MODERN STANDARD ARABIC ج: /ʒ/ AND /ʤ/

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Abstract

This paper explores the phonemic inventory of Modern Standard Arabic (MSA) with respect to the phoneme represented orthographically as ج in the Arabic alphabet. This phoneme has two realizations, i.e., variants, /ʤ/, /ʒ /. It seems that there is a regional variation across the Arabic-speaking peoples, a preference for either phoneme. It is observed that in Arabia /ʤ/ is dominant while in the Levant region /ʒ/ is. Each group has one variant to the exclusion of the other. However, there is an overlap regarding the two variants as far as the geographical distribution is concerned, i.e., there is no clear cut geographical or dialectal boundaries.

The phone [ʤ] is an affricate, a combination of two phones: a left-face stop, [d], and a right-face fricative, [ʒ]. To produce this sound, the tip of the tongue starts at the alveolar ridge for the left-face stop [d] and retracts to the palate for the right-face fricative [ʒ]. The phone [ʒ] is a voiced palato-alveolar fricative sound produced in the palatal region bordering the alveolar ridge.

This paper investigates the dichotomy, or variation, in light of the grammatical (morphological/phonological and syntactic) processes of MSA; phonologies of most Arabic dialects' for the purpose of synchronic evidence; the history of the phoneme for diachronic evidence and internal sound change; as well as the possibility of external influence.

Keywords: Modern Standard Arabic (MSA), Cairene Arabic, Saidi Arabic, Bahraini Arabic, Kuwaiti Arabic, Eastern Yemeni Arabic, Semitic languages, the Arabic definite article, sound change, lenition, spirintization, affricatization, synchronic linguistics, diachronic linguistics, assimilation

Introduction

To my knowledge, there is much obscurity and similarly a lack of explanation with respect to a problematic aspect of Arabic phonology. This problem is whether Arabic has the palatal fricative [ʒ], the alveo-palatal affricate[ʤ], or both. Hence, the question this paper attempts to answer is

whether the phonemic inventory of Modern Standard Arabic (MSA) comprises the phoneme /ʤ/ to the exclusion of /ʒ/, or vice versa, or both /ʤ/ and /ʒ/. If it is both, then what is the distribution of the two phonemes phonologically and across the Arabic-speaking world?

The phone [ʤ] is a voiced alveo-palatal affricate, with an alveolar stop [d] and an alveo-palatal fricative [ʒ]. An affricate is a succession of two phones: a stop such as [b], [p], [t], [q] and [k], and a homorganic fricative such as [s], [z], [š] (Ladefoged, 2006: p. 66). The affricate phone [ʤ] is a combination of the dental/alveolar stop [d] and the alveo-palatal fricative [ʒ] (Geoffrey & Ladusaw, 1996: p. 42). Both are voiced, and so is the resulting combination [ʤ]. An example of this phone is in the English word "*judge*" /ʤʌʤ/, where the first phoneme and the last are /ʤ/. Another example of an affricate is [č], the voiceless counterpart of [ʤ], as in the English word "church" /čɜrč/, where the first phoneme and the last are [č].

What concerns this study is the status of the two relevant phonemes /ʒ/ and /ʤ/ and their distribution in MSA Arabic. It is obvious that they are dialect-specific: in some regions, speakers favor one over the other. It should be clear that the focus is MSA and the topic is exclusively these two phonemes. Only by way of comparison, drawing evidence and making analogies, does this paper draw on other Arabic varieties.

The phones [ʒ] and [ʤ]

In producing the phoneme [ʤ], the tongue sets out to produce the stop [d] by placing the tip of the tongue against the tooth ridge, the alveolar ridge. As soon as making the [d], it immediately moves back to the end of the soft-hard palate line to produce the phone [ʒ] by slightly retracting and raising the front of the blade of the tongue against the soft palate. The phone [ʒ] is a voiced palato-alveolar, median laminal, fricative (Pullum and Ladasaw 1986). The blade of the tongue contacts the palate creating a closure and moves forward to the alveolar, allowing airflow along the center of the oral cavity (uvula to middle front teeth) as the vocal folds vibrate. Clearly it is produced further back in the mouth than the phone [ʤ], which is alveo-palatal, starting at the alveolar/tooth ridge and retracting toward the palate, the reverse process of producing [ʒ]. An overview of the Arabic phonemic inventory is indispensable here, as it offers a description of the phonemes in term of their point of and manner of articulation, and phonation.

