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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	<i>édan</i>	NADE	'I'
2	Transposition	<i>grog</i>	IGROG	'groggy'
3	Sequence Exchange	<i>hamil</i>	LIHAM	'pregnant'
4	Permutation	<i>abis</i>	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.

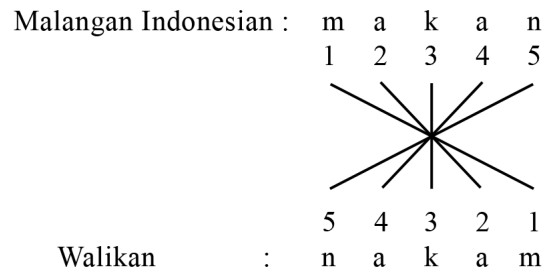


FIGURE 4.1: Total Segment Reversal in the word makan 'to eat'

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] → *SAM* ['sam] 'older brother'
bir ['bɪr] → *RIB* ['rip] 'beer'

(2) Bisyllabic words

$C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$
tahu ['t̪a.hu] → *UHAT* ['ʔu.haʔ] 'tofu'
pagi ['pa.ɡi] → *IGAP* ['ʔi.ɡap] 'morning'

$V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1$
aré [ʔa.rɛʔ] → KÉRA [kɛ.ra] ‘kid’
utang [ʔu.tɔŋ] → NGATU [ŋa.tu] ‘debt’

$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
kabar [ka.b̥aʔ] → RABAK [ra.b̥aʔ] ‘news’
suwun [su.wʊnʔ] → NUWUS [nʊ.wʊs] ‘thank you’

(3) Trisyllabic words

$C_1V_2.V_3.C_4V_5 \rightarrow V_5.C_4V_3.V_2C_1$
biasa [b̥i.ʔa.sa] → ASAIB [ʔa.ʔa.ipʔ] ‘ordinary’
siapa [si.ʔa.pa] → APAIS [ʔa.pa.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.ʔa.maʔ] → DAMAHOM [d̥a.ʔa.hɔmʔ] ‘a name’
selamat [sə.ʔa.maʔ] → TAMALES [ʔa.ma.ləs] ‘a greeting’

(4) Quadrisyllabic words

$C_1V_2.C_3V_4.C_5V_6.C_7V_8 \rightarrow V_8.C_7V_6.C_5V_4.C_3V_2C_1$
kotalama [kɔ.ʔa.ʔa.ma] → AMALATOK [ʔa.ma.ʔa.tɔʔ] ‘a place name’
surabaya [su.ra.ʔa.ja] → AYABARUS [ʔa.ja.ʔa.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 [mɛr.ʔɔ.sa.ʔri] → IRASÒJREM [ʔi.ra.sɔ.ʔrɛmʔ] ‘a place name’
mergòsònò [mɛr.ʔɔ.sɔ.ʔnɔ] → ÒNÒSÒGREM [ʔɔ.nɔ.sɔ.ʔrɛmʔ] ‘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 [mɔ.rɔ.ʔu.ʔwɔ] → ÒRÒMAUT [ʔɔ.rɔ.ʔma.ʔuʔ] ‘parent-in-law’
kòcòmòtò [kɔ.cɔ.ʔmɔ.ʔtɔ] → ÒCÒKÒTÒM [ʔɔ.cɔ.ʔkɔ.ʔtɔmʔ] ‘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

<i>sepéda</i>	[sə.ˈpɛ.ɗa]	→	<i>HADÉPES</i>	[ha.ˈɗɛ.pəs]	‘bicycle’
<i>mutia</i>	[mu.ˈtɪ.ˈa]	→	<i>HAITUM</i>	[ha.ˈi.tum]	‘a name’
<i>dua</i>	[ˈɗu.ˈa]	→	<i>HAUD</i>	[ˈha.ɯ]	‘two’
<i>dhéwé</i>	[ˈɗɛ.wɛ]	→	<i>HÉWÉDH</i>	[ˈhɛ.wɛɗ]	‘by oneself, alone’
<i>gedhé</i>	[ˈɡɛ.ˈɗɛ]	→	<i>HÉDHEG</i>	[ˈhɛ.ɗɛk]	‘big’
<i>penjara</i>	[pə.ˈɲa.ra]	→	<i>NARANJEP</i>	[na.ˈra.ɲəp]	‘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 commonly attested in words containing consonant clusters. The word [ˈsu.ɲkan], 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 clusters¹

<i>tentara</i>	[tə.ˈnta.ra]	→	<i>ARANÉT</i>	[a.ˈra.nɛɗ]	‘soldier’
<i>sungkan</i>	[ˈsu.ɲkan]	→	<i>NAKUS</i>	[ˈna.kʊs]	‘shy’
<i>béncong</i>	[ˈbɛ.ncɔŋ]	→	<i>NGOCÉB</i>	[ˈŋɔ.cɛp]	‘transvestite’

Consonant deletion in word-final clusters

<i>mbah</i>	[ˈmbah]	→	<i>HAM</i>	[ˈham]	‘grandparent’
<i>ndowéh</i>	[ˈndɔ.wɛh]	→	<i>HÉWOD</i>	[ˈhɛ.wɔɗ]	‘confused’
<i>mbakyu</i>	[ˈmbaʔ.ju]	→	<i>UYAB</i>	[ˈʔu.jap]	‘older sister’

Consonant deletion in onset position

<i>rokok</i>	[ˈrɔ.kɔʔ]	→	<i>OKÉR</i>	[ˈʔɔ.kɛr]	‘cigarette’
<i>tujuh</i>	[ˈtʊ.ʔɔh]	→	<i>UJUT</i>	[ˈʔu.ʔɯɗ]	‘seven’
<i>karcis</i>	[ˈkar.cɪs]	→	<i>ITRAK</i>	[ˈʔi.ɗraʔ]	‘ticket’

Consonant deletion in coda position

<i>wédok</i>	[ˈwɛ.ɗɔʔ]	→	<i>KODÉ</i>	[ˈkɔ.ɗɛ]	‘woman’
<i>wédhus</i>	[ˈwɛ.ɗʊs]	→	<i>SUDHÉ</i>	[ˈsu.ɗɛ]	‘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

