

The English, German, and French Cognates of Arabic Back Consonants: A Lexical Root Theory Approach

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Abstract: *This paper investigates the phonemic cognates of Arabic back consonants in English mainly besides German, French, and Latin. Using the lexical root theory as a theoretical framework, it shows that Arabic and English, for example, not only belong to the same family but also to the same language, contrary to traditional Comparative (Historical Linguistics) Method claims that they are not. The data consists of representative examples containing the pharyngeals /2 & 3/, the velar fricatives /kh & gh/, the uvular and velar stops /q & k/, the glottal fricative and stop /h & '/. The results show that they developed into similar ones in European languages which were either more advanced than their Arabic counterparts (e.g., /q, k/ → /t/) or unique to European languages such as /v/ which substituted for the pharyngeals and velar fricatives in the main. In other words, all the above Arabic sounds have true cognates with the same or similar forms and functions, irrespective of minor phonetic and morphological changes.*

Keywords: *Back consonants, Arabic, English, German, French, Latin, historical linguistics, lexical root theory*

1. Introduction

The lexical root theory was first proposed in Jassem's (2012a) study of numeral words to establish the genetic relationship between Arabic and English, in particular, and all (Indo-)European languages in general, thus rejecting the claims of the Comparative 'Historical Linguistics' Method that Arabic and English, German, French, and so on belong to different language families (Bergs and Brinton 2012; Algeo 2010; Crystal 2010: 302; Campbell 2006: 190-191; Crowley 1997: 22-25, 110-111; Pyles and Algeo 1993: 61-94). The main reasons for that were: (a) geographical continuity and/or proximity, (b) persistent cultural interaction and similarity, and (c) linguistic similarity between Arabic and such languages (see Jassem 2013b for further detail).

Linguistically, the evidence was decisive, compelling, and clear-cut. In his investigation of all the numeral words from *one* to *trillion* in Arabic, English, German, French, Latin, Greek and Sanskrit, Jassem (2012a) showed that all are the same or similar in form and meaning in general,

forming true cognates with Arabic as their end origin. Jassem (2012b) examined common contextualized religious terms such as *Hallelujah*, *God*, *Anno Domini*, *Christianity*, *Judaism*, *welcome*, *worship*, and so on, which were also found to have true Arabic cognates. *Hallelujah*, for instance, is a reversal and shortening of the Arabic phrase *la ilaha illa Allah* '(There's) no god but Allah (God)' as follows:

<i>Halle</i>	+	<i>lu</i>	+	<i>jah</i>
<i>Allah</i>		<i>la</i>		<i>ilaaha & illa</i>
'God'		'no'		'god' & 'except'.

That is, *Halle* and *Allah* are the reverse of each other, *lu* and *la* (pronounced *lo* also) are the same, *jah* is a shortening of both *ilaaha* 'god' and *illa* 'but, except' which sound almost the same. Jassem (2012c) showed that personal pronouns in Arabic, English, German, French, Latin and related languages are true cognates, which descend from Arabic directly. Jassem (2012d) examined determiners like *the*, *this*, *an*, *both*, *a lot*, *very* in English, German, French, and Latin which were all found to have identical Arabic cognates. Jassem (2012e) established the Arabic genetic origins of verb *to be* forms in those languages. Jassem (2012f) showed that inflectional 'plural and gender' markers formed true cognates in all. Jassem (2013a) demonstrated the Arabic origins of English, German, and French derivational morphemes like *activity*, *activate*, *determine*, *whiten*. Finally, Jassem (2013b) dealt with the Arabic origins of negative particles and words like *in/no* in English and its sisters.

The lexical root theory has been used as the theoretical framework in all, which is so called because of employing the lexical (consonantal) root in examining genetic relationships between words like the derivation of *rewritten* from *write* (or simply *wrt*). The main reason for that is because it carries and determines the basic meaning of the word regardless of affixation such as *overwrite*, *underwrite*, *writing*. Historically speaking, all classical Arabic dictionaries (e.g., Ibn Manzoor 1974) used consonantal roots in listing lexical entries, first founded by Alkhaleel bin Ahmad Alfarahidi (Jassem 2012e).

The lexical root theory has a simple structure, comprised of a theoretical construct, hypothesis or principle and five practical procedures. The principle states that Arabic and English as well as (Indo)European languages are not only genetically related but also are directly descended from one language, which may be Arabic in the end. In fact, it claims in its strongest version that they are all dialects of the same language. The applied procedures for analyzing lexical roots are (i) methodological, (ii) lexicological, (iii) linguistic, (iv) relational, and (v) comparative/historical. As all have been reasonably described in the previous studies (Jassem 2012a-f, 2013a-b), only a brief summary will be given below.

The methodological procedure concerns data collection, selection, and statistical analysis. Apart from loan words, all language words, affixes or morphemes, and phonemes may be subject to study, and not only the core vocabulary as is commonly practiced in the field (Bergs and Brinton 2012; Crystal 2010; Pyles and Algeo 1993: 76-77; Crowley 1997: 88-90, 175-178). However, data selection is inevitable practically for which the most appropriate way would be to use semantic fields like the present and the above topics. The steady accumulation of evidence from such findings will aid in formulating rules and laws of language change later (cf. Jassem 2012f, 2013a-b). The statistical analysis employs the percentage formula (see 2.2 below).

The lexicological procedure is the first step in the analysis. Words are analyzed by (i) deleting affixes (e.g., *overwritten* → *write*), (ii) using primarily consonantal roots (e.g., *write* → *wrt*), and (iii) search for correspondence in meaning on the basis of word etymologies and origins (e.g., Harper 2012).

The linguistic procedure handles the analysis of the phonetic, morphological, grammatical and semantic structure and differences between words. The phonetic analysis considers sound changes within and across categories. That is, consonants may change their place and manner of articulation as well as voicing. Change by place relates to bilabial consonants ↔ labio-dental ↔ dental ↔ alveolar ↔ palatal ↔ velar ↔ uvular ↔ pharyngeal ↔ glottal (where ↔ signals change in both directions); manner change concerns stops ↔ fricatives ↔ affricates ↔ nasals ↔ laterals ↔ approximants; and change by voice indicates voiced consonants ↔ voiceless. Similarly, vowels may change as well. The three basic long Arabic vowels /a: (aa), i: (ee), & u: (oo)/ (and their short versions besides the two diphthongs /ai (ay)/ and /au (aw)/ which are a kind of /i:/ and /u:/ respectively), may change according to (i) tongue part (e.g., front ↔ centre ↔ back), (ii) tongue height (e.g., high ↔ mid ↔ low), (iii) length (e.g., long ↔ short), and (iv) lip shape (e.g., round ↔ unround). These have additional allophones or variants which do not change meaning (see Jassem 2003: 98-113). Although English has a larger number of about 20 vowels, which vary from accent to accent (Roach 2009; Celce-Murcia et al 2010), they can still be treated within this framework. Furthermore, vowels are marginal in significance which may be totally ignored because the changes are limited in nature and do not affect the final result at all. In fact, the functions of vowels are grammatical such as indicating tense (e.g., *sing*, *sang*, *sung*, *song*) and plurality (e.g., *man/men*) and phonetic to link consonants to each other in speech.

