of movement is not possible. In questions like (7) and (8)

7. man qaala muhammadun? inna zaydan raʔaa
 who said Muhammed that Zayd saw
 'who did Muhammed say that Zayd saw'
8. maaʔaa za'am-ta ʔanna fatimata ʔistarar
 what claimed-you that Fatima bought
 'what did you claim that Fatima bought?'

With initial phrase markers like (7') and (8')

10'. S [comp₁ [] S₁ Topic [zaydan] S₂ [comp₂ [] S₁ [ra?at ?ummahu man]]]]

The ungrammaticality of these sentences stems from the fact that the movement of the wh-elements *maaʔaa* and *man* to comp₁ of S₁ is blocked. They can only move to comp₂ of S₂; that is to the right of the topic NP's **muhammadun** and **zaydun**. From (9) and (10) we can infer that comp's are sisters of S's are not an appropriate place for wh-elements to move into. In other words, they are not specified with a [wh] feature. Only comps that are sisters of S's are, and would therefore, admit wh-elements to move into them. Comps in Arabic appear to be subcategorized for their availability for wh-movement. This, in turn, means that in (7') and (8'), after the first step movement of the wh-elements from their original place to comp₃, the second step movement from comp₃ to comp₂ is not possible since comp₂ is the same kind of comp that we have in the matrix clauses of (9') and (10'); i.e., a comp which is a sister of S. Nevertheless, the wh-elements in (7') and (8') can appear at the beginning of the matrix clauses, i.e., they can move into comp₁ of S₁, as is evidenced in the grammaticality of sentences (7) and (8).

All this suggests a second step of a different kind. We have to say how that this second step movement is from Comp₃ to Comp₁ directly. But this movement will violate subadjacency. It crosses two cyclic domains: S₂ and S₁, if we take S to be cyclic in Arabic, or S₃ and S₂ if S is to be taken to be as cyclic. And if matters are such, then there is no reason why the movement of wh-elements in these sentences has to be done in two steps. Why couldn't it be achieved in one step from the original place where these elements are generated to the position at which they appear on the surface? We are led by all this to adopt the theoretical alternative suggested by Bresnan (1976) and Postal (1972) and to claim with them that transformations need not be bounded.

Another class of Arabic sentences that exhibits the same phenomenon is that of sentences containing free relatives. Free relatives in Arabic may or may not show resumptive pronouns. The fact that there is no resumptive pronoun in object position does not affect the grammaticality of the sentence, as in (11) and (12).

11. reʔay-tu man qul-ta l-i ?inna muhammadan tazawwaja---
saw-1 who said-you to-me that Muhammed married '
I saw who you told me that Mohammed married'

12. ʔaallika man ʔalima al-naasu ? anna zaydun qad faʕ ala-
that what knew def-people that zayd had did
'That is what people know that Zayd had done.'

A possible analysis will involve a wh-movement from the place of the gap to the beginning of the relative clause. The relative clause in (11') and (12') will have phrase markers like (11) and (12) respectively.

subject to subjacency in that the two Comp's involved in this process have to be subjacent to each other, thus intervening major categories will block this coindexing process, as suggested by Goldsmith (1979) and formulated as (13):

$$13. \text{Comp}_x \dots \left[\dots \text{Comp} \dots \right]_{\infty} \text{Comp}_x \dots \text{Comp}_x$$

Condition $\propto \neq S, Np, PP$

The sentence under discussion will thus be properly bound. There will be no intervening major category between the lowest Comp and the trace of the moved wh-element, since all the Comp's in these sentences will have been indexed through the above process.

In conclusion, these two classes of sentences in Arabic provide empirical evidence against a universal principle of successive, subjacency-abiding application of wh-movement transformations such as has been advocated in the Chomskyan model of 1977 and earlier publications. The adoption of a model that does not impose such constraints is not a matter of a choice between two adequate alternatives as far as Arabic is concerned⁶, rather it is the only answer in our quest for observational adequacy.

Notes

1. But cf. Koster (1978) and other references cited therein for arguments against that, and for considering the S to be a cyclic category.
2. The variety of Arabic that we are concerned with here is modern literary, which shares basically the same syntactic properties with Classical Language. No attempt is made to include the spoken colloquials in this analysis.
3. For expository reasons, only wh-words **man** 'who' **māāāā** 'what' are exemplified. No examples were given for moved wh-phrases of the form [p + wh] although they behave similarly, but with a slight morphological change in the wh-word **maaāāā**. Apparently, preposed wh-phrases of the form **p + man** and **p + maaāāā** are reduced to single lexical items. So instead of 'anman about whom and 'an maaāāā about what, we have 'amman 'amma. Similarly we have bima in what instead of bi maaāāā, and 'alaama on what instead of 'alaa maaāāā : e.g.
 (i) 'amma qulta lli ?anna muhammad - an ? araada ? an yas: ala
 about what said you to me that Mohammad wanted to ask
 what did you tell me Mohammad wanted to ask about.
 (ii) bima ? itaqada al-hasssn ?anna saaliman qad ?insagala?
 in what believed def-people that Salim was occupied
 'what did people believe Salim was occupied with'
4. In Chomsky (1977), where 'topic' was proposed for the first time as a immediate constituent of S, no details were given as to the categorical status of this constituent. It was as if 'topic' - a functional concept has acquired a categorical characteristic on par with NP, V, S, etc.. However, in that paper and in subsequent papers in the literature, topic has always been assumed to be an NP. The fact that the topics in the examples given here were not given any further labelling is only done in conformity with the configuration that was originally devised by Chomsky in the above mentioned paper.
5. This claim for unbounded rule application receives further support from research within the government - binding theory, cf. Baltin (1983), Manzini (1983) and Koster (1984). This was kindly brought to my attention by anonymous reviewer of A.J.H.
6. Neither of the two theoretical models discussed here should make any claim for universality. It seems that they can only be assumed as alternative features characterizing the application of specific rules in a given language. They should not even be assumed as the sole modes of transformational rules that subcategorize languages. As has been argued by Chung (1982), there are languages such as Chamorro which exhibit both successive-cyclic and unbounded transformations.

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