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**The Role of Gemination in Inflection  
and Word Formation of Modern Standard Arabic**

**Abstract**

This paper discusses gemination, mainly its morphologically conditioned cases. It gives an account of the use of gemination in inflection and – much more abundant – in word formation (of deverbal, denominal and deadjectival verbs, of deverbal, denominal and deadjectival nouns and of deverbal adjectives). The analysis focuses on meanings of derivatives in which gemination occurs (indicating also the mechanisms of motivation).

**Keywords:** Modern Standard Arabic, gemination, inflection, word formation, semantic analysis

Gemination,<sup>1</sup> that is lengthening or doubling of a consonant, regularly appears in Modern Standard Arabic (MSA) in mostly the same way, as in other Semitic languages.<sup>2</sup> In some cases it is a by-product of phonetic processes taking place within particular lexemes and in other cases it is a procedure used deliberately in inflection and word formation, and as such it determines meanings of inflected forms and derivatives, so it should be considered a part of language system.

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<sup>1</sup> Arabic term: تَشْدِيدٌ *tašdīd* *intensification, strengthening, intensified pronunciation*. English translations of Arabic words I quote after: Hans Wehr, *Dictionary of Modern Written Arabic*, J.M. Cowan (ed.), Ithaca, New York 1984.

<sup>2</sup> Edward Lipinski, *Semitic Languages: Outline of a Comparative Grammar*, Peters, Leuven 1997, pp. 173–174.

Phonetic analysis of this phenomenon is provided i.a. by Salman Al-Ani<sup>3</sup> and Henri Fleisch,<sup>4</sup> and its prosodic analysis i.a. by John J. McCarthy and Alan S. Prince,<sup>5</sup> Robert D. Hoberman,<sup>6</sup> Samuel Rosenthal.<sup>7</sup> Whereas these authors focus mainly on formal aspects of the phenomenon, this paper is aimed at reviewing meanings of inflected forms and derivatives in which gemination occurs. It has been conceived as an appendix to my monograph *Słowotwórstwo rzeczowników arabskich i polskich w ujęciu kontrastywnym* [The Contrastive Analysis of Noun Formation in Arabic and Polish],<sup>8</sup> which offers semantic approach to the issues of word formation (analysis starts with meanings and indicates possible ways of expressing them). In the Polish language gemination is a rare and exclusively phonetically conditioned phenomenon with no semantic implications. For instance the paired lexemes: *winy* : *winny* [*faults* : *guilty*], *rana* : *ranna* [*wound* : *wounded* (fem.)], *podany* : *poddany* [*served* : *subject*] differ in their meanings but the geminations are accidental consequences of occurrence of two identical consonants at the junctions of morphemes. That is why I have not discussed in detail this technique of word formation in the monograph. In MSA gemination may also result exclusively from phonetic factors, but the important thing is, that in numerous cases it bears semantic functions. This paper therefore focuses exclusively on Modern Standard Arabic and surveys various forms in which gemination occurs, in order to indicate and classify meanings expressed by them.

Geminated consonants (called geminates), which are characterized as double consonants or long consonants, stand out by the longer period of their articulation.<sup>9</sup> In MSA – as well as in other Semitic languages – all consonants can be geminated.<sup>10</sup> Though gemination may be semantically relevant, it is not reflected in orthography. The sign ّ called *šadda* *strengthening*, *intensification*, appears only in vocalized texts which constitute a small fraction of all written texts.

Phonetically conditioned gemination occurs, when at the junction of two morphemes there are two identical consonants adjacent to each other, and no vowel separates them (for example doubling of consonant *t* in past tense conjugation of verbs having stems ending with *t*, that attach suffixes that begin also with *t*, e.g.: سَكَتُ sakat-tu *I broke off*). Similar

<sup>3</sup> Salman Al-Ani, *Arabic Phonology. An Acoustical and Physiological Investigation*, Mouton, The Hague-Paris 1970, pp. 75–86.

<sup>4</sup> Henri Fleisch, *Traité de philologie arabe*, Vol. 1: *Préliminaires, phonétique, morphologie nominale*, Dar el-Machreq Éditeurs, Beyrouth 1990, pp. 61–62, 174–175.

