

Causativization in Arabic: Evidence for the interface between semantics and morpho-phonology¹

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DOI: [http://doi.org/ 10.36892/ijlls.v4i4.1097](http://doi.org/10.36892/ijlls.v4i4.1097)

APA Citation: Teimi,C.(2022). Causativization in Arabic: Evidence for the interface between semantics and morpho-phonology. *International Journal of Language and Literary Studies*. 4(4).139-157. <http://doi.org/10.36892/ijlls.v4i4.1097>

Received:

01/11/2022

Accepted:

17/12/2022

Keywords:

Causativisation, semantics, morpho-phonology, interface, gemination, affixation, Modern Standard Arabic (MSA) .

Abstract

Meaning is derived through the interaction of the components of the linguistic system. As established within the Parallel Architecture Framework (Jackendoff 1997), the linguistic system is composed of components considered equal in terms of producing meaning. In other words, linguistic components are related to each other via interface rules and principles so that they cooperate to derive meaning. In this regard, Morpho-phonological processes constitute the interface between morpho-phonology and semantics. Morphological and phonological features of a word bear on its semantic interpretation. In this article, I deal with Causativization in Modern Standard Arabic (MSA, henceforth), representing a pure phenomenon for the morpho-phonology-semantics interface. Causative verbs in MSA provide good insights into this issue. Adopting Jackendoff's Conceptual Semantics framework proves that morphology is an autonomous generative component that can generate some aspects of meaning either independently or in cooperation with phonology and/or other linguistic components; therefore, this proves the interface between morpho-phonology and semantics.

1. INTRODUCTION

The issue of interfaces between linguistic components has received much interest since the development in phonology, especially with “auto-segmental phonology” in the mid-seventies. Since then, each of the linguistic components has been taken to be divided into several semi-independent subcomponents or tiers. Language, therefore, has been seen to consist of several

¹ My special thanks go to the Team of Linguistics and Language Preparation at the faculty of Languages, Literature and Arts, Ibn Tofail University, for giving me the opportunity to present this work at their conference they held in honor of professor Mohamed Ghalim on the 19th and 20th of May 2022. I also thank the participants for their comments on this work. My special thanks also go to my fellow Dr. Adel Sahili, professor of Arabic linguistics, for assuring the accuracy of the Arabic data. .

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independent combinatorial systems (syntax, phonology, semantics etc.), which are linked to each other through a collection of interface rules or principles (see Jackendoff, 2002).

According to Jackendoff (1997, p. 26), morphology is an autonomous component, even from phonology. This is inferred from his exemplification (1), in which he shows that syllabification and foot structure (phonological units) often do not match with morpheme boundaries (lexical/syntactic units).

(1) a. Phonological structure: [or+ga+ni]za+tion]

b. Morphological Structure: [[[organ]iz]ation]

Similarly, Fassi Fehri (1993 p. 12) points out that “morphology is an autonomous component, and that morphological rules mediate the mapping from S-structure to PF”. Moreover, other frameworks like Relational Grammar and Government Binding Theory disassociate morphology and syntax (cited in Baker 1985). However, Baker sees that morphology and syntax are deeply united; they mirror one another. Nonetheless, Baker seems to grant morphology the same status as syntax (ibid).

From the Conceptual Semantics perspective, and throughout the developments in the field of semantics since the seventies, it was confirmed that linguistic components, including morphology, bear equal statuses. They all can derive meaning. Throughout his works, Jackendoff (for example, Jackendoff 1983, 1987, 1990, 1991a, 1997, 2002, 2007, and 2011) established a well-consistent theory of meaning, represented as a parallel architecture. Syntax, phonology, morphology and semantics were taken to constitute language's architecture. This persistent work led to the set up of the Parallel Architecture Framework.

On this basis, I adopt the view that morphology is an autonomous linguistic component that can contribute to deriving meaning in cooperation with the other linguistic components. This view is compatible with the Conceptual Semantics Framework. Morphology also has its own rules that enable it to produce meaning. Morphological formation rules are responsible for creating morphemes necessary to form words. They work together with the phonological formation rules, syntactic formation rules and conceptual formation rules. All these are parts of the architecture of language.

In this article, I show how the component of morpho-phonology interfaces with semantics. This can be achieved through the analysis of causative verbs in MSA. This type of

verb serves as a good manifestation of the morphological processes responsible for deriving different types of meaning.

2. Causativization as an Interface operation between Morpho-phonology and Semantics

2.1. Lexical and Syntactic Causativization

In languages like English, causativization is either lexical or syntactic. In other languages, causativization may involve three components of language: lexicon, syntax and morphology (Arad 2002 and Samardzic and Merlo 2012). In languages like Arabic, causativization is lexical, Syntactic and morphological. However, since the main concern here is about the interface between morphology and semantics, lexical and syntactic causativization are not discussed in much detail. However, a short overview about the two types is given. As far as Lexical causativization is concerned, it refers to causative events expressed by sentences containing verbs which are causative in their basic form; that is without derivation. *Break* in English and its equivalent *kasara* in MSA are good examples of lexical causatives. Consider (2) from English and MSA.

