Bòsò Walikan Malangan : structure and development of a Javanese reversed language
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CHAPTER 4

Reversal in Walikan

4.1   Introduction

This chapter discusses reversal strategies and word structure in Walikan. It starts by giving an overview of the attested reversal rules (§4.2), then proceeds to discuss each type of the reversal. §4.3 discusses the most productive type of reversal, Total Segment Reversal. §4.3.1 explores the additional reversal rules, while the way in which all types of reversal reflect the phonology and phonotactics of Malangan Javanese and Malangan Indonesian is described in §4.3.2.

4.2   Overview of Reversal Rules in Walikan

Lexical items in Walikan are created through a process of reversal, which involves exchanging and/or reversing segments at word level. The term reversal is used here in accordance with the name of the variety, *Walikan*, which in Javanese means 'reversed'. The term 'reversed language' has been used in previous linguistic studies of similar type of languages (Bagemihl 1988; Bagemihl 1989; Dreyfuss 1983; Hoogervorst 2014; Lefkowitz 1989; Lefkowitz 1991). It is a linguistic manipulation strategy that can be defined as deliberately rever-

sing linguistic forms according to linguistic rules, as well as cultural and social contexts (Storch 2011). Word reversal is a widespread phenomenon that can be observed in many different languages. A typological description of word reversal and a framework which categorizes reversal into ten different types can be found in Bagemihl (1989).

This chapter adopts Bagemihl's (1989) terminology to describe the word reversal processes observable in Walikan, as shown in Table 4.1.

No	Type of reversal	Original word	Reversed word	Gloss
1	Total Segment Reversal	*édan*	NADÉ	'I'
2	Transposition	*grogi*	IGROG	'groggy'
3	Sequence Exchange	*hamil*	LIHAM	'pregnant'
4	Permutation	*abis*	SIBUN	'all gone, used up'

TABLE 4.1: Reversal types in Walikan

For this thesis I collected a corpus of spoken and written forms of Walikan (see §1.5.2). The most productive type of reversal in my corpus of Walikan is Total Segment Reversal (95%). The other 5% (36 out of 725 tokens) deviate from the Total Segment Reversal rule and fall under the Transposition, Sequence Exchange, and Permutation reversal types. They will be discussed in §4.5.

It is important to note that some reversal processes in Walikan also correspond to the linguistic process of metathesis, which involves a phonological reordering of sounds. However, metathesis never involves the total reversal of segments in a word.

There is good evidence that Walikan speakers base themselves on the underlying phonemic form of a word to be reversed rather than its phonetic realization. For example, the word-final light velar stop /k/ realized as [ʔ] in Malangan Javanese and Indonesian (refer to §3.2.2.1.5) appears as /k/ in the word-initial position of a reversed word. After the reversal, the newly created word must conform again to the phonology and phonotactics of Malangan Javanese and Indonesian.

4.3   Total Segment Reversal

Total Segment Reversal is the most salient reversal rule in Walikan. It allows for complete inversion of all the segments in a word. This means that the last segment of the original word will be the first segment of the reversed form, the penultimate segment will be the second segment, and so on. The process is represented in Figure 4.1.
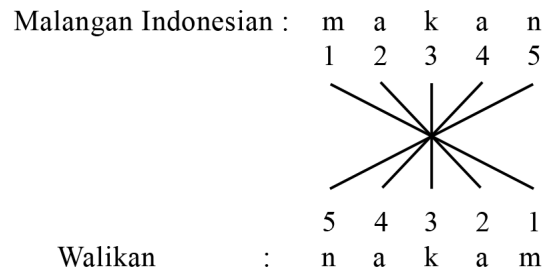
Malangan Indonesian :   m   a   k   a   n
                        1   2   3   4   5

                        5   4   3   2   1
Walikan   :   n   a   k   a   m

FIGURE 4.1: Total Segment Reversal in the word *makan* 'to eat'

This type of reversal is also found in other languages, although typologically a total reversal of word segments is a rare strategy (Bagemihl 1989). In Walikan, Total Segment Reversal affects both monosyllabic and polysyllabic words. Most native words in both Malangan Javanese and Malangan Indonesian are bisyllabic, as they are in Walikan. Examples (1) - (4) show the distribution of Total Segment Reversal in all syllable types.

(1)   Monosyllabic words
      $C_1V_2C_3 \rightarrow C_3V_2C_1$
      mas   ['mas] $\rightarrow$ SAM   ['sam˺]   'older brother'
      bir   ['ɓɪr] $\rightarrow$ RIB   ['rɪp˺]   'beer'

(2)   Bisyllabic words
      $C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$
      tahu   ['ʈa.hu] $\rightarrow$ UHAT   ['ʔu.haʈ˺]   'tofu'
      pagi   ['pa.ɠi] $\rightarrow$ IGAP   ['ʔi.ɠap˺]   'morning'

$V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1$

arék	[ˈʔa.rɛʔ]	→	KÉRA	[ˈkɛ.ra]	'kid'
utang	[ˈʔu.t̪aŋ]	→	NGATU	[ˈŋa.t̪u]	'debt'

$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$

<u>*kabar*</u>	[ˈka.ɓa̰r]	→	RABAK	[ˈra.ɓa̰ʔ]	'news'
suwun	[ˈsu.wʊn˺]	→	NUWUS	[ˈnʊ.wʊs]	'thank you'

(3)   Trisyllabic words

$C_1V_2.V_3.C_4V_5 \rightarrow V_5.C_4V_3.V_2C_1$

<u>*biasa*</u>	[ɓi̯.ˈʲa.sa]	→	ASAIB	[ʔa.ˈsa.ip˺]	'ordinary'
<u>*siapa*</u>	[si.ˈʲa.pa]	→	APAIS	[ʔa.ˈpa.is]	'who'

$C_1V_2.C_3V_4.C_5V_6C_7 \rightarrow C_7V_6.C_5V_4.C_3V_2C_1$

mohamad	[mɔ.ˈha.mat̪˺]	→	DAMAHOM	[d̪a̰.ˈma.hɔm˺]	'a name'
<u>*selamat*</u>	[sə.ˈla.mat̪˺]	→	TAMALES	[t̪a.ˈma.ləs]	'a greeting'

(4)   Quadrisyllabic words

$C_1V_2.C_3V_4.C_5V_6.C_7V_8 \rightarrow V_8.C_7V_6.C_5V_4.C_3V_2C_1$

<u>*kotalama*</u>	[ˈkɔ.t̪a.ˈla.ma]	→	AMALATOK	[ˈʔa.ma.ˈla.t̪ɔʔ]	'a place name'
<u>*surabaya*</u>	[ˈsu.ra.ˈɓa̰.ja]	→	AYABARUS	[ˈʔa.ja.ˈɓa̰.rus]	'a place name'

$C_1V_2C_3.C_4V_5.C_6V_7.C_8V_9 \rightarrow V_9.C_8V_7.C_6V_5.C_4C_3V_2C_1$

merjòsari	[mər.ˈɟɔ̰.sa.ˈri]	→ IRASÒJREM	[ˈʔi.ra.ˈsɔ.ɟrə̰m˺]	'a place name'
mergòsònò	[mər.ˈg̊ɔ̰.sɔ.ˈnɔ]	→ ÒNÒSÒGREM	[ˈʔɔ.nɔ.ˈsɔ.g̊rə̰m˺]	'a place name'

Quadrisyllabic words (4) that are place names undergo Total Segment Reversal. However, compound words are reversed based on each root. In (5), *mòròtuwò* consists of *mòrò* 'to approach' and *tuwò* 'old' and *kòcòmòtò* consists of *kòcò* 'glass' and *mòtò* 'eye'. Both parts of the compound are reversed independently.

(5)   Compound words

$C_1V_2.C_3V_4.C_5V_6.C_7V_8 \rightarrow V_4.C_3V_2.C_1V_7.V_6C_5$

mòròtuwò	[ˈmɔ.rɔ.ˈt̪u.ʷɔ]	→ ÒRÒMAUT	[ˈʔɔ.rɔ.ˈma.ʔut̪˺]	'parent-in-law'
kòcòmòtò	[ˈkɔ.cɔ.ˈmɔ.t̪ɔ]	→ ÒCÒKÒTÒM	[ˈʔɔ.cɔ.ˈkɔ.t̪ɔm˺]	'eyeglasses'

The total restructuring of the segments or phonemes also affects the syllabification of words. As shown in (2), when a word with CV.CV syllabification undergoes Total Segment Reversal, the reversed word will have an onset-less initial syllable and a closed final syllable. In contrast, a word with V.CVC syllabification will have a reversed form with a CV.CV structure.

In addition, example (4) shows that reversing a sequence of consonants across syllable boundaries, as in CVC.CV.CV.CV, may create a consonant cluster in syllable-onset position.

Examples (1) - (4) do not include any unreversed words with consonant clusters, but in §4.3.2.4 I will discuss the effects of Total Segment Reversal for consonant clusters.

So far, the following general principles of Total Segment Reversal in Walikan can be proposed (6).

(6)   Rules for Total Segment Reversal

1. Total Segment Reversal can be applied to words with all possible syllabification patterns in Malangan Indonesian and Malangan Javanese (i.e. monosyllabic, bisyllabic, trisyllabic and quadrisyllabic words).

2. Total Segment Reversal results in the reordering of syllable patterns.

3. Total Segment Reversal of a consonant sequence across syllable boundaries may create a consonant cluster in syllable onset position.

4. The reversal of compound words is applied on each of the roots separately.

4.3.1   Modifications in Total Segment Reversal

The Total Segment Reversal rule requires the order of segments in words to be fully inverted. However, in a number of cases some modifications can be observed. There are three main modification strategies employed by speakers, namely: 1) Segment Addition; 2) Segment Deletion; and 3) Segment Exchange.

Segment Addition allows speakers to add a segment to a word that has undergone Total Segment Reversal. In some cases two or more segments can be added instead of only one, in order to repair an onset-less syllable (7).

(7)   Consonant Addition in onset position
       sepéda   [sə.ˈpɛ.ɖa̤]   →   ʜᴀᴅᴇ́ᴘᴇꜱ   [ha.ˈɖɛ̤.pəs]   'bicycle'
       mutia   [mu.ˈt̪i.ʲa]   →   ʜᴀɪᴛᴜᴍ   [ha.ˈi.t̪um˺]   'a name'
       dua   [ˈɖṳ.ʷa]   →   ʜᴀᴜᴅ   [ˈha.ut̪˺]   'two'
       dhéwé   [ˈɖɛ̤.we]   →   ʜᴇ́ᴡᴇ́ᴅʜ   [ˈhɛ.wɛt̪˺]   'by oneself, alone'
       gedhé   [ɠə̤.ˈɖɛ̤]   →   ʜᴇ́ᴅʜᴇɢ   [ˈhɛ.ɖək˺]   'big'
       penjara   [pə.ˈnɟa.ra]   →   ɴᴀʀᴀɴᴊᴇᴘ   [na.ˈra.nɟəp˺]   'jail, prison'

The second type, Segment Deletion, allows speakers to delete one or more
segments of a word that has undergone Total Segment Reversal. This is com-
monly attested in words containing consonant clusters. The word [ˈsu.ŋkan˺],
for example, loses the velar nasal /ŋ/ in the reversal, which yields the form
[ˈna.kʊs]. The several types and functions of Segment Deletion are shown in
(8).