Such sound changes result in processes like assimilation, dissimilation, deletion, merger, insertion, split, syllable loss, resyllabification, consonant cluster reduction or creation and so on. Finally, Sound change may operate in a multi-directional, cyclic, and lexically-diffuse or irregular manner. The criterion in all the changes is naturalness and plausibility; for example, the change from /k/ (e.g., *kirk*, *ecclesiastic*), a voiceless velar stop, to /ch/ (e.g., *church*), a voiceless

palatal affricate, is more natural than to /s/, a voiceless alveolar fricative, as the first two are closer by place and manner (Jassem 2012b); the last is plausible.

The morphological and grammatical analyses overlap. The former examines the inflectional and derivational aspects of the grammar in general (Jassem 2012f, 2013a-b); the latter handles grammatical categories like pronouns, case, and word order (Jassem 2012c-d). Since their influence on the basic meaning of the lexical root is marginal, they may be ignored altogether.

The semantic analysis looks at meaning relationships between words, including lexical stability, multiplicity, convergence, divergence, shift, split, change, and variability. Stability means that word meanings have remained constant. Multiplicity denotes that words might have two or more meanings. Convergence means two or more formally and semantically similar Arabic words might have yielded the same cognate in English. Divergence signals that words have become opposites or antonyms of one another. Shift indicates that words have switched their sense within the same field. Lexical split means a word led to two different cognates. Change means a new meaning developed. Variability occurs in the presence of two or more variants for the same word.

The relational procedure examines and accounts for the relationship between form and meaning from three perspectives: formal and semantic similarity (e.g., *three*, *third*, *tertiary* and Arabic *thalath* 'three' (Damascus Arabic *talaat* (see Jassem 2012a)), formal similarity but semantic difference (e.g., *ship* and *sheep* (see Jassem 2012b), and formal difference but semantic similarity (e.g., *quarter*, *quadrant* and *cadre* from Arabic *qeeraaT* '1/4' (Jassem 2012a)).

Finally, in the comparative historical analysis, every word in English in particular and German, French, and Latin in general is compared with its Arabic counterpart phonetically, morphologically, and semantically on the basis of its history and development in English (e.g., Harper 2012; Pyles and Algeo 1993; Algeo 2010) and Arabic (e.g., Ibn Manzour 1974; Ibn Seedah 1996; AlsuyuTi 2010) besides the author's knowledge of both Arabic as a first language and English as a second language.

The lexical root theory will be applied in this paper to the investigation of the correlates or cognates of Arabic back consonant phonemes in English, German, French, and Latin to show their genetic relationship to and/or their descent from Arabic. It has six sections: an introduction, research methods, data, results, a discussion, and a conclusion.

2. Research Methods

2.1 Data Sampling: Back Consonants

Arabic, English, German, French, Latin, and Greek share similar sound systems in general. Arabic has 28 letters or phonemes- 25 consonants and 3 basic long vowels /aa, oo, & ee/, representing both vowels and semi-vowels. All the consonants are generally the same as their English, German, and French counterparts. However, Arabic has some special 'back' consonants, which are produced at the back of the mouth as a result of three articulatory processes. The first is contact between the back of the tongue and the velum or uvula, producing four sounds in all: /k/, a voiceless velar stop, /kh/, a voiceless velar fricative, /gh/, a voiced velar fricative, and /q/, a voiceless uvular stop. The second is due to retraction of the root of the tongue towards the pharynx, leading to two fricative pharyngeals: a voiceless /2/ and a voiced /3/. The last is a glottal stricture with two voiceless sounds: a fricative /h/ and a stop /'.

In addition, Arabic has four emphatics which result from two strictures or articulations: one primary (alveolar/dental) and one secondary where the back of the tongue retracts towards the pharynx. Hence the name pharyngealization (Jassem 1993, 1994a-b; Ladefoged 2001: 218). In this work, they are transcribed in capital letters /T, D, S, & Dh/, which can actually be treated like their plain counterparts /t, d, s, & dh/. Therefore, they will not be treated here. In English, labio-velar /w/ and dark (velarized) /l/ are such examples (Ladefoged 2001: 218).

In spoken Arabic, the pharyngeals and velar fricatives have remained intact over the ages although /3/ varies with /n/ in some cases as in *a3Ta* v. *anTa* 'give' (my accent). The uvular and velar stops /q/ and /k/ have undergone huge changes which vary from accent to accent; for example, *qiddam* 'in front of' may be said with /g, gh, k, ', j, & dz/ whereas *kaan* 'was' with /ch, sh, & ts/ (Jassem 1993, 1994a-b). The glottal stop /' is highly variable where it is usually (a) dropped in speech as in *ra's* v. *raas* 'head', *bi'r* v. *beer* 'well' or (b) replaced by (i) /w/ as in *'ain* v. *wain* 'where', (ii) /y/ as in *sa'al* v. *siyal* 'ask', *maa'* v. *may* 'water', or (iii) /h/ as in *shaima'* v. *sheemeh* 'proper name'. Similarly, /h/ is usually silent in final position at pause. In European languages, all have disappeared except for /k/ and, to a lesser extent, /h/ where it is silent in French (Lawless 2012), Latin (Omniglot 2012), and Greek (Wikipedia 2012). The voiced velar fricative /gh/ occurs as an /r/-variant in French as in *Paris, rouge* 'red' whereas its voiceless counterpart occurs as a /k/-variant in German as in *Buch* 'book' (Bauer 2012), and Greek (Wikipedia 2012). /q/ represents orthographic heritage rather than sound change, so it never existed as a sound in European languages. However, all were replaced by other closer sounds.

To sum up, the back consonants /2, 3, kh, gh, q, k, h, & '/ constitute the data here, by using select, representative examples derived from the author's research over the years, dating as far back as to 1984 in his doctoral days at Durham University, UK, and later in Syria, Malaysia, and KSA. For the sake of clarity, economy and due to their similarity in European languages, all the exemplary words below will be mostly for English versus Arabic, of course.

2.2 Data Analysis

The data will be analyzed theoretically and statistically. The theoretical analysis utilizes the lexical root theory as a framework as surveyed above. The statistical analysis calculates the percentage of shared elements by dividing the number of cognates over the total number of investigated ones multiplied by a 100. For example, suppose the total number of investigated pronouns or words is 20, of which 19 are true cognates (Jassem 2102c). Calculating the percentage of cognates would be $19/20 \times 100 = 95\%$. Finally, the resultant figures are checked against Cowley's (1997: 173, 182) formula to determine whether such words or phonemes are accents of the same language or languages of the same family, and so on (for a survey, see Jassem 2012a-b).

