Universitas Muhammadiyah Malang, East Java, Indonesia
Izdihar : Journal of Arabic Language Teaching, Linguistics, and Literature
p-ISSN: 2622-738X, e-ISSN: 2622-7371 // Vol. 4 No. 1 April 2021, pp. 43-58
https://doi.org/10.22219/jiz.v4i1.11337 http://ejournal.umm.ac.id/index.php/izdihar/index izdihar.jurnalpba@umm.ac.id

Arabic-Java Writing System How Javanese Language Adopts Arabic Script

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ARTICLE INFO

Article History:
Received: 04/03/2021
Revised: 05/04/2021
Accepted: 30/04/2020
Published: 30/04/2020

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ABSTRACT

Borrowing script happens throughout history of languages. Long before we know Latin script, Javanese has already adopted Arabic script. However, Java language deals with problematic adaptation due to distinctive sound system among those two languages, Arabic and Java. For that matter, this research aims to uncover 1) how Arabic-Java orthography represents Javanese's consonants and vowel, and 2) how Arabic-Java orthography represents Javanese's cluster. This research uses qualitative descriptive method. Data contain with the Javanese words which is written in Arabic script. Data are gained from eight different books which are inscribed by Arabic-Java orthography. After data are collected, the orthography method and grapheme-phoneme correspondence are used to analyze them. Grapheme-phoneme correspondence used to know how Arabic-Java orthography represents consonants and vocal phonemes. Finally, this research found that Arabic-Java orthography has 28 graphemes which are used to represent 23 consonants. Modification letters and digraph are used to represent missing sound in Arabic. Six Javanese vocals are represented with 9 graphemes. In another hand, cluster is written in two ways, first by adding *Anaptyxis schwa* [ə] in between sonorant-sonorant or obstruent-sonorant and vowel [a] in initial cluster nasal consonant and plosive consonant.

Keywords Arabic script; Arabic-Java orthography; grapheme; phoneme

مستخلص البحث

كانت إستعارة الكتابة تقع طول حياة اللغوي. قبل نستخدم الكتابة اللاتنية, جاويون قد استعملوا الكتابة العربية. و لكن هم توجهوا مشكلة الإستعمال بسبب فرق نظام الصوت اللغوي بين العرب و جاوي. لتلك السبب, يبدأ هذ البحث ليظهر (١, كيف قواعد الإملاء العربي-الجوي يرسم حرف صامت و مصوّت لجوي و (٢, كيف قواعد الإملاء العربي-الجوي يرسم اجتماع حرفين ساكنين. يستخدم هذا البحث بحث نوعي الوصفي. و البيانات تتكون علي كلمات الجوية المكتوبة بكتابة العربية. تنولت البيانات من ثمانية الكتب متفرقة مكتوبة باالقواعد الإملاء العربي-الجوي. بعد جمع البينات استخدم الباحث المنهج الإملائي و إتّفاق بين الحرف و الرسم لتحليل هذه البينات. كان إتفاق حرف الرسمي مستخدما لإنكشاف كيف إملاء العربي- الجوي يرسم حرف الصامت و المصوت. و أخيرا, لقد تبيّن هذا الباحث أنّ للإملاء العربي-الجوي ٢٨ أحروف مستعملا لكتابة ٢٣ الصوامت و ٩ أحروف لكتابة ٦ أحروف المصوّتْ الجاوي. رسم الحرف الصناعي تستعمل للصوت الغريب عند العرب. و أمّا عند اجتماع حرفين ساكنين تستخدم طريقين يعني (١) بزيادة مصوتا مركزيا قصيرا *schwa* [ə] بين مجهورة-مجهورة أو إنفجار-مجهورة و (٢) زِيَادَةِ مصوت [a] عند أوّلِ اجتماع حرفين ساكنين بين حرف الأنفية و حرف الإنفجاري.

كلمات أساسية رسم العربي, إملاء العربي-الجوي, رسم الحرف, الحرف

Please cite this article as Jamalin, F., & Rahman, A. A. (2021). Arabic-Java Writing System How Javanese Language Adopts Arabic Script. *Izdihar : Journal of Arabic Language Teaching, Linguistics, and Literature*, *4*(1), 43-24. DOI: https://doi.org/10.22219/jiz.v4i1.11337

INTRODUCTION

Borrowing from other languages or *al-Iqtirāḍ* in Arabic (Mahmoud-Mukadam & Adebisi, 2019) does not occur only in words but also on the writing system. Javanese language is not the exception. Adaptation of writing from different languages is the common phenomenon according to Coulmas (2000) and the Javanese language has experienced three writing systems in a record: *hanacaraka,* Arabic-Java Writing System, and Alphabetic writing system. Introduction of Arabic script can be traced back at around 7 century AD, the early of Islamic religion entering Java. At that time, Caliphate 'Usman bin 'Affan sent Muawiyah bin Abu Sufyan to visit Java in 674 AD (Ahmad 1978). Nine centuries later, precisely at the beginning of the 16th century, Islamic teaching successfully penetrated Javanese culture, however, it had a small impact on the Javanese language. As a result, Arabic Script appeared to be used as a writing system for religious matter only, according to Raffles (2014).

