

## Sound Correspondences among Cognates Shared by Arabic, English, and Indonesian

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### ABSTRACT

This article investigates sound correspondences among cognates shared by Arabic (ARA), English (ENG), and Indonesian (IND). The cognates comprise ARA and IND words copied from ENG and ENG words as the forms from which they are copied. The data corpora are taken from the phonological forms (pronunciations) of the words which are obtained from reliable transcription/source. Besides sound correspondences (known as sound replacements in morphophonemics), certain other morphophonemic phenomena found in the phonological realizations of the words, i.e., sound additions, sound fusions and deletions, sound laxings, sound lenitions, sound fortitions, assimilations, dissimilations, and metatheses, are being analytically discussed. The patterns of sound correspondences among the cognates become the findings of the investigation.

**Keyword:** *cognates, copy words, morphophonemics, sound correspondences (sound replacements)*

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## 1. INTRODUCTION

As the consequence of language contact, there are words in a certain language resulted from borrowing. For example, each of Indonesian (IND) word *inci* /ʔInci/ and Arabic (ARA) word *إنش* /ʔInʃ/ is borrowed from English (ENG) word *inch* /Intʃ/. Aitchison (2013, p.150) states, “‘Borrowing’ is a somewhat misleading word. ... The item is actually copied, rather than borrowed in the strict sense of the term”. In line with that, Haugen (1972, p. 81) states, “... the term ‘borrowing’ might seem to be almost as inept for the process we wish to analyze as ‘mixture’. ... the borrowing takes place without the lender’s consent or awareness, and the borrower is under no obligation to repay the loan”. Based on the two quotations, *copying* is preferably used in this article instead of *borrowing*.

Notions of **importation** and **substitution** are pointed out by Haugen (1972) as types of copying. If the linguistic unit is similar enough to the form accepted by a native speaker (the speaker of the language from which the linguistic unit is copied) as his own, it is imported. If it is reproduced and its form is similar to certain pattern in the copying language, the unit is substituted. The notions are associated by Fauzi (2015) with the notions of **adoption** and **adaptation**: *importation* is associated to *adoption* and *substitution* is associated to *adaptation*.

IND word *cas* is copied from ENG word *charge* /tʃɑːɹʒ/. Orthographically, it is realized as a string of graphemes/letters *c-a-s* and phonologically is realized as a string of sounds/phonemes /cʌs/. Therefore, **adaptations**, both orthographically and phonologically, happen in the copying. However, this article only deals with the phonological adaptations found in the copy words.

This article investigates sound/phoneme correspondences among (1) IND words copied from ENG, (2) ARA words copied from ENG, and (3) ENG words from which they are copied. Al-Athwary (2016) reports phonological modifications happen in words in Modern Standard ARA which are copied from ENG. Phonological modifications, which are claimed by Al-Athwary as phonological adaptations are found in 300 words. The phonological constraints are often called *phonotactic constraints*; and that seems to be the reason why Al-Athwary entitles his research report “The phonotactic adaptation of English loanwords in Arabic”. This article describes the phonological adaptations in IND and ARA words which are copied from ENG. It also describes how phonotactic rules in the phonology of each language govern the adaptations.

## 2. COPY LINGUISTIC UNITS

There are several forms of linguistic units resulted from copying, i.e. **copy word**, **copy phrase**, **copy blend**, and **copy translation**. Loan word (copy word) is explained by Fromkin, Rodman, and Hyams (2014) as a word in one language whose origin is in another language; they exemplify *besiboru* 'baseball' as a copy word in Japanese which is derived from ENG. Its form shows the characteristic of adjustment explained by Aitchison and discussed in the previous paragraph. The adjustment is related to the notion of **adaptation** in Crystal's (2008, p. 286) definition of *loan 'copy'*, "... loan words (where both form and meaning are borrowed, or "assimilated", with some adaptation to the phonological system of the new language ...) ...". Phonotactic rules in Japanese phonology refraining /l/ from occurring in its words has caused the sound realized as sound cluster /ru/ in the copy word.

Aitchison (2013) exemplifies *un blanc visage* 'a white face'—in which syntactic construction adopted from German occurs—as a copy phrase in French. Fauzi (2015) reports that IND copy phrase *unit analisis* /ʋ.nlt.ʔl.nɔ.l.sIs/ is copied from ENG phrase *analysis unit* /ə.næ.l.sIs.ju.nlt/. Different from what happens in the French copy phrase aforementioned, instead of syntactic adoption, syntactic or structural adaptation happens in *unit analisis*. Furthermore, besides the structural adaptation, the phonological form of the IND copy phrase shows that phonological adaptation also happens in it.

Crystal (2008, p.286) explains loan blend (copy blend) in "...; loan blends (where the meaning is borrowed, but only the part of the form ...) ...". This form of copy linguistic unit is termed by Baker and Hengeveld (2012, p. 417) as *loan compound* and is explained as "... such as these consist of a combination of a loan word from language A ... and an original word from language B ...". Fauzi (2015) exemplifies **menganalisis** and **dianalisis** as Indonesian copy blends becoming the equivalents for ENG **to analyze** and **be analyzed** such as in *The researcher decided to analyze the data qualitatively; in other words, the data were analyzed qualitatively*. Therefore, if it is translated into IND, *Peneliti memutuskan menganalisis data secara kualitatif; dengan kata lain, data dianalisis secara kualitatif* is resulted. Copy blend *menganalisis* consists of two morphemes: base form *analisis*, i.e. a free morpheme which is copied from ENG and prefix *meN-*; while *dianalisis* consists of base form *analisis* and prefix *di-*. In contrast, Heru (2014) reports his investigations of IND noun-forming suffixes copied from foreign languages. He explains that *sukuisme* 'ethnicity matters' is a result of suffix *-isme* (IND suffix derived from Dutch) attachment to base form *suku* 'ethnic'. Thus, there are two types of copy blends in IND: (1) the ones resulted from the attachment of IND bound morphemes to base forms which are copy linguistic units and (2) the ones resulted from the attachment of copy bound morphemes to base forms which are originally IND.