3. The Results

3.1 The Voiceless Pharyngeal Fricative /ʕ/

Arabic /ʕ/ irregularly developed into several similar sounds in English as follows:

- a) /v/ as in *vita*, *vital*, *vitality*, *revitalize*, *vitamin*, *viva*, *survive*, *revive*, etc., from Ar. *ʕaiat* 'life', *ʕai* 'alive' (Jassem 2012a); *live*, *alive*, *life* from Ar. *ʕai* where /l/ split from /v/ (or from *roo2* 'soul, life' where /r/ became /l/); *vie* from Ar. *waaha* 'vie with, compete' where /w & h/ merged into /v/; *arrive* from Ar. *raa2/aroo2* 'go' via lexical shift; *travel* from Ar. *tirʕaal* 'travel'; *evolve*, *evolution*, *involve*, *revolve*, *revolution*, *devolve*, *convolve*, *Volvo* from Ar. *ʕawla* 'about, change, turn' (Jassem 2012b); *invoke*, *invocation*, *revoke*, *provoke*, etc. from Ar. *ʕaka* 'talk'; *value*, *valuables* from Ar. *ʕulee* 'jewels, gold and silver' or from *thaman/thameen* 'price, expensive' where /th & m/ merged into /v/ while /n/ turned onto /l/.
- b) /w/ as in *worry*, *worried*, *wary*, *wariness* from Ar. *ʕaira(n)* 'worry, (worried)'; *wizard(ry)* from a reordered Ar. *saʕirat* or *baSSaarat* 'wizard'; *war* from Ar. *ʕarb* 'war' where /ʕ & b/ merged into /w/ or *wagha* 'war' where /gh/ became /r/; *worship* from a reordered Ar. *subʕaan* 'glorify God' where /s & n/ passed into /sh & r/ each (Jassem 2012b).
- c) /k/ as in *cline*, *incline*, *inclination*, *decline*, *declination*, *declension*, *recline*, etc. from Ar. *ʕana*, *inʕana* 'bend, incline' where /l/ split from /n/ or from a reordered *nazal* 'go down' where /z/ became /k/; *curve/carve*, *curvature* from Ar. *ʕarf/ʕafar* 'curve/carve'; *cod* from Ar. *ʕoot* 'fish' where /t/ became /d/; *shake* from Ar. *ʕaaʕa* 'shake'; *coy* from Ar. *ʕaya* 'shyness' (cf. *shy* below); *culture* (*cultivation*) from Ar. *ʕaDar*, *ʕaDaar(at)* 'civilized, civilization' where /D/ split into /l & t/, *ʕirath(at)* 'cultivation, farming' where /l/ split from /r/, and *khuthra(t)* 'body culture, yeast' where /kh/ became /k/; *coy* from Ar. *ʕaya* 'shyness' (cf. *shy* below); *commend*, *recommend* from Ar. *ʕamad/madaʕ* 'praise' where /n/ split from /m/ (Jassem 2012b).

- d) /g/ as in *engrave*, *grave* from a reordered Ar. (*in*)*2afar* 'dig, engrave' or (*in*)*qarafa* 'of hard objects, to break'; *give*, *gift* from Ar. *2adha*, *2adhiat* 'give, gift' where /dh/ became /f/ or *jaab* 'bring' via lexical shift and the passage of /b/ into /v/; *graph* (*photography*, *paragraph*, *calligraphy*, *telegraph*), *graffiti* from Ar. *2arf* 'letter'; *holy* (Ger. *heilig*) from Ar. *Saali2* 'good, holy' (see i) below).
- e) /s/ as in *sorcery* from a reordered Ar. *si2ir* 'sorcery'; *obstinate* from Ar. *3aneed* 'obstinate' where /d/ became /t/.
- f) /sh/ as in *shy* from Ar. *ista2a*, *2ayi* '(to be) shy'; *witch/switch* from a reordered Ar. *fattaa2(at)* 'witch, open' where /f/ became/split into /w & s/.
- g) /h/ as in *hope* from Ar. *2ubb* 'love' via lexical shift; *behold* from Ar. *laa2aDh* 'look' via reordering and the change of /Dh/ to /d/; *hymn* from a reordered Ar. *la2n* 'song, melody' where /l & n/ merged into /n/ or /l/ became /m/.
- h) /z/ as in *zebra* from Ar. *2imaar(at)* 'donkey (f.)'.
- i) Ø as in *allow* from Ar. *a2alla*, *2alaal* 'allow, allowed'; *pause* from Ar. *2abas* 'pause, jail'; *rope/rape* from Ar. *2abl/2abal* 'cable/pregnancy' where /l/ passed into /r/; *itch* from Ar. *2akk(at)* 'itch' where /k/ passed into /ch/; *holy* from Ar. *Saali2* 'good, holy' where /S/ became /h/.

3.2 The Voiced Pharyngeal Fricative /3/

Arabic /3/ evolved irregularly into various closer sounds in English as follows:

- a) /g/ as in *grape* from Ar. *3inab* 'grape' where /n/ became /r/; *design* from a reordered Ar. *Sana3*, *taSnee3* (n) 'make' where *ta-* 'verb marker' changed to *de-* (Jassem 2013a) (cf. *sign* from a reordered Ar. *Sana3* 'make', a reversed *naqsh*, 'sign', *assign* from Ar. *aSna3* 'I work', *consign* from Ar. *sha2n* 'consign', and *resign* from Ar. *sakan/istakan* 'calm down'); *bought* (*buy*, *pay*) (see l) below); *malign*, *malignant*, *malignancy* from Ar. *mal3oon* 'cursed, disease(d)'; *benign*, *benignancy* from Ar. *na3eem*, *mun3im* 'good, positive, wealth' where /m/ became /b & n/.
- b) /k/ as in *cognition*, *cognitive*, *recognize*, *recognition*, *cognizance*, *incognito*, *know*, *knowledge*, *acknowledge*, etc. from Ar. *3aql* 'mind, brain, recognize' where /q & l/ changed to /g & n/ each; *know* 'sexual intercourse (Harper 2012)' from a reversed Ar. *n--k* 'f--k', a reordered *kahana/kaniha* 'know' where /h/ changed to /w/, or *aiqan* 'know for certain'; *likely* from Ar. *la3alla* 'perhaps'.

- c) /s/ as in *scorpion* from Ar. *3aqrab(un)* 'scorpion'; *scores* from Ar. *3asharat* 'ten(s)' (Jassem 2012a); *juris* (*jury*, *juror*) from Ar. *shar3* 'legislation' where /sh/ became /j/; *accelerate* from Ar. *asra3a*, *tasaara3a* 'accelerate' where /l/ split from /r/.
- d) /r/ as in *realm* from Ar. *3aalam* 'realm, world'; *routine* from Ar. *3aadat(an)* 'habit' where /d & t/ merged; *serpent* from Ar. *thu3ban(at)* 'serpent' where /th/ became /s/; *abroad* from Ar. *ab3ad*, *ba3eed* 'far(ther)'; *normal* (*normality*, *normalize*) from Ar. *na3eem* 'good, fine'; *ready* from Ar. *a3adda* 'get ready' (cf. *already* from Ar. *al3aadi* 'past').
- e) /v/ as in *over* from Ar. *3ala* 'on'; *severe*, *severity* from a reordered Ar. *3aseer*, *3usrat* (n) 'severe' (cf. *sever* from Ar. *za3ara* 'cut', *sha3ara* 'split', *zabar* 'cut', or *shafra* 'razor'; *verse*, *converse*, *versatility* from a reordered Ar. *shi3r* 'verse' or *kharras* 'talk-guess' where /kh/ became /v/; *vine* (*wine*) from Ar. *3inab* 'grapes' where /3 & b/ merged into /v/; *avian*, *avionics*, *aviation* from Ar. *3aSfoor* 'bird' where /3, S & f/ merged into /v/ while /r/ became /n/; *evil* 'bad, harm, crime (Harper 2012)' from Ar. *3illa(t)* 'bad, disease' and/or *Dhulm* 'injustice, harm' where /Dh & m/ merged into /v/; *envy* from a reordered Ar. *3ain* 'eye, envy'.
- f) /w/ as in *wood* from Ar. *3ood* 'stick, wood' or a reordered *daff* 'wood'; *twist* from Ar. *Ta3aj(at)/Ta3waj(at)* 'bend, twist' where /j/ changed to /s/; *aware(ness)*, *wary* from Ar. *a3rif/3aarif* 'I know' where /3 & f/ merged into /w/; *wine* (*vine*) from Ar. *3inab* 'grapes' where /3 & b/ merged into /w/; *swoon* from a reversed Ar. *nu3aas* 'sleepiness' (cf. *swine* in 3.3 c) below); *waive* from Ar. *3afa* 'exempt, waive'.
- g) /y/ as in *hurry* from Ar. *hara3* 'to hurry' or *haiyar*; *dally* from Ar. *dala3* 'dalliance'.
- h) /sh/ as in *shop* from a reversed Ar. *bai3* 'sell, buy' (cf. *sheep* from Ar. *kabsh* 'male sheep' v *ship* from Ar. *saba2* 'swim', *worship* and *bishop* from Ar. *sabba2* 'glorify God', and *shape* from Ar. *shabah* 'shape, likeness' (see Jassem 2012b).); *rush* from Ar. *saree3* where /3 & s/ merged.
- i) /n/ as in *insulate* (*isolate*) from Ar. *in3azal* 'insulate'; *antique* from Ar. *3ateeq* 'old' or a reversed *aqdam* 'older' where /d & m/ changed to /t & n/ each.
- j) /h/ as in *howl* from Ar. *3aweel* 'howl'; *helmet* from a reordered Ar. *al-3amamat* 'the-helmet'.
- k) /z/ as in *zigzag* from Ar. *3awaj*, *i3wijaaj* 'zigzag, bent'.
- l) Ø as in *odd*, *oddity*, *odds*, *oddness* from Ar. *3adoo*, *3adawat* 'enemy' and/or *wa2id*, *a2ad*, *aw2ad* 'one, single, odd' (Jassem 2012a); *odour* from Ar. *3uToor* 'perfumes'; *alt*, *elite*, *elate*, *elevate*, *aloof*, and derivatives from Ar. *3aal* (*3iliat/3uloo* (n), *ta3aala/ya3loo* (v)) 'high';