(2) a. John broke the window.

b. *kasara* r-rajul-u l-baab-a.
 Broke-3ps the-man-NOM the-door-ACC “The man broke the door”

The verb ‘*break*’ in (2a) and its Arabic equivalent *kasara* in (2b) are causative verbs. Causation is inherent to them; therefore, they are lexically causative. However, the most known generalization about lexical causatives is that they describe an event involving a change of state of one of the participants (Samardzic and Merlo 2012 p: 2), usually the one described in object position for sentences with transitive verbs. Thus, we can formalize the sentences in (2a) and (2b) as follows.

(3) Break: [[x ACT] CAUSE [y BECOME <BROKEN>]] or,

Break: [[X ACT<MANNER>] CAUSE [BECOME [Y <BROKEN>]]]

Concerning syntactic causativization in English and Arabic, it is about events that involve causation and are expressed by sentences with a special syntactic construction, usually involving past tense as the following.

(4) a. The police officer had everyone show their passports.

b. The teacher made his students attend the workshop.

c. The dean got his secretary to fix the machine.

d. *mafd‘ra, jaʕaltuka tantadir -u*
 excuse-me made-I-you-past wait-pres-perf

“Excuse me, I kept you waiting”

e. *laqad jaʕala-h-u yughayyir-u raʕya-h-u*

Made-him change-pres perf view-ACC his-pro

“he made him change his mind.”

However, since we are concerned with the interface between morphology and semantics, we will limit ourselves to studying causativization from a morphological perspective. In this respect, we will rely on Arabic since it clearly demonstrates the issue of morphological causativization.

2.2. Morphological Causativization

The morphological template form in MSA is the form I, *faʕala* (C₁aC₂aC₃a). It is the basic form that derives all other forms. As far as causativization is concerned, three main forms enable us to derive causative verbs. The first form is *faʕala* which derives the ablaut causative verbs for *hazina* (be sad) and its causative counterpart *hazana* (make x sad). However, according to Hallman (2006 p: 7), ablaut is a restricted process that applies to unaccusative verbs only. The second the form is the form II, *faʕʕala*, which derives causative verbs from transitive verbs that fit to the form *faʕala*. For instance, *qattaʕa* (cut into pieces) which fits the form *faʕʕala* is derived from *qataʕa* (cut) that fits to the form *faʕala*. This process of doubling the middle radical of the root is called gemination. Its morphological template is C₁aC₂C₂aC₃. The last form is the form IV, *ʔaʕʕala* which derives causative verbs from both transitive and intransitive verbs which also fit the form *faʕala*. For example, *ʔadkhala* (make X enter), which fits the form *ʔaʕʕala*, is derived from *daxala* (enter) that fits the form *faʕala*. In what follows, we deal with each form independently to see how causative meaning is revealed by causative verbs in MSA, and therefore, determine how the morpho-phonology-semantics interface manifests in MSA.

As it is well known, Arabic is morphologically rich. The morphological system of Arabic is highly productive and regularly derivative.

3. The interface between morpho-phonology and semantics

3.1. Ablauting as an interface phonological operation

Ablauting is a process of alternating stem vowels of related words to make a change in their tense or meaning; in English, for example, *drink – drank – drunk*, in Arabic, *ḍahika* (laugh) – *yadḥaku* (is laughing), *daraba* (beat) – *yadribu* (is beating). In this subsection, I deal with the causative ablaut in Arabic, i.e. *faʕala* → *faʕala*; the second vowel of some of this type of verbs may appear as /i/, /u/ or /a/, but they are considered to belong to the form *faʕala*.

Table A: The ablaut: *faʕala* → *faʕala*. (Ablaut is restricted to unaccusative verbs)

<i>faʕala</i>	<i>faʕala</i>
---------------	---------------

1. <i>hazina</i> (be sad)	<i>hazana</i> (make sad)
2. <i>kariba</i> (be worried)	<i>karaba</i> (make worry)
3. <i>haziʔa</i> (be ridiculed)	<i>hazaʔa</i> (ridicule)
5. <i>faziʕa</i> (be scared)	<i>fazaʕa</i> (make scared)
6. <i>haruma</i> (be prohibited)	<i>harama</i> (prohibit)
7. <i>hadima</i> (collapse)	<i>hadama</i> (make collapse)
8. <i>xariba</i> (be destroyed)	<i>xaraba</i> (destroy)
9. <i>falata</i> (be released)	<i>falata</i> (release)
10. <i>faraša</i> (spread out)	<i>faraša</i> (spread x out)

Concerning ablaut, as we notice in the table A, the second vowel in the form *faʕala* appears as /i/, /u/ or /a/ (for verbs with /a/ as their second vowel, ablaut has no morphological effect (see Hallman 2006). However, changing the mentioned second vowels of unaccusative verbs to /a/ results in causative meaning that we notate as the following:

(5) To be (X) → To CAUSE to be (X)

Ablaut verbs are unaccusative in their basic forms (i.e. *faʕala*) that denote the meaning of *to be such and such* as the case of *hazina* (be sad) and its causative counterpart *hazana* (make x sad) and the other verbs in table A, whereas their ablauts denote causative meaning; i.e. to cause someone or something to become such and such. According to Levin and Rappaport Hovav 2011, internally caused verbs have no causative lexical representation. Based on this view, in their basic form (i.e. *faʕala*), ablaut verbs have no causative lexical semantic representation, too. They are internally instigated verbs that do not need a causer¹. In other words, they are verbs that denote internally provoked events. Consider the following sentences from MSA.

