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THE INTERACTION BETWEEN THE PASSIVE TRANSFORMATION AND OTHER TRANSFORMATIONS IN ENGLISH AND ARABIC

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1. Introduction

This paper sets out to compare and contrast the passive transformation in English and in Modern Standard Arabic (MSA) on two grounds: (1) how the passive transformation in each of the two languages interacts with other transformations, and (2) whether or not rule application in these transformations is cyclically ordered (Lakoff 1966). Arguments for the cycle and strict cyclicity have been put forward by many T.G. grammarians (e.g., Keyser and Postal 1976, Pullum 1976, Neubauer 1972, Postal 1971, and McCawley 1970). Similar arguments for "the cycle based on languages other than English have been given by Kayne (1975) for French, and Evers (1975) for Dutch and German" (qtd. in Soames and Perlmutter 1979: 172). However, no studies have dealt exclusively with the cyclical principle in Arabic grammar, but there have been some contrastive studies on the use of verb forms and agentive phrases in Arabic and English passives (Khalil 1993, 1989; Nofal 1993, Kharma and Hajjaj 1989; Kharma 1983; Saad 1982).

In this paper I will show that MSA exhibits some constructions which require cyclical rule application to allow rules like passive, object-to-subject raising, complementizer insertion, Equi-NP-Deletion, and so on, to apply in the derivation of some sentences. Evidence from Arabic will be supportive of Soames and Perlmutter's (1979: 118) claim that the two general principles of rule interaction, namely "the cycle and strict cyclicity are linguistic universals."

2. A structural description of the passive construction in modern standard Arabic

Given that the domain of the passive construction in Arabic is the verbal sentence, it is necessary to determine the form of the verbal sentences whose structural description satisfies the application of the passive transformation. An important element to consider is the verb and the restrictions on the possible subjects and objects

that certain verbs can take. Since an Arabic passive sentence, like an English passive sentence, is derived from an active counterpart, it is necessary to maintain an NP complement in the underlying active sentence in order for the passive transformation to operate. We should also emphasize that the selectional restrictions in Arabic active sentences should capture the two generalizations proposed by Soames and Perlmutter (1979: 31-32):

> The class of possible subjects that can occur with a verb in the passive sentences is identical with the class of subjects that the same verb can have in the active sentences

and

> The class of possible NPs that a certain verb can have in the *by*-phrase in passive sentences is identical with the class of possible subjects that the verb can have in active sentences.

These two generalizations have been used by generative grammarians to support the hypothesis that active and passive sentences are derived from the same underlying structures. The same argument holds for Modern Standard Arabic, which shares this characteristic with English, e.g.,

	V	S [NP1]			O [NP2]	
Active: (1)	*šariba*	*t-*	*tiflu*	*I-*	*ḥaliiba*	(1)
	drank	def.	child	def.	milk	
	'The child drank the milk.'					

	V (passive)	Agent Substitute (A.S.)/Grammatical Subject (Gr.S.)	
Passive: (2)	*šuriba*	*I-*	*ḥaliibu*
	was drunk	def.	milk
	'The milk was drunk.'		

In the active sentence, the verb *šariba* (= drank) is transitive, and the two slots of the *subject* and *object* are filled. Also the *agentive phrase*, which is usually deleted in Arabic passive, is identical, when recoverable, with the subject of the active sentence. In sentence (2) above, however, it is not possible to retain an agentive phrase. This is in line with Khalil (1993: 169), who concludes that "Arab grammarians have always described the passive in Classical Arabic (CA) as an agentless construction. English, unlike CA, has both agentless and agentive passive constructions." A different argument is presented by Saad (1982: 92) who says that "semantically, Arabic passive has an external agent and that it is not agentless." This suggests that agentive passive constructions in CA and MSA may occasionally occur through the agentive *by*-phrases: *biwaasitat* 'by means of', *min qibal* 'on the part of', or *9ala yadi* 'at the hands of' (cf. Nofal 1993: 12), e.g.,

	V (Passive)		A.S. /(Gr.S.)		
(3)	*dubiṭa*	*I-*	*liṣṣu*	*biwaasitati/9ala yadi*	*š-* *šurṭah*
	was caught	def.	thief	by means of/at hands of	def. police
	'The thief was caught by the police'				

As far as the structural description of Arabic passive is concerned, two important aspects should be discussed, namely (1) the form of the verb, and (2) the subject.

2.1. Form of the Verb

The passive verb in Arabic is marked for tense and is always identified as either past or present. In the most general terms, the past tense, which consists of the radicals (*f-9-l*) in its underlying form, is known to take the surface passive form (*fu-9i-la*), by inserting the case marker vowel affixes: *dammah* : *-u,* the *kasrah*: *-i,* and the *fathah*: *-a,* after the radicals (*f-9-l*), respectively. This establishes that any past tense that corresponds to the prescribed passive form is a passive. Examples are given in Table 1 below:

Table 1. Active-Passive transfprmations in the past tense

Root	Active	Passive
f-9-l	*fa9ala*	*fu9ila*
k-s-r	*kasara* (= 'break - past')	*kusira*
q-t-l	*qatala* (= 'kill - past')	*qutila*
k-š-f	*kašafa* (= 'reveal - past')	*kušifa*

The same applies to words with 'geminates' such as *affa - luffa*, *9adda - 9udda*, and *damma - dumma*, which undergo the following process:

l-f-f	*lafafa*	→	(*laffa* = 'wrapped')	*lufifa*	→	*luffa*
9-d-d	*9adada*	→	(*9adda* = 'counted')	*9udida*	→	*9udda*
d-m-m	*damama*	→	(*damma* = 'annexed')	*dumima*	→	*dumma*

The above examples show that the vowel *a*, which is inserted after the second radical in the active base form, is deleted and thus yielding the surface active verbs: *laffa*, *9adda*, and *damma*, respectively. The derived forms include the doublets (i.e., geminates 'ff', 'dd', 'mm') resulting in 'emphasis.' When passive applies to the surface active forms: *laffa*, *9adda*, and *damma*, they yield the passive counterparts *luffa* 'was wrapped', *9udda* 'was counted', and *dumma* 'was annexed', respectively, whose base passive forms, prior to the deletion of the vowel *i* following the second

radical, were *lufifa*, *9udida*, and *dumima*, respectively. What actually happens is that the underlying passive forms given above are changed into their surface counterparts *luffa*, *9udda*, and *dumma*, through the Arabic morpho-phonemic rule of '*idγaam* 'assimilation', for the ease of pronunciation.