Raffles' claim might equivalently concur with what Mark Sebba (2011) said about a script that can serve to differentiate social groups at various levels of an organization. Following that matter, 20th century, Arabic Script which is used to write the Javanese language can be found in Islamic student books at *Salafi* boarding school from East Java to Middle Java, as such al-Munawwir Boarding School at Krapyak, Tebuireng at Jombang, Kwagean at Kediri, Candramawa at Ngawi. Arabic script is used as a medium to understand Islamic Knowledge among *santri* or Islamic Boarding School Students. That phenomenon can be proved by the existence of the Javanese teaching books of Islam which is written in Arabic, such as *Basyā'irul Khairāt* (BKH) by Hamid at Ngawi (1996), *Niẓamus Sullamil Munawaraq* (NSM) by Bisyri Mustafa at Rembang (1381 H), *Masā'ilur Rijāl* (MR) By Misbah ibn Zayn al-Mustafa at Tuban (1422 H), *Risālatul Maḥīḍ* (RM) by Masruhan Ihsan Kudus (n.d.), *I'anatun Nisa* (IN) by Muhammad Usman Kediri (n.d.), *al-Mar'ah as-Ṣāliḥah* (MS) by Masruhan al-Maghfuri at Surabaya (n.d.), *'Iḍāh Mawā'iẓil 'Uṣfuriyyah* (IMU) by Abu Bakar at Kudus (1966).

Unfortunately, Arabic-Java Writing System (AJWS) got less attention among Indonesian Scholars. In Javanese culture, AJWS is broadly known by *pegon.* Some Indonesian researchers who conducted research on *pegon* used various perspectives. Ulyan *et al* (2020), Mahfud and Zuhdy (2018) analyzed *pegon* as a medium to transfer knowledge from a pedagogical perspective. Ulyan *et al* conducted a study on *Madrasah Diniyah al-Barokah* Watuagung Tambak Banyumas, their research summarized that *pegon* is still in use for religious education in that school. Meanwhile, Mahfud and Zuhdy tried to capture the effectiveness of *pegon* in the global context, and its contribution to education in Indonesia. At the beginning of the research, both assumed that the number of *pegon* letters is based on *hanacaraka*. In 2019, there was research on Arabic

manuscripts in Indonesian Archipelago conducted by Hizbullah *et all* (2019). They studied *pegon* and *jawi* script by corpus linguistics approach and they suggest the need for a systematic way to digitalized the literature that was written by *pegon* and *jawi* script.

On the 19th, precisely at the year between 1994-1995, Aswadi made two academic papers about Arabic-Java orthography. Frist, 1994, he studied Arabic letters and described, in his paper, the development of Arabic script usage from its origin till worldwide Arabic scripts expansion and application to write Urdu language in India, and other languages in Indonesia (Aswadi, 1994). The year after, 1995, his study focused on how the letter of *hanacaraka* transfigured into Arabic script. And his paper submitted to Gadjah Mada University under title *"Rekonstruksi Kaidah Penulisan Naskah Jawa dengan Huruf Arab"* (Aswadi, 1995).

From the literature review, not one single of them started AJWS or *pegon* studies from the Javanese Language itself. Mahfud and Zuhdy (2018) and Aswadi (1995) stated that *pegon* is based *hancaraka* and not based on the systematic unit of the Javanese Language. Therefore, they drew the line of Arabic script not by symbol and sound but by symbol and symbol. As a result, they missed a problematic adaptation between the Javanese Language and Arabic script.

Here is some other recent study about writing system that related to Arabic script around the world. First is House and Mirdeghan (2011), They conducted comparative orthography on three languages Persian, Urdu, and Pashto. According to the Arabic script is flexible and easy to modify with its' diacritics, and through this flexibility Persian, Urdu, and Pashto according to their research have a different number of graphemes due to distinctive feature of phonemes; Persian contains 32 graphemes, Urdu has 50, and Pashto has 44. Second, Dennis Kurzon (2013), studied the diacritic of Perso-Arabic script that is used in Urdu, and Sindhi. On his paper, dots are not compulsory only to represent phoneme as diacritics but also attached with grapheme to differentiate it from other, and he concluded that dots have three types;(1) diacritics with distinctive orthographic feature; (2) diacritics with inconsistent uses to maintain correspondence between phoneme and grapheme; (3) moraic diacritics – marks to indicate vowels following consonant in an abjad. Third, Dua'a Abu Elhija (2014), questioned what Arabic orthography that is used by Arabian youth in Facebook should like ?, and he found the interesting fact that most of them used new orthographic to represent colloquial Arabic language.

Compared to the previous study of the writing system, this paper will give a new insight into orthography study that focused on Arabic script used to represent the Javanese language from a linguistics perspective. This paper will examine the varying degrees of the orthographic style used by various Javanese

writers in corresponding to phonological counterparts like Javanese consonants, vowels, and syllables. This paper found 38 graphemes and diacritics is not solely represent vowels but stand along with other letters.

The result of this study, hopefully, can make a contribution whether for theory or practice. At the theoretical matter, this paper hopefully can give a holistic explanation about Arabic-Java orthography and also can contribute to the development of Linguistics particularly on written language. Practically, this paper can help Javanese culture to preserve Arabic-Java orthography and people who want to use Arabic-Java orthography for pedagogical or daily communication purposes.