The Arabic phonemic inventory*:*

The Arabic phonemic inventory consists of twenty-six consonants and six vowels: three long vowels and three short vowels. Since the consonants are our focus, Figure 1 shows the MSA Arabic consonant inventory.

Figure 1: Arabic consonants chart

	Bilabial	Labiodental	Interdental	Alveolar	Alveopalatal	Palatal	Velar	Uvular	Pharyngeal	Glottal
Stops vl			tت ṭط				kك	qق		ʔء
Stops vd	bب		dد ḍض							
Fricatives vl		fف	θث	sس ṣص		š ش		xخ	ḥح	hه
Fricatives vd			ð ظ ðذ	zز		[14]*ʒ ج		ġغ	ʕع	
Affricate vd					*ʤ ج					
Nasals vd	mم			nن						
Laterals vd				l						
Flap vd				rر						
Glides vd	wو					jي				

Note that the affricate row has only one phoneme namely /ʤ/. That is, in Arabic there is one class of affricates that consists of one affricate segment. Is it a natural class in Arabic? The phonemes in questions and their notational variants are juxtaposed and placed in parentheses. Note also that MSA, unlike some Arabic varieties, lacks the phone [g].

Literature review

There is a dearth in Arabic phonology with respect to research and studies dealing with the Arabic phonemes {/ʤ/ʒ/, /y/, /g/,/ ġ/, /q/, /ʔ/, /k/}, which are problematic cross-dialectally in the Arab speaking world. These phonemes evince a complex overlap across Arabic dialects. For instance, for MSA /ʤ/ or /ʒ/ and /q/:

In Egypt, Cairene Arabic uses /g/ and /ʔ/, except in *Qur'an* and al-*Qahira*; e.g., /gaw/ 'weather' and /ʔaal/ 'he said'; Saidi uses /ʤ/ and /g/, respectively, e.g., /ʤaw/ 'weather' and /gaal/ 'he said';

In Yemen, San'ani Arabic uses /ʤ/ and /g/, respectively, e.g., /ʤaw/ 'weather' and /gaal/ 'he said'; Adeni/Taizi Arabic favors /g/ and /q/, respectively, e.g., /gaw/ 'weather' and /qaal/ 'he said'; in addition to /ʤ/ and /g/,some parts of Hadramout (also in Kuwait), /j/ and /g/, respectively, e.g., /jaw/ and /gaal/; and

In Bahrain, some Bahrainis favor /g/ and /q/, as in Adeni/Taizi Arabic

[*] The asterisk indicates questionability, which is the thesis of this paper.

above, for MSA /ʤ/and /g/ while other Bahrainis /ʤ/ and /g/, as in the San'ani and Saidi Arabic varieties above.

Moreover, the cross-dialectal overlap does not confine itself to these phonemes, it includes others. For example, MSA /q/ is replaced by /ġ/ and MSA /ġ/ by /q/ in Abyani Arabic in Yemen. Likewise, in some parts of Palestine, Egypt, and Lebanon, MSA /q/ is pronounced as /k/.

There is a scarcity of research in this area in relation to the two phones [ʒ] and [ʤ] and identifying which of these is part of the phonemic inventory of MSA Arabic, the research query this paper investigates. To my knowledge, books that target ASL/AFL (Arabic as a Second/Foreign Language) fail to adequately address this problem. The scarcity stems from the fact that most ASL/AFL fall short of sufficiently focusing on Arabic phonology and offering sound and theoretically supported generalizations.

Several works have touched upon the problem but were inadequate. One of these is McCarus and Rammuny's (1974) *A Programmed Course in Modern Literary Arabic phonology and Script* postulating several pronunciations for the MSA Arabic phoneme represented by the letter ج. These are variants: [ʤ], [ʒ], and [g]. They explain that although these phones are cross-dialectally different, they pose no intelligibility problems for Arabic speakers. That is tantamount to saying that these phones are allophones for the same phoneme, which is theoretically and empirically controversial. They also offer a geographical distribution, i.e., a dialectology atlas, for the pronunciations of the respective phoneme. Such distribution seems to be confusing at best for lack of a thorough investigation, scholarship and empirical support.