¹Note that the formation of [a.ˈra.nɛɗ] 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 *NGINGUB*, 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

<i>kotalama</i>	[kɔ.ʔa.la.ma]	→	<i>AMALOTAK</i>	[ʔa.ma.lɔ.ʔaʔ]	‘a place name’
<i>manéh</i>	[ˈma.nɛh]	→	<i>HANÉM</i>	[ˈha.nɛm]	‘again’
<i>mélók</i>	[ˈmɛ.lɔʔ]	→	<i>KÉLOM</i>	[ˈkɛ.lɔm]	‘to follow’
<i>tempik</i>	[ˈʔɛ.mɪʔ]	→	<i>KEMPIT</i>	[ˈkɛ.mɪʔ]	‘vagina’
<i>betul</i>	[bɛ.ʔɔl]	→	<i>LETUB</i>	[lɛ.ʔɔp]	‘correct’
<i>rebut</i>	[rɛ.ʔɔʔ]	→	<i>TEBUR</i>	[ʔɛ.ʔɔʔ]	‘take away’
<i>bingung</i>	[ˈbɪ.ŋʊŋ]	→	<i>NGINGUB</i>	[ˈŋɪ.ŋʊp]	‘perplexed’
<i>raimu</i>	[ra.i.mu]	→	<i>UMAIR</i>	[ˈʔu.ma.ir]	‘your face’
<i>sodara</i>	[sɔ.ʔɔ.ra]	→	<i>ARODES</i>	[ʔa.ro.ʔɔs]	‘family’
<i>sedikit</i>	[sɛ.ʔɔ.kɪʔ]	→	<i>TEKEDIS</i>	[ʔɛ.kɛ.ʔɔs]	‘few’

Segment Exchange: Consonant

<i>surabaya</i>	[su.ra.ʔa.ja]	→	<i>AYARABUS</i>	[a.ja.ra.ʔɔs]	‘a place name’
<i>selawé</i>	[sɛ.la.wɛ]	→	<i>ÉLAWES</i>	[ʔɛ.la.wɛs]	‘twenty five’ ²
<i>juragan</i>	[ʔɪ.ʔa.ʔaŋ]	→	<i>NARAGUJ</i>	[na.ʔa.ʔɔʔ]	‘boss’
<i>sarapan</i>	[sa.ʔa.pan]	→	<i>NARAPAS</i>	[na.ʔa.pas]	‘breakfast’
<i>selamat</i>	[sɛ.la.mat]	→	<i>TALAMES</i>	[ʔa.la.mɛs]	‘a greeting’
<i>setuju</i>	[sɛ.ʔu.ʔɪ]	→	<i>UTUJES</i>	[u.ʔu.ʔɛs]	‘agree’
<i>mlebu</i>	[mlɛ.ʔɪ]	→	<i>UBLEM</i>	[ˈʔu.blɛm]	‘to enter’
<i>mlaku</i>	[ˈmla.ku]	→	<i>UKLAM</i>	[ˈʔu.klam]	‘to walk’
<i>klambi</i>	[ˈkla.mbi]	→	<i>IMBLAK</i>	[ˈʔi.mblaʔ]	‘shirt’

²Note that the formation of [ʔɛ.la.wɛs] 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, ɖ, d, ɗ, ʃ, g/ and light stops /p, t̪, t, c, k/. In Malangan Javanese and Indonesian, the phonation type distinction in heavy and light stops is neutralized in final position, for instance: /b/ → [p]/_#.

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 [p̚]
 $C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
bécak [ʔḅḙ.caʔ] → KACÉB [ˈka.cɛp̚] ‘pedicab’
beras [ḅḙ.ˈras] → SAREB [ˈsa.rəp̚] ‘rice’

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

- (11) /ɖ/, /d/, and /ɗ/ realized as [t̪̚]
 $C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
dulur [ḁḁ̚.l̪ʊr] → RULUD [ˈrʊ.lʊt̪̚] ‘sibling/relative’
dhusun [ḁḁ̚.sʊn̚] → NUSUDH [ˈnʊ.sʊt̪̚] ‘village’

$$\begin{array}{lcl}
C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1 \\
dhéwé \quad [d̥ɛ.we] \rightarrow \acute{E}WÉDH \quad [ɛ.wɛ́t̚] \quad \text{'by oneself, alone'}^3 \\
dinò \quad [d̥i.no] \rightarrow \grave{O}NID \quad [ʔɔ.nít̚] \quad \text{'day'}
\end{array}$$

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

$$\begin{array}{lcl}
(12) \quad /t/ \text{ realized as } [t̚] \\
C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1 \\
thithik \quad [t̥i.t̥iʔ] \rightarrow KITHITH \quad [k̥i.t̥ít̚] \quad \text{'a few'}^4
\end{array}$$

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].

$$\begin{array}{lcl}
(13) \quad /g/ \text{ realized as } [k̚] \\
C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1 \\
gadis \quad [g̥a.d̥is] \rightarrow \acute{S}IDAG \quad [si.d̥ák̚] \quad \text{'girl'} \\
goréng \quad [g̥ɔ.rɛŋ] \rightarrow \acute{N}GÉROG \quad [ŋɛ.rɔ́k̚] \quad \text{'fried'} \\
\\
C_1V_2C_3.C_4V_5 \rightarrow V_5.C_4C_3V_2C_1 \\
germò \quad [g̥ər.mɔ] \rightarrow \grave{O}MREG \quad [ʔɔ.mrək̚] \quad \text{'pimp'}^5
\end{array}$$

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.

$$\begin{array}{lcl}
(14) \quad \text{Heavy consonants in word-initial position} \\
V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1 \\
arab \quad [ʔa.rap̚] \rightarrow \acute{B}ARA \quad [b̥a̰.ra] \quad \text{'Arab'} \\
abab \quad [ʔa.b̥ap̚] \rightarrow \acute{B}ABA \quad [b̥a̰.b̥a̰] \quad \text{'breath'}
\end{array}$$

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

⁴The constant retention of [i] in [k̥i.t̥ít̚] and [ʔɔ.nít̚] is discussed in §4.3.2.6.