The writing system is a branch of Linguistics introduced by some linguists who concern about the writing systems such as Geoffrey Sampson (2014), Florian Coulmas (1989), and Henry Rogers (2005). The term of writing system is used to make no confusion between transcription and translation. Transcription and translation mean one-to-one conversion of the graphemes (graphic phonemes) of one writing system into those of another writing system, and the visual representation of verbal utterance by means of special phonetic symbols derived from alphabetic letters, respectively (Coulmas, 2000). Meanwhile, the writing system is a set of visible or tactile signs used to represent units of language in a systematic way (ibid).

In this paper, the writers will use other terms which are related to the writing system such as script, orthography, and grapheme. The script is reserved for the graphic form of the units of a writing system, and orthography refers to the standardized variety of a given language-specific writing system (Coulmas, 2000), and Kridalaksana (1982) defines orthography as a language spelling system and spelling can be understood by representing language sound with particular writing rules. So when Arabic script is adopted by the Javanese language it can be called Arabic-Java orthography due to it already had its own spelling system rule that corresponded to the Javanese language. In addition, there are three aspects of orthography: first, the phonology aspect which is discussed how to write phonemes with letters or alphabets structuresecond, the morphology aspect which is discussed how to write morphemic units, third, the syntaxis aspect which is correlated with spelling and reading. From those three aspects, the core component that should be studied from orthography is the correlation between sound and symbol (Coulmas, 2002). The last term is grapheme; it is an abstract entity of the writing system that is coined on analogy with 'phoneme' (Coulmas, 1989),(Meletis, 2019). In linguistics, the graphemes of a language are commonly enclosed in angle bracket <> (Ibid). So, in this paper, grapheme unit will be marked with <> meanwhile phoneme and phonetic are marked with double slash // and square bracket [] respectively. For further

information, the researcher of this paper prefers to use Arabic-Java writing system instead of *pegon* due to no make confusion between *pegon* used in another language like Madura (Noordyanto et al., 2016).

This paper focused on the core aspect of orthography that is the correlation between sound including phonemes and syllables, and symbols. Java language has 23 consonant phonemes and six vocal phonemes which are needed to represent with Arabic script. 23 consonant phonemes consist of / p, b, t, d, ṭ, ḍ, c, j, k, g, ʔ, m, n, ñ, ŋ, l, f, s, z, h, r, w, y/ (Marsono, 1992), and six vocal consist of /a, i, u, e, ə, o/ (Wedhawati et al., 2006). Unfortunately, the 28 consonant Arabic-letters have no symbol of seven phonemes, they are /p, ṭ, ḍ, c, g, ŋ, ñ/. The same case also occurs on vocals, the vocal Arabic-diacritic or *ḥarakat* has no symbol for /e, ə, o/. The cluster writing also has a problem issue, the Javanese's syllable may start with a consonant cluster like a word *mriki* but, unfortunately, the Arabic writing never been used to write cluster at the beginning of syllable as mentioned by Ryding (Ryding, 2005), that there is no consonant cluster at the beginning of Arabic words.

From those problems of writing, the Arabic-Java writing system (AJWS) has to be studied due to knowing how Arabic-Java orthography works. This research divided into two goals, first how Arabic-Java orthography represents consonant phonemes and vocal phonemes, second how Arabic-Java orthography represents consonant clusters.

METHOD

The method used by the researcher is the language research method with the descriptive qualitative model of research. The language research method is the way to understand the work of Linguistics objects, and the objects are the language used in daily life (Mastoyo, 2007). The object of this paper is written language used by Javanese people.

This research has been done through 4 steps, preparation, gathering data from various resources, data analysis, analysis presentation. In the beginning, the researcher collected the resources books from Salafi Boarding School's book store, as such Kwagean, and Krapyak. Researcher selected 8 different books and authors, those are , *al-Mar'ah as-Ṣāliḥah* (MS) by Masruhan al-Maghfuri Rembang, *Naẓmu Assullamil Munawwaraqi fil Manṭiq* (NSM) by Bisyri Mustafa Rembang; *I'ānatun Nisā'* (IN) by Muhammad Ustman Kediri; *Sullamul Futuḥāt* (SF) by Abdul Hanan Kediri; *Masā'ilur Rijāl* (MR) by Misbah Bangelan; *Īḍāḥ Mawā'iẓil 'uṣfūriyah* (IMU) by Muhammad ibn Abu Bakr; *Risālatul Maḥīḍ* (RM) by Masruhan Ihsan Rembang; *al-Mar'ah as-Ṣaliḥah* (MS) by Masruhan al-Maghfuri Surabaya; *Basyā'irul Khairāt* (BKH) by Agus Abdul Hamid Ngawi.

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After primary resources books were collected, the researcher began to gather data by using the observation method that observing language usage by those authors in their books. Due to the formal object of the research is text so the observation is called text observation. This method uses recording technically, the researcher recorded Arabic text which is used to write the Javanese language. To execute this technic, first, the researcher traced Javanese words written in Arabic in those 8 Islamic books. Afterward, the selected words were marked and transferred it to office word.