Crystal (2008, p.286) explains loan translation (copy translation) in "...; loan translation (where the morphemes in the borrowed word are translated item by item, e.g. *superman* from *Übermensch*—also known as a calque) ...". Fauzi (2015) exemplifies IND phrase *cetak biru* as a copy translation derived from ENG phrase *blue print*. However, the copy linguistic units involved in this article are mostly in forms of copy words. ENG *ice cream* which is in form of phrase turns out to be realized as a word: IND *eskrim* and ARA *أيس كريم*. ENG *pragmatism*, becoming one of the ENG linguistic units involved in this article, contains suffix *-ism*; but when copied into ARA, it is realized as *براغماتية*, i.e. a word form containing ARA suffix corresponding to the ENG suffix.

## 3. SOUND CORRESPONDENCES, SOUND REPLACEMENTS, AND PHONOLOGICAL ADAPTATIONS IN COPY LINGUISTIC UNITS AS COGNATES

Fromkin, Rodman, and Hyams (2014) point out that from cognates in languages developed from the same ancestral root we can observe sound correspondences and from which we can deduce sound changes. Phenomena of sound correspondences or sound replacements in IND copy words derived from ENG are reported by Fauzi (2015). He reports myriad of data showing sound replacements and prosody replacement by a segmental sound, sound fissions and additions, sound fusions and deletions, and IND bound-morpheme attachments to base forms which are copy words. He also reports morphophonemic rules governing the phonological adaptations found in the data. The rules involve sound laxings, lenitions, fortitions, assimilations, dissimilations, and metatheses. The phenomena pointed out in this paragraph are claimed by Fauzi as the phonological adaptations found in the phonological realizations of IND copy words derived from ENG.

#### 4. PHONEMES

This article shows how the correspondences of the phonemes (and the allophones) in the phonological realizations of the cognates shared by IND, ARA, and ENG. Therefore, the distributions of phonemes in the three languages are needed. Fauzi (2015) suggests the following distributions of phonemes in ENG.

- **The Distribution of Consonant Phonemes and their Allophones in ENG**

manners of articulations	points of articulation							
	bilabial	labio-dental	dental	alveola r	post- alveola r	palata l	velar	glot -tal
plosive	p b			t d			k g	
nasal	m			n			ŋ	
thrill					r			
affricate					tʃ dʒ			
fricative		f v	θ ð	s z	ʃ ʒ			h
lateral				l				
approximan t	w				ɹ	j		

- **The Distribution of Vowel Phonemes and their Allophones in ENG**

tongue position	front		central		back	
	tense	lax	tense	tense	lax	tense
high	i	ɪ			u	ʊ
mid	e	ɛ	ɜ	ə	o	ɔ
low		æ	a	ʌ	ɑ	ɒ

A diphthong can also be a phoneme in ENG. Diphthong /aʊ/ in *cow* /kaʊ/ differs it from *key* /ki:/. Soenjono (2009) explains that at least there are two other diphthongs phonemes in ENG, i.e. (1) /ai/ as in *write* /rait/; the diphthong differs it from *root* /ru:t/ and (2) /ɔi/ as in *boy* /bɔi/; the diphthong differs it from *bee* /bi:/.

The following are the distributions of phonemes in IND that involves consonants, vowels, and diphthongs suggested by Fauzi (2015).

- **The Distribution of Consonant Phonemes and their Allophones in IND**

manners of articulations	points of articulation							
	bilabial	labio-dental	alveola r	post- alveola r	palata l	velar	uvula r	glot -tal
plosive	p b		t d		C J	k g		ʔ
nasal	m		n		ɲ	ŋ		
thrill				r				
affricate								
fricative		f	s z	ʃ			x	h
lateral			l					
approximan t	w				j			

- **The Distribution of Vowel Phonemes and their Allophones in IND**

tongue position	front		central		back	
	tense	lax	tense	lax	tense	lax
high	i	ɪ			u	ʊ
mid	e	ɛ			ə	ɔ
low			a	ʌ		

Soenjono (2009) explains that IND has three diphthong phonemes, i.e. /aɪ/, /aʊ/, and /ɔɪ/. The distinctiveness of the diphthongs can be seen when they occur in the following minimal pair: *pakai* /pa.kai/ 'wear/use' versus *paku* /pa.ku/ 'nail', *kalau* /ka.lau/ 'if' versus *kali* /ka.li/ 'river', and *sepoi* /sə.pɔɪ/ 'breeze' versus *sepi* /sə.pɪ/ 'silent'.

• **The Distribution of Consonant Phonemes and their Allophones in ARA**

manners of articulations	points of articulation									
	bi-labial	labio-dental	dental	alveolar	post-alveolar	palatal	velar	uvular	pharyngeal	glottal
plosive	b			t d		ɟ	k			ʔ
plosive-emphatic			(denti-alveolar) tʰ dʰ					q	ʕ	
nasal	m			n						
thrill					r			ɣ		
fricative		f	θ ð	s z	ʃ			x	ħ	h
emphatic-fricative			θʰ	sʰ						
lateral				l						
approximant	w					j				

Hellmuth (2006) and Isaksson (n.d.) explain that /a/, /i/, and /u/ are vowels belong to ARA phonology. Furthermore, the writer of this article thinks that /ʌ/ (as the variant of /a/), /ʊ/ (as the variant of /u/), and /ɪ/ (as the variant of /i/). Besides, vowel /o/ and /ɔ/ also belong to ARA phonology, but they are specially distributed because they occur only after certain consonants, i.e. after emphatic consonants /tʰ/, /dʰ/, /q/, /ðʰ/, dan /sʰ/, after thrill consonants /r/ and /ɣ/, or after fricative-uvular consonant /x/.

The special distribution of vowel /o/ and /ɔ/ in ARA phonology mentioned in the previous section is dealing with phonotactic rules. Phonotactics is defined by Fromkin, Rodman, and Hyams (2014, p. 575) as "rules stating permissible strings of phonemes within a syllable". They also point out that one's knowledge of phonology includes information about what sequences of phonemes are permissible, and what sequences are not; and they explain that the limitations on sequences of segments are called *phonotactic constraints*.

##### 5. SOUND CORRESPONDENCES AMONG COGNATES SHARED BY ARA, ENG, AND IND

The IND linguistic units being involved are the particular ones copied from ENG listed by Jones (2008) and by Fauzi (2015). The involvement of the linguistic units is due to the fact that the two references are the two most updated references of IND linguistic units copied from ENG. The selection of the particular ones is caused by the fact that their ENG equivalents also become linguistic units from which ARA linguistic units reported by Al-Athwary (2016) are copied.