It is worth noting here that one of the schools of Arabic linguistics, namely the Kufan school believes that "the passive form is not transformed from its active counterpart and that it must be added to the well-known forms to become four: *fa9ala*, *fa9lia*, *fa9ula*, and *fu9lia*" (Nofal 1993: 43). But proponents of the Basra school, another pominent school of Arabic linguistics, believe that verbs like *junna* 'went mad', which the Kufans believe to have no active equivalent, "do actually have their active counterparts, but they are not frequently used, e.g., (a) *junna* = passive, and (b) *junna*= active" (Nofal 1993: 43).

On the other hand, the present tense of the passive verb takes the form *yu-f-9a-lu*, in which case the first radical is followed by the vowel *dammah*: *-u*, and the penultimate is followed by the vowel *fathah*: *-a*. Thus, any present tense that corresponds to the prescribed passive form is said to be a passive. Examples are given in Table 2 below:

Table 2. Present tense Passive form

Root	active		passive
f-9-I	*ya-f-9a-Iu*		*yu-f-9a-lu*
š-r-b	*ya-š-ra-bu*	(='drink' – pres.)	*yu-š-ra-bu*
m-d-h	*ya-m-da-hu*	(='praise' – pres.)	*yu-m-da-hu*
q-t-9	*ya-q-ta-9u*	(='cut' – pres.)	*yu-q-ta-9u*

2.2. Underlying Subject

The surface structure subject in Arabic passive sentences, the agent substitute or the grammatical subject (hereafter Gr.S.), often follows the verb and carries the nominative case marker, *dammah*: *-u*, which marks the subject. Nevertheless, Arab grammarians do not refer to it as subject but as *naa'ib faa9il* "agent substitute". Consequently, I chose to distinguish it from the logical subject by labelling it "grammatical subject" (cf. Khalil 1993, 1989).

As far as the agentive phrase is concerned, Arabic passive constructions normally occur without it, since it is uniquely recoverable from the context. This is not the case with the *by* phrase in English passive which, according to Liles (1979: 73), is usually deleted when: (a) "the subject in the active sentence is an indefinite pronoun," and may be deleted when (b) "the meaning of the verb suggests that only one performer of the action is likely," e.g.,

(4) a. Someone hit him.
b. He was hit.

(5) a. The policeman arrested the thief.
b. The thief was arrested. (cf. Liles 1979: 73)

This suggests that whereas the agent is not normally retained in Arabic passive constructions, since the agentive phrase is often not explicitly stated, it is treated as an optional part of the passive rule in English. The same opinion is expressed by Nofal (1993: 127) who reports that "agents in Arabic passive sentences generally do not appear in surface structure ...; however, some Arabic passive sentences incorporate an overtly expressed agent." A counter argument is forwarded by Khalil (1989: 23) who points out that "the agent is obligatorily deleted in the Arabic passive."

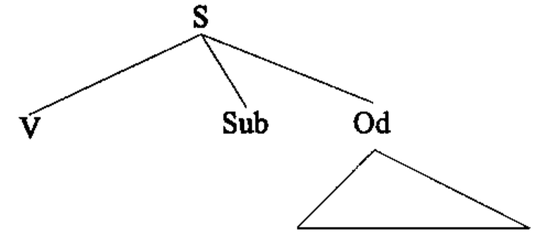
3. Clauses as objects of higher verbs

The passive rule in Arabic designates the semantic object in the active sentence as the grammatical subject of the derived passive equivalent. When passive applies, it is often the case that certain verbs take the whole clause as an object and not just the NP that immediately follows the verb; e.g.,

	V	S	Od				
(6) a.	*9arafa*	*9aliyyun*	[*anna*	*zaydan*	*sa-*	*yasilu*	*γadan*]
	knew	Ali	that	Zayd	will	arrive	tomorrow

'Ali knew that Zayd would arrive tomorrow.'

The deep structure can be represented in terms of a phrase marker as follows:



The passive rule then applies to generate:

(6) b. V (passive)			Gr. S.		
9urifa	*anna*	*zaydan*	*sa-*	*yasilu*	*γadan*
was known	that	Zayd	will	arrive	tomorrow

'It was known that Zayd would arrive tomorrow.'

In this case, the entire clause (i.e., the Od in the active string) becomes the grammatical subject in the passive counterpart. In such constructions, Arabic also allows the NP object alone, without its complement, to be the grammatical subject. The case for English was discussed by Stockwell (1977: 128), who rules out the possibil-

ity of moving the NP object only to be the subject by a passive rule because "passive would then be applied across the boundary of the lower sentence," which results in the ungrammatical sentences (7b, 7c):

(7) a. "John expected - Mary would arrive.
b. *Mary was expected by John would arrive.
c. *Mary was expected would arrive by John." (Stockwell 1977: 128).

This suggests that extraposition is obligatory after passive where the object NP is an embedded sentence, as in (7d) below:

(7) d. It was expected (by John) that Mary would arrive.

But in the case of embedded infinitives, moving the NP object to subject position is permissible, as in (7e) below:

(7) e. Mary was expected [to arrive].

This is not to suggest however that INF Complementizer is generated in the deep structure (DS).

Arabic passive, on the other hand, accomodates such constructions as follows:

(8) a.

V	S				
9arafa	*zaydun*	*anna*	*9aliyyan*	*sa-*	*yafuuz*
knew	Zayd	that	Ali	will	win

'Zayd knew that Ali would win.'

passive:

(8) a.

V (passive)	Gr. S			
9urifa	*anna*	*9aliyyan*	*sa-*	*yafuuz*
was known	that	Ali	will	win

'It was known that Ali would win.'

4. The passive transformation in standard Arabic

A close investigation of the passive transformation in MSA shows that the two parts of a transformational rule: 'structural description' (SD) and 'structural change' (SC) are applicable (Akmajian and Heny 1975: 140). Consequently, the passive transformation rule which is optional in Arabic, except when the deep structure subject is empty where it should be obligatory, may be stated by positing the element PASS in the deep structure to account for cases where the subject position is empty (i.e., dummy), as follows:

(a)

SD:	V-tense [+ past] *fa9ala*		S/NP1	O/NP2 [PASS]
	1		2	3
SC:	V-pass. *f+u-9+i-l+a* 1		Gr. S NP2 3	Agentive Phrase (Prep + NP1) or ø 2

(b)

SD:	V-tense [present]		S/NP1	O/NP2 [PASS]
	1		2	3
SC:	V-pass. *yu-f-9+a-l+u* 1		Gr. S NP2 3	Agentive Phrase (prep + NP1) or ø 2

As illustrated in (a) and (b) above, the structural description of Arabic passive sentences is a sequence of three constituents: V NP1 NP2, in which the two NPs stand for subject and object, respectively. Unlike English, where the linear ordering of the two NPs relative to the verb determines their identification as subject and object, the identification of subject and object in Arabic is based on the inflectional case endings which assign the affix *dammah*: *-u*, as a subject marker, and the affix *fathah*: *-a*, as an object marker. But there are cases – as in the normal unmarked order V S O – where we can get the meaning without using the inflectional case endings, as in:

(9)

V	S	O
daraba	*muhammad*	*faatimah*
hit	Muhammad	Fatima

'Muhammad hit Fatima.'

