LEXICAL STRATA OF INDONESIAN VOCABULARY

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0 Introduction

Indonesian is known for its rich use of loanwords. It has adopted a number of words from different languages throughout its history. Scholars describe the historical borrowings in Indonesian as coming from Arabic, Chinese, Dutch, English, Hindi, Japanese, Portuguese, Sanskrit, Tamil, etc. (Gonda 1973, Jones 1984, Lapoliwa 1981, Lowenberg 1983, Quinn 2001, etc.). In this paper, I will focus on loanwords from Sanskrit, Arabic, Dutch and English in today's Indonesian language.

For the purpose of observing the morphophonemic degrees of coherence between the prefix and stems, this paper focuses on the history of the Indonesian lexicon in connection with the transitive verb forming prefix *məŋ-*. The morphophonemic boundaries show stronger or weaker degrees of coherence depending upon the origins of the stem vocabulary[1].

Indonesian lexical strata are layers formed within the Indonesian vocabulary as the result of accumulation of words from different languages and time periods through the history. Although the idea of lexical strata presented here is closely related to a Lexical Phonology (LP) framework, there is a fundamental difference between my proposal and the original LP strata. Major scholars who developed the theory of LP, such as Kiparsky (1982) and Mohanan (1982), based their analyses on morphophonological interactions between affixes of different classes and stems. However, I am using a stem-based analysis (c.f. Giegerich 1999) to give an explanation for a similar morphophonological situation. My approach allows us to account for the history of a language in the same organized way as the original LP framework. I will first introduce the historical background of the major loanwords in Indonesian before getting into the discussion of the morphophonemics.

1 Historical Background of the Major Loanwords

1.1 *Sanskrit*

Among the languages that influenced Indonesian, Sanskrit loanwords are concentrated in religious and scholarly terms. The French scholar Coedès (1948: Chapter II) viewed the contact between India and Indonesia as starting around 100 AD. The earliest inscription or Yupa inscription that dates back to c.400 was found at Kutai, West Kalimantan (Hunter 1998:12). According to Gonda (1973:67), there is a record of the existence of Hindu settlements in Java in 414 AD. Since Sanskrit loanwords started coming into the Indonesian language such a long time ago with strong religious influence roughly until the 14th century in different parts of today's Indonesia (Collins 1996:12), they are deeply assimilated into the indigenous vocabulary with respect to the morphophonemic variation with the *məŋ-* prefix. Many Indonesian speakers in general consider the Sanskrit loanwords as their native vocabulary.

Examples of Sanskrit loanwords in Indonesian are *dewa/dewi* (< *deva/deva*)

'god/goddess', *surga* (< *svarga*) 'heaven', *neraka* (< *naraka*) 'hell', *puji* (< *pūjā*) 'worship', *agama* (< *āgamā*) 'religion', *gembira* 'delighted' (< *gambhīra* 'serious, sagacious'), *sarjana* (< *sajjana*) 'virtuous, a wise man', and *siswa* (< *śiṣya)* 'student' (data from Jones 1984:5-10).

1.2 *Arabic*

The Islamic religion started to spread throughout Indonesia circa 1300 (Jones 1984:12) with strong influence from the Arabic language. According to Collins (1996:30), "borrowing from Arabic into Malay greatly increased and Arabic loanwords began to supplement and replace Sanskrit and indigenous Malay words" in the 16th century. Lapoliwa (1982:288) reports that many words of Arabic origin, which had been introduced into the Indonesian language through the Islamic religion, have been adopted into Indonesian for a long time; thus, many of them have been nativized to the extent that they behave as native vocabulary considering morphophonemic rule applications.

Examples of Arabic loanwords in Indonesian include, *patuh* 'to obey', *terjemah* 'to translate', and *sadar* 'to be aware' (Alwi et al. 2000).