Along the same lines, Abdel-Malek and Abdul-Malak (1974) in their book *The sound system of Modern Standard Arabic: A handbook for teachers and learners,* liken the pronunciation of ج is similar to that of English /ʤ/. This paper argues for neither /ʒ/ nor /ʤ/ and attempts to investigate the matter objectively on the basis of the following:

(1) grammar (morphological, phonological, and syntactic processes) of MSA;

(2) historical evidence (history of the relevant phonemes and sound change);

(3) synchronous evidence by probing the phonologies of the Arabic dialects vis-à-vis the phonemes in question, aside from MSA where applicable.

The grammatical behavior of [*ʤ*] and [*ʒ*]

This section explores the behavior of two phonemes vis-à-vis the morphological, phonological and syntactic rules. The query here is when involved in concatenation, involving either phone abides by the rules

imposed by MSA phonology, morphology and syntax. A grammatical process that involves the phoneme in question is the definite article throughout the morphological, phonological, and syntactic levels is the definite article rule.

The Arabic definite article

The definite article in Arabic is /ʔal-/. When the definite article is prefixed to words that begin with coronal consonants, it undergoes assimilation, a universal phonological process. In environments where the following sound is coronal, i.e., produced with the tip or blade of the tongue against the alveolar/tooth ridge, the phoneme /l/ of the definite article morpheme /ʔal-/ assimilates to the next coronal phoneme. Due to this rule, the Arabic alphabet is divided into two equal sets: coronal and non-coronal consonants, based on the way they behave when preceded by the phoneme /l/ of the definite article.

The [+coronal] phonemes

The coronal consonant sounds symbolized by the letters in 1 below are also known as the "sun letters/sounds". The word شمس /šams/ 'sun' in Arabic starts with the phoneme [š ش], which is a coronal consonant that forces assimilation on the [l-] of the definite article. Table 2 shows examples of the assimilation of all the consonants in 1.

{/θ ث/, /ð ذ /, /ẓ ظ/, /š ش/, /ṣ ص/, /s س/, /z ز/, /ḍ ض/, /d د/, /ṭ ط/, /t ت/, /r ر/, /l ل/, /n ن/}

Table 1: Assimilation of (ʔa)l- → C_1 [+coronal] /-- C_1 [+coronal]

Def. Article	Word	Concatenation	Gloss	Phoneme
ʔal- ألـ	θaub ثوب	ʔaθθaub اَلثَّوْبْ	Garment, gown	/θ ث/
ʔal- ألـ	ðura ذرة	ʔaððura اَلذَّرة	corn	/ð ذ /
ʔal- ألـ	ẓabi ظبي	ʔẓẓabij اَلظَّبي	dear	/ẓ ظ/
ʔal- ألـ	šams شمس	ʔaššams اَلشَّمس	sun	/š ش/
ʔal- ألـ	ṣaif صيف	ʔaṣṣaif اَلصَّيف	summer	/ṣ ص/
ʔal- ألـ	saif سيف	ʔassaif السَّيف	sword	/s س/
ʔal- ألـ	zeit زيت	ʔazzeit اَلزَّيت	oil	/z ز/
ʔal- ألـ	ḍabiṭ ضابط	ʔaḍḍabiṭ اَلضَّابط	officer	/ḍ ض/
ʔal- ألـ	darb درب	ʔaddarb اَلدَّرب	path, way	/d د/
ʔal- ألـ	ṭalib طالب	ʔaṭṭalib اَلطَّالب	student	/ṭ ط/
ʔal- ألـ	turba تربة	ʔatturba اَلتُّربة	soil	/t ت/
ʔal- ألـ	rabb رب	ʔarrab اَلرَّب	god, lord	/r ر/
ʔal- ألـ	labwa لبوة	ʔallabwa اَللبوة	lioness	/l ل/
ʔal- ألـ	naar نار	ʔannaar اَلنار	hell, fire	/n ن/

Note the doubling diacritic / ّ / on the coronal consonant. It indicates the doubling of the coronal consonant in compensation for the loss of /l-/ due to assimilation.