Meanwhile, ARA linguistic units being involved are the particular ones copied from ENG listed by Al-Athwary (2016). The involvement is based on the fact that it is the most updated reference of ARA linguistic units copied from ENG. The selection of the particular ones is caused by the fact whether their ENG equivalents also become linguistic units from which IND linguistic units reported by Jones (2008) and by Fauzi (2015) are copied.

As the result of the efforts mentioned in the last two paragraphs, 79 linguistic units (cognates) shared by the three languages are obtained. The orthographic forms of IND and ENG linguistic units refer to Jones (2008) and Fauzi (2015). The phonological forms of IND linguistic units refer to Fauzi (2015). The phonological forms of ENG linguistic units refer to the newest edition of Longman Dictionary of Contemporary English. The phonological forms of ARA linguistic units refer to Al-Athwary (2016).

Al-Athwary (2016) only attaches the phonological forms of ARA linguistic units becoming the data of his research. In order to obtain the orthographic forms, the writer of this article took them from Google Translation. In order to obtain more valid orthographic forms (as well as more valid phonological forms)

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of the ARA linguistic units, they were verified by consulting Syamsul Hadi, a professor of Arabic Linguistics from Universitas Gadjah Mada Yogyakarta, Indonesia; the verification/consultation was conducted on 19 June 2018.

The corpora above-mentioned were also used by Fauzi (2018) as the data source for his article entitled "Grapheme-Phoneme Correspondences in Cognates Shared by Arabic, English, and Indonesian". The involvement of the corpora is based on the fact that this article also needs them as the data source. Since the topic of the article is similar of the topic of the article written by Fauzi (2018) above-mentioned, certain parts of sections 1, 2, 3, and 4 of this article are derived from what were described by Fauzi (2018) in that article.

The following subsections describe sound correspondences in cognates shared by ARA, ENG, and IND. The orthographic forms are listed in the left columns, while the phonological forms are listed in the right columns. Since ENG linguistic units become the forms from which IND and ARA linguistic units are copied, the descriptions start with ENG linguistic units.

### 5.1 Sound Replacements

The following is the distribution of sound replacements among the cognates.

#### • Consonant Replacements

##### ○ Consonant Replacements in IND

ENG		IND		ARA	
yard	/jɑ:d/	yard	/jɑrt/	ياردة	/ja:r.dəh/
jazz	/dʒæz/	jaz	/jɛs/	جاز	/ja:z/
shampoo	/ʃæm.pu:/	sampo	/sɑm.po/	شامبو	/ʃa:m.bu:/

Plosive-alveolar-lenis /d/ and fricative-alveolar-lenis /z/ can only occur as onset in IND syllable. Since each of them occurs as coda, it is realized as its allophone: (1) /d/ as plosive-alveolar-fortis /t/, articulated at the same place where /d/ is articulated (homorganic to /d/), in /jɑrt/ and (2) /z/ as fricative-alveolar-fortis /s/, homorganic to /z/, in /jɛs/. Since the allophones are realized as fortis consonants, the sound replacements also show fortition.

Although fricative-postalveolar-fortis /ʃ/ is a phoneme in IND, it is explained by Hasan (2103) as a copy consonant. That is the reason why it is realized as a consonant which is purely IND and articulated not far from where that ENG phoneme is articulated (quite homorganic to it), i.e. fricative-alveolar-fortis /s/, in /sɑm.po/. In other words, the phonological realization is dealing with the effort in order that it sounds more IND.

##### ○ Consonant Replacements in ARA

ENG		IND		ARA	
gallon	/gæ.lən/	galon	/ga.lɔn/	غالون	/ɣo:lu:n/
golf	/gɒlf/	golf	/go.lɒf/	جولف	/ju:lf/
hello	/hə.ləʊ/	halo	/ha.lo/	ألو	/ʔə.lu:/
transit	/træn.sɪt/	transit	/trɑn.sɪt/	ترانزيت	/ti.ra:n.zɪt/
watt	/wɒt/	watt	/wɑt/	واط	/wa:tʰ/

Plosive-velar-lenis /g/ is not a phoneme in ARA. Therefore, it is realized as an ARA phoneme which is quite homorganic to the ENG phoneme: as plosive-uvular-lenis /ɣ/ in /ɣo:lu:n/ and as plosive-palatal-lenis /j/ in /ju:lf/.

Although fricative-glottal-fortis /h/ and as fricative-alveolar-fortis /s/ are phonemes in ARA, each of those ENG phonemes are realized as plosive-glottal-fortis /ʔ/ in /ʔə.lu:/ and as fricative-alveolar-lenis /z/ in /ti.ra:n.zɪt/. In the first-mentioned realization fortition happens because fricative sound is realized as plosive sound (stronger sound), while in the last-mentioned realization lenition happens. The lenition also becomes the phenomena of assimilation: the realization of lenis /z/ is influenced by the similar sound (lenis /n/) occurring before it.

ENG plosive-alveolar-fortis /t/ turns out to be realized as ARA plosive-emphatic-denti-alveolar-fortis /tʰ/ in /wa:tʰ/. In other words, the phonological realization is dealing with the effort in order that it sounds more ARA.

○ **Consonant Replacements in both IND and ARA**

ENG		IND		ARA	
catalogue	/kæ.tə.lɒg/	katalog	/katalɒk/	كتالوج	/katalu:J/
pragmatism	/præg.mə.tl.zəm/	pragmatisme	/prɒk.ma.tɪs.mə/	براغماتية	/bl.ri.ɣa.ma.tij.jah/
chocolate	/tʃɒ.klɪt/	coklat	/Co.klɒt/	شوكولاتة	/ʃu:.ku.la:.tɒh/
hydrogen	/haɪ.drə.dʒən/	hidrogen	/hi.dro.gən/	هيدروجين	/hi:.dru:.Ji:n/
jacket	/dʒæ.kɪt/	jaket	/Ja.kɛt/	جاكت	/Ja:.kɪt/
pyjamas	/pə.dʒɑ:.məz/	piama	/pi.ja.ma/	بجامة	/bi.Ja:.mɒh/
vaseline	/væ.sɪ.li:n/	vaselin	/fa.sə.lɪn/	فازلين	/fa:.zi.li:n/

Plosive-velar-lenis /g/ is realized as plosive-velar-fortis /k/ in (1) IND /ka.ta.lɒk/ and /prɒk.ma.tɪs.mə/ and as plosive-palatal-lenis /j/ in (2) ARA /ka.ta.lu:J/ and as /y/ in ARA /bl.ri.ɣa.ma.tij.jah/. Phenomena in (1) are dealing with the phonotactic rules that refrain lenis /g/ from occurring as coda in IND, so fortis /k/, as its allophone, is realized; and fortition happens. Phenomena in (2) are dealing with the realization of an ENG phoneme which does not belong to ARA as an ARA phoneme in each of the linguistic units.

