The Arabic Origins of "Celestial and Terrestrial" Terms in English, German, and French: A Lexical Root Theory Approach

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Abstract: This paper examines the Arabic origins or cognates of celestial (sky) and terrestrial (earth) terms in English, German, French, Latin, and Greek, using a lexical root theory approach. The data consists of about 60 celestial and 120 terrestrial words. The results show that all such words in Arabic and English, for example, are true cognates with the same or similar forms and meanings, which means they belong not only to the same family but also to the same language, contrary to traditional comparative historical linguistics method claims. The different forms amongst such words are shown to be due to natural and plausible causes of phonetic, morphological and semantic change. For example, Latin and Greek terra, French terre, English earth, and German Erde, and Arabic arD (also thara) 'earth (dust)' are identical cognates via reversal and turning /D or th/ into /t or d/. Similarly, English acme, summit 'top' come from Arabic qimma(t) 'top' where /q/ became /k (s)/. Owing to their huge lexical variety and multiplicity besides phonetic complexity, Arabic words are the original source from which they emanated. This proves the adequacy of the lexical root theory according to which Arabic, English, German, French, Latin, and Greek are dialects of the same language with the first being the origin.

Keywords: Celestial, terrestrial terms, Arabic, English, German, French, Latin, Greek, historical linguistics, lexical root theory

1. Introduction

Investigating the genetic relationship between Arabic, English, German, French, Latin, Greek and Sanskrit has been conducted and firmly established in Jassem (2012a-f, 2013a-e). In his first study, Jassem (2012a) showed that numeral words from *one* to *trillion* in Arabic, English, German, French, Latin, Greek and Sanskrit share the same or similar forms and meanings in general, forming true cognates with Arabic as their end origin. For example, *three (third, thirty, trio, tri, tertiary, trinity, Trinitarian)* derives from a 'reduced' Arabic *thalaath* (*talaat* in Damascus Arabic (Jassem 1993, 1994a-b)) 'three' through the change of /th & l/ to /t & r/ each. This led to the rejection of the claims of the comparative 'historical linguistics' method which classifies Arabic and English, German, French, and so on as members of 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). Therefore, he proposed the lexical root theory to account for the genetic relationships between Arabic and English, in particular, and all (Indo-)European languages in general for three main reasons: namely, (a) geographical continuity and/or proximity between their homelands, (b) persistent cultural interaction and similarity between their peoples over the ages, and, above all, (c) linguistic similarity between Arabic and such languages (see Jassem 2013b for further detail).

His subsequent research gave a decisive and clear-cut linguistic evidence. Jassem (2012b) traced the Arabic origins of common contextualized biblical or religious terms such as *Hallelujah, Christianity, Judaism, worship, bead,* and so on. For instance, *hallelujah* resulted from a reversal and reduction of the Arabic phrase *la ilaha illa Allah* '(There's) no god but Allah (God)'. That is, *Halle* is *Allah* in reverse, *lu* and *la* (pronounced *lo* also) are the same, *jah* is a shortening of both *ilaaha* 'god' and *illa* 'except' which sound almost the same. Jassem (2012c) found that personal pronouns in Arabic, English, German, French, Latin and Greek form true cognates, which descend from Arabic directly. For example, *you* (*ge* in Old English; *Sie* in German) all come from Arabic *iaka* 'you' where /k/ changed to /g (& s)/ and then to /y/; Old English *thine* derives from Arabic *anta* 'you' via reversal and the change of /t/ to /th/ whereas *thou* and *thee*, French *tu*, and German *du* come from the affixed form of the same Arabic pronoun *-ta* 'you'. Jassem (2012d) examined determiners such as *the, this, an, both, all* in English, German, French, and Latin which were all found to have identical Arabic cognates. For instance, *the/this* derive from Arabic *tha/thih* 'this' where /h/ became /s/. Jassem (2012e) established the Arabic origins of verb *to be* forms in all such languages. For example, *is/was* (Old English *wesan* 'be'; German *sein*; French *etre, es, suis*) descend from Arabic *kawana* (*kaana*) 'be' where /k/ became /s/. Jassem (2012f) showed that inflectional 'plural and gender' markers as in *ox<u>en</u>, girl<u>s</u>, Paula, Charl<u>otte</u>* formed true cognates in all. Similarly, Jassem (2013a) demonstrated the Arabic origins of English, German, and French derivational morphemes as in *ac<u>tivity</u>, ac<u>tivate</u>, <u>de</u>termine, whiten*, whose identical Arabic cognates are *ta* (e.g., *salaamat(i)* 'safety', *takallam* 'talk') and *an* (e.g., *wardan* 'bloom'). Jassem (2013b) dealt with the Arabic origins of negative particles and words like *in-/no*, *-less,* and *-mal* in English, French and so on. Jassem (2013c) outlined the English, German, and French cognates of Arabic back consonants such as /k/ in *church, kirk, ecclesiastical*, which all come from Arabic *kanees(at)* where /k & n/ became /ch & r (l)/ each. Jassem (2013d) described the Arabic cognates and origins of English, German, and French *water* and *sea* terms like *water, hydro, aqua, sea, ocean, ship, navy*, all of which derive from Arabic sources. Finally, Jassem (2013e) traced back the Arabic origins of *air* and *fire* terms in English and such languages.

In all the above studies, the lexical root theory was used as a theoretical framework, which is so called because of employing the lexical (consonantal) root in examining genetic relationships between words like the derivation of *overwritten* from *write* (or simply *wrt*). The

main reason for that is because the consonantal root carries and determines the basic meaning of the word regardless of its affixation such as <u>*overwrite, writing*</u>. Historically speaking, classical Arabic dictionaries (e.g., Ibn Manzoor 1974, 2013) used consonantal roots in listing lexical entries, a practice first founded by Alkhaleel bin Ahmad Alfaraheedi (Jassem 2012e).

Simple in structure, the lexical root theory comprises a theoretical construct, hypothesis or principle and five practical procedures of analysis. The principle states that Arabic and English as well as the so-called 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, whose differences are due to natural and plausible causes of linguistic change. The applied procedures of analysis are (i) methodological, (ii) lexicological, (iii) linguistic, (iv) relational, and (v) comparative/historical. As all have been reasonably described in the above studies (Jassem 2012a-f, 2013a-e), a brief summary will suffice here.

First, the methodological procedure concerns data collection, selection, and statistical analysis. Apart from loan words, all language words, affixes, and phonemes are amenable to investigation, and not only the core vocabulary as is the common practice in the field (Crystal 2010; Pyles and Algeo 1993: 76-77; Crowley 1997: 88-90, 175-178). However, data selection is practically inevitable for which the most appropriate way would be to use semantic fields such as the present and the above topics. Cumulative evidence from such findings will aid in formulating rules and laws of language change at a later stage (cf. Jassem 2012f, 2013a-e). The statistical analysis employs the percentage formula (see 2.2 below).