After data collection, the researcher analyzed them by studying a similar way of consonants and vocals writing from eight different Arabic-Java script users. Then, the way of writing compares to Arabic orthography as a material standard. This has been known *metode padan* or equivalent method by Indonesian linguists. Due to the text asprimary data so it can be classified as an orthographic method (Sudaryanto 1993:15), and it uses two technics; relation of comparing similarities and relation of comparing varieties between Arabic-Java writing and Arabic Writing itself. Afterward, to know the principle rule between sounds and scripts of AJWS, the researcher used grapheme-phoneme correspondence that is pairing one-to-one symbols and sounds (Coulmas 1999:175).

The final step is analysis presentation. The final result of AJWS research was represented in informal and formal ways. The informal way was delivered in ordinary words through mini discussion and formal ways were presented with signs and symbols, such as International phonetics, through academic papers.

RESULTS & DISCUSSION

The Uncertain Grapheme-Phoneme Relation and The Modified Letters Using Dots

Between Arabic and Java share same consonant phoneme those are /b,t,d,j,k, ʔ,m,n,l,f,s,z,h,r,w,y/. AJWS writers used the same graphemes as Arabic script writers did to represent those 16 similar phonemes, but some phonemes found different cases. Take a look at these written words in AJWS found in three books BKH, NSM, and IN:

(1) تُوْكُوْ /tuku/ ‘to buy’

(2) سَرْطَا /sərta/ ‘with’

(3) تَمْبُوْغْ /təmbuŋ/ ‘word’

(4) پَاطَا /ñata/ ‘real’

In these four words, the phoneme plosive alveolar voiceless /t/ is represented with two graphemes; <ت> and <ط>. Both acts as /t/ writing symbol according to /t/ distribution. Grapheme <ت> is used when /t/ occurs in all position, like (1) in BKH and (2) in NSM, but /ط/ takes the position as /t/ grapheme only when it occurs in open syllable like example number (2) in BKH and (4) in IN, and phoneme, after /t/, is /a/ so it can be pronounced [tɔ] like ط [tˤ] in Arabic. This phenomenon can be found in Persian, Urdu, and Pashto where <ت> and <ط> become representations of /t/ (House & Mirdehghan, 2011).

The same condition goes to glottal stop representation /ʔ/, Arabic language uses *hamzah* <ء> to represent /ʔ/ or known as *al-huruf al-mustafalah* (Fayad 1998) just like glotal stop in the final sound of *khaṭā'* /xaṭāʔ/ 'wrong' and in initial words of *'akala* /ʔakala/ 'to eat'. However, in the Javanese Language /ʔ/ only distributed at the end of a syllable (Wedhawati et al., 2006), and the AJWS writers use either *hamzah* <ء> or *kāf* <ك>, see example (6) in MR and (7) in SF below:

(6) اَوَاءْ /awaʔ/ 'self'

(7) اَفِيْكْ /apiʔ/ 'good'

(9) فْلَاسْتِيْكْ /plastik/ 'plastic'

(10) اِيْكِىْ /iki/ 'this'

In other hand in example (9) in SF, and (10) in BKH, grapheme <ك> are not only for glottal stop /ʔ/ but also /k/. The way of writing of one phoneme with two symbols can be justified that the relation between phoneme and grapheme is uncertain (Coulmas, 2000), see table 1 for the list of the uncertain grapheme-phoneme relation, just like Alphabetic Writing System of English, considering the English vowel /uː/ have different ways of spelling; <u> 'truly', <o> 'do', <oe> 'shoe', <oo> 'soon', <oe> ə'true', <ui> 'lawsuit', <ou> 'routine', <wo> 'two', <ew> 'screwed', <ewe> 'jewel', <oeu> 'manoeuvre', <ous> 'rendezvous', <ough> 'throughout', <oups> 'coups' (ibid). All of those graphemes are representation of /uː/.

Meanwhile, about the atypical of Arabic Consonant like /p, ṭ, ḍ, c, g, ŋ, ñ/, AJWS modifies closed grapheme of those seven sounds by additional dots and digraph. The dots can be one or two, following grapheme *fa'* <ف>, AJWS adds two dots of *fa'* <ڤ> then becomes grapheme of bilabial voiceless /p/, the near sound of labio-dental voiceless /f/, grapheme <ڤ > is written in example number (9) and (7) above. Furthermore, modified dots are found in others six sounds; /ṭ/ → <ﻁ>, <ﻄ>, <ﻈ> see example (11) in NSM, /ḍ/ → <ډ>, <ڍ> (12) in MS,

/c/ → <چ> (13) in MS, /g/ → <ﮒ> (14) in RM, /ŋ/ → <ﻍ > (15) in BKH, /ñ/ → <ﻲ > (16) in MS:

(11) چَطَّا /cəṭc/ ‘clear’ (12) رَنْدَڠْ /rənḍəŋ/ ‘cloudy’

(13) مَاچَاءْ /macaʔ/ ‘make up’ (14) ﮕَتَيْهْ /gəteh/ ‘blood’

(15) وَوْغْ /woŋ/ ‘person’ (16) اَيَارْ /añar/ ‘new’

All those words were written by three dots modification, however, some sounds face uncertain grapheme of modification, like the words *dunya* /duña/ ‘world’. The phoneme /ñ/ can be represented by triple dots of *ya´* <ﭖ >, like (17) in RM or by digraph, a combination of two letters to represent one sound (Kridalaksana, 1982), that is *nun* wa *ya´*<ني>, like (18) in IMU.