Elsewhere, meaning in other environments such as those where the consonant phoneme following the /l/ of the definite article /ʔal-/ is a non-coronal [-coronal], this assimilation rule is inapplicable. These non-coronal consonants have been dubbed "the moon letters", known as such because the word قمر /qamar/ 'moon' starts with the phoneme /q/, a non-coronal phoneme, which bleeds (prevents) the assimilation rule of the definite article's /l-/.

Note that /š/ the voiceless counterpart of /ʒ/ is included in this set of coronal consonants in Table 1. This poses a dilemma for our analysis. Are /š/ and /ʒ/ coronal; is one coronal while the other is non-coronal? If so, which is which? What are their phonetic properties then? This dilemma seems to be inconclusive at this point. This dilemma is explained in further detail by the history of the phoneme /ʒ/ or /ʤ/ later in the paper in section 3.6.

The non-coronal [-coronal] phonemes

Table 10 shows those phonemes in 2 and the process and their concatenation with the definite article. The table also demonstrates that no assimilation is required with the moon letters/ phonemes. Note that the two variants /ʤ/ and /ʒ/ are included in this non-coronal set in Table 2 with respect to the definite article assimilation rule in MSA Arabic phonology.
{/ʔ ء/, /b ب/, /ʒ/ʤ/ ج/, /ḥ ح/, /x خ/, /ʕ ع/, /ġ غ/, /f ف/, /q ق/, /k ك/, /m م/, /h هـ/, /w و/, /ǰ ي/}

Table 2: (ʔa)l- → C_I [+coronal]/--C_I [+coronal]

Def. Article	Word	Concatenation	Gloss	Phoneme
ʔal- ألـ	ʔarḍ أرض	ʔalʔarḍ ألأرض	earth	/ʔ ء/
ʔal- ألـ	beiḍ بَيض	ʔalbeiḍ ألبَيض	eggs	/b ب/
ʔal- ألـ	ʒawz جَوز	ʔalʒawz ألجَوز	nutmeg, walnut	/ʒ ج/
ʔal- ألـ	ḥibr حِبر	ʔalḥibr ألحِبر	ink, rabbi	/ḥ ح/
ʔal- ألـ	xawx خَوخ	ʔalxawx ألخَوخ	peach, plum,	/x خ/
ʔal- ألـ	ʕain عَين	ʔalʕain ألعَين	eye	/ʕ ع/
ʔal- ألـ	ġuṣn غُصن	ʔalġuṣn ألغُصن	branch, twig	/ġ غ/
ʔal- ألـ	faaris فارِس	ʔalfaaris ألفارِس	knight	/f ف/
ʔal- ألـ	qamar قَمر	ʔalqamar ألقَمَر	moon	/q ق/
ʔal- ألـ	kaff كفّ	ʔalkaff ألكِفّ	palm	/k ك/
ʔal- ألـ	mahd مَهد	ʔalmahd ألمَهد	cradle	/m م/
ʔal- ألـ	hadaf هدَف	ʔalhadaf ألهدَف	goal	/h هـ/
ʔal- ألـ	ward وَرد	ʔalward ألوَرد	roses	/w و/
ʔal- ألـ	yadd يدّ	ʔalyadd ألـيَد	hand	/y ي/

The definite article: implications

This section investigates the behavior of these two variants when the Arabic definite article /ʔal-/ is prefixed to a word that begins with either of the variants, vis-à-vis the Arabic definite article assimilation rule of the

phoneme /l/ in the morpheme /ʔal-/. The phoneme /l/ assimilates with consonant phonemes with the feature coronal [+coronal]. That is to say that it assimilates with homorganic phonemes, i.e., phonemes produced in the same articulation point/place. To elaborate, it assimilates with all phonemes that are produced with the tip and/or front of the tongue contacting the dental/alveolar area of the mouth. In brief, the definite article rule in Arabic phonology treats the phoneme in question as non-coronal, perhaps palatal, rather than alveolar. If the phoneme in question were /ʤ/, then the definite article rule would treat it as coronal. Thus, the assimilation of /l/ to the left-face component of the affricate [d] will apply. As the case is, it doesn't apply, slightly tipping the argument in favor of /ʒ/, which is palato-alveolar (starting at the palate and advancing towards the tooth/alveolar ridge), in which case the assimilation rule is inapplicable, while the assimilation is applicable in the case of /š/, which is the voiceless counterpart of /ʒ/.

