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

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CHAPTER 3

Phonology of Malangan Javanese and Malangan Indonesian

3.1 Introduction

The phonology of Walikan is influenced by the dominant languages in the area: the local dialect of Javanese and the local variety of Indonesian. In this thesis, the varieties are referred to as Malangan Javanese and Malangan Indonesian respectively. This chapter begins with a description of Malangan Javanese phonology in §3.2 and Malangan Indonesian phonology in §3.3, starting from the segment inventory, phonetic realization rules, then moving on to phonotactics, and stress. This provides the necessary background for the discussion of the reversal rules in Walikan in Chapter 4.

3.2 Malangan Javanese

Malangan Javanese is the local dialect of Javanese spoken in Malang. It belongs to the Eastern Javanese dialect grouping (see §1.3.1). The phonology of Surabayan Javanese, also part of the East Javanese dialect grouping, has recently been described by Hoogervorst (2008) and Krauße (2017). In addi-

tion, Conners (2008) has provided a description of the phonology of Tengger Javanese, a dialect also spoken in East Java. The phonology of Malangan Javanese, on the other hand, has not been described before.

3.2.1 Segment Inventory of Malangan Javanese

In this section, I discuss the segmental phonemes of Malangan Javanese. Malangan Javanese has 20 consonants, as presented in Table 3.1.

	Bila- bial	Den- tal	Alve- olar	Retro- flex	Pala- tal	Velar	Glot- tal
‘Light’ Stops	p	t̚		t̚	c	k	
‘Heavy’ Stops	b	ɓ		ɗ	ɟ <j>	g	
Nasals	m		n		ɲ <ny>	ŋ <ng>	
Frica- tives			s				h
Trill			r				
Lat- eral			l				
Ap- proxi- mants	w				j <y>		

TABLE 3.1: Consonant inventory of Malangan Javanese (the orthographic representations of phonemes which differ from IPA are given in pointy brackets)

Unlike what is suggested by the orthography, Malangan Javanese stops are not differentiated by voicing. They are all acoustically voiceless, because the closure in both series does not involve a vibration of the vocal cords. The phonetic properties of /b, ɓ, ɗ, ɟ, g/ and /p, t̚, t̚, c, k/ in other Javanese varieties have been described as ‘lax’ and ‘tense’ (Brunelle 2010; Hayward 1999; Vander Klok et al. 2018), ‘heavy’ and ‘light’ (Fagan 1988; Hoogervorst 2009; Horne 1961), ‘slack voiced’ and ‘stiff voiced’ (Ladefoged and Maddieson 1996; Thurgood 2004), as well as ‘breathy’ and ‘clear’ (Adisasmito-Smith 2004). I

use the terms ‘heavy’ and ‘light’ to describe the phonation type of the two contrasting sets.

Malangan Javanese also has a glottal stop [ʔ], but here, this consonant is analysed as non-phonemic. In general it is a realization of /k/ in root-final position, but it also appears as a result of competing historico-phonological processes explained in §3.2.2.1.5.

There are six vowels in Malangan Javanese. The inventory is listed in Table 3.2. The distribution of allophones is given later in Table 3.5.

	Front	Central	Back
High	i <i>		u <u>
High-Mid	e <é>		o <o>
Mid		ə <e>	
Low		a <a/ò>	

TABLE 3.2: Vowel Inventory of Malangan Javanese (the orthographic representation of phonemes which differ from IPA are given in pointy brackets)

The six vowel inventory is in line with earlier descriptions of Javanese (Adisasmito-Smith 2004; Dudas 1976; Hayward 1999; Nothofer 2006; Uhlenbeck 1978; Yallop 1982). Five of the vowels have different allophonic realizations depending on the environment, except for /ə/, which is realized as [ə] everywhere. The high-mid vowels /i/ and /u/ are realized as [i] and [ʊ] in a final closed syllable and its preceding syllable. The allophones [ɛ] and [ɔ] are realizations of /e/ and /o/ in a final closed syllable. [ɛ] and [ɔ] also appear in penultimate open syllables depending on the vowel in the subsequent syllable. In addition, [ɔ] is also an allophonic representation of /a/ in a word-final open syllable. For more detailed information about the vowels, see §3.3.3.

In the Eastern Javanese dialect of Surabaya, [ɛ] and [ɔ] are described as phonemic vowels (Hoogervorst 2008; Krauß 2017). In my description of Malangan Javanese, they are analysed as the allophones of /e/ and /o/ respectively. However, they are shown to be moving into the direction of gaining phonemic status, as will be shown in the analysis of a number of Walikan words in §4.3.2.6.

The high front vowels /i/ and /u/ each have the slightly more open allophone [ɪ] and [ʊ] respectively, which occur in a final closed syllable and a penultimate open syllable. Speakers sometimes pronounce them similarly to the high-mid vowels /e/ and /o/.

3.2.2 Description of the Consonants

3.2.2.1 The Stops

In Malangan Javanese, the ‘heavy’ stops /b, ɖ, ɗ, ʃ, g/ are produced with a wider opening of the vocal folds than their ‘light’ counterparts. The heavier sound is extended to the following segment (usually a vowel), where it causes a breathy voice. The distinctive breathy pronunciation is heard more in the following vowel rather than in the consonant. The narrower glottal opening of the ‘light’ stops /p, t, ʈ, c, k/, on the other hand, generates a lighter (non-breathy) sound in the subsequent vowel.¹

Heavy consonants are phonetically represented as [Ḑ], breathy vowels as [Ṽ]. Following a homorganic nasal, the heavy consonants become voiced, and the breathy vowels do not have breathy quality, such as in *lambé* [ˈla.mbe] ‘lip’.

3.2.2.1.1 The Bilabial Stops Example (1) shows the phonemic contrast between bilabial stops /p/ and /b/.

(1)	Contrast between bilabial stops /p/ and /b/				
	#_	<i>purik</i>	/purik/	[ˈpʊ.rɪʔ]	‘cranky’
		<i>burik</i>	/burik/	[ˈbʊ.rɪʔ]	‘mottled’
	V_V	<i>rapi</i>	/rapi/	[ˈra.pi]	‘tidy’
		<i>rabi</i>	/rabi/	[ˈra.βi]	‘to marry’

In coda position, the light stop /p/ is unreleased and is realized as [p̚] in (2).

(2)	Examples of the bilabial /p/ in coda position				
	_#	<i>karep</i>	/karəp/	[ˈka.rəp̚]	‘intention’
		<i>idep</i>	/idəp/	[ˈʔi.dəp̚]	‘folded (hands)’

In the orthography preferred by the speakers, the grapheme in word-final and root-final position can be observed in a number of words, but it is realized as [p̚] (3). Word-final and root-final /b/ are found in words that are of Sanskrit and Arabic origins. In Walikan, a word with /b/ realized as [p̚] in

¹Acoustic investigations involving Central Javanese dialects speakers found that a heavy stop is followed by a breathy vowel and a light stop is followed by a modal vowel (Brunelle 2010; Vander Kloek et al. 2018).

word-final position such as *abab* [ʔa.b̥ap̚] ‘breath’ is reversed into [b̥a.b̥a], indicating that the final consonant is underlyingly /b/ and not /p/.

(3) Grapheme in root-final position

<i>abab</i>	/abab/	[ʔa.b̥ap̚]	‘breath’
<i>abab-é</i>	/ababe/	[ʔa.b̥a.pe]	‘breath-DEF’
<i>muntab</i>	/munṭab/	[mu.nṭap̚]	‘to lose one’s temper’
<i>sebab</i>	/səbab/	[sə.b̥ap̚]	‘reason’

3.2.2.1.2 The Dental Stops The dental stops /ṭ/ and /ḍ/ in Malangan Javanese are pronounced by raising the tip of the tongue to touch the back of the upper front teeth. They can occur in word-initial and word-medial position as [ṭ] and [ḍ]. The phonemic contrast between /ṭ/ and /ḍ/ can be seen in (4).

(4) Contrast between the dentals /ṭ/ and /ḍ/ in onset position

#_	<i>tòwò</i>	/ṭawa/	[ṭɔ.wɔ]	‘to offer/bargain’
	<i>dòwò</i>	/ḍawa/	[ḍɔ.wɔ]	‘long’
V_V	<i>adus</i>	/aḍus/	[ʔa.ḍʊs]	‘take a bath’
	<i>atus</i>	/aṭus/	[ʔa.ṭʊs]	‘drip dry’

In coda position, the light dental stop /ṭ/ is produced as the unreleased light stop [ṭ̚] (5).

(5) Examples of the dental /ṭ/ in coda position

_#	<i>lulut</i>	/luluṭ̚/	[lʊ.lʊṭ̚]	‘tame’
	<i>welut</i>	/wəluṭ̚/	[wə.lʊṭ̚]	‘eel’

The grapheme <d> in root-final position is used in the orthography of some words, but it is always realized as [ṭ̚] both word-finally and root-finally (6). Similar to /b/, /ḍ/ in root-final and word-final position is found in words with Sanskrit and Arabic origins. The Walikan word *Kelud* [kə.lʊṭ̚] ‘name of a mountain’ becomes [ḍ̥u.ləʔ] or [nḍ̥u.ləʔ] after an allophonic prenasalization (see §4.3.2.5). This suggests the original phoneme is /ḍ/ instead of /ṭ/.