5. Rule ordering and the passive transformation

In the previous section we have tried to formalize, albeit informally, the passive transformation rule in MSA by identifying its two parts, the (SD) and the (SC). But there are sentences with complex grammatical structures resulting from the interaction between passive and other transformations such as question, dative-movement, Equi-NP-Deletion, and so on. In this section of the paper, I will account for the passive construction in MSA with relation to such structures, and find whether or not rule application in Arabic is ordered.

5.1. Dative Movement and Passive

One area of investigation is the interaction of dative movement and passive. Dative movement has the effect of transforming the structure underlying sentences such as (10a) into the structure underlying sentences such as (10b):

(10) a. V S Od Oi
manaha *l-* *mudiiru* *jaa'izatan* *li* *l-* *faa'izi*
gave def. master prize prep. def. winner
'The headmaster gave a prize to the winner.'

Dative movement:

(10) b. V S Oi Od
manaha *l-* *mudiiru* *l-* *faa'iza* *jaa'izatan*
gave def. master def. winner prize
'The headmaster gave the winner a prize.'

We notice that the dative movement rule has moved the indirect object (i.e., the NP within the prepositional phrase) in (10a) to the position of a direct object immediately following the verb in (10b). When the two rules (i.e., dative movement and passive) interact, the preferred order for them in MSA is for the dative movement to apply before the passive rule. Therefore, sentence (10b) can yield the desired passive:

(11) a. V (passive) Gr.S. O
munih̲a *l-* *faa'izu* *jaa'izatan*
was granted def. winner prize
'The winner was given a prize.'

Had we attempted to apply the passive transformation to sentence (10a) before applying dative movement, we could have generated the ungrammatical string:

(11) b. **munih̲a* *li-* *l-* *faa'izi* *jaa'izatun*
was given prep. def. winner prize.
*'To the winner was given a prize. / The winner was given a prize.'

Nevertheless, we can apply passive before dative movement if we change the focus from the animate direct object, *li-l-faa'izi* 'to the winner', to the inanimate direct object, *jaa'izatan* 'a prize' in the active sentence (10a), and consequently add an inflectional ending (i.e., the feminine gender marker *-t* to the passive verb) so that we can generate:

(11) c. V- passive
munih̲at *jaa'izatun* *li-* *l-* *faa'izi*
was given a prize to def. winner
'The winner was given a prize.'

The same is true in English, which requires for the dative movement to apply before passive; otherwise, we will generate the ungrammatical string:

(11) d. *To the winner was given a prize.

5.2. Passive and Questions

Another area of investigation is the ordering of the passive and question transformations. First, let us deal with the Yes- No questions as shown in this sentence:

(12) a. V S O
h̲alla *l-* *majlisu* *l-* *muškilata*
solved def. council def. problem
'The council solved the problem.'

If we apply the passive rule first, we obtain:

(12) b. V (passive) Gr. S.
h̲ullat *al-* *muškilatu*
was solved def. problem
'The problem was solved.'

And by applying the question transformation next, we generate:

(12) c. V (passive) Gr. S.
hal *h̲ullat* *al-* *muškilatu?*
Interr. was solved def. problem
'Was the problem solved?'

Similarly, if we reverse the order of the rules and apply the question transformation to sentence (12a) and then the passive, the output string will be equally grammatical. If we apply the question rule first, we obtain:

(12) d. *hal* *h̲alla* *l-* *majlisu* *l-* *muškilata?*
inter. solved def. council def. problem
'Did the council solve the problem?'

The same argument holds for *wh*-questions in which question words like *man* 'who,' *mataa* 'when,' *ayna* 'where,' etc., are manifested. But it should be pointed out that although the output string is not affected significantly by rule ordering, the semantics of the derived sentence is more sound when the passive transformation applies first. Thus, after applying passive to the original string (12a):

(12) a. V S O
h̲alla *l-* *majlisu* *l-* *muškilata*
solved def. council def. problem
'The council solved the problem.'

we obtain:

(12) e. V (passive) Gr. S.
ḥullat *al-* *muškilatu*
was solved def. problem

in which case the focus is shifted to the action itself (i.e., the act of solving the problem, in the above example) irrespective of the agent. Or else we can generate (12f), where focus is on the object, which now has a 'grammatical subject' function as a result of preposing:

(12) f. *al-* *muškilatu* *ḥullat*
def. problem was solved
'The problem was solved.'

This can only be achieved if the passive transformation applies first. When this is done, we start an investigation on 'how the problem was solved' and 'when,' etc., by applying the *wh-* question to generate:

(12) g. *Kayfa ḥullat al-* *muškilatu*
how was solved def. problem
'How was the problem solved?'

But there is nothing to suggest, on pure syntactic grounds, that the passive should apply before the question. Consequently, we assume that in the interaction of passive and question, there is no adherence to the "strict ordering" theory, but to the "free application" theory (Soames and Perlmutter 1979: 144). Let us consider the following examples in which the question transformation may apply before passive:

(13) a. *ḥalla l-* *mudiiru* *l-* *muškilata* → WH Question
solved def. master def. problem
'The headmaster solved the problem.'

b. *kayfa ḥalla l-* *mudiiru* *l-* *muškilata?* → PASS
how solved def. master def. problem
'How did the headmaster solve the problem?'

c. *kayfa ḥullat* *al-* *muškilatu?*
how was solved def. problem
'How was the problem solved?'

Similarly, if we reverse the order of transformations, we can still generate the following grammatical strings:

(14) a. *ḥalla l-* *mudiiru* *l-* *muškilata* → PASS
solved def. master def. problem

(14) b. *ḥullat* *al-* *muškilatu.* → WH-Question
was solved def. problem

(13) b. *kayfa ḥullat* *al-* *muškilatu?*
how was solved def. problem

In this respect, Arabic differs from English, which requires passivization to apply before question.

5.3. Passive through Extraposition

Passive may also apply through extraposition, a rule that "moves the subject to the right of the predicate" (Stockwell 1977: 129). Thus, in the sentence:

(15) a. S Cs
an *taγliba* *9aliyyan* *amrun sa9b*
to beat Ali act difficult
'It is difficult to beat Ali.'

Extraposition:

(15) b. *(innahu)* *(la)-* *amrunsa9bun* *an taγliba* *9aliyyan*
it is emph. act difficult to beat Ali
'It is difficult to beat Ali.'

Passive:

(15) c. Gr. S. V passive
9aliyyun *ṣa9bun an* *yuγlaba*
Ali difficult to be beaten
'Ali is difficult to beat/be beaten.'

