AN ANALYSIS OF PHONEMIC AND GRAPHEMIC CHANGES OF ENGLISH LOANWORDS IN *BAHASA INDONESIA* APPEARING IN MAGAZINE ENTITLED "CHIP"

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Abstract
This research aimed to describe the phonemic and graphemic changes of English loanwords in Bahasa Indonesia appearing in magazine entitled 'CHIP'. The subjects of this research were the writers/editors of each articles of CHIP magazine. The objects of this research were English loanwords in Indonesian appearing in CHIP magazine ranging from 2013 to 2015 edition plus with the special edition of CHIP. The data were collected by reading and giving a mark to each borrowing words found or spotted in technology magazine (CHIP) through the process of reading. This study was a descriptive qualitative research which applying interactive data anaylisis model in analyzing the collected data. The results of this study show there are 12 processes of phonemic changes specifically for consonants. There are 8 processes of phoneme shift, 2 processes of phoneme split, and 2 processes of apocope. There are 10 phonemic changes of vowel: 1 process of phoneme split, 2 processes of phoneme shift, 2 processes of phoneme merger and 5 processes of paragoge. There are two types of graphemic changes found, namely pure phonological adaptation and syllabic adaptation. In the syllabic adaptation process, there are four processes of graphemic change, namely (1) double consonants become single consonant, (2) double vowels become single vowel, (3) monosyllable become disyllable, and (4) consonant inhibitory at the end of consonant clusters is disappear.

Keywords:graphemic changes, loanwords, phonemic changes

INTRODUCTION

Loanwords refer to some alternative terms as "borrowings", "transfer", "copying", and "replicating" which is implying one language (the receptor) borrowed from other language (the source) fully or partially under certain circumstances. The coverage range of loanwords study is wide, touching upon the areas of subfield linguistics, both micro and macro, including phonology, morphology, and semantics as well as sociolinguistics and historical linguistics (Kang, 2010).

The phenomenon of borrowing words in the world, not exception for Indonesia is likely to be happening on and on. In this globalization era, maintaining a good relation inter-countries is really significant. The contact of languages will happen intensely resulting a rise number of loanwords existed in a language. In line with notion above, the need to extend the vocabularies in one field and to be able to get along with the development of technology, information and rapid communication is substantial, making borrowing words is substantial as well (Widayaningsih, 2010).

Alisjahbana as cited in Marcellino (1993) stated that more than 321.000 words of modern term has been drafted into Indonesian standard language and has been used in schools, parliament and mass media, including newspaper, magazine, etc. This number will certainly rise up noting that the language contacts across countries risen up as well. In Indonesia's mass media, the language used in newspaper or magazine is emerged in many issues such as, tourism, politics, technology, education, etc.

Regarding to many loanwords can be found in many fields of issues, technology field is the one being concerned by the researcher. The reason of why researcher put interest more on technology field is because, these days, in technology field, many new things are developed and introduced by developed countries alongside with the language broadly conveyed in International language, English. Indonesia as developing country, in this globalization era, is mostly taken part as recipient country who adapt and adopt, not exception in adapting and adopting languages brought by the technology development itself.

In its process of borrowing words from English, Indonesian language as the receptor needs to adjust the source words' linguistics system into Indonesian language standard system. Marcellino (1993) in his analysis stated there are four linguistics factor underlying the cause of the absorption of English loanwords in Indonesian language: (a) the needs of filling the non-existence lexicons in Indonesian language standard system, (b) the needs of giving accurate meanings sufficiency in semantics field, (c) the needs of filling a specific register, (d) the adaptability in receiving loanwords. Regarding to the fourth factor above, Marcellino (1993) added that borrowing words can be transformed into Indonesian language through affixation process under condition in which the borrowing words has been modified in its phonological and morphological system.

In relation with notion above, therefore, this research study is limited to the analysis of phonemic and graphemic changes of English loanwords in Bahasa Indonesia appearing in both online and paper version of Indonesian's technology magazine, i.e. CHIP magazine, published range from 2013 edition to 2015 edition and added with the special edition. In addition, in this research, researcher will examine the data by (1) marking the English loanwords found in the magazine, (2) each phonemic and graphemic change processes of English loanwords will be analyzed one by one.

According to Kang (2010), loanword or often referred as "lexical borrowing" or simply "borrowing" are words borrowed from one language to another. Furthermore, the alternative terms like "transfer", "copying", and "replicating" are also proposed knowing the terms "loanword" or "borrowing" are often criticized because those two terms imply something is taken away from the source language and the borrower has to return the borrowed items. As stated by Haugen in 1950, the process of borrowing might be called an adoption, in which the speaker does adopt elements from the source language into his own. Based on two theories above, loanwords are words which are undergone the adoption process, for borrowed items will be adjusted from one language to another.

The loanwords process is generally happened when there is a contact between two different cultures. Robins (1965) has stated that virtually everywhere, where culture contacts of any sort between speakers of different languages occur, speakers will make use of words from other languages to refer to things, process, and ways of behavior, organization, or thinking, for which words or phrases were not available or convenient in their own language hitherto. By this means, the contacts can be caused of immigration, trade, fashions, technologies, or wars.

According to Bloomfield (1933), cultural borrowing and intimate borrowing are two concepts regarding to borrowing that had been distinguished. Each of these will be discussed further below.

A. Cultural Borrowing

Every speech-community learns from its surrounding leads to the cultural borrowing caused due to the patterns of action conducting by two countries or cultures, such as technical procedures, warlike practices, religious rites, or fashions of individual conduct. In Indonesian for instance, words in technological terms such as komputer and internet are borrowed from English because of the contact that Indonesia has with English speaking countries.

B. Intimate Borrowing

Different with culture borrowing, Intimate borrowing occurs when two languages are spoken in what is topographically and politically a single community. Intimate borrowing is occurred due to conquest and migration. In intimate borrowing, there are terms as upper or dominant language (spoken by the conquering) and the lower language (e.g. the immigrants). In Indonesia, Dutch and Chinese are the example of languages in intimate borrowing. Dutch loanwords are borrowed due to conquest, the words such as bursa, pension, and Parlemen are the example of intimate borrowing.

Besides the types of borrowing words stated above, there is also another classification made by Aitchison (2001) who states that the borrowing process from one language to another also has two main types namely adoption and adaptation. The further description about those types will be discussed as follows.

Adoption

The target language does a minimal adjustment which means that there is only a small adjustment or even no changes at all to the structure of its language borrowed from the donor language. The example can be seen from the words hot, spot, and trip that are borrowed from English without changing any singles phonemes.

Adaptation

The target language adapts some items from the donor language in order to fit in with the structure of the target language itself. The examples can be seen from the word brochure and computer. When those two wordsare borrowed from English into Indonesian language, they have done the process of adjustment with the phonemic system of Indonesian, so that those words become brosur and komputer.

Looking at the two categorizations that are stated previously about the type of borrowing words, in conclusion, it is inferred that there are two ways of classifying the types of borrowing words. First of all, the types can be classified based on the process of borrowing which is happened between two languages that either come from different community (cultural borrowing) or come from a single community (intimate borrowing). Second of all, the types can be also classified based on whether the target language does or does not do adjustment from the donor language.

Language change is a topic which is strongly related to the study of historical linguistics. Historical linguistics itself studies about how languages change over time and how languages are related. In broader way, language change covers to the other disciplines of linguistics: phonetic, phonemic, morphological, syntactic, semantic, pragmatic. Many theorists classified the types of language changes into the disciplines of linguistics as well, such as Hickey (2010) classifies the language change into phonological change, morphological change, and syntactic change, McMahon (1994) classifies the language change into sound change, morphological change, syntactic

change, semantic and lexical change. The further discussion about the types of language change under linguistics discipline will be discussed later (phonological (phonemic and graphemic) change in focus).

According to Yang in 2001, explained that language change is observed when linguistic expressions which were produced by speakers of one generation differ with those of previous generations, either in form or in distribution. Moreover, Yang added that one essential component toward theory of language change is the theory of language acquisition by child learners: language changes because learners (children) acquire different grammars from their parents. In addition, as children become parents, their linguistic expressions constitute the acquisition evidence for the next generation.

In conclusion, synthetizing toward these two statements about the concept of language change, language change is defined as the process of the way languages change: about why languages change (tell us about the way language is used in society), about how it is acquired by individuals.

A study of phonemic changes focuses the analysis at the changes of phonemic transcription pattern occurred from one language to another. In linguistics, this approach is categorized under the sub-unit of historical linguistics and a part of phonological changes. Generally speaking, there are many types of phonemic processes existed but basically there are two theories of phonemic changes used in this research. Each of these two theories will be described in more detail below:

Campbell's Theory

The first theory is based on the classification by Lyle Campbell's theory (1998) who defined several types of common sound changes (the process of phonemic changes), namely: (1) deletions that consist of syncope, apocope and apheresis; (2) insertions/epenthesis that consist of prothesis, anaptyxis, excrescence and paragoge; (3) compensatory lengthening; (4) rhotacism; (5) metathesis; (6) haplology; (7) breaking. Each of the classifications above is described as follow.

Deletions

Deletions is the phonemic processes caused by deleting or removing phoneme(s) from a string of words (Campbell, 1998). Syncope, Apocope an Apheresis are types of deletions.

a) Syncope (atata > atta)

The loss (deletion) of a vowel from the interior of a word (not initially or finally).

b) Apocope (tata > tat)

The loss (deletion) of a sound, usually a vowel, at the end of a word.

c) Apheresis (atata > tata)

The loss (deletion) of an initial sound (usually a vowel) of a word.

According to Campbell (1998), insertions/epenthesis can be defined as the pronunciation alteration which is caused by adding phoneme (either vowels or consonants). Under this category, there are four sub categories of insertions/epenthesis, those are: prothesis, anaptyxis, excrescence and paragoge.

a) Prosthesis (tata > atata)

A kind of epenthesis in which a sound is inserted at the beginning of a word.

b) Anaptyxis (VCCV > VCVCV)

A kind of epenthesis in which an extra vowel is inserted between two consonants.

c) Excrescence (amra > ambra; anra > andra; ansa > antsa)

A type of epenthesis which refers to a consonant being inserted between other consonants.

d) Paragoge (tat > tata)

A type of epenthesis in which a sound (usually a vowel) is added at the end of a word.

Before a word or term is received as loanword in language, first the word borrowed or the loanword shall be adjusted into the recipient language's rules and regulations. English phonemes does not have characteristics in common with Bahasa Indonesia phonemes, some phonemes in English cannot be found in Bahasa Indonesia phonemic system, that's why it's needed some adjustments to get the nearest sound form in accordance with the phonological system of Bahasa Indonesia.

Before enactment of EYD, Bahasa Indonesia has some of each phoneme that represent by more than one grapheme. People used to write the word baca and baju with tj and dj – batja and badju. Now, phoneme /c/ and /j/ respectively have been represented by one grapheme <c> and <j>.

A study of graphemic changes focuses the analysis at the changes of graphemic transcription pattern occurred from one language to another. In linguistics, this approach is categorized under the sub-unit of historical linguistics and a part of phonological changes. In this research, one theory of graphemic change is as described more detail below:

Djarwowidjojo's Theory

The theory used in this research is based on the classification adopted from Djarwowidjojo's theory as cited in Rachmiati (2011). There are two classification of graphemic changes that are proposed, namely pure phonological adaptation and syllabic adaptation.

Pure Phonological Adaptation

Adjustment of foreign sounds with changes based on phonological system of a language is called pure phonological adaptation. Pure phonological adaptation occurs only in English phonemes contained in the phonological system of Bahasa Indonesia. This adjustment is generally carried out based on pronunciation, while writing adjusted to the rules of spelling in Bahasa Indonesia.

Syllabic Adaptation

Adjustment of sound doesn't only happen on a particular phoneme. The adjustment is also found in syllables. It is called syllabic adjustment or adaptation. This adjustment occurred because English syllable structure is different with the form of grammar in Bahasa Indonesia. There are three changes processes of syllabic adaptation under the classification as described below:

a. Double consonant/vowel become single consonant/vowel
b. Monosyllable become disyllable

Consonant inhibitory at the end of consonant cluster is disappear.

There are some research used to support this research. The research are as follows.

Rachmiati in 2011 conducted a research which discussed the change process of phonemic and graphemic of English loanwords in Teropong articles of Kompas' newspaper. In this research, the writer used a descriptive qualitative method where the data were taken from the articles of Teropong in Kompas's on August 16 2011 edition. The findings in this research showed that there are 50 loanwords in the articles of Teropong in Kompas' newspaper. The writer of this research examined the changes process of loanwords from the source language into recipient language at phonemic and graphemic.

Restifiza in 2012 conducted a research in which the study was to see a phenomenon of a language borrowing words. Besides, this study also intended to differentiate the pronunciation of Indonesian's words spoken by the Minangkabau people especially those in Bukittinggi, and what phonological processes that occur. In this study, the phonological classifications being used are those belong to Lass (1991). Based on the result of this study, there are some processes that are not found in borrowing words from Indonesian in Minangkabau language such as dissimilation, prosthesis and epenthesis process.

In 2013, there was another researcher who conducted a study about borrowing words - Mohamed Abdulmajid Akidah. This study was more complex that it was not only analyzing the phonological changes of borrowing words but also the semantic change at once. This study concluded that there is a high frequency of borrowing words from Arabic into Kiswahili and the borrowing process often leads to phonological adaptation because they get absorbed into the Kiswahili lexicon, and is sometimes accompanied by semantic changes such as broadening, narrowing and shift.

In the following year – 2014, Ari Wicaksono was becoming the next researcher who analyzed the phenomenon of borrowing words from English into Indonesian. The result of this study shows that there are five phonological processes mostly occur in political borrowing words, namely deletion of phoneme, addition of phoneme, change of vowel, change of simple consonant and deletion of stress.

Based on the four empirical studies above, all those researches above deal with the change process of borrowing words/loanwords. From the first review on first research conducted by Rachmiati (2011) in which disccussing the change phonemically and graphemically, the writer of this research adopt the theory classification at grapheme level of Rachmiati's research, in addition at phoneme level, Rachmiati used the theory of campbell which is used in this research as well, the difference is that, in Rachmiati, the classification of phoneme theory is fewer. Similar with first review on Rachmiati's research, a review on Wicaksono's research in 2014 gave contribution to this study as the theory used in Wicaksono's research of Crowley's rephonemicization is adopted. While from Restifiza's research in 2012 and Akidah in 2013 enrich the sight of the writer of this research on the phenomenon of language borrowings in Indonesia and abroad.

METHOD

The design of this research study was descriptive qualitative design in which describing the data taken from the subject research or obtained from the source of data became the main focus. As the design of this study, descriptive qualitative design, this study in particular aimed at recognizing and describing the language changes especially the phonological (phonemic and graphemic) changes of the English loanwords in Indonesian.

In descriptive qualitative design, there are four stage of activities involved, namely, describing, noting, analyzing and interpreting the phenomenon (Wicaksono, 2014). Furthermore, since this study is qualitative research, this study was trying to explain, to describe and to analyze the displayed data in form of notes. In addition, Pallawa (2013) stated that the findings of qualitative research were no measured in statistic procedure or by any other devices as used to measure quantitative research.

Generally speaking, this study has synchronic characteristics. It means that the research is studying the phenomenon of a language at a particular range of time instead

of studying the phenomenon of language related to the developmental of language from time to time or also called as diachronic (Hickey, 2010).

Regarding to the data obtained from articles of a tech-magazine: CHIP, the subjects of the study for this research were the writers/editors of each articles of tech-magazine: CHIP, where the data obtained, as they are the ones who were responsible for each articles, in term of using the loanwords in the articles.

The object of this study were English loanwords in Indonesian (Indonesian words borrowed from English). The loanwords which are analyzed in this study were those specifically appearing in articles of tech-magazines: CHIP. In this research, the magazines: CHIP chosen were the editions ranging from 2013 to 2015 plus with the special edition of CHIP. Furthermore, the reason why CHIP magazine chosen was because CHIP magazine is a leading information communication & technology theme magazine. Moreover, the contents in each articles cover things about ICT: information, communication & technology stuffs around the globe.

Specifically for this research, there were three CHIP magazines which were used by the researcher as the source of data. These magazines issued in 2013-2015 were divided into 2 editions added with 1 special editions, namely the edition of May in 2013, the edition of July in 2015, and the special edition. Each editions is described as follow.

In all the 3 editions, total 8 articles were picked by researcher as source of the data. Researcher picked 4 articles from May 2013 edition, 3 articles from July 2015 edition, meanwhile 1 articles was picked from the special edition. Those articles were:
a. CHIP Edition of May 2013: NVIDIA TITAN
    (1) Berkarya Saat Masih Mahasiswa (p. 22),
    (2) Rencana Tidak Berjangka (p. 26),
    (3) Pionir Dunia TI (p. 43),
    (4) Jangan Buang Foto Lama Anda! (p. 64),
b. CHIP Edition of July 2015: Mengintip COMPUTEX 2015
    (5) Solusi Pengamanan Melalui Smartphone (p. 19),
    (6) Bercanda dengan Serius, dan Berhasil Besarkan Malesbanget.com (p. 28),
    (7) Peralatan Tambahan untuk Produktivitas Anda (p. 46),
c. CHIP Spesial (Special Edition): Networking
    (8) Mengenal Internet Protokol Masa Depan (p. 6).

In collecting or obtaining the information expected as the data for this research, the main instrument of this study was the researcher who collecting all the data by giving a mark to each borrowing words found or spotted in technology magazine (CHIP) through the process of reading. Moreover, Godfred (2016) states that the part of instrument is can be those who are doing the process of reading documents, in this case the research himself who have done the process of reading CHIP magazines. In addition, reading is more in dealing with thing about literature, reading is also a process/instrument for studying either public documents such as newspapers, magazines or private documents such as letters, biographies and diaries of people.

According to Miles and Huberman (1984), the design "Interactive Data Analysis Model" is the most suitable design for this research study relating that the data of this study were analyzed both in descriptive and qualitative way using documentation method.

As qualitative data are attractive, rich in descriptions and derive fruitful explanation, in analyzing these data, the "Interactive Data Analysis Model" is the most appropriate model to be used.

There were four stages of activities in "Interactive Data Analysis Model" that flow systematically, begin with data collection, data reduction, data presentation, and data verification/conclusion.

FINDING AND DISCUSSION

All the English loanwords (Indonesian words borrowed from English) in the CHIP magazine that had been found is displayed in this description of the data. From the sources of data, researcher found up to 221 English loanwords (Indonesian words borrowed from English). In order to make the data are easy to be analyzed, all the data found are displayed in form of tabulated data* (attached). Then, the researcher divided the analysis into two parts. The change processes of English loanwords (Indonesian words borrowed from English) in CHIP magazine both phonemically and graphemically are included in these two parts.

In this research study as described below, the researcher found that there are 12 processes of phonemic changes specifically for consonants. There are 8 processes of phoneme shift which dominate the changes in consonant section, 2 processes of phoneme split, and 2 processes of apocope.

Based on the data gathered from the source of data, the researcher found that there are ten phonemic changes of vowel appearing in Indonesian borrowed words. These ten changes are divided into 1 process of phoneme split, 2 processes of phoneme shift, 2 processes of phoneme merger and 5 processes of paragoge.

The analysis of graphemic change is divided into 2 parts. The first part deals with pure phonological adaptation in the process of graphemic change, while in the second part deals with the syllabic adaptation in the process of graphemic change.

Refering to the classification made by Aitchison (2001) who states that the borrowing process from one language to another also has two main types namely adoption and adaptation.

Adoption - The target language does a minimal adjustment which means that there is only a small adjustment or even no changes at all to the structure of its language borrowed from the donor language. The example can be seen from the words hot, spot, and trip that are borrowed from English without changing any singles phonemes.

Adaptation - The target language adapts some items from the donor language in order to fit in with the structure of the target language itself. The examples can be seen from the word brochure and computer. When those two wordsare borrowed from English into Indonesian language, they have done the process of adjustment with the phonemic system of Indonesian, so that those words become brosur and komputer.

Based on the findings of Indonesian borrowed words from English gathered above, the researcher found these two classfications are existed in English loanwords in Bahasa Indonesia appearing in CHIP magazine where the type of adaptation dominate the type of borrowed words. This result shows that there are efforts in Indonesian Language to make the borrowed words from English sounds as Indonesian words. The words such as computer, concept, myth, machine, unique, and application are some of the examples. These words have been adapted and theirs phonemic transcriptions also have been suited with the phonemic system of Bahasa Indonesia so that they become komputer, konsep, mitos, mesin, unik and aplikasi.

Although there were many types of borrowed words adapted from English, the researcher also found that there were some borrowed words adopted or even did not have any process of adoption at all. Under this type, the words found were classified into words that had a slight difference of phonemic transcription, such as team - tim, limit – limit, access - akses, camera – kamera and the words that had no process of adoption at all which means that the English words were used in Indonesian text, such as website, provider, channel, wireless, smartphone, software, startup, internet and hardware.

In line with the previous notion, this phenomenon might happen because there were no translations of those words in Indonesian so that it was used in Indonesian text or might happen because the writers were more comfortable using some words of English instead of theirs translation in Indonesian Language.

Based on Campbell's theory, there are 7 process of change phonemically namely: (1) deletions that consist of syncope, apocope and apheresis; (2) insertions/epenthesis that consist of prothesis, anaptyxis, excrescence and paragoge; (3) compensatory lengthening; (4) rhotacism; (5) metathesis; (6) haplology; (7) breaking.

Based on the findings found in this study, the phonemic process, both in consonant and vowel, of English loanwords in Bahasa Indonesia appearing in CHIP magazine are classified into 5 types of changes (deletions:apocope, insertions:paragoge, phoneme shift, phoneme split, and phoneme merger) based on both theories by Campbell and Crowley.

Based on Crowley's theory of Rephonemicization, there are 3 process of change phonemically namely: (1) phoneme shift, (2) phoneme merger, and (3) phoneme split. In this study, based on the findings, the process of phonemic change which is existed here are (1) phoneme shift, (2) phoneme merger, and (3) phoneme split (all are existed).

According to Djarwowidjojo as cited in Rachmiati (2011), adjustment of foreign sounds with changes based on phonological system of a language is called pure phonological adaptation. Pure phonological adaptation occurs only in English phonemes contained in the phonological system of Bahasa Indonesia. This adjustment is generally carried out based on pronunciation, while writing adjusted to the rules of spelling in Bahasa Indonesia.

Based on the findings of this study, the writer found twelve graphemes which have undergone the process of changes in the process of borrowing source/donor language (English) into recepient language (Bahasa Indonesia) for pure phonological adaptation. Those twelve graphemes are: <c>, <g>, <q>, <t>, <x>, <y>, <e>, <f>, <v>, <ch>, <ph> and <ea>.

Adjustment of sound doesn't only happen on a particular phoneme. The adjustment is also found in syllables. It is called syllabic adjustment or adaptation. This adjustment occurred because English syllable structure is different with the form of grammar in Bahasa Indonesia. There are three changes processes of syllabic adaptation under the classification namely: double consonant/vowel become single consonant/vowel, monosyllable become disyllable, consonant inhibitory at the end of consonant cluster is disappear.

Based on the findings of this study, the writer found, there were four processes of graphemic change, namely (1) double consonants become single consonant (<ff>, <ll>, <mm>, <nn>, <pp>, and <ss>), (2) double vowels become single vowel (<uu>), (3) monosyllable becomes disyllable, and (4) consonant inhibitory at the end of consonant clusters is disappear.

CONCLUSION

The writer draws the conclusions which are based on the problem statements and the result of the analysis. The conclusions are:

1. Based on the analysis of both phonemic and graphemic changes of English loanwords (Bahasa Indonesia words borrowed from English) as found in CHIP magazines, from edition of May in 2013, edition of July in 2015 and the special edition, it can be concluded that English as a donor language has significant infulence towards language borrowing from any other languages, including Bahasa Indonesia. Particularly in Bahasa Indonesia, specifically in technology sector, researcher found that there were a great number of words borrowed from English (the loanwords). Those words have been either adapted or adopted into Bahasa Indonesia. In this study, researcher found some of those words have been adapted and the others were remaining the same so that they were pronounced and written exactly the same as the English word.

2. In the process of phonemic changes, the researcher noticed that there were three types of phonemic changes processes for consonants and four types of phonemic changes for vowel analyzed from the English loanwords (words of Bahasa Indonesia which are borrowed from English) found.

   Those phonemic changes for consonant are:

   A. Phoneme shift as divided into eight processes including: (1) Phoneme shift of /θ/ into /t/, (2) Phoneme shift of /k/ into /s/, (3) Phoneme shift of /z/ into /s/, (4) Phoneme shift of / / into /s/, (5) Phoneme shift of /f/ into /p/, (6) Phoneme shift of /ti/ into /tas/, (7) Phoneme shift of /v/ into /f/ and (8) Phoneme shift of / n/ into /si/.

   B. Phoneme split as divided into two processes including: (1) Phoneme split of /d / into /g/, /y/, /d/, /j/, /s/ and (2) Phoneme split of /t / into /c/ and /t/.

   C. Apocope as divided into two processes including: (1) Apocope of /d/ and (2) Apocope of /t/.

   On the other hand, below are the phonemic changes for vowel:

   A. Phoneme split of / / into /a/, /o/, /i/, /u/.

   B. Phoneme shift as divided into two processes including: (1) Phoneme shift of / / into /u/, and (2) Phoneme shift of / / into /e/.

   C. Phoneme merger as divided into two processes including: (1) Phoneme merger of /e/ and / / into /a/ and (2) Phoneme merger of /j/ and / / into /u/.

   D. Paragoge as divided into five processes including: (1) Paragoge of /e/, (2) Paragoge of /u/, (3) Paragoge of /o/, (4) Paragoge of /a/, and (5) Paragoge of /i/.

Apart from the analysis of phonemic changes, the researcher also noticed that there were two types of graphemic changes analyzed in English loanwords, namely pure phonological adaptation and syllabic adaptation. Further, the researcher found that there were twelve graphemes which have undergone the process of changes for pure phonological adaptation. Those twelve graphemes are: <c>, <g>, <q>, <t>, <x>, <y>, <e>, <f>, <v>, <ch>, <ph> and <ea>. On the other hand, in the syllabic adaptation process, there were four processes of graphemic change, namely (1) double consonants become single consonant (<ff>, <ll>, <mm>, <nn>, <pp>, and <ss>), (2) double vowels become single vowel (<uu>), (3) monosyllable become disyllable, and (4) consonant inhibitory at the end of consonant clusters is disappear.

Finally, the writer hopes that the study will be useful for the writer herself and other readers for future improvement of studying phonological change of English loanwords in Bahasa Indonesia.

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