⁵The maintenance of [ɔ] in [ʔɔ.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; Krauß 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 [ki.wɔ] → òWIK [ʔɔ.wɪʔ] ‘left’
 $C_1V_2C_3.C_4V_5C_6 \rightarrow C_6V_5.C_4C_3V_2C_1$
kontrol [kɔ.nɬɔl] → LONTOK [lɔ.nɬɔʔ] ‘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 [ma.bʊʔ] → KUBAM [ku.bʌm] ‘drunk’
bécak [bɛ.caʔ] → KACÉB [ka.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 [ma.tɛʔ] → *KÉTAM* [kɛ.tam] ‘to die, dead’

$C_1V_2.C_3C_4V_5C_6 \rightarrow C_6V_5C_4.C_3V_2C_1$
mintak [mi.ntaʔ] → *KATNIM* [kaʔ.nim] ‘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 [ʔaʔ.so] → *OSKAB* [ʔɔ.skap] ‘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 [kər.ʔɔ] → *ÒJREK* [ʔɔ.jrɛk] ‘to work’
kerdi [kər.ði] → *IDREK* [ʔi.drɛk] ‘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; Krauß 2017). This is further confirmed in Walikan,

⁶Homorganic consonant clusters in Walikan are retained, see §4.3.2.4. The words *KATNIM* ‘to ask’, *LOTNOK* ‘penis’, and *TAPME* ‘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

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

<u>tujuh</u>	[tu.juh]	→	<u>HUJUT</u>	[hu.jut]	‘seven’
<u>sekolah</u>	[sə.'kə.lah]	→	<u>HALOKES</u>	[ha.'lə.kes]	‘school’
<u>rumah</u>	[ru.mah]	→	<u>HAMUR</u>	[ha.mur]	‘house’

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

(21) /h/ in Walikan

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

<u>sepéda</u>	[sə.'pɛ.da]	→	<u>HADÉPES</u>	[ha.'dɛ.pəs]	‘bicycle’
<u>mutia</u>	[mu.ti.'a]	→	<u>HAITUM</u>	[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 consonants /c/ and /ɟ/ are realized as a phoneme with the closest corresponding place of articulation, that is the unreleased light dental stop [t̚] (22).

(22) /c/ and /ɟ/ realized as [t̚]

$$C_1V_2.C_3V_4C_5.C_6V_7 \rightarrow V_7.C_6C_5V_4.C_3V_2C_1$$

<u>jakarta</u>	[ʃa.'kar.t̚a]	→	<u>ATRAKAJ</u>	[a.'tra.kat̚]	‘a place name’
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$$C_1V_2.C_3V_4.C_5V_6 \rightarrow V_6.C_5V_4.C_3V_2C_1$$

<u>celana</u>	[cə.'la.na]	→	<u>ANALEC</u>	[ʔa.'na.lət̚]	‘trousers’
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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 [p̚]
 $C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
wédok ['wɛ.ḍəʔ] → KODÉB ['kɔ.ḍɛp̚] '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 ['wɛ.nɛh] 'to give' in Malangan Javanese for example, is sometimes also realized as ['bɛ.nɛh], especially by older speakers.

Alternatively, speakers may also apply Consonant Deletion, so that ['wɛ.ḍəʔ] becomes ['kɔ.ḍɛ] (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

$C_1V_2C_3.C_4V_5 \rightarrow V_5.C_4C_3V_2C_1$					
<i>kerdi</i>	[kər.'d̪i]	→	<u>IDREK</u>	['ʔi.ḍrək]	'to work'
<i>marsò</i>	[mar.sə]	→	ÒSRAM	['ʔə.sram]	'a name'
<i>ngerti</i>	[ŋər.'ti]	→	ITRENG	['ʔi.t̪rəŋ]	'to understand.av'
<i>germò</i>	[g̊ər.'mɔ]	→	ÒMREG	['ʔə.mrək]	'pimp'
<i>bakso</i>	['b̥aʔ.so]	→	OSKAB	['ʔə.skap]	'meatball'
<i>palsu</i>	[pal.su]	→	<u>USLAP</u>	['ʔu.slap]	'fake'
$C_1V_2C_3.C_4V_5C_6 \rightarrow C_6V_5.C_4C_3V_2C_1$					
<i>berkat</i>	['b̥ər.kat̪]	→	TAKREB	['t̪a.krəp]	'blessed food'
$C_1V_2.C_3V_4.V_5C_6.C_7V_8 \rightarrow V_8.C_7C_6V_5.V_4.C_3V_2C_1$					
<i>keluarga</i>	[kə.'lu.'w̥ar.ɡ̊a]	→	<u>AGRAULEK</u>	['ʔa.ɡ̊r̥a.u.ləʔ]	'family'

The process is exemplified in (25).

(25) *marsò* ['mar.sə] 'a name'

Original Word	:	m	a	r	.	s	ə
Walikan	:	ə	.	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 following 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.mbuʔ] → TUMBAR [ʔu.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.mpes] ‘underwear’

tempik [tə.mpiʔ] → KIMPET [ki.mpəʔ] ‘vagina’

/nt/

$C_1V_2.C_3C_4V_5C_6 \rightarrow C_6V_5.C_4C_3V_2C_1$

suntik [sʊ.nʔiʔ] → KINTUS [ki.nʔʊs] ‘to inject’

kontrol [kʊ.nʔɔl] → LONTOK [lʊ.nʔʊʔ] ‘male genitals’

/nd/

$C_1V_2.C_3C_4V_5C_6 \rightarrow C_6V_5.C_4C_3V_2C_1$

sandal [sa.ndal] → LANDAS [la.ndas] ‘sandal’

pendhék [pə.ndɛʔ] → KÉNDHEP [kɛ.ndɛp] ‘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 *témbok* means ‘wall’. The reversal process of the phrase can be seen in (27) and (28).