This does not suggest, however, that the proposed ordering of rules is fixed, since the passive transformation can apply directly to sentence (15a) above:

(15) a. S Cs
an *taγliba* *9aliyyan* *amrun sa9b*
to beat Ali act difficult
'It is difficult to beat Ali.'

to yield passive:

(15) d. V passive Gr. S.
an *yuγlaba* *9aliyyun* *amrun ṣa9b*
to be beaten Ali act difficult
'For Ali to be beaten is difficult.'

followed by extraposition, as in (15b) above.

5.4. Adverb Fronting and Passive

Adverb fronting is a focusing rule which focuses on the fronted adverb; e.g.,

(16) a. *sa- yaḥkumu l- qaadi fi l- qadiyyati ɣadan*
will rule def. judge in def. case tomorrow
'The judge will give his verdict tomorrow.'

With regard to the application of adverb fronting and passive, there are no restrictions concerning rule ordering. Thus, the order can be either adverb fronting followed by passive as in:

Adverb fronting:

(16) b. *ɣadan sa- yuḥkamu fi l- qadiyyah*
tomorrow will be ruled in def. case
'The verdict will be given tomorrow.'

Passive:

(16) c. V passive
sa- yuḥkamu fi l- qadiyyati ɣadan
will be ruled in def. case tomorrow
'The verdict will be given tomorrow.'

or the reverse (i.e., by applying the passive first as in (16c) followed by adverb fronting as in (16b) above).

This shows that in the interaction of passive and adverb fronting the rule application adheres to the free application theory and not to the strict ordering principle (cf. Soames and Perlmutter 1979: 118).

5.5. Reduced Complements and the Passive Transformation

Akmajian and Heny (1975: 298) define a reduced complement as "one that seems to have a subject which is co-referential with the subject of the matrix sentence," e.g.,

(17) a. "I would hate it if I found the house empty.

When reduced:

(17) b. I would hate to find the house empty" (Heny 1975: 298).

The same argument applies to MSA when a given string satisfies the SD of the passive transformation with the rules ordered as follows:

(18) a. *yastaḥsin 9aliy an yaðhab 9aliy ila l- ḥaflah*
prefer Ali to go Ali to def. party
'Ali would like for Ali/himself to go to the party.'
Equi-NP-Deletion

(18) b. *yastahsin 9aliy an yaðhab ila l- ḥaflah*
Subject-to-Object Raising

(18) c. *anaa astaḥsin [9aliy yaðhab ila l- ḥaflah]*
I prefer Ali go to def. party

Passive

(18) d. V- passive Gr. S.
yustaḥsanu an yaðhaba 9aliyyun ila l- ḥaflati
be preferred to go Ali to def. party
'It is preferable for Ali to go to the party.'

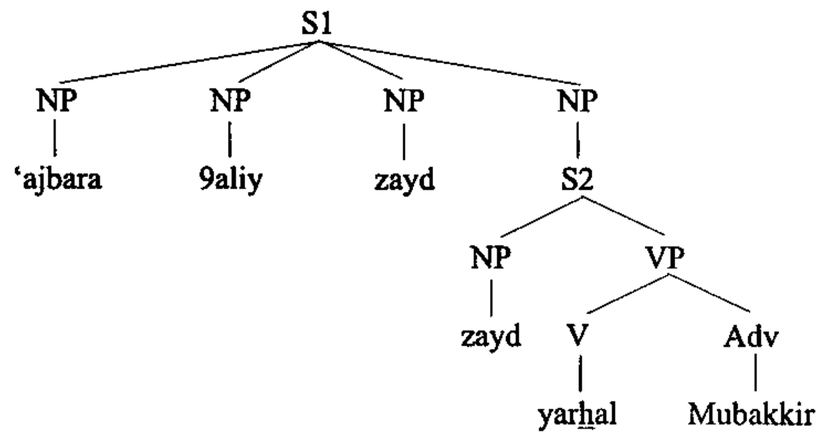
Equi-NP-Deletion also occurs with the verb 'force' *yujbir*, in embedded sentences like:

(19) a. *'ajbara 9aliyyun zaydan an yarḥala mubakkiran*
forced Ali Zayd to leave early
'Ali forced Zayd to leave early.'

which has the underlying structure:

(19) b. *'ajbara 9aliy zayd [zayd yarḥal mubakkir]*
force Ali Zayd Zayd leave early

shown in terms of phrase marker as:



In the derivation of sentence (19a) from structure (19b), a number of transformations apply to the original underlying string (19b) as follows:

(19) b. *'ajbara* *9aliy* *zayd* [*zayd* *yarhal mubakkir*]
forced Ali Zayd Zayd leave early

Equi Deletion

forced Ali Zayd _____ leave early.

complementizer insertion

(19) c. *'ajbara* *9aliy* *zayd* *an* *yarhal mubakkir.*
forced Ali Zayd to leave early

Passive

	V passive	Gr. S.		COMP.			Adv.
(19) d.	*'ujbira*	*zaydun*	*an*	*yarhala/9ala*	*r-*	*rahiili*	*mubakkiran*
	was forced	Zayd	to	leave/on	def.	leaving	early

'Zayd was forced to leave early.'

In light of the above, one can gather that there is not much of a problem between Equi-NP-Deletion and passive in Arabic because the SD of the active sentence (cf. (19c) above):

V	S	O		COMP.	
'ajbara	*9aliyyun*	*zaydan*	*an*	*yarhala*	*mubakkiran*
forced	Ali	Zayd	to	leave	early

can yield, on applying the passive transformation, the desired passive counterpart (cf. 19d) above:

V passive	Gr. S.		COMP.			Adv.
'ujbira	*zaydun*	*an*	*yarhala/9ala*	*r-*	*rahiili*	*mubakkiran*
was forced	Zayd	to	leave/on	def.	leaving	early

'Zayd was forced to leave early.'

In English, however, Equi-NP-Deletion can apply after passive because the subject of the matrix sentence is identical with the subject of the embedded sentence, e.g.:

(20) a. We forced Bill to leave early.

which has the underlying structure as:

(20) b. We forced Bill [Bill leave early].

Passive can apply first to yield:

(20) c. S V Passive S V Adv.
Bill was forced [Bill leave early]

followed by Equi-NP-Deletion and complementizer insertion (i.e., infinitive marking) to yield:

(20) d. Bill was forced to leave early.