<sup>5</sup> John J. McCarthy, *A Prosodic Theory of Nonconcatenative Morphology*, „Linguistic Inquiry”, Vol. 12, No. 3, 1981, pp. 373–418; John J. McCarthy and Alan S. Prince, *Foot and Word in Prosodic Morphology: The Arabic Broken Plural*, „Natural Language & Linguistic Theory”, Vol. 8, No. 2, 1990, pp. 209–283.

<sup>6</sup> Robert D. Hoberman, *Local and Long-Distance Spreading in Semitic Morphology*, „Natural Language & Linguistic Theory”, Vol. 6, No. 4, 1988, pp. 541–549.

<sup>7</sup> Samuel Rosenthal, *Gemination*, in: Kees Versteegh et al. (eds.), *Encyclopedia of Arabic Language and Linguistics*, Vol. 2, Brill, Leiden–Boston 2007, pp. 153–155.

<sup>8</sup> Iwona Król, *Słowotwórstwo rzeczowników arabskich i polskich w ujęciu kontrastywnym*, Księgarnia Akademicka, Kraków 2013.

<sup>9</sup> Hadumod Bussmann, *Dictionary of language and linguistics*, (trans.) Gregory Trauth and Kerstin Kazzazi, Routledge, London and New York 1996, p. 451.

<sup>10</sup> Lipinski, *Semitic Languages*, pp. 148–149.

is the case of so called geminate verbs, in which the second and third consonant of the root are the same. Short vowel that separates two identical consonants is elided when they are followed by a short vowel, e.g.: \* فَرَرَ farara > فَرَّ farra *to flee, run away*.<sup>11</sup>

Gemination may occur in cases of total assimilation of adjacent consonants, e.g.:

- (i) consonant *l* in the definite article *al-* which is assimilated to the subsequent consonant (dental, alveolar or interdental) that occurs at the beginning of the following word, e.g. \* السِّيَاسَةُ al-siyāsa > السِّيَاسَةُ as-siyāsa *the policy*;<sup>12</sup>
- (ii) consonant *d* occurring at the end of stems of verbs that attach suffixes beginning with *t*, e.g.: قَعَدْتُ qa‘ad-tu > qa‘at-tu *I sat down*.

In the above examples phonetically conditioned gemination doesn't influence meanings of the words.

In most cases gemination is accompanied by transfixation<sup>13</sup> and then derivational bases and derivatives have different syllabic structures.

### The role of gemination in inflection

In MSA there exist two patterns of broken plurals, in which gemination occurs: فُعُلٌ fu‘al and its more frequent variant with long vowel following geminated consonant فُعَالٌ fu‘āl.<sup>14</sup> They are used in case of personal nouns designating performers of habitual actions, that follow the pattern فَاعِلٌ fa‘il.

The pattern فَاعِلٌ fa‘il is typical of active participles derived from triconsonantal form I verbs. They can function as adjectival attributes, e.g.:

دُونِ الْمَوَاطِنِ السَّاكِنِينَ فِي مَنَاطِقٍ سَيَطُرُ عَلَيْهَا دَاعِشٌ *except for citizens inhabiting areas controlled by The Islamic State of Iraq and the Levant (Aš-Šarq al-Awsaṭ, 27.01.2015).*

Plural forms are then created with the use of suffix -ūna (-īna).

Participles following the pattern فَاعِلٌ fa‘il are adjectival participles. In MSA they are very often subject to paradigmatic derivation, i.e. they are transferred into noun paradigm and occur in syntactic positions typical of nouns (this derivational pattern is today the most expansive method of creating new words in Arabic).<sup>15</sup>

<sup>11</sup> Karin C. Ryding, *A Reference Grammar of Modern Standard Arabic*, Cambridge University Press, Cambridge 2005, p. 458.

<sup>12</sup> Hartmut Kästner, *Phonetik und Phonologie des modernen Hocharabisch*, VEB Verlag Enzyklopädie, Leipzig 1981, p. 102.

<sup>13</sup> I use terms: “transfixation” and “transfix” as they are used in: Alan S. Kaye, *Arabic Morphology*, in: Alan S. Kaye (ed.), *Morphologies of Asia and Africa*, Eisenbrauns, Winona Lake, Ind. 2007, p. 211, Ellen Broselow, *Transfixation*, in: Geert Boij et al. (eds.), *Morphologie. Morphology. Ein internationales Handbuch zur Flexion und Wortbildung. An International Handbook on Inflection and Word-Formation*, Vol. 1, Walter de Gruyter, Berlin, New York 2000, p. 552.