Secondly, the lexicological procedure is the initial 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 as a guide (e.g., Harper 2012), to be used with discretion, though.

Thirdly, the linguistic procedure handles the analysis of the phonetic, morphological, grammatical and semantic structure and differences between words. The phonetic analysis examines sound changes within and across categories. In particular, consonants may change their place and manner of articulation as well as voicing. At the level of place, bilabial consonants ↔ labio-dental ↔ dental ↔ alveolar ↔ palatal ↔ velar ↔ uvular ↔ pharyngeal ↔ glottal (where ↔ signals change in both directions); at the level of manner, stops ↔ fricatives ↔ affricates ↔ nasals ↔ laterals ↔ approximants; and at the level of voice, 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 limited nature of the changes do not affect the final semantic result at all. In fact, the functions of vowels are phonetic like linking consonants to each other in speech and grammatical such as indicating tense, word class, and number (e.g., *sing, sang, sung, song*; *man/men*).

Sound changes result in processes like assimilation, dissimilation, deletion, merger, insertion, split, syllable loss, resyllabification, consonant cluster reduction or creation and so on. In addition, sound change may operate in a multi-directional, cyclic, and lexically-diffuse or irregular manner (see 4. below). 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 that to /s/, a voiceless alveolar fricative, as the first two are closer by place and manner (Jassem 2012b); the last is plausible, though (Jassem 2013c).

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

As for the semantic analysis, it 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 became opposites or antonyms of one another. Shift indicates that words switched their sense within the same field. Lexical split means a word led to two different cognates. Change means a new meaning developed. Variability signals the presence of two or more variants for the same word.

Fourthly, the relational procedure 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 and semantic difference (e.g., *ship* and *sheep* (see Jassem 2012b), and formal difference and semantic similarity (e.g., *quarter, quadrant, cadre* and Arabic *qeeraaT* '1/4' (Jassem 2012a)).

Finally, the comparative historical analysis compares every word in English in particular and German, French, Greek, and Latin in general 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) and Arabic (e.g., Ibn Manzour 2013; Altha3aalibi 2011; Ibn Seedah 1996) besides the author's knowledge of both Arabic as a first language and English as a second language.

In this paper, the lexical root theory will be used in the investigation of the Arabic genetic origins and descent of *celestial* and *terrestrial* words in English besides German, French, Latin, and Greek. It has five sections: an introduction, research methods, results, a discussion, and a conclusion**.**

2. Research Methods

2.1 The Data

The data consists of 60 *celestial* and 120 *terrestrial* words, selected on the basis of English thesauri and the author's knowledge of their frequency and use. They have been arranged alphabetically for quick reference together with brief linguistic notes in (3.) below. All etymological references to English below are for Harper (2012) and to Arabic for Altha3aalibi (2011: 313-27), Ibn Seedah (1996 (9): 2-125; (10): 70-140), and Ibn Manzoor (2013).

The data is transcribed by using normal spelling. For exotic Arabic sounds, however, certain symbols were used- viz., /2 & 3/ for the voiceless and voiced pharyngeal fricatives respectively, capital letters for the emphatic counterparts of plain consonants /t, d, th, & s/, /kh & gh/ for the voiceless and voiced velar fricatives each, and /'/ for the glottal stop (Jassem 2013c).

2.2 Data Analysis

The data will be analyzed theoretically and statistically. The above-surveyed lexical root theory is used as the theoretical framework. The statistical analysis employs the percentage formula, obtained by dividing the number of cognates over the total number of investigated words multiplied by a 100. For example, suppose the total number of investigated words is 100, of which 95 are true cognates. Calculating the percentage of cognates is obtained thus: 95/100 = 0.95 X 100 = 95%. Finally, the results are checked against Cowley's (1997: 173, 182) formula to determine whether such words belong to the same language or to languages of the same family (for a survey, see Jassem 2012a-b).

3. Results: 3.1 Sky Terms

Acme from Arabic *qimma(t)* 'acme' via reordering and changing /q/ to /k/.

Altitude *(elate, elite, elevated, aloof, loft)* from Arabic *3aal(iat), 3uloo, 3alawat* 'high, height' where /3 & w/ changed to /Ø & v/ each.

Ascent *(ascend, ascension, descend, descent)* from Arabic *aS3ad, Su3ood* 'ascent' in which /S & d/ turned into /s & t/ each while /3/ into /n/.

Atlas (*Atlantic, Atlantis*) 'hill, map' from a reordered Arabic *tall(at/h)* 'mount' where /t (h)/ became /s/, *Tal3a(t)* 'mount, slope' via reordering and the change of /3/ to /s/, or *3alaat* 'height' via reordering and turning /3/ into /s/.

Atmosphere (Greek *atmos* 'vapour, steam' and *spharia* 'ball, globe') from Arabic *sadeem* 'steam' through reordering and changing /d/ to /t/ and from *Sabboor* '(ball-shaped) heap' where /b/ became /f/, *sabr, asbaar* (pl.) 'depth' where /b/ changed to /f/, *Sabr* 'highest point; white cloud' via lexical shift and turning /b/ into /f/, or *safar* 'place, distance, day light/white after sunset' via lexical shift.

Bottom from Arabic *baTn, buToon* (pl.) 'belly, bottom' in which /n/ became /m/.

Broad *(breadth, abroad)* from Arabic *ba3eed, ab3ad* 'far' where /3/ became /r/.

Celestial 'heavenly' via Latin *caelum* 'sky' and French *ciel* 'sky' from Arabic *ka2la(t)* 'sky' via /2/-loss, *qulla(t)* 'top, highest part' where /q/ changed to /k or s/, or *sama, samawat* (pl.) 'sky' where /m/ became /l/.

Comet from Arabic *najmat* 'star' via reordering and turning /j/ into /k/ and merging /n/ into /m/.

Cosmos *(cosmic, cosmology, cosmetic)* 'order, prepare, universe in Greek' from Arabic *kawn* 'universe, putting together' where /k/ split into /k & s/ and /n/ became /m/, *shams, shumoos* (pl.) 'sun, planet' via lexical shift, reordering, and the split of /sh/ into /s & k/, or *samaa', samawat* (pl.) 'skies' via reordering, and the split of /s/ into /k & s/.

Crescent from Arabic *qurS, quraiSinat* (dim.) 'circle' where /q/ turned into /k/.