(6) Grapheme <d> in root-final position

<i>murid</i>	/muriḍ/	[ˈmɔ.rɪḥ]	‘student’ (from Arabic)
<i>murid-é</i>	/muriḍe/	[ˈmɔ.rɪ.ḥe]	‘student-DEF’
<i>Kelud</i>	/kəlud/	[kə.ˈlɔḥ]	‘name of a mountain’
<i>abad</i>	/abad/	[ˈʔa.ḥaḥ]	‘century’ (from Arabic)

Younger speakers of Malangan Javanese can be heard pronouncing the dental stop /ḍ/ as the retroflex stop [ḍ], or an Indonesian alveolar stop [d] under influence of Malangan Indonesian. Younger speakers generally do not notice the difference in pronunciation, for example *dulur* ‘sibling’ may have different pronunciations: [ˈḍʊ.lɔr], [ˈḍʊlɔr], and [ˈdʊ.lɔr].

3.2.2.1.3 The Retroflex Stops The /t/ and /ḍ/ in Javanese are referred to as retroflex consonants in Suharno (1982), but they are less retracted than the retroflex consonants in Dravidian or Indo-Aryan languages (Blust 2013), and are described as apico-alveolar stops (Wolff and Poedjosoedarmo 1982) or alveolar stops (Horne 1974). A palatographic investigation conducted with one male speaker of Central Javanese confirms the distinction between /ṭ, ḍ/ and /t, d/ (Hayward and Muljono 1991). The retroflex stops are articulated by raising the tip of the tongue so that it touches the back of the alveolar ridge. The /ṭ/ is more retracted than its heavy counterpart /ḍ/ (Hayward and Muljono 1991).

The retroflex stops /ṭ/ and /ḍ/ occur in word-initial and word-medial position, but never in word-final position. Retroflex /ṭ/ and /ḍ/ are attested as phonemes, distinct from their dental counterparts, as shown in (7) and (8).

(7) Contrast between retroflex /ḍ/ and dental /ḍ/ in onset position

#_	<i>dhodhol</i>	/ḍoḍol/	[ˈḍʊ.ḍʊ]	‘toffee-like dessert’
	<i>dodol</i>	/ḍoḍol/	[ˈḍʊ.ḍʊ]	‘to sell’
V_V	<i>wedhi</i>	/wəḍi/	[wə.ḍi]	‘sand’
	<i>wedi</i>	/wəḍi/	[wə.ḍi]	‘afraid’

(8) Contrast between retroflex /ṭ/ and dental /ṭ/ in onset position

V_V	<i>pathi</i>	/paṭi/	[ˈpa.ṭi]	‘quite’
	<i>pati</i>	/paṭi/	[ˈpa.ṭi]	‘starch’
V_V	<i>puthu</i>	/puṭu/	[ˈpu.ṭu]	‘dessert made of coconut’
	<i>putu</i>	/puṭu/	[ˈpu.ṭu]	‘grandchild’

Malangan Javanese speakers are able to differentiate the retroflex stops [ʈ, ɖ] from the dental stops [t̪, d̪], although they sometimes pronounce the (originally) light retroflex stop /t̪/ as the light dental stop [t̪], and the (originally) heavy dental stop /d̪/ as the heavy retroflex stop [ɖ]. Thus, [pu.t̪u] ‘dessert made of coconut’ sometimes is realized as [pu.t̪u], and [b̪u.ɖaɭ] ‘to leave’ is realized as [b̪u.ɖaɭ]. This might be due to influence from Malangan Indonesian, which has only one set of *t* and *d*, the former dental, the latter alveolar (cf. §3.3.2.1).²

The fluctuation between dental, alveolar, and retroflex stops in Malangan Javanese and Indonesian indicates an ongoing phonological change, but because this is not the topic of my dissertation, I will leave it for future research. It is worth noting that the distinction between dental and retroflex phonemes is also disappearing in Surinamese Javanese, where they are merged into a dental stop (Villierius 2019). In an acoustic study conducted by Zen (2019), young students in Malang and Blitar are shown to have merged the (originally) retroflex /t̪/ with the light dental stop [t̪], and the (originally) heavy dental stop /d̪/ into the heavy retroflex stop [ɖ].

Despite variation in speakers’ realizations, in this book I use three IPA symbols to represent the *d*: a dental stop /d̪/ or a retroflex stop /ɖ/ symbols for Javanese words, and an alveolar stop /d/ symbol for Indonesian words.

3.2.2.1.4 The Velar Stops The velar stops /k/ and /g/ in Malangan Javanese show phonemic contrasts in onset position, as shown in (9).

(9)	Contrast between the velars /k/ and /g/ in onset position
#_	<i>Kelud</i> /kəluɖ/ [kə.lɔʈ] ‘name of a mountain’
	<i>gelut</i> /gəluʈ/ [gə.lɔʈ] ‘to fight’
V_V	<i>tuku</i> /t̪uku/ [t̪u.ku] ‘to buy’
	<i>tugu</i> /t̪ugu/ [t̪u.gu] ‘monument’

In word-final position, the light velar stop /k/ is realized as the glottal stop [ʔ], while the heavy velar stop /g/ is realized as an unreleased light velar stop [k̚] (10).

²See Blust (2013:191) for a brief historical overview of dental and alveolar/retroflex stops in Javanese.

- (10) Contrast between the light velar stop /k/ and the heavy velar stop /g/ in coda position

_#	<i>tutug</i>	/tʉtʉg/	[tʉ.tʉk̚]	‘finished’
	<i>tutuk</i>	/tʉtʉk/	[tʉ.tʉʔ]	‘from’
_#	<i>jejeg</i>	/ʃəʃəg/	[ʃə.ʃək̚]	‘to stand firmly’
	<i>jejek</i>	/ʃəʃək/	[ʃə.ʃəʔ]	‘to kick’

Notice that the heavy velar stop /g/ is realized as an unreleased light velar stop [k̚] root-finally (11).

- (11) Examples of /k/ in root-final position

	<i>samblég</i>	/sambleg/	[sa.mblek̚]	‘to smack’
	<i>nyamblég-i</i>	/nyamblegi/	[ɲa.mble.ki]	‘N-smack-APPL’
	<i>grojog</i>	/groʃog/	[g̚rɔ.ʃɔk̚]	‘water falling’
	<i>grojog-an</i>	/groʃogan/	[g̚rɔ.ʃɔ.kan]	‘water falling-NMLZ’

3.2.2.15 The Glottal Stop The glottal stop [ʔ] regularly appears as the realization of the light velar stop /k/ in word-final and root-final position (12).

- (12) The glottal stop [ʔ] in word-final and root-final position

	<i>bapak</i>	/bapak/	[b̚a.paʔ]	‘father’
	<i>bapak-é</i>	/bapake/	[b̚a.paʔ.e]	‘father-DEF’
	<i>kodhok</i>	/kodɔk/	[k̚ɔ.ʔɔʔ]	‘frog’
	<i>kodhok-ku</i>	/kodɔkku/	[k̚ɔ.ʔɔʔ.ku]	‘frog-POSS’
	<i>mbak-yu</i>	/mbakju/	[mbaʔ.ju]	‘older sister-pretty (older sister)’
	<i>pak-lik</i>	/paklik/	[paʔ.liʔ]	‘father-little (uncle)’
	<i>walik-an</i>	/walikan/	[wa.liʔ.an]	‘reverse-NMLZ’
	<i>yòk-òpò</i>	/jakapa/	[jɔʔ.ʔɔ.pɔ]	‘yes-what (how)’

The glottal stop [ʔ] in Malangan Javanese occurs as the result of competing processes, as shown in (12 - 19). Firstly, the glottal stop can be seen in the root-final position of morphologically complex words, see (12). The word *mbakyu* is a compound formed from *mbak* [mbaʔ] ‘older sister’ and *ayu* [ʔa.ju] > *yu* [ju] ‘pretty’. In addition, *paklik* is from the words *pak* [paʔ] ‘father’ and *cilik* [ci.liʔ] > *lik* [liʔ] ‘small’. Note that the name of the language discussed in this work, *walikan*, is also pronounced with a glottal stop in the coda of its second syllable. The root form is [wa.liʔ] ‘to reverse’, which receives the modifier suffix *-an*, yielding the form [wa.liʔ.an] ‘reversed’.

Secondly, the glottal stop [ʔ] occurs phonetically before a vowel in word-initial position. It is not phonemic, and is not represented orthographically (13).

- (13) Phonetic glottal stop in word-initial position
- | | | | |
|-------------|--------|----------|--------|
| <i>òpò</i> | /apa/ | [ʔa.pə] | ‘what’ |
| <i>aréḱ</i> | /arek/ | [ʔa.rɛʔ] | ‘kid’ |

Thirdly, the glottal stop [ʔ] is a colloquial realization of final nasals. This innovation is not regular. In a limited number of cases, words ending in /ɔn/ become /ɔʔ/, which can sometimes also change the preceding vowel from /a/ to /ɛ/ (14). Note that the forms with final nasals on the left side are still used in Central Javanese.