(8)   Consonant deletion in word-medial clusters[1]
       tentara   [t̪ə.ˈnt̪a.ra]   →   ᴀʀᴀɴᴇ́ᴛ   [a.ˈra.nɛt̪˺]   'soldier'
       sungkan   [ˈsu.ŋkan˺]   →   ɴᴀᴋᴜꜱ   [ˈna.kʊs]   'shy'
       béncong   [ˈɓɛ̤.ncɔŋ]   →   ɴɢᴏᴄᴇ́ʙ   [ˈŋɔ.cɛp˺]   'transvestite'

       Consonant deletion in word-final clusters
       mbah   [ˈmbah]   →   ʜᴀᴍ   [ˈham˺]   'grandparent'
       ndowéh   [ˈnd̪ɔ.wɛh]   →   ʜᴇ́ᴡᴏᴅ   [ˈhɛ.wɔt̪˺]   'confused'
       mbakyu   [ˈmbaʔ.ju]   →   ᴜʏᴀʙ   [ˈʔu.jap˺]   'older sister'

       Consonant deletion in onset position
       rokok   [ˈrɔ.kɔʔ]   →   ᴏᴋᴇ́ʀ   [ˈʔɔ.kɛr]   'cigarette'
       tujuh   [ˈt̪ʊ.ɟʊ̥h]   →   ᴜᴊᴜᴛ   [ˈʔu.ɟṳt̪˺]   'seven'
       karcis   [ˈkar.cɪs]   →   ɪᴛʀᴀᴋ   [ˈʔi.t̪raʔ]   'ticket'

       Consonant deletion in coda position
       wédok   [ˈwɛ.ɖɔ̤ʔ]   →   ᴋᴏᴅᴇ́   [ˈkɔ.ɖɛ̤]   'woman'
       wedhus   [wə.ˈɖʊ̥s]   →   ꜱᴜᴅʜᴇ́   [ˈsu.ɖɛ̤]   'sheep/lame-brained'

The third strategy, Segment Exchange, is a process where one or more
segments exchange positions within a word. The examples in (9) illustrate the

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[1]Note that the formation of [a.ˈra.nɛt̪˺] involves vowel alternation, which will be
explained in §4.3.2.6. Also, the formation of [ˈʔɔ.kɛr] from [ˈrɔ.kɔʔ] is the result of an
unsystematic process.

types of Segment Exchange that are observed after Total Segment Reversal. The attested Walikan word for *bingung* 'perplexed', for example, is ɴɢɪɴɢᴜʙ, which shows that the position of the vowels /i/ and /u/ is not affected after the entire word is completely reversed. It is possible that this happens because speakers reverse the entire word but unconsciously leave out certain segments in their original positions.

In the reversal of *mlebu* 'to enter', *mlaku* 'to walk', and *klambi* 'shirt', Segment Exchange takes place in order to repair the unpermitted cluster in coda position, as discussed in (36) - (38) and (40) - (41) .

(9)   Segment Exchange: Vowel

<u>*kotalama*</u>	[kɔ.t̪a.ˈla.ma]	→	ᴀᴍᴀʟᴏᴛᴀᴋ	[ʔa.ma.ˈlɔ.t̪aʔ]	'a place name'
manéh	[ˈma.nɛh]	→	ʜᴀɴᴇ́ᴍ	[ˈha.nɛm˺]	'again'
mélok	[ˈmɛ.lɔʔ]	→	ᴋᴇ́ʟᴏᴍ	[ˈkɛ.lɔm˺]	'to follow'
tempik	[ˈt̪ə.mpɪʔ]	→	ᴋᴇᴍᴘɪᴛ	[ˈkə.mpɪt̪˺]	'vagina'
<u>*betul*</u>	[b̥ə̥.ˈt̪ʊl]	→	ʟᴇᴛᴜʙ	[lə.ˈt̪ʊp˺]	'correct'
<u>*rebut*</u>	[rə.ˈb̥ʊt̪˺]	→	ᴛᴇʙᴜʀ	[t̪ə.ˈb̥ʊ̥r]	'take away'
bingung	[ˈb̥ɪ̥.ŋʊŋ]	→	ɴɢɪɴɢᴜʙ	[ˈŋɪ.ŋʊp˺]	'perplexed'
raimu	[ra.ˈi.mu]	→	ᴜᴍᴀɪʀ	[ˈʔu.ma.ir]	'your face'
<u>*sodara*</u>	[sɔ.ˈd̥ḁ.ra]	→	ᴀʀᴏᴅᴇꜱ	[ʔa.ˈro.d̥ə̥s]	'family'
<u>*sedikit*</u>	[sə.ˈd̥ɪ̥.kit̪˺]	→	ᴛᴇᴋᴇᴅɪꜱ	[t̪ə.kə.ˈd̥ɪ̥s]	'few'

Segment Exchange: Consonant

<u>*surabaya*</u>	[su.ra.b̥ḁ.ja]	→	ᴀʏᴀʀᴀʙᴜꜱ	[a.ja.ra.b̥ʊ̥s]	'a place name'
selawé	[sə.ˈla.wɛ]	→	ᴇ́ʟᴀᴡᴇꜱ	[ʔɛ.ˈla.wəs]	'twenty five'[2]
juragan	[ɟ̊u̥.ˈra.g̊ḁn˺]	→	ɴᴀʀᴀɢᴜᴊ	[na.ˈra.g̊ʊ̥t̪˺]	'boss'
<u>*sarapan*</u>	[sa.ˈra.pan˺]	→	ɴᴀʀᴀᴘᴀꜱ	[na.ˈra.pas]	'breakfast'
<u>*selamat*</u>	[sə.ˈla.mat̪˺]	→	ᴛᴀʟᴀᴍᴇꜱ	[t̪a.ˈla.məs]	'a greeting'
<u>*setuju*</u>	[sə.ˈt̪u.ɟ̊u̥]	→	ᴜᴛᴜᴊᴇꜱ	[u.ˈt̪u.ɟ̊ə̥s]	'agree'
mlebu	[mlə.ˈb̥u̥]	→	ᴜʙʟᴇᴍ	[ˈʔu.b̥lə̥m˺]	'to enter'
mlaku	[ˈmla.ku]	→	ᴜᴋʟᴀᴍ	[ˈʔu.klam˺]	'to walk'
klambi	[ˈkla.mbi]	→	ɪᴍʙʟᴀᴋ	[ˈʔi.mblaʔ]	'shirt'

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[2]Note that the formation of [ʔɛ.ˈla.wəs] also involves vowel alternation. This will be explained in §4.3.2.6.

4.3.2 The Role of Phonology and Phonotactics

This section focuses on how the phonology and phonotactics of Malangan Javanese and Malangan Indonesian influence the Total Segment Reversal process. The phonological properties discussed are: 1) neutralization of final consonants (§4.3.2.1); 2) realization of velar and glottal consonants (§4.3.2.2); 3) palatal stops and bilabial approximant consonants (§4.3.2.3); 4) consonant sequences and clusters (§4.3.2.4); 5) prenasalized stops (§4.3.2.5); and 6) vowel alternation (§4.3.2.6).

4.3.2.1 Neutralization of Final Consonants

As discussed in Chapter 3, stops in Malangan Javanese and Indonesian are distinguished not by their voicing, but rather by the opening of the vocal folds. As a result, the phoneme inventory shows two sets of stops: heavy stops /b, ḍ, d, ḍ, ɟ, g/ and light stops /p, t̪, ʈ, c, k/. In Malangan Javanese and Indonesian, the phonation type distinction in heavy and light stops is neutralized in final position, for instance: /b/ $\rightarrow$ [p̚]/_#.

When a word with a heavy consonant in initial position undergoes Total Segment Reversal, it moves the heavy consonant to word-final position. Following Malangan Javanese rules, the heavy consonant in word-final position is then pronounced as the light counterpart.

Word-final neutralization of the heavy bilabial stop /b/ in word-final position can be observed in (10). In word-final position, /b/ is realized as an unreleased light bilabial stop [p̚].

(10)　　/b/ realized as [p]
　　　$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
　　　bécak　[ˈb̥ɛ�థ.caʔ]　$\rightarrow$　KACÉB　[ˈka.cɛp̚]　'pedicab'
　　　beras　[b̥ə̣.ˈras]　$\rightarrow$　SAREB　[ˈsa.rəp̚]　'rice'

Word-final neutralization of the heavy dental stop /ḍ/, the heavy alveolar stop /d/, and the heavy retroflex stop /ḍ/ in word-final position can be observed in (11). In word-final position, /ḍ, d, ḍ/ are realized as the unreleased light dental stop [t̪̚].

(11)　　/ḍ/, /d/, and /ḍ/ realized as [t]
　　　$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
　　　dulur　[ˈd̥ʊ.lʊr]　$\rightarrow$　RULUD　[ˈrʊ.lʊt̪̚]　'sibling/relative'
　　　dhusun　[ˈd̥ʊ.sʊn̚]　$\rightarrow$　NUSUDH　[ˈnʊ.sʊt̪̚]　'village'

$$C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$$

dhéwé	[ɖ̥ɛ̤.we]	→	ÉWÉDH	[ɛ.wɛt̪̚]	'by oneself, alone'[3]
dinò	[ˈɖ̥i̤.nɔ]	→	ÒNID	[ˈʔɔ.nit̪̚]	'day'

In word-final position, the light alveolar stop /t̪/ is realized as an unreleased light dental stop [t̪̚], as shown in (12).

(12) /t̪/ realized as [t]
$$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$$

thithik	[ˈt̪i.t̪iʔ]	→	KITHITH	[ˈki.t̪it̪̚]	'a few'[4]

Example (13) shows the word-final neutralization process for the heavy velar stop /g/ in word-final position. In this position, /g/ is realized as the unreleased light velar stop [k̚].

(13) /g/ realized as [k]
$$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$$

<u>*gadis*</u>	[ˈg̥a̤.ɖ̥i̤s]	→	<u>SIDAG</u>	[ˈsi.ɖ̥a̤k̚]	'girl'
goréng	[ˈg̥ɔ̤.rɛŋ]	→	NGÉROG	[ˈŋɛ.rɔk̚]	'fried'

$$C_1V_2C_3.C_4V_5 \rightarrow V_5.C_4C_3V_2C_1$$

germò	[ˈg̥ə̤r.mɔ]	→	ÒMREG	[ˈʔɔ.mrək̚]	'pimp'[5]

The same process also applies to heavy consonants that occur in the word-final position of an unreversed word and are realized as light consonants. Total Segment Reversal will move the consonant into word-initial position, where it appears with its underlying heavy quality. As is the case in Malangan Javanese and Indonesian, the vowels following heavy consonants are breathy (14). This reveals that these consonants are still regarded as distinct from their light equivalents in the Malangan Javanese dialect, despite their identical realization in word-final position.

(14) Heavy consonants in word-initial position
$$V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1$$

arab	[ˈʔa.rap̚]	→	BARA	[ˈb̥a̤.ra]	'Arab'
abab	[ˈʔa.b̥a̤p̚]	→	BABA	[ˈb̥a̤.b̥a̤]	'breath'

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[3]The vowel alternation process involving [e] and [ɛ] in [ˈʔɛ.wɛt̪̚] is discussed in §4.3.2.6.

[4]The constant retention of [i] in [ˈki.t̪it̪̚] and [ˈʔɔ.nit̪̚] is discussed in §4.3.2.6.

[5]The maintenance of [ɔ] in [ˈʔɔ.mrək̚] is discussed in §4.3.2.6.5.

4.3.2.2   Velar and Glottal Consonants

This subsection discusses the correlation between /k/ and [ʔ] in Malangan Javanese and Indonesian. In addition, it will also discuss the status of glottal fricative /h/ in word-final position in Malangan Javanese and Indonesian.

The phonemic status of the glottal stop in Javanese is debatable. It is described as a phoneme in descriptions of another East Javanese dialect, Surabayan Javanese (Hoogervorst 2008; Krauße 2017). In Malangan Javanese and Malangan Indonesian, the glottal stop [ʔ] is the allophonic realization of /k/ in root-final position (see §3.2.2.1.4 and §3.3.2.1). Besides, [ʔ] also appears as the result of other phonological processes (see §3.2.2.1.5).

The Walikan data presented here provides evidence for the non-phonemic status of [ʔ] in Malangan Javanese and Indonesian. The allophonic relation between /k/ and [ʔ] is shown in Walikan (15) - (17).

First, example (15) shows how an original light velar stop /k/ in word-initial position becomes [ʔ] in word-final position after the word has undergone the Total Segment Reversal process.