- (27) *séndhén* [sɛ.ndɛn] ‘to lean’

Original Word : s ε . n d ε n

↓ ↓

Walikan : n ε . n d ε s

- (28) *témbok* [ʔɛ.mboʔ] ‘wall’

Original Word : ʔ ε . m b ɔ k

↓ ↓

Walikan : k ɔ . m b ε ʔ

(29) Obstruent + liquid cluster remains intact

(30) *muklis* ['mʊ.klɪs] 'a name'

(31) Fricative + stop cluster remains intact

(32) *pésta* ['pɛ.st̪a] 'party'

(33) Consonant cluster remains intact

$C_1V_2.C_3C_4C_5V_6C_7 \rightarrow C_7V_6.C_3C_4C_5V_2C_1$			
<i>ménkrét</i>	[mɛ.nɛɾɛ́ʦ]	→	TÉNCRÉM [tɛ.nɛɾɛm] ‘diarrhea’
<i>listrik</i>	[li.stɾik]	→	KISTRIL [ki.stɾil] ‘electricity’

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

- (34) *listrik* ['lɪ.s̺ɪɾɪk] 'electricity'
- | | | | | | | | | | |
|---------------|---|---|---|---|---|----|---|---|---|
| Original Word | : | l | i | . | s | t̺ | r | i | k |
| | | | | | ↓ | ↓ | | | |
| Walikan | : | k | i | . | s | t̺ | 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
- | | |
|---|---------------------------------|
| $C_1C_2V_3C_4 \rightarrow C_4V_2C_1$ | |
| <i>mbah</i> ['mbah] | → HAM ['ham] 'grandparent' |
| $C_1C_2V_3C_4.C_5V_6 \rightarrow V_6.C_5V_3C_2$ | |
| <i>mbakyu</i> ['mbaʔ.ju] | → UYAB ['ʔu.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
- | | |
|---|-------------------------------|
| $C_1C_2V_3.C_4V_5 \rightarrow V_5.C_4C_2V_3C_1$ | |
| <i>mlebu</i> [mlə.ʔu] | → UBLEM ['ʔu.ʔləm] 'to enter' |
| <i>mlaku</i> [mla.ku] | → UKLAM ['ʔu.klam] 'to walk' |

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

- (37) *mlebu* [mlə.ʔu] ‘to enter’
- | | | | | | | | |
|------------------------|---|----|---|---|---|---|---|
| Original Word | : | m | l | ə | . | b | u |
| Total Segment Reversal | : | *u | . | b | ə | l | m |
| Walikan | : | u | . | b | l | ə | m |

- (38) *mlaku* [mla.ku] ‘to walk’
- | | | | | | | | |
|------------------------|---|----|---|---|---|---|---|
| Original Word | : | m | l | a | . | k | u |
| Total Segment Reversal | : | *u | . | k | a | l | m |
| Walikan | : | u | . | k | l | a | m |

In (37), Total Segment Reversal creates *UBELM, 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 UBLEM is formed. The cluster /bl/ in the onset of a word-medial syllable is considered acceptable. This strategy also works for UKLAM (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* [mla.ju] ‘to run’
- | | | | | | | | |
|------------------------|---|----|---|---|---|---|---|
| Original Word | : | m | l | a | . | j | u |
| Total Segment Reversal | : | *u | . | j | a | l | m |
| Segment Exchange | : | *u | . | j | l | 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 ['kla.mbi] $\rightarrow$ IMBLAK ['ʔi.mblaʔ] 'shirt'

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

(41) *klambi* ['kla.mbi] 'shirt'

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

In (41), the word *klambi* 'shirt' is transformed into *IBMALK 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 *IMBALK. 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 IMBLAK [ʔi.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/	['ma.mbu]	/mb/	['ʔu.mbam]	'smelly'
/mp/	['sɛ.mpaʔ]	/mp/	['ka.mpeɪs]	'underwear'
/nt/	['sɔ̃.nɪɾʔ]	/nt/	['ki.nɪɾɔs]	'to inject'
/nd/	['pə.ndɛʔ]	/nd/	['kɛ.ndəp]	'short'
/kl/	['mɔ̃.klɪs]	/kl/	['si.klɔm]	'a name'
/kr/	['sɔ̃.krɔn]	/kr/	['nɔ̃.krus]	'a name'
/st/	['pɛ.sta]	/st/	['ʔa.stɛp]	'party'
/ncr/	['mɛ.ncrɛɪʔ]	/ncr/	['tɛ.ncrɛm]	'diarrhea'
/str/	['lɪ.strɪʔ]	/str/	['kɪ.strɪl]	'electricity'

TABLE 4.2: Consonant clusters that remain intact

Source	Example	Walikan	Example	Gloss
/r.t̚/	[ŋər.ʔi]	/t̚r/	[ʔi.t̚rəŋ]	‘to understand.AV’
/r.d/	[kər.ʔdi]	/dr̥/	[ʔi.ḍrək]	‘to work’
/r.k/	[ʔər.kat̚]	/kr̥/	[ʔa.krəp̚]	‘blessed food’
/r.g/	[kə.lu.ʷar.ɡa]	/gr̥/	[ʔa.ɡr̥a.u.ləʔ]	‘family’
/r.m/	[ʔər.mə]	/mr̥/	[ʔə.mrək]	‘pimp’
/r.s/	[mar.sə]	/sr̥/	[ʔə.sram̐]	‘a name’
/k.s/	[ʔaʔ.so]	/sk̥/	[ʔə.skap̐]	‘meatball’
/l.s/	[pal.su]	/sl̥/	[ʔu.slap̐]	‘fake’

TABLE 4.3: Consonant sequences that generate new clusters

Source	Example	Walikan	Example	Unpermitted cluster
/mbVC/	[mbah] ‘grandparent’	/VCm̐/	[ham̐] ‘grandparent’	*/bm/
/mIVCV/	[mlə.ʔu] ‘to enter’	/VCIVm̐/	[ʔu.ḍləm̐] ‘to enter’	*/lm/
/kIVCCV/	[kla.mbi] ‘shirt’	/VCCIVk̥/	[ʔi.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, ɖ, d, ʃ, 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.'lʊɸ] → NDULEK ['nɖu.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

$$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$$

<i>sakit</i>	[sa.kɪt̚]	→	TIKAS	[t̚i.kas]	‘sick’
<i>pakis</i>	[pa.kɪs]	→	SIKAP	[si.kap̚]	‘a place name’
<i>petis</i>	[pə.t̚is]	→	SITEP	[si.t̚əp̚]	‘shrimp paste’
<i>maling</i>	[ma.lɪŋ]	→	NGILAM	[ŋi.lam̚]	‘thief’

$$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$$

<i>mabuk</i>	[ma.b̥ʊʔ]	→	KUBAM	[ku.b̥am̚]	‘drunk’
<i>masuk</i>	[ma.sʊʔ]	→	KUSAM	[ku.sam̚]	‘to enter’
<i>manuk</i>	[ma.nʊʔ]	→	KUNAM	[ku.nam̚]	‘penis’
<i>tidur</i>	[t̚i.ɗ̥ʊr]	→	RUDIT	[ru.ɗ̥it̚]	‘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