1.3 *Dutch*

Dutch merchants arrived at Bantam in West Java in 1596 (Vlekke 1959: Chapter V), and Dutch traders arrived in Ambon in the Moluccas in the 17th century (Lapian 1996: 42). Along with the Dutch East India Company operation from 1602 to 1799 (Jones 1984:24, Perengkuan 2001:4), Dutch influence became prominent in the Moluccas (Andaya 1996: 5657). From 1605, the Dutch controlled the government of much of the Moluccas, including supervision of the spice production and official administrations of the native people (Collins 1996:41).

Although Dutch became the official language of the colonial government in parts of today's Indonesia and was taught in school, the actual use of the language was limited to the most elite Indonesians. Even among the very limited number of Indonesian population who were able to understand Dutch, the majority of them did not start acquiring Dutch until the 20th century (Dufon 1999:55, Jones 1984:24).

As far as loanwords go, unlike words of Sanskrit and Arabic origin, it is said that Dutch words are still to a large extent distinguished as *bahasa asing* 'foreign words' by the average Indonesian speaker (Suprapto 1993:12). Nonetheless, many words have been completely assimilated into today's Indonesian compared to newer loanwords from English, and such assimilation can be observed in orthography as well. For example, there are many loanwords starting with /str/ clusters from both Dutch and English in Indonesian. For Dutch words, the Indonesian spelling commonly has an epenthetic vowel between the consonant clusters as in *seterap* 'sweet drink made of syrup' (< Dutch *strafen*), *seteruk* 'receipt' (< Dutch *strook*), *seterum* 'electric current' (< Dutch *stroom*), as oppose to the English loanwords in Indonesian such as *stroberi* (< English *strawberry*), *striptis* (< English *strip*), *stroke* (< English *stroke*), etc.

It is doubtful that most Indonesian speakers have knowledge of Dutch. The foreignness of the Dutch loanwords that led a scholar such as Suprapto (1992:12) to consider them to be 'more foreign than Sanskrit and Arabic' may be a result of miscategorization of Dutch loanwords with English vocabulary. Examples of Dutch loanwords used commonly in Indonesian include *kontrolir* 'supervisor' (< Dutch

controleur), *telepon* 'telephone' (< Dutch *telefoon*), and *portret* 'to take a picture' (< Dutch *portret*).

1.4 *English*

From about 1945, particularly after 1965, since Indonesia opened up to western economic and cultural influences, the newest loanwords have been adopted from English (Jones 1984:24ff). Despite a low education rate in Indonesia[2], many native speakers of Indonesian recognize English loanwords as words of English-origin relatively well. Due to the introduction of English via mass media by political leaders, scholars, journalists, and pop stars to the general public, acceptance of these loanwords has accelerated in today's Indonesian society. According to Lapoliwa (1981:3), Dutch and English loanwords manifest their influence upon the Indonesian language and people in modern sciences, technology, and culture. Many Indonesian people consider the use of English loanwords as a sign of education; thus, expressions containing English loanwords have some degree of prestige in today's general Indonesian society.

Collins (1996) states that the Indonesian language stands "unchallenged as the language of instruction and administration"; however, "the recent prescriptivist crackdown on the proliferation of English in public signs and mass communication channels implies a perceived threat to the Indonesian language" (Collins 1996:86). Examples of English loanwords commonly used in today's Indonesian language are *teror* 'terror', *antisipasi* 'anticipation', *sosialisasi* 'socialization', *klasifikasi* 'classification', *mensurvei* 'survey' and so on (data from Alwi et al. 2000:113).