(17) دُوْڤَا /duña/ ‘world’ (18) دُوْنْيَا /duña/ ‘world’

The modified grapheme of the closed sound becomes adopted-Arabic-script orthography’s characteristic. It does not happen only through Arabic script in Javanese but also in other languages like Persian, Urdu, and Pashto. As recorded by House and Mirdehghan (2011), the phoneme /p/ in the three languages is represented with <ﭖ> *ba´* with three dots. The phoneme /p/ is the nearest phoneme to /b/ where /b/ correspond to grapheme <ب>. In another case, the Javanese language chooses *fa´* <ڤ> with three dots to repesent /p/. Javanese languages picks nearest sound of bilabial, labio-dental sound /f/ <ف>, at the same voiceless sound.

For further explanation, the dot or *naqt* in Arabic is pioneered by Abu Aswad Adu’Ali (Dani,1997). In order to prevent getting mistaken in Qur’anic Reading, he put a dot alongside letters to represent the vocal phoneme (Ibid). When time goes by and Islamic civilization arises, Arabic orthography become a worldwide phenomenon and the dot helps other Language to complete the missing sound representation. Ibnu Sina in his book *'asbabul Hudusil Huruf*, recorded that the Persian Language have sound like *jim* <ج> that is <چ > like the first sound of the name of well in Persian language <چَاه > (n.d.).

The dots in Arabic is very unique and some linguists focused study on this matter, some of them are E.J. Revell (1975), he conducted study diacrtical dots in Arabic script, and make suggestion on his analysis that dots in Arabic script may give an information about the articulation of the letter. Furthermore, Kurzon

(2013), made a conclusion and cited what Revell analyzed that placing dots at above and below Arabic letter represents high and low consonants. Put an example, while <ن> is dental, therefore a high consonant, <ب> is a low consonant. In other hand, Daniels categorized dots in Arabic (2006) as a diacritic that has little consistency in phonological function and only to differentiate between similarly graphemes. So does in Arabic-Java orthography, Javanese writers place the dots, so far, as what Daniel categorized. The grapheme <ب> /b/ *ba'* is in contrast with <ت>*ta'* /t/, <ج> *jim* /j/ with <چ> *jim* /c/with three dots, grapheme <د> /d/ with <ڍ>, <ڊ > /ḍ/, grapheme <ر> /r/ with <ز> /z/, grapheme <ط> /t/, /ṭ/ with <ظ>, <ڟ> /ṭ/, grapheme <ف> /f/ with <ڤ > /p/, grapheme <ك> /k/ with <ڬ> /g/, the grapheme <ي> /y/ with <ۑ > /.

Table 1. The Uncertain Grapheme-Phoneme Relation of Consonants

Names	Graphemes	Phonemes	Names	Graphemes	Phonemes
Bā'	ب	b	*Fā'*	ف	f
Tā'	ت	t	*Pa*	ڤ	p
Jīm	ج	j	*Kāf*	ك	k
Cha	چ	c	*Gha one dot*	ڬ	g
Dāl	د	d	*Gha three dots*	ڭ	l
Dha one dot	ڍ	ḍ	*Lām*	ل	m
Dha three dots	ڊ	r	*mīm*	م	n
Rā'	ر	z	*nūn*	ن	h
Zā'	ز	s	*hā*	ه	w
Sīn	س	ṭ	*wauw*	و	y
Ṭā'	ط	ŋ	*yā*	ي	ñ
Ṭā' one dot	ظ		*nya*	ۑ	ʔ
Ṭā' three dots	ڟ		*digraph nūn yā'*	ني	
Nga	ڠ		*hamzah*	ء	

Table 1 shows the complexity of grapheme-phoneme relation. The relation can be one-to-one like <ب>, <ت>, one-to-two as such <ط> and <ك>. In reverse relation, the phoneme can be represented with one or more grapheme, as such /ṭ/ can be represented with three graphemes.

The Digraph and The Creation of *Pepet* Diacritic

Javanese vowel has six vocal phonemes /a,i,u,o,ə,e/ (Wedhawati et al, 2006). Among these sounds, Javanese's vowels share the same three vowels; /a,i,u/, but three others are different. All those phonemes, AJWS does not represent them by diacritic or *ḥarakat* only but also pairing it with Arabic letter or *ḥarf*.

(19) اَدَاڠْ /adaŋ/ 'cooking rice'

(20) اِڬْيِهْ /iŋgih/ 'yes'

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(21) اُوْنْتُوْ /untu/ ‘tooth’

(22) سَيْجَىْ /seje/ ‘different’

(23) تَمَنْ /təmən/ ‘really’

(24) لَوْرَوْ /loro/ ‘two’

From the example (19) to (24) which are found in the book of IMU, RM, MS, MR, BKH, Javanese’s vowels are represented with digraph except in initial position and vowel of /ə/. Diacritic or *ḥarakat fatḥah* alongside with *'alif* will be spelled /a/ like (19) and if *fathah* comes together with *wau* و it can be the symbol of /o/ like (24), and when *fathah* meets *ya´* it represents /e/ like (22).