Affricate-postalveolar-fortis /tʃ/ does not belong to IND or ARA. Therefore, it is realized as the one which is quite homorganic or homorganic to it. In IND /Co.klɒt/ it is realized as plosive-palatal-fortis /C/ and in ARA /ʃu:.ku.la:.tɒh/ as fricative-post-alveolar-fortis /ʃ/.

Affricate-post-alveolar-lenis /dʒ/ does not belong to IND or ARA. Therefore, it is realized as the one which is quite homorganic or homorganic to it. In IND /hi.dro.gən/ it is realized as plosive-velar-lenis /g/. It is realized as plosive-palatal-lenis /j/ in IND /Ja.kɛt/ as well as in ARA /hi:.dru:.Ji:n/, /Ja:.kɪt/, and /bi.Ja:.mɒh/. It is realized as approximant-palatal-lenis /j/ in IND /pi.ja.ma/.

Fricative-labiodental-lenis /v/ does not belong to IND or ARA. Therefore, it is realized as the one which is homorganic to it, i.e. as fricative-labiodental-fortis /f/ in IND /fa.sə.lɪn/ and ARA /fa:.zi.li:n/. The last-mentioned realizations show fortition. The fortition in ARA /fa:.zi.li:n/ also becomes the phenomena of dissimilation: the realization of fortis /f/ (instead of lenis) is influenced by the opposite type of consonant (lenis /z/) occurring before it.

• **Vowel Replacements**

○ **Vowel Replacements in IND**

ENG		IND		ARA	
vaseline	/væ.sɪ.li:n/	vaselin	/fa.sə.lɪn/	فازلين	/fa:.zi.li:n/
mechanic	/mi.kæ.nɪk/	mekanik	/me.ka.nɪk/	ميكانيكي	/mi:.ka:.ni:.ki:/
jacket	/dʒæ.kɪt/	jaket	/Ja.kɛt/	جاكت	/Ja:.kɪt/
supermarket	/su:.pə.mɑ:kɪt/	supermarket	/su.pər.mɑ:r.kət/	سوبرماركت	/su:.bɑr.mar:kɪt/
rheumatism	/ru:.mə.tl.zəm/	rematik	/rɛ.ma.tɪk/	روماتزم	/ru:.ma:.tlzm/

High-front-tense /i/ is realized as high-front-lax /ɪ/ in /fa.sə.lɪn/. Therefore, vowel laxing happens. Meanwhile, it is realized as mid-front-tense /e/ in /me.ka.nɪk/. High-front-lax /ɪ/ is realized as mid-front-lax /ɛ/ in /Ja.kɛt/ and as mid-central-lax /ə/ in /su.pər.mɑ:r.kət/. The two last-mentioned realizations show lowered tongue-position. Back-high-tense /u/ is realized as mid-front-lax /ɛ/ in /rɛ.ma.tɪk/. Besides lowered-centered tongue-position, the last-mentioned realization shows laxing.

○ **Vowel Replacements in ARA**

ENG		IND		ARA	
disco	/dɪs.kəʊ/	disko	/dɪs.ko/	ديسكو	/di:.sku:/
jelly	/dʒe.li/	jeli	/Je.li/	جيلي	/Ji:.li:/
tennis	/te.nɪs/	tenis	/te.nɪs/	تنس	/tɪ.nɪs/
penalty	/pe.nəl.ti/	penalti	/pe.nəl.ti/	بلنتي	/ba.lən.ti:/
christmas	/krɪs.məs/	krismes	/krɪ.sməs/	كرسمس	/ki.rɪs.mɪs/

computer	/kəm. pju:tər/	komputer	/kəm.pu.tər/	كمبيوتر	/kum. bi.ju:tər/
bulldozer	/bʊl.dəʊ.zər/	buldoser	/bʊl.do.sər/	بلدوزر	/bʊl.dəʊ.zər/
base ball	/beɪs.bɔ:l/	bisbol	/bɪs.bɔl/	البیسبول	/bi:s.bu:l/

High-front-lax /ɪ/ is realized as high-front-tense /i/ in /di:sku:/. Therefore, tensing happens. The realization of tense vowel is also followed by length. Meanwhile, mid-front-tense /e/ is realized as high-front-tense /i/ in /ji:li:/, high-front-lax /ɪ/ in /tɪnɪs/, and low-central-tense /a/ in /bɑ.lən.ti:/. The realizations of those vowels show assimilation because the realization of each of the vowels is influenced by the similar vowel occurring before it. The first-and-second-mentioned realizations show raised tongue-position while the last-mentioned one shows lowered-centered tongue-position. Besides, the second-mentioned realization shows laxing.

Mid-central-lax /ə/ is realized as high-front-lax /ɪ/ in /ki.rɪs.mɪs/ and as low-central-lax /ʌ/ in /kʊm.bi.ju:tər/. The first-mentioned realization shows raised-fronted tongue-position. Meanwhile, the last-mentioned one shows lowered tongue-position. High-back-lax /ʊ/ is realized as high-front-lax /ɪ/ in /bʊl.dəʊ.zər/; fronted tongue-position happens. Mid-back-lax /ɔ/ is realized as high-back-tense /u/ in /bi:s.bu:l/; raised tongue-position happens. In the last-mentioned realization, tensing happens and length is following the tense vowel.