2 Allomorphic Distributions and Morphophonemic Rules of the *məŋ-* Prefix

Indonesian adopts lexical items from foreign words easily with affixations; thus, a productive prefix such as *məŋ-*can attach to loanwords of different origins to form transitive verbs. The *məŋ-*prefix is realized as *mə-*before sonorant consonants, and *məŋ-*before vowels and all monosyllabic stems respectively. For stems starting with voiced obstruents, the coda nasal of the prefix *məŋ-*assimilates to a place of articulation of the first segment of following polysyllabic stems. Generally speaking, in stems that begin with a voiceless obstruent /p, t, k, s/ the base-initial consonant is deleted after the assimilation[3]. The voiceless palatal affricate /tʃ/[4] and all base-initial obstruents in monosyllabic stems are exceptions to obstruents deletion. I will focus on the morphophonemic rule concerning the *məŋ-*prefix with voiceless obstruents and vowels. Exam
ples of the relevant morphophonemic realizations are as follows (data from Alwi et al. 2000, Kramer 1997).

(1) Stems starting with sonorants

rokok →	*mərokok*	'to smoke'
latih →	*məlatih*	'to practice'
wakil →	*məwakilkan*	'to represent'
yakin →	*məyakinkan*	'to convince of'

(2) Stems starting with vowels

ambil	→	*məɲambil*	'to take'
iŋat	→	*məŋiŋatkan*	'to remind'
ulaŋ	→	*məŋulaŋi*	'to repeat'
endap	→	*məŋendap*	'to settle, deposit'
oŋkos	→	*məŋoŋkosi*	'to pay for one's expense'

(3) Stems starting with monosyllabic stems

bom	→	*məŋəbom*	'to bomb'
cek	→	*məŋəcek*	'to check'

(4) Stems starting with voiced obstruents

beri	→	*məmberi*	'to give'
doroŋ	→	*məndoroŋ*	'to push'
guna	→	*məŋguna*	'to use'

(5) Stems starting with voiceless obstruents

potoŋ	→	*məmotoŋ*	'to cut'
tonton	→	*mənonton*	'to watch'
kirim	→	*məɲirim*	'to send'
sakit	→	*məɲakitkan*	'to cause pain'

The *məŋ*-prefix assimilation is a common phenomenon observed, especially in the Western Malayo-Polynesian branch of the Austronesian language family (including languages spoken in the Philippines and western Indonesia) where *maŋ-is the proto form for a transitive verbal marking prefix[5].

3. Rule Application with Loanwords

3.1 *Consonants*

The behavior of nasal substitution suggests that the morphophonemic rules of Indonesian are sensitive to the status of stems as native or non-native parts. In other words, conso nant assimilation and deletion with the prefix *məŋ-* is invariant for native vocabulary or nativized loanwords, but in newly adapted loanwords the deletion rule does not always apply. The former category includes native Indonesian vocabulary as well as Sanskrit and most Arabic loanwords. On the other hand, many of the Dutch and English loanwords are included in the latter category. Relevant examples are given in (6).

(6) *məŋ*-with voiceless obstruent-initial stems of different origins

Native	*məŋ-tonton*	→	*mənonton*	'to view, watch'
Native	*məŋ-kaji*[6]	→	*məŋaji*	'to recite the Koran'
Sanskrit	*məŋ-puji*	→	*məmuji*	'to worship
Arabic	*məŋ-terjemah*	→	*mən(t)erjemahkan*	'to translate'
Dutch	*məŋ-sopir*	→	*məɲopir*	'to drive (chauffer)'
Dutch	*məŋ-traktir*	→	*mən(t)raktir*	'to treat someone'
English	*məŋ-teror*	→	*mən(t)eror*	'to terrorize'

Deletions of the segments in the parenthesis in (6) are optional in today's Indonesian. In Sneddon's (1996:12) words, these voiceless obstruents are in a "transition period" in the loanword assimilation process in Indonesian.

3.2 *Vowels*

As lexical items starting with the voiceless obstruents show traces of the loanword assimilation process, words starting with vowels also show different behaviors at the morphophonemic level in terms of the loanword nativization. The prefix is invariably realized as *məŋ*-with vowel-initial stems; however, in native and nativized vocabulary, the velar nasal resyllabifies (as a syllable onset) with the stem-initial vowel. But, in non-nativized loanwords the velar nasal remains as a syllable coda. Therefore, with native or nativized loanwords, the velar nasal forms a syllable with the following stem-initial vowels whereas with less-assimilated loanwords, there is often a pause or a glottal stop insertion between the prefix and stem.