Decline *(declination, declension)* from Arabic *nazal, tanzeel* (n) 'go down' via reordering and the change of /z/ to /k/ or *2ana, ta2ni* 'decline, bend' via turning /2/ into /k/ and /l/-insertion.

Down *(under)* from Arabic *doon, adna* 'below'.

East *(eastern, Easter)* from Arabic *sharq, mashriq* 'east' where /sh & q/ merged into /s/.

Ease *(it eased up)* from a reversed Arabic *Sa2oo* 'stoppage of rain' where /2/ merged into /s/.

Eclipse (*ecliptic*) from Arabic *qalab, qalba(t/h)* (n) 'turn over, collapse' where /q & t/ became /k & s/, *ghaab, ghaib(at/h)* (n) 'disappear' where /gh & t/ became /k & s/ while /l/ was inserted, *khafas* 'go down' via changing /kh & f/ to /k & p/ besides /l/-insertion.

Ecology from Arabic *jaw* 'sky, atmosphere' where /j/ became /k/.

Enigma *(enigmatic)* from Arabic *najma(t)* 'star' through turning /j/ into /g/.

Fall from Arabic *afal* 'of stars, to fall, set', *za(wa)al* 'fall, disappear' (cf. *flee* and *leave* from Arabic *falla* 'leave' and *fell* from Arabic *fal3* 'cut' via /3/-loss).

Galaxy ('Milky Way' via Greek *gala* 'milk' and *kyklos* 'cycle') from Arabic *falak* 'sky, galaxy' in which /f & k/ merged into /g/, *khalqaa'* 'sky, creation' where /kh & q/ became /g & k/ each, or *sukaak(at)* 'sky' where /s & k/ merged besides /l/-insertion.

Heaven 'home of God' from Arabic *janna(t/h)*, *jinaan* (pl.) 'heaven' through reordering and the change of /j & h/ turned into /h & v/, *najm* 'star' via reordering and changing /j & m/ into /h & v/ each, or *kawn* 'sky, universe' where /k & w/ became /h & v/ each (cf. *ra2maan/ra2eem* '(most) merciful' where /r & n/ merged while /2 & m/ became /h & v/ each and *na3eem* 'happiness, wealth' to which reordering and changing /3 & m/ to /h & v/ each was applied).

Helen *(helium, Eileen, Ellen)* from Arabic *hilal* 'moon, a proper name' in which /l/ turned into /n/, *haala(t)* 'sun circle' or *ilaaha* 'sun, sun god' via reordering and splitting /n/ from /l/.

High *(height)* from Arabic *shaahiq* 'high' via the merger of /sh & h/ into /h/ and the change of /q/ to /g/.

Horizon *(horizontal)* from Arabic *3arD(aani)* 'width' through the change of /3/ to /h/ and the split of /D/ into /z & n/.

Inferior *(infra, inferiority)* from Arabic *nazeer* 'small' where /z/ became /f/, *asfal, sulfa, insafal* '(be)low' in which /s & f/ merged into /f/ while /l/ became /r/, *Sagheer* 'small' where /S/ changed to /f/ while /gh & r/ merged.

Latitude from Arabic *3arD, 3areeD(at)* 'wide' via /3/-deletion and the substitution of /r/ for /l/.

Levant via Latin *lever* 'to rise, raise' from Arabic *rafa3* 'to raise' through turning /r/ into /l/ and /3/-loss.

Low via Old English *hlow* 'hill, mound' from Arabic *3uloo, 3alwa(t)* 'height, hill' where /3/ became /h/ and via German läge '(lie) low, flat' from Arabic *laqa2a* 'to place low' where /q/ changed to /g/ besides /2/-loss (cf. *saafil* 'low' through reversal and /s & f/- merger into /w/ or *waaT(i)* 'low' via reversal and turning /T/ into /l/).

Luna *(lunar, lunatic)* from Arabic *lail* 'night' via lexical shift and changing /l/ to /n/ or *hilal* '(small) moon' via /h/-deletion and turning /l/ into /n/ (cf. *Helen* above).

Meteor *(meteorite, meteoroid, meteorology)* 'rock falling to earth' from a reversed Arabic *rujm/jamr* 'stones' where /j/ became /t/ or *maTar* 'rain, object falling from above'.

Moon from Arabic *noor, muneer* 'light, lighting' via /n & r/-merger into /n/, *qamar* (*amar* in Damascus Arabic (Jassem 1993, 1994a-b) 'moon' via /q/-deletion and changing /r/ to /n/, or *najm, nujoom* (pl.) 'star' via reversal, /j/-loss, and lexical shift (cf. Kuwaiti Arabic *nayem*).

Narrow 'become smaller, limited, severe' from Arabic *nazeer* 'small, little' where /z & r/ merged or *murr* 'bitter, severe' where /m/ became /n/ (cf. **near** below).

Near *(next, nigh)* comparative of Old English *neah, neh, nigh* 'near' from Arabic *na2wa, naa2iat* 'toward, near' via /2/-deletion, change to /h/, or split into /ks/.

Next superlative of *neah, neh* 'near' above.

Nigh via Old English *neah, neh* 'near' above from Arabic *na2wa* 'toward, near' via turning /2/ into /g/.

North *(northern)* from Arabic *shamaal* 'north' via reordering and the change of /sh, m, & l/ into /th, n & r/ in that order.

Orbit from Arabic *3arab(at)* 'run, move' through /3/-loss.

Occident *(occidental)* via Latin *occidere* 'fall/go down' from Arabic *suqooT, masqiT* 'fall, set' via reordering and the change of /m & q/ into /n & d/ each.

Orient *(oriental, orientation)* via Latin *oriens* 'sunrise, east' and *oriri* 'to rise' from Arabic *mashriq* 'east' via reordering and the change of /m & q/ into /n & t/, *3ala/3uloo* 'rise' via /3/-loss and turning /l/ into r/, or *noor(at)* 'light' via reordering.

Planet from Arabic *badr, budraan* (pl.) 'star' via reordering, /l/-insertion and the change of /d & r/ to /t & n/ each, *binaa', binayat* 'building, sky' where /l/ split from /n/ (cf. **plant, plantation** from Arabic *nabaat* 'plant, grass' and *binayat* 'building' via reordering and /l/-insertion**.)**

Sky from Arabic *jaw* 'sky' where /j/ split into /s & k/ or *Saq3, aSqaa3* (pl.) 'region' through /3/-deletion and lexical shift.

Space *(spatial)* from Arabic *sabsab* 'land type, space', *sahb, suhoob* (pl.) 'spacious land' via reordering and turning /h/ into /s/, *sabkha(t)* 'land type' where /kh/ changed to /s/, or *baa2a(t)* 'area' via reordering and merging /2 & t/ into /s/.