6. Cyclical rule application in complex embedded sentences

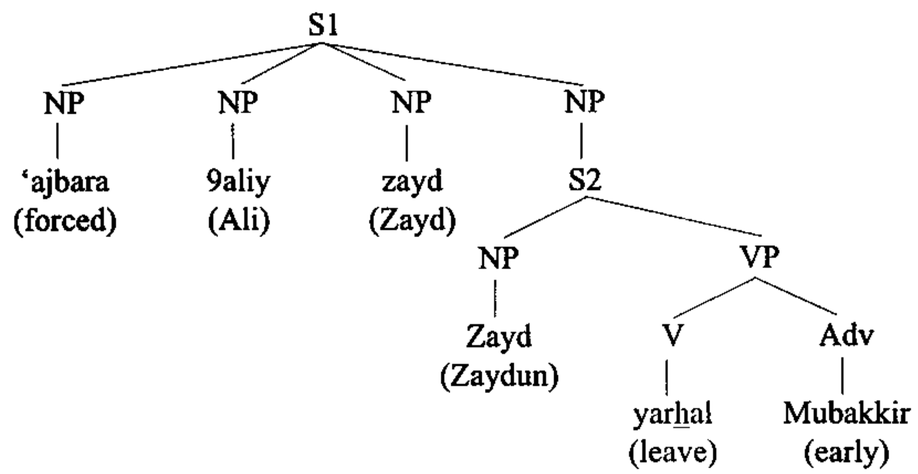
In the previous section we have shown that the passive transformation in MSA is often rule governed and that the SD of some sentences may not undergo the passive tranformation unless other rules apply to the string before the passive can apply. Evidence was found in extraposition and reduced complements. With this in mind, I will show how the passive transformation in Arabic complex embedded sentences (i.e., sentences in which the surface string incorporates a number of interacting deep structure transformations) is realized in the light of rule ordering and the cyclical principle of rule application.

Soames and Perlmutter (1979: 126) state that in early transformational grammar "rules apply from bottom to top; i.e., rules first apply to the most deeply embedded S and then to the next deeply embedded S, and so on". Let us test the applicability of this argument to standard Arabic with the understanding that Arabic is a VSO language. For example, the passive sentence:

(21) a. *'ujbira* *zaydun* *an* *yarhala* *mubakkiran*
was forced Zayd to leave early
'Zayd was forced to leave early.'

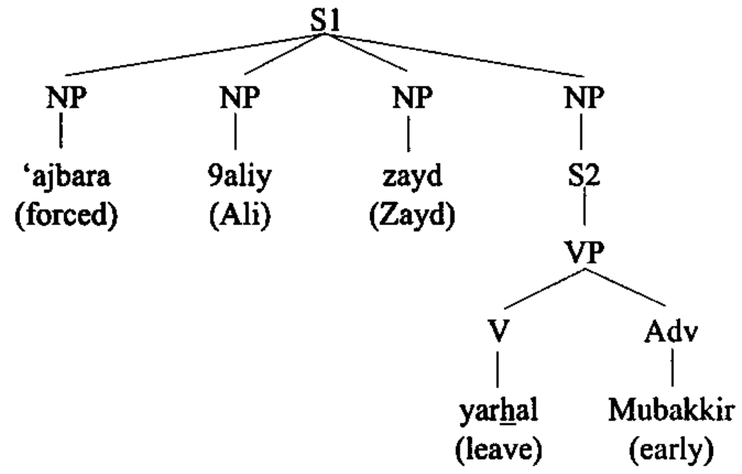
has the underlying structure:

(21) b.



In the derivation of sentence (21a) from (21b), Equi-NP-Deletion is applied on the S2 cycle producing the derived structure:

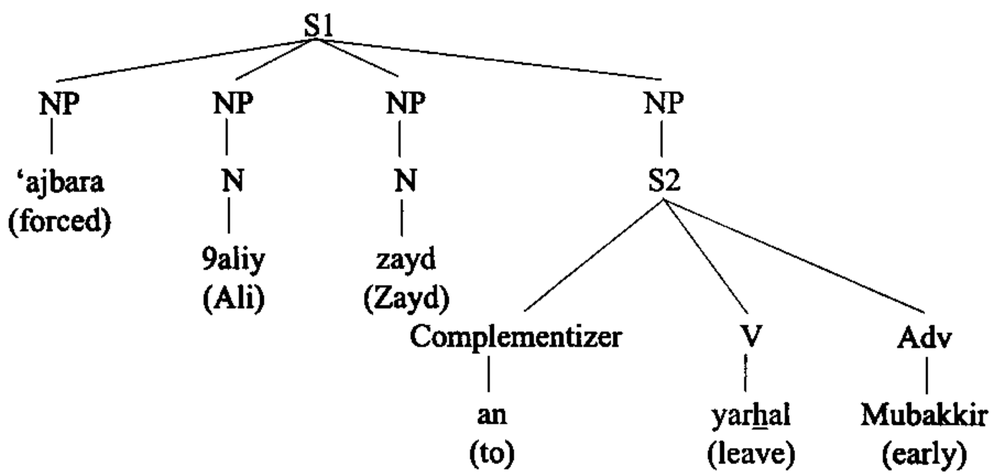
(21) c.



'ajbara	*9aliy*	*zayd*	____	*yarḥal*	*mubakkir*
forced	Ali	Zayd		leave	early

On the S2 cycle, complementizer insertion also applies. Complementizer insertion is triggered by the identity of *Zayd* in S1 and *Zayd* in S2, deleting the lower occurrence and leaving a finite verb without a subject, which makes the complementizer insertion rule necessary:

(21)d.

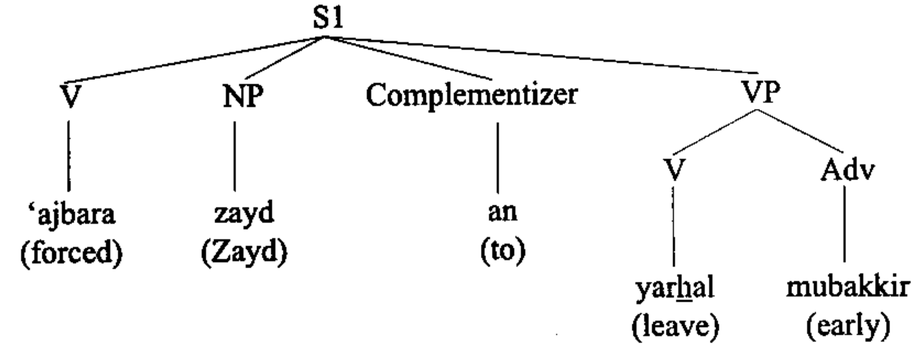


'ajbara	*9aliyyun*	*zaydan*	*an*	*yarḥala*	*mubakkiran*
forced	Ali	Zayd	to	leave	early

'Ali forced Zayd to leave early.'

On the S1 cycle, passive changes the verb format, reorders, then deletes the subject *9aliyyun* 'Ali', and gives the verb its passive form *'ujbira* 'was forced,' yielding the desired passive construction (21a) above, which can be represented as:

(21)e.