(7) *məŋ*-with vowel-initial stems of different origins

Native	*ancam*	→	*mə.ŋan.cam*	'to threaten'
	undaŋ	→	*mə.ŋun.daŋ*	'to invite'
Sanskrit	*ajar*	→	*mə.ŋa.jar*	'to teach'
	upacara	→	*mə.ŋu.pa.ca.ra.i*	'to hold a ceremony for'
Arabic	*alam*	→	*mə.ŋa.la.mi*	'to experience'
	utus	→	*mə.ŋu.tus.kan*	'to delegate'
Dutch	*agen*	→	*məŋ.a.gen.i*	'to distribute'
	impor	→	*məŋ.im.por*	'to import'
	informasi[7]	→	*məŋ.in.for.ma.si.kan*	'to inform'
English	*asosiasi*	→	*məŋ.a.so.si.a.si.kan*	'to associate with'

Together with the voiceless obstruents examples, the different behaviors of the *məŋ*-prefix clearly seem sensitive to the nativeness of the Indonesian vocabulary.

3.3 *Syllabification with Consonants*

For stems considered to be native and nativized Indonesian, the syllable assignment of the final nasal in the *məŋ*-prefix depends on what is available in the initial-position of the following stem. Consider the following cases given in the order of stems starting with the sonorants, voiced obstruents, /p/, /t/, /k/, and /s/ from different word origin (data from Alwi et al. 2000, Departmen Pendidikan Nasional 2001, Echols and Shadily 1989, Jones 1984, Sneddon 1996):

(8) Stems starting with sonorants

N:	*latih*	→	*mə.la.tih*	'to practice'
S:	*muka*	→	*mə.mu.ka.kan*	'to suggest, propose'
A:	*napas*	→	*mə.na.pas.kan*	'to exhale something'
D:	*motor*	→	*mə.mo.to.ri*	'to go by a car'
E:	*respons*	→	*mə.res.pons*	'to respond'

(9) Stems starting with voiced obstruents
N: *duga*   →   *mən.du.ga*   'to pray'
S: *bukti*   →   *məm.buk.ti.kan*   'to prove'
A: *zakat*   →   *mən.za.kat.kan*   'to donate (to mosque)'
D: *Belanda*   →   *məm.be.lan.da.kan*   'to make it Dutch-like'
E: *gossip*   →   *məŋ.go.sip.kan*   'to gossip'

(10) Stems starting with voiceless obstruent /p/
N: *potoŋ*   →   *mə.mo.toŋ*   'to cut'
S: *puji*   →   *mə.mu.ji*   'to worship'
A: *patuh*   →   *mə.ma.tu.hi*   'to obey'
D: *portret*   →   *mə.mot.ret*   'to take a picture'
E: *partisipasi*   →   *məm.par.ti.si.pa.si*   'to participate'

(11) Stems starting with voiceless obstruent /t/
N: *tonton*   →   *mə.non.ton*   'to view, watch'
S: *tata*   →   *mə.na.ta*   'to put in order, organize'
A: *takbir*   →   *mə.nak.bir.kan*   'to make laudatory'
D: *telepon*   →   *mə.ne.le.pon*   'to call, telephone'
E: *transfer*   →   *mən.trans.fer*   'to transfer'

(12) Stems starting with voiceless obstruent /k/
N: *kirim*   →   *mə.ŋi.rim*   'to send'
S: *kepala*   →   *mə.ŋe.pa.la.i*   'to act as the head'
A: *khotbah*   →   *mə.ŋot.bah.i*   'to preach at, lecture someone'
D: *klat*   →   *məŋ.kə.lat*   'to draft a paper'
E: *klipiŋ*   →   *məŋ.kli.piŋ*   'to clip'