(6) a. *hazina* *r-rajul-u*.
became-sad-3ps-Masc-pst the-man-NOM “The man became sad”

b. *kariba* *n-nas-u*.
became-distressed-3pp-pst the-people-NOM “The people distressed”

(7) a. *hazana* *r-rajul-u* *ʔaxaah-u*.
made-sad-3ps-Masc-pst the-man-NOM brother-ACC-his-pro “the man made his brother sad”

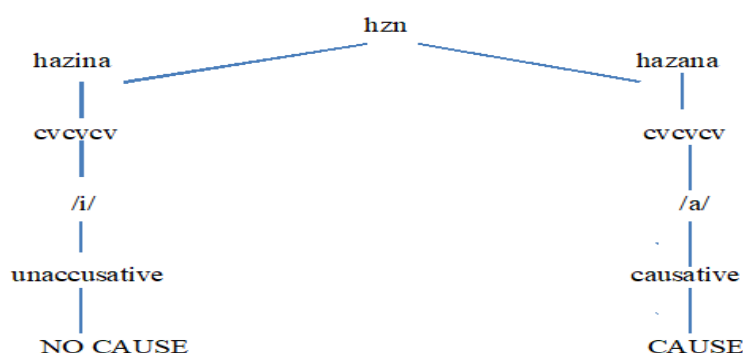
b. *karaba* *l-xabar-u* *n-naasa*.
distressed-3pp-pst the-news-NOM the-people-ACC “The news distressed the people.”

In (6a & b), the verbs *hazina* (became sad) and *kariba* (became distressed) denote the meaning of *become* or *be* in a particular state (i.e. be/ become such and such) whereas in (7a & b) the

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verbs *hazana* and *karaba*, after changing their middle vowels from /i/ to /a/, bear the causative meaning (i.e. cause to be / become such and such). As we notice here, from this simple morphological process of changing the middle vowel of the verb from /i/ to /a/, the meaning changes from unaccusative to causative. This alternation is called ablaut. The following diagram illustrates the prosodic template of the verb *hazina* (as a sample of ablaut verbs in Arabic) and the meaning realized from it when put in a morphological process of causativization.

(8)



Now, we put forth the different linguistic structures of the verb *hazina* and its causative counterpart, *hazana*.

(9)

	<i>hazina</i>	<i>hazana</i>
Morphological structure:	cvcvcv	cvcvcv
Syntactic structure:	V Subj	V Subj Obj
Thematic structure:	EVENT Patient	ACT Agent Patient
Conceptual structure:	SELF-INITIATED STATE	CAUSATIVE ACTION

As we notice here, the unaccusative verb *hazina* (become sad) bears a subject in the syntactic structure and the role Patient in the thematic structure; meanwhile, it conveys self-initiated state in the conceptual structure. On the other hand, *hazana* (make sad), which is derived from *hazina* through changing the second vowel from /i/ to /a/, holds a subject and object in the syntactic structure and the roles Agent and Patient in the thematic structure so that it denotes causative action. Apart from this, there is a full correspondence between the syntactic structure and thematic one in that the subject correlates with the role Patient for the verb *hazina* and the subject and object correlate with the roles Agent and Patient for *hazana*, respectively. However, this is evident that morphology also contributes in deriving meaning.

Herein, we devise the structure of the verb *hazina* (become sad) and its causative counterpart *hazana* (make sad) as follows.

(10) a. *hazina*: (X, Sad, s); at (X, Sad) (s)

b. [[x Do-SOMETHING] CAUSE [[y BECOME SAD]]

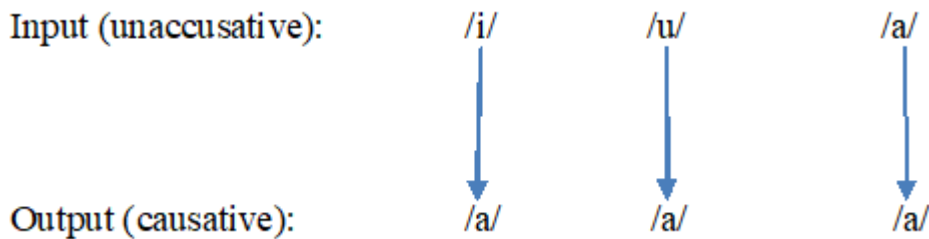
The formalization in (10a) is read as *x is sad at Situation s*. And the reading of the conceptualization in (10b) is that the Agent *x* does something to cause *y* become sad.

Last but not least, unaccusative verbs are ablauted from three varied *cvcvcv* forms (i.e. *cv_acv_icv_a*, *cv_acv_ucv_a* and *cv_acv_acv_a*). When ablauted to causative form, the second vowel (in bold) turns out to /a/. This can be illustrated as follows.

(11)	a	b
(become sad)	<i>hazina</i>	<i>hazana</i> (make sad)
(be prohibited)	<i>haruma</i>	<i>harama</i> (prohibit)
(spread (by itself))	<i>faraša</i>	<i>farāša</i> (spread x out)

Therefore, the middle vowel of any unaccusative verb in Arabic is turned out to the vowel /a/ to form the causative counterpart.