In the case of /ə/, AJWS used customized diacritics. In the Javanese Language, it calls *pepet*, the same name of *hanacaraka* symbol of /ə/ but in different shape. *Hancaraka’s pepet* is more like ears above letters, meanwhile, AJWS *pepet* is like *fatḥah* but has wave-like example (23).

Table 2. Grapheme-Phoneme Relation of Vowels

Names	Graphemes	Phonemes
Fatḥah	◌َ	a
Fatḥah alif	◌َا	i
Kasrah	◌ِ	u
Kasrah yā'	◌ِي	o
Ḍammah	◌ُ	e
Ḍammah wauw	◌ُو	ə
Fatḥah wauw	◌َو	
Fatḥah yā'	◌َي	
pepet	◌ꦼ	

Table 2 describe There are six 6 phonemes which can be represented with 10 graphemes. Some graphemes are posed with digraph like *fathah alif, kasrha ya´, fathah wauw* and *fathah ya´.*

The diacritics of what happens in vowel graphemes can be classified as moraic diacritics as what Kurzon (2013), and Ratcliffe (2001) argued in their paper. The term used of moraic due to vowel diacritics attached to consonants grapheme indicates the sequence of syllable CV instead of C. In the case of Arabic-Java orthography the vowel diacritics placed with the grapheme *alif* <ا> *wauw* <و> and *ya´*<ي>. Borrowing the term from Ratcliffe in his argumentation of moraic diacritic, the example (24) have two mora, <لَوْ> /lo/, and <رَوْ> /ro/. One mora is one syllable. Arabic script is a consonantal writing system in its origin (Daniel, 1996) but it is inconsistent due to the long vowel represented in grapheme (Ratcliffe, 2001). In spite of that, the Arabic script which adopted by the Javanese language make Arabic script fully phonemic writing system, the

vowel diacritics have to be written due to not to make confusion between <بو> which is spelled [bu] and <بو> pronounced [bo]

The Appearance of Anaptyxis Schwa [ə] and Prothesis [a]

The Javanese Language has cluster on its' syllable system, sequence of adjacent consonants occurring initially or finally in a syllable (Major & Crystal, 1992). According to Wedhawati et al Javanese's cluster occurs only in initial and the syllable pattern can be CCV like ***bla*** **–** *bag* 'board', CCVC like ***prap****-ta* 'to come', CCCV like ***stli****-ka* 'iron', CCCVC like ***skrip*** 'notebooks' (Wedhawati et al, 2006).

Moreover, AJWS writes cluster in two ways, first is anaptyxis schwa [ə] or insertion of the vowel between two consonants in a syllable, second is prothesis of the vowel [a] or addition of the vowel in initial words. Anaptyxis schwa [ə] happens through cluster that consists sonorant nasal and sonorant liquids like [mr], [ml], and [ŋl] and can be found too in between consonant obstruent and sonorant like [tr], [sr], [kr], [gl], [pl], [by]. The anaptyxis schwa process can be seen clearly through a comparison between spoken words and written words, see table 3.

It is hard to find a study about anaptyxis schwa occurred on written language, however, we might my find it in other cases just like anaptyxis schwa in Persian language (Ghorbanpour & Kambuziya, 2019). In order to meet with the Persian syllable structure CV(C)(C), Persian people tend to add vowels in their loanwords, like 'tragedy' [tra-ʒe-dy] becomes [te-ra-ge-dy] (ibid). In comparison to Arabic-Java orthography, the anaptyxis schwa happening to AJWS is more consistent to happen in the specific type of sound. Meanwhile, Persian language anaptyxis [e] occurs on cluster [tr] but at the sequence of [kr] like 'crocodile' [krokodil], Persian people insert [o] in [kr] instead of [e], and become [ko-ro-ko-dil] (ibid).

On other hand, prothesis [a] occurs in different shapes of cluster. If the anaptyxis schwa happens through sonorant nasal+sonorant liquids, the prothesis [a] is applied when the cluster is consisting of consonant nasal and plosive consonant like [nj], [ŋg], [mb], and [nd]. Then the javanese word like (34a) *ndemek* [ndʰəmɛʔ] 'to touch' is written (34b) اَنْدَمَيْكْ [andʰəmɛʔ] in Arabic-Java writing system (AJWS). The structure of syllable in (34a) [ndʰə-mɛʔ] KKV-KVK transforms into (34b) [an-dʰə-mɛʔ] VK-KV-KVK, there is prothesis [a] which is represented with *alif* and *fatḥah* in initial writing of the words. This initial [a] addition occurs in the same scheme of cluster nasal and plosive consonant like the example in Table 4.

At the morphology study, the prothesis [a] is known as the affixation of {a}. The prefix [a] happens in old Javanese language to give the meaning 'having'

in word, like *tuha* 'old', *atuha* 'having old age' (Zoetmulder & Poedjawijatna, 1992). Furthermore, Zoetmulder and Podjawijatna noted that the prefix [a] can be used for other meanings of other expressions, such as act like *angalas* 'going to jungle', behaving like *angjalagraha* 'behaving like a rock', and transitive verb like *angdanda* 'to fine'. From the example of prosthesis [a] in AJWS, AJWS writers use this prefix [a] inserted before verb which has the sequence of a specific clusters. Despite they comprehend problematic adaptation to write cluster they bring back the old Javanese system of morphology.