Spot from Arabic *buq3at* 'area' via reordering, changing /q/ to /s/, and /3/-loss (cf. **spit, spout** (Jassem 2013d).

Star *(astrology, astronomy, asterisk, Astra)* from Arabic *thuraya* 'star' in which /th/ split into /s & t/ (cf. **stellar** below).

Stellar *(constellation, stella)* from Arabic *thuraya* 'star' in which /th/ split into /s & t/ while /r/ became /l/.

South *(southern)* from Arabic *junoob* 'south' where /j/ became /s/ while /n & b/ merged into /th/ via /f/ perhaps.

Summit from Arabic *qimmat* 'acme' via the passage of /q/ into /s/ or *sama(wat)* 'sky'.

Sun *(solar)* from Arabic *shams* 'sun' through the merger of /sh & s/ into /s/ and the change of /m/ to /n/ or from *sana* 'light' (cf. *son* from Arabic *Dana* 'children' where /D/ became /s/.)

Sundial from Arabic *daa'ir(at), dawwar* 'circle' through changing /r/ to /l/.

Sunrise from Arabic *shurooq* 'rise' through reversal and the merger of /sh & q/ into /s/ or *Dhuhoor* 'rise' via reversal and the merger of /Dh & h/ into /z/.

Sunset from Arabic *suqooT* 'fall' through merger of /q/ into /s/ and turning /s/ into /t/.

Super *(supra, superiority, superb)* from Arabic *Sabr, aSbaar* (pl.) 'highest part; white cloud' where /S/ became /s/ or *kabeer, kubra* 'big' where /k/ changed to /s/ besides lexical shift (Jassem 2012b, 2013c).

Tall from Arabic *Taal, Taweel* 'tall' where /T/ became /t/ (cf. *tail* from Arabic *thail* 'tail' via changing /th/ to /t/, *tell/tale* from Arabic *qaal* 'say' where /q/ became /t/ (Jassem 2013c), *tool* from a reordered *aalat* 'tool', and *tile* from *Teen* 'mud' where /n/ became /l/ (see below)).

Top from Arabic *qubbat* 'top' where /q & t/ merged into /t/ or *tabb(at)* 'top'.

Up *(upper)* from Arabic *3ubaab* 'heights' via /3/-loss.

Vast from Arabic *fasee2a(t), wasee3(at)* 'wide' via /f & w/-merger into /v/ and /2 & 3/-loss or merger into /s/.

Vertical from Arabic *Tool, Taweel* 'length' through reordering, the change of /w & l/ to /v & r/ each, and lexical shift (cf. *tall* above).

Void from Arabic *faDaa'* 'void' in which /f & D/ became /v & d/ each (cf. *wide* below).

West *(western)* from Arabic *wasaT* 'middle' via lexical shift, *masqiT* '(sun) set' via changing /m/ to /w/ and merging /q/ into /s/ (cf. *waist* from Arabic *wasaT* 'middle, waist' and *waste* from Arabic *wasakh* 'dirt' where /kh/ became /t/).

Wide *(width)* from Arabic *faDee, faDaawat* (n) 'wide' where /f & D/ turned into /w & d/ each (cf. *void* above).

Zodiac *(zoo, zoology)* via Greek *zodiakos* 'circle of little animals' of *zoion* 'animal' and *–diakos* from Arabic *2aiwan* 'animal' where /2/ became /z/ and *Tauq* 'circle' where /q/ became /k/ or *2aush* 'zoo' where /2 & sh/ turned into /k & s/.

3.2 Earth Terms

America from Arabic *maariqa(t)* 'far (land), Alidreesi's designation thereof' where /q/ became /k/.

Arctic *'of the north'* from Arabic *sharq* 'east' via reordering, turning /sh & q/ into /k & t/, and lexical shift (cf. **Pole** below).

Area from Arabic *3araa'* 'open land' through /3/-loss.

Arena from Arabic *3areen* 'protected area' via /3/-loss.

At from Arabic *2atta* 'to, until' via /2/-loss (cf. **to** below).

Berg from Arabic *jabal* 'mountain' via reordering and turning /j & l/ into /g & r/ respectively.

Borough *(burgh, Canterbury)* from Arabic *burj, burooj* 'tower' where /j/ became /g (y)/.

Block *(blockade)* from Arabic *Salhab* 'strong stone' via reversal and merging /s & h/ into /k/, *jabal, jabla(t)* 'mountain, block' via reordering and turning /j/ into /k/, *kabbal* 'block, fetter' or *kabtool* 'small rounded heap' via reordering and merging /t/ into /k/.

Boulder from Arabic *barTeel* 'stone' via reordering and turning /T/ into /d/.

Brick *(break)* from a reordered Arabic *biSr, baSra(t)* 'soft rock' where /S/ became /k/.

Cave *(cavity)* from Arabic *kahf* 'cave' via /h & f/-merger into /v/.

Cement 'cut down, slay' from a reordered Arabic *qaTam* 'cut' in which /q/ became /s/ while /m/ split into /m & n/, *jamad(aanat)* 'frozen, solidified' where /j & d/ turned into /s & t/, or a reordered *maaken(at)* 'of stones, strong and fixed' where /k/ became /s/.

City *(citizen, civil, civilization)* 'river bank' from Arabic *jidda(t/h)* 'river bank, a KSA city' where /j & d/ turned into /s & t/ or *shaT, shuT'aan* (pl.) 'coast' where /sh/ became /s/.

Calcium *(calcification)* from Arabic *kils* 'calcium'.

Clay from Arabic *Sall, SalSaal* 'clay' in which /S/ changed to /k/.

Cliff from a reordered Arabic *likhaaf* 'thin rock' where /kh/ became /k/ or *quff* 'big stone' via /l/-insertion.

Concrete 'thick, stiff' from Arabic *ghaleeDh* 'thick' where /gh, l, & Dh/ became /k, r, & t/ or *qarT(at), qiraaTa(t)* 'cut, small things' in which /q/ changed to /k/.

Dune from Arabic *dahnaa'* 'dunes' via /h/-loss or *nafoodh* 'desert' in reverse where /f & dh/ merged into /d/.

Continent via Latin *continere* 'hold together' from Arabic *manTiqa(t)* 'area' via reordering and turning /m & q/ into /n & t/ each, *qaTana* 'place (name), residence, area' where /q/ changed to /k/ while /T & n/ split into two each, or *qiT3at, qiT3aan* 'piece(s)' in which /q/ passed into /k/.

Corner from Arabic *qurna(t)* 'corner' where /q & t/ became /k & r/ each.

Country from Arabic *quTr* 'country' via changing /q/ to /k/ and /n/-insertion.