(15)   /k/ realized as [ʔ]
$C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$
   kiwò   [ˈki.wɔ]   →   òwɪк   [ˈʔɔ.wɪʔ]   'left'

$C_1V_2C_3.C_4V_5C_6 \rightarrow C_6V_5.C_4C_3V_2C_1$
   kontol   [ˈkɔ.nt̪ɔl]   →   lontok   [ˈlɔ.nt̪ɔʔ]   'male genitals'

The same alternation also affects original words with /k/ in word-final position. In this position, /k/ in Malangan Javanese is realized as [ʔ]. After being moved to the word-initial position through Total Segment Reversal, its realization changes to [k] (16).

(16)   [ʔ] realized as [k]
$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
   mabuk   [ˈma.ɓʊʔ]   →   kubam   [ˈku.ɓa̰m˺]   'drunk'
   bécak   [ˈɓɛ.caʔ]   →   kacéb   [ˈka.cɛp˺]   'pedicab'

A glottal stop is added in word-final position for a number of Malangan Indonesian words after a final open syllable. In standard Indonesian the words are pronounced without a word-final glottal stop. When such words are reversed, the word-final glottal stop appears as /k/ in word-initial position.

(17)   [ʔ] realized as [k]
$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
maték [ˈma.t̪ɛʔ] → ᴋᴇ́ᴛᴀᴍ [ˈkɛ.t̪am̚] 'to die, dead'

$C_1V_2.C_3C_4V_5C_6 \rightarrow C_6V_5C_4.C_3V_2C_1$
<u>*mintak*</u> [ˈmi.ntaʔ] → <u>ᴋᴀᴛɴɪᴍ</u> [ˈkat̪.nim̚] 'to ask'[6]

In (18), the glottal stop in the coda position of the initial syllable in a loanword also changes to /k/ after reversal.

(18)   [ʔ] realized as [k]
$C_1V_2C_3.C_4V_5 \rightarrow V_5.C_4C_3V_2C_1$
bakso [ˈɓa̤ʔ.so] → ᴏꜱᴋᴀʙ [ˈʔɔ.skap̚] 'meatball'

Note that there are exceptional cases, where /k/ in word-initial position remains as [k] in word-final position after Total Segment Reversal (19). They appear due to the influence of the orthography.

(19)   /k/ realized as [k]
$C_1V_2C_3.C_4V_5C_6 \rightarrow C_6V_5.C_4C_3V_2C_1$
kerjò [ˈkər.ɟ̥ɔ] → òᴊʀᴇᴋ [ˈʔɔ.ɟ̥rə̥k] 'to work'
<u>*kerdi*</u> [ˈkər.d̥i̥] → <u>ɪᴅʀᴇᴋ</u> [ˈʔi.d̥rə̥k] 'to work'

Despite some exceptions in (19), examples (15)-(17) show that /k/ is realized differently depending on its position in a word: it is realized as [k] in word-initial position, and as [ʔ] in word-final position. The glottal stop [ʔ] in word-final position is thus an allophone of /k/, and not an independent phoneme.

In addition, the alternation of /k/ and [ʔ] also provides evidence that Walikan speakers take the underlying phonemic form of a word as input for the reversal process. Following the reversal, the phoneme is realized in a way that reflects Malangan Javanese and Indonesian phonology.

In Malangan Javanese, the glottal fricative /h/ in word-final position is pronounced as [h] (see §3.2.2.3), unlike in Surabayan Javanese and other dialects around Surabaya where it is dropped in this position (Hoogervorst 2008; Kisyani-Laksono 1998; Krauße 2017). This is further confirmed in Walikan,

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[6]Homorganic consonant clusters in Walikan are retained, see §4.3.2.4. The words ᴋᴀᴛɴɪᴍ 'to ask', ʟᴏᴛɴᴏᴋ 'penis', and ᴛᴀᴘᴍᴇ 'four' are exceptions. There are only three words in my data that exhibit the reversed order of homorganic clusters.

where a word-final /h/ in an unreversed word appears in the initial position
of the reversed word (20).

(20)   /h/ in Walikan
        $C_1V_2C_3.C_4V_5 \rightarrow V_5.C_4C_3V_2C_1$

tujuh	['tu.ɟuh]	→	HUJUT	['hu.ɟut]	'seven'
sekolah	[sə.'kɔ.lah]	→	HALOKES	[ha.'lɔ.kes]	'school'
rumah	['ru.mah]	→	HAMUR	['ha.mur]	'house'

Interestingly, /h/ also appears in the initial position of another set of Wa-
likan words, which originate from words with no /h/ in word-final position
(21).

(21)   /h/ in Walikan
        $C_1V_2C_3.C_4V_5 \rightarrow V_5.C_4C_3V_2C_1$

sepéda	[sə.'pɛ.da]	→	HADÉPES	[ha.'dɛ.pəs]	'bicycle'
mutia	[mu.ti.ʲa]	→	HAITUM	[ha.ʔi.tum˺]	'a name'

In the above examples, the attestation of a glottal fricative /h/ reflects the
older pronunciations, *sepédah* and *mutiah*, which are not used by younger
speakers but occur among older speakers. The word-initial /h/ does not reflect
orthographical influence, as the forms are spelled without a word-final /h/. In
the case of *sepéda(h)*, ADÉPES is also attested.

4.3.2.3   Palatal Stops and Bilabial Approximant Consonants

Malangan Javanese phonotactics does not allow palatal stops /c, ɟ/ or a bilabial
approximant /w/ in word-final position. In Walikan, word-final palatal con-
sonants /c/ and /ɟ/ are realized as a phoneme with the closest corresponding
place of articulation, that is the unreleased light dental stop [t̪] (22).

(22)   /c/ and /ɟ/ realized as [t̪]
        $C_1V_2.C_3V_4C_5.C_6V_7 \rightarrow V_7.C_6C_5V_4.C_3V_2C_1$

jakarta	[ɟ̊a.'kar.t̪a]	→	ATRAKAJ	[a.'t̪ra.kat̪˺]	'a place name'

$C_1V_2.C_3V_4.C_5V_6 \rightarrow V_6.C_5V_4.C_3V_2C_1$

celana	[cə.'la.na]	→	ANALEC	[ʔa.'na.lət̪˺]	'trousers'

The bilabial approximant /w/, that is supposed to appear in word-final position, is realized as an unreleased light bilabial stop [p̚] (23) after Total Segment Reversal.

(23)   /w/ realized as [p]
       $C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
       wédok   [ˈwɛ.ɗɔʔ]   →   ᴋᴏᴅᴇ́ʙ   [ˈkɔ.ɗɛp̚]   'woman'

In (23), the /w/ in word-final position is realized as an unreleased [p̚] via an earlier [b]. In Javanese, the alternation of /w/ and /b/ is common. The word [ˈwɛ.nɛh] 'to give' in Malangan Javanese for example, is sometimes also realized as [ˈɓɛ.nɛh], especially by older speakers.

Alternatively, speakers may also apply Consonant Deletion, so that [ˈwɛ.ɗɔʔ] becomes [ˈkɔ.ɗɛ] (8).

4.3.2.4   Consonant Sequences and Clusters

Both consonant clusters and sequences can potentially cause problems in word reversal. For example, Total Segment Reversal may yield a cluster or a sequence that is not permitted in Malangan Javanese or Malangan Indonesian phonology and phonotactics. This section discusses how Walikan deals with such sequences and clusters.

First, consonant sequences across syllable boundaries that undergo Total Segment Reversal may form new sequences. No additional rule is needed when the cluster formed does not violate Malangan Javanese or Malangan Indonesian phonotactics.

Consonant sequences consisting of a liquid in coda position followed by an obstruent in the onset of the following syllable become consonant clusters in the onset position of syllable word-medially after Total Segment Reversal. These clusters consist of an obstruent followed by a liquid, which is a permitted onset structure in both Malangan Javanese and Indonesian (24).

(24)   Forming a new cluster
$C_1V_2C_3.C_4V_5 \rightarrow V_5.C_4C_3V_2C_1$

kerdi	[kər.ˈɖi̥]	→	IDREK	[ˈʔi.ɖrək̚]	'to work'
marsò	[ˈmar.sɔ]	→	ÒSRAM	[ˈʔɔ.sram̚]	'a name'
ngerti	[ŋər.ˈʈi]	→	ITRENG	[ˈʔi.ʈrəŋ]	'to understand.AV'
germò	[ɠə̥r.ˈmɔ]	→	ÒMREG	[ˈʔɔ.mrək̚]	'pimp'
bakso	[ˈɓḁʔ.so]	→	OSKAB	[ˈʔɔ.skap̚]	'meatball'
palsu	[ˈpal.su]	→	USLAP	[ˈʔu.slap̚]	'fake'

$C_1V_2C_3.C_4V_5C_6 \rightarrow C_6V_5.C_4C_3V_2C_1$

berkat	[ˈɓə̥r.kat̚]	→	TAKREB	[ˈʈa.krəp̚]	'blessed food'

$C_1V_2.C_3V_4.V_5C_6.C_7V_8 \rightarrow V_8.C_7C_6V_5.V_4.C_3V_2C_1$

keluarga	[kə.ˈlu.ʷar.ɠḁ]	→	AGRAULEK	[ˈʔa.ɠrḁ.u.lə̥ʔ]	'family'

The process is exemplified in (25).

(25)   *marsò* [ˈmar.sɔ] 'a name'
Original Word   :   m   a |r| . |s| ɔ
Walikan   :   ɔ   . |s| |r| a   m

The following discussion concerns consonant clusters defined as a sequence of more than one consonant that occurs in the same syllable. In Malangan Javanese and Malangan Indonesian, consonant clusters occur in word-initial and word-medial positions but never in word-final position (see §3.2.7 and §3.3.7).

With the application of Total Segment Reversal a consonant cluster in word-initial position will be transposed to word-final position, which is not permitted phonotactically. In addition, Total Segment Reversal may also create clusters with with consonant combinations that are not permitted.

Walikan deals with the reversal of consonant clusters by employing different strategies depending on the type and position of the clusters. They include: 1) maintenance of clusters; 2) Segment Deletion; and 3) Segment Exchange.

The first strategy is the maintenance of clusters, which is applied to the followig clusters: nasal + obstruent, obstruent + liquid, fricative + stop, and fricative + stop + liquid. They all remain intact in root-medial position.

The nasal + obstruent cluster is also referred to as a homorganic cluster, that is, a cluster of consonants of the same or neighboring place of articulation, which is a salient feature of Javanese (see §3.2.7). Example (26) illustrates

how homorganic consonant clusters stay intact even after Total Segment Reversal in Walikan.

(26) Homorganic consonant cluster remains intact
/mb/
$C_1V_2.C_3C_4V_5 \rightarrow V_5.C_4C_3V_2C_1$

mambu	['ma.mbu]	→	UMBAM	['ʔu.mbam˺]	'smelly'
rambut	['ra.mbʊt̪˺]	→	TUMBAR	['t̪u.mbar]	'to pray'

/mp/
$C_1V_2.C_3C_4V_5C_6 \rightarrow C_6V_5.C_4C_3V_2C_1$

sémpak	['sɛ.mpak˺]	→	KAMPÉS	['ka.mpɛs]	'underwear'
tempik	['t̪ə.mpɪʔ]	→	KIMPET	['ki.mpət̪˺]	'vagina'

/nt̪/
$C_1V_2.C_3C_4V_5C_6 \rightarrow C_6V_5.C_4C_3V_2C_1$

suntik	['sʊ.nt̪ɪʔ]	→	KINTUS	['kɪ.nt̪ʊs]	'to inject'
kontol	['kɔ.nt̪ɔl]	→	LONTOK	['lɔ.nt̪ɔʔ]	'male genitals'

/nɖ/
$C_1V_2.C_3C_4V_5C_6 \rightarrow C_6V_5.C_4C_3V_2C_1$

<u>*sandal*</u>	['sa.ndal]	→	<u>LANDAS</u>	['la.ndas]	'sandal'
pendhék	['pə.nɖɛʔ]	→	KÉNDHEP	['kɛ.nɖəp˺]	'short'

A famous phrase in Walikan often cited by the community of speakers is *néndhés kombét* 'to have sex/ to get high on drugs', which is derived from the Javanese phrase *séndhén témbok* 'to lean on a wall'. Speakers use this phrase when they want to chill out or calm themselves down in difficult situations. Literally, *séndhén* means 'to lean', while *témbòk* means 'wall'. The reversal process of the phrase can be seen in (27) and (28).