- (14) Glottal stop replacing nasal endings
- | | | | | | |
|----------------|-----------|---|---------------|-----------|----------|
| <i>wadon</i> | [wa.ɖɔn] | > | <i>wédok</i> | [wɛ.ɖɔʔ] | ‘woman’ |
| <i>katon</i> | [ka.tɔn] | > | <i>kétok</i> | [kɛ.tɔʔ] | ‘seen’ |
| <i>takon</i> | [ta.kɔn] | > | <i>takok</i> | [ta.kɔʔ] | ‘to ask’ |
| <i>ndeleng</i> | [ndə.ləŋ] | > | <i>ndelok</i> | [ndə.lɔʔ] | ‘to see’ |

Fourthly, in a limited number of cases the glottal stop [ʔ] also appears after the vowel /ɔ/ in the word-final position of bisyllabic words (15).

- (15) Glottal stop appearing after /ɔ/
- | | | | | |
|-------------|---------|---|----------|------------|
| <i>mòsò</i> | [mɔ.sɔ] | > | [mɔ.sɔʔ] | ‘how can?’ |
| <i>ònò</i> | [ʔɔ.nɔ] | > | [ʔɔ.nɔʔ] | ‘there is’ |
| <i>kòyò</i> | [kɔ.jɔ] | > | [kɔ.jɔʔ] | ‘as,like’ |

This is not regular, as there are numerous instances where [ɔ] in word-final position is not followed by [ʔ] such as [ʔa.pə] ‘what’, [li.mɔ] ‘five’, [ʔi.jɔ] ‘yes’, etc. There is also an exceptional case where [ɔ] in both syllables of a word are transformed into [ɛ] before receiving a word-final glottal stop, for instance, *òlò* [ʔɔ.lɔ] becomes *élék* [ʔɛ.lɛʔ] ‘ugly’.

Fifth, a historically final open syllable with high vowel /u, i/ is realized as a closed syllable with final glottal stop and lowered vowel (16). This is not a regular pattern, and is only applied to a limited number of examples observed during my fieldwork. Note that the original forms in the examples below are still used in Central Javanese.

(16) Glottal stop and vowel lowering

<i>mélu</i>	[ˈmɛ.lu]	>	<i>mélok</i>	[ˈmɛ.lɔʔ]	‘to join’
<i>tiru</i>	[ˈt̪i.ru]	>	<i>térok</i>	[ˈt̪ɛ.rɔʔ]	‘to imitate’
<i>kari</i>	[ˈka.ri]	>	<i>karék</i>	[ˈka.rɛʔ]	‘to remain’
<i>mati</i>	[ˈma.t̪i]	>	<i>maték</i>	[ˈma.t̪ɛʔ]	‘dead’
<i>tai</i>	[ˈt̪a.i]	>	<i>taék</i>	[ˈt̪a.ɛʔ]	‘shit’

Further, in a small number of cases, the glottal stop [ʔ] may also replace the consonants /h/ and /t̪/ in word-final position, as shown in (17). This is not a regular pattern. The words on the left side are still used in Central Javanese.

(17) Glottal stop replacing word-final consonant

<i>isih</i>	[ˈʔi.sih]	>	<i>isik</i>	[ˈʔi.sɪʔ]	‘still’
<i>dhilut</i>	[ˈd̪i.luʔ]	>	<i>dhiluk</i>	[ˈd̪i.luʔ]	‘a moment’
<i>tepat</i>	[t̪ə.ˈpaʔ]	>	<i>tepak</i>	[t̪ə.ˈpaʔ]	‘exactly right’

Finally, glottal stop [ʔ] appears between two identical vowels in loanwords (18), and word-medially in between consonants in loanwords (19).

(18) Glottal stop in word-medial position

<i>suun</i>	/suʔun/	[ˈsu.ʔun]	‘glass noodles’ (from Hokkien)
<i>taat</i>	/t̪aʔaʔ/	[ˈt̪a.ʔaʔ]	‘obedient’ (from Arabic)

(19) Glottal stop in word-medial position

<i>bakso</i>	/baʔso/	[ˈb̪aʔ.so]	‘meatball’ (from Hokkien)
<i>bakmi</i>	/baʔmi/	[ˈb̪aʔ.mi]	‘noodle’ (from Hokkien)

3.2.2.1.6 The Palatal Stops The palatal stops in Malangan Javanese are /c/ and /ɟ/. While neither phoneme can occur in coda position, their phonemic contrast in onset position is shown in (20).

(20) Contrast between the palatal stops /c/ and /ɟ/

#_	<i>cak</i>	/cak/	[ˈcaʔ]	‘older brother’
	<i>jak</i>	/ɟak/	[ˈɟaʔ]	‘to invite’
V_V	<i>cecek</i>	/cɛcɛk/	[ˈcɛ.cɛʔ]	‘house lizard’
	<i>jejek</i>	/ɟɛɟɛk/	[ˈɟɛ.ɟɛʔ]	‘to kick’

3.2.2.2 The Nasals

There are four nasals in Malangan Javanese, they are the bilabial nasal /m/, the alveolar nasal /n/, the palatal nasal /ɲ/, and the velar nasal /ŋ/.

3.2.2.2.1 The Bilabial and Alveolar Nasals The bilabial nasal /m/ and the alveolar nasal /n/ can occur in all positions. In word-final position, both phonemes are unreleased as [m̚] and [n̚] respectively. Their contrast is shown in (21).

- (21) Contrast between the nasals /m/ and /n/ in onset and coda position
- | | | | | |
|-----|--------------|---------|------------|----------------|
| V_V | <i>gemah</i> | /gəmah/ | [g̚ə.'mah] | 'prosperous' |
| | <i>genah</i> | /gənah/ | [g̚ə.'nah] | 'well-behaved' |
| _# | <i>param</i> | /param/ | ['pa.ram̚] | 'ointment' |
| | <i>paran</i> | /paran/ | ['pa.ran̚] | 'destination' |

The bilabial nasal /m/ is observed in initial position in a number of roots. However, the alveolar nasal in initial position is usually the result of a nasal prefix (N-) that is added to the root (discussed in §3.2.10).

- (22) The nasals /m/ and /n/ in word-initial position
- | | | | | |
|----|--------------|--------|----------|-----------------|
| #_ | <i>mari</i> | /mari/ | ['ma.ri] | 'finished' |
| | <i>n-ari</i> | /nari/ | ['na.ri] | 'N-to dance.AV' |

3.2.2.2.2 The Palatal Nasal The palatal nasal /ɲ/ can occur in onset position, but not in coda position. The phonemic status of the palatal nasal /ɲ/ is shown by contrasting it with the palatal stop /ɟ/ in (23).

- (23) Contrast between palatal nasal /ɲ/ and palatal stop /ɟ/ in onset position
- | | | | | |
|-----|--------------|--------|----------|----------|
| #_ | <i>nyòwò</i> | /ɲawa/ | ['ɲɔ.wɔ] | 'soul' |
| | <i>jòwò</i> | /ɟawa/ | ['ɟɔ.wɔ] | 'Java' |
| V_V | <i>penyu</i> | /pəɲu/ | [pə.'ɲu] | 'turtle' |
| | <i>peju</i> | /pəɟu/ | [pə.'ɟu] | 'semen' |

3.2.2.2.3 The Velar Nasal The velar nasal /ŋ/ is realized as [ŋ] in both onset and coda position. Example (24) demonstrates the phonemic status of /ŋ/ by contrasting it with the alveolar nasal /n/.

- (24) Contrast between velar nasal /ŋ/ and alveolar nasal /n/ in onset and coda position
- | | | | | |
|-----|----------------|-----------|------------|-------------|
| V_V | <i>tangi</i> | /t̚aŋi/ | [t̚a.ŋi] | ‘to get up’ |
| | <i>tani</i> | /t̚ani/ | [t̚a.ni] | ‘farmer’ |
| _# | <i>tambang</i> | /t̚ambaŋ/ | [t̚a.mbaŋ] | ‘mine’ |
| | <i>tamban</i> | /t̚amban/ | [t̚a.mban] | ‘cure’ |

3.2.2.3 The Fricatives

Malangan Javanese has two fricatives: the alveolar fricative /s/ and the glottal fricative /h/. They both can occur in onset and coda position, as shown in (25).

- (25) Contrast between alveolar fricative /s/ and glottal fricative /h/ in onset position
- | | | | | |
|-----|--------------|---------|----------|---------------|
| #_ | <i>salah</i> | /salah/ | [sa.lah] | ‘wrong’ |
| | <i>halah</i> | /halah/ | [ha.lah] | ‘exclamation’ |
| V_V | <i>sisir</i> | /sisir/ | [si.sir] | ‘comb’ |
| | <i>sihir</i> | /sihir/ | [si.hir] | ‘black magic’ |
| _# | <i>adhas</i> | /aɖas/ | [ʔa.ɖas] | ‘fennel’ |
| | <i>adhah</i> | /aɖah/ | [ʔa.ɖah] | ‘container’ |

Note that in fast speech, /h/ in word-final and root-final position may be omitted, thus *omah* /ɔmah/ ‘house’ may be pronounced as [ʔɔ.ma] and *omah-é* /ɔmahe/ ‘house-DEF’ as [ʔɔ.ma.e].