County from Arabic *qaDaa'* 'county, district' where /q & D/ passed into /k/ and /t/ each along with /n/-insertion.

Crag from Arabic *2ajar* 'stone' via reordering and changing /2 & j/ into /k & g/ each or *Sakhr* 'rock' where /S & kh/ became /k & g/ each coupled with reordering.

Degree from Arabic *qadr* 'amount' via reordering and turning /q/ into /g/ (cf. *grade* below).

Desert from Arabic *daashirat* 'unused land' in which /sh/ became /s/ or *jurd* 'plantless land' via splitting /j/ into /d & s/ and changing /d/ to /t/.

Destination *(destine, destiny)* via Latin *destination* 'purpose, design' from Arabic *qaSd(aan), maqSad* 'aim, direction' where /q & S/ merged into /s/ while /d/ split into /d & t/, *waTan, tawTeen* 'home' where /T/ split into /s, t, & d/, or *taSnee3* 'designing, making' in which /t, S & 3/ turned into /d, s, & Ø/.

Direction from Arabic *Tareeq(at)* 'way, direction' in which /T & q/ became /d & k/ each.

District 'hinder, detain' from Arabic *qaSar, qaSrat* 'to shorten, restrain' where /q/ split into /s & k/ or *2aSeer(at)* 'restriction' in which /2 & S/ changed to /s & k/ besides reordering.

Domain *(dominion)* from Arabic *dunia* 'world, domain' where /n/ split into /m & n/ (cf. **domination** (Jassem 2012b)) or a reordered *maidaan* 'field'.

Dust from Arabic Tais 'dust' where /T/ split into /s & t/.

Earth from Arabic *arD* 'earth' through turning /D/ into /th/ (cf. *terra* below).

Environ *(environment)* 'around in French' from Arabic *2awla* 'around' where /2/ became /v/ while /l/ split into /r & n/ (cf. *involve, revolve, evolve* (Jassem 2012b)).

Europe from Arabic *gharb* 'west' where /gh & r/ merged.

Fault *(seismic fault)* from Arabic *falq* 'division' where /q/ became /t/ and *zilzaal* 'quake' where /z & l/ changed to /s & m/ each (see below).

Fief *(fiefdom)* from Arabic *feef*, *fayafi* (pl.) 'land, area'

Field from Arabic *falaat* '(grazing) land' where /t/ became /d/.

Firmament *(firm)* from Arabic *Saarim* 'firm, strict' where /S/ changed to /f/ or *sama, samawaat* (pl) 'sky' via /r/-insertion and changing /s/ to /f/.

Flat from Arabic *balaaT* 'rock, tile, flat land' in which /b & T/ became /f & t/ each (cf. **plateau** below) or *falTa2* 'uneven' via reordering, /2/-loss, and lexical shift.

Fro *(to* and *fro)* from Arabic *wara* 'back' where /w/ became /f/.

From from Arabic *min* 'from' via changing /m/ to /f/ and splitting /n/ into /f & r/.

Gap from Arabic *jaib* 'gap' or *shi3b* 'gap' in which /sh & 3/ merged into /g/.

Geology from Arabic *2aSa, 2aSoo* 'pebbles, stones' via /2 & S/-merger into /j/.

Globe from Arabic *qilaab* 'land' in which /q/ turned into /g/.

Grad 'village' from Arabic *qaryat* 'village' where /q & t/ turned into /g & d/ respectively.

Grade *(gradual, graduation)* from Arabic *daraja(t)* 'grade, step' via reversal and turning /j/ into /g/ (cf. *degree* above).

Grits from Arabic *qiraaTa(t)* 'cut, small things' in which /q/ changed to /g/.

Ground from Arabic *jurd* 'bare land' in which /j/ turned into /g/ while /n/ split from /r/ or *qardad* 'high land' where /q & d/ became /g & n/ each (cf. *qaraT, inqaraT* 'grind' via changing /q & T/ to /g & d/ each besides /n/-insertion).

Hard from a reordered Arabic *3atr* 'hard' where /3 & t/ became /h & d/ each.

Hill from Arabic *3aal, 3ula* (pl.) 'high, heights' in which /3/ passed into /h/ or *tall* 'hill' via changing /t/ to /h/ (cf. *atlas* above).

Island, Isle from Arabic *jazeera(t)*, *juzur* (pl.) 'island' where /j & z/ merged into /s/ while /r/ turned into /l/.

Land from a reordered Arabic *laTa(at)* 'land, earth, stick (lie low) to earth' where /T & t/ became /n & d/, *jalad* 'flat hard land' via reordering, merging /j/ into /d/ and /n/-split from /l/, *nad2* 'vast land' via /2/-loss and /l/-split from /n/, *najd/najwa(t)* 'high land' via /j & d/-merger and /l/-split from /n/, *miTlaa'* 'flat, soft land' or *milaaT* 'type of mud' via reordering and turning /m & T/ into /n & d/, a reordered *muTilla(t)* 'mount, hill' where /m/ passed into /n/, a reordered *balad*, *buldaan* (pl.) 'region, country, village' in which /b/ passed into /n/, or a reversed *dunya* 'world' where /n/ split into /l & n/.)

Limestone from Arabic *raml* 'sand' via reordering and /r & l/-merger or *mil2* 'salt' via /2/-loss; (for **stone**, see below).

Locus *(location, local)* from Arabic *makaan(at)* 'place' where /m & n/ merged into /l/, or *2aal, 2ill* 'situation, place' via reversal and turning /2/ into /k/.

Meadow from Arabic *mada* 'space, extent', *madd* 'extension', *maidaan* 'field' via /m & n/-merger, or *maTkh* 'farming field' in which /T & kh/ passed into /d & w/ respectively.

Milieu from Arabic *3aalam* 'world' via /3/-loss and reversal or *ma2la(t)* 'land' via /2/-loss.

Moor from Arabic *boor* 'uncultivated land' where /b/ became /m/, *ameeri* 'government-owned (land)', *mar3a* 'grazing land' through /3/-deletion (cf. Jassem 2013d).

Mound *(mount, mountain, surmount)* from a reordered Arabic *matn*, *mutoon* (pl.) 'hill, high land' or *maTia(t)* 'mount, animal' where /n/ split from /m/ (cf. *mount a horse* from Arabic *maTa, imtaTa, maTiya(t)* 'ride, animal to ride' and *faras* 'horse' where /f/ became /h/).

Mud from Arabic *Tami* 'river mud' or *Teen* 'mud' via reversal and the change of /T & n/ to /d & m/ each.

Mundane via French *monde* from Arabic *mudun, madani* (adj.) 'cities, urban' via reordering or *dunia* 'world' through reordering and /m/-split from /n/.