(27) *séndhén* ['sɛ.nɖɛn˺] 'to lean'

Original Word	:	s	ɛ	.	n	ɖ	ɛ	n
					↓	↓		
Walikan	:	n	ɛ	.	n	ɖ	ɛ	s

(28) *témbok* ['t̪ɛ.mbɔʔ] 'wall'

Original Word	:	t̪	ɛ	.	m	b	ɔ	k
					↓	↓		
Walikan	:	k	ɔ	.	m	b	ɛ	t̪

The second type of cluster that is retained in word-medial position is the obstruent + liquid cluster. (29).

(29) Obstruent + liquid cluster remains intact
      $C_1V_2.C_3C_4V_5C_6 \rightarrow C_6V_5.C_3C_4V_2C_1$
      muklis ['mʊ.klɪs] → SIKLUM ['si.klʊm̥] 'a name'
      sukron ['sʊ.krɔn̥] → NOKRUS ['nɔ.krus] 'a name'

The reversal process of words with a stop + liquid consonant sequence is shown in detail in (30).

(30) *muklis* ['mʊ.klɪs] 'a name'
      Original Word : m u . ⬚k ⬚l i s
                                    ↓   ↓
      Walikan   : s i . ⬚k ⬚l u m

When the consonant cluster is fricative + stop, such as in the borrowed Malangan Indonesian word *pésta* ['pɛ.st̪a] 'party', the cluster remains intact (31).

(31) Fricative + stop cluster remains intact
      $C_1V_2.C_3C_4V_5 \rightarrow V_5.C_4C_3V_2C_1$
      pésta ['pɛ.st̪a] → ASTÉP ['ʔa.st̪ɛp̚] 'party'

The reversal form also gives evidence that the syllabification of the word *pésta* is CV.CCV instead of CV.CVC. The reversal process is shown in (32).

(32) *pésta* ['pɛ.st̪a] 'party'
      Original Word : p ɛ . ⬚s ⬚t̪ a
      Walikan   :   a . ⬚s ⬚t̪ ɛ p

Furthermore, a cluster with three consonants that consists of nasal + stop + liquid or fricative + stop + liquid is also retained in word-medial position.

(33) Consonant cluster remains intact
      $C_1V_2.C_3C_4C_5V_6C_7 \rightarrow C_7V_6.C_3C_4C_5V_2C_1$
      méncrét ['mɛ.ncrɛt̪̚] → TÉNCRÉM ['t̪ɛ.ncrɛm̥] 'diarrhea'
      listrik [lɪ.st̪rɪk̚] → KISTRIL [kɪ.st̪rɪl] 'electricity'

The reversal form also gives evidence that the syllabification of the word *méncrét* and *listrik* is CV.CCCV instead of CVC.CCVC. The reversal process for *listrik* is shown in (34).

(34)   *listrik* [ˈlɪ.s̩trɪk] 'electricity'

Original Word	:	l	i	.	$\boxed{s}$	$\boxed{\underset{.}{t}}$	$\boxed{r}$	i	k
					↓	↓			
Walikan	:	k	i	.	$\boxed{s}$	$\boxed{\underset{.}{t}}$	$\boxed{r}$	i	l

The second strategy for reversing a consonant cluster is Segment Deletion. This constitutes the deletion of vowels and consonants from a reversed word. Example (35) shows how Total Segment Reversal yields a homorganic consonant cluster in word-final position, which violates a Malangan Javanese and Indonesian phonotactic rule. Segment Deletion solves the problem by deleting one of the consonants.

(35)   Segment Deletion
$$C_1C_2V_3C_4 \rightarrow C_4V_2C_1$$
   mbah   [ˈmbah]   →   ʜᴀᴍ   [ˈham˺]   'grandparent'
$$C_1C_2V_3C_4.C_5V_6 \rightarrow V_6.C_5V_3C_2$$
   mbakyu   [ˈmbaʔ.ju]   →   ᴜʏᴀʙ   [ˈʔu.jap˺]   'older sister'

In the word *mbakyu* [mbaʔ.ju] 'sister', the glottal stop [ʔ] in the coda of the original word-initial syllable is also deleted in order to yield a well-formed onset.

Segment Deletion can also be observed in the form variation of a number of words with a homorganic consonant cluster in word-medial position, such as those described in (8), although the versions where the consonant cluster is retained (26) are more widely used.

Next, the second strategy to reverse consonant clusters is Consonant Exchange. It refers to the reordering of consonant positions in a word that has undergone Total Segment Reversal, in order to create well-formed onsets and avoid unacceptable codas. In (36), the prohibited consonant cluster in word-final position is reordered. Note that these forms contain a nasal prefix.

(36)   Consonant Exchange
$$C_1C_2V_3.C_4V_5 \rightarrow V_5.C_4C_2V_3C_1$$
   mlebu   [mlə.ˈɓu̥]   →   ᴜʙʟᴇᴍ   [ˈʔu.ɓlə̥m˺]   'to enter'
   mlaku   [ˈmla.ku]   →   ᴜᴋʟᴀᴍ   [ˈʔu.klam˺]   'to walk'

The process of the reversal can be seen in (37) and (38).

(37) *mlebu* [mlə.ˈɓu̥] 'to enter'

Original Word	:	m	l	ə	.		b	u
Total Segment Reversal	:	*u	.	b	ə		l̲	m̲
Walikan	:	u	.	b̲	l̲	ə	m

(38) *mlaku* [ˈmla.ku] 'to walk'

Original Word	:	m	l	a	.		k	u
Total Segment Reversal	:	*u	.	k	a		l̲	m̲
Walikan	:	u	.	k̲	l̲	a	m

In (37), Total Segment Reversal creates *ᴜʙᴇʟᴍ, a form that has an ill-formed coda in the final syllable. The cluster /lm/ in word-final position is not permitted. After reordering, an attested Walikan word ᴜʙʟᴇᴍ is formed. The cluster /bl/ in the onset of a word-medial syllable is considered acceptable. This strategy also works for ᴜᴋʟᴀᴍ (38).

Another word with the /ml/ cluster in original word-initial position is not treated with the same strategy, as shown in (39).

(39) *mlayu* [ˈmla.ju] 'to run'

Original Word	:	m	l	a	.		j	u
Total Segment Reversal	:	*u	.	j	a		l̲	m̲
Segment Exchange	:	*u	.	j̲	l̲	a	m
Walikan	:	u	.	l	a	.	j	ə	m

In example (39), the consonant exchange or reordering will only yield a prohibited type of cluster, /jl/. The permitted Walikan word is therefore formed by Vowel Addition and Segment Exchange. The epenthesis of /ə/ is commonly used in Malangan Javanese and Indonesian to break up a consonant cluster (see §3.2.3.3 and 3.3.3.3).

Furthermore, there is another case where further adjustment needs to be applied in order to form the attested Walikan word. In (40), the reversal of a Javanese word with a consonant cluster in its initial position is accomplished through the maintenance of the homorganic cluster /mb/ and an adjustment for the prohibited cluster /lk/ in coda position.

(40)   Segment Exchange
$$C_1C_2V_3.C_4C_5V_6 \rightarrow V_6.C_4C_5C_2V_3C_1$$
klambi   [ˈkla.mbi]   →   ɪᴍʙʟᴀᴋ   [ˈʔi.mblaʔ]   'shirt'

The detailed process of the reversal is shown in (41).

(41)   *klambi* [ˈkla.mbi] 'shirt'

Original Word	:	k	l	a	.	m	b	i
Total Segment Reversal	:	*i	.	m	b	a	l̲	k̲
Segment Exchange	:	i	.	m̲	b̲	l̲	a	ʔ

In (41), the word *klambi* 'shirt' is transformed into *ɪʙᴍᴀʟᴋ through Total Segment Reversal. However, the homorganic cluster /mb/ needs to be retained because it is treated as one segment, thus the word would become *ɪᴍʙᴀʟᴋ. However, since the cluster /lk/ is not a good coda, the consonant /l/ is moved to become part of the syllable onset in the attested Walikan word ɪᴍʙʟᴀᴋ [ˈʔi.mblaʔ].

In summary, most of the clusters remain intact (Table 4.2). In addition, there are eight consonant sequences in my data that are separated by a syllable boundary which can form consonant clusters after Total Segment Reversal (Table 4.3). Finally, Table 4.4 shows clusters that are reduced or separated after Total Segment Reversal.

Source	Example	Walikan	Example	Gloss
/mb/	[ˈma.mbu]	/mb/	[ˈʔu.mbam˺]	'smelly'
/mp/	[ˈsɛ.mpaʔ]	/mp/	[ˈka.mpɛs]	'underwear'
/nt̪/	[ˈsʊ.nt̪ɪʔ]	/nt̪/	[ˈki.nt̪ʊs]	'to inject'
/nɖ/	[ˈpə.nɖɛʔ]	/nɖ/	[ˈkɛ.nɖəp˺]	'short'
/kl/	[ˈmʊ.klɪs]	/kl/	[ˈsi.klʊm˺]	'a name'
/kr/	[ˈsʊ.krɔn˺]	/kr/	[ˈnɔ.krus]	'a name'
/st̪/	[ˈpɛ.st̪a]	/st̪/	[ˈʔa.st̪ɛp˺]	'party'
/ncr/	[ˈmɛ.ncrɛt̪˺]	/ncr/	[ˈt̪ɛ.ncrɛm˺]	'diarrhea'
/st̪r/	[ˈlɪ.st̪rɪʔ]	/st̪r/	[ˈkɪ.st̪rɪl]	'electricity'

Tᴀʙʟᴇ 4.2: Consonant clusters that remain intact

Source	Example	Wa-likan	Example	Gloss
/r.t̪/	[ŋər.ˈt̪i]	/t̪r/	[ˈʔi.t̪rəŋ]	'to understand.av'
/r.d/	[kər.ˈɗi]	/dr/	[ˈʔi.ɗrə̰k̚]	'to work'
/r.k/	[ˈɓə̰r.kat̪̚]	/kr/	[ˈt̪a.krəp̚]	'blessed food'
/r.g/	[kə.ˈlu.ˈʷar.ĝa̰]	/gr/	[ˈʔa.ĝra̰.u.ləʔ]	'family'
/r.m/	[ˈĝə̰r.mɔ]	/mr/	[ˈʔɔ.mrək̚]	'pimp'
/r.s/	[ˈmar.sɔ]	/sr/	[ˈʔɔ.sram̚]	'a name'
/k.s/	[ˈɓa̰ʔ.so]	/sk/	[ˈʔɔ.skap̚]	'meatball'
/l.s/	[ˈpal.su]	/sl/	[ˈʔu.slap̚]	'fake'

TABLE 4.3: Consonant sequences that generate new clusters

Source	Example	Walikan	Example	Unper-mitted cluster
/**mb**VC/	[ˈmbah] 'grandpa-rent'	/VC**m**/	[ˈham̚] 'grandpa-rent'	*/bm/
/**ml**VCV/	[mlə.ˈɓṳ] 'to enter'	/VC**l**V**m**/	[ˈʔu.ɓ̊ləm̚] 'to enter'	*/lm/
/**kl**VCCV/	[ˈkla.mbi] 'shirt'	/VCC**l**V**k**/	[ˈʔi.mblaʔ] 'shirt'	*/lk/

TABLE 4.4: Consonant clusters that are reduced or separated

In the previous chapter, in §3.2.7 and §3.3.7, all the attested clusters and sequences in Malangan Javanese and Indonesian were described. They function as the model for how speakers can treat consonant clusters and consonants in Walikan. This investigation of Walikan can suggest which clusters are alive and used by the speakers. The retained clusters in Walikan are evidence that speakers are using them in real and spontaneous situations, and that the clusters have entered the phonotactics of Malangan Javanese and In-

donesian (Table 4.3 and 4.2). Table 4.4 also shows that certain clusters that are not permitted in the Malangan Javanese and Indonesian model are separated or reduced by the speakers as they perform Walikan.