#### ○ Vowel Replacements in both IND and ARA

	ENG		IND		ARA
jeep	/dʒi:p/	jip	/jɪp/	جيب	/jɪjb/
film	/fɪlm/	film	/fi.ləm/	فيلم	/fi:lm/
vaseline	/væ.sɪ.li:n/	vaselin	/fa.sə.lɪn/	فازلين	/fa:zi.li:n/
chocolate	/tʃɒ.klɪt/	coklat	/Co.klɑt/	شوكولاتة	/ʃu:ku.lɑ:təh/
helicopter	/he.lɪ.kɒp.tər/	helikopter	/he.li.kɒp.tər/	هليكوبتر	/hi.li.ku:b.tər/
internet	/ɪn.tər.net/	internet	/ɪn.tər.net/	انترنت	/ɪn.tər.nɪt/
rugby	/rʌg.bi/	rugbi	/rʊk.bi/	رجبي	/rʊj.bi:/
chlorine	/klɔ:ri:n/	klorin	/klo.rɪn/	كلور	/ku.lu:r/

High-front-tense /i/ is realized as high-front-lax /ɪ/ in IND /jɪp/ and as diphthong in ARA /jɪjb/. Vowel laxing happens in /jɪp/. Meanwhile diphthongization happens in /jɪjb/.

High-front-lax /ɪ/ is realized as high-front-tense /i/ in IND /fi.ləm/ as well as in ARA /fi:lm/ and /fa:zi.li:n/; tensing happens in the realizations. It is realized as mid-central-lax /ə/ in IND /fa.sə.lɪn/; lowered-centered tongue-position happens. It is realized as low-central-lax /ʌ/ in IND /Co.klɑt/ and as low-central-tense /a/ in ARA /ʃu:ku.lɑ:təh/; lowered-centered tongue-position happens in the realizations and laxing happens in the realization of ARA word.

Mid-front-tense /e/ is realized (1) as mid-front-tense /e/ in IND /he.li.kɒp.tər/ and as mid-front-lax /ɛ/ in IND /ɪn.tər.net/ (in the last-mentioned realization laxing happens) and (2) as high-front-tense /i/ in ARA /hi.li.ku:b.tər/ and high-front-lax /ɪ/ in ARA /ɪn.tər.nɪt/; in the realizations raised tongue-position happens and in the last-mentioned realization laxing happens.

Low-central-lax /ʌ/ is realized as high-back-lax /ʊ/ in IND /rʊk.bi/ and in ARA /rʊj.bi:/. The realizations show raised-backed tongue-position. Meanwhile, mid-back-lax /ɔ/ in ENG is realized as mid-back-tense /o/ in IND /klo.rɪn/ and as high-back-tense /u/ in ARA /ku.lu:r/. Tensing happens in the realizations. Raised tongue-position happens in the last-mentioned realization.

#### ○ Schwa Replacements in both IND and ARA

	ENG		IND		ARA
pyjamas	/pə.dʒɑ:məz/	piama	/pi.jɑ.ma/	بجامة	/bi.jɑ:məh/
oxygen	/ɒk.sɪ.dʒən/	oksigen	/ɔk.sɪ.ɡen/	أكسجين	/ɔk.si.ji:n/
anaemia	/ə.ni:miə/	anemia	/ʌ.ne.mi.jɑ/	أنيميا	/ʌ.ni:mi.jɑ/
hello	/hə.ləʊ/	halo	/hɑ.lo/	ألو	/ʌ.lu:/
gallon	/gælən/	galon	/gɑ.lən/	غالون	/yo:lu:n/
kangaroo	/kæŋ.gə.ru:/	kanguru	/kaŋ.gu.ru/	كنغر	/ka:ŋɑr/

o					
transistor	/træn.zls.tə/	transistor	/trɑn.sls.tɔr/	ترانزستور	/tɪrɑnzlstɔr/
kerosene	/ke.rə.si:n/	kerosin	/ke.ro.sɪn/	كيروسين	/ki:ru:si:n/
panorama	/pæ.nə.ra.mə/	panorama	/pa.no.rama/	بانوراما	/ba:nu:ro:ma:/

Mid-central-lax /ə/ or schwa is realized as high-front-tense /i/ in IND /pi.ja.ma/ as well as in ARA /bi.Ja.mɑh/ and /ʔuk.si.ji:n/; besides tensing, fronted-raised tongue-position also happens; while in the realization of IND /ʔuk.si.gɛn/ only fronted tongue-position happens. The schwa is realized as low-central-tense /a/ in IND /ʔa.ne.mi.ja/ and /ha.lo/, while it is realized as low-central-lax /ʌ/ in ARA /ʔɑni:mija/, /ʔɑ.lu:/, and /ka:ɲɑr/; in the realizations lowered tongue-position happens while in the realizations of IND words tensing happens. The schwa is realized as high-back-tense /u/ in IND /kaŋguru/ as well as in ARA /yo:lu:n/, /ti.ra:nzls.tu:r/, /ki:ru:si:n/, and /ba:nu:ro:ma:/; the realizations show tensing and raised-backed tongue-position. The schwa is realized as mid-back-lax /ɔ/ in IND /galɔn/ and as mid-back-tense /o/ in IND /ke.ro.sɪn/ and /pa.no.ra.ma/; the realizations show backed tongue-position and the last-two-mentioned realizations show tensing.

○ **Non-IND/ARA Vowel Replacements in both IND and ARA**

ENG		IND		ARA	
jazz	/dʒæz/	jaz	/jɛs/	جاز	/Ja:z/
cabin	/kæbɪn/	kabin	/ka.bɪn/	كابينة	/ka.bi:nɑh/
fax	/fæks/	faks	/fʌks/	فاكس	/fa:ks/
hamburger	/hæm.bɜ:ɡər/	hamburger	/hʌm.bɔr.gər/	هامبورجر	/hʌm.bu:r.Jʌr/
pragmatism	/præg.mə.tɪ.zəm/	pragmatisme	/prʌk.ma.tɪ.smə/	براغماتية	/bl.ri.ya.ma:tijjah/
gallon	/gælən/	galon	/ga.lɔn/	غالون	/yo:lu:n/
hamburger	/hæm.bɜ:ɡər/	hamburger	/hʌm.bɔr.gər/	هامبورجر	/hʌm.bu:r.Jʌr/
golf	/gɔlf/	golf	/go.lɔf/	جولف	/Ju:lf/
panorama	/pæ.nə.rɑ.mə/	panorama	/pa.no.ra.ma/	بانوراما	/ba:nu:ro:ma:/
pyjamas	/pə.dʒɑ:məz/	piama	/pi.ja.ma/	بجامة	/bi.Ja:mɑh/
seminar	/se.mɪ.nɑ:/	seminar	/se.mi.nʌr/	سمينار	/sɪ.mi:na:r/
catalogue	/kætə.lɔɡ/	katalog	/ka.ta.lɔk/	كتالوج	/ka.ta.lu:j/
cocktail	/kɔk.tel/	koktail	/kɔk.tɪl/	كوكتيل	/ku:k.ti:l/
intercom	/ɪn.tə.kɔm/	interkom	/ʔɪn.tər.kɔm/	إنتركم	/ʔɪn.tər.kɔm/
jockey	/dʒɔ.ki/	joki	/jo.ki/	جوكي	/Ju:ki:/
squash	/skwɒʃ/	skuas	/sku.was/	إسكواش	/ʔɪs.kwa:ʃ/
watt	/wɒt/	watt	/wʌt/	واط	/wa:tʰ/