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

<i>pirò</i>	[pi.rɔ̃]	→	òRIP	[ʔɔ̃.rip̚]	‘how much’
<i>sinò</i>	[si.ŋɔ̃]	→	òNGIS	[ʔɔ̃.ŋis̚]	‘lion’
<i>limò</i>	[li.mɔ̃]	→	òMIL	[ʔɔ̃.mil̚]	‘five’
<i>dinò</i>	[ɗ̥i.nɔ̃]	→	òNID	[ʔɔ̃.nit̚]	‘day’

$$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$$

<i>tidur</i>	[t̚i.ɗ̥ʊr]	→	RUDIT	[ru.ɗ̥it̚]	‘to enter’
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$$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$$

<i>ruwet</i>	[ru.wəɕ̚]	→	TÉWUR	[t̚ɛ.wur̚]	‘complicated’ ⁸
<i>pulang</i>	[pu.laŋ]	→	NGALUP	[ŋa.lup̚]	‘to go home’
<i>budhal</i>	[b̥u.ɗ̥al]	→	LADHUB	[la.ɗ̥up̚]	‘to depart’

⁷An exception applies to the word *òné* [ʔɔ̃.nɛɕ̚] ‘Chinese’, which is a reversal from *cinò* [c̥i.nɔ̃]. 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.

⁸The 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 [pi.tiʔ] → KITIP [ki.tɪp] ‘chicken’
sikil [si.kɪl] → LIKIS [li.kɪs] ‘foot’

$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$
pukul [pʊ.kʊl] → LUKUP [lʊ.kʊp] ‘to hit’
sukun [sʊ.kʊn] → NUKUS [nʊ.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 [ʔi.tiʔ] → KITHITH [ki.tiʔ] ‘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 [ḡə.ʔe] → ÉDHEG [ʔɛ.ʔək] ‘big’
saté [sa.te] → ÉTAS [ʔɛ.tas] ‘satay’
dhéwé [ʔe.we] → ÉWÉDH [ʔɛ.wɛʔ] ‘by oneself, alone’

The reversal of $['ʔɛ.wɛɫ]$ from $['d̪ɛ.we]$ ‘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

$C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$					
<i>gulé</i>	$['g̥u.le]$	$\rightarrow$	ÉLUG	$['ʔɛ.luk]$	‘curry’
<i>bulé</i>	$['b̥u.le]$	$\rightarrow$	ÉLUB	$['ʔɛ.lup]$	‘white people’
<i>suwé</i>	$['su.we]$	$\rightarrow$	ÉWUS	$['ʔɛ.wus]$	‘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

$V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1$					
<i>énak</i>	$['ʔɛ.naʔ]$	$\rightarrow$	KANÉ	$['ka.ne]$	‘delicious, nice’
<i>édan</i>	$['ʔɛ.d̪an]$	$\rightarrow$	NADÉ	$['na.d̪e]$	‘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 $[e]$

$C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$					
<i>dhéwé</i>	$['d̪ɛ.we]$	$\rightarrow$	ÉWÉDH	$['ʔɛ.wɛɫ]$	‘by oneself, alone’
<i>dhéwé</i>	$['d̪ɛ.we]$	$\rightarrow$	ÉWÉDH	$['ʔe.wɛɫ]$	‘by oneself, alone’
<i>saté</i>	$['sa.ɬe]$	$\rightarrow$	ÉTAS	$['ʔɛ.ɬas]$	‘satay’
<i>saté</i>	$['sa.ɬe]$	$\rightarrow$	ÉTAS	$['ʔe.ɬas]$	‘satay’

$C_1V_2.C_3V_4.C_5V_6 \rightarrow V_6.C_3V_4.C_5V_2C_1$					
<i>selawé</i>	[sə.'la.we]	→	ÉLAWES	['ʔe.'la.wəs]	'twenty five'
<i>selawé</i>	[sə.'la.we]	→	ÉLAWES	['ʔe.'la.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>ébé</u> s | ['ʔe.b̥ɛs] | → | <u>SÉBÉ</u> | ['sɛ.b̥ɛ] | 'father' |
| élék | ['ʔe.lɛʔ] | → | KÉLÉ | ['kɛ.lɛ] | 'ugly' |

The Walikan forms in (51) are the only accepted forms, which means that other forms that conform to the phonotactic rules, such as ['se.b̥ɛ] and ['ke.le], are not observed. Therefore, ['sɛ.b̥ɛ] and ['kɛ.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 speakers as 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]
- | | | | | | |
|---|-----------|---|------|----------|---------|
| $V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1$ | | | | | |
| <i>enom</i> | ['ʔə.nəm] | → | MONÉ | ['mɔ.nɛ] | 'young' |
| <i>enam</i> | ['ʔə.nam] | → | MANÉ | ['ma.nɛ] | 'six' |