4.3.2.5 Prenasalized Stops

Malangan Javanese often prenasalizes the word-initial heavy stops /b, ḍ, ɖ, ɟ, g/ of locations (see (71) in Chapter 3). As a result, reversed toponyms in Walikan are also prenasalized (whereas prepositions are never reversed) (42).

(42) Prenasalization of word-initial consonants
$C_1V_2.C_3V_4C_5 \rightarrow C_6C_5V_4.C_3V_2C_1$
kelud [kə.ˈlʊt̪] → NDULEK [ˈn̪d̪u.ləʔ] 'a place name'

4.3.2.6 Vowel Alternation

The vowels in both Malangan Javanese and Malangan Indonesian have different phonetic realizations based on their position in the root syllable and the type of vowel that occurs in the adjacent syllable (see §3.2.4 and 3.3.4). Discussing their occurrence after reversal in Walikan may provide an interesting insight as to how vowels with distributional restrictions in the phonotactics of Malangan Javanese and Malangan Indonesian are treated.

4.3.2.6.1 /i/ and /u/ In Malangan Javanese and Indonesian, the high vowels /i/ and /u/ are realized as [ɪ] and [ʊ] respectively in word-final closed syllables, and the lowering also affects high vowels in the preceding open syllables. In other conditions, /i/ and /u/ are realized as [i] and [u] (see §3.2.3.1 and 3.3.3.1). The same phonological process can be observed in Walikan.

Example (43) shows how /i/ and /u/, which are realized as [ɪ] and [ʊ], in the second syllable of the original word are moved into the first syllable after Total Segment Reversal. The reversal process causes /i/ and /u/ to occur in an open syllable. Since there is no high vowel in the following closed syllable, they are no longer realized as [ɪ] and [ʊ], but as [u] and [i].

(43)   /i/ and /u/ realized as [i] and [u] in a penultimate open syllable
       $C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$

sakit	[ˈsa.kɪt̚]	→	TIKAS	[ˈt̪i.kas]	'sick'
pakis	[ˈpa.kɪs]	→	SIKAP	[ˈsi.kap̚]	'a place name'
petis	[pəˈt̪ɪs]	→	SITEP	[ˈsi.t̪əp̚]	'shrimp paste'
maling	[ˈma.lɪŋ]	→	NGILAM	[ˈŋi.lam̚]	'thief'

       $C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$

mabuk	[ˈma.b̥ʊʔ]	→	KUBAM	[ˈku.b̥am̚]	'drunk'
masuk	[ˈma.sʊʔ]	→	KUSAM	[ˈku.sam̚]	'to enter'
manuk	[ˈma.nʊʔ]	→	KUNAM	[ˈku.nam̚]	'penis'
tidur	[ˈt̪i.d̥ʊr]	→	RUDIT	[ˈru.d̥it̪̚]	'to enter'

Interestingly, when the reversal yields the high vowels /i/ and /u/ in a closed syllable, then vowel lowering does not take place. In other words, the speakers retain /i/ and /u/ in closed syllable as [i] and [u]. They are no longer realized as their allophones, [ɪ] and [ʊ], as would happen in Malangan Javanese (44).[7]

(44)   /i/ and /u/ realized as [i] and [u] in a final closed syllable
       $C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$

pirò	[ˈpi.rɔ]	→	ÒRIP	[ˈʔɔ.rip̚]	'how much'
siŋò	[ˈsi.ŋɔ]	→	ÒNGIS	[ˈʔɔ.ŋis]	'lion'
limò	[ˈli.mɔ]	→	ÒMIL	[ˈʔɔ.mil]	'five'
dinò	[ˈd̥i.nɔ]	→	ÒNID	[ˈʔɔ.nit̪̚]	'day'

       $C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$

tidur	[ˈt̪i.d̥ʊr]	→	RUDIT	[ˈru.d̥it̪̚]	'to enter'

       $C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$

ruwet	[ˈru.wət̪̚]	→	TÉWUR	[ˈt̪ɛ.wur]	'complicated'[8]
pulang	[ˈpu.laŋ]	→	NGALUP	[ˈŋa.lup̚]	'to go home'
budhal	[ˈb̥u.d̪̥al]	→	LADHUB	[ˈla.d̪̥up̚]	'to depart'

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[7]An exception applies to the word *ònét* [ˈʔɔ.nɛt̪̚] 'Chinese', which is a reversal from *cinò* [ˈci.nɔ]. In this case the high front vowel /i/ in the final closed-syllable is reinterpreted as the low mid front vowel [ɛ] in the Walikan form.

[8]The vowel alternation process involving /e/ and /ə/ is discussed in §4.3.2.6.3.

However, the vowel lowering process does occur when the high vowels /i/ and /u/ appear twice, i.e. in both syllables of bisyllabic words, whether they are open or closed (45).

(45)   /i/ and /u/ realized as [i] and [u] in both syllables
$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
pitik   [ˈpɪ.t̪ɪʔ]   →   KITIP   [ˈkɪ.t̪ɪpˈ]   'chicken'
sikil   [ˈsɪ.kɪl]   →   LIKIS   [ˈlɪ.kɪs]   'foot'

$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
pukul   [ˈpʊ.kʊl]   →   LUKUP   [ˈlʊ.kʊpˈ]   'to hit'
sukun   [ˈsʊ.kʊn˭]   →   NUKUS   [ˈnʊ.kʊs]   'a place name'

The same rule, however, does not apply to Malangan Javanese words. They do not exhibit lowering of a high front vowel /i/ in a final closed syllable and its preceding open syllable (see (34) in Chapter 3). In (46) the realization of /i/ is indeed not affected by the vowel lowering process.

(46)   /i/ remains [i] in a closed syllable
$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
thithik   [ˈt̪i.t̪iʔ]   →   KITHITH   [ˈki.t̪it̪ˈ]   'a few'

4.3.2.6.2   /e/ and [ɛ]   In Malangan Javanese and Indonesian, the high-mid front vowel /e/ is realized as [ɛ] in closed syllables. The vowel /e/ is realized as [ɛ] in open syllables under two conditions: 1) when it precedes an open syllable with a high vowel; and 2) when it precedes a closed syllable with a high-mid vowel, a mid central vowel, and a low central vowel (see §3.2.4.2 and §3.3.4.2).

As shown in (47), when Total Segment Reversal yields the high-mid front vowel /e/ in a penultimate open syllable preceding a closed syllable with /e/, /ə/, and /a/, /e/ is realized as [ɛ]. This shows conformity to the phonotactics of Malangan Javanese and Malangan Indonesian.

(47)   /e/ realized as [ɛ] in word-initial position
$C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$
gedhé   [ɡ̊ə.ˈɖ̥e]   →   ÉDHEG   [ˈʔɛ.ɖ̥əkˈ]   'big'
saté   [ˈsa.t̪e]   →   ÉTAS   [ˈʔɛ.t̪as]   'satay'
dhéwé   [ˈɖ̥e.we]   →   ÉWÉDH   [ˈʔɛ.wɛt̪ˈ]   'by oneself, alone'

The reversal of [ˈʔɛ.wɛt̪] from [ˈd̪e̞.we] 'by oneself, alone', shows that the high-mid front vowel /e/ in the final closed syllable is also realized as [ɛ], following the phonotactics of Malangan Javanese.

On the other hand, in (48), the realization of /e/ in the penultimate open syllable follows the phonotactics of Malangan Javanese and Indonesian, but the high vowel /u/ in the following closed syllable does not. In Malangan Javanese, /u/ in this position would be realized as [ʊ].

(48)   /e/ realized as [ɛ] in word-initial position
        $C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$
        gulé   [ˈg̊u̥.le̞]   →   ÉLUG   [ˈʔɛ.luk]   'curry'
        bulé   [ˈb̥u̥.le]   →   ÉLUB   [ˈʔɛ.lup̚]   'white people'
        suwé   [ˈsu.we]   →   ÉWUS   [ˈʔɛ.wus]   'long (time)'

In a final open syllable, /e/ appears as [e]. In (49) the high-mid front vowel /e/ in word-initial position is realized as [ɛ], but after being moved into word-final position it is realized as [e].

(49)   /e/ realized as [e] in word-final position
        $V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1$
        énak   [ˈʔɛ.naʔ]   →   KANÉ   [ˈka.ne]   'delicious, nice'
        édan   [ˈʔɛ.d̪an̚]   →   NADÉ   [ˈna.d̪e̞]   'crazy'

Examples (47) to (49) support the analysis that [ɛ] is the allophone of /e/ that appears in predictable positions.

However, some speakers realize /e/ as [e] in a position where it should have been realized as [ɛ] according to the Malangan Javanese allophonic distribution, namely a closed syllable, and an open syllable preceding a closed syllable that contains /e/, /ə/, and /a/. Example (50) lists the alternative realizations of a number of Walikan words. This shows that, in Walikan, the allophonic relation between /e/~[ɛ] is becoming less rigid.

(50)   Interchangeable realizations of /e/ as [ɛ] and [e]
        $C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$
        dhéwé   [ˈd̪e̞.we]   →   ÉWÉDH   [ˈʔɛ.wɛt̪]   'by oneself, alone'
        dhéwé   [ˈd̪e̞.we]   →   ÉWÉDH   [ˈʔe.wet̪]   'by oneself, alone'

        saté   [ˈsa.t̪e]   →   ÉTAS   [ˈʔɛ.t̪as]   'satay'
        saté   [ˈsa.t̪e]   →   ÉTAS   [ˈʔe.t̪as]   'satay'

$$C_1V_2.C_3V_4.C_5V_6 \rightarrow V_6.C_3V_4.C_5V_2C_1$$

selawé	[sə.ˈla.we]	→	ÉLAWES	[ˈʔɛ.ˈla.wəs]	'twenty five'
selawé	[sə.ˈla.we]	→	ÉLAWES	[ˈʔe.ˈla.wəs]	'twenty five'

In addition, there are also Walikan words where [ɛ] appears in positions that violate Malangan Javanese and Indonesian phonotactics. In (51), Total Segment Reversal yields an [ɛ] in a final open syllable and its preceding open syllable. In such a position, the high-mid front vowel should have been realized as [e] in Malangan Javanese. However, the following examples demonstrate that a number of Walikan forms indeed display structures that were originally impossible.

(51)   [ɛ] and [ə] in prohibited position
$$V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1$$

<u>*ébés*</u>	[ˈʔɛ.ɓɛs]	→	<u>SÉBÉ</u>	[ˈsɛ.ɓɛ]	'father'
élék	[ˈʔɛ.lɛ̰ʔ]	→	KÉLÉ	[ˈkɛ.lɛ̰]	'ugly'

The Walikan forms in (51) are the only accepted forms, which means that other forms that conform to the phonotactic rules, such as [ˈse.ɓḛ] and [ˈke.le], are not observed. Therefore, [ˈsɛ.ɓɛ] and [ˈkɛ.lɛ] could be seen as evidence that [ɛ] is steadily gaining phonemic status in Malangan Javanese.

To sum up, sometimes speakers do not strictly follow the phonotactics of Malangan Javanese regarding the distribution of [e] and [ɛ]. Examples (47) to (49) show that [e] and [ɛ] are still considered by speakersas originating from the same phoneme, thus they can be used interchangeably, but (50) and (51) indicate phonological change in progress, where speakers perceive [ɛ] as independent from /e/.

4.3.2.6.3   /e/ and /ə/   The next discussion concerns the mid central vowel /ə/. It is described as an independent phoneme in Malangan Javanese (see §3.2.3.3). However, in a number of Walikan words, it shows an unexpected exchange with /e/. The mid central vowel /ə/ is realized as [ɛ] in (52).