Table 3. The Anaptyxis Schwa in Between Sonorant Nasal+ Sonorant Liquids and Consonant Obsturent+Sonorant.

no	Verbal Words	no	Written Words	Book Source
(25a)	*mle-bu* [mle-bʰu] 'to enter'	(25b)	بُوْ - لَـ - مَـ [mə-lə-bʰu]	IMU
(26a)	*Klam-bi* [klam-bʰi] 'dress'	(26b)	بِيْ - لَامْ - كَـ [kə-lam-bʰi]	MR
(27a)	*nglam-pa-hi* [ŋlam-pa-hi]	(27b)	هِيْ -فَا - لَامْ- غَـ [ŋə-lam-pa-hi]	IN
(28a)	*byar* [byar] 'light up'	(28b)	يَارْ - بَـ [bʰə-yar]	BKH
(29a)	*sre-gep* [srə-gʰep] 'diligent'	(29b)	كَفْ -رَ - سَـ [sə-rə-gʰep]	MR, SF

Table 3 shows that in the written words the schwa [ə] is inserted in between [ml], [kl], [ŋl], [by], [sr].

Table 4. The Prothesis [a] in between Consonant Nasal and Plosive Consonant

no	Verbal Words	no	Written Words	Source Book
(30a)	*nju-puk* [njʰu-pUʔ] 'to take'	(30b)	فُوْ - جُوْ - اَنْ [an-jʰu-pUʔ]	MR
(31a)	*ngge-puk* [ŋgʰə-pɔʔ] 'to hit'	(31b)	فَوْءْ - كَـ - اَغْ [aŋ-gʰə-pɔʔ]	NSM
(32a)	*mbu-wang* [mbʰu-waŋ] 'to throw'	(32b)	وَاغْ -بُوْ - اَمْ [am-bʰu-waŋ]	NSM
(33a)	*ndu-nga* [ndʰu-ŋɔ] 'to pray'	(33a)	غَا – دَوْ - اَنْ [an-dʰu-ŋɔ]	IMU
(34a)	*nde-mek* [ndʰəmɛʔ] 'to touch'	(34b)	مَيْكْ -دَـ - اَنْ [an-dʰə-mɛʔ]	MR

Table 4 shows the prothesis [a], in morphology study it can be called prefix [a]. A morpheme that add before word in order to express transitive or intransitive verbs. All example are verbs, and the Arabic-Java writers used this morpheme to comprehended problematic cluster adaptation to Arabic script.

CONCLUSIONS

This paper shows at least two problem adaptations; phonemes adaptation and syllable adaptation. The uncertain grapheme-phoneme relation concludes that there is no main orthographic rule that bounds all AJWS writers and the phenomena of anaptyxis schwa and prothesis [a] lead the poetic sensation among readers even though the 8 books are not poetry. The study of Arabic-Java orthography needs more attention among many researchers in Indonesia. This orthography is much older than the country where it belongs. In the hands of traditional '*Ulama'*, it has strived and existed till this day. However, there are not many people who can read it, and few people either know the Arabic-Java orthography rule or practice it. Besides all the result found in this paper, the further writing system study still has question needs to answer such as how Arabic-Java orthography represents words and sentences, and how Arabic-Java orthography is still being preserved by such religious community.

ACKNOWLEDGMENT

This paper is a part of my thesis research at Gadjah Mada University. The research finished in 2015. I added some latest journals from the year 2019 and 2020 to support my updated literature review about Arabic-Java Writing System. I greatly thanks to Dr. Amir Ma'ruf as my Supervisor and Prof. I Dewa Putu Wijana gave me some suggestion about AJWS.

BIBLIOGRAPHY

'Ulyan, M., Budiyanti, N., & Nugraha, S. (2020). Islamic education based on arabic pegon letters in Madrasah Diniyah Al Barokah Watuagung Tambak Banyumas. *Jurnal Iqra': Kajian Ilmu Pendidikan*, *5*(1), 133–134. DOI: https://doi.org/doi.org/10.25217/ji.v5i1.576

Aswadi. (1994). *Huruf Arab Dalam Lintasan Sejarah*.

Aswadi. (1995). *Rekonstruksi kaidah penulisan naskah jawa dengan huruf Arab*.

Coulmas, F. (1989). *The blackwell encyclopedia of writing systems*. Blackwell.

Coulmas, F. (2000). *The writing systems of the world*. Blackwell.

Coulmas, F. (2002). *Writing systems an introduction to their linguistics analysis*. Cambridge University Press.

Dani, I. S. (1997). *Al-Muḥkam fī naqt al-maṣāḥif*. Dārul Fikr al-Mu'āṣir.

Daniel, P. T. (1996). *The world's writing systems*. Oxford Univesity Press.