(13) Stems starting with voiceless obstruent /s/
N: *sakit*   →   *mə.ɲa.kit.kan*   'to cause pain'
S: *sentosa*   →   *mə.ɲen.to.sa.kan*   'to provide rest and safety'
A: *sadar*   →   *mə.ɲa.da.ri*   'to realize'
D: *seterika*   →   *mə.ɲe.te.ri.ka*   'to iron'
E: *sosialisasi*   →   *mən.so.si.a.li.sa.si.kan*   'to socialize'

The border between the native/nativized category versus the non-nativized category is not clear-cut as observed in the consonant deletion of stem-initial /p, t, k, s/ segments as seen in examples (6) -(10). There are some loanwords that have not yet been fully nativized; thus, there exist variation in pronunciations at a morphophonemic level with *məŋ-*. This means that for the words starting with /p, t, k, s/, the steminitial consonants are sometimes dropped and sometimes kept, depending on the speaker without changing meanings[8]. Examples of such loanwords are given in (11).

(11) a. *terjemah*[9] → *mənterjemahkan/mənerjemahkan* 'to translate'
      b. *traktir* → *məntraktir/mənəraktir* 'to treat someone'
      c. *kategori* → *məŋkategorikan/məŋategorikan* 'to categorize'
      d. *sukses* → *mənsukseskan/məɲukseskan* 'to succeed'
      e. *proses* → *məmproses/məməroses* 'to process'

In general, loanwords from Dutch and English show variation in consonant deletion whereas the native words and loanwords from Sanskrit and Arabic rarely have variation in this environment. At the same time, speakers of the Indonesian language are often aware that the loanwords from Dutch and English are considered to be foreign, while they tend to consider Sanskrit and Arabic loanwords as native.

4 Observation

4.1 *Survey*

To observe the consonant deletion and syllabification patterns regarding the *məŋ*-prefixation and the vowel-initial stems, I informally surveyed some native Indonesian speakers about the use of *məŋ*- and words of different origin both in Indonesia (Group A) and in Hawai'i (Group B). The survey instrument contained a combination of *məŋ*-prefix and stems of different origins in different speech rates (fast, normal, and slow), randomly arranged. The stems were selected from three different categories, namely, 1. Native and nativized vocabulary, 2. Well-assimilated foreign loans, and 3. Less-assimilated foreign loans. All the stems in these different groups were chosen from Echols and Shadily (1975) with guidance of a high school teacher in Makassar who is a native Indonesian language speaker, Mr. Syahruddin.

    Category 1 (native and nativized vocabulary) included *ambil* 'take', *iɲin* 'desire', *undaŋ* 'invite', *endap* 'deposit/ settle', and *oŋkos* 'cost.' Category 2 (well-assimilated loan-words) had *aborsi* 'abortion', *informasi* 'information', *evaluasi* 'evaluation', and *operasi* 'operation.' Stems such as *antisipasi* 'anticipation', *imajinasi* 'imagination', *edit* 'edit', and *organisasi* 'organization' were used for Category 3 (less-assimilated loanwords)[10].

4.2 *Findings*

The following table indicates syllabification patterns of the last nasal in the *məŋ*-prefix with the stem-initial vowels by four native speakers of Indonesian who had little exposure to foreign languages. (C = category, FS = fast speech, NS = normal speech, SS = slow speech, and SR = speech rate)

Table 1: *Vowel resyllabification of the four speakers in Indonesia (Group A)*

	FS	NS	SS	Affected by SR?
C 1	100%	100%	100%	No
C 2	56.2%	25%	6%	Yes
C 3	6%	0%	0%	No ?

    The resyllabification of the coda nasal and stem-initial vowels takes place the most with Category 1 (native/nativized), followed by Category 2 (well-assimilated loanwords)

and Category 3 (less-assimilated loanwords). The speech rates seem to be affecting the results in Category 2 because people resyllabified the velar nasal with the stem-initial vowels in fast speech the most and slow speech the least.