Low-front-lax /æ/ is realized as mid-front-lax /ɛ/ in IND /jɛs/; the realization shows raised tongue-position. It is realized as high-front-tense /i/ in ARA /bl.ri:.ya.ma:tijjah/; the realization shows raised tongue-position and laxing. It is realized as low-central-tense /a/ in IND /kʌbɪn/ and /ga.lɔn/ as well as in ARA /Ja:z/, /ka.bi:nɑh/, and /fa:ks/; the realizations show centered tongue-position and tensing. It is realized as low-central-lax /ʌ/ in ARA /hʌm.bu:r.Jʌr/ as well as in IND /fʌks/, /hʌm.bɔr.gər/, and /prʌk.ma.tɪs.mə/; the realizations show centered tongue-position. It is realized as mid-back-tense /o/ in ARA /yo:lu:n/; the realization shows backed-raised tongue-position and tensing.

Mid-central-tense /ɜ/ is realized as high-back-lax /ʊ/ in IND /hʌm.bɔr.gər/ and as high-back-tense /u/ in ARA /hʌm.bu:r.Jʌr/. The realizations show raised-backed tongue-position. Meanwhile, the realization of IND word shows laxing.

Low-back-tense /ɑ/ is realized as high-back-tense /u/ in ARA /Ju:lf/; the realization shows raised tongue-position. It is realized as mid-back-tense /o/ in IND /go.lɔf/ and ARA /ba:nu:ro:ma:/; the realizations show raised tongue-position. It is realized as low-central-tense /a/ in IND /pa.no.ra.ma/ and /pi.ja.ma/ as well as in ARA /bi.Ja:mɑh/ and /sɪ.mi:na:r/; the realizations show centered tongue-position. It is realized as low-central-lax /ʌ/ in IND /se.mi.nʌr/; the realization shows laxing and centered tongue-position.



Low-back-lax /ɒ/ is realized as high-back-tense /ʊ/ in ARA /ʔIn.tʌr.kəm/; the realization shows raised tongue-position. It is realized as high-back-tense /u/ in ARA /ka.ta.lu:ʃ/, /ku:k.ti:l/, and /ju:ki:/; the realizations show vowel tensing and raised tongue-position. It is realized as mid-back-lax /ɔ/ in IND /ka.ta.lɔk/, /kɔk.til/, and /ʔIn.tʌr.kəm/; the realizations show raised tongue-position. It is realized as mid-back-tense /o/ in IND /ʃo.ki/; the realization shows vowel tensing and raised tongue-position. It is realized as low-central-tense /a/ in IND /sku.was/ as well as in ARA /ʔIs.kwa:f/ and /wa:tʰ/; the realizations show vowel tensing and centered tongue-position. It is realized as low-central-lax /ʌ/ in IND /waʔ/; the realization shows centered tongue-position.

- **Diphthong Replacements**

- **Diphthong Replacements in IND**

ENG		IND		ARA	
bulldozer	/bʊl.dəʊ.zər/	buldoser	/bʊl.do.sər/	بلدوزر	/bɪl.dʌw.zʌr/
ice cream	/aɪs.kri:m/	eskrim	/ʔɛs.krɪm/	ايس كريم	/ʔɛj.si.ki.ri:m/
nylon	/naɪ.lɒn/	nilon	/ni.lɒn/	نايلون	/nɛ:j.lu:n/

Every diphthong in ENG words above-listed is realized as a vowel in IND words but still as a diphthong in ARA words. In other words, the phenomenon of monophthongization happens in IND, but not in ARA. Different from each of ENG diphthong that consists of two vowels, every diphthong in ARA consists of a vowel followed by an approximant.

- **Diphthong Replacements in both IND and ARA**

ENG		IND		ARA	
cocktail	/kɒk.teɪl/	koktail	/kɒk.tɪl/	كوكتيل	/ku:k.ti:l/
laser	/leɪ.zər/	laser	/la.sər/	ليزر	/lɛj.zʌr/
radar	/reɪ.dɑː/	radar	/ra.dɑr/	رادار	/ra:.dɑ:r/
poster	/pəʊs.tər/	poster	/pɔs.tər/	پستر	/bʊs.tʌr/
disco	/dɪs.kəʊ/	disko	/dɪs.ko/	ديسكو	/di:s.ku:/
video	/vɪ.diəʊ/	video	/fi.di.jo/	فيديو	/fi:.di.ju:/
hydrogen	/haɪ.drə.dʒən/	hidrogen	/hi.dro.gen/	هيدروجين	/hi:.dru:.ji:n/
fluorine	/flʊə.ri:n/	fluorin	/fluo.rɪn/	فلور	/fʊ.lu:r/

Most of diphthongs in ENG words above-listed are monophthongized in IND and ARA words, except in ARA /lɛjzʌr/. However, instead of consisting of two vowels, the diphthong in ARA words consists of a vowel followed by an approximant. In IND /fidijo/ and ARA /fi:diju:/ ENG diphthong is realized as a sound-cluster consisting of an approximant followed by a vowel.

- **Length Replacement**

ENG		IND		ARA	
cartoon	/kɑːtu:n/	kartun	/kɑrtun/	كرتون	/kɑrtu:n/
seminar	/semɪnɑː/	seminar	/seminɑr/	سمينار	/sɪmi:nɑ:r/

Length in ENG words is replaced by thrill-post-alveolar-lenis /r/ in IND and ARA words. The replacement is influenced by grapheme-phoneme correspondence governing that letter *r* in IND or letter ر in ARA normally corresponds to /r/.