Daniels, P. T. (2006). On beyond alphabets. *Written Language and Literacy*, *9*(1), 7–24.DOI: https://doi.org/10.1075/wll.9.1.03dan

Elhija, A. (2014). A new writing system ? Developing orthographies for writing Arabic dialects in electronic media. *Writing System Research*, *6*(2), 37–41. DOI: https://doi.org/10.1080/17586801.2013.868334

Ghorbanpour, A., & Kambuziya, A. K. Z. (2019). Loanword Syllable Adaptation in Persian : An Optimality-Theoretic Account. *Journal of Universal Language*, *20*(2), 95–127. DOI: https://doi.org/10.22425/jul.2019.20.2.95

Hamid, A. (1996). *Basyā'irul khairat*. Jannatul Ma'wa.

Hizbullah, N., Suryaningsih, I., & Mardiah, Z. (2019). Manuskrip Arab di nusantara dalam tinjauan linguistik korpus. *Arabi:Journal of Arabic Studies*, *4*(1), 65–74. DOI: http://dx.doi.org/10.24865/ajas.v4i1.145

House, M., & Mirdehghan, M. (2011). Persian, Urdu, and Pashto: A comparative orthographic analysis. *Writing System Research*, *2*(1), 9–23. DOI: https://doi.org/10.1093/wsr/wsq005

Ihsan, M. (n.d.). *Risālatul maḥīḍ*. Menara Kudus.

Kridalaksana, H. (1982). *Kamus linguistik*. PT Gramedia Jakarta.

Kurzon, D. (2013). *Diacritics and the Perso-Arabic script*. *August 2014*, 37–41. DOI: https://doi.org/10.1080/17586801.2013.799451

Maghfuri, M. (n.d.). *al-Mar'ah as-Ṣāliḥah*. al-Hikmah.

Mahammad, A. bakar. (1966). *'Iḍāh mawā'izil 'uṣfūriyah*. Menara Kudus.

Mahfud, S., & Zuhdy, H. (2018). Kitābatu 'Arab pegon ḥaṣā'iṣuha wa ishāmātuhā fī taṭwīri ta'līmi al-lugah Al-'arabiyah bi Indūnīsiyā. *Arabiyat: Jurnal Pendidikan Bahasa Arab Dan Kebahasaaraban*, *5*(2), 315. DOI: http://dx.doi.org/10.15408/a.v5i2.7446

Mahmoud-Mukadam, A.-R., & Adebisi, A. A. (2019). Language borrowing between Arabic and Yoruba language. *Izdihar*, *2*(1), 53–66. DOI: https://doi.org/10.22219/jiz.v2i1.7386

Major, R. C., & Crystal, D. (1992). A dictionary of linguistics and phonetics. In *The Modern Language Journal* (Vol. 76, Issue 3). DOI: https://doi.org/10.2307/330198

Marsono. (1992). *Sistem konsonan dalam bahasa Jawa*.

Mastoyo, T. (2007). *Pengantar (metode) penelitian bahasa*. Caransavatibooks.

Meletis, D. (2019). The grapheme as a universal basic unit of writing. *Writing System Research*, *11*(1), 26–49. DOI: https://doi.org/10.1080/17586801.2019.1697412

Misbah, Z. al-M. (1422). *Masā'ilur rijāl*. al-Balag.

Mustofa, B. (1381). *Naẓamus sullamil munawaraq*. Menara Kudus.

Noordyanto, N., Studi, M., & Komunikasi, D. (2016). Tipografi Arab pegon dalam praktik berbahasa Madura. *Jurnal Desain Komunikasi Visual*, *9*(2), 28–53. DOI: https://doi.org/10.24821/dkv.v9i2.1763

Raffles, T. S. (2014). *The history of Java*. Narasi.

Ratcliffe, R. R. (2001). What do " phonemic " writing systems represent? Principle. *Writing System Research*, *4*(1), 1–14. DOI: https://doi.org/10.1075/wll.4.1.02rat

Revell, E. J. (1975). The diacritical dots and the development of the Arabic alphabet. *Journal of Semitic Studies*, *20*(2), 178–190. DOI: https://doi.org/10.1093/jss/XX.2.178

Rogers, H. (2005). *Writing systems a linguistic approach*. Blackwell.

Ryding, K. C. (2005). *A reference grammar of modern standard Arabic*. Cambridge University Press.

Sampson, G. (2014). Writing Systems: methods for recording language. In Keith Allan (Ed.), *Routledge Handbook of Linguistics*. Routledge.

Sebba, M. (2011). Sociolinguistic approaches to writing systems research. *Writing System Research*, *1*(1), 37–41. DOI: https://doi.org/10.1093/wsr/wsp002

Sina, I. (n.d.). *Ābābu ḥudūtsil ḥurūf*. Maṭbu'āt Majma' al-Lugah al-'Arabiyah.

Usman, M. (n.d.). *I'ānatun nisā'*. Ḥuqūq at-Ṭab' wa an-Nasyr Maḥfuẓah.

Wedhawati et al. (2006). *Tata bahasa Jawa mutakhir*. Kanisius.

Wedhawati, Marsono, Edi Setiyanto, Wiwin, Restu, & Praptomo. (2006). *Tata bahasa Jawa mutakhir*. Penerbit Kanisius.

Zoetmulder, P. J., & Poedjawijatna, I. R. (1992). *Bahasa Purwa 1*. Gadjah Mada University Press.