# THE PHENOMENON OF GEMINATION IN ENGLISH AND ARABIC

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**ABSTRACT**: *Gemination is a phonetic phenomenon whereby two identical /sounds/ co-occur in one word or at words boundaries. The co-occurrence of two identical sounds doesn't matter, what matters is their pronunciation. Whether to pronounce them as one sound or two sounds is a matter treated differently across languages that have geminate sounds. As the present paper restricts itself to two languages only, Arabic and English, it investigates how gemination occurs in the two languages and how it can be represented? Is it restricted to consonants only or it can also occur with vowels? What type of gemination each language exhibits? These questions beside some more others are the main concern of the present paper in which the phenomenon of gemination is clarified in general, then a study of gemination is presented in English and Arabic respectively. There is a common view point which holds that English does not have gemination, but in fact it appears that English has gemination at certain conditions. Although it is unlike Arabic in its realization, but it can be said that gemination exists in English.*

**KEYWORDS:** Gemination, English, Arabic, Phonetic Environment, Comparison

## INTRODUCTION

### The Phonetics and Phonology of Gemination

The phenomenon of geminate consonants or sometimes referred to as long consonants is found in many different languages around the world. Nevertheless, the number of works that are devoted to study this phenomenon is very few (Kubozono, 2017:1).

In phonetics, on one hand, the key and most important point at which consonant length contrast is the consonant duration, besides other phonetic features. But, it is not investigated how these other phonetic features are employed by languages around the world and consequently how much they differ in this regard. For example, languages such as Hindi, Italian, Bengali tend to vowel shortening as they occur in pre-geminate positions, exactly the same way vowels shortened when they are in closed syllables. Some other languages like Japanese behave in the opposite way, they tend to vowels lengthening in the same context (ibid).

In phonology, On the other hand, it is well known that languages show differences in the positions where the geminate/singleton contrasts can emerge. Generally, geminates may appear in two different positions: the first one is morpheme-internally and the second one is in the sequences of morphemes or words. They are called underlying and derived geminates respectively. Both of the two types might appear in a single language like Italian or Turkish, or the second type only fundamentally appears in languages such as Russian. Furthermore, there might be some constraints imposed by different languages on the occurrence of geminate consonants. Languages also exhibit variations in the place where consonant length can be contrastive within the word (ibid, 1-2).

Wright (2004: 34) points out that there are some phenomena including gemination, that play a role in the perception of phonological processes.

**General Views on Gemination**

Gemination is a phenomenon of doubling some sounds, particularly consonants, in certain positions in the word or in words boundary in phrases and sentences. The term has been defined by different scholars in terms of production or as a phonological phenomenon that can be applied to certain sounds.

Carr (2008, 62) defines the term gemination as "a process whereby a single, non-geminate, consonant undergoes lengthening to become a geminate consonant". Gemination can be seen in English in words such as *unnatural*, where the prefix [un-] is added to the root *natural*, resulting in the pronunciation /ʌnˈnætʃrəl/, with what is called fake geminate. (ibid, 39).

Crystal (2008, 206) states that "gemination is a term used in phonetics and phonology for a sequence of identical adjacent segments of a sound in a single morpheme, e.g. Italian notte /nɔtte/ means (night)".

The term is also used in the quantitative approaches to phonology. This can be seen in notions such as *short* as opposed to *long* consonant sounds and *gemination* (ibid, 399). Many other definitions are proposed to stress the same idea of gemination which suggests the identity between sounds for example, it is defined as "being a sequence of identical speech sounds as in *meanness* or Italian *notte*" (Web 1).

Consonants may have lengthening due to where they are in a syllable, word or phrase. This is confirmed for a number of different languages. For example, consonants in word initial or final positions tend to have length more than those occur are medially (Keating, 2006: 167).
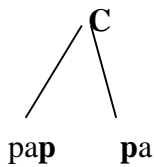
There is a direction to define gemination as a morpho-phonological phenomenon, such as "geminate consonants occur in English only at morpheme boundaries: *nighttime*, *bookcase*, *solely*, *non-null*" (Trask 1996:154).