<sup>14</sup> Fleisch, *Traité de philologie arabe*, Vol. 1, p. 483.

<sup>15</sup> Król, *Słowotwórstwo rzeczowników*, pp. 135–141.

The nouns that are products of this derivational pattern may have various meanings. In this group personal nouns of performers of habitual actions, that single out particular social (e.g. professional) groups (nouns of profession) are the most numerous. Only in case of those nouns plural forms are created with the use of gemination.<sup>16</sup> Examples:

صَائِمٌ ṣā'im – صَوِّمٌ ṣuwwam / صَيِّمٌ ṣuyyam *faster, one who fasts*;

رَاكِعٌ rāki' – رُكَّعٌ rukka' *kneeler, one who kneels*;

سَائِحٌ sā'iḥ – سَوَّاحٌ suwwāḥ / سَيَّاحٌ suyyāḥ *traveler, tourist*;

قَارِئٌ qāri' – قُرَّاءٌ qurrā' *reader*,

عَامِلٌ 'āmil – عُمَّالٌ 'ummāl *producer, worker, laborer*.

Gemination as a mechanism of creating plural forms allows one to differentiate between derivatives belonging to this semantic category and others, i.e.:

- (i) Nouns of performers of actual actions, the plural forms of which are created with the use of suffixation, e.g.:  
عَدَدُ الْجَالِسِينَ قَلِيلٌ. *The number of the sitting [people] is small.* (Al-Ahrām: 3.02.1015).
- (ii) Impersonal nouns of performers of actions, the plural forms of which are created with the use of transfixation, without gemination, e.g. the word عَامِلٌ 'āmil may also occur with the meaning *factor, (causative) agent, something that functions* and then its plural form it is: عَوَامِلٌ 'awāmil; other example is: زَوَاحِفٌ zāḥif – زَوَاحِفٌ zawāḥif *reptile, something that crawls*.
- (iii) Nouns of instruments, particularly feminine ones, e.g.: رَافِعٌ rāfi' / رَافِعَةٌ rāfi'a – رَوَافِعٌ rawāfi' *crane, machinery that is used to lift something up*, حَوَافِرٌ ḥāfir – حَوَافِرٌ ḥawāfir *hoof, organ that is used for digging*.

### The role of gemination in word formation

Gemination as a word-formation technique that accompanies transfixation in most cases involves the second consonant, and very rarely the third consonant of the root of the word.<sup>17</sup>

In the following survey of various types of derivatives I also take into consideration word-formation motivation.<sup>18</sup>

1. Word patterns with gemination are used i.a. for creating intensive deverbal adjectives. They are derived exclusively from form I verbs having triconsonantal roots, with short vowel following the first consonant and long vowel following the second, geminated consonant, e.g.:

<sup>16</sup> In this case there appear also other patterns of plural, e.g.: عَالِمٌ 'ālim – عُلَمَاءٌ 'ulamā' *scientist*; فَاعِلٌ fā'il – فَعَلَاءٌ fa'ala *worker*, صَائِمٌ ṣā'im – صَيَّامٌ ṣiyām *one who fasts*.

<sup>17</sup> Hoberman, *Local and Long-Distance Spreading*, p. 546.

<sup>18</sup> See also: Król, *Słowotwórstwo rzeczowników*, pp. 22–23.

- (i) فَعُولٌ fa‘‘ūl, فُعُولٌ fu‘‘ūl:  
 قُدُسٌ qadusa *to be holy* → قُدُوسٌ qaddūs / قُدُوسٌ quddūs *most holy, one who is most holy*;
- (ii) فِعِيلٌ fi‘‘īl:  
 سَكِرَ sakira *to be, to get drunk* → سِكِّيرٌ sikkīr *drunkard, heavy drinker, one who is frequently or habitually drunk*;  
 سَكَرَ šadaqa *tell the truth, be sincere, be right* → سِددِقٌ šiddīq *strictly veracious, honest, one who is veracious, honest*;
- (iii) فَعَالٌ fa‘‘āl:  
 أَكَلَ ‘akala → أَكَّالٌ ‘akkāl *voracious, gluttonous, hearty eater, glutton, one who often eats*;  
 كَذَبَ kaḏaba *to lie, deceive* → كَذَّابٌ kaḏḏāb *lying, untruthful, liar, swindler, one who often lies*;  
 ضَحِكَ ḏahika *to laugh, jeer* → ضَحَّاحٌ ḏahḏhāk *frequently or constantly laughing, laugher, joker, one who often laughs*.<sup>19</sup>