(52)   /ə/ realized as [ɛ]
$$V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1$$

enom	[ʔə.ˈnɔm̚]	→	MONÉ	[ˈmɔ.nɛ]	'young'
<u>*enam*</u>	[ʔə.ˈnam̚]	→	<u>MANÉ</u>	ˈ[ma.nɛ]	'six'

$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
ruwet   [ˈru.wət̚]   →   ТÉWUR   [ˈt̪ɛ.wʊr]   'complicated'
<u>*macet*</u>   [ˈma.cət̚]   →   <u>TÉCAM</u>   [ˈt̪ɛ.camˀ]   'jammed'

$C_1V_2.C_3V_4.C_5V_6C_7 \rightarrow C_7V_6.C_5V_4.C_3V_2C_1$
kebalén   [kə.ˈɓ̥a.lɛnˀ]   →   NÉLABEK   [nɛ.ˈla.ɓ̥ə̞ʔ]   'a place name'
kebalén   [kə.ˈɓ̥a.lɛnˀ]   →   NÉLABÉK   [nɛ.ˈla.ɓ̥ɛ̞ʔ]   'a place name'

$C_1V_2.C_3V_4.C_5V_6 \rightarrow V_6.C_3V_4.C_5V_2C_1$
selawé   [sə.ˈla.we]   →   ÉLAWES   [ʔɛ.ˈla.wəs]   'twenty five'
selawé   [sə.ˈla.we]   →   ÉLAWÉS   [ʔɛ.ˈla.wɛs]   'twenty five'

$C_1V_2.C_3C_4V_5.C_6V_6C_7 \rightarrow V_7.C_6V_5.C_3V_2C_1$
<u>*tentara*</u>   [t̪ə.ˈnt̪a.ra]   →   <u>ARANET</u>   [ʔa.ˈra.nət̚]   'soldier'
<u>*tentara*</u>   [t̪ə.ˈnt̪a.ra]   →   <u>ARANÉT</u>   [ʔa.ˈra.nɛt̚]   'soldier'

The words in (52) show that, after reversal, the mid central vowel /ə/ in the word-final position is realized as [ɛ], as in the reversal of the words *enom* 'young' and *enam* 'six'. This is because /ə/ in word-final position is not allowed in Malangan Javanese and Indonesian.

In the reversal of *ruwet* 'complicated' and *macet* 'jammed', /ə/ is also always realized as [ɛ]. Furthermore, in the reversal of the following words, *kebalén* 'a place name', *selawé* 'twenty five', and *tentara* 'soldier', /ə/ in a final closed syllable can have two different realizations: as both [ə] and [ɛ]. This might be due to the fact that /ə/ and /e/ are written with the same grapheme in the orthography: <e>. As shown in §3.2.3.3 and 3.3.3.3, they are different phonemes and do not have allophonic relations.

4.3.2.6.4   /o/ and /a/   In Malangan Javanese and Indonesian, the high-mid back vowel /o/ is realized as [ɔ] in closed syllables. It remains [o] in open syllables. It is realized as [ɔ] in an open syllable only when it: 1) precedes an open syllable with a high vowel; or 2) precedes a closed syllable with a high-mid vowel, a mid central vowel, and a low central vowel (see §3.2.4.2 and §3.3.4.2).

In (53), Total Segment Reversal yields words with /o/ in word-final open syllables. Following Malangan Javanese and Malangan Indonesian phonotactics, it is realized as [o].[9]

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[9]Note that the formation of <u>*orang*</u> into [ɠ̥ə̞.ˈna.ro] and <u>*omong*</u> into [ɠ̥ə̞.ˈno.mo] is an exception, as explained in (88).

(53)   /o/ realized as [o] in a word-final open syllable
$V_1.C_2V_3C_4 \rightarrow C_5C_4V_3.C_2V_1$

<u>*orang*</u>	['ʔɔ.raŋ]	→	<u>GENARO</u>	[g̊ə.'na.ro]	'person'
<u>*omong*</u>	['ɔ.mɔŋ]	→	<u>GENOMO</u>	[g̊ə.'no.mo]	'to speak'

Moreover, (54) exemplifies /o/ that is realized as /ɔ/ because it occurs in a closed syllable, as well as the preceding open syllable after reversal.

(54)   /o/ realized as [ɔ] in a closed syllable
$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$

botol	['b̥ɔ̝.tɔl]	→	LOTOB	[lɔ.tɔp̚]	'bottle'
bokong	['b̥ɔ̝.kɔŋ]	→	NGOKOB	[ŋɔ.kɔp̚]	'buttocks'

Meanwhile, (55) shows /o/ realized as /ɔ/ in an open syllable that precedes a closed syllable with a low central vowel.

(55)   /o/ realized as [ɔ] in an open syllable
$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$

balon	['b̥a̝.lɔn̚]	→	NOLAB	['nɔ.lap̚]	'prostitute'
takon	['ta̰.kɔn̚]	→	NOKAT	['nɔ.kat̚]	'to ask'

Examples (53) to (55) support the analysis that [ɔ] is the allophone of /o/ that appears in predictable positions.

Further, some speakers realize /o/ as [o] in a position where /o/ should have been realized as [ɔ], namely a closed syllable, and in an open syllable preceding a closed syllable that contains /e/, /ə/, and /a/. Example (56) shows sets of alternative realizations of a number of Walikan words.

(56)   Interchangeable realizations of /o/ as [ɔ] and [o]
$C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$

<u>*toko*</u>	['t̥o.ko]	→	<u>OKOT</u>	['ʔɔ.kɔt̚]	'store'
<u>*toko*</u>	['t̥o.ko]	→	<u>OKOT</u>	['ʔo.kot̚]	'store'
soto	['so.t̥o]	→	OTOS	['ʔɔ.tɔs]	'kind of soup'
soto	['so.t̥o]	→	OTOS	['ʔo.t̥os]	'kind of soup'
solo	['so.lo]	→	OLOS	['ʔɔ.lɔs]	'a place name'
solo	['so.lo]	→	OLOS	['ʔo.los]	'a place name'

$$C_1V_2.C_3V_4.C_5V_6 \rightarrow V_6.C_5V_4.C_3V_2C_1$$

sodara	[sɔ.ɖa̰.ra]	→	ARADOS	[ˈʔa.ra.ɖɔ̰s]	'relative'
sodara	[sɔ.ɖa̰.ra]	→	ARADOS	[ˈʔa.ra.ɖo̰s]	'relative'

$$C_1V_2.C_3V_4.C_5V_6C_7 \rightarrow C_7V_6.C_5V_4.C_3V_2C_1$$

sekolah	[sə.ˈkɔ.lah]	→	HALOKES	[ha.ˈlɔ.kəs]	'school'
sekolah	[sə.ˈkɔ.lah]	→	HALOKES	[ha.ˈlo.kəs]	'school'

The words in (56) show that sometimes speakers do not strictly follow the phonotactics of Malangan Javanese regarding the distribution of [o] and [ɔ]. In spite of the violation, they still show that [o] and [ɔ] are considered by speakers as originating from the same phoneme, and thus exhibit higher levels of interchangeability.

There are two Walikan words that show /o/ realized as [o] in a word-final closed syllable and its preceding open syllable, which violate the phonotactics of Malangan Indonesian (57).

(57)   /o/ realized as [o] in closed syllables

$$V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1$$

bojo	[ˈɓo̰.ɟo̰]	→	OJOB	[ˈʔo.ɟop̚]	'spouse'
foto	[ˈfo.t̪o]	→	OTOF	[ˈʔo.t̪op̚]	'photograph' (from Dutch)

The forms in (57) are the only accepted forms, which means that other forms that follow the Malangan Javanese phonotactics, such as [ˈʔɔ.ɟɔp̚] and [ˈʔɔ.t̪ɔp̚], are not observed. This can indicate that /o/ is increasingly seen as a distinct phoneme.

4.3.2.6.5   /a/ and /ɔ/   In Malangan Javanese, as described in §3.2.3.4, the low central vowel /a/ is realized as [ɔ] in word-final open syllables. The same rule applies to /a/ in the open syllable preceding a word-final /a/ realized as [ɔ]. In any other positions, /a/ is realized as [a].

This allophonic situation is not shared by Walikan. Example (58) shows that in Walikan, /a/ in word-final position is realized as [a] instead of [ɔ].

(58)   /a/ and [ɔ] in Walikan

$$V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1$$

anak	[ˈʔa.naʔ]	→	KANA	[ˈka.na]	'child'
arék	[ˈʔa.rɛʔ]	→	KÉRA	[ˈkɛ.ra]	'kid'

The first word in example (58), [ˈka.na], is a reversal of an Indonesian word [ˈʔa.naʔ], which suggests that the /a/ in word-final position does not need to be realized as [ɔ] because it is an Indonesian word. Because the source word is Indonesian, it follows Indonesian phonology, whereby /a/ in word-final position remains [a].

For the second word in (58), it can be suggested that the reversal of [ˈʔa.rɛʔ] is [ˈkɛ.ra] and not [ˈkɛ.rɔ] because the latter has another meaning in Javanese, namely 'cross eyed'.

However, all other examples confirm the analysis that [ɔ] has become more than just an allophone of /a/. The Walikan words in (58) and (59) show that when a word-final [ɔ] is moved into word-initial position, it retains its realization as [ɔ].

(59)   /a/ and [ɔ] in Walikan
$$C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$$

sòpò	[ˈsɔ.pɔ]	→	òpòs	[ˈʔɔ.pɔs]	'who'
lapò	[ˈla.pɔ]	→	òpal	[ˈʔɔ.pal]	'what are you doing?'
tibò	[ˈt̪i.bɔ]	→	òbit	[ˈʔɔ.bi̪t̪]	'to fall'

In the first example in (59), òpòs [ˈʔɔ.pɔs], the underlying phoneme /a/ in the final closed syllable is realized as [ɔ], which according to the phonotactics of Malangan Javanese should have been realized as [a]. In òbit [ˈʔɔ.ɓi̪t̪], the underlying phoneme /a/ in the penultimate open syllable should have been realized as [a] instead of [ɔ].

This indicates that speakers no longer treat the [ɔ] in (58) and (59) as derived from /a/. The maintenance of [ɔ] is evidence that it is losing its allophony with /a/. In other words, [ɔ] as a separate vowel from /a/ is steadily gaining a phonemic status in Malangan Javanese.

4.3.3   Loanwords

This section considers how loanwords enter Walikan. It focuses on how speakers reverse loans, and whether or not they follow Malangan Javanese and Indonesian phonotactics and phonology.

In (60) we can see that assimilated loanwords obey Malangan Javanese and Malangan Indonesian phonology and phonotactics during the reversal process.

(60)   Loanword from Arabic
        $C_1V_2C_3 \rightarrow C_3V_2C_1$
        <u>*zén*</u>   [ˈsɛn˺]   →   <u>NÉZ</u>   [ˈnɛs]   'nice'

The loan phoneme /z/ is realized as [s] or [ɟ] in word-initial position (see §3.2.3.5). When the word is reversed, the /z/ is moved into word-final position and is also realized as [s] in (60). I found only one example of this in Arabic. Other Arabic loanwords are found in Malangan Javanese, but they are not reversed (see Chapter 2).

Loanwords that have only recently made their way into the repertoire of Walikan speakers are also adapted to Malangan Javanese and Malangan Indonesian phonology. Most of them are English words, which are quite popular among the younger generation (61).

(61)   Loanwords from English
        $C_1C_2V_3C_4 \rightarrow C_5V_4.C_3V_2C_1$
        <u>*slow*</u>   [sə.ˈlow]   →   <u>WOLES</u>   [ˈwɔ.ləs]   'slow'

        $C_1C_2V_3.C_4V_5C_6 \rightarrow C_6C_5V_4.C_3V_2C_1$
        <u>*riléks*</u>   [ˈri.lɛks]   →   <u>SKELIR</u>   [sə.kə.ˈlɪr]   'relax'

        $C_1C_2V_3.V_4C_5 \rightarrow C_5V_4.V_3C_1$
        <u>*mbois*</u>   [ˈmbɔ.is]   →   <u>SIOB</u>   [ˈsi.ʲɔp˺]   'cool'

Speakers pronounce *slow* as [sə.ˈlow] 'slow', the consonant cluster in the word-initial position is avoided by inserting a schwa. The schwa is also present in the reversed form [ˈwɔ.ləs]. In [sə.kə.ˈlɪr], speakers also optionally insert [ə] in between the consonant cluster /sk/ in word-initial position. Note that the subsequent /ɛ/ is affected and is also realized as [ə]. In the next example, [ˈmbɔ.is], originated from the English word *boyish*, is reversed into [ˈsi.ʲɔp˺]. The prenasalization in the initial position of the unreversed word is no longer present in the reversed form.