(12)



3.2. Geminatio as an interface phonological process

Geminatio is identified as doubling or lengthening of a consonant sound to contrast it with its shorter or singleton counterpart (Davis, 2011). Lengthening of a consonant sound may take place due to morphological processes (Ball and Rahilly, 1999) as with the affixation of the prefix ‘*un*’ in English to a word initiating with an *n*-sound as in *unnatural*. This comes about due to the affixing of ‘*un*’ with its final [n] to the word *natural* with its initial [n]. This is also frequent in Arabic as, for instance, with the affixing of the determiner ‘*elⁱⁱ*’ (the) to words like ‘*šams*’ (sun), ‘*layl*’ (night), ‘*dar*’ (house), ‘*nahr*’ (river) that respectively result in ‘*el-ššams*’ (the sun), ‘*el-llayl*’ (the night), ‘*el-ddar*’ (the house), ‘*el-nnahr*’ (the river). Also, geminatio in Arabic takes place in bilateral and trilateral verbs. Examples of bilateral geminated verbs are *šabba* (pour), *šadda* (hold off), *jaffa* (dry) etc. And examples of trilateral geminated verbs are *kassara* (break into pieces), *qattaʿa* (cut into pieces), *kattaba* (make/ help write). Bilateral geminated verbs are not of our concern here.

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Geminating the second consonant of trilateral verb result from a phonological process where two consonants are merged together to constitute one stressed sound; in Arabic, geminated consonants are somehow stressed explosive sounds. The prosodic representation of the geminate consonants has received much interest in the phonological field (for example, Chomsky & Halle, 1968; McCarthy, 1979; Leben, 1980; McCarthy and Prince, 1986). In the following subsection, we are going to see how causative forms are derived from Arabic intransitive and transitive verbs through the process of gemination.

Table B: Verbs of form *faʕʕala* derived from intransitive verbs (i.e., the second consonant of the verb is geminated)

<i>faʕala</i>	<i>faʕʕala</i>
1. <i>hadima</i> (collapse)	<i>haddama</i> (make <i>x</i> collapse)
2. <i>kaṭura</i> (be numerous)	<i>kattara</i> (make <i>x</i> numerous)
3. <i>fariha</i> (be happy)	<i>farraha</i> (cause <i>x</i> be happy)
4. <i>ṣaʕuba</i> (be difficult)	<i>ṣaʕʕaba</i> (cause <i>x</i> to be difficult)
5. <i>wasixa</i> (become dirty)	<i>Wassaxa</i> (make <i>x</i> dirty)
6. <i>danisa</i> (become dirty)	<i>dannasa</i> (make <i>x</i> dirty)
7. <i>naama</i> (sleep)	<i>nawwama</i> (make <i>x</i> asleep)
8. <i>ṣaʕada</i> (ascend)	<i>ṣaʕʕada</i> (make <i>x</i> ascend)
9. <i>nazala</i> (go down)	<i>nazzala</i> (make <i>x</i> go down)
10. <i>taafa</i> (tour)	<i>tawwafa</i> (make <i>x</i> tour)
11. <i>waqafa</i> (stand)	<i>waqqafa</i> (make <i>x</i> stand)
12. <i>saala</i> (to leak out)	<i>sayyala</i> (cause <i>x</i> to leak out)
13. <i>ḍakara</i> (to remember/ mention)	<i>ḍakkara</i> (remind; cause <i>x</i> to remember <i>y</i>)

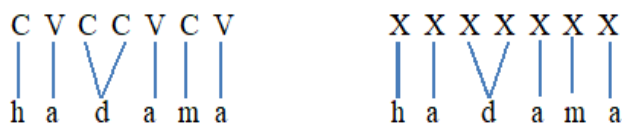
As far as the second form is concerned, that is *faʕʕala* as exemplified in table B, geminating the second consonant of the intransitive verbs in question changes their meanings from *to be such and such, to become such and such and to do (act) such and such* to *to cause to be such and such, to cause to become such and such and to cause to act, (and to cause change of location and place in some cases (i.e. to cause movement))* respectively. For instance, *hadima* → *haddama* (collapse (B1)), *kaṭura* → *kattara* (be/ make numerous (B2)), *fariha* → *farraha* (be/ make happy (B3)) and *ṣaʕuba* → *ṣaʕʕaba* (be/ make difficult (B4)) denote states of being such and such and geminating the second consonant of these verbs changes their meaning to causative, i.e. *to cause to be such and such*. For verbs like *wasixa* → *wassaxa* (become/ make dirty (B5)), *danisa* → *dannasa* (become/ make dirty (as well) (B6)) and *naama* → *nawwama*

(sleep/ make sleep (B7), they bear the meaning of *to become such and such* and geminating their second consonants changes their meanings from *becoming such and such* to *to cause to become such and such*. Also, geminating the second consonant of verbs such as *šaʕada* → *šaʕʕada* (ascend/ make ascend (B8)), *nazala* → *nazzala* (go down/ make go down (B9)), *taafa* → *tawwafa* (tour/ make tour (B10)), and *waqafa* → *waqqafa* (stand/ make stand (B11)) that denote the meaning of *to do such and such* (i.e. to act), changes their meaning to either to cause change of location/ place or to cause change of state. However, change of state is involved in all verbs in table B and alike.