The adjectives belonging to the category (iii) may be subject to paradigmatic derivation (analogously to the derivatives motivated by active participles) and then they function as nouns.<sup>20</sup> They sometimes have the same meanings as adjectives having word pattern without gemination, but with long vowel *ū* following the second consonant of the root instead: فَعُولٌ fa‘‘ūl: أَكُولٌ ‘akul, كَذُوبٌ kaḏūb, ضَحُوكٌ ḏahūk.

2. In MSA lexemes with the word pattern فَعَالٌ fa‘‘āl, when they are motivated by verbs designating habitual actions being bases for particular professions, have exclusively substantive-like meanings and designate performers of those actions. Today they are considered being derived directly from verbs, e.g.:

- نَقَشَ naqāša *to paint, sculpture* → نَقَّاشٌ naqqāš *painter, sculptor*;  
 نَقَدَ naqada *to criticize* → نَقَّادٌ naqqād *critic*;  
 جَزَرَ ḡazara *to slaughter, kill, butcher* → جَزَّارٌ ḡazzār *butcher*.<sup>21</sup>

The same word pattern characterizes also derivatives motivated by nouns, that designate:

- (i) object of habitual action performed by someone, e.g.:  
 حَسَبَ ḥašab *wood, lumber, timber* → حَسَّابٌ ḥaššāb *lumber merchant, one who works with timber*;  
 زَبَّالَةٌ zubbāla *refuse, rubbish, garbage* → زَبَّالٌ zabbāl *sweeper, garbage collector, one who collects garbage*;

<sup>19</sup> Fleisch, *Traité de philologie arabe*, Vol. 1, p. 358; Janusz Danecki, *Gramatyka języka arabskiego*, Vol. 1, Wydawnictwo Akademickie DIALOG, Warszawa 2001, p. 416.

<sup>20</sup> Clive Holes, *Modern Arabic. Structures, Functions, and Varieties*, Georgetown University Press, Washington 2004, p. 157.

<sup>21</sup> Król, *Słowotwórstwo rzeczowników*, pp. 82–85.

(ii) result of habitual action performed by someone, e.g.:

صَابُونَ *ṣābūn* soap → صَبَّانٌ *ṣabbān* soap boiler, soap maker;

حِذَاءٌ *ḥidāʾ* shoe → حَدَّاءٌ *ḥaddāʾ* shoemaker;

(iii) place at which some habitual action is performed by someone, e.g.:

بَحْرٌ *baḥr* sea → بَحَّارٌ *bahḥār* seaman, sailor.<sup>22</sup>

Contrary to intensive adjectives, which are very rare today, nouns of performers of habitual actions are quite numerous, however it is paradigmatic derivation based on active participles derived from most verbs forms and adnominal adjectives, that is the most productive mechanism of creating such nouns.

3. Word pattern فَعَّالٌ *fa‘‘āl* when transferred into feminine paradigm (فَعَّالَةٌ *fa‘‘āla*)<sup>23</sup> is typical of nouns of instruments (tools, mechanisms, devices, appliances).<sup>24</sup>

Those nouns are motivated by form I verbs and this type of derivation is quite productive today, e.g.:

كَسَرَ *kasara* to break, shatter, fracture → كَسَّارَةٌ *kassāra* crusher;

حَصَدَ *ḥaṣada* to harvest, to reap → حَصَّادَةٌ *ḥaṣṣāda* mowing machine, harvester.

Much more rarely they are motivated by nouns, e.g.:

تَلَجَّ *talğ* snow, ice → تَلَّاجَةٌ *tallāğa* refrigerator, icebox.

In few cases nouns of instruments are created with the use of the word pattern فَعَّالٌ *fa‘‘āl* (masculine), e.g.:

خَلَطَ *ḥalaṭa* to mix, to blend → خَلَّاطٌ *ḥallāṭ* mixer, mixing machine.<sup>25</sup>

The above nouns refer to tools and devices, that are used for performing habitual actions – analogously to nouns of performers of actions having the word pattern فَعَّالٌ *fa‘‘āl*.