There are also instances where the English loanwords are reversed based on the orthography of the unreversed words instead of the way they are pronounced by Malangan Javanese speakers (62).

(62)   Loanwords from English based on orthography
        $C_1C_2V_3 \rightarrow C_3V_2.C_4C_1$
        <u>*tour*</u>   [ˈt̪ʊr]   →   ruot   [ˈru.ʷɔt̪̥]   'tour'

$$C_1V_2C_3.C_4V_5C_6 \rightarrow C_6V_5.C_4V_3C_1$$

<u>*riding*</u> ['rai.ɖɪŋ] → NGIDIR ['ŋɪ.ɖɪr] 'to ride a motorcycle'

4.4 Affixation and Reduplication

As a rule, reversal in Walikan only affects the root of lexical items and not morphologically complex forms or phrases. The norm is that Walikan operates only within the domain of the root and the speaker recognizes the morphological boundary of a word. This is shown in (63)-(68).

Exceptions are a number of fixed expressions that are considered to be single entities (69) and words with a historical nasal prefix *m-* that have been discussed in §3.2.10.

In (63), prefixes are not reversed, rather they are attached to a reversed root. It is shown that the original word *cekel* is reversed using Total Segment Reversal rule and it becomes *lekec*. The /c/ in word-final position is realized as /ṯ/, as explained previously in §4.3.2.3.

(63)   Unreversed prefixes
        LEKEC   ['lə.kəṱ]   'to catch'   →   *ke-*LEKEC   [kə.'lə.kəṱ]   'caught'
                                                            PASS-catch

The reversal and prefixation process can be seen in (64).

(64)   Prefixes attached after reversal
        Original Word   :   c   ə   .   k   ə   l
        Total Segment Reversal   :   l   ə   .   k   ə   c
        Prefixation   :   [k]   [ə]   .   l   ə   .   k   ə   c

Likewise, suffixes are not reversed, but are attached to a reversed root (65). The word <u>*makan*</u> is shown to have first undergone Total Segment Reversal and becomes NAKAM before receiving the suffix *-an*.

(65)   Unreversed suffixes
        NAKAM   ['na.kam̚]   'to eat'   →   NAKAM-*an*   ['na.ka.man̚]   'food'
                                                        food-NMLZ

The reversal and suffixation process can be seen in (66).

(66)   Suffixes attached after reversal

Original Word	:	m	a	.	k	a	n		
Total Segment Reversal	:	n	a	.	k	a	m		
Suffixation	:	n	a	.	k	a	.	m	a̲	n̲

Examples (67) - (69) provide more instances of affixes being attached to reversed roots. Note that these examples include a number of common affixes in Malangan Javanese, such as *-i*, *-nò*, *-e*, *ke-*, *-an*, *-mu*, and *pa-*, as well as the Malangan Indonesian affixes *-kan*, *se-*, and *di-*. The function and distribution of these affixes is listed in Appendix D.

(67)   Affixation to reversed roots

ISAK	['ʔi.saʔ]	→	ISAK-*i*	['ʔi.saʔ.i]
'to give'			'be given'	
NGALUP	['ŋa.lup̚]	→	NGALUP-*nò*	['ŋa.lup̚.nɔ]
'to go home'			'to bring home'	
LADHUB	['la.ɖup̚]	→	LADHUB-*kan*	['la.ɖup̚.kan˺]
'to depart'			'go ahead'	
LÉDOM	['lɛ.ɖɔm˺]	→	LÉDOM-*é*	['lɛ.ɖɔme]
'style'			'the style'	
NOLAB	['nɔ.lap̚]	→	*pa*-NOLAB-*an*	[pa.'nɔ.la.pan˺]
'prostitute'			'prostitution district'	
INDAM	['ʔin.ɖa̤m˺]	→	*pa*-NGINDAM-*an*	[pa.'ŋin.ɖa̤.man˺]
'to take a bath'			'bathing place'	

Example (68) lists instances where nasal prefixes that function as active verb markers can be added to the initial position of a reversed root. The realization of the nasal prefix depends on the word-initial consonant of the reversed root (see §3.2.10). Note that the first word in each pair is the source word, while the following word is its Walikan form.

(68) Nasal prefixes in Walikan

kopi	[ˈkɔ.pi]	→	*ng-opi*	[ˈŋɔ.pi]
IPOK	[ˈʔi.pɔʔ]	→	*ng-*IPOK	[ˈŋi.pɔʔ]
'coffee'			'to drink coffee.AV'	

rokok	[ˈrɔ.kɔʔ]	→	*ng-rokok*	[ˈŋrɔ.kɔʔ]
OKÉR	[ˈʔɔ.kɛr]	→	*ng-*OKÉR	[ˈŋɔ.kɛr]
'cigarette'			'to smoke.AV'	

wédok	[ˈwɛ.ḓɔ̰ʔ]	→	*m-édok*	[ˈmɛ.ḓɔ̰ʔ]
KODÉ	[ˈkɔ.ḓɛ]	→	*ng-*ODÉ	[ˈŋɔ.ḓɛ]
'woman'			'to have an affair.AV'	

bayar	[ˈɓa̰.jar]	→	*m-bayar*	[ˈmba.jar]
RAYAB	[ˈra.jap̚]	→	*ng-*RAYAB	[ˈŋra.jap̚]
'to pay'			'to pay.AV'	

In (68) the nasal prefix of the source word and that of the Walikan form are the same, as in [ˈŋɔ.pi] and [ˈŋi.pɔʔ] 'to drink coffee.AV'. However, they can also be different, such as in [ˈmba.jar] and [ˈŋra.jap̚]. This is because the roots of both forms have different word-initial consonants.

Note that in words such as *mlaku* 'to walk', *mlebu* 'to enter', and *mlayu* 'to run', speakers consider the historical nasal prefix *m-* as part of the root. Therefore, unlike in 68, the nasal prefix *m-* becomes part of the reversal (see examples (36) and (39) in Chapter 3).

Furthermore, there are also a number of exceptional cases where the reversal affects the roots and the prefixes, suffixes, and particles (69). This involves words that have become fixed expressions in Malangan Javanese or Indonesian and hence are considered as single entities.

(69) Phrases reversed as words

rai-mu	[ˈra.ʔi.mu]	→	UMIAR	[ʔu.ˈmi.ʲar]	'your face'
face-2SG.POSS					
di-mana	[ḓḭ.ˈma.na]	→	ANAMID	[ʔa.ˈna.mit̚]	'where'
PREP-where					
se-dulur	[se.ˈḓʊ.lʊr]	→	RULUDES	[ru.ˈlu.ḓ̰əs]	'relative'
one-relative					
ke-temon	[kə.tə.ˈmɔn̚]	→	NOMETEK	[ˈnɔ.mə.t̚ək̚]	'arrested'
'PASS-find					

The evidence that Walikan operates within the domain of the root can also be observed in the following. Example (70) and (71) show that the reduplication rule in Malangan Javanese in (§3.2.11) is obeyed.

(70)   Reduplications in Walikan
        Verbal base   UKLAM < *mlaku*   'to walk'
                           UKLAM-UKLAM   'to walk around'
                           RDP~walk

        Nominal base   NAWAK < *kawan*   'friend'
                           NAWAK-NAWAK-*é*   'the friends'
                           RDP~friend-DEF

        Adjectival base   ÉWUS < *suwé*   'long'
                           di-ÉWUS-ÉWUS-*nò*   'PASS-delayed'
                           RDP~PASS-long-BEN

Further, (71) shows how derived words are reversed in Walikan.

(71)   Reduplication of derived words
        kopi   > IPOK   'coffee'
        ng-opi   > *ng*-IPOK   'to drink coffee.AV'
        NGIPOK   NGIPOK-NGIPOK   'to drink coffee/hang out'
                     RDP~drink.coffee

The principle of *dwilinggò salin swòrò* in Javanese, that is reduplication with vowel alternation, described in §3.2.11 can also be seen in Walikan (72), even though only one example is in frequent use.

(72)   Vowel alternation in reduplication
        Source word   *walik*   'to reverse'
                        wolak-walik   'to reverse on and on'
                        RDP~reverse
        Reversed word   KAWIL   'to reverse'
                        KOWAL-KAWIL   'to reverse on and on'
                        RDP~reverse

The most common type of reversal in Walikan is Total Segment Reversal; however, the Walikan word described in (72) is formed through Permutation. The word used is the title of a news program in a local television station, and the reason for the use of Permutation can be seen in §6.3.1.

4.5   Other Forms of Reversal

This section describes other reversed forms in Walikan that can be regarded as exceptions to the Total Segment Reversal rule. Their total number is very small (36 out of 725 tokens). Most of them are not systematic, but some of them undergo a reversal process of: 1) Transposition; 2) Sequence Exchange; or 3) Permutation.

Transposition involves the movement of the last or initial syllable (73) or segment of a word to the beginning or the end of the word respectively (74).

(73)   *gaji* [ˈg̊a̤.ɟ̤i̤] 'salary'
      Original Word   :   g   a   ɟ   i
      Walikan   :   ɟ   i   g   a

(74)   *grogi* [ˈg̊rɔ̤.g̊i̤] 'groggy'
      Original Word   :   g   r   ɔ   .   g   i
      Walikan   :   i   .   g   r   ɔ   g

Several other Walikan words in my data that undergo this reversal process are listed in (75):

(75)   Transposition
    critò   [ˈcri.t̤ɔ]   →   ÒCRIT   [ˈʔɔ.crit̤˺]   'story'
    kamu   [ˈka.mu]   →   UKAM   [ˈʔu.kam˺]   'you'
    pirò   [ˈpi.rɔ]   →   ÒPIR   [ˈʔɔ.pir]   'how much'

In addition to Transposition, another exception is called Sequence Exchange, which allows for the swapping of sequences in a word (Bagemihl 1989). The first type of Sequence Exchange allows a reversal of only the first CVC sequence of the word (76) and (77).

(76)   *maksud* [ˈmaʔ.sʊt̤˺] 'intention'
      Original Word   :   m   a   k   .   s   u   t̤
      Walikan   :   k   a   m   .   s   u   t̤

(77)   *walik* [ˈwa.lɪʔ] 'to reverse'
       Original Word   :   w   a   .   l   i   ʔ
       Walikan   :   l   a   .   w   i   ʔ

The second type of sequence-based reversal inverts the final VC sequence of a word and transposes it to the initial position (78).

(78)   *hotél* [hɔ.t̪ɛl] 'hotel'
       Original Word   :   h   ɔ   .   t̪   ɛ   l
       Walikan   :   l   ɛ   .   h   ɔ   t̪

Other Walikan words in my data that undergo this reversal process are listed in (79):

(79)   Sequence Exchange
       lanang   [ˈla.naŋ]   →   NGALAN   [ˈŋa.lan˺]   'man'
       walik   [ˈwa.lɪʔ]   →   KIWAL   [ˈki.wal]   'to reverse'
       hamil   [ˈha.mɪl]   →   LIHAM   [ˈli.ham˺]   'pregnant'
       makelar   [ma.kə.ˈlar] →   RAMALEK   [ra.ˈma.lə̆ʔ] 'middleman'

In my data, the word *walik* has different Walikan forms through two Sequence Exchange processes: LAWIK and KIWAL. They are used interchangeably by speakers. But like many Walikan words with more than one attested variant, they can sometimes be determined by social factors (also see §4.6). Further, Permutation refers to the process in which segments are reordered in an unsystematic way. Sometimes they are also replaced with other segments that do not stem from the source word (80).

(80)   Permutation
       walik   [ˈwa.lɪʔ]   →   KAWIL   [ˈka.wɪl]   'to reverse'
       abis   [ˈʔa.b̥ɪs]   →   SIBUN   [ˈsi.b̥u̥n˺]   'all gone, used up'
       parkir   [ˈpar.kɪr]   →   SIKRAP   [ˈsi.krap˺]   'to park'
       roti   [ˈrɔ.t̪i]   →   SITOR   [ˈsi.t̪ɔr]   'bread'
       abah   [ˈʔa.b̥ḁh]   →   ÉBÉS   [ˈʔɛ.b̥ɛ̥s]   'father'

The first example in (80), KAWIL, is previously discussed in (72). It was only observed in the particular TV show mentioned in §6.3.1.