pay, buy (bought) from Ar. *baa3/bai3* 'sell' via lexical shift where /3/ also became /g/; *bead* (O.E. *gebedan* 'worship') from Ar. *3abada* 'worship' (Jassem 2012b); *inform, information, informant, informatics* from a reordered Ar. *ma3rifat* 'knowledge' via lexical shift and the change of /m/ to /n/.

3.3 The Voiceless Velar Fricative /kh/

Arabic /kh/ developed in an irregular way into various sounds in English as follows:

- a) /v/ as in *vapour, vapourization, vapourizer, evaporate, evaporation* from a reordered Ar. *bukhaar* 'vapour'; *serve, servant, service, servitude, servility, servile* from a reordered Ar. *sukhra(t)* 'work freely for' (cf. *observe* from Ar. *abSar* 'see'; *persevere* from Ar. *Sabara* 'to be patient'; *preserve, conserve* from a reordered Ar. *Sabara* 'preserve, embitter'; *reserve, reservoir* from a reversed Ar. *2irz* 'store, winning' or a reordered Ar. *khazan* 'store' where /n/ became /r/; *deserve* from Ar. *ti2riz* 'win, is worth' where /ti-/ became /de-/ (Jassem 2013a.)
- b) /f/ as in *fairy folk (tale)* from Ar. *khurafi* 'fairy, superstitious' where /kh/ merged into /f/, Ar. *khalq* 'people' (and Ar. *qaala(t)* 'tale' (see 3.7f below)); *felony* from Ar. *khiana(t)* 'felony' where /l/ split from /n/; *ferment* from a reordered Ar. *khamrat* 'alcohol' where /n/ split from /m/.
- c) *swine* from a reordered Ar. *khanzeer(at)* 'pig (swine)' where /z & n/ became /s & r/ each (cf. *swoon* in 3.2 f) above).
- d) /t/ as in *waste* from Ar. *wasakh* 'waste, dirt' (Cf. *west, waist* from Ar. *wasat* 'middle'; *tattoo* from Ar. *khaT(ooT)* 'line(s)').
- e) /gh/ as in *thigh* from Ar. *fakhdh* 'thigh' where /f/ merged into /th/.
- f) /ch/ as in *cheap* from a reversed Ar. *bakhs* 'cheap' where /kh & s/ merged; *chivalry (cavalry, cavalier)* from Ar. *khail, khuyool* 'horse(s)' where /w (oo)/ became /v/ and /r/ split from /l/; *charity* from Ar. *khair(aat)* 'good (things), charitable'; *teach (taught)* from a reversed Ar. *khaT* 'write, line'.
- g) /k/ as in *take* from a reversed Ar. *akhadh, khudh* 'take' where /th/ became /t/; *mistake* from Ar. *khaTa', mukhTi'* 'mistake, mistaken'; *sarcasm, sarcastic* from a reversed Ar. *sakhara, maskhara(t)* 'sarcasm'; *include, inclusion, inclusive, exclude, exclusion, exclusive, preclude, preclusion, seclude, seclusion, recluse, reclusive* from a reordered Ar. *dakhal, adkhal* 'enter'.

- h) /s/ as in *lose, loss* from a reversed Ar. *khasira* 'lose' where /r/ became /l/ or *Dalla* 'get lost' where /D/ became /s/. (Cf. *laze, lazy, lousy* from a reversed Ar. *kasal* 'lazy' where /k/ merged into /s/, *less* from Ar. *laisa* 'not' or *qaleel* 'less', and *lass* from Ar. *anisa(t)* 'lass' where /n/ became /l/); *express, expression, expressive* from a reversed Ar. *khobar, akhbara* 'news, tell' (cf. *Daily Express* from Ar. *Akhbaar Du2a* 'early morning news', *press me to* from a reordered Ar. *jabara ni* 'force me to' where /j/ became /s/ (Jassem 2012c-d), *press* (*repress, oppress, depress*) from a reordered Ar. *rabaS* 'press'.)
- i) /j/ as in *sage* from Ar. *sheikh* 'chief, sage' where /sh/ became /s/.
- j) /h/ as in *hollow* from Ar. *khuloo* 'hollow, empty'; *hoof* from Ar. *khuf* 'hoof'; *how* from Ar. *kaif* 'how' where /f/ became /w/ (cf. German *wie* where /k & f/ merged into /v/; French *que* where /f/ merged into /u/ or was dropped).
- k) /z/ as in *dizzy, dizziness* from Ar. *daakh, daayikh* 'dizzy'.
- l) Ø as in *awe, awful, awesome* from Ar. *khawf* 'fear' where /kh & f/ merged into /o/ or *awf* 'fear' where /f/ merged into /o/ (cf. *how* above).