#### 4. Form II verbs

Form II verbs are derived from form I verbs with the use of gemination of the second root consonant. In most cases they are transitive verbs.<sup>26</sup> Their frequency is very high and they may have various meanings,<sup>27</sup> that depend on properties or causalities constituting their lexical aspect:<sup>28</sup>

<sup>22</sup> Ibidem, pp. 127–129.

<sup>23</sup> Suffix *-a* is a feature of impersonal noun here, see: Jerzy Łacina, *Współczesna specjalistyczna terminologia arabska i procesy słowotwórcze na przykładzie słownictwa z dziedziny chemii, fizyki i techniki*, Wydawnictwo Naukowe UAM, Poznań 1989, p. 8.

<sup>24</sup> Król, *Słowotwórstwo rzeczowników*, pp. 102–104.

<sup>25</sup> Because they may be confused with personal nouns of performers of actions.

<sup>26</sup> Ryding, *Reference Grammar*, p. 491.

<sup>27</sup> Hoberman, *Local and Long-Distance Spreading*, p. 547, William Wright, *A Grammar of the Arabic Language*, Michael Jan de Goeije and W. Robertson Smith (eds.), Vol. 1, Cossimo Classics, New York 2011, pp. 31–32, J.A. Haywood, H.M. Nahmad, *A New Arabic Grammar of the Written Language*, Lund Humphries Publishers, London 1965, p. 161, Fleisch, *Traité de philologie arabe*, Vol. 2, *Pronoms, Morphologie verbale, Particules*, Dar el-Machreq Éditeurs, Beyrouth 1990, p. 288.

<sup>28</sup> Kazimierz Polański (ed.), *Encyklopedia językoznawstwa ogólnego*, Zakład Narodowy im. Ossolińskich, Wrocław 1999, p. 496.

- (i) causative (factitive) meaning – bringing about some activity or state, e.g.:  
 سَمِعَ *sami'a to hear, to listen* → سَمَّعَ *samma'a to make hear*;  
 بَلَغَ *balaga to reach, to arrive* → بَلَّغَ *ballaga to make reach or attain*;  
 قَدِرَ *qadira to be or become dirty* → قَدَّرَ *qaddara to make dirty, to pollute*.
- (ii) intensive meaning – performing action with greater intensity, e.g.:  
 كَسَرَ *kasara to break* → كَسَّرَ *kassara to break into pieces, fragmentize*;  
 قَتَلَ *qatala to kill, murder* → قَتَّلَ *qattala to kill, massacre; slaughter*;  
 خَرَبَ *haraba to destroy, demolish* → خَرَّبَ *harraba to devastate, demolish, ruin*;  
 قَطَعَ *qata'a to cut, cut off* → قَطَّعَ *qatta'a to cut into pieces*.
- (iii) iterative (frequentative) meaning – performing action repeatedly, e.g.:  
 طَافَ *tāfa to go about, run around* → طَوَّفَ *ṭawwafa to run around often, to circle, to circumambulate*;
- (iv) declarative (estimative) meaning – declaring and assessing, e.g.:  
 حَمَقَ *hamuqa to be stupid, silly, foolish* → حَمَّقَ *hammaqa to regard as a fool, consider stupid*;  
 سَرَقَ *saraqa to steal, to rob* → سَرَّقَ *sarraqa to accuse of theft, call a thief*;  
 كَذَبَ *kaḏaba to lie, to deceive* → كَدَّبَ *kaddaba to accuse of lying, to call a liar*;  
 صَدَقَ *ṣadaqa to tell the truth, to be right* → صَدَّقَ *ṣaddaqa to deem credible, accept as true, to believe, to trust*.

Some verbs belonging to this class are motivated by nouns. They give the meaning of creating something with the use of something else, dealing with something, etc., e.g.:

- تَلَّجَ *talğ snow, ice* → تَلَّلَجَ *tallağa to cool with ice, to turn into ice*;  
 تَمَّنَ *taman price, cost, value* → تَمَّمَنَ *tammaṇa to determine the price or value, to appraise, estimate*;  
 حَيَّمَهُ *ḥayma tent* → حَيَّيَّمَهُ *ḥayyama to pitch one's tent, to camp*.