Owing to the developments that took place in the field of phonology starting from the seventies, Arabic has been a source of data for phonologists than any other language in the world due to its rich and productive morpho-phonological system (see for example, McCarthy, 1979, 1981 ; Leben, 1980; Prince, 1990). However, the phonological and morphological representations of geminates have caught much interest and have been controversial among researchers in the field. The main problem was how to represent geminates sufficiently. In what follows, we briefly sketch out the most important morpho-phonological views about the topic and then move to illustrate how it is good evidence of the interface between morpho-phonology and semantics.

As discussed in Davis (2011), the featural representation of geminate consonants put forward by Chomsky and Halle (1968) as being a single consonant possessing the distinctive feature [+long] has long been considered insufficient for the reason that geminated consonants behave like a string two consonants in this respect. Geminates can be represented using a skeletal tier as posited by Leben (1980), in which a geminated consonant can be linked to two slots that constitute the prosody of the word. This skeletal tier is also referred to as a CV-tier, an X-tier, or a length tier. In this respect, geminate representation of an Arabic geminated verb from table B above (*haddama* (destroy), for instance) can be put as follows.

- (13) a. CV-tier representation b. X-tier representation



McCarthy (1979, 1981), Halle and Vergnaud (1980), Clements and Keyser (1983) and Hayes (1986) adopted CV-tier, whereas Levin (1985) assumed an X-tier. Based on these two

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representations, a geminated consonant is not just a consonant that bears the feature [+ long] but two consonants merged to form one consonant. Actually, this applies to Arabic geminated consonants. Further, there had been another representation that was introduced by Hayes (1989) called the moraic representation. For this approach, geminates are taken to be underlyingly moraic or heavy; i.e. a geminate does not have a double linking as with CV-tier representation or X-tier representation above. Consider the following representation: UR = underlying representation, and μ = mora.

(14) Moraic (weight) representation of geminates (Hayes 1989)

a. Geminate in UR

μ
|
c

(singleton)

b. Single consonant in UR

c

(geminate)

This theory of moraic phonology was formulated by Hayes (1989), in which the prosodic tier is devised as being moraic rather than segmental. In this respect, a geminate consonant is moraic, whereas a short consonant is non-moraic (see Davis, 2011 for more discussion).

Be it as it might be, what concerns me here is that, semantically, a consonant, when geminated bears a different meaning from its short counterpart, i.e. bears causative meaning as illustrated in the following example.

(15) Morpho-phonological level: *šaʕada* → *šaʕʕada* (ascend → make ascend)

Semantic Level: non-causative causative

Geminating the middle consonant of the Arabic verb results in changing its meaning from being non-causative to causative; this applies to both intransitive and transitive verbs in Arabic. Furthermore, this phonological process has other consequences on the argument/ syntactic and conceptual/ semantic structures of sentences containing verbs with geminated middle consonants. Consider the following examples.

(16) a. *hadim-a* *l-bayt-u*.

Collapsed-3ps

the-house-Nom

“The house collapsed”

b. *haddama*

l-junu:d-u

l-bayt-a.

Made-collapse-3ps the-soldiers-Nom the-house-ACC “The soldiers destroyed the house”

(17) a. *wasixa* *l-hidaaʔ-u*.

Became-dirty-3ps the-shoes-NOM “The shoes became dirty”

b. *wassaxa* *l-tifl-u* *l-hidaaʔ-a*.

made-dirty-3ps the-child-NOM the-shoes-ACC “The child made the shoes dirty”

On the one hand, as it is clear from the structures of the examples in (16 & 17), a’s examples contain intransitive verbs that hold one argument only. This argument is either Agent, if the subject correlates with an entity that performs the action, or Patient if the subject expresses a negatively affected entity as in the case of the examples (16a and 17a). On the other hand, geminating the second consonant of the verbs in the sentences in (16b and 17b) changes the meaning to express causative action; actions performed by an extrinsic agent (causer). The argument structure contains subject-object arguments and the conceptual structure contains agent-patient roles. The Agent is the causer and the Patient is the *causee*. Thus, doubling/geminating the second consonant of such verbs results in causative meaning. That is, the phonological process of geminating the second consonants of the verbs in table b is behind the resulted causative meaning, and therefore, it is behind expanding the argument structure as well as conceptual structure.

The Argument structure and Conceptual Structure of the examples in (16a and 17a) will be represented as (18a) and that of (16b and 17b) will be represented as (18b), respectively.

18a. Argument Structure: V Subject

Conceptual structure: event Patient

18b. Argument Structure: V Subject Object

Conceptual Structure: ACT Agent Patient

As we notice here, the sentences in (16a and 17a) have different structures form those in (16b and 17b). This is because the former contain intransitive unaccusative verbs with non-geminated middle consonants and transitive verbs with geminated middle consonants. This process of geminating the second consonant of the intransitive verbs leads to an expansion in the Argument Structure and Conceptual Structure.

The formalization of the verbs of table B is the following.