3.4 The Voiced Velar Fricative /gh/

Arabic /gh/ irregularly changed to various like sounds in English as follows:

- a) /r/ as in *tyranny, tyrannical, tyrant* from Ar. *Tughyaan* 'tyranny'; *rinse* from a reordered Ar. *ghasal* 'wash' where /l/ turned into /n/; *war* from Ar. *wagha* 'war' or *2arb* 'war' where /b/ merged into /w/; *ram* from Ar. *ghanam* 'sheep' where /n & m/ merged.
- b) /g/ as in *gulp* from Ar. *ghabb* 'gulp' in which /l/ was inserted; *guilt(y)* from Ar. *ghalaT* 'guilt, error'; *regret* from Ar. *ghalaT* 'mistake' where /l/ became /r/ via semantic shift; *graph* from Ar. *2arf* 'letter' (cf. e) below); *forgive* from a reordered Ar. *ghafar* 'forgive' where /f/ split into /f & v/.
- c) /s/ as in *spite, despite* from a reordered Ar. *ghaSeeb(at)* 'take by force' where /gh & S/ merged or *bughD* 'hate' where /D/ became /t/ (cf. *respite* from Ar. *subaat* 'stillness'); *upset* from a reordered Ar. *ghaDab* 'anger', *3aSSab* 'nervous' or *3abas* 'frown'.
- d) /z/ as in *bizarre* from a reordered Ar. *ghareeb* 'strange'.
- e) /k/ as in *crave, craving* from Ar. *raghiba* 'desire' (cf. *carve/curve* from Ar. *2afar/2arf* 'carve/curve' (3.1c above); *tycoon* from Ar. *Taaghooon* 'tyrants' (cf. a) above).
- f) /h/ as in *hare* from Ar. *ghurairi* 'kind of wolf' or *hirr* 'cat'.

- g) /v/ as in *value, valuable, evaluate, evaluation* from Ar. *ghali* 'valuable' or *maal* 'value, money' where /m/ became /v/.
- h) /w/ as in *wrist* from a reversed Ar. *rusgh* 'wrist'.

3.5 The Glottal Fricative /h/

Arabic /h/ developed into various sounds irregularly in English as follows:

- a) /r/ as in *river, rivulet, Rivera, ravine* from Ar. *nahr* 'river' where /n/ became /r/; *eventually, eventuality* from a reordered Ar. *nihaiat, intaha* 'end' (cf. *event* from Ar. *2aalat, i2nat; even so* from Ar. *wa'in* 'even so', *eve, evening*: from Ar. *lail* 'night' where /l/ changed to /v & n/.)
- b) /k/ as in *escape, scapegoat* from Ar. *dhahaba* 'go' where /dh/ became /s/; *dedicate, dedication* from a reordered Ar. *ahda, tahaada* 'give each other, dedicate' (Jassem 2012f).
- c) /g/ as in *king* from a reordered Ar. *kaahin* 'priest' via lexical shift.
- d) /s/ as in *this, that, these, those, thus* (*deixis, deictics, indicate, indication, index, indices*) from Ar. *dha, dhih* or *tih* 'this' (Jassem 2012c).
- e) /z/ as in *blaze* from a reordered Ar. *lahab* 'blaze' or *shalhoob* 'blaze' where /sh & h/ merged into /z/.
- f) /w/ as in *wear* from Ar. *hara, ihtara* 'wear' (cf. *wear* and *tear* from Ar. *hara am Tarr/farr* 'wear and tear'; *wave* from Ar. *hawa* 'air'); *award* from Ar. *ahda* 'give', *a3Ta, 3aTwat* 'give' or *awrada* 'give'; *woo* from Ar. *hawa* 'love, desire'.
- g) /p/ as in *pyramid* from Ar. *haram, ihramat* (pl.) 'pyramid'.
- h) /f/ as in *future* from a reordered Ar. *dahr* 'time' where /d/ became /t/ or *baakir/bukrat* (*baachir*) 'tomorrow' where /b/ passed into /f/; *facile, facilitate, facility, difficulty* from a reordered Ar. *sahl, suhoolat* 'easy, ease'.
- i) /h/ as in *Hallelujah* in 1) above; *here* from Ar. *huna* 'here' where /r/ changed to /n/; *he, him, (hyo/hi* 'she in O.E.') from Ar. *huwa/hiya* 'he/she' (Jassem 2012d); *wave* from Ar. *hawa(a')* 'air' where /w/ became /v/.
- j) Ø as in *cave, cavity, excavate* from Ar. *kahf* (cave); *elope* from Ar. *harab, huroob* (n) 'run away'.

3.6 The Glottal Stop //

Arabic /ʔ/ changed to several sounds in English irregularly as follows.

- a) /w/ as in *whine* from Ar. 'anna 'whine'; *whiz* from Ar. 'azza 'whiz'; *wish* from a reversed Ar. *shaa'*, *mashi'a(t)* (n) 'wish' (cf. *wash* from Ar. *maaS* 'wash' where /m & S became /w & sh/ each); *where* from Ar. 'aina 'where' where /n/ became /r/; *when* from Ar. 'aiyana 'when?' and /or *2eena* 'when' where /2/ changed to /w/; *which* from Ar. 'aish 'what?'; *why* from Ar. 'ai 'which?' via lexical shift.
- b) /v/ as in *review* from Ar. *ra'a*, *ru'ia(t)*, *ru'a* (n) (see, vision).
- c) /h/ as in *habit*, *habitual* from a reordered Ar. 'adab 'politeness, habit' where /d/ changed to /t/ (cf. *inhabit*, *inhabitant*, *inhabitanace*, *inhabitation* from Ar. *bait*, 'abeet 'house, I stay'); *heritage*, *hereditary*, *inherit*, *inheritance*, *heir*, *heirdom* from Ar. 'irth, *wirthat* 'inheritance' where /th/ became /t/.
- d) /s/ as in *Zeus*, *Deus*, *deity*, *divine*, etc. from Ar. *Dau'* (light) (Jassem 2012b).
- e) Ø as in *Emily*, *Amelia* from Ar. 'amal 'hope'; *Mandy*, *Amanda* from Ar. 'aamina(t) 'honest' where /t/ became /d/; *real*, *reality*, *realize* from Ar. *ra'a*, *ru'ya(t)* 'see, vision'; *Hereafter* from Ar. 'aakhirat 'hereafter' where /t/ split into /f & t/ with /r/ being an insertion; *human*, *humanity* from a reordered Ar. 'anaam 'humans'; *ya* from Ar. 'ai 'ya, yes'; *hello (hail)* from Ar. 'ahla, *halla* 'hello, welcome'; *Adam (democracy)* from Ar. 'aadam, 'awaadim (pl.) 'man, men/people'; *Academy* from a reordered Ar. 'akamat 'grove, trees' where /t/ became /d/.

3.7 The Voiceless Uvular Stop /q/

Arabic /q/ evolved irregularly into the following sounds in English:

- a) /g/ as in *grind*, *ground* from Ar. *qaraT*, *inqaraT* 'grind' or *qarmaT* 'grind'; *segment* from a reordered Ar. *qism(at)* 'segment'; *fragment* from Ar. *farq*, *farraq* (v) 'fragment, division' (cf. b) & k) below); *generation* from Ar. *qarn* 'generation, century, horn' (cf. b) below); *regurgitate* from Ar. *qarqaT* 'of animals, to eat' where /l/ passed into /r/; *religion* from a reordered Ar. *qara'a*, *qur'aan* 'read, reading (Quran)' where /r/ passed into /l/ (for detail, see Jassem 2012b).
- b) /k/ as in *call* from Ar. *qaal* 'say, call' (cf. *recall*, *recollect* from Ar. *3aql* 'mind' where /3 & q/ merged into /k/); *crown*, *coronation*, *coroner*; *crane*; *cranium*; *chronology* from Ar. *qarn*, *quroon* (pl.) 'horn'; *core* from Ar. *qa3r* 'bottom, core' where /3/ was lost; *fork*, *bifurcate* from Ar. *farq*, *tafarraq* 'division, divide, bifurcate'; *trick* from Ar. *tareeq(at)* 'track, plan' (cf. *track*, *trek*, *truck* from Ar. *Tareeq* 'road'.)