3.2.2.4 The Trill and the Lateral

The alveolar trill /r/ can occur in all positions, as can the alveolar lateral /l/. Their phonemic contrast is shown in example (26).

(26) Contrast between alveolar trill /r/ and alveolar lateral /l/ in all positions

#_	<i>regò</i>	/rəga/	[rə.ʔə]	‘price’
	<i>legò</i>	/ləga/	[lə.ʔə]	‘relieved’
V_V	<i>tari</i>	/t̪ari/	[t̪a.ri]	‘to dance’
	<i>tali</i>	/t̪ali/	[t̪a.li]	‘rope’
_#	<i>gemp̪ar</i>	/gəmp̪ar/	[g̪ə.m̪par]	‘chaos’
	<i>gemp̪al</i>	/gəmp̪al/	[g̪ə.m̪pal]	‘muscular’

3.2.2.5 The Approximants

There are two approximants in Malangan Javanese: the bilabial approximant /w/ and the palatal approximant /j/. Both have the same distribution: they can occur in onset position but never in coda position. The phonemic contrast between the approximants is shown in (27).

(27) Contrast between bilabial approximant /w/ and palatal approximant /j/ in onset position

#_	<i>yak</i>	/yak/	[jaʔ]	‘yes’
	<i>wak</i>	/wak/	[waʔ]	‘sir/mam’
V_V	<i>ayu</i>	/ayu/	[ʔa.ju]	‘pretty’
	<i>awu</i>	/awu/	[ʔa.wu]	‘ash’

3.2.3 Description of the Vowels

3.2.3.1 The High Vowels

In Malangan Javanese, the vowel /i/ is a high front vowel that is realized as [i] in word-initial, medial, and final position in open syllables, as shown in (28).

(28) Examples of the high front vowel /i/ in open syllables

#_	<i>iku</i>	/iku/	[ʔi.ku]	‘that’
C_C	<i>tibò</i>	/t̪iba/	[t̪i.b̪ə]	‘fall’
_#	<i>mari</i>	/mari/	[ma.ri]	‘after, finished’

The phonemic status of /i/ is shown in example (29) by contrasting it with its phonetically close counterpart, the mid front vowel /e/. The minimal pairs in my data contrast both vowels in word-final position.

(29) Contrast between the front vowels /i/ and /e/ in word-final position

_#	<i>pari</i>	/pari/	[ˈpa.ri]	‘paddy’
	<i>paré</i>	/pare/	[ˈpa.re]	‘bitter gourd’
_#	<i>sari</i>	/sari/	[ˈsa.ri]	‘essence’
	<i>saré</i>	/sare/	[ˈsa.re]	‘to sleep’

The high back rounded vowel /u/ is realized as [u] in word-initial, medial and final position in open syllables, as shown in (30).

(30) Examples of the high back vowel /u/ in open syllables

#_	<i>udan</i>	/uɖan/	[ˈʔu.ɖan]	‘rain’
C_C	<i>туру</i>	/turu/	[ˈtu.ru]	‘to sleep’
_#	<i>awu</i>	/awu/	[ˈʔa.wu]	‘ash’

The phonemic status of /u/ is shown in example (31), where it is contrasted with the high-mid back vowel /o/.

(31) Contrast between the back vowels /u/ and /o/

C_C	<i>wulu</i>	/wulu/	[wu.lu]	‘feather’
	<i>wolu</i>	/wolu/	[wɔ.lu]	‘eight’
_#	<i>paru</i>	/paru/	[ˈpa.ru]	‘beef lung chips’
	<i>paro</i>	/paro/	[ˈpa.ro]	‘half’

In roots that end in closed syllables, /i/ and /u/ are lowered and realized as [ɪ] and [ʊ] respectively. This also affects the high vowel in the preceding syllable, as shown in (32) and (33).

(32) Examples of allophonic [ɪ]

	<i>kirik</i>	/kirik/	[ˈkɪ.rɪʔ]	‘dog’
	<i>sikil</i>	/sikil/	[ˈsɪ.kɪl]	‘foot’
	<i>burik</i>	/burik/	[ˈbʊ.rɪʔ]	‘mottled’

(33) Examples of allophonic [ʊ]

	<i>mumbul</i>	/mumbul/	[ˈmʊ.mʊɮ]	‘to hover’
	<i>surung</i>	/suruŋ/	[ˈsʊ.rʊŋ]	‘to push’
	<i>irung</i>	/iruŋ/	[ˈʔɪ.rʊŋ]	‘nose’

It is worth noting that in a number of adjectives, the lowering of /i/ and /u/ into [ɪ] and [ʊ] exemplified in (32) and (33) is violated. Both vowels appear as their underlying forms in these following words (34).

- (34) Examples of non-lowered /i/ and /u/
- | | | | |
|----------------|-----------|-------------|------------|
| <i>cilik</i> | /cilik/ | [ˈci.liʔ] | ‘small’ |
| <i>thithik</i> | /tʰitʰik/ | [ˈtʰi.tʰiʔ] | ‘a little’ |
| <i>apik</i> | /apik/ | [ˈʔa.piʔ] | ‘good’ |
| <i>kecut</i> | /kəcut/ | [ˈkə.cuʔ] | ‘sour’ |

3.2.3.2 The High-Mid Vowels

Malangan Javanese has two high-mid vowels, including the high-mid front vowel /e/ and the high-mid back vowel /o/.

The high-mid front vowel /e/ is realized as [e] in open syllables (35).

- (35) Examples of the high-mid front vowel /e/
- | | | | | |
|-----|--------------|---------|-----------|---------------------|
| C_C | <i>pépe</i> | /pepe/ | [ˈpe.pe] | ‘to lie in the sun’ |
| _# | <i>lambé</i> | /lambe/ | [ˈla.mbe] | ‘mouth’ |

The phonemic status of /e/ is previously shown in example (29). Furthermore, example (36) shows the phonemic contrast between /e/ and /o/. The minimal pairs I found in my data contrast both vowels in word-final position.

- (36) Contrast between the high-mid vowels /e/ and /o/
- | | | | | |
|----|-------------|--------|----------|-----------------------|
| _# | <i>paré</i> | /pare/ | [ˈpa.re] | ‘a kind of vegetable’ |
| | <i>paro</i> | /paro/ | [ˈpa.ro] | ‘half’ |
| _# | <i>karé</i> | /kare/ | [ˈka.re] | ‘a kind of dish’ |
| | <i>karo</i> | /karo/ | [ˈka.ro] | ‘and, with’ |

The phonemic status of /o/ has been shown in example (31) by contrasting it with the high back vowel /u/. The high-mid back vowel /o/ is realized as [o] in open syllables depending on the following vowel (37).

- (37) Examples of the high-mid back vowel /o/ in open syllables
- | | | | | |
|----|-------------|--------|-----------|---------------------|
| #_ | <i>ombé</i> | /ombe/ | [ˈʔo.mbe] | ‘drink’ |
| _# | <i>pélo</i> | /pelo/ | [ˈpe.lo] | ‘speech impediment’ |

In closed syllables, the high-mid front vowel /e/ is lowered to [ɛ] (38) and the high-mid back vowel /o/ is lowered into [ɔ] (39). This is also the case with loanwords.

- (38) Examples of /e/ realized as [ɛ] in closed syllables
- | | | | |
|---------------|----------|-----------|-----------------------------|
| <i>térmos</i> | /termos/ | [ʔɛr.mɔs] | ‘vacuum flask’ (from Dutch) |
| <i>suwék</i> | /suwek/ | [ʔu.wɛʔ] | ‘torn’ |
| <i>kabéh</i> | /kabeh/ | [ʔka.bɛh] | ‘all’ |

- (39) Examples of /o/ realized as [ɔ] in closed syllables
- | | | | |
|---------------|----------|------------|-----------------------|
| <i>wortel</i> | /wortel/ | [ʔwɔr.təl] | ‘carrot’ (from Dutch) |
| <i>abot</i> | /aboʔ/ | [ʔa.bɔʔ] | ‘heavy’ |
| <i>berok</i> | /bərok/ | [bɔ.rɔʔ] | ‘to scream’ |

The lowering of /e/ to [ɛ] and /o/ to [ɔ] also takes place in an open syllable if the following closed syllable contains a high-mid vowel, a mid vowel or a low vowel, as shown in (40) and (41).