Arabic phonology: Naturalness and markedness

Affricates are marked as opposed to other phonemes, which are unmarked. If we were to presume that the phoneme in question is the affricate phone [ʤ], it would be marked since it would constitute an affricate class in and of itself. If MSA Arabic contained this affricate, it would be more natural to have at least one other member in the class of affricates: more likely, the voiceless counterpart [č], as the case is in English and other languages that have an affricate class of consonants. Looking at the phonemic chart of MSA Arabic in Figure 1 above, the affricates class is a one-member category, which makes the affricate phoneme /ʤ/ marked, i.e., unnatural, given MSA's phonology. In other words, it is an odd constituent.

On the other hand, a glance at the class of fricatives in Figure 1, above, strikes us as natural. The class of fricatives is the largest, a universal across languages. Possible affricates are [ʤ] and [č] and [ts] and [dz] among others, which are discernable across languages. English, for example, has for its affricate class /ʤ/, as in *judge* /ʤʌʤ/, and /č/, as in *church* /čɜrč/.

Arabic syllable structure and phonotactics allow for consonant clusters word-finally [cvcc] (Abdel-Malek & Abdul-Malak, 1975: 63). However, clusters and affricates are not the same or synonymous. Although they may seemingly be so, clusters are not affricates, but are combinations of independent phonemes. One reason is that in Arabic, those consonant clusters are breakable. They resyllabify with a following vowel to abide by the Arabic syllable rules that ban clusters elsewhere in words, except for monosyllabic words of one super heavy syllable [cvcc] as in /qabr/ 'tomb'. This line of thinking renders any equation between clusters and affricates as irrelevant and that, once again, /ʤ/ is an affricate rather than a consonant cluster.

Synchronic evidence: Other Arabic dialects

In some parts of the Arab world, for example Cairene Arabic, southern and western Yemen, and parts of Bahrain, this same phoneme is realized as /g/. In some parts of the Arabic-speaking region it is realized as /ʒ/. Still in other parts, for example, in parts of Kuwait and western Yemen, it is realized as /j/. One of the three different realizations is velar /g/, the second palato-alveolar /ʒ/, the third palatal /j/, and none of which is an affricate. Adding the affricate realization [ʤ] augments the inventory of the realizations to four. Applying the definite article assimilation rule to the four realizations using the word [g/ʒ/ʤ/jaamiʕa] "university" yields:

a. /ʔalgaamiʕa/ (in some Arabic dialects, specifically Cairene Egyptian)

b. /ʔalʒaamiʕa / , /ʔalʤaamiʕa/ (in MSA Arabic)

c. /ʔaljaamiʕa/ (still in some other Arabic dialects)

d. /ʔiʤʤaamiʕa/ (by some Sudanese and Saidi speakers, personal experience)

e. /ʔiggaamiʕa (in Cairene Egyptian; relatively restricted)

But not [15]*ʔaʒʒaamiʕa

This gives rise to the argument that the phoneme in question may be produced further back in the mouth [-Anterior] closer to /j/ and [g]. The fricative /ʒ/ may be this phoneme. Being coronal phonemes, [ʒ] and /ʤ/bleed the definite article rule of assimilation.

The definite article assimilation rule

[+Coronal] [+ Lateral] → C_i/ __ C_i[+Coronal]

Where the /l/ in /ʔal-/ assimilates to the next coronal consonant.

It gets more complicated as the phoneme /š/, the voiceless (homorganic) counterpart of /ʒ/, feeds the rule; one way to reconcile the bleeding of the rule is by positing an additional rule that would bleed the assimilation rule in relation to /ʒ/. Thus, there will have to be two rules ordered in a bleeding relationship, according to which the assimilation rule will apply to [š] but not to [ʒ]. Not only is this additional rule counter-intuitive, but it is beyond the scope of this paper. It suffices to say that there is an anomaly posed by the application of the definite article assimilation rule with respect to /ʤ/ and /ʒ/ on the one hand, and /š/ on the other.