'ujbira	*zaydun*	*an*	*yarḥala*	*mubakkiran*
was forced	Zayd	to	leave	early

'Zayd was forced to leave early.'

Thus the preferred ordering of rule application is:

1. Equi-NP-Deletion
2. Complementizer insertion
3. Passive

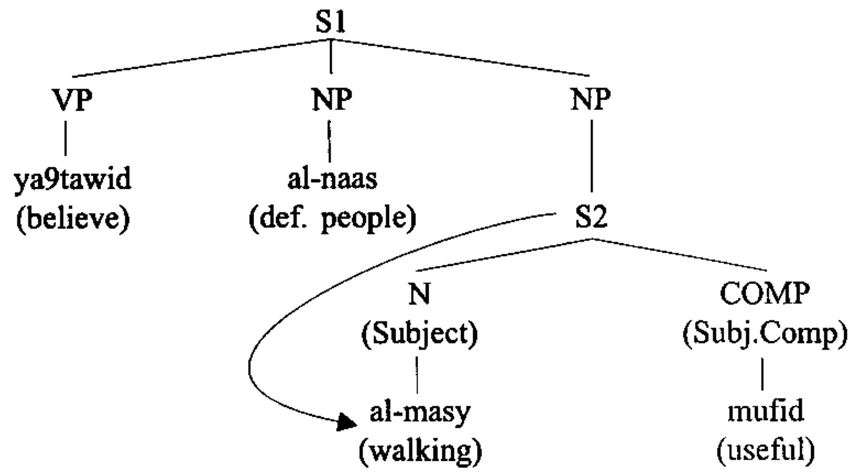
In other words, there is no strict adherence to rule ordering because, as shown in (5.7: 19a-d) above, the passive transformation can apply to the active string without the need to go through Equi-NP-Deletion.

The application of the cyclical rules in the passive transformation may also be detected in the following example:

(22) a. *ya9taqidu l- naasu anna l - mašya mufiidun*
believe def. people that def. walking useful
'People believe that walking is useful.'

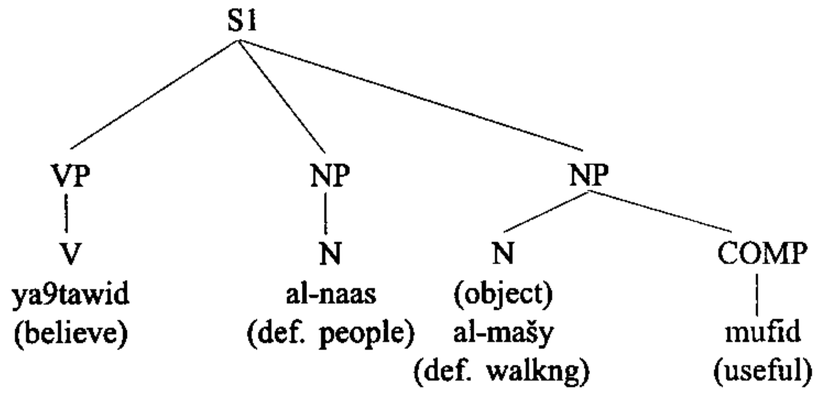
whose underlying structure is:

(22) b. *ya9taqid al-naas* S2 [*al-mašy mufiid*]



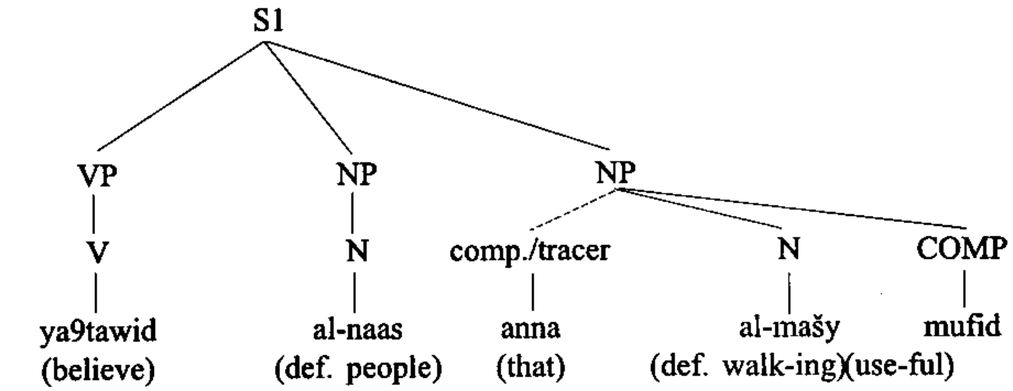
On the S2 cycle, raising the nominal sentence [*al-mašy mufiid*] as [object + complement] of higher verb *ya9taqid* 'believe' (i.e., subject-to-object raising) applies to produce:

(22) c.



'People be-lieve walking is useful.'

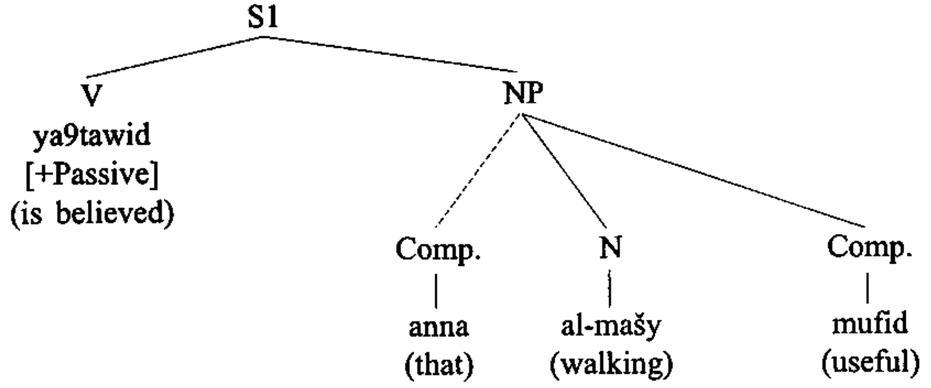
On the S1 cycle, complementizer insertion applies to mark 'objectivity.' The inserted complementizer *anna* 'that', is a tracer element which codes embedding.



(22) d. *ya9taqidu l- naasu anna l- mašya mufiidun*
believe def. people that def. walking useful
'People believe that walking is useful.'

On S1 cycle, passive applies to delete the subject *al-naasu* 'people' and change the verb into its passive form *yu9taqadu* 'is believed.'

(22) e.



yu9taqadu anna l- mašya mufiidun
be believed that def. walking useful
'It is believed that walking is useful.'