(19) To be x → to cause to be x

To become x → to cause to become x

To do x → to cause to do x (to cause movement or change of location/ place).

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For the first two notations, there is a change of state of the thing over which causation occurs. For the third notation, there is causation of movement, to cause something/ someone to move from one location to another; i.e. to cause someone/ something to perform an action of movement.

Table C: Verbs of form *faʕʕala* derived from transitive verbs

<i>faʕala</i>	<i>faʕʕala</i>
1. <i>malaka</i> (possess)	<i>mallaka</i> (make <i>x</i> possess sth.)
2. <i>rabiha</i> (win)	<i>rabbaha</i> (make <i>x</i> win sth.)
3. <i>qataʕa</i> (cut)	<i>qattaʕa</i> (cut into pieces)
4. <i>kasara</i> (break)	<i>kassara</i> (smash/ break into pieces)
5. <i>qatala</i> (kill)	<i>qattala</i> (beat to death)
6. <i>jamaʕa</i> (collect)	<i>jammaʕa</i> (collect numerously)
7. <i>fataha</i> (open)	<i>fattaha</i> (open extensively)
8. <i>kataba</i> (write)	<i>kattaba</i> (make/ help <i>x</i> write)
9. <i>saaqa</i> (drive)	<i>sawwaqa</i> (make/ help <i>x</i> drive)
10. <i>hamala</i> (carry s. t.)	<i>hammala</i> (carry <i>y</i> on <i>x</i>)
11. <i>ʕanaʕa</i> (manufacture)	<i>sannaʕa</i> (manufacture intensively)

As far as transitive verbs in table C are concerned, they either express cases of getting something or performing an action (i.e., to act) referring to the transfer of an entity from a destination to an end with either a caused possession meaning or a caused motion meaning. This type of verbs can become causative by geminating their second consonants (adding the prefix *ʔa* is not possible except for *rabiha* (win)). However, doubling or geminating the second consonant of the verbs in table C changes their meaning to causative. It either expresses cause of change of possession as in (C1 & 2), cause of change of state as in (C3, 4, 5, 6 & 7), cause an action to be performed by an agent (i.e. to cause someone to act) as in (C8 &9) or to cause change of location/ place as in (C10). What is more, we notice that most of the derived causative verbs in table C (C3-11) convey repetitive actions that exhibit use of force.

Accordingly, the argument structures as well as conceptual structures of sentences with the verbs in table C remain the same except for *malaka* (possess), *kataba* (write) and *rabiha* (win). For these three verbs, when geminating their second consonant, their argument structure and conceptual structure expand from two to three arguments and three thematic roles respectively as clarified by the following examples.

(20) a. *malaka xalid-un manzil-an.*

Possessed-3ps Khalid-NOM house-ACC “Khalid possessed a house”

b. *mallaka xalid-un ?ahmad-a manzil-an.*

Made-possess-3ps Khalid-NOM Ahmed-ACC house-ACC

“Khalid made Ahmed possess a house”

(21) a. *kataba xalid-un d-dars-a.*

Wrote-3ps Khalid-NOM the-course-ACC “Khalid wrote the course”

b. *kattaba xalid-un ?ahmad-a d-dars-a.*

Made-write-3ps Khalid-NOM Ahmed-ACC course-ACC “Khalid made Ahmed write the course”

(22) a. *rabiha xalid-un l-maal-a.*

Won-3ps khalid-NOM the-money-ACC “Khalid won the money”

b. *rabbaha xalid-un ?ahmad-a l-maal-a.*

Made-win-3ps Khalid-NOM Ahmed-ACC the-money-ACC

“Khalid made Ahmed win the money”

In (20-22), a’s examples contain two arguments and two thematic roles. Conversely, doubling the second consonant of the verbs in these sentences changes meaning to causative and therefore expands argument and conceptual structures. The argument and conceptual structures expand from a two argument-role to a three argument-role.

4. Affixation as an interface morphological process

Affixation is a morphological process whereby a bound morpheme, an affix, is attached to a morphological base (root or stem) or word to change its meaning. The affix precedes the root/ base word is called prefix whereas the one attached to the end of the word is called suffix. In this section, we are only concerned with the prefix *?a* in Arabic.

It’s conformable, among the Arab grammarians, that any addition (or deletion) has a meaning other than of the original form. Thus, affixing the prefix *?a* to trilateral verb and deleting the first vowel of it changes it from being intransitive to being transitive. The verb, then, bears two arguments, subject and object; while it bears only one argument in its original form, subject. Sibawayh says: "this is a chapter of *fa?alt-u* (I do) and *?affalt-u* (I make x do) of the verb meaning. You [Arabs] say: *daxala* (enter), *xaraja* (get out) and *jalasa* (sit), and if you want to express change of the state of the thing, you say *?adxala* (make x enter), *?axraja* (expel/ force to leave) and *?ajlasa* (make x sit), [respectively]" (Sibawayh, vol. 2, p. 233). It is apparent that adding the prefix *?a* to a trilateral verb changes it from being non-causative (intransitive) to being causative (transitive). The subject expresses the causer and the object expresses the causee. Consider the following table. Note that causative verbs derived from verbs that fit to the form *?affala* can be derived from intransitive as well as transitive verbs.