- c) /q/ as in *acquit(tal)* from Ar. *a3taqa* 'acquit, set free'; *acquire*, *acquisition* from Ar. *qana/aqna* 'gain' where /n/ became /r/; *quarter*, *quadrant* from Ar. *qeeraaT* '1/4, a cut' (Jassem 2012a).
- d) /r/ as in *pre-*, *prior*, *priority* from a reordered Ar. *qabl* 'before' into which /l/ merged.
- e) /s/ as in *size* from Ar. *qias* 'size' (cf. *seize*, *seizure*, *crazy* from a reversed/reordered Ar. *raseesa(t)* 'madness fit' where /s/ became /k/; *incise*, *scissors*, *incision* from Ar. *qaSS* 'cut' or *2azz/jazz* 'incise, cut' where /2 & j/ became /s/); (*sun*) *rise* from a reordered Ar. *shurooq* 'rise' where /sh & q/ merged into /s/ or a reversed *Dhahara* 'rise' where /Dh & h/ merged into /s/, which is more likely because of similarity to *rose* 'flower' from a reversed Ar. *zahra* 'flower' where /h/ was dropped.
- f) /t/ as in *tell/tale* from Arabic *qaal(at)* 'say, tale'; (*sun*) *set* from Ar. *suqooT*; *tube* from Arabic *qaSab* 'tube, reed' where /q & S/ merged into /t/; *tribe*, *attribute to* from a reordered Ar. *qabeela(t)* 'tribe' or *qaraaba(t)* 'relationship, nearness'; *rate*, *ratio* from a reversed Ar. *qadr* 'rate' where /q & d/ merged into /t/ (cf. *root* & *rat* from reversed Ar. *jathr* 'root' & *jurth* 'rat' where /j & th/ merged into /t/; *write* & *rite* from Ar. *qira'at* 'reading' via lexical shift where /q/ became /w/ in the former while it merged with /r/ in the latter.)
- g) /w/ as in *water* from Ar. *qaTr* 'water, rain'; *write*, *playwright* from Ar. *qira'at* 'reading' (cf. *word* and Ger. *Wort*.)
- h) /d/ as in *dirt(y)* from a reordered Ar. *qadhar* 'dirt' where /dh/ became /t/; *doomsday* from Ar. *qiamat* 'doomsday'.
- i) /tsh/ as in *approach*, *rapprochement*, *approximate*, *proximity*, etc. from a reversed Ar. *qareeb*, *aqrab*, *muqtarib* 'near, nearer, nearing' (cf. *attribute*, *tribe* from Ar. *qaraabat* or *qabeela(t)* 'nearness, tribe' in f) above.)
- j) /h/ as in *horn* from Ar. *qarn*, *quroon* (pl.) 'horn' (cf. *crown* above).
- k) /j/ as in *verge*, *converge*, *convergence*, *diverge*, *divergence*, *divorce*, *diverse*, *diversity* from Ar. *farraq*, *tafarraq* 'divide' and/or *furja* 'gap' where /q/ became /s/ also (cf. *fragment* and *fork* in a & b) above).
- l) /sh/ as in *ancient* from a reordered Ar. *qadeem(at)*, *aqdam* 'ancient' where /m/ became /n/; *punish*, *penal*, *penalty*, *punitive* from a reordered Ar. *3aaqab*, *mu3aaqab(at)* 'punish(ment)' where /3/ became /n/.

- m) /y/ as in *yet* from Ar. *qaTT* 'not'; *lay* from Ar. *alqa* 'lay down' or *laqa2a* 'lay'; *you, your, yours* (O.E. *ge, she*, Ger. *Sie/sie*) from Ar. *iaka/ka* 'you' where /k/ changed to /g/ and then to /sh (s) & y/ (Jassem 2012d).
- n) /Ø, gh/ as in *neigh* from Ar. *na3aq* 'animal's sound', *nahaq* 'donkey's sound', or *nagh* 'baby's sound'; *sigh* from Ar. *shahaq* 'sigh, exhale, choke' where /sh & h/ merged into /s/.
- o) /v/ as in *poor, poverty, impoverish* from Ar. *faqeer* 'poor' where /f/ became /p/.

3.8 The Velar Stop /k/

Arabic /k/ underwent irregular sound changes in English as follows:

- a) /tsh/ as in *church* from Ar. *kanees(at)* 'church' where /n/ changed to /r/ (see f) below); *bachelor* from Ar. *bikr* 'bachelor, virgin' where /l/ split from /r/; *chew* from Ar. *akal* 'eat' where /l/ passed into /w/ as in London's Cockney.
- b) /sk/ as in *script, scripture, scribe, scribble, inscribe, describe, prescribe, proscribe, subscribe*, etc. from Ar. *katab* 'write' (Ger. *schreiben*) (see h) below).
- c) /z/ as in *zone* from Ar. *kawn* 'world'; *lazy, laze, lousy* from a reversed Ar. *kasool* 'lazy' where /k & s/ merged into /z/ (cf. *lose* from Ar. *khasira* 'lose' where /kh & s/ merged and /r/ became /l/, *lass* from Ar. *nisa* 'woman' where /n/ became /l/, *less* from Ar. *laisa* 'not' and/or *qal(eel)* 'less', and *louse, lice* from a reversed Ar. *qaml* 'lice' where /k & s/ merged into /s/ while /m/ into /l/.)
- d) /t/ as in *term, terminology, determine* from Ar. *kalim(at), takallam* 'word, talk'; *style, stylist* from Ar. *shakl* 'form, style' where /sh/ became /s/.
- e) /sh/ as in *share* from Ar. *shaarak* 'share'; *machine, machinery, machination* from Ar. *makr* 'plot' (and *maSna3* 'machinery, factory' where /3/ became /r/ (cf. *design* in 3.2a above).
- f) /k/ as in *book/copy* from a reversed Ar. *kitaab, kutub* (pl.) 'book' where /t/ was lost; *duck* from Ar. *deek, duyook* (pl.) 'rooster' or a reduced *dajaaj* 'chicken' where /j/ became /k/; *monarch* from Ar. *malik* 'king' where /l/ split into /n & r/; *ecclesiastical* and *kirk* from Ar. *kaneesat* 'church' where /n/ became /l/ in the former but /r/ in the latter in which /s/ became /k/ also (see a) above); *extra* from Ar. *akthar* 'more' where /th/ became /t/ (cf. *et cetera* below).
- g) /g/ as in *grip* from Ar. *karaba* 'tighten' or *kallab* 'grip'; *gyrate, gyration* from Ar. *karra(t), kura, kawwar* 'roll, ball'.

- h) /h/ as in *hyper* from Ar. *kabeer* 'big'; *hepat(itis)* from Ar. *kabd* 'liver' where /d/ changed to /t/; *abhor*, *abhorrence* from Ar. *akrah* (v), *kurh* (n) '(I) hate' where /k & h/ merged.
- i) /s/ as in *superiority*; *supreme*, *supremacy* (cf. *hyper*, *hypo* above); *exacerbate*, *exacerbation* from Ar. *kabeer* 'big' (Jassem 2012b); *bless* from Ar. *baarak* 'bless' where /r/ became /l/ (Jassem 2012b); *slam* from a reordered Ar. *lakam* 'hit, slam'; *bless* from Ar. *baarak* 'bless' where /r/ changed to /l/; *suffice*, *sufficient*, *sufficiency*, (*deficiency*, *deficient*, *efficiency*, *efficient*, *proficient*, *proficiency*) from Ar. *kafa*, *kifayat* (n) 'enough, suffice'; *et cetera* from Ar. *katheer(a)* 'many' where /th/ became /t/ (cf. *extra* in f) above); *is/was* (Ger. *sein/ist/gewesen*; Fr. *sui/soi/es*, etc.) from Ar. *kaan/kawan* 'was/be' (Jassem 2012e) where /n/ was dropped.