Another definition to support the morpho-phonological view states that "double consonants are frequently found in English, especially at word junction: *wholly* (as said by many), *unknown*, *book-case*, *this Sunday*" (Abercrombie1967:82).
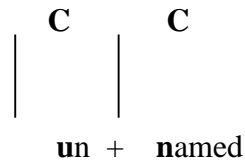
**True Gemination Versus Fake Gemination**

In many languages around the world, it is said that there are three different kinds of gemination; they are lexical, assimilated, and concatenated. The first represents the phonemic inventory and is found in the lexicon, the second is the case of same identity of one segment inside the word that is affected by the other segments, whereas the last type happens when the same sound is found finally in one segment that is attached to another one having that same sound, and this is the case that is found in English (Web 2).

McCarthy (1986) states that the distinction between fake and true gemination can be seen in terms of auto-segmental phonology as residing in the underlying feature bundles. So, when there is a single feature bundle that is linked to two timing units the result is true gemination, while a sequence of feature bundles with each bundle linked to its own unit the result is fake gemination, as represented in the following figures:

```
        C                    C        C
       /|                    |        |
      / |                    |        |
     /  |                    |        |
    pap   pa                un  +   named
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(True gemination)            (Fake Gemination)

Besides these types of gemination, there might be an occurrence of a process which is the opposite of gemination. This process is known as (degemination) that "forbids the occurrence of a sequence of identical consonant segments" (Gussenhoven and Jacobs, 2011: 101).

**Gemination in English**

In English, gemination does not take place initially in a word, although there are some cases of double consonant letters which occur initially in some loan words that are used in English (llama, llano, Lloyd, Llewellyn). There is a group of consonants which are never doubled in any position in a word, they are /h, j, q, w, x/. Another important point is that the consonant clusters of any type are never geminated. Gemination in English is found mainly in total assimilation, across word boundaries, and in complex and compound words which are morphologically different from simple words in having some extra morphemes attached to them, such as (bell-like; stainless-steel) or (misspell, meanness, roommate). It can be stated that the main reason that leads some consonants to have the geminate feature is a morpho-phonological one due to the affixation that certain types of words might undergone (Web 3).

**Gemination in Total Assimilation**

Assimilation is a concept whereby a pronunciation of sound is influenced by the adjacent sounds. This happens due to the difficulty in pronunciation so speakers will tend to utter certain sounds in terms of the other neighboring sounds for ease. Crystal (2008: 39) defines assimilation as "a general term in phonetics which refers to the influence exercised by one sound segment upon the articulation of another, so that the sounds become more alike, or identical." He elaborates that it could happen partially such as in *ten bikes* which is pronounced as /tem baɪks/, not /ten baɪks/ in such a case no gemination happens, and "The assimilation is total in *ten mice* /tem maɪs/, where the /n/ sound is now identical with the /m/ which influenced it." In such a case the /m/ sound has to be doubled or geminated in pronunciation. Other examples could include phrases like *good girl* /gʊg gɜːl/, *that kid* /ðæk kɪd/, and *dress shop* /dreʃ ʃɒp/. For more examples see (Web 4).

**Gemination across Words without Assimilation**

Gemination happens when a consonant is pronounced for a longer period than it is usually used to be pronounced. This happens only across word boundariess, this can be obvious in the following phrases:

- *Calm man*  /ka:m mæn/

- Black coat  /blæk kəʊt/

- This site /ðɪs saɪt/                                                                     (Web 5).

In these phrases, the same sound is found at the end of the first words and the beginning of the second words, so when they are pronounced they will be merged together and the result will be one slightly longer sound.