Pasture *(pastoral)* via Latin *pastus, pastura* 'grass, grazing' from Arabic *baSSa(t)* 'grass-covered area' where /S/ turned into /s/ or *bisaaT* 'flat (land), rug' via /T/-split into /t & r/.

Path from Arabic *sabeel* 'path' or *saab* 'go, pass' via reversal, /l/-loss, and turning /s/ into /th/ or *baT2a* 'flat land' via /2/-loss and changing /T/ to /th/.

Pebble from Arabic *labab* 'sand type' via reversal or *nabala(t), nibaal* (pl.) 'small pebble' through /n/-merger into /b/.

Perth from Arabic *barth* 'soft land, earth'.

Petrol *(Peter, Petra, oil)* 'rock oil' from a reordered Arabic *balTa, balaaT* (pl.) 'flat stone' where /l/ changed to /r/, *barTeel* 'long rock' where /l/ merged into /r/, *Dhirb* 'firm stone' where /Dh/ became /t/, or a reversed and lexically shifted *turaab* 'dust'; for **oil**, see Jassem 2013d).

Place *(emplace, replace)* via Latin/Greek *platea* 'courtyard, broad way, open space' from Arabic *balaaT* 'stones' where /T/ became /s/ (cf.   **Polis** below).

Plateau from Arabic *balaaT(a)* 'rock, tile, flat land' in which /T/ became /t/.

Plains from Arabic *lubn/labin* 'mud, earth' via reordering and sense shift (cf. *plain, explain, complain* from Arabic *bayen* 'clear' via /l/-insertion and *plane* from *nibal* 'arrows' via reordering sense shift).

Pole *(polar)* from Arabic *laabba(t)* 'end, side' via reversal.

Polis *(metropolis, cosmopolitan, Tripoli, police, politics, polity, place)* from Arabic *balad(at)* 'village, town' where /d/ turned into /s/.

Pottery *(potter, pot)* from Arabic *turaab* 'earth' via reordering.

Prairie from Arabic *barr, barriyat* 'the wild, prairie'.

Quarter(s) from Arabic *qariat* 'village' via /r/-insertion or *2aara(t)* 'area' where /2/ became /k/ (cf. Jassem 2012a).

Quarry from Arabic *qal3, maqla3* 'stone extraction' where /l & 3/ merged into /r/.

Realm from Arabic *3aalam* 'world' in which /3/ passed into /r/ (cf. *milieu* above).

Region from Arabic *arjaa'* 'regions' in which /n/ split from /r/.

River (see Jassem 2013c)

Road from Arabic *najd* 'way' via turning /n/ into /r/ and merging /j/ into /d/ or *Tareeq* 'road' in reverse where /r & q/ merged and /T/ became /d/.

Rock from Arabic *raqq* 'flat stone' where /q/ became /k/ (cf. *rajj, razz* 'rock, shake' where /j (z)/ became /k/), *Sakhr* 'rock' via reversal and merging /S & kh/ into /k/, or *2ajar* 'stone' via reversal, /2/-loss and turning /j/ into /k/ (cf. *sclerosis* below.)

Rome from Arabic *irma, aaraam* (pl.) 'marker stones'.

Room from Arabic *maraa2* 'animals' resting place' via reversal and /2/-loss.

Rural *(rear)* from Arabic *raa3ee, ra3awi* 'shepherd, rural, grazing' in which /3/ turned into /r/.

Rustic from Arabic *ra3ia(t), ru3aat* 'grazing, shepherds' where /3/ became /s/ or *reef* 'area close to water, rural' where /f/ split into /s & t/.

Salt *(salary)* from Arabic *ajr, ujrat* 'salary' via changing /r/ to /l/ and lexical shift (cf. *sale, sell* from Arabic *shara* 'sell, buy' where /sh & r/ became /s & l/ each.).

Sand from Arabic *zalaT* 'stone' in which /z, l & T/ turned into /s, n & d/ in that order or *Sa3eed* 'sand' via turning /3/ into /n/.

Sclerosis from Arabic *Sakhr* 'rock' where /kh/ passed into /k/ and /l/ split from /r/ (cf. *rock* above).

Secular via Latin *saeculum* 'age, generation' from Arabic *jeel* 'generation, age' where /j/ split into /s & k/ or *khalq* 'creation' via reordering and changing /kh & q/ to /s & k/ each**.**

Seismic *(seismograph)* from Arabic *zilzaal* 'quake' where /z & l/ became /s & m/ each (see *fault* above).

Shire *(Oxfordshire)* from Arabic *jeera(t), deera(t)* 'neighbourhood, area' via changing /j & d/ to /sh/, *2aara(t)* where /2/ changed to /sh/, or *Seera(t)* 'walled-in structure' where /S/ became /sh/.

Site *(situation, station)* from Arabic *saT2* 'site, surface' through /2/-deletion or merger into /s/ or *2aTTa(t), ma2aTTa(t)* 'place, station' where /2/ became /s/.

Slab from Arabic *Solb* 'sharpening stone' or *Salhab* 'strong stone' via /h/-loss.

Slope from Arabic *jabal* 'mountain' via lexical shift, reordering and changing /j/ to /s/ or *sal2oob* 'slope' via /2/-loss (cf. *slip* from Arabic *sal2ab* 'to move low and stealthily').

Soil from Arabic *sahl(at), suhool* (pl.) 'earth, plain' via merging /h/ into /s/ or *wa2l* 'mud' via reordering and turning /2/ into /s/.

Solid *(rock)* from Arabic *Sald* 'hard' where /S/ became /s/.

Square from Arabic *2aSeer* 'enclosed area' via reordering and the change of /2 & S/ to /s & k/ each, *2aara(t)* 'area' where /2/ split into /s & k/, or *jadhr* '(mathematical) root' where /j & dh/ became /k & s/ each**.**

Stairs from a reordered Arabic *Dhahar(at)* 'back, rise, ascend' where /Dh & h/ turned into /s & t/, *daraj* 'stairs' via reversal and turning /d & j/ into /t & s/ (cf. *degree* above), or *jidaar* 'wall' via lexical shift.

Step from Arabic *3ataba(t)* 'step' where /3/ became /s/.

Steppe from a reduced and reordered Arabic *sabsab(at)* 'stony land', *2aSbaa'* 'stony earth' where /2 & S/ became /s & t/ each, a reversed *ba2S(at), ba2SaaS* 'pebbles' in which /S/ became /s/, or a reordered *Sabbat* 'hard earth, cement'.

Stone from Arabic *Safwaan* 'stone' where /S & f/ became /s & t/ each, *Suwaan(at)* 'stone type' via /S/-split into /s & t/, or *kittaan* 'soft sand stone' where /k/ became /s/.