Diachronic investigation: Semitic languages

Reviewing the alphabet, and hence sound system, of Semitic languages Assyrian, Aramaic, Ugaritic, and Akkadian reveals that neither /ʤ/

[15] Ill formed in MSA, for the correct pronunciation is /ʔalʒ/ʤaamiʕa/; assimilation is inapplicable.

nor /ʒ/ constituted part of their phonemic and orthographic systems. On the other hand, Semitic alphabets attest to the phonemes /g/ and /j/. That is to say that /g/ and /j/ are native to Semitic Languages and Proto-Semitic. This raises the question: how has Arabic, especially MSA, come to have either or both of the respective phonemes /ʤ/ or /ʒ/.

At a glance, there are two possible answers to this question. The first hypothesis is that they may be the result of external influence. They were borrowed from Persian, Latin, or Greek. Perhaps, one or either was borrowed then changed over time to become the other, with the possibility that it remained unchanged in some dialects.

The second hypothesis is that it may be the outcome of sound change. Sound change occurs through phonological processes and is motivated by various reasons, amongst which is context and naturalness for the purpose of simplification.

Phonological processes: Simplification

Simplification is a natural process of language. Languages, it is said in the literature, tend toward simplification. It seems that a fricative [ʒ] is simpler than the affricate [ʤ]; [ʤ], in turn, is simpler than the stop [g]; and the glide [j] is simpler than [ʒ]. Simplification occurs through phonological processes of sound change, as discussed below.

Along these lines, MSA /ʤ/ may have been the result of a phonological process known as affricatization, whereby stops (e.g., [g]) change into affricates (e.g., [ʤ]). In this process, due to their position in a certain phonetic environment, certain stops become affricates over time. In such phonetic environments, the phoneme's position may be intervocalic (between vowels), postvocalic (proceeded by a vowel), or prevocalic (followed by a vowel). For example, [k] becomes [č] and [g] becomes [ʤ].

Moreover, another phonological process, known as spirantization, may have been at the heart of the sound change yielding /ʒ/, and /ʤ/ in the process, in the case of MSA Arabic. Spirantization is a left-to-right sound change (also known as weakening or lenition), whereby a stop or an affricate turns into a fricative in postvocalic (after a vowel or a voiced consonant) environments (Kenstowicz. 1994), possibly forming an affricate as an intermediary step in the process. Hence, affricatization may be part of the process of spirantization. Thus, [k] may change into [h] or [š], possibly undergoing a phase of [č]; likewise, [g] may change to [ʒ], likely undergoing a phase of [ʤ]. A sound change to the phoneme ي /j/ would have been unlikely since it had been in the phonemic inventory of Proto-Semitic and has persisted in descendent Semitic languages including Arabic dialects, especially MSA. If the change to ي /j/ had taken place, a concomitant change should have occurred to the genuine ي /j/ itself to turn it into another

sound or be excluded from the phonemic inventory MSA like ج [g]. Nonetheless, spirantization in some Arabic dialects may have led to the approximant ي /j/ as a further phase of sound change merging /j/ and ج /ʒ/.

Accordingly, MSA and other Arabic dialects could have been through sound change producing the phonemes /ʒ/ and /ʤ/. So those that have /ʒ/ may have reached this point in the process; those which have /ʤ]/ perhaps are still in the sound change process towards /ʒ/. Apparently, MSA, along with other Arabic dialects, has reached the end point of the spirantization process from Semitic /g/ to MSA /ʒ/. Still, other Arabic dialects may be at the /ʤ/ stage. Whether that stage is final or transitional begs research and remains to be a guess into the future.

The fact that [g] is nonexistent in the phonemic inventory of MSA supports the speculation that Semitic /g/ had spirantized to /ʒ/, or was at the intermediary /ʤ/ by the time the Qureishi Arabic dialect became dominant in Arabia in the latter half of the seventh century. Qureishi Arabic is historically a prestigious Northern Arabic dialect and ancestor of Classical Arabic, of which MSA is a modern descendent.

Yet a third hypothesis may be that other Arabic dialects had developed alongside the Quraish dialect and continued to develop, from which some of the current Arabic dialects may have descended. It is probable that some of these dialects had undergone some sound changes, such as that of spirantization reaching the stage /ʤ/. In the process, some made it to /ʒ/ as well as MSA. Some have passed to the /j/ stage in the process. Perhaps some may have not been through the sound change process and preserved their Semitic /g/.

To summarize this historical account of sound change, some Arabic dialects have retained their Semitic phoneme /g/. Some have come to have /ʒ/ or /ʤ/ as a result of the phonological process of spirantization as a historical phonological process of sound change. Still, others may have undergone one further step, namely lenition, than spirantizing Semitic /g/ to /j/, which already exists in their current phonemic inventory. An alternative explanation is that /ʒ/ or /ʤ/ had been adopted from one or more other languages, i.e., external influence. Stated differently, either Semitic [g] had gone through spirantization to MSA [ʒ] and /ʤ/ or MSA had adopted /ʒ/ and /ʤ/ from other languages by virtue of cultural contact and/or geographical affinity.

Discussion

As far as MSA is concerned and irrespective of the other Arabic dialect, reviewing the points arrived at through the investigation of the evidence projected in the previous sections above, the following insights emerge: grammatically, as far as the definite article is concerned, both

variants [ʒ] and [ʤ] behave the same in relation to the definite article assimilation rule in MSA. In other words, they both bleed the rule, as if they were non-coronal.

The definite article assimilation rule also reveals another discrepancy. The phoneme [ʒ] does not behave the same as its voiceless counterpart [š] in relation to the definite article rule of assimilation. The rule applies to [š], but not to [ʒ]. As a coronal phoneme, /š]/ feeds the rule. On the other hand, /ʒ/ is coronal yet it behaves as a non-coronal, retaining properties of the original Semitic /g/: the inapplicability of the definite article assimilation rule. This substantiates the analysis that /ʒ/ is in actuality the Semitic /g/, which has evolved into /ʒ/ through the process of spirantization, as discussed above. This is supported by the fact that the phonemic inventory of Proto-Semitic and its descendents, the Semitic languages Ugaritic, Assyrian, Aramaic, and Akkadian lacked the phones [ʒ] and [ʤ]. Instead, they had /g/. Simpson (2009; 83) cites Cantineau's (1945; 56) proposal illustrating the evolution of Proto-Semitic /g/ to /ʒ/, /ʤ/ on the one hand and to /y/ on the other in Arabic dialects. Thus all possible variants across the dialects including MSA are represented in this sound change that originates in Proto-Semitic /g/. The proposal is reproduced here for convenience:

g → g^{y} → d^{y} → ǰ [ʤ] → ž [ʒ] (my brackets)
↘ y

Spirantization, in order to yield MSA /ʒ/ or /ʤ/, must have had as input (Semitic) /g/, since the process starts with a stop and ends with the appropriate fricative. As shown in Cantineau's sound change proposal above, spirantization also may have transitioned through palatalization [g^{y}] and [d^{y}] then affricatization yielding /ʤ/ in the process of evolving /g/ to /ʒ/. Accordingly, the MSA phoneme orthographically represented as ج is both /ʒ/ and /ʤ/ in form but is [g] in behavior.

Theoretically, the definite article assimilation rule in 4 above should tip the balance for /ʒ/, which is palto-alveolar, since /ʤ/, which is alveo-palatal--note the direction of the tongue with respect to the alveolar ridge, would yield unacceptable forms, such as *ʔaʤʤumʕa instead of ʔalʒumʕa "Friday". That is because the left-face of the affricate [d] is a coronal stop feeding the assimilation rule. However, empirically the rule applies indiscriminately to both /ʒ/ and /ʤ/, as though they were non-coronal phonemes. This lends support to the claim that MSA /ʒ/ and /ʤ/ are developments of Semitic /g/ by virtue of spirantization. In short, with respect to the definite article assimilation rule, MSA /ʤ/ and /ʒ/ behave as if they were [g], which is a voiced velar stop, irrelevant to MSA's phonemic inventory.

In terms of naturalness and markedness, the fact that the phonemic inventory of MSA lacks any affricates other than [ʤ] renders this very

variant as marked, i.e., unnatural. This adds to the argument that it is a transition. Finally, in terms of simplification and naturalness, the fact that it is easier to produce [ʒ] in the mouth than it is to produce [ʤ] supports the argument for /ʒ/ as more natural, simpler and unmarked, as it forms a natural class with other respective fricatives in the MSA phonemic inventory.

In addition, the Arabic phonotactic ban on consonant clusters except at the end of a super heavy syllable may have a bearing on why /ʤ/ is marked. Although consonant clusters and affricates are dissimilar, the principle of combining consonants without an intervening vowel is disfavored in MSA. The same principle probably holds here, too.

So far, the arguments in this section are based on: MSA grammar (morphology, phonology, phonotactics and syllable structure, and syntax); on the phonetic properties of the relevant MSA phonemes; on the history and the development of the variants and related phonemes; and the comparison and contrast drawn with counterparts in other Arabic varieties.

The alternative hypothesis to explaining the situation lies in the possibility that they both developed by way of external influence from different sources of which one was [ʒ] and the other was [ʤ]. That is, as Arabic came into contact with other languages, it adopted the variants [ʤ] and [ʒ] from their respective languages, possibly Latin and Persian, among others, at certain point in time of contact.

Conclusion

To address the question this paper set out to answer, MSA has one psychological phoneme orthographically represented as ج. It is realized as an affricate /ʤ/ in some Arab regions and as a fricative /ʒ/ in others. Arabic-speakers from regions where the affricate realization is common tend to substitute their /ʤ/ for MSA ج. Those who come from a region where the fricative variant is dominant replace MSA ج with /ʒ/.

To explain the dichotomy, there are two explanations. The first is internal influence reflected in sound change through phonological changes such as spirantization. Spirantization is a process of for example evolving Semitic /g/ to /ʒ/ that may have involved affricatization, producing /ʤ/ in the process. Thus, speakers in some regions have the intermediary phase of the change /ʤ/. Others have /ʒ/ as the final stage of the sound change process. This is a plausible explanation for which there is support in MSA grammar; (phonology, morphology, syntax, syllable structure and phonotactics) of MSA; and in the history of Semitic linguistics as [g] may be the source of the of MSA /ʒ/ and /ʤ/.

The alternative explanation to the dichotomy espouses external influence, i.e., adopting the sounds [ʤ] and [ʒ] from other languages. Having developed from its Semitic ancestors, which had no such sounds, Arabic

must have borrowed these sounds from languages it came in contact with across history. It may have also borrowed one or the other. Later the borrowed phone went through sound change to become either at a different pace across the Arabic-speaking region. At any rate, the question that arises is what happened to the sound that was used before the borrowing, presumably the Semitic /g/. The answer is that it may have been pushed out of the inventory of Qureshi Arabic, the ancestor of MSA, long before Qureshi became the Standard, prestigious Arabic variety in Arabia.

Implications

For teachers and learners of Arabic, it is imperative that teachers know reasonably well the sound system of the language or dialect they teach. It is also important to distinguish between the sound systems of the different dialects. Blanketing generalizations and unsupported claims should be avoided by all means. Teachers owe this to their students, their profession and their integrity as teachers.

It may not make a difference to the native Arabic-speaker, but it certainly does to the non-native speaker or student of Arabic. Having several variants for the same phoneme is inefficient in terms of memory space, management, retrieval, and processing. Not to mention the confusion for the students that may result from the overlap between sounds across Arabic dialects in general and in MSA particularly. Native teachers of Arabic impose their dialectal variant of the phoneme ج on MSA. So it is either /ʒ/ or /ʤ/, depending on the teacher's dialect of Arabic. Some teachers choose to use [g] which is not part of the phonemic inventory of MSA.

To students, it makes a difference, especially those who differentiate between the phones [ʒ] and [ʤ], not to add [g] to the mix, in their own native tongue. For instance, in English, as well as a host of other languages, these are two independent phonemes with completely different phonetic properties and a contrasting relationship.

Imagine the hesitation and frustration they go through when producing the sound for MSA ج. They are not sure which variant they are expected to use. Let alone the inconsistency resulting from having teachers who may inadvertently impose their own dialectal variant. Such variants should be kept distinct and within the boundaries of their respective dialects. It should be clear that [ʒ] and [ʤ] are acceptable variants for ج in MSA, to the exclusion of [g], which, although it is relevant to other Arabic dialects' phonologies, it is irrelevant to MSA's phonology.

The investigation projected in this paper will help explain the overlap of the variants of ج in MSA and across other Arabic varieties. Such overlap, although seemingly perplexing, is explainable in terms of phonological processes of sound change and the history of the evolution of the phoneme in

question, ج.

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