It turns out that the cyclical application of rules should be ordered as follows:

1. Subject-to-Object raising
2. Complementizer/Tracer insertion
3. Passive

A fairly complex display of cyclical rule application in MSA may be evidenced in the following example:

(23) a. *dubiṭa l- saa'iqu musri9an wa- quddima li- l- muḥaakamah*
was caught def. driver speeding and was sent to def. trial
'The speeding driver was caught and tried.'

which has the underlying structure:

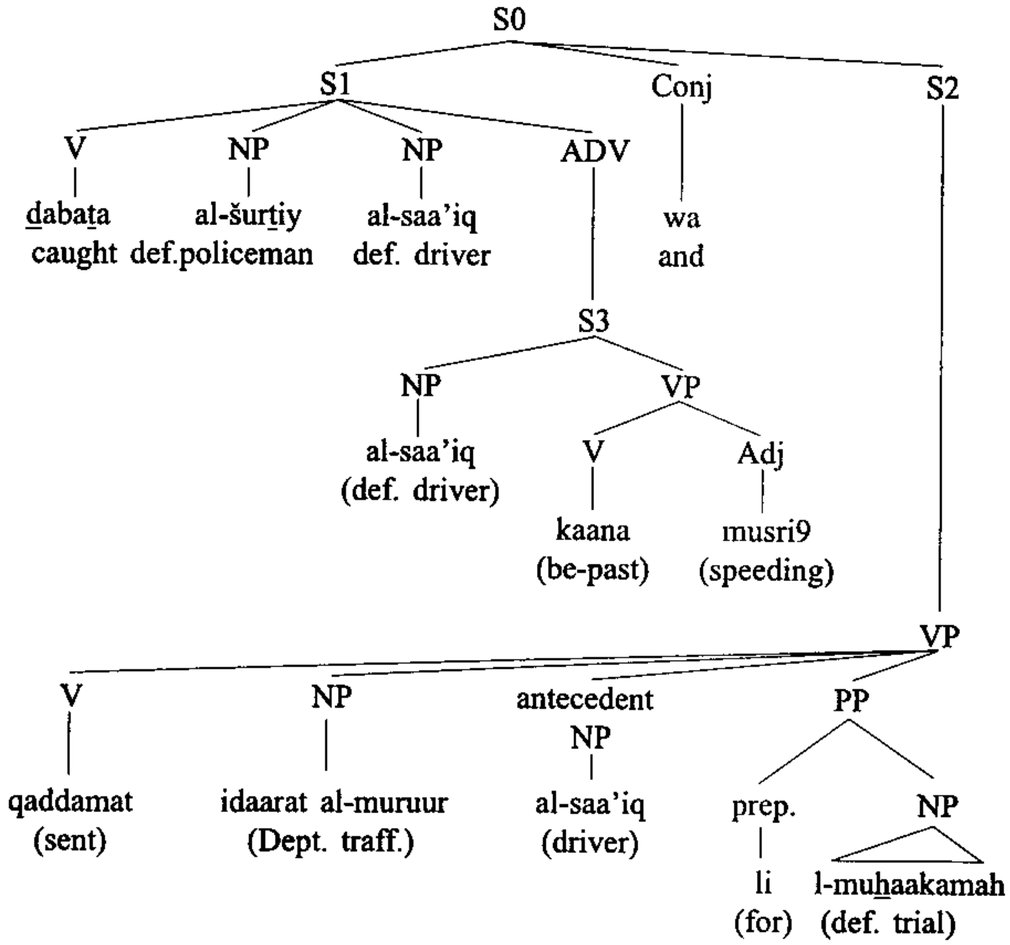
(23) b. *dabaṭa aš- šurṭiy as- saa'iq* [*al- saa'iq kaana musri9*]
caught def. policeman def. driver def. driver was speeding

wa- qaddamat idaarat al- muruur as- saa'iq al-
and sent administration def. traffic def. driver def.

musri9 li- l- muḥaakamah
speeding to def. trial
'The policeman caught the speeding driver and the motor-vehicle department sent him to court for trial.'

and is represented as:

(23) c.

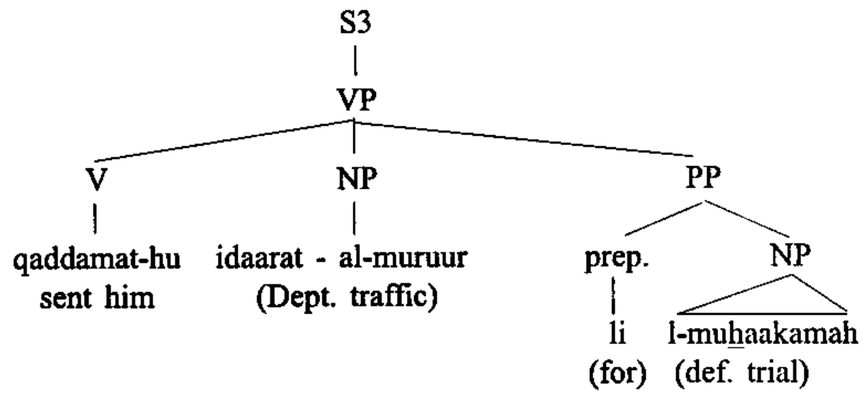


On the S3 cycle, the NP *as-saa'iq* (= 'the driver') is replaced with the pronoun *huwa* (= him), (i.e., pronominalization applies). After that, pronoun adjunction applies obligatorily to attach the disjunctive pronoun *huwa* 'him' to the transitive verb *qaddamat* 'sent' to change it into *qaddamat-hu* 'sent him,' (i.e., the noun *as-saa'iq* 'the driver' is the antecedent of the pronoun *huwa* 'him'). This yields the derived structure:

(23) d. *qaddamat- hu idaarat al- muruur li- l- muḥaakamah*
sent him dept. def. traffic to def. trial

represented as:

(23) e.

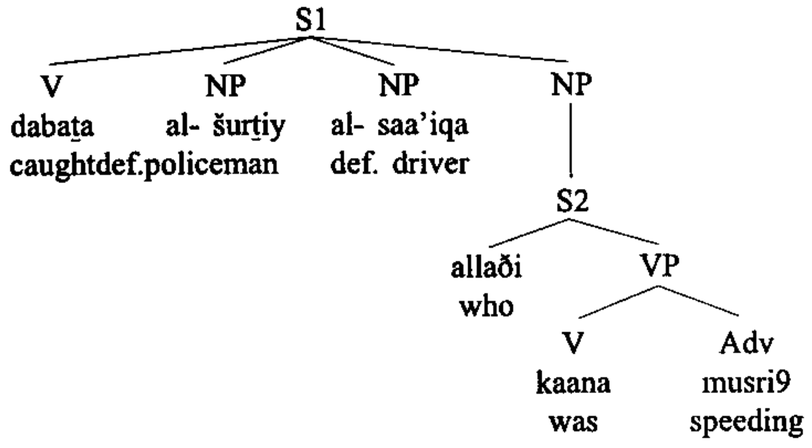


On the S2 cycle, Equi-NP-Deletion, triggered by the identity of *as-saa'iq* in S1, applies to delete the lower occurrence of *as-saa'iq* 'the driver':