- (40) Examples of /e/ realized as [ɛ] before a closed syllable
- | | | | |
|--------------|---------|-----------|----------------------------|
| <i>élék</i> | /elek/ | [ʔɛ.lɛʔ] | ‘ugly’ |
| <i>kétok</i> | /keʔok/ | [ʔkɛ.tɔʔ] | ‘seen’ |
| <i>néker</i> | /nekər/ | [ʔnɛ.kər] | ‘marble’ |
| <i>éman</i> | /eman/ | [ʔɛ.man] | ‘unfortunate, regrettable’ |

- (41) Examples of /o/ realized as [ɔ] before a closed syllable
- | | | | |
|--------------|---------|-----------|-----------------------|
| <i>bobok</i> | /bobok/ | [bɔ.bɔʔ] | ‘powder’ |
| <i>korép</i> | /korep/ | [ʔkɔ.rɛp] | ‘unshowered face’ |
| <i>kober</i> | /kobər/ | [ʔkɔ.bɔr] | ‘to have enough time’ |
| <i>omah</i> | /omah/ | [ʔɔ.mah] | ‘house’ |

Further, the high-mid front vowel /e/ is realized as [ɛ] in an open syllable when the following open syllable has a high vowel or an [ɔ] which is underlyingly a low central vowel /a/ (42). The high-mid back vowel /o/ is also realized as [ɔ] in an open syllable when the following open syllable contains a high vowel or a low vowel (43).

- (42) Examples of /e/ realized as [ɛ] before an open syllable
- | | | | |
|-------------|--------|---------|--------------|
| <i>méri</i> | /meri/ | [mɛ.ri] | ‘jealous’ |
| <i>séwu</i> | /sewu/ | [sɛ.wu] | ‘thousand’ |
| <i>kérò</i> | /kera/ | [kɛ.rɔ] | ‘cross-eyed’ |
| <i>déwò</i> | /dewa/ | [dɛ.wɔ] | ‘male deity’ |

- (43) Examples of /o/ realized as [ɔ] before an open syllable
- | | | | |
|-------------|--------|----------|----------|
| <i>roti</i> | /roti/ | [rɔ.t̪i] | ‘bread’ |
| <i>wolu</i> | /wolu/ | [ʷɔ.lu] | ‘eight’ |
| <i>ora</i> | /ora/ | [ʔɔ.ra] | ‘no/not’ |

3.2.3.3 The Mid Vowel

The mid-central vowel /ə/ occurs in both open and closed syllables. It does not occur in the final position of an open word-final syllable. See example (44).

- (44) Examples of the mid-central vowel /ə/
- | | | | | |
|-----|--------------|---------|--------------|---------------|
| #_ | <i>entut</i> | /əntut/ | [ʔə.n̪t̪ʊt̪] | ‘fart’ |
| C_C | <i>wareg</i> | /warəg/ | [ʷa.rək] | ‘full, sated’ |

Example (45) shows schwa occurring in both syllables of bisyllabic roots. The stress is on the penultimate syllable containing the schwa.

- (45) Examples of the mid-central vowel /ə/ in both syllables
- | | | | |
|-----------------|----------|------------|------------------|
| <i>geger</i> | /gəgər/ | [g̊ə.g̊ər] | ‘back’ |
| <i>gendheng</i> | /gəndəŋ/ | [g̊ə.ndəŋ] | ‘crazy, idiotic’ |

In order to show that /ə/ is phonemic, it is contrasted with the low central vowel /a/, as presented in (46).

- (46) Contrast between the central vowels /ə/ and /a/
- | | | | | |
|-----|-------------|--------|----------|----------|
| #_ | <i>elus</i> | /əlus/ | [ʔə.lʊs] | ‘caress’ |
| | <i>alus</i> | /alus/ | [ʔa.lʊs] | ‘smooth’ |
| C_C | <i>legi</i> | /ləgi/ | [lə.g̊i] | ‘sweet’ |
| | <i>lagi</i> | /lagi/ | [la.g̊i] | ‘again’ |

The schwa cannot form a cluster with another vowel, and it has no allophonic variants. It is also used as an optional epenthetic vowel that breaks up consonant clusters in loanwords, or other consonant clusters for ease of pronunciation. See example (47).

- (47) Examples of epenthetic [ə]
- | | | | |
|-----------------|-----------|---------------|----------------------|
| <i>brambang</i> | /brambaŋ/ | [b̥ə.ʔa.mbaŋ] | ‘shallot’ |
| <i>klas</i> | /klas/ | [kə.las] | ‘class’ (from Dutch) |
| <i>klòsò</i> | /klasa/ | [kə.lɔ.sɔ] | ‘bamboo mat’ |

3.2.3.4 The Low Vowel

Malangan Javanese has one low vowel, that is the low central vowel /a/. It is realized as [a], as can be seen in (48).

- (48) Examples of the low central vowel /a/
- | | | | | |
|-----|--------------|--------|-----------|----------|
| #_ | <i>arék</i> | /arɛk/ | [ʔa.rɛʔ] | ‘child’ |
| C_C | <i>abang</i> | /abaŋ/ | [ʔa.b̚aŋ] | ‘red’ |
| _# | <i>ora</i> | /ɔra/ | [ʔɔ.ra] | ‘no/not’ |

The phonemic status of /a/ is demonstrated in (49), by contrasting /a/ with the high-mid front vowel /e/ and the high-mid back vowel /o/.

- (49) Contrast between low vowel /a/ and high-mid vowels /e, o/
- | | | | | |
|-----|--------------|----------|----------|--------------------|
| C_C | <i>pélat</i> | /pɛlat̚/ | [pɛ.laʔ] | ‘lisp’ |
| | <i>pélét</i> | /pɛleʔ/ | [pɛ.lɛʔ] | ‘voodoo’ |
| C_C | <i>pacak</i> | /pacak/ | [pa.caʔ] | ‘nice arrangement’ |
| | <i>pacok</i> | /pacok/ | [pa.cɔʔ] | ‘to match-make’ |

With the exception of one word *ora* ‘no/not’, exemplified in (43) and (48), in a word-final position /a/ is realized as [ɔ]. This rule is also extended to the preceding open syllable (50).

- (50) Examples of /a/ realized as [ɔ]
- | | | | | |
|----|---------------|---------|----------|----------|
| _# | <i>kebò</i> | /kəba/ | [kə.ʔɔ] | ‘sack’ |
| | <i>còrò</i> | /cara/ | [cɔ.rɔ] | ‘way’ |
| | <i>bòndhò</i> | /banda/ | [ʔɔ.ndɔ] | ‘wealth’ |

The evidence for the underlying /a/ occurs in *bandha-né* [ʔa.nda.ne] ‘DEF-wealth’, in which the low vowel /a/ is realized as [a] and not lowered to [ɔ] when a suffix is attached to the word. In Malangan Javanese, however, the vowel-lowering process is no longer completely regular and productive, though it may still affect words with the applicative suffix *-(n)i* (51). Some words with this suffix seem to preserve an older root form, while others do not (52).

(51) Examples of /a/ realized as [a] after suffixation

<i>mòrò</i>	[mɔ.rɔ]	<i>mara-ni</i>	[ma.'ra.ni]
	'to approach (intr.)'	<i>mara-APPL</i>	'to approach (tr.)'
<i>n-jògò</i>	[nʝɔ.ʝɔ]	<i>njaga-ni</i>	[nʝa.ʝa.ni]
	'to guard'	<i>n-jaga-APPL</i>	'to prevent.AV'

(52) Examples of /a/ realized as [ɔ] after suffixation

<i>tòmbò</i>	[tɔ.mbɔ]	<i>tòmbò-né</i>	[tɔ.mbɔ.ne]
	'cure'	<i>tòmbò-DEF</i>	'the cure'
<i>kòncò</i>	[kɔ.ncɔ]	<i>kòncò-ku</i>	[kɔ.ncɔ.ku]
	'friend'	<i>kòncò-1SG.POSS</i>	'my friend'
<i>mòtò</i>	[mɔ.tɔ]	<i>mòtò-mu</i>	[mɔ.tɔ.mu]
	'eye'	<i>eye-2SG.POSS</i>	'your eye'

In addition, Malangan Javanese also has at least one example where speakers realize /a/ in a root final position as both [ɔ] and [a] (53).

(53) Examples of /a/ realized as both [ɔ] and [a]

<i>sepurò-né</i>	/sepura-ne/	[sə.'pu.rɔ.ne]	[sə.'pu.ra.ne]
<i>sorry-DEF</i>	'sorry'	'sorry'	'sorry'

Examples (52)-(53) highlight the interchangeable nature of [a] and [ɔ]. This fluctuation can be evidence of ongoing language change, which indicates that speakers no longer associate [ɔ] as deriving from /a/ in root-final position. This is also supported by several examples in Walikan, as shown in §4.3.2.6.4.

3.2.3.5 Loan Consonants

Malangan Javanese and Indonesian have a large number of loanwords; many of them come from Arabic, Dutch, Portuguese, as well as English. Some loanwords contain consonants that are not present in the original segment inventory, namely /f x z s^ʃ/. Here, loanwords in Malangan Javanese and Indonesian are discussed together because they are treated similarly by speakers. Older speakers tend to assimilate these loan phonemes with Malangan Javanese/Indonesian phonemes that have the same or closest manner and place of articulation.

The labiodental fricative /f/ is realized as [p]. This is illustrated in two examples of Dutch loanwords in (54).