$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$					
<i>ruwet</i>	[ru.wəʔ]	→	TÉWUR	[tɛ.wʊr]	‘complicated’
<i>macet</i>	[ma.cəʔ]	→	TÉCAM	[tɛ.cam]	‘jammed’
$C_1V_2.C_3V_4.C_5V_6C_7 \rightarrow C_7V_6.C_5V_4.C_3V_2C_1$					
<i>kebalén</i>	[kə.ʔa.lən]	→	NÉLABEK	[nɛ.ʔa.ləʔ]	‘a place name’
<i>kebalén</i>	[kə.ʔa.lən]	→	NÉLABÉK	[nɛ.ʔa.ləʔ]	‘a place name’
$C_1V_2.C_3V_4.C_5V_6 \rightarrow V_6.C_3V_4.C_5V_2C_1$					
<i>selawé</i>	[sə.ʔa.we]	→	ÉLAWES	[ʔɛ.ʔa.wəs]	‘twenty five’
<i>selawé</i>	[sə.ʔa.we]	→	ÉLAWÉS	[ʔɛ.ʔa.wɛs]	‘twenty five’
$C_1V_2.C_3C_4V_5.C_6V_6C_7 \rightarrow V_7.C_6V_5.C_3V_2C_1$					
<i>tentara</i>	[tə.ʔa.ra]	→	ARANET	[ʔa.ʔa.nəʔ]	‘soldier’
<i>tentara</i>	[tə.ʔa.ra]	→	ARANÉT	[ʔa.ʔa.nɛʔ]	‘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

⁹Note that the formation of *orang* into [ŋə.ʔa.ro] and *omong* into [ŋə.ʔa.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>	['ʔo.raŋ]	→	<u>GENARO</u>	[g̃ə.'na.ro]	'person'
<u>omong</u>	['o.məŋ]	→	<u>GENOMO</u>	[g̃ə.'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

$$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$$

<i>botoł</i>	[b̃ɔ.tɔ]	→	LOTOB	[lɔ.tɔp]	'bottle'
<i>bokong</i>	[b̃ɔ.kɔŋ]	→	NGOKOB	[ŋɔ.kɔp]	'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

$$C_1V_2.C_3V_4C_5 \rightarrow C_5V_4.C_3V_2C_1$$

<i>balon</i>	[b̃ɔ.lɔn]	→	NOLAB	[nɔ.lap]	'prostitute'
<i>takon</i>	[t̃ɔ.kɔn]	→	NOKAT	[nɔ.kat]	'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>	[t̃o.ko]	→	<u>OKOT</u>	['ʔo.kɔt]	'store'
<u>toko</u>	[t̃o.ko]	→	<u>OKOT</u>	['ʔo.kot]	'store'
<i>soto</i>	[s̃o.t̃o]	→	OTOS	['ʔo.t̃os]	'kind of soup'
<i>soto</i>	[s̃o.t̃o]	→	OTOS	['ʔo.tos]	'kind of soup'
<i>solo</i>	[s̃o.lo]	→	OLOS	['ʔo.l̃os]	'a place name'
<i>solo</i>	[s̃o.lo]	→	OLOS	['ʔo.los]	'a place name'

$$\begin{array}{lcl}
C_1V_2.C_3V_4.C_5V_6 \rightarrow V_6.C_5V_4.C_3V_2C_1 \\
\underline{sodara} \quad [sɔ.ɖ̥a.ra] \rightarrow \underline{ARADOS} \quad [ʔa.ra.ɖ̥s] \quad \text{'relative'} \\
\underline{sodara} \quad [sɔ.ɖ̥a.ra] \rightarrow \underline{ARADOS} \quad [ʔa.ra.ɖ̥s] \quad \text{'relative'}
\end{array}$$

$$\begin{array}{lcl}
C_1V_2.C_3V_4.C_5V_6C_7 \rightarrow C_7V_6.C_5V_4.C_3V_2C_1 \\
\underline{sekolah} \quad [sə.'kɔ.lah] \rightarrow \underline{HALOKES} \quad [ha.'lɔ.kəs] \quad \text{'school'} \\
\underline{sekolah} \quad [sə.'kɔ.lah] \rightarrow \underline{HALOKES} \quad [ha.'lɔ.kəs] \quad \text{'school'}
\end{array}$$

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

$$\begin{array}{lcl}
V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1 \\
\underline{bojo} \quad [ʔɔ.ʔɔ] \rightarrow \underline{OJOB} \quad [ʔo.ʔɔp] \quad \text{'spouse'} \\
\underline{foto} \quad [ʔo.ʔo] \rightarrow \underline{OTOFO} \quad [ʔo.ʔop] \quad \text{'photograph' (from Dutch)}
\end{array}$$

The forms in (57) are the only accepted forms, which means that other forms that follow the Malangan Javanese phonotactics, such as [ʔɔ.ʔɔp] and [ʔɔ.ʔop], 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

$$\begin{array}{lcl}
V_1.C_2V_3C_4 \rightarrow C_4V_3.C_2V_1 \\
\underline{anak} \quad [ʔa.naʔ] \rightarrow \underline{KANA} \quad [ka.na] \quad \text{'child'} \\
\underline{aré} \quad [ʔa.rɛʔ] \rightarrow \underline{KÉRA} \quad [kɛ.ra] \quad \text{'kid'}
\end{array}$$

The first word in example (58), [ka.na], is a reversal of an Indonesian word [ʔa.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 [ʔa.rɛʔ] is [kɛ.ra] and not [kɛ.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

$C_1V_2.C_3V_4 \rightarrow V_4.C_3V_2C_1$					
<i>sòpò</i>	[sɔ.pɔ]	→	òPÒS	[ʔɔ.pɔs]	‘who’
<i>lapò</i>	[la.pɔ]	→	òPAL	[ʔɔ.pal]	‘what are you doing?’
<i>tibò</i>	[ti.bɔ]	→	òBIT	[ʔɔ.biʔ]	‘to fall’

In the first example in (59), òPÒS [ʔɔ.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 [ʔɔ.biʔ], 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

$$C_1V_2C_3 \rightarrow C_3V_2C_1$$

zén [sɛnʔ] → NÉZ [nɛs] 'nice'

The loan phoneme /z/ is realized as [s] or [ʃ] 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

$$C_1C_2V_3C_4 \rightarrow C_5V_4.C_3V_2C_1$$

slow [sə.'low] → WOLES ['wɔ.ləs] 'slow'

$$C_1C_2V_3.C_4V_5C_6 \rightarrow C_6C_5V_4.C_3V_2C_1$$

riléks ['ri.lɛks] → SKElIR [sə.kə.'lɪr] 'relax'

$$C_1C_2V_3.V_4C_5 \rightarrow C_5V_4.V_3C_1$$

mbois ['mbɔ.is] → SIOP ['si.ʔɔp] 'cool'