## Gemination with [-ly]

Adding a suffix to a word does not necessarily mean that geminate consonants would occur. It depends on what sort of word final sound is there to decide the occurrence of gemination. So, the addition of [-ly], for instance, would result in one of three cases: no gemination, variable gemination (i.e. the case is optional) or gemination. This is illustrated in the following examples:

- categorically /kætəˈɡɒrɪkli/

- dreadfully /dredfəli/     No Gemination

- dully /ˈdʌlli/ or /ˈdʌli/

- wholly /həʊlli/ or /ˈhəʊli/     Variable Gemination

- stalely /steɪlli/

- vilely /vaɪlli/     Gemination     (Source 6)

## Gemination with [un-] and [in-]

Most cases of [in-] results in degemination which is defined as " inverse process of gemination, when a spoken long consonant is pronounced for an audibly shorter period" (Source 7). It can be found, for example, in words like the following:

- innavigable /Iˈnævɪɡəbl/

- innumerable /ɪˈnjuːmərəbl/

As for [-un], Cruttenden and Gimson (2014, 248) state that "in general, such prefixes result in a doubled consonants when the prefix-final and the stem-initial consonants are identical, e.g. *unnecessary* is pronounced with a double length [n:]. (This rule does not apply to in- and its variants, so for example illogical is pronounced with only a single /l/)" Mohanan (1986:18) cites the following examples: *unknown, unnatural, suddenness, fineness, soulless, guileless.*

## Gemination in Compound Words

Gemination in English can be phonetically realized in compound words that consist of more than one morpheme, it occurs at the morphemes boundaries. This is evident in the following list of compound words. The transcription shows a double phoneme:

- nighttime /ˈnaɪt taɪm/

- bookkeeper /ˈbʊkki:pə(r)/

- roommate /ˈruːmmeɪt/

- meanness /ˈmiːnnəs/

- misspell /ˌmɪsˈspel/

- homemade /ˌhəʊmˈmeɪd/

- bookcase /ˈbʊkkeɪs/

- midday /ˌmɪdˈdeɪ/

- goalless /ˈgəʊlləs/

- guileless /ˈgaɪlləs/

- keenness /ˈkiːnnəs/                                                                                     (Web 5)

## Gemination in Arabic

Gemination in Arabic is symbolized by using a diacritic called (shadda) in "Arabic writing system" and this symbol is in the form of the letter " ◌ّ " but smaller, it is placed on the geminated letters in writing to mark gemination in pronunciation. In Arabic the "shadaa" ( ◌ّ ) is used to indicate gemination. The reason for the use of shadda is the occurrence of two similar sounds next to each other. It is held that (tashdeed) gemination is an obligatory feature in Arabic writing and pronunciation systems since it has a contrastive feature, it can change the meaning or the grammatical category of a word (Web 8).
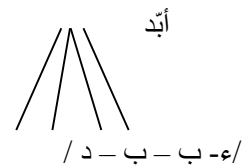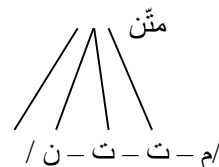
Hassan (1983: 119) defines gemination (التضعيف) as "the lengthening of the continuant sounds and the plosion in stops". He divided gemination into two groups:

a- **geminate consonants (السواكن المضعفة)**

Geminate consonants are considered as identical clusters. When syllable boundaries are identified, the first constituent of the clusters whether identical or non-identical is the coda of the preceding syllable, while the second constituent will always be the beginning of the subsequent syllable, the following two examples are for illustration:

ـ أبّد = /ء- ب ــ ب ــ د / = س ح س / س ح س

ـ متّن = /م ــ ت ــ ت ــ ن / = س ح س / س ح س



متّن                    أبّد

/م ــ ت ــ ت ــ ن /            /ء- ب ــ ب ــ د /

The second sounds in the two words are geminated and are signaled by the diacritic ( ◌ّ ) which should be used in writing to state that gemination occurs on this sound and in such a case it is referred to as "mushaddad" i.e., geminated (ibid: 120).

In Arabic, gemination can change the meaning of the word as in the following examples:

عَلَّمَ                                                            عَلِمَ

(with gemination, it is a verb: *he taught* …) (without gemination, it is a verb: *he knew...)*

حمّام                                                            حمام

( with gemination means *bathroom*)                (without gemination means *pigeon*s)

**b- long vowels (الحركات الطويلة)**

Long vowels are considered as monophthongs and not diphthongs. In comparison with the identical clusters they have the same importance in the pronunciation within the syllable. The vowels which are long could be considered as equivalents to geminate consonants. An example of illustration is in the following:

/kaa tib/ or /ka: tib/      = (means *writer* ) كاتب -

(Hassan 1983: 120).

Gemination is also defined by Muhammad (2001) as "the pronunciation of the sound twice or giving it more duration". All sounds in Arabic are either short or long in pronunciation, the duration of the long sounds is the double of that of the short. This phenomenon applies to all vowels and consonants (Muhammad, 2001: 75-76).

The duration of a sound is variant according to its position in a word, the number of words in a sentence, and the speed of the speaker. Thus, it is found that the difference of duration between a geminate and singleton sound is the half, where the duration of a singleton in a sentence is the half of duration of a geminate sound in the same sentence (ibid: 132).

The /r/ sound of Arabic is a special case. When it is geminated it can be pronounced more than two times, but this characteristic is not due to the duration rather, it is related to the acoustic features of the sound. So, gemination means the doubling of the sound represented in the emphasis, which results from the merging of two consecutive characters of the same type, one static and one moving (ibid).

In Arabic, gemination can occur within words and across word boundaries (although when occuring across words it is usually known as assimilation "idgaam").

It is possible that gemination in Arabic happens in accompany with other diacritics that indicate certain phonological processes:

إنَّ = إنْ + نَ -

i<u>nn</u>a   (x2 long)

In this example the (ن) (noon) letter consist of two (noons) actually, the first one came with (skoun) and the second one came with (fet ha). In the normal context they are pronounced as

one geminated (noon) (نّ), they are pronounced as (inna). In the case of the spoken language, (shadaa) can be recognized by the longer period a sound takes than in ungeminated cases. Gemination can go in accompany of other diacritics that indicate certain vowels in Arabic (Hay, 2007:42).

**Shadaa and Short Vowels**

The geminated sounds can work with short vowels of Arabic. It is important to mention that any letter with the shadda symbol on it is known as mushaddad. So, for example if we have (نّ) it is referred to as mushaddad or geminated. Letters with shadda can carry one of the three short vowels in Arabic. These vowels are also represented by diacritics above or under a letter. An example of this is the (ن) letter which can have two diacritics one to mark gemination and the other is to mark the short vowel (نُّ    نِّ    نَّ). These letters can be analyzed just to show that they actually consist of two letters, each of these letters has its own diacritic:

نَّ = نْ + نَ

نِّ = نْ + نِ

نُّ = نْ + نُ

The point these examples reveal is that each one of the letters consists actually of two letters and these two in turn have their own diacritic. It is important to mention here that in these cases the first letter always comes with (skoun). So, this is applicable to any geminated letter of Arabic. They can be broken down into two letters (Johnstone,1991:44).

**Phonetic Environment of Gemination in Arabic**

Gemination occurs typically in certain phonetic environments. Thurgood (1993:1) cited in Ahmed and Sameer (2016: 8) points out that "the most favored one for long consonants to occur is intervocalically , following a short , stressed vowel and preceding another short vowel." There are a lot of examples in Arabic words to clarify that:

- حادّ / (sharp)                    حادْ (deviated).

Ahmed and Sameer (2016: 8) state that gemination in articulation of geminate sounds in Arabic, as mentioned earlier, can contrast the meaning of two words, so it can be said that it is a phonemic phenomenon:

- سلم /silm/ (peace)

- سلِّم/sallam/  (handed)

- صمد/samad /  (resist)

- صمَّد/sammad/  (economize)

According to Ahmed and Sameer (2016), there are geminate counterparts for all phonemic sounds that occur medially and contrast the meaning of words. Word finally can be shown in the following:

- /saar / "walked"

- /saarr / (pleasing)

The most common positions of gemination in Arbic are Inter-vocalic and word-final. It is noted that gemination that occurs initially is less common in Arabic (Ahmed and Sameer 2016: 8).