In summary, although most of the above Arabic back consonants have disappeared in English, German, French, Latin, and Greek, they all, it can be clearly seen, have cognates, which reflect changes in place, manner, and/or voice. For example, if one takes /k/ as an illustrative case, one finds that its cognates underwent voicing change like /g & z/, manner change from stop to affricate/fricative like /ch, sh, s, h/, and place change from velar to alveolar like /t/. Statistically speaking, the percentage of shared vocabulary is 100% as there is no exemplary word without a cognate.

4. Discussion

The above description has shown that Arabic shares the same or similar forms for most consonant phonemes as those of English, German, French, Latin, and Greek. However, some sounds are different and/or unique to Arabic: namely, the emphatic consonants /T, D, S, & Dh/, the velar fricatives /kh & gh/, the uvular stop /q/, the glottal stop and fricative /' & h/, and the pharyngeals /2 & 3/, generally called back consonants. Of all, /2, 3, & q/ are unique to Arabic whilst all the rest occur in varying degrees in the other languages.

All the phonemes have undergone different kinds of change within and across languages, reflecting place, manner, and voice modifications (see 3.8 above). As to the changes affecting common vowels and consonants which are shared amongst the above languages, they are not unlike those that occur in all world languages because of the operation of universal sound processes in this respect such as palatalization, spirantization, assimilation, dissimilation, merger, deletion, resyllabification, and so on (e.g., Campbell 2004: 16-52; Pyles and Algeo 1993: 35-39; Kreidler 2006: 242-265; Roach 2008: 110-116; Celce-Murcia et al 2010: 164-184). However, some of the common sound changes in European languages were more advanced than those in Arabic. For example, while the consonant /k/ has four variants in Arabic- namely, /ch, ts, sh/ as in /kaan, chaan, tsaan, shaan/ 'was' (e.g., Jassem 1993, 1994a-b), it further turned in European languages into (a) /h/ as in *hepat-* from Arabic *kabd* 'liver' and (b) /t/ as in *term* from Arabic *kalim(at)* 'word' (3.8 above). The same happened with /q/ which alternates with /gh, k, g, j, dz, &

/ʃ/ as in *qiddaam* (*ghiddaam, giddaam, kiddaam, 'iddaam, jiddaam, dziddaam*) 'in front of' (Jassem 1993, 1994a-b) besides /t, s, ch, & h/ in European languages as in *crown, horn, siren* from Arabic *qarn* (*karn, garn, gharn, 'arn*) 'horn' (3.7 above).

As to the unique Arabic sounds, the pharyngeals /ʕ & ʁ/ and the velar fricatives /kh & gh/ have remained intact and stable over the ages in Arabic but have totally disappeared in English and European languages, especially the former. However, they were all replaced by similar consonants such as /v, w, k, g/ (see 3.1-4 above). Of all the consonants in English, German, French and Latin, /v/ is unique because it is lacking in Arabic, on the one hand, and it replaced nearly all of the pharyngeals and velar fricatives in a great many cases, on the other (see 3.1-4 above). It also replaced other common consonants such as:

- i) /w/ as in *vowel* from a reversed Arabic *al-waw* 'the-(letter)-oo/w', *vow* (*avow, avowal, avowedly*) from Arabic *wa* 'vow, and' and (*aiwa* 'yes, avow');
- ii) /b/ as in *valve* from a reordered Arabic *al-baab* 'the-door'; *intervene, intervention* from Arabic *baina* 'between' (cf. *vent* from a reordered Arabic *nafadha* 'penetrate, outlet'); *seven(th)* from Arabic *sab3(at)* 'seven' in which /ʕ/ was deleted or became /n/ (Jassem 2012a);
- iii) /m/ as in *value* from Arabic *maal* 'money, price' or *ghaali* 'expensive';
- iv) /f/ as in *vent, invent, prevent, advent, adventure* from a reordered Arabic *nafadha* 'penetrate, outlet, window' where /dh/ became /t/; *void* from Arabic *faaDee, faDaa'* 'void, empty' (cf. *avoid* from Arabic *2aiyad*; *vice* from Arabic *fu2sh* 'vice' where /ʕ & sh/ merged into /s/ or *waSee* 'vice-' (cf. *voice* from Ar. *2is* 'voice'); *invite, invitation* (Fr. *invité* 'guest') from a reversed Ar. *Daif* 'guest' where /D/ became /t/;
- v) /th/ as in *even (number)* from Ar. *thaani* 'two, second' (Jassem 2012a); *heave* from Ar. *lahatha* 'breathe in and out' where /l & th/ merged into /v/;
- vi) /dh & Dh/ as in *villain(y)* 'lowly, cruel, farmhand (Harper 2012)' from a reordered Ar. *nadh1* 'lowly', *Dhaalim* 'unjust', and/or *fallaa2* 'farmer' where /ʕ & f/ merged into /v/; and
- vii) /D & Dh/ as in *vibrate, vibration* from Ar. *Darab, Darbat* 'strike'; *oval, ovulation, ovule* from Ar. *baiD(at)* 'egg, ova' where /b & D/ merged (cf. *ovation* from Ar. *2aiya, ta2iyat* 'greeting' and *vital* from Ar. *2ayat* 'life' in 3.1a above); *move, movement* from Ar. *maDa* 'move, went'; *evil* from Ar. *Dhulm* 'injustice' where /m/ merged into /l/ (3.2e above).

The different forms of the cognate phonemes are due to the operation of different courses of sound change in such languages. For example, /k/ developed differently in different Arabic accents and so did /q/ as the above examples clearly show. The same phonemes underwent

further divergent changes in English, German, French, Russian, Latin, and Greek, for example, the different forms for *five*, *seven*, *quarter* 'four(th)', all of which derive from true Arabic cognates (for further details, see Jassem 2012a).

At least some of the sound changes in English, German, French, and Latin emanated as a result of convergence, where two or more formally similar Arabic phonemes or words have led to a particular case- a recurrent phenomenon in all Jassem's studies (2012a-f, 2013a-b). For example, /v/ in a great many cases might have arisen from two or more formally similar phonemes such as /w/ in *vowel* from a reversed Arabic *al-waw* 'the-(letter)-oo/w' and/or /ʒ/ in *ʒilla(t)* 'vowel, illness'; /m/ in *value* from Arabic *maal* 'money, price' and/or /gh/ in *ghaale* 'expensive, dear'; similarly, *incline* may derive from a reordered Arabic *inʒana* 'bend' in which /ʒ/ became /k/ with /l/ being an insertion or a split from /n/ or from *nazal* 'go down' in which /z/ became /k/ (3.1 above).

Vocalic changes usually accompany consonantal ones but they are simpler, more predictable, and so non-consequential. For example, in *incline* above, identifying the meaning(s) of the word and its consonantal changes are sufficient. In fact, vocalic analysis will simply complicate matters for no obvious purpose. Therefore, vocalic changes can be ignored without negatively impacting the end result of the analysis in any way. This has so far been the practice in Jassem (2012a-f, 2013a-b).