Table D: Verbs of form *ʔafʔala* derived from intransitive verbs

<i>faʕala</i>	<i>ʔafʔala</i>
1. <i>daxala</i> (enter)	<i>ʔadxala</i> (make <i>x</i> enter)
2. <i>xaraja</i> (go out)	<i>ʔaxraja</i> (expel <i>x</i>)
3. <i>ḍahika</i> (laugh)	<i>ʔaḍhaka</i> (make <i>x</i> laugh)
4. <i>bakaa</i> (cry)	<i>ʔabkaa</i> (make <i>x</i> cry)
5. <i>saqata</i> (fall)	<i>ʔasqata</i> (make <i>x</i> fall)
6. <i>ḍaaba</i> (melt)	<i>ʔaḍaaba</i> (make <i>x</i> melt)
7. <i>naama</i> (sleep)	<i>ʔanaama</i> (make <i>x</i> sleep)
8. <i>haḍara</i> (be present)	<i>ʔahaḍara</i> (cause <i>x</i> be present)
9. <i>jalasa</i> (sit)	<i>ʔajlasa</i> (make <i>x</i> sit)
10. <i>hazina</i> (be sad)	<i>ʔahzana</i> (make <i>x</i> sad)

Intransitive verbs in table D become causative by adding the prefix *ʔa* to the verb and deleting the short vowel of the first consonant. In their basic form, they denote the meanings of performing an action as the case of the verbs in (D1, 2, 3, 4, 8 & 9), express an event as in (D5 & 6) or express a state as in (D7 & 10). In their causative form, they convey the meanings of causing an action to be performed in addition to performing an action by the Agent as in the counterparts of (D1, 2, 3, 4, 8, & 9), cause an event to happen (action) as in the counterparts of (D5 & 6), and cause a state to happen as in the counterparts of (D7 & 10). In a nutshell, adding the prefix *ʔa* to the basic form changes its meaning to causative. In intransitive sentences, the Agent self-initiates the action. In the causative use of the verbs in question, the Agent is extrinsic, an outside causer that makes someone perform an action or become in a particular state. As far as argument and conceptual structures of this type of verbs are concerned, there is an expansion in the number of argument positions as well as thematic roles. For sentences with intransitive verbs, their argument structure contains only one position, the subject. Meanwhile, their conceptual structure contains only one thematic role, usually Agent. However, adding the prefix *ʔa* to the verbs in their basic form in table D and alike expands argument as well as conceptual structure. For argument structure, it expands from one argument position in intransitive sentences to two argument positions in their causative counterparts. Accordingly, the conceptual structure expands from one thematic role in intransitive sentences to two thematic roles in their causative counterparts. Take these two sentences as exemplars and have a look at their argument and conceptual structures.

(23) a. *ḍahika* *l-ʔatfaal-u.*

Laughed-3rd pp

the-children-NOM

Argument Structure (AS): V Subj

Conceptual Structure (CS): ACT Agent

b. *ʔaḏhaka l-bahlawaan-u l-ʔatfaal-a*

made-laugh-3rd ps the- clown-NOM the-children-ACC

AS: V Subj Obj

CS: ACT Agent Undergoer/ Experiencer

Table E: Verbs of form *ʔaffʔala* derived from transitive verbs

<i>faʕala</i>	<i>ʔaffʔala</i>
1. <i>rabiha</i> (win)	<i>ʔarbaha</i> (make <i>x</i> win sth.)
2. <i>ʕalima</i> (know)	<i>ʔaʕlama</i> (inform; make <i>x</i> know sth.)
3. <i>fahima</i> (understand)	<i>ʔafhama</i> (to instruct; cause <i>x</i> to understand)
4. <i>nasiya</i> (forget)	<i>ʔansaa</i> (cause <i>x</i> to forget)
5. <i>shariba</i> (drink)	<i>ʔashraba</i> (make/ help <i>x</i> drink)
6. <i>mashata</i> (comb)	<i>ʔamshata</i> (make combed)
7. <i>wajada</i> (find)	<i>ʔawjada</i> (bring out)
8. <i>labisa</i> (wear)	<i>ʔalbasa</i> (enable/ help <i>x</i> wear sth.)
9. <i>samiʕa</i> (hear)	<i>ʔasmaʕa</i> (cause/make/ enable <i>x</i> hear sth.)

For transitive verbs in table E that derive causative verbs in the form of *ʔaffʔala*, we notice that most of these verbs express an act of giving (i.e. dative) when causativized. Attaching the prefix *ʔa* to the verbs in table E changes meaning from *to get X* to *to cause to get X*. Except for *nasiya* (forget (E4)) and *wajada* (find (E7)), all other verbs express an act of giving when causativized. However, argument and conceptual structures of sentences containing this type of verbs expand when the verbs in question are causativised. Consider the following examples.

(24) a. *ʕalima xalid-un l-xabar-a.*

Knew-3ps Khalid-NOM the-news-ACC “Khalid knew the news”

b. *ʔaʕlama xalidun ʔahmad-a l-xabar-a.*

Informed-3ps Khalid-NOM Ahmed-ACC the-news-ACC “Khalid made Ahmed know the news”

(25) a. *labisa xalid-un l-miʕtaf-a.*

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Wore-3ps Khalid-NOM the-coat-ACC “Khalid wore the coat”

b. *ʔalbasa xalid-un ʔahmad-a l-miʔtaf-a.*

helped-wear-3ps Khalid-NOM Ahmed-ACC the-coat-ACC

“Khalid made Ahmed wear the coat.”