**Differences and Similarities between Gemination in English and Arabic**

The present paper has presented the phenomenon of gemination in both English and Arabic with some details and important facts in the previous sections. Accordingly, differences and similarities can be sketched out.

**Differences**

a.  Gemination is of two types, fake and true. The type that English exhibit tends strongly to be fake due to its occurrence in word boundaries rather than within the same word. In contrast, Arabic gemination is referred to as true for it comes within the same word rather than on word boundaries.

b.  The distribution of gemination positions in both languages shows that the most common positions of gemination in English is medially and finally, while in Arabic geminate consonants occur in different words positions.

c.  English gemination is mostly concatenated, while Arabic gemination is mostly assimilated.

d.  In English gemination occurs in total assimilation, across words, and in the morphologically complex and compound words. The case in Arabic is not the same, it occurs within words.

e.  In Arabic writing system gemination is marked by using a diacritic placed above the geminate consonant called (shadda), while in English there is no mark used indicating the occurrence of gemination.

f.  In Arabic there is no variable gemination, in the sense that it is obligatory in pronunciation when the conditions are available. In English there are some limited cases where gemination is variable, that is using it is optional.

g.  In Arabic, long vowels are considered as equivalents to geminate consonants, which means that gemination occurs even with vowels. In English there are long vowels but they are not considered as geminate vowels.

h.  The /r/ sound in Arabic is a special case, when it is geminated it may be pronounced more than two times, and in English there is no such a case.

i.  Gemination in English is a morpho-phonological phenomenon rather than a pure phonological one, whereas in Arabic gemination is seen as a phonological phenomenon because it can contrast the meaning of a minimal pair.

**Similarities**

a.  Arabic utilizes gemination as an integral part of its writing, and phonological systems, as for English, although there is a common conception that there is no gemination but it appears that English also exhibits it in certain circumstances.

b.  In Arabic when gemination occurs across word boundaries it is referred to as (idgaam) which is the same idea in English when gemination occurs across word boundaries in total assimilation.

c.  Both in English and Arabic the initial occurrence of gemination is less common. It is important to mention here that there are some opinions go to the extreme that it never occurs initially in English.

d.  Both in English and Arabic gemination is realized in pronunciation by doubling the articulation of the geminate sound or lengthening the duration of a sound.

e.  Gemination in both languages is operation that has to be distinguished from prosodic operations that cause, in some cases, lengthening of consonants.

**CONCLUSIONS**

It can be concluded that as gemination is a phonological phenomenon in Arabic, it is also found in English, nevertheless the behavior and distribution are different between the languages under scrutiny. This is obvious from the differences and similarities listed above, the points at which the two languages meet are more than those at which they depart. This is normal since each language has its own idiosyncratic features that make it uniquely different from others; moreover, the fact that the sound pattern of any language is not the same as other languages since each language has its own phonological system.

The semantic dimension that gemination has in Arabic might be a good point of contrast to which further detailed investigation can be carried out, as it is noted that in Arabic a geminate sound can contrast the meaning of two words. Moreover, as explained in the present paper that gemination in English is a morpho-phonological phenomenon, a work might be carried out to study the morphological basis of gemination in English.

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**Web Sites:**

- (Web 1) https://www.merriam-webster.com/dictionary/geminate
- (Web 2) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3352589
- (Web 3) http://usefulenglish.ru/writing/double-consonants
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