The remaining examples in (80) seem to have been influenced by another type of slang in East Java. One of the rules in a Surabayan gay slang is the

use of prefix *si-* to be combined with the initial syllable of a source word (Oetomo 1990). Words such as *banci* 'transvestite' will be changed into *siban*, and *lanang* 'male' into *silan*. The final syllable of the original word is deleted. Influence from Surabayan slang may explain the formation of the Walikan words sɪʙᴜɴ, sɪᴋʀᴀᴘ, and sɪᴛᴏʀ.

In addition, the word *ébés* 'father', which is used by the speakers to refer to their biological father or a person of whom they respect, may also be derived from this slang.

Another word-formation process in the Surabayan gay slang discussed in Oetomo (1990:58) involves transforming a word according to a template: C V C V (C) →C ɛ C e/ɛ s. Based on this template, the first vowel in the source word is changed to /ɛ/ and the second vowel to /e/ or /ɛ/, followed by the replacement of any consonant in the final syllable by /s/. If the source word has an open final syllable, an /s/ is simply added in word-final position (81).

(81) Word template of Surabayan gay slang (Oetomo 1990)

banci	[ˈɓ̥a̰.nci]	→	ʙᴇ́ɴᴄᴇ́s	[ˈɓ̥ɛ̰.nces]	'transvestite'
homo	[ˈho.mo]	→	ʜᴇ́ᴍᴇ́s	[ˈhɛ.mes]	'gay'
ratus	[ˈra.tʊs]	→	ʀᴇ́ᴛᴇ́s	[ˈrɛ.ʈes]	'hundred'
kluar	[ˈklu.ʷar]	→	ᴋʟᴇ́ᴡᴇ́s	[klɛ.wes]	'ejaculation'
maen	[ˈma.ʔen̚]	→	ᴍᴇ́ᴇ́s	[mɛ.ʔes]	'to have sex'
arab	[ˈʔa.rap̚]	→	ᴇ́ʀʙᴇ́s	[ʔɛr.ɓ̥ḛs]	'Arabs'

The template explained in (81) might explain the origin of the word ᴇ́ʙᴇ́s and ᴇ́ᴍᴇ́s 'mother' (82). Note that both words are derived from Arabic, and that the latter is more popular among younger speakers. Older speakers generally disapprove of the word ᴇ́ᴍᴇ́s,, instead prefering ᴇ́ʙᴇ́s *wédok*, which literally means 'female father'.

(82) Walikan words influenced by slang template

abi	[ˈʔa.ɓ̥ḭ]	→	ᴇ́ʙᴇ́s	[ˈʔɛ.ɓ̥ɛ̰s]	'father'
umi	[ˈʔu.mi]	→	ᴇ́ᴍᴇ́s	[ˈʔɛ.mɛs]	'mother'

To conclude, both the slang template and the affix *si-* rules are not productive and not used systematically in Walikan. They show an influence of Surabayan slang in Walikan.

4.6   Variation of Rules

Speakers of Walikan may apply different reversal strategies. As a result, there are a number of words that have more than one acceptable reversed version. In (83), the forms that follow Total Segment Reversal have alternate forms resulting from other strategies, such as Segment Exchange.

(83)   Alternate Forms: Total Segment Reversal and Segment Exchange

selamat	[sə.ˈla.mat̚]	→	TAMALES	[t̪a.ˈma.ləs]	'a greeting'
selamat	[sə.ˈla.mat̚]	→	TALAMES	[t̪a.ˈla.məs]	'a greeting'
setuju	[sə.ˈt̪u.ɟu]	→	UJUTES	[ʔu.ˈɟu̥.t̪əs]	'agree'
setuju	[sə.ˈt̪u.ɟu]	→	UTUJES	[ʔu.ˈt̪u.ɟ̥əs]	'agree'
semangat	[sə.ˈma.ŋat̚]	→	TANGAMES	[t̪a.ˈŋa.məs]	'spirit'
semangat	[sə.ˈma.ŋat̚]	→	TAMANGES	[t̪a.ˈma.ŋəs]	'spirit'
kuliah	[ku.ˈli.ʲah]	→	HALIUK	[ha.ˈli.ʲuʔ]	'lecture'
kuliah	[ku.ˈli.ʲah]	→	HAILUK	[ha.ˈi.luʔ]	'lecture'

In (84), speakers produce forms that follow Total Segment Reversal, but they also reverse the same words by using Transposition and Sequence Exchange.

(84)   Alternate Forms: Total Segment Reversal and Transposition/Sequence Exchange

kamu	[ˈka.mu]	→	UMAK	[ˈʔu.maʔ]	'you'
kamu	[ˈka.mu]	→	UKAM	[ˈʔu.kam̚]	'you'
pirò	[ˈpi.rɔ]	→	ÒRIP	[ˈʔɔ.rip̚]	'how much'
pirò	[ˈpi.rɔ]	→	ÒPIR	[ˈʔɔ.pir]	'how much'
lanang	[ˈla.naŋ]	→	NGANAL	[ˈŋa.nal]	'man'
lanang	[ˈla.naŋ]	→	NGALAN	[ˈŋa.lan̚]	'man'

The alternate forms of Walikan are used unsystematically by speakers. Sometimes speakers will use a certain form because it is the only one used by their community. They may also prefer a form reversed through Total

Segment Reversal over another, as is the case with the word ᴜᴊᴜᴛᴇꜱ and
ᴜᴛᴜᴊᴇꜱ, (83). In writing platforms, speakers tend to use ᴜᴊᴜᴛᴇꜱ because all
the graphemes in the spelling of the word are reversed directly. In addition,
the choice can also be influenced by age factors, for example the word ᴏ̀ᴘɪʀ
and ᴏ̀ʀɪᴘ in (84). The former is preferred by older speakers while the latter is
accepted by both older and younger speakers.

There are also a number of instances of Walikan words that violate Malan-
gan Javanese and Indonesian phonotactics by reversing the orthographic
form of a word. As discussed previously in §4.3.2.3, the palatal stops /c, ɟ/,
and the bilabial approximant /w/ are not permitted in word-final position. In
(22) and (23), speakers of Malangan Javanese and Indonesian realize /c, ɟ/ as
[t̪] and /w/ as [p] in word-final position. Speakers can also opt for Consonant
Deletion (8). However, there are instances where younger speakers follow the
orthography and retain these consonants in word-final position, even though
doing so violates Malangan Javanese and Indonesian phonotactics (86) - (87).
In (85), the bilabial approximant /w/ in word-final position is realized as a
diphthong.

(85)　/w/ in word-final position
　　　wédok　　[ˈwɛ.d̪ɔʔ]　　→　ᴋᴏᴅᴇ́ᴡ　[ˈkɔ.d̪ɛᵘ]　‘woman’
　　　wangi　　[ˈwa.ŋi]　　→　ɪɴɢᴀᴡ　[ˈʔi.ŋaᵘ]　‘fragrant’
　　　walikan　[ˈwa.liʔ.an˺]　→　ɴᴀᴋɪʟᴀᴡ　[na.ˈki.laᵘ]　‘reversal’
　　　wani　　[ˈwa.ni]　　→　ɪɴᴀᴡ　[ˈʔi.naᵘ]　‘to dare’

(86)　/ɟ/ in word-final position
　　　Jakarta　[ɟa̪.ˈkar.t̪a]　→　ᴀᴛʀᴀᴋᴀᴊ　[ʔa.ˈtra.kaɟ]　‘a place name’
　　　juragan　[ɟu̪.ˈra.g̊a̪n˺]　→　ɴᴀʀᴀɢᴜᴊ　[na.ˈra.g̊ʊɟ]　‘boss’
　　　jeruk　　[ɟə̪.ˈrʊʔ]　　→　ᴋᴜʀᴇ́ᴊ　[ˈku.rɛɟ]　‘orange’
　　　jembut　[ˈɟə̪.mbʊt̪]　→　ᴛᴜᴍʙᴇᴊ　[ˈt̪u.mbəɟ]　‘pubic hair’

(87)　/c/ in word-final position
　　　celana　[cə.ˈla.na]　→　ᴀɴᴀʟᴇᴄ　[ʔa.ˈna.ləc]　‘trousers’
　　　cinò　　[ˈci.nɔ]　　→　ᴏ̀ɴɪᴄ　[ˈʔɔ.nic]　‘Chinese’

The second type of Walikan form that violates Malangan Javanese and
Indonesian phonotactics is shown in (88). Here the velar nasal consonant /ŋ/
is seen as two segments, because it is orthographically written as <ng>. The

digraph <ng> is then reversed into <gn> in word-initial position. Since /gn/ is not a good onset, speakers use [ə] to break the unusual cluster.[10]

(88)   Reversal of <ng> into <gn>
  orang ['ʔɔ.raŋ] → GENARO [g̊ə̯.ˈna.ro] 'people'
  omong ['ʔɔ.raŋ] → GENOMO [g̊ə̯.ˈna.ro] 'people'
  utang ['ʔu.t̪aŋ] → GENATU [g̊ə̯.ˈna.t̪u] 'debt'
  tukang ['t̪u.kaŋ] → GENAKUT [g̊ə̯.ˈna.kut̪˺] 'worker'

 Examples (85) to (88) show how orthography can play a role in Walikan. Instead of applying additional modification strategies to conform to the phonology and phonotactics of Malangan Javanese and Indonesian, speakers strictly follow Total Segment Reversal, directly reversing the graphemes used in the common orthography of particular words, even though doing so may violate Malangan Javanese and Indonesian phonology and phonotactics.

4.7 Conclusions

This chapter has shown that in the majority of cases, word reversal in Walikan follows the Total Segment Reversal rule, in which the segments or phonemes in a word are totally reversed and restructured. Total Segment Reversal can be applied to words with all possible number of syllables in Malangan Javanese and Indonesian, and results in the reorganisation of syllable patterns. Modification strategies apply in Total Segment Reversal to create well-formed onsets and codas in the reversed words through vowel and consonant insertion, vowel and consonant deletion, simplification of clusters, or the exchange of vowels or consonants.

 During the reversal process, a word's underlying form is reversed in conformity with the phonology and phonotactics rules of Malangan Javanese and Indonesian. The reflection of the source language's phonological system can be seen in: 1) the neutralization of heavy final consonants; 2) the alternation of velar and glottal stops; 3) the status of the glottal fricative in word-final position; 4) the realization of palatal stops and bilabial approximant consonants

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[10]Effendi Kadarisman, an informant in Fitriah (2015), explains that the choice is made because the sounds of [gən˺] in [g̊ə̯.ˈna.ro] is heavier than the velar nasal is ['ŋa.ro], which can help portray the people of Malang as stronger and more powerful, but obviously this rather ideological explanation does not work on all the other examples.

in word-final position; 5) consonant sequences and clusters' constraints; 6) prenasalized stops; and 7) the phonemic statuses of certain sets of vowels: /e/ ~[ɛ], /ə/, /o/ ~[ɔ], and /a/ ~[ɔ].

Some Walikan words, however, show evidence that speakers no longer strictly follow the allophonic patterns between /e/ ~[ɛ] and /a/ ~[ɔ]. This indicates a phonological change that is ongoing in Malangan Javanese and Indonesian.

One of the most important phonological rules in Walikan relates to the homorganic consonant clusters, whose order remains intact in root-medial position. This provides evidence that homorganic consonant clusters in root-medial position in Malangan Javanese and Malangan Indonesian are tautosyllabic, i.e part of a single syllable.

Walikan operates within the domain of the root, as affixes are attached to a reversed root form, and reduplication is applied to a reversed root form. Walikan has a small number of tokens that deviate from Total Segment Reversal and instead apply Transposition and Sequence Exchange strategies.

Finally, Walikan may apply different reversals to the same word due to a number of reasons. Some of the forms show violations of Malangan Javanese phonology and phonotactics, mostly because speakers base the reversal on the way the source words are written. But also because reversed languages are intended to deviate from the rules, so exceptions are to be expected.