- (54) Examples of /f/ realized as [p]
afdruk /afdruk/ [ʔap.ɖrʊʔ] ‘copy’
foto /foʔo/ [ʔpo.ʔo] ‘photo’

The fricative velar /x/ has two Javanese/Indonesian realizations, [k] or [h] in onset and coda position, as shown in these Arabic loanwords (55).

- (55) Examples of /x/ realized as [k] and [h]
khotib /xotib/ [ʔhɔ.ʔip] [ʔkɔ.ʔip] ‘preacher’
akhlak /axlak/ [ʔah.laʔ] [ʔak.laʔ] ‘morals’

The fricative /z/ is realized as [s] or [ʃ]. It is [ʃ] in word-initial position and [s] in word-medial position. Illustrations are the Arabic loans in (56).

- (56) Examples of /z/ realized as [ʃ] and [s]
ziarah /zizarah/ [ʃi.ja.rah] ‘pilgrimage’
zakat /zakaʔ/ [ʃa.kat] ‘alm’
ijazah /ijazah/ [ʔi.ʃa.sah] ‘diploma’

The pharyngealized voiceless alveolar sibilant consonant /sʰ/ is realized as [s], as illustrated in words borrowed from Arabic in (57). It occurs in word-initial and word-medial position.

- (57) Examples of /sʰ/ realized as [s]
solat /sʰolat/ [sɔ.laʔ] ‘prayers’
asar /asʰar/ [ʔa.sar] ‘afternoon prayer’

3.2.4 Phonotactics

3.2.4.1 Consonants

All consonants can occur in both word-initial and word-medial positions. In coda position, certain consonants cannot occur. A number of heavy stops, /b ɖ g/, appear in word-final position of Arabic and Sanskrit loanwords and are realized there as their light counterparts /p, t, k/. This is in line with the result

of an acoustic investigation on a Central Javanese dialect, where heavy stops and light stops show no distinction in pitch and phonation type in word-final position (Vander Klok et al. 2018).

Table 3.3 shows the phonetic realizations of the consonants in different positions.

Position	p	b	t̚	d̚	t̚	d̚	c	ɟ	k	g	s	h	m	n	ɲ	ɳ	r	l	w	j
Syllable level																				
onset	p	b	t̚	d̚	t̚	d̚	c	ɟ	k	g	s	h	m	n	ɲ	ɳ	r	l	w	j
coda	p̚	p̚	t̚̚	t̚̚	-	-	-	-	ʔ	k̚	s	h	m̚	n̚	-	ɳ	r	l	-	-
Word level																				
initial	p	b	t̚	d̚	t̚	d̚	c	ɟ	k	g	s	h	m	n	ɲ	ɳ	r	l	w	j
medial	p	b	t̚	d̚	t̚	d̚	c	ɟ	k	g	s	h	m	n	ɲ	ɳ	r	l	w	j
final	p̚	p̚	t̚̚	t̚̚	-	-	-	-	ʔ	k̚	s	h	m̚	n̚	-	ɳ	r	l	-	-

TABLE 3.3: Phonetic realizations of Malangan Javanese consonants (=- unattested)

The distribution and phonetic realizations of Malangan Javanese consonants are summarized in (58).

(58) Distribution of consonants in Malangan Javanese

1. The heavy retroflex stops /t̚, d̚/, the palatal stops /c, ɟ/, the palatal nasal /ɲ/, and the approximants /w, j/ do not occur in coda and word-final position.
2. The phonation type distinction in bilabial, dental, and velar stops is neutralized in coda and word-final position, whereby /b/ is realized as [p̚], /d̚/ is realized as [t̚̚], and /g/ is realized as [k̚].
3. The glottal stop [ʔ] appears as the realization of /k/ in coda and word-final position.

The loan consonants can all occur in both onset and coda position.

3.2.4.2 Vowels

All vowels occur in all positions, except for the mid-central vowel /ə/, which cannot appear in word-final position if the syllable is open, as shown in Table 3.4.

Position	i	u	e	o	ə	a
word-initial	x	x	x	x	x	x
word-medial	x	x	x	x	x	x
word-final	x	x	x	x	-	x

TABLE 3.4: Malangan Javanese vowels (x= attested, -= unattested)

The high vowels /u, i/, the high-mid vowels /e, o/ and the low central vowel /a/ in Malangan Javanese each have an allophone that appears based on the type and position of the syllable, or the type of vowel that occurs in the adjacent syllable. The combinations are shown in Table 3.5. The schwa, however, does not have any allophone.

Phoneme	Penultimate closed syllable	Subsequent syllable	Example
/i/	[ɪ]	[V]	['sɪr.sətʃ] 'soursop'
/u/	[ʊ]	[V]	['kʊr.mɔ] 'date (fruit)'
/e/	[ɛ]	[V]	['tɛr.mɔs] 'thermosfl'es'
/o/	[ɔ]	[V]	['wɔr.təl] 'carrot'
Phoneme	Penultimate open syllable	Final closed syllable	Example
/i/	[V]	[ɪ]	[wa.'lɪʔ] 'to reverse'
/u/	[V]	[ʊ]	['sa.rʊŋ] 'sarong'
/i/	[ɪ]	[ɪ, ʊ]	['sɪ.kɪl] 'foot'
/u/	[ʊ]	[ʊ, ɪ]	['sʊ.rʊŋ] 'to push'
/e/	[V]	[ɛ]	['su.wɛʔ] 'torn'
/o/	[V]	[ɔ]	['ʔa.bʊʔ] 'heavy'
/e/	[ɛ]	[ɛ, ɔ, ə, a]	['sɛ.paʔ] 'to kick'
/o/	[ɔ]	[ɔ, ɛ, ə, a]	['kɔ.rɛp] 'unshowered face'
Phoneme	Penultimate open syllable	Final open syllable	Example
/e/	[ɛ]	[i, u, ɔ]	['sɛ.wu] 'thousand'
/o/	[ɔ]	[i, u, a]	['wɔ.lu] 'eight'
/a/	[V]	[ɔ]	[kə.'bʊ] 'sack'
/a/	[ɔ]	[ɔ]	['cɔ.rɔ] 'way'

TABLE 3.5: Malangan Javanese allophones (V = any other vowel)

In any other position or distribution not illustrated in Table 3.5, the phonemes appear in their underlying form. The distribution of Malangan Javanese vowels is summarized in (59).

(59) Distribution of vowels in Malangan Javanese

1. The mid central vowel /ə/ does not occur in the final position of an open word-final syllable.
2. The high vowels /i/ and /u/ are realized as [ɪ] and [ʊ] respectively in closed syllables.
3. The high vowels /i/ and /u/ are realized as [ɪ] and [ʊ] respectively in a penultimate open syllable preceding a closed syllable that contains a high vowel.
4. The high-mid vowels /e/ and /o/ are realized as [ɛ] and [ɔ] respectively in closed syllables.
5. The high-mid vowels /e/ and /o/ are realized as [ɛ] and [ɔ] respectively in a penultimate open syllable preceding a closed syllable that has a non-high (high-mid, mid, or low) vowel.
6. The high-mid front vowel /e/ is realized as [ɛ] in a penultimate open syllable preceding an open syllable that has a high vowel, or a low vowel.
7. The high-mid back vowel /o/ is realized as [ɔ] in a penultimate open syllable preceding an open syllable that has a high vowel or a low vowel.
8. The low central vowel /a/ is realized as [ɔ] word-finally.
9. The low central vowel /a/ is realized as [ɔ] in a penultimate open syllable preceding an open syllable that has a low vowel.
10. In any other positions, the phonemes appear as their underlying forms.

3.2.5 Syllable Structure

Malangan Javanese syllables have an optional onset, and the syllables can either be open or closed. The syllable structure is (C)(C)(C)V(C). The onset generally consists of one consonant, but it can also contain a consonant cluster. Diphthongs are not acceptable; there is only one vowel in the nucleus of a syllable. An overview of the syllable types is presented in (60).

(60) Overview of syllable types in Malangan Javanese

Onset	Nucleus	Coda	Position
C	V		word-initial/medial
	V		word-initial/medial
C	V	C	word-initial/medial
	V	C	word-initial/medial
CC	V		word-initial/medial
CC	V	C	word-initial/medial
CCC	V		word-initial/medial
CCC	V	C	word-initial/medial

In a cluster of two consonants, the first consonant can be an obstruent (stop/fricative), a nasal, or a glide, while the second consonant can either be an obstruent, a liquid, or a glide. The first consonant in a cluster of three consonants can be a nasal or an obstruent. The second consonant is always an obstruent, while the third consonant is a liquid. In clusters of two and three consonants that have two obstruents, the first consonant is a fricative and the second a stop. The combination of complex onsets is represented in (61).

(61) Overview of complex onsets in Malangan Javanese

Onset		Nucleus	Coda	
C _{obstruent}	C _{liquid}	V	(C)	
C _{obstruent}	C _{glide}	V	(C)	
C _{fricative}	C _{stop}	V	(C)	
C _{nasal}	C _{obstruent}	V	(C)	
C _{nasal}	C _{liquid}	V	(C)	
C _{glide}	C _{liquid}	V	(C)	
C _{nasal}	C _{obstruent}	C _{liquid}	V	(C)
C _{fricative}	C _{stop}	C _{liquid}	V	(C)

The cluster of three consonants composed of nasal + obstruent + liquid cannot occur in root-initial position, while the fricative + stop + liquid combination can be found in both root-initial and root-medial positions. The distribution of consonant clusters is discussed in §3.2.7.

3.2.6 Root

Malangan Javanese roots can be monosyllabic (Table 3.6).

Type	Example	Transcription	Gloss
CV	<i>yò</i>	/ja/	‘yes’
CVC	<i>dol</i>	/d̥ol/	‘to sell’
CCV	<i>sri</i>	/sri/	‘goddess’
CCVC	<i>blas</i>	/blas/	‘at all’
CCCVC	<i>strip</i>	/s̥trip/	‘stripe’ (from Dutch)

TABLE 3.6: Monosyllabic roots in Malangan Javanese

However, roots are generally bisyllabic, containing a single foot. The typical shape of a Malangan Javanese root is (C)(C)V(C)(C)(C)V(C), which is similar to other dialects of Javanese (Adisasmito-Smith 2004; Uhlenbeck 1978). Although a simple onset with one consonant is most frequent in native words, they can have a maximal cluster of two consonants in root-initial position. A maximum of three consonants can occur in the root-initial position of loanwords. The root-medial position allows a three consonant sequence, if the first consonant is a nasal or a fricative (Table 3.7).

Type	Example	Transcription	Gloss
V.V	<i>aé</i>	/a.e/	‘just’
V.VC	<i>aib</i>	/a.ib/	‘secret’ (from Arabic)
V.CV	<i>iki</i>	/i.ki/	‘this’
V.CVC	<i>élék</i>	/e.lek/	‘ugly’
V.CCV	<i>asri</i>	/a.sri/	‘beautiful’
V.CCVC	<i>abrit</i>	/a.briṭ/	‘red’
V.CCCV	<i>istri</i>	/i.stri/	‘wife’
V.CCCVC	<i>amblas</i>	/a.mblas/	‘gone, finished’
VC.CV	<i>arti</i>	/ar.ti/	‘meaning’
VC.CVC	<i>arwah</i>	/ar.wah/	‘spirit’
CV.V	<i>rai</i>	/ra.i/	‘face’
CV.VC	<i>taék</i>	/ta.ek/	‘shit’
CV.CV	<i>lemu</i>	/lə.mu/	‘fat’
CV.CVC	<i>wegah</i>	/wə.gah/	‘hesitant’
CV.CCV	<i>mambu</i>	/ma.mbu/	‘smelly’
CV.CCVC	<i>jeglong</i>	/jə.glonŋ/	‘hole’
CV.CCCV	<i>mantra</i>	/ma.n̥tra/	‘magic words’
CV.CCCVC	<i>listrik</i>	/li.s̥trik/	‘electricity’ (from English)
CVC.CV	<i>mergi</i>	/mər.gi/	‘road’

Type	Example	Transcription	Gloss
CVC.CVC	<i>mercon</i>	/mər.con/	‘firework’
CCV.V	<i>prau</i>	/pra.u/	‘boat’
CCV.VC	<i>blaén</i>	/bla.en/	‘worrisome’
CCV.CV	<i>driji</i>	/dri.ʃi/	‘finger’
CCV.CVC	<i>gragal</i>	/gra.gal/	‘gravel’
CCV.CCV	<i>kròndhò</i>	/kra.nɔ̃a/	‘coffin’
CCV.CCVC	<i>brambang</i>	/bra.mbaŋ/	onion’
CCV.CCCV	<i>sléndro</i>	/sle.nɔ̃ro/	‘crazy/sloppy’
CCV.CCCVC	<i>bléndrang</i>	/ble.nɔ̃raŋ/	‘mix of leftover food’
CCVC.CVC	<i>prakték</i>	/prak.tək/	‘practice’ (from Dutch)

TABLE 3.7: Bisyllabic roots in Malangan Javanese

The first consonant of a cluster that occurs in root-medial position is not analyzed as the final consonant of the preceding syllable. Evidence for this comes from Walikan, where the cluster remains intact after reversal, such as /u.mbam/ from /ma.mbu/ ‘smelly’ and /ki.stril/ from /li.ʃtrik/ ‘electricity’.

There are also some words comprising three or more syllables. They represent loanwords, toponyms, or compounds, as presented in Table 3.8.

Type	Example	Transcription	Gloss
Loanword			
CV.CV.CV	<i>sepatu</i>	/sə.pa.ʈu/	‘shoes’
Toponym			
CV.CV.CV	<i>madhura</i>	/ma.ɖu.ra/	‘an island’
Compounds			
CV.CCVC.CVC	<i>sembahyang</i>	/sə.mbah.jaŋ/	‘to pray’
CV.CV.CV.CV	<i>mòròtuwò</i>	/ma.ra.ʈu.a/	‘parent-in-law’

TABLE 3.8: Roots with more than two syllables

The word *sepatu* is a loanword from Portuguese *sapato*. The word *sembahyang* is a compound from *sembah* ‘worship’ and a borrowing from Sanskrit, *hyang* ‘god’, while *mòròtuwò* is from the Javanese words *mòrò* ‘to approach’ and *tuwò* ‘old’.

3.2.7 Consonant Clusters

The term consonant cluster refers to a sequence of more than one consonant that occurs in the same syllable. Consonant clusters are particularly interesting for this study because in Walikan their position can be reversed, yielding clusters that were originally prohibited (see §4.3.2.4). This section describes the types of cluster that are attested in Malangan Javanese. Loanwords are also included to show that language contact and borrowing have expanded the amount of possible clusters. The next chapter (§4.3.2.4) examines which of these are also attested in reversed forms.

Malangan Javanese syllables generally allow clusters of two consonants (but see (76) and (77) for examples of three-consonant clusters). There are two categories of consonant clusters. The first category is a consonant cluster that is part of the root and discussed in this section. The second category is a consonant cluster that is formed by a nasal prefix and discussed in §3.2.10.

In general there are six types of the first category of clusters of two consonants: 1) obstruent + liquid; 2) obstruent + glide; 3) fricative + stop; 4) nasal + obstruent; 5) nasal + liquid; and 6) glide + liquid. The overview of clusters of two consonants in my data is presented in Table 3.9.

	/p/	/b/	/t̪/	/d̪/	/t̪/	/d̪/	/c/	/ɟ/	/k/	/g/	/s/	/r/	/l/	/w/	/j/
/p/	-	-	-	-	-	-	-	-	-	-	-	/pr/	/pl/	-	/pj/
/b/	-	-	-	-	-	-	-	-	-	-	-	/br/	/bl/	-	/bj/
/t̪/	-	-	-	-	-	-	-	-	-	-	-	/tr̪/	/tl̪/	-	/t̪j/
/d̪/	-	-	-	-	-	-	-	-	-	-	-	/dr̪/	/dl̪/	/dw̪/	/dj̪/
/t̪/	-	-	-	-	-	-	-	-	-	-	-	/t̪r/	-	-	-
/d̪/	-	-	-	-	-	-	-	-	-	-	-	/d̪r/	-	-	/d̪j/
/c/	-	-	-	-	-	-	-	-	-	-	-	/cr/	/cl/	-	-
/ɟ/	-	-	-	-	-	-	-	-	-	-	-	/ɟr/	/ɟl/	/ɟw/	-
/k/	-	-	-	-	-	-	-	-	-	-	-	/kr/	/kl/	/kw/	/kj/
/g/	-	-	-	-	-	-	-	-	-	-	-	/gr/	/gl/	-	/gj/
/m/	/mp/	/mb/	-	-	-	-	-	-	-	-	-	/mr/	/ml/	-	-
/n/	-	-	/nt̪/	/nd̪/	/nt̪/	/nd̪/	/nc/	/nɟ/	-	-	-	-	-	-	-
/ŋ/	-	-	-	-	-	-	-	-	/ŋk/	/ŋg/	/ŋs/	/ŋr/	/ŋl/	-	-
/s/	/sp/	/st̪/	-	-	-	-	-	-	/sk/	-	-	/sr/	/sl/	/sw/	-
/w/	-	-	-	-	-	-	-	-	-	-	-	/wr/	/wl/	-	-

TABLE 3.9: Clusters of two consonants in Malangan Javanese

The combination of the two-consonant clusters is summarized in (62).

(62) Constraints on consonant cluster combinations in Malangan Javanese

1. All stops can occur as the initial consonant in a cluster.
2. The nasals /m, n, ŋ/, the fricative /s/, or the glide /w/ can also occur as the initial consonant in a cluster.
3. When the first consonant of a cluster is an obstruent (stop, fricative), the following consonant is a liquid (trill, lateral) or a glide.
4. A consonant cluster consisting of a fricative followed by a stop, /sp/ and /st/, is also possible (mostly in loanwords).
5. When the first consonant of a cluster is a nasal (/m, n, ŋ/), the following consonant is either an obstruent or a liquid.
6. When the first consonant of a cluster is a glide (/w/), the following consonant is a liquid.

The first type of consonant cluster is an obstruent that is followed by a liquid. This type can be found in root-initial and root-medial position (63) - (64).

(63) Obstruent + liquid cluster in root-initial position

/pr/	<i>praoto</i>	[pra.o.t̚o]	‘truck’
/pl/	<i>plaur</i>	[pla.ʊr]	‘troublesome’
/br/	<i>brambang</i>	[br̥a.mbaŋ]	‘shallot’
/bl/	<i>blimbing</i>	[bl̥i.mbiŋ]	‘star fruit’
/tr/	<i>trimò</i>	[tri.mə]	‘to accept’
/tl/	<i>tlògò</i>	[t̚l̥o.gə]	‘lake’
/dr/	<i>driji</i>	[d̥ri.ji]	‘finger’
/dl/	<i>dluwang</i>	[dl̥u.waŋ]	‘paper’
/tr/	<i>throthol</i>	[tr̥o.t̚ɔl]	‘to peck here and there’
/dr/	<i>dhrodhog</i>	[d̥r̥o.d̥ɔk]	‘to shiver’
/cr/	<i>cranthél</i>	[cra.n̥ɛl]	‘hanging everywhere’
/cl/	<i>clakep</i>	[cla.kəp]	‘to stop talking’
/ʃr/	<i>jrngot</i>	[ʃr̥ɔ.ŋɔt̚]	‘to stick out’
/ʃl/	<i>jléntreh</i>	[ʃl̥ɛ.n̥tr̥ɛh]	‘to explain’

/kr/	<i>krokot</i>	[ˈkrɔ.kɔʔ]	‘to chew on’
/kl/	<i>klambi</i>	[ˈkla.mbi]	‘shirt’
/gr/	<i>gragal</i>	[ˈgɾa.gəl]	‘gravel’
/gl/	<i>glagep</i>	[ˈgla.gəp]	‘to be lost for words’
/sr/	<i>srabi</i>	[ˈsra.βi]	‘a kind of pancake’
/sl/	<i>slendro</i>	[ˈsle.ɳdro]	‘sloppy’

(64) Obstruent + liquid cluster in root-medial position

/pr/	<i>kepruk</i>	[kə.ˈprɔʔ]	‘to smash’
/pl/	<i>jeplak</i>	[ʔə.ˈplaʔ]	‘to open up’
/br/	<i>sabrang</i>	[ˈsa.βraŋ]	‘the other side’
/bl/	<i>ceblok</i>	[cə.ˈβlɔʔ]	‘to fall out’
/tr/	<i>satru</i>	[ˈsa.ʔru]	‘to be at odds with’
/tl/	<i>potlot</i>	[ˈpɔ.ʔlɔʔ]	‘pencil’ (from Dutch)
/dr/	<i>budreg</i>	[ˈβu.ɳrɛk]	‘high blood pressure’
/cr/	<i>kecrit</i>	[kə.ˈcrit]	‘to eject in small quantity’
/cl/	<i>keclap</i>	[kə.ˈclap]	‘a glimpse’
/ʃr/	<i>ajrih</i>	[ˈʔa.ʃrɪh]	‘fear’
/ʃl/	<i>gojlog</i>	[ˈgɔ.ʃlɔk]	‘bully’
/kr/	<i>pòkrò</i>	[pɔ.krɔ]	‘sane’
/kl/	<i>cuklék</i>	[ˈcu.klɛʔ]	‘to break into two’
/gr/	<i>bògrég</i>	[ˈβɔ.gɾɛk]	‘broken’
/gl/	<i>jeglong</i>	[ʔə.ˈgɪlɔŋ]	‘hole’
/sr/	<i>asri</i>	[ˈʔa.sri]	‘beautiful’
/sl/	<i>aslep</i>	[ˈʔa.slɛp]	‘to enter’

The list in (64) shows that the /dl/, /tr/, and /dr/ clusters do not occur in root-medial position.

The second type of consonant cluster is an obstruent followed by a glide, as shown in (65) and (66).

(65) Obstruent + glide cluster in root-initial position

/pj/	<i>pyaji</i>	[pja.ji]	‘elite class’
/bj/	<i>byayak</i>	[bja.jaʔ]	‘careless’
/tj/	<i>tyang</i>	[tjaŋ]	‘person.II’
/dw/	<i>dwi</i>	[dwi]	‘two’ (literary)
/dj/	<i>dhyah</i>	[djaḥ]	‘noble lady’
/ɟw/	<i>jwawut</i>	[ɟwa.wʊʔ]	‘millet’
/kw/	<i>kwaci</i>	[kwa.ci]	‘salted seed’ (from Hokkien)
/kj/	<i>kyai</i>	[kja.i]	‘respected male’
/sw/	<i>swiwi</i>	[swi.wi]	‘wing’

(66) Obstruent + glide cluster in root-medial position

/pj/	<i>kepyur</i>	[kə.pjʊr]	‘in little drops’
/bj/	<i>gebyog</i>	[gə.bjɔk]	‘wooden wall’
/tj/	<i>setyò</i>	[sə.tjɔ]	‘faithful’
/dj/	<i>madyò</i>	[ma.djɔ]	‘middle’
/kw/	<i>takwa</i>	[ta.kwɔ]	‘Javanese jacket’
/kj/	<i>bakyak</i>	[ba.kjaʔ]	‘wooden sandal’

The clusters /dj/, /ɟw/ and /sw/ do not occur in root-medial position. A root-medial sequence /sw/ is observed in the word *yuswò* ‘age’, but its syllabification is [jʊs.wɔ]. The /u/ in the first syllable is lowered to [ʊ] because it occurs in a closed syllable.

Another type of consonant cluster, attested in loanwords, consists of an obstruent followed by another obstruent. In this case the first obstruent is a fricative, and the second a stop. They can occur in root-initial and root-medial position, as shown in (67) and (68).

(67) Fricative + stop cluster in root-initial position

/sp/	<i>spirtus</i>	[spr.ʔʊs]	‘liquid for lamp’ (from Dutch)
/st/	<i>stang</i>	[stʌŋ]	‘handlebar of a bike’ (from Dutch)
/sk/	<i>skop</i>	[skɔp]	‘spade’ (from Dutch)

(68) Fricative + stop cluster in root-medial position

/sp/	<i>kaspé</i>	[ka.spɛ]	‘cassava’ (from Portuguese)
/st/	<i>kasti</i>	[ka.sti]	‘a kind of baseball’ (from Dutch)
/sk/	<i>béskap</i>	[bɛ.skap]	‘double breasted jacket’ (from English)

The next type of consonant cluster, a nasal followed by an obstruent, mostly appears in root-medial position (69). This type is also referred to as a homorganic cluster, because the nasal consonant has the same place of articulation as the obstruent.

(69)	Nasal + obstruent cluster in root-medial position		
	/mp/	<i>témpé</i>	[t̚e.mpe] ‘soybean cake’
	/mb/	<i>tòmbò</i>	[t̚ɔ.mbɔ] ‘cure’
	/n̄t̚/	<i>genti</i>	[g̚ɛ.n̄ti] ‘change’
	/n̄d̚/	<i>tandur</i>	[t̚a.n̄d̚ʊr] ‘to plant’
	/n̄t̚/	<i>kanthil</i>	[ka.n̄t̚il] ‘to dangle’
	/nd̚/	<i>bòndhò</i>	[b̚ɔ.nd̚ɔ] ‘wealth’
	/nc/	<i>réncang</i>	[re.ncaŋ] ‘friend’
	/n̄ʃ/	<i>benjut</i>	[b̚ɛ.n̄ʃʊt̚] ‘lump on the head’
	/ŋk/	<i>bungkuk</i>	[b̚ʊ.ŋkʊʔ] ‘crooked’
	/ŋg/	<i>tònggò</i>	[t̚ɔ.ŋgɔ] ‘neighbor’
	/ŋs/	<i>bungsu</i>	[b̚ʊ.ŋsu] ‘last born’

Earlier descriptions of Javanese, e.g. Suharno (1982), describe clusters of a nasal + obstruent sequence in root-medial position as heterosyllabic, but in a later study by Adisasmito-Smith (2004) they are analysed as tautosyllabic (i.e. belonging to the same syllable) based on phonological patterns and acoustic analysis. The latter analysis is able to explain the historical vowel lowering process observed in words displaying this cluster, which is triggered by tautosyllabicity. The description of Walikan’s reversal rules in Chapter 4 will show that speakers consider them to be tautosyllabic; instead of being separated by syllable boundaries, they are treated as both being part of the second syllable.

In root-initial position, a small number of clusters consisting of a nasal followed by an obstruent can be observed in the abbreviated forms of longer words (70).

(70)	Nasal + obstruent cluster in root-initial position		
	<i>mbah</i>	[ˈmbah]	< [ˈsi.mbah] ‘grandparent’
	<i>ndòrò</i>	[ˈnd̚ɔ.rɔ]	< [b̚ɛ.n̄d̚ɔ.rɔ] ‘boss’
	<i>nggon</i>	[ˈŋgɔn]	< [ˈɛ.ŋgɔn] ‘place’

The same type of cluster in word-initial position also appears in the realization of certain place names (71).

- (71) Nasal + obstruent cluster