- **Bound Morpheme Replacements**

ENG		IND		ARA	
pragmatism	/præg.mə.tɪ.zəm/	pragmatisme	/prɛk.ma.tɪs.mə/	براغماتية	/bl.ri:.ya.ma:.tɪj.jah/
rheumatism	/ru:.mə.tɪ.zəm/	rematik	/rɛmatɪk/	روماتزم	/ru:.ma:.tɪzm/

ENG suffix *-ism* /I.zəm/ is realized as /Is.mə/ in IND /pɾak.ma.tɪs.mə/ and as /Izm/ in ARA /ru.ma.tɪzm/. However, the suffix is realized differently: as /Ik/ in IND /rɛ.ma.tɪk/ and as /tɪj.jah/ in ARA /bl.ri.ya.ma.tɪj.jah/.

## 5.2 Sound Additions

The following is the distribution of sound additions among the cognates.

### • Consonant Additions

#### ○ Consonant Addition in ARA

ENG		IND		ARA	
tuna	/tju:.nə/	tuna	/tu.na/	تونة	/tu:.nɒh/

Fricative-glottal-fortis /h/ is added as the final sound in /tu:nɒh/. Since it is added as the final sound of the word, the addition is called excrescent.

#### ○ Consonant Additions in both IND and ARA

ENG		IND		ARA	
orchestr a	/ɔ:.kɪs.trə/	orquestra	/ʔɔr.kɛs.trə/	أوركسترا	/ʔu:r.kɪs.trə:/
superma n	/su:.pə.mæn/	superme n	/su.pəɾ.mɛn/	سوبرمان	/su:.bɒr.ma:n/
influenz a	/ɪn.flu.en.zə/	influenz a	/ʔɪn.flu.wɛn.zə/	إنفلونزا	/ʔɪn.fl.lu.wɒn.zə/
anaemia	/ə.ni:.miə/	anemia	/ʔa.ne.mi.jə/	أنيميا	/ʔa.ni:.mi.jə/

Plosive-glottal-fortis /ʔ/ is added in both IND and ARA words. Since it is added as the initial sound of the word, the consonant addition is called prothesis. Thrill-post-alveolar-lenis /r/, approximant-bilabial-lenis /w/, and approximant-palatal-lenis /j/ is also found to be added in both IND and ARA words. Since it is inserted within a word, the addition is called anaptyxis.

### • Vowel Additions

#### ○ Vowel Additions in IND

ENG		IND		ARA	
inch	/ɪntʃ/	inci	/ʔɪn.Cɪ/	إنش	/ʔɪnʃ/
golf	/gɒlf/	golf	/go.ləf/	جولف	/ju:lʃ/
squash	/skwɒʃ/	skuas	/sku.was/	إسكواش	/ʔɪs.kwɑ:ʃ/

High-front-tense /i/ is added in IND words. Since it is added as the final sound of the words, the addition is called proparalepsis. Mid-central-lax /ə/ and high-front-tense /u/ are also found to be added in IND words. Since it is inserted within a word, the addition is called anaptyxis.

#### ○ Vowel Additions in ARA

ENG		IND		ARA	
mechani c	/mi.kæ.nɪk/	mekanik	/me.ka.nɪk/	ميكانيكي	/mi:.ka:.ni:.ki:/
influenz a	/ɪn.flu.en.zə/	influenz a	/ʔɪn.flu.wɛn.zə/	إنفلونزا	/ʔɪn.fl.lu.wɒn.zə/
folklore	/fəʊ.klɔ:/	folklor	/fo.klor/	فولكلور	/fu:l.ko.lu:r/
platinu m	/plæ.tɪ.nəm/	platinum	/pla.tinəm/	بلاتين	/ba.la.ti:n/

Anaptyxis also happens in ARA words as can be seen in the insertion/addition of vowels in ARA words above-listed.

○ **Vowel Additions in both IND and ARA**

ENG		IND		ARA	
flannel	/flænl/	flanel	/fla.nel/	فانيلي	/fa:.ni:.li:/

Anaptyxis also happens in both IND and ARA words as can be seen in the cognates above.

• **Length Additions**

ENG		IND		ARA	
disco	/dɪs.kəʊ/	disko	/dɪs.ko/	ديسكو	/di:s.ku:/
panorama	/pæ.nə.ra.mə/	panorama	/pa.no.ra.ma/	بانوراما	/ba:.nu:.ro:.ma:/
whisky	/wɪs.ki/	wiski	/wɪs.ki/	ويسكي	/wi:s.ki:/

Length (/:/) is added in the realization of ARA words. The phenomenon of the prosodic aspects addition is found in many ARA words becoming the data source of this article; the three above-listed are only the examples. However, the length addition is not found in any IND words becoming the data source of this article.

• **Sound-Cluster Additions**

ENG		IND		ARA	
squash	/skwɒʃ/	skuas	/sku.was/	إسكواش	/ʔɪs.kwa:ʃ/
stereo	/ste.ri.əʊ/	stereo	/ste.re.jo/	إستيريو	/ʔɪs.ti:.ri.ju:/

Sound cluster /ʔl/ is added as initial sounds (initial syllable) in ARA words above-listed. The addition of sound-cluster (syllable consisting of /ʔ/ as its coda and /l/ as its nucleus) is not found in IND words involved in this article.

• **Bound Morpheme Additions**

ENG		IND		ARA	
chocolate	/tʃɒ.klɪt/	coklat	/Co.klat/	شوكولاتة	/ʃu:.ku.la:tʰ/
yard	/jɑ:d/	yard	/jʌrt/	ياردة	/ja:r.dʰ/

Each of ENG words does not contain suffix. However, ARA suffix *-ة* or *-ة* is added in ARA words. The attachment of the suffix, as well as the addition of fricative-glottal-fortis /h/ as the final sound in /tu:.nʰ/ discussed in the several previous sections seem to deal with the phenomenon of analogy. The suffix attachment is influenced by the existence of other ARA words containing the suffix such as *براعماتية* /bɪ.ri:.ya.ma:tij.jʰ/ exemplified previously.

### 5.3 Sound Fusions and Deletions

The following is the distribution of sound fusions and sound deletion among the cognates.