Street from Arabic *Tareeq* 'road' via splitting /T/ into /s & t/ and turning /q/ into /t/ (cf. *road* above) or *Siraat* 'street, path' in which /t/ is an insertion.

Talus via French *talu* 'slope' from Arabic *Tuloo3* 'uphill', turning /3/ into /s/ or /Ø/.

Terra (*terrain, terrestrial, territory, subterranean, Mediterranean)* from Arabic *thara* 'earth, dust' via changing /th/ to /t/ or *arD, arDeen* (pl.) in reverse where /D/ became /t/ (cf. *earth* above).

Tile *(Tyler)* via Latin *tegere* 'roof, cover' from a reversed Arabic *ghaTTa* 'cover' where /gh & T/ became /g & t/ each, *Teen, Taiyaan* 'mud, mud builder' via changing /n/ to /l/, or *aajurr* 'brick, tile' where /j & r/ became /t & l/ each.

Threshold from Arabic *darajat* 'grade, step' via turning /d, j, & t/ into /th, sh, & d/ besides /l/-insertion (cf. *degree* above).

To from Arabic *2atta* 'to, until' via /2/-loss or *kai* 'to, in order to' where /k/ became /t/ (cf. **at** above)**.**

Town from Arabic *madeenat, mudun* (pl.) 'town' via reversal, turning /d/ into /t/ and merging /m & n/ into /n/, *Teen, aTyaan* (pl.) '(mud-built) village', or a reordered *waTan* 'home, country'.

Track *(trek, truck)* from Arabic *Tareeq* 'road' via turning /q/ into /k/ (cf. **street** above).

Universe *(university, universal)* from Arabic *miSr, amSaar* (pl.) 'country' through splitting /m/ into /n & v/ (cf. *reverse, diverse, inverse, converse* (Jassem 2013c).

Urban *(urbanity, urbanize, conurbation)* from Arabic *bunyaan, abniat* 'buildings, built area' through /r/-insertion or split from /n/ (cf. **rural, rustic** above).

Way *(-ways, -wise)* from Arabic *wijha(t), wajh* 'direction, way, face' via merging /j & h/ into /y/ (cf. Kuwait Arabic *waih*).

Wild *(wilderness)* from Arabic *falaat* 'the wild' in which /f & t/ passed into /w & d/ each or *baidaa', bawaadi* (pl.) 'the wild' via /l/-insertion and turning /b/ into /w/.

World (German *Welt*) from Arabic *waTan* 'region, homeland' via reordering, turning /T/ into /d/ and /n/-split into /r & l/, *diyaar/door, daar* 'homes, world' through reversal and /l/-split from /r/, or *bilaad, buldaan* 'lands, countries' via changing /b/ to /w/ along with /r/-insertion.

Vacuum *(vacate)* from Arabic *faj, fijaaj* (pl.) 'vast, open land, section' in which /j/ became /k/, *fasee2* and *wasee3* 'wide, spacious' where /s & 2 (3)/ merged into /k/, or *faraagh* 'vacuum, emptiness' via /r & gh/-merger into /k/.

Valley (see Jassem 2013d)

Village from Arabic *balad* 'village' where /b & d/ turned into /v & j/ each (cf. *ville* below).

Ville *(village)* from Arabic *2ill(at), ma2al* 'place to live in' through changing /2/ to /v/ (cf. *village* above).

Zone from Arabic *kawn* 'world' where /k/ turned into /z/ or *makaan* 'place' where /m & n/ merged and /k/ changed to /z/.

To sum up, the total number of *sky* (60) and *earth* (120) words amounted to 180 or so, all of which have direct Arabic cognates. In other words, the percentage of cognates is 100%.

4. Discussion

The discussion handles the relationship of the present study to the previous ones and the relevance of the lexical root theory to the data at hand. As to the former, the results show that *celestial* and *terrestrial* terms in Arabic and English are true cognates, whose differences are due to natural and plausible causes of linguistic (phonetic, morphological and semantic) change. Thus, the 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 (2013a), negative particles (2013b), back consonants (2013c), *water* and *sea* words (2013d), and *air* and *fire* terms (Jassem 2012e) in English, German, French, Latin, Greek, and Arabic which were found to be not only genetically related but also rather dialects of the same language. The percentage of shared vocabulary or forms between Arabic and English, for instance, was 100% in all studies. According to Cowley's (1997: 172-173) classification, this ratio means that they belong to the same language (i.e., dialects).

In light of such results, the lexical root theory has been found adequate for the present analysis of as it was for all the previous ones. Therefore, the main principle which states that Arabic, English, and so on are not only genetically related but also are dialects of the same language is verifiably sound and empirically true. Tracing back all English *sky* and *earth* words to true Arabic cognates proves that clearly.

The applied procedures of the theory operated neatly and smoothly. The lexicological procedure showed that the lexical root is an adequate, analytic tool for relating *sky* and *earth* words in Arabic and English to each other by focusing on consonants and overlooking vowels because the former carry word meaning while the latter perform phonetic and morphological functions as described in section (1.) above (see Jassem 2012a-f, 2013a-e). For example, *celestial* and *terrestrial* are stripped down to their roots first as underlined.

The etymological or historical origin and meaning of lexical items cannot be underestimated. In fact, tracing the Latin, Greek, French, and German roots of English words facilitates the attainment of good results as to their Arabic origins. For example, English *terrestrial* and *earth* (German *Erde*) come from Latin and French *terra/terre* in reverse, whose Arabic cognate is *arD* 'earth' via turning /D/ into /th or t (d)/ or *thara* 'earth, dust' via turning /th/ into /t or d/ (see 3.2 above).

The linguistic analysis demonstrated how words can be genetically related to and derived from each other in four steps. To start with, the phonetic analysis was central in this regard due to the huge changes which affected Arabic consonants especially in English and other European languages as well as mainstream Arabic varieties themselves (e.g., Jassem 1993, 1994a, 1994b). These changes included deletion, reversal, reordering, merger, split, insertion, mutation, shift, assimilation, dissimilation, palatalization, spirantization (velar softening), duplication, syllable loss, resyllabification, consonant cluster reduction or creation and so on. The commonest changes were reversal, reordering, split, and merger, some of which may be due to Arabic script direction change from right to left at the hands of the Greeks. The results (3.1-2) are rife with such examples. Jassem (2013c) provides an outline of the major sound changes in this area.