(26) a. *šariba xalid-un haliib-an.*

Drank-3ps Khalid-NOM milk-ACC “Khalid drank milk”

b. *ʔašraba xalid-un ʔahmad-a haliib-an.*

Made-drink-3ps Khalid-NOM Ahmed-ACC milk-ACC “Khalid made Ahmed drink milk.”

We notice that sentences (25a- 26a) express self-initiated actions. However, adding the prefix *ʔa* and deleting the first consonant's short vowel (24 – 26 b's) changes meaning to be causative.

Hence, the argument structure as well conceptual structure gets expanded. Consider the devices in (27).

(27) a. *šalima xalid-un l-xabar-a.*

Knew-3ps Khalid-NOM the-news-ACC “Khalid knew the news”

AS: V Subj Obj

CS: RECEIVE Recipient Theme

b. *ʔašlama xalidun ʔahmad-a l-xabar-a.*

Informed-3ps Khalid-NOM Ahmed-ACC the-news-ACC “Khalid made Ahmed know the news”

AS: V Subj Obj 1 Obj 2

CS: ACT Agent Recipient Theme

(28) a. *labisa xalid-un l-miʔtaf-a.*

Wore-3ps Khalid-NOM the-coat-ACC “Khalid wore the coat”

AS: V Subj Obj

CS: ACT Agent Patient/Theme

b. *ʔalbasa xalid-un ʔahmad-a l-miʔtaf-a.*

helped-wear-3ps Khalid-NOM Ahmed-ACC the-coat-ACC

AS: V Subj Obj 1 Obj 2

CS: ACT Agent Beneficiary Patient

(29) a. *šariba xalid-un haliib-an.*

Drank-3ps Khalid-NOM milk-ACC “Khalid drank milk”

AS: V Subj Obj

CS: ACT Agent Patient

b. *ʔašraba xalid-un ʔahmad-a haliib-an.*

Made-drink-3ps	Khalid-NOM	Ahmed-ACC	milk-ACC	“Khalid made Ahmed drink milk.”
AS: V	Sub	Obj 1	Obj 2	
CS: ACT	Agent	Beneficiary	Patient	

The number of arguments changes from two for self-initiated actions in (24- 26 a’s) to three for causative actions in (24- 26 b’s). Concerning conceptual structures of the sentences (24- 26 a’s), the subject correlates with the role recipient and the object correlates with Theme. For the causative sentences in (24- 26 b’s), the conceptual structure gets larger. A third thematic role is added, Beneficiary, recipient or Patient. The first argument (i.e. subject) correlates with the role of Agent, the second argument (i.e. direct object) correlates with Beneficiary or Recipient, and the third argument (i.e. indirect object) correlates with the role of Patient or Theme. The interpretation of the thematic role that links to a direct object is pragmatic; it depends on whether the verb denotes a positive meaning or negative meaning. For instance, the verb *ʔansaa* (make/ cause to forget) denotes a negative meaning; therefore, the direct object will be Patient, not Beneficiary.

5. CONCLUSION

In this article, I dealt with causativization which represents a morphological and phonological process that proves the interface between morphology and semantics. All transitive and intransitive verbs, but not the subclass of non-causatives, can be causativized, in MSA. Through different morphological processes, we get different types of meanings and express different situations. For transitive verbs, gemination is the morphological process used constantly where we double the second consonant which changes the meaning of the verb to express repetition or multiplicity of action. For intransitive verbs, gemination and affixation of the morpheme ‘*ʔa*’ are used to change a verb to express causativization. Geminating and adding the morpheme ‘*ʔa*’ change the verb from being intransitive to transitive (i.e. from non-causative to causative); therefore, the verb changes to express causative events/ actions instead of expressing self-instigated ones.

The Arabic morphological system is suitable to demonstrate the interface between morpho-phonology and semantics. Analyzing different morphological processes and phenomena proves the correspondence between semantics and morphology. Fruitfully, arguing the direct correspondence between morpho-phonology and semantics proves, on the one hand, the Parallel Architecture Approach, which states that meaning is derived and produced in different linguistic components (mainly in morpho-phonology, syntax and semantics), and, on the other hand, it proves that the interface between syntax and semantics is not always a trivial one-to-one correspondence. Semantics sometimes link directly to the other components without needing to link to syntax.

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i Taking a step back and having a close look at this kind of verbs, we can smell causation in the sentences containing unaccusative; a person can't become sad for no reason. However, there is no linguistic or lexical feature that conveys causation in those verbs. We are concerned here with the linguistic causation but not with the 'outside linguistic causation'.

ii The phoneme [l] in the article 'el' (the) in the exemplifying Arabic words is silent. In other contexts, the phoneme [l] is articulated as in 'el-malik' (the king), but the initial phoneme of a word attached to it can't be geminated (i.e., when the phoneme [l] in 'el' is articulated the initial phoneme of a word attached to it can't be geminated).