• **Sound Fusions in ARA**

ENG		IND		ARA	
kangaroo	/kæŋ.gəru:/	kanguru	/kaŋ.guru/	كنغر	/ka:.ŋʌr/
flannel	/flænl/	flanel	/fla.nel/	فانيلي	/fa:.ni:.li:/
tuna	/tju:.nə/	tuna	/tu.na/	تونة	/tu:.nʰ/

Every consonant-cluster in ENG words above-mentioned is fused into a single consonant in ARA and IND words.

• **Vowel Deletions**

ENG		IND		ARA	
kangaroo	/kæŋ.gəru:/	kanguru	/kaŋ.gu.ru/	كنغر	/ka:.ŋʌr/
penicillin	/pe.nɪ.sɪ.lɪn/	penisilin	/pe.ni.si.lɪn/	بنسلين	/bɪn.si.li:n/

Apocope or the deletion of the final sound of a word happens in the realization of ARA /ka:ŋar/. Meanwhile, syncope or the deletion of the sound in the middle of a word happens in ARA /bɪnsili:n/.

- **Sound-Cluster Deletions**

ENG		IND		ARA	
fluorine	/fluə.ri:n/	fluorin	/fluo.rɪn/	فلور	/fu.lu:r/
platinum	/plæ.tl.nəm/	platinum	/pla.ti.nəm/	بلاتين	/ba.la.ti:n/

The nucleus of the final syllable of every ENG word above-listed is replaced by another vowel in IND words while the nucleus and the coda are deleted in ARA words. The deletion of the sound-cluster seems to be related to vowel addition. The first syllable of every ENG word consists of double onset. A vowel is added in every ARA word and becomes the nucleus of a new syllable, i.e. the syllable in which the first consonant the double onset becomes the onset. The second onset of the double onset becomes the onset of the second syllable in ARA words. Therefore, although sound-cluster deletion happens, deletion does not make any syllable reduction in ARA words above-listed.

- **Length Deletion**

ENG		IND		ARA	
dollar	/dɒ.lər/	dolar	/do.lɑr/	دولار	/du:.la:r/
kerosene	/ke.rə.si:n/	kerosin	/ke.ro.sɪn/	كيروسين	/ki:.ru:.si:n/
super-market	/su:.pə. mɑ.kɪt/	super-market	/su.pər. mɑr.kət/	سوبرماركت	/su:.bɑr. mɑ:r.kɪt/

Length (/:/) is deleted in the realization of IND words. Such deletion is found in many IND words becoming the data source of this article. The three cognates above-listed represent them.

- **Bound Morpheme Deletions**

ENG		IND		ARA	
chips	/tʃɪps/	cip	/cɪp/	شيبس	/ʃɪps/
jeans	/dʒi:nz/	jin	/ʃɪn/	جينز	/ʃi:nz/
pyjamas	/pə.dʒɑ:məz/	piama	/pijama/	بجامة	/bi.jɑ:məh/

Every ENG word listed-above contains plural-form-marker suffix *-s*. The realization of the ENG suffix is maintained in ARA /ʃɪps/ and /ʃi:nz/, but it is replaced by ARA suffix *-ة* in /bi.jɑ:məh/. However, the ENG suffix is not realized (deleted) in IND words. The deletion of the suffix seems to deal with the fact that IND does not have any plural-form-marker suffix.

#### 5.4 Metatheses

The following is the distribution of metatheses among the cognates.

ENG		IND		ARA	
penalty	/penəlti/	penalti	/penəlti/	بلنتي	/ba.lənti:/
pragmatism	/præg. mətɪ.zəm/	pragmatisme	/præk. mɑtɪs.mə/	براغماتية	/bl.ri:.yə. mɑ:tɪj.jah

The sound-cluster of /nəl/ becomes the second syllable of /pe.nəl.ti/ while /lən/ becomes the second syllable in /ba.lən.ti:/. The onset in ENG word changes position into the coda in ARA word and vice-verse. Therefore, metathesis or sound position-change happens in the realization of the ARA word.

The final syllable of /præg.mətɪ.zəm/ is /zəm/. Meanwhile, the final syllable of /præk.mɑtɪs.mə/ is /mə/. The onset of the final syllable of the ENG word /z/ is replaced by /s/, moves, and becomes the coda of penultimate syllable of IND word. The coda of the final syllable of ENG word /m/ becomes the onset of the final syllable of the IND word. Therefore, besides consonant replacement, metathesis also happens in /præk.mɑtɪs.mə/.

## 6. CONCLUSION

Most of the linguistic units becoming the data source of this article are in forms of copy words. Even, ENG *ice cream*, which is in form of a phrase, is realized as IND word *eskrim*. Besides, there are some ARA copy words involved in this article, such as شوكولاتة /ʃu:.ku.la:.tAh/ and ياردة /ja:r.dAh/, consist certain suffix, i.e. ARA suffix ة- or ة (ta marbutah).

Sound correspondences discussed in this article involve the replacement of consonants, vowels, diphthong, length (a prosodic aspect), and bound morphemes. Compared to consonant replacements, vowel replacements involve more phenomena. Both consonant fortition and consonant lenition are found in the realization of copy words (both IND and ARA). Vowel tensing and vowel laxing, as well as tongue-position shifts, are found in the realizations of both IND and ARA words. Assimilations and dissimilations are also found in the replacement of both consonants and vowels.

Diphthongization, in which a vowel in ENG word is realized as a sound-cluster consisting of a vowel followed by an approximant, is found in ARA جيب /jɪjb/. Dealing with replacement of ENG diphthongs, monophthongizations are found in the realizations of both IND and ARA words. However, more monophthongizations happen in IND than in ARA.

Sound additions involve consonants, vowels, sound-cluster, length, and bound morphemes. However, sound-cluster additions, length additions, and bound morpheme additions only happen in ARA words. Meanwhile, sound deletions involve vowels, sound-cluster, length, and bound morpheme. Vowel deletions and sound-cluster deletions only happen in ARA words while length deletions and bound-morpheme deletions only happen in IND words. Different from sound deletions, there are some phenomena of sound fusions happening in both IND and ARA words. The sound fusions only involve consonants.

Metaheses or sound-position changes are found in the realizations of both IND and ARA words. The position changes involve onset and coda as elements of syllable. However, other common morphophonemic phenomena such as haplology and reduplication are not found in the realizations of copy words discussed in this article.

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