The results clearly show that sound change proceeds in three different courses (Jassem 2012a-f, 2013a-e). First, it may be multi-directional where a particular sound may change in different directions in different languages at the same time. For example, Arabic *thuraia* 'star' led to *star (astro-)* and *stellar (constellation)* via the split of /th/ into /st/ and the change of /r/ to /l/ in English, French, Latin, Greek, and so on (3.1 above). *Sun* and *solar* is another example, both of which come from Arabic *shams* 'sun' through the merger of /sh & s/ into /s/ and the change of /m/ to /l/ in French and /n/ in English. Secondly, it may be cyclic where more than one process may be involved in any given case. The changes from Arabic *raml* 'sand' to English *lime(stone)*, for example, included (i) reordering, (ii) merging /r/ into /l/, and (iii) vowel shift. Finally, it may be lexical where words may be affected by the change in different ways- i.e., lexical diffusion (see Phillips 2012: 1546-1557; 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 forms *earth (terra, terrain, terrestrial)* in English is a case in point (3.1 above), which descend from Arabic *arD* or *thara* mentioned above. Such factors turn Arabic, English, German, and French to be mutually unintelligible despite the use of the same word roots (Jassem 2012a-b).

All the sound changes above exhibit naturalness and plausibility; for example, the split of /th/, a voiceless interdental fricative, in Arabic *thuraiya* 'star' to /t (s)/, a voiceless alveolar stop (fricative) in *star*, is natural as both are closer by place and voice (cf. Jassem 2012b). Likewise, the change of /j/ in *janna(t/h)* 'heaven' to /h/ in *heaven* is plausible. (For further detail, see Jassem (2012a-f, 2013a-b).)

Morphologically and grammatically, Jassem (2012f, 2013a) described the main inflectional and derivational affixes, most of which recur here to which the curious reader can be referred. In fact, all such differences do not alter the meaning of the root itself and so they can be ignored altogether outright.

Finally, certain lexical patterns recurred on the semantic plane, all of which were reported in Jassem (2012a-f, 2013a-e). Almost all the words exhibited lexical stability such as *earth, terrain, terra, fault, rock, stone, sun, sky, moon, star, ecology*, the cognates of all of which still retain the same or similar forms and meanings in both Arabic and English. Others showed lexical shift like *America*, whose meaning shifted from Arabic *maariqa* 'far' to its current meaning in English; *Europe* 'west, sunset' has the same story which moved from Arabic *gharb* 'west, sunset' in which /gh & r/ merged to its current reference. Lexical split took place in words like *enigmatic* and *comet,* which came from Arabic *najma(t)* 'star' through different phonetic processes: in *enigma, enigmatic* /j/ became /g/ whereas in *comet* /n & m/ merged together with reordering (3.1 above). *Earth* and *terra* could have split from Arabic *arD* via reversal in the latter and turning /D/ into /th or d/. Lexical divergence was minimal as in *low* via Old English *hlaw* 'hill, mound' from Arabic *3uloo* 'height' where /3/ became /h/ and lost later. Lexical convergence was very common due to the existence of several formally and semantically similar words in Arabic. For example, *land* might derive from Arabic *laTaa(t)* 'land' through turning /T/ into /d/ and /l/-insertion, *najd* 'high land' via reordering and merging /j & d/ and splitting /l/ from /n/, or *lajad* (also *jalad*) 'land' via merging /j & d/ and /n/-split from /l/ (see 3. above); *terra* could have stemmed from Arabic *thara* where /th/ became /t/ or *arD* via reversal and turning /th/ into /t/. Lexical multiplicity occurred often in words like *ground* 'earth; smash' which derive from Arabic *jurd* 'ground' amd *qaraT* 'grind, cut' where /j & q/ became /g/ besides /n/-insertion; *heaven, ease* are other examples. Like convergence, multiplicity is due to formal and semantic similarity between words. Finally, lexical variability was apparent in the presence of variant or alternative words for *earth* and *sky* in both Arabic and English, which are utilized in different ways. For example, English *earth, dust, terra, terrain, terrestrial, land, ground, moor* are a few such examples (see 3.1 above); Arabic *arD* 'earth' has tens and tens of such variants (Altha3alibi 2011: 313-327; Ibn Seedah 1996 (10: 70-146) whereas *sama* 'sky' has countless (Ibn Seedah 1996 (9: 2-125).

As to the relational procedure, many of the above lexical cognates are both formally and semantically similar, for example, *earth* and Arabic *arD* 'earth'; *terra* and Arabic *thara* 'dust' where /th/ became /t/. Some, however, are formally different but semantically similar such as

stellar and *star*, both of which derive from Arabic *thuraiya* 'star'. Others still are formally similar but semantically different such as *boulder* and *builder* in English, all of which derive from similar Arabic cognates: i.e., *barTeel* 'stone' and *ballaT* 'pave, build' via different sound changes (see 3.2 above). Thus Arabic cognates can be seen to account for the formal similarities and/or differences between English words themselves.

In summary, the foregoing *sky* and *earth* words in Arabic, English, German, French, Latin, and Greek are true cognates with similar forms and meanings. So it can be safely said that Arabic is their origin all for which Jassem (2012a-f, 2013a-b) offered some equally valid reasons such as lexical multiplicity and variety. English, German, French, and Latin do have lexical variety and multiplicity but not to the same extent as Arabic does. One has just to compare the number of *sky* and *earth* words in English dictionaries and thesauri and Arabic ones (e.g., Ibn Seedah 1975: (9) 2-125; (10) 70-146; Altha3alibi 2011: 313-27).

6. Conclusion and Recommendations

The main findings of this paper can be summed up as follows:

i)   The 60 *celestial (sky)* and 120 *terrestrial (earth)* terms or so in English, German, French, Latin, Greek, and Arabic are true cognates for being similar in form and meaning.

ii) The different forms amongst such words across those languages stem from natural and plausible phonological, morphological and/or lexical factors (cf. Jassem 2012f, 2013a-e). Reversal, reordering, split, and merger were very common sound changes.

iii) The main recurrent lexical patterns were stability, convergence, multiplicity, shift, and variability; convergence and multiplicity were very common because of the formal and semantic similarities between Arabic words from which English words emanated.

iv) The huge lexical variety and multiplicity of Arabic *sky* and *earth* terms as well as their phonetic complexity compared to those in English and European tongues point to their Arabic origin in essence.

In conclusion, the lexical root theory has been applicable to and adequate for the analysis of the close genetic relationships between Arabic, English, German, French, Latin, and Greek *sky* and *earth* terms. To substantiate these findings, the current work agrees with Jassem's (2012a-f, 2013a-e) calls for further research into all language levels, especially vocabulary. Furthermore, the application of such findings to language teaching, lexicology and lexicography, translation, cultural (including anthropological and historical) awareness, understanding, and heritage is urgently needed for the dissemination and promotion of linguistic and cultural understanding, cooperation, acculturation, and peaceful coexistence.

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