## 5. Form V verbs

Form V verbs are derived from form II verbs with the additional prefix *ta-* bearing reflexive meaning.<sup>29</sup> Here gemination is inherited from derivational base. The verbs transform meanings of their form II bases (resulting from gemination) making them reflexive or mediopassive meanings, e.g.:

- كَبَّرَ *kabbara to make great, large, to extend, intensify* → تَكَبَّرَ *takabbara to make oneself great, to swagger, to be proud*;  
 قَلَّبَ *qallaba to turn (something) over; turn (something) around* → تَقَلَّبَ *taqallaba to turn over (oneself), writhe*.<sup>30</sup>

## 6. Form IX verbs

These are intransitive verbs meaning *to be* or *to become* (of some quality). This category of verbs is the least numerous one.<sup>31</sup> They are derived exclusively from adjectives

<sup>29</sup> Wright, *Grammar of the Arabic Language*, p. 36.

<sup>30</sup> Fleisch, *Traité de philologie arabe*, Vol. 2, p. 304, Ryding, *Reference Grammar*, p. 530.

<sup>31</sup> Fleisch, *Traité de philologie arabe*, Vol. 2, p. 328.

designating colours or physical defects with the use of gemination of the third root consonant, e.g.:

أَخْضَرَ 'aḥḍar *green* → إِخْضَرَ iḥḍarra *to be or become green*;

أَزْرَقَ 'azraq *blue* → إِزْرَقَ izraqqa *to become blue*;

أَحْوَلَ 'aḥwal *squint-eyed, cross-eyed* → إِحْوَلَ iḥwalla *to become cross-eyed*.<sup>32</sup>

Some authors suggest that form IX verbs are motivated by form I verbs.<sup>33</sup> Taking into account, however, that in case of some colours or physical defects there are no form I verbs designating states, the supposition that it is adjectives that motivate them, is more plausible. Those adjectives are also derivational bases for form II verbs (denominal forms are pretty frequent in this category) meaning: *to make something have some quality*, e.g.:

أَصْفَرَ 'aṣfar *yellow* → صَفَّرَ ṣaffara *to make yellow, to dye yellow*;

أَحْمَرَ 'aḥmar *red* → حَمَّرَ ḥammara *to color or dye red, to redden*.

## Conclusions

Arabic morphology is based on a system of consonantal roots, combined with transfixing, prefixing, suffixing, infixing and gemination. In the system of Modern Standard Arabic gemination may be conditioned phonetically or – more often – morphologically. In this latter case gemination becomes one of the mechanisms (together with transfixation) of creating particular inflectional forms or derivatives. As far as inflexion is concerned, gemination occurs in plural forms (broken plural). In word formation it is used for deriving verbs from verbs, nouns or adjectives, as well as for deriving nouns from verbs, nouns or adjectives and also for deriving adjectives from verbs. The occurrences of gemination linked to word formation are therefore the most frequent.

Derivatives created with the use of gemination have various semantic functions, but among them there is one – function of expressing increased quantity (resp. intensity, plurality, etc.) – that seems to be the most frequent. It occurs in case of every category of words: nouns, adjectives and verbs. As far as inflection of nouns is concerned, gemination is used for creating plural forms (of nouns of performers of habitual actions), therefore it expresses semantic category of discrete quantity that may be subject to numerical quantification (e.g. in phrases consisting of a noun and numeral: مِليُونُ سُكَّانٍ milyūn sukkān *million inhabitants*).

The broadly understood aspect of quantity characterizes some of form II verbs, which denote intensive, long lasting or repetitive activities, as well as nouns and adjectives (motivated by verbs) connoting abundance of events or states of some sort. These are nouns of performers of habitual actions and nouns of instruments that connote multiple and repetitive actions performed by the bearer of the noun, as well as adjectives motivated by verbs expressing increase of intensity of a state or multiplicity and repetitiveness of an action.

<sup>32</sup> Ibidem, pp. 315–316, Danecki, *Gramatyka języka arabskiego*, pp. 183–184, Régis Blachère, Maurice Gaudefroy-Demombynes, *Grammaire de l'arabe classique. Morphologie et syntaxe*, Éditions G.P. Maisonneuve, Paris 1975, p. 68.

<sup>33</sup> Wright, *Grammar of the Arabic Language*, p. 43.