Speakers pronounce *slow* as [sə.'low] 'slow', the consonant cluster in the word-initial position is avoided by inserting a schwa. The schwa is also present in the reversed form ['wɔ.ləs]. In [sə.kə.'lɪr], 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, ['mbɔ.is], originated from the English word *boyish*, is reversed into ['si.ʔɔp]. 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

$$C_1C_2V_3 \rightarrow C_3V_2.C_4C_1$$

tour ['tʊr] → ruot ['ru.ʔɔɸ] 'tour'

(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 a n

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

<u>ISAK</u>	['ʔi.saʔ]	→	<u>ISAK</u> - <i>i</i>	['ʔi.saʔ.i]
'to give'			'be given'	
<u>NGALUP</u>	['ŋa.lup]	→	<u>NGALUP</u> - <i>nò</i>	['ŋa.lup'.nò]
'to go home'			'to bring home'	
<u>LADHUB</u>	['la.ɖup]	→	<u>LADHUB</u> - <i>kan</i>	['la.ɖup'.kan]
'to depart'			'go ahead'	
<u>LÉDOM</u>	['lɛ.ɖəm]	→	<u>LÉDOM</u> - <i>é</i>	['lɛ.ɖəme]
'style'			'the style'	
<u>NOLAB</u>	['nɔ.lap]	→	<i>pa</i> - <u>NOLAB</u> - <i>an</i>	[pa.'nɔ.la.pan]
'prostitute'			'prostitution district'	
<u>INDAM</u>	['ʔin.ɖam]	→	<i>pa</i> - <u>NGINDAM</u> - <i>an</i>	[pa.'ŋin.ɖa.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

<i>kopi</i>	[kɔ.pi]	→	<i>ng-opi</i>	[ŋɔ.pi]
IPOK	[ʔi.pɔʔ]	→	<i>ng-IPOK</i>	[ŋi.pɔʔ]
‘coffee’			‘to drink coffee.AV’	
<i>rokok</i>	[rɔ.kɔʔ]	→	<i>ng-rokok</i>	[ŋrɔ.kɔʔ]
OKÉR	[ʔɔ.kɛr]	→	<i>ng-OKÉR</i>	[ŋɔ.kɛr]
‘cigarette’			‘to smoke.AV’	
<i>wédok</i>	[wɛ.ɖɔʔ]	→	<i>m-édok</i>	[mɛ.ɖɔʔ]
KODÉ	[kɔ.ɖɛ]	→	<i>ng-ODÉ</i>	[ŋɔ.ɖɛ]
‘woman’			‘to have an affair.AV’	
<i>bayar</i>	[b̥a.jar]	→	<i>m-bayar</i>	[mba.jar]
RAYAB	[ra.japʔ]	→	<i>ng-RAYAB</i>	[ŋra.japʔ]
‘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 [ŋɔ.pi] and [ŋi.pɔʔ] ‘to drink coffee.AV’. However, they can also be different, such as in [mba.jar] and [ŋra.japʔ]. 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

<i>rai-mu</i>	[ra.ʔi.mu]	→	UMIAR	[ʔu.mi.ʔar]	‘your face’
face-2SG.POSS					
<i>di-mana</i>	[ɖi.ma.na]	→	ANAMID	[ʔa.na.miʔ]	‘where’
PREP-where					
<i>se-dulur</i>	[se.ɖɔ.lɔr]	→	RULUDES	[ru.lu.ɖɔs]	‘relative’
one-relative					
<i>ke-temon</i>	[kə.ʔə.mɔnʔ]	→	NOMETEK	[nɔ.mə.ʔəkʔ]	‘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 < <i>mlaku</i> | ‘to walk’ |
| | UKLAM-UKLAM | ‘to walk around’ |
| | RDP~walk | |
| Nominal base | <u>NAWAK</u> < <i>kawan</i> | ‘friend’ |
| | <u>NAWAK-NAWAK</u> -é | ‘the friends’ |
| | RDP~friend-DEF | |
| Adjectival base | ÉWUS < <i>suwé</i> | ‘long’ |
| | <i>di</i> -ÉWUS-ÉWUS- <i>nò</i> | ‘PASS-delayed’ |
| | RDP~PASS-long-BEN | |

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

- (71) Reduplication of derived words
- | | | |
|---------------|-------------------|----------------------------|
| <i>kopi</i> | > IPOK | ‘coffee’ |
| <i>ng-opi</i> | > <i>ng</i> -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 | <i>walik</i> | ‘to reverse’ |
| | <i>wolak-walik</i> | ‘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* ['g̊a.ʃi] 'salary'
 Original Word : g a ʃ i
 Walikan : ʃ i g a

- (74) *groggi* ['g̊r̥.ʒi] '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 ['cri.tɔ] → òCRIT ['ʔɔ.criʔ] 'story'
kamu ['ka.mu] → UKAM ['ʔu.kam] 'you'
pirò ['pi.rɔ] → òPIR ['ʔɔ.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* ['maʔ.sʊʔ] 'intention'
 Original Word : m a k . s u ʔ
 Walikan : k a m . s u ʔ

(77) *walik* ['wa.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.t̚ɛl] 'hotel'

Original Word	:	h	ɔ	.	t̚	ɛ	l
Walikan	:	l	ɛ	.	h	ɔ	t̚

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

(79) Sequence Exchange

<i>lanang</i>	['la.naŋ]	→	NGALAN	['ŋa.lanʔ]	'man'
<i>walik</i>	['wa.lɪʔ]	→	KIWAL	['ki.wal]	'to reverse'
<i>hamil</i>	['ha.mɪl]	→	LIHAM	['li.hamʔ]	'pregnant'
<i>makelar</i>	[ma.kə.'lar]	→	RAMALEK	[ra.'ma.ləʔ]	'middleman'

In my data, the word *walik* has different Walikan forms through two Sequence Exchange processes: LAWIK and KI WAL. 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

<i>walik</i>	['wa.lɪʔ]	→	KAWIL	['ka.wɪl]	'to reverse'
<i>abis</i>	['ʔa.b̥ɪs]	→	SIBUN	['si.b̥ɪnʔ]	'all gone, used up'
<i>parkir</i>	['par.kɪr]	→	SIKRAP	['si.krapʔ]	'to park'
<i>roti</i>	['rɔ.t̚i]	→	SITOR	['si.t̚ɔr]	'bread'
<i>abah</i>	['ʔa.b̥əh]	→	ÉBÉS	['ʔɛ.b̥ɛs]	'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 *SIBUN*, *SIKRAP*, and *SITOR*.