(23) f. *as- saa'iq* [*as- saa'iq kaana musri9*]
def. driver def. driver was speeding

On the S2 cycle, the relative caluse marker *allaði* 'who' is inserted as tracer element:

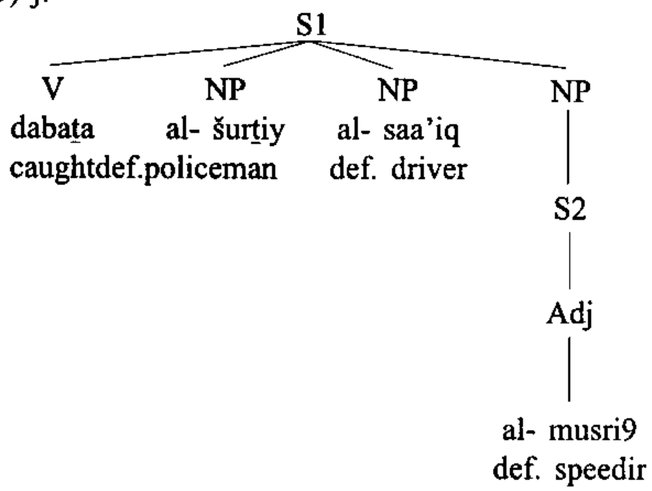
(23) g. *as- saa'iq allaði kaana musri9an*
def. driver who was speeding



On the S2 cycle relative clause reduction applies, so the adjective clause *allaði kaana musri9an* becomes *al-musri9* 'the speeding'; thus

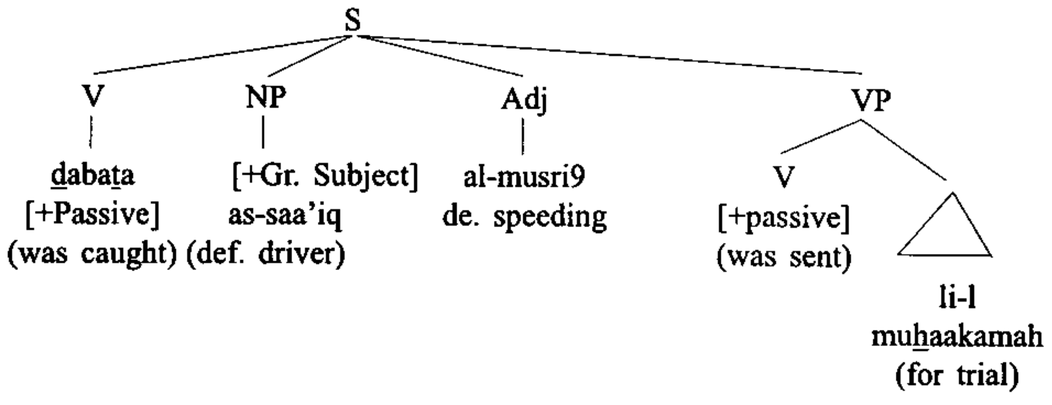
(23) i. *dabaṭa* *aš-* *šurṭiy* *as-* *saa'iq al-* *musri9*
caught def. policeman def. driver def. speeding

(23) j.



On the S1 cycle, passive applies to delete the subject *aš-šurtiy* 'the policeman' and to change the verb *dabaṭa* 'caught' into the passive form *ḍubiṭa* 'was caught.' Also, the verb, *qaddamat-hu* 'sent him', takes the passive form *quddima* 'was sent' in order to be compatible with the passive form of the verb *ḍubiṭa* 'was sent"

(23) k. *ḍubiṭa* *as-* *saa'iq al-* *musri9* – *quddima* *li-* *l-* *muḥaakamah*
was caught def. driver def. speeding was sent for def. trial



On the final cycle, the coordinating conjunction *wa* 'and' is inserted in front of the passive verb *quddima* 'was sent' to become *wa-quddima* 'and was sent' in order to account for the two major actions of 'catching the driver' and then 'sending him to court for trial.' Thus, the conjunction *wa* 'and' is introduced to produce the original surface string (23a):

(23) k. *ḍubiṭa* *s-* *saa'iqu* *musri9an* *wa* *quddima li-* *l-* *muḥaakamah*
was caught def. driver speeding and was sent for def. trial
'The speeding driver was caught and sent to court for trial.'

Thus, in the derivation of the output sentence the rules must apply in the following order:

1. Pronominalization
2. Pronoun adjunction
3. Equi-NP-Deletion
4. Tracer element insertion
5. Relative clause reduction
6. Passive
7. Coordinating conjunction insertion

The argument presented in the previous example provides evidence that Modern Standard Arabic adheres, to a great extent, to rule ordering and that the cyclical principle of rule application in the passive transformation is well justified.

7. Conclusion

The comparison that I have drawn between English and Arabic passive shows that Modern Standard Arabic can be affected by the cyclical principle of rule application resulting in a complete structure that is broken into different domains of rule application. Although Lakoff (1966) argues that the cyclical principle is based on the assumption that syntactic rules are ordered, the case for Modern Standard Arabic shows that "the cycle may be adopted whether or not rules are ordered" (Soames and Perlmutter 1979: 131). This is evidenced in the interaction of passive with other rules, such as reduced complements and extraposition, where rules are found to apply freely, since they are not strictly ordered. Nevertheless, the cycle is found to apply in such constructions.

The paper also argues that an obligatory rule like dative movement should apply before the optional rule of passive and that, in some cases, Modern Standard Arabic adheres to the principle of rule government. For example, Equi-NP-Deletion can only delete the subject of a complement if it is coreferential with the subject of the higher clause.

The importance of the cycle in Modern Standard Arabic is justified by the need to derive grammatical sentences, which can only be generated by allowing rules in a lower cycle to apply before obligatory rules in a higher one; e.g., the application of the optional rule of passive before the obligatory dative movement. In addition, the cycle allows rules to apply more than once; e.g., Equi-NP-Deletion, passive, raising, and so on.

If we bring the findings of this study about Modern Standard Arabic together with Kayne's (1975) about French, Evers' (1975) for French and German (qtd. in Soames and Perlmutter 1979), as well as other arguments in favor of the cycle, we support the thesis that the cyclical principle of rule application is a language universal.

Symbols

The following list of symbols represents sounds found in the Arabic phonemic system. A description of each sound according to place and manner of articulation is given below:

h: voiceless pharyngeal fricative
9: voiced pharnygeal fricative
q: voiceless uvular stop
γ: voiced velar fricative
t: emphatic voiceless alveolar stop
d: emphatic voiced alveolar stop
s: emphatic dento-alveolar fricative

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