Speakers in Group B are three native speakers of Indonesian who have lived in English-speaking countries for over five years. Again, the resyllabification took place the most in the order of Category 1, Category 2, and Category 3.

Table 2: *Vowel resyllabification of the three speakers in the English speaking countries (Group B)*

	FS	NS	SS	Affected by SR?
C 1	100%	100%	93%	No
C 2	25%	25%	16%	?
C 3	6%	0%	0%	No

For both groups, it is difficult to determine whether speech rates had any effects on syllabification patterns or not for this group, due to the small number of samples. Nonetheless, just by looking at the outcome, it does seem as if the slow speech was triggering non-application of the resyllabification in Category 2. In any case, these data and observations are just suggestive and needs further investigation with more samples.

5 Rule Ranking and Boundary Strength

Stanley (1973:191) states, "more than one type of boundary is necessary and that it makes initial sense to consider boundaries are ranked from strong to weak." In accordance with Stanley (1973), the boundary involving the *məŋ* -prefix and loanwords in Indonesian are ranked in order from the most coherent (native/nativized = the weakest boundary) to the least coherent (less-assimilated loanwords = the strongest boundary). Differences in the various different degrees of cohesion are determined by the phonological rules of consonant deletions and syllabification patterns.

In order to account for the variation of the rule applications or "transition period" (Sneddon 1996:12), separating a domain of rule application into different strata provides a general view into the rule applications in Indonesian phonology. For this purpose, categories based on the different word origins (or nativeness) such as native/nativized, well-assimilated loanwords, and less-assimilated loanwords are used in the following figure.
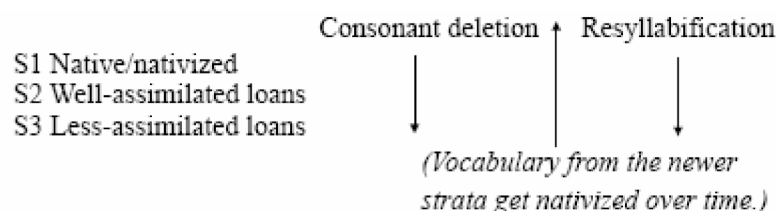

Consonant deletion   Resyllabification

S1 Native/nativized
S2 Well-assimilated loans
S3 Less-assimilated loans

(Vocabulary from the newer strata get nativized over time.)

Figure 1: *Lexical Strata of Indonesian based on the degrees of nativeness*

Myers (1991:382) states, "there is a gradual loosening of restrictions on phonological representations." He refers to Kiparsky's Strong Domain Hypothesis (SDH) concerning the degrees of cohesion at the morphophonological level. Myers (1991:382) explains the SDH as follows[11]:

(12)   a. All rules are available at the earliest level of the phonology.
       b. Rules may cease to apply, but may not begin to apply, at a later level by stipulation.

It appears that the application of the morphophonological rule in the patterns considered is a clear indication of the degree of nativeness. For example, a process of the on-going nativization of loanwords can be seen in examples in (11) with "a gradual loosening of restrictions on phonological representations" (Myers 1991:382). From the point of view of the SDH, the consonant deletion rule and resyllabification rules are available at the earliest level of the phonology (S1), and then they cease to apply gradually at the following level (S2).

When less-assimilated loanwords starting with vowels are prefixed with *məŋ-*, there is often a short gap or a glottal insertion between the two morphemes. According to Hyman (1978:452-454), if there is such a pause, it is an indication of a potential morpheme boundary sensitive to boundary strength. A general prediction is that with the existing loanwords, the boundaries will weaken over time and the evidence will appear in syllable structure. This means that the initial vowels in stems will start resyllabifying with the preceding velar nasal of the prefix, changing it from a coda to an onset in an assimilated form of a loanword.