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 ε C e/ε s. Based on this template, the first vowel in the source word is changed to /ε/ and the second vowel to /e/ or /ε/, 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)

<i>banci</i>	[b̥a.nci]	→	<i>BÉNCÉS</i>	[b̥ε.nces]	‘transvestite’
<i>homo</i>	[ho.mo]	→	<i>HÉMÉS</i>	[hε.mes]	‘gay’
<i>ratus</i>	[ra.tʊs]	→	<i>RÉTÉS</i>	[rε.t̚es]	‘hundred’
<i>kluar</i>	[klu.ʷar]	→	<i>KLÉWÉS</i>	[klε.wes]	‘ejaculation’
<i>maen</i>	[ma.ʔen]	→	<i>MÉÉS</i>	[mε.ʔes]	‘to have sex’
<i>arab</i>	[ʔa.rap]	→	<i>ÉRBÉS</i>	[ʔε.r̥ɛs]	‘Arabs’

The template explained in (81) might explain the origin of the word *ÉBÉS* and *ÉMÉS* ‘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 *ÉMÉS*, instead preferring *ÉBÉS wédok*, which literally means ‘female father’.

(82) Walikan words influenced by slang template

<i>abi</i>	[ʔa.b̥i]	→	<i>ÉBÉS</i>	[ʔε.b̥ɛs]	‘father’
<i>umi</i>	[ʔu.mi]	→	<i>ÉMÉS</i>	[ʔε.mes]	‘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
- | | | | | | |
|-----------------|---------------|---|-----------------|--------------|--------------|
| <u>selamat</u> | [sə.'la.mat̚] | → | <u>TAMALES</u> | [ʔa.'ma.ləs] | 'a greeting' |
| <u>selamat</u> | [sə.'la.mat̚] | → | <u>TALAMES</u> | [ʔa.'la.məs] | 'a greeting' |
| <u>setuju</u> | [sə.'tu.ʔu] | → | <u>UJUTES</u> | [ʔu.'ʔu.ʔəs] | 'agree' |
| <u>setuju</u> | [sə.'tu.ʔu] | → | <u>UTUJES</u> | [ʔu.'tu.ʔəs] | 'agree' |
| <u>semangat</u> | [sə.'ma.ŋat̚] | → | <u>TANGAMES</u> | [ʔa.'ŋa.məs] | 'spirit' |
| <u>semangat</u> | [sə.'ma.ŋat̚] | → | <u>TAMANGES</u> | [ʔa.'ma.ŋəs] | 'spirit' |
| <u>kuliah</u> | [ku.'li.ʔah] | → | <u>HALIUK</u> | [ha.'li.ʔuʔ] | 'lecture' |
| <u>kuliah</u> | [ku.'li.ʔah] | → | <u>HAILUK</u> | [ha.'i.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
- | | | | | | |
|---------------|----------|---|---------------|-----------|------------|
| <u>kamu</u> | [ka.mu] | → | <u>UMAK</u> | [ʔu.maʔ] | 'you' |
| <u>kamu</u> | [ka.mu] | → | <u>UKAM</u> | [ʔu.kamʔ] | 'you' |
| <u>pirò</u> | [pi.rɔ] | → | <u>ÒRIP</u> | [ʔɔ.ripʔ] | 'how much' |
| <u>pirò</u> | [pi.rɔ] | → | <u>ÒPIR</u> | [ʔɔ.pirʔ] | 'how much' |
| <u>lanang</u> | [la.naŋ] | → | <u>NGANAL</u> | [ŋa.nal] | 'man' |
| <u>lanang</u> | [la.naŋ] | → | <u>NGALAN</u> | [ŋa.lanʔ] | '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 UJUTES and UTUJES, (83). In writing platforms, speakers tend to use UJUTES 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 ÒPIR and ÒRIP 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 Malangan 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

<i>wédok</i>	[ʷɛ.ḍɔʔ]	→	KODÉW	[kɔ.ḍɛʷ]	‘woman’
<i>wangi</i>	[ʷa.ŋi]	→	INGAW	[ʔi.ŋaʷ]	‘fragrant’
<i>walikan</i>	[ʷa.liʔ.anʔ]	→	NAKILAW	[na.ki.laʷ]	‘reversal’
<i>wani</i>	[ʷa.ni]	→	INAW	[ʔi.naʷ]	‘to dare’

(86) /ɟ/ in word-final position

<i>Jakarta</i>	[ʔa.kar.ɟa]	→	ATRAKAJ	[ʔa.ʔra.kaɟ]	‘a place name’
<i>juragan</i>	[ʔu.ra.ɡaŋʔ]	→	NARAGUJ	[na.ra.ɡɔɟ]	‘boss’
<i>jeruk</i>	[ʔɔ.rɔʔ]	→	KURÉJ	[ku.rɛɟ]	‘orange’
<i>jembut</i>	[ʔɔ.mbɔʔ]	→	TUMBEJ	[tu.mbɔɟ]	‘pubic hair’

(87) /c/ in word-final position

<i>celana</i>	[cə.la.na]	→	ANALEC	[ʔa.na.ləc]	‘trousers’
<i>cinò</i>	[ci.nɔ]	→	ÒNIC	[ʔɔ.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>

<i>orang</i>	[ʔɔ.raŋ]	→	<u>GENARO</u>	[ġə.'na.ro]	'people'
<i>omong</i>	[ʔɔ.raŋ]	→	<u>GENOMO</u>	[ġə.'na.ro]	'people'
<i>utang</i>	[ʔu.taŋ]	→	<u>GENATU</u>	[ġə.'na.tu]	'debt'
<i>tukang</i>	[tu.kan]	→	<u>GENAKUT</u>	[ġə.'na.kuʔ]	'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

¹⁰Effendi Kadarisman, an informant in Fitriah (2015), explains that the choice is made because the sounds of [gən] in [ġə.'na.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.