The above sound changes resulted in processes like assimilation, dissimilation, palatalization, spirantization, deletion, merger, insertion, split, syllable loss, resyllabification, consonant cluster reduction or creation and so on. The results (3.1-8) have a plenty of such examples.

The above results also show that sound change proceeds in three different courses (Jassem 2012a-f, 2013a-b). First, it may be multi-directional where a particular sound may change in different directions in different languages at the same time. In fact, all the back consonants are multi-directional in nature where each has several forms (see 3.1-8 above). For example, Arabic *qarn* 'horn, century' is *crown* (*coroner*, *coronation*), *horn*, *siren* in English, French, Latin and so on; Arabic *qaal* 'say' is *call*, *tell/tale* in English; Arabic *qeeraaT* 'a quarter' is *quarter*, *quatre*, *chatteere* 'four' in English, French/Latin, and Russian (Jassem 2012a). This happens even within the same language such as the different pronunciations of the above voiceless uvular stop /q/ in Arabic varieties themselves (Jassem 1993, 1994a, 1994b), /k/ in English as in *kirk*, *ecclesiastical* v. *church* from Arabic *kanees(at)* (3.8 above), or /th/ as in *three* v. *tree*, *free* from Arabic *thalaath/thilth* 'three/third' (Jassem 2012a). Secondly, it may be cyclic where more than one process may be involved in any given case. In *kirk* above, the changes include (i) turning /n/ into /r/, (ii) /s/ into /k/, (iii) vowel deletion, (iv) syllable reduction, and (v) consonant clustering; in *church*, turning /k/ into /ch/ and /ee/ into /ə:r (ur)/ were added. In fact, the differences between Arabic, English, German, French, and Latin words (e.g., *vita*, *vitality*, *survive*, *revive*, *viva* in 3.1

above) are the result of the cyclic operation of sound change (see Jassem 2012b). Finally, it may be lexical where words may be affected by the change in different ways- a process known as lexical diffusion (see Jassem 1993, 1994a, 1994b for a survey). That is, a particular sound change may operate in some words, may vary in others, and may not operate at all in some others. For example, the different words or forms for Arabic *kaneesat* 'church' in English, where /k/ varies with /ch/ in *church* and /k/ in *kirk* and *ecclesiastical* is a case in point; other examples are *book/copy*, *scribe* (German *schreiben* 'write') from Arabic *katab* 'write'; *horn*, *siren*, *crown* from Arabic *qarn* 'horn'. The different realizations of Arabic phonemes in English and European languages are all of this kind here.

All the changes above exhibit naturalness and plausibility; for example, the change of /k/, a voiceless velar stop (e.g., *kirk*), to /ch/, a voiceless palatal affricate (e.g., *church*), is more natural than to /s/, a voiceless alveolar fricative, as the first two are closer by place and manner (cf. Jassem 2012b); the last is plausible. Likewise, the change of *qaal* 'say' to *call* is natural while to *tell*, *tale* is plausible; the change of Arabic *qarn* to *crown* and *horn* is natural while to *siren* is plausible. (For further detail, see Jassem (2012a-f, 2013a-b).)

Thus the above results agree with Jassem's (2012a) investigation of numeral words, common religious terms (Jassem 2012b), pronouns (Jassem 2012c), determiners (Jassem 2012d), verb *to be* forms (Jassem 2012e), inflectional 'gender and plurality' markers (2012f), derivational morphemes or affixes(2013a), and negative particles (2013b) in English, German, French, Latin, Greek, and Arabic which were found not only to be genetically related but also rather dialects of the same language. In all, the percentage of shared vocabulary or forms between Arabic and English, for instance, was 100%, which means that they belong to the same language (i.e., dialects), according to Cowley's (1997: 172-173) classification. In short, the lexical root theory is as adequate for the analysis of the present case as it has been for all the previous ones.

To sum up, all the foregoing phonemes and words in Arabic, English, German, French, and Latin are true cognates in the sense of having similar forms and meanings where Arabic can be safely said to be their origin all. Jassem (2012a-f, 2013a-b) offered some equally valid reasons for that to which the curious reader can refer. One such reason is the phonetic complexity, multiplicity and variety of Arabic 'back' consonants as opposed to the simplicity of English, German, French, and Latin ones in which the lower back part of the mouth or throat lies idle, phonetically speaking. Owing to their complexity, variety, and multiplicity, Arabic phonemes are, therefore, the real or original cognates from which English, German, French, and Latin forms stemmed.

6. Conclusion and Recommendations

The different back phonemes in English, German, French, Latin, Greek, and Arabic are true cognates, some of which change form according to phonological, morphological and/or

lexical factors or conditions (Jassem 2013a, forthcoming). The main ideas of this paper can be summarized as follows.

- i) Arabic has a more complex and varied consonantal system than English, German, French, Latin, and Greek which have simpler systems in lacking the pharyngeals /2 & 3/, the uvular and glottal stops /q & ʔ/, the emphatics /T, D, S, & Dh/, and, to a lesser extent, the velar (and glottal) fricatives /kh, gh (& h)/. However, all have been replaced by closer consonants which are alike in place, manner, and/or voice (see 3.1-8).
- ii) The unique consonant /v/ in English, German, French, and Latin has developed from Arabic back consonants, especially /2, 3, kh & gh/ besides others like /w, b, m, f, th, dh, D, Dh/ (3.1-4, 5. above).
- iii) The changes affecting Arabic sounds in English, German, French, and Latin are more advanced than those in Arabic as is the case with /q/ and /k/ which passed into /t & h/, amongst others (3.7-8 above).
- iv) The changes were multi-directional, cyclic, and lexically diffuse in nature; all were also natural and plausible also.
- v) Convergence was a common source of English phonemes where two or more similar Arabic sounds led to a new one as the above results and discussion show (3.1-8 above).
- vi) Vocalic changes do accompany consonantal changes but these are simpler, more limited in nature and often non-consequential. The three basic vowels /aa, oo, & ee/ swap qualities amongst one another in a limited way such as raising v. lowering, backing v. fronting, and shortening v. lengthening. Moreover, while the root consonants carry word basic meanings, the function of vowels is mostly grammatical such as tense markers and phonetic such as linking consonants. Therefore, they can be ignored in relating words to each other. Once the meaning of the case/word has been ascertained and its consonantal changes identified, the vowels are done by default.

In conclusion, the lexical root theory has proven over and over again its applicability to and adequacy for the analysis of the close genetic relationships between Arabic, English, German, French, Latin, and Greek phonemes. The absence of back consonantal phonemes, especially the pharyngeals /2 & 3/, and their evolution into simpler forms in European tongues points to their Arabic origin in essence. To consolidate these findings, further research is required into especially the pharyngeals to determine whether there are any linguistic conditions or factors governing their different realizations in English and (Indo-)European languages. In fact, all other language levels need research. Moreover, the application of such findings to language teaching, lexicology and lexicography, translation, cultural (including anthropological and

historical) awareness, understanding, and heritage (Jassem 2012a-f, 2013a-b) is badly needed. This research opens up interestingly endless and extremely useful windows and grounds, whose results will hopefully bring down world barriers and prejudices of all kinds where language learning and cultural adaptation will eventually seem alluring and easier a great deal.

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