6 Conclusion

This paper began with a brief history of loanwords in Indonesian, and morphophonological phenomena between a highly productive prefix *məŋ-*and stems of different lexical strata (native/nativized, well-assimilated loans, less-assimilated loans). Following this, the application of less well-reported morphophonemic rules (syllabification patterns with the vowel-initial stems) in different lexical strata were compared in two different groups of native Indonesian speakers. Regarding discreteness of the Indonesian lexical strata, the data tells us that connections between different strata are not clear cut but rather fuzzy for the following two reasons[12]: 1) variation is allowed in the consonant deletion rule applications, and 2) *məŋ-*and vowel-initial stems' syllabification patterns were influenced by speech rate. As reported in this paper, more and more loanwords (especially from English) are coming into the Indonesian language today. In future, it can be suggested that further observation of the *məŋ-*prefix in loanwords should be investigated, especially with respect to the difference between speakers with and without knowledge of English.

Notes

errors and shortcomings are my responsibility alone.

1.   Some verbal suffixes such as *–i* or *–kan* are often added to the roots along with the transitive verb prefix, however, details of these suffixes will not be discussed in this paper.

2.   E.g., according to Collins (1996:82), slightly less than 2% people have university education.

3.   Exceptions to this rule are words such as a native vocabulary *punya* 'to possess/own' (< (*em*)*pu + nya*) • *məmpunyai* (**məmunyai*) and an Arabic loanword *pengaruhi* 'influence' *məmpengaruhi* (**məmenga-ruhi*).

4.   A language such as Javanese shows nasal assimilation of /tʃ/ to [ɲ], which is easier to explain than /s/ to [ɲ]. However, the obstruents here exclude an affricate /tʃ/ as well as all voiceless obstruents in monosyllabic stems.

5.   Theterm Western Malayo-Polynesian has been widely used, but there is a question whether this is a valid subgroup (Ross 2002:19). Although only languages that have been called 'Western Malayo-Polynesian' make active use of homorganic nasal substitution, there are scattered indications that the process may also have been found in the common ancestor of the languages of eastern Indonesia and the Oceanic group (Blust 1977, 1999:68).

6.   There is a homophone   *kaji* meaning 'inspect, examine, investigate' derived from the same root (Echols and Shadily 1989:254). This meaning is usually prefixed as *mənkaji*with a reserved meaning 'to inspect, to examine, to analyze' while *məŋaji* is reserved for another meaning, 'to recite the Koran' in general.

7.   A commonly used Dutch word that is equivalent for English 'information' is *inlichting*, but, there is another form *informatie* in Dutch lexicon (Kozok, personal communication, Travelag 2000).

8.   Notice that epenthetic schwa is inserted in examples (11b) *m n raktir* 'to treat someone' and (11e) *məməroses* 'to process' in order to maintain a phonotactics of the Indonesian language. When impermissible consonant clusters are introduced to the Indonesian language from foreign sources, schwa is often inserted in pronunciation between the onset consonants in the loanword forms, as in *səlogan* 'slogan' (< Dutch/English), and *sətructor* 'structure' (< Dutch/English) (Alwi et al. 2000:77). Thus, schwa seems to be a minimal vowel in Indonesian. This schwa insertion is more seen in the orthography of the Dutch loanwords than English loanwords as mentioned earlier in the paper.

9.   Sneddon (1996:12) notes that "after many years of use, *mənterjemah-kan* 'translate' was completely replaced by *mənerjemhkan* in a very short period during the mid-1980s." 10.   Although there are six Indonesian vowel phonemes /a, i, u, ə, e, o/, the vowel-initial stems of the first category contains only five phonemes /a, i, u, ə, o/ and the second and third category, only four /a, i, e, o/.

11.   I learned this from Professor Kenneth Rehg's seminar entitled "The lifecycle of phonological rules" during Fall 2001 semester. He has given a presentation at the department colloquium on the same topic (Rehg 2001).

12.   Considering the morphophonological boundaries, Dressler (1985:3) explains that the variation between the allomorphic rules and phonological rules point out that lexical strata are separated by fuzzy rather than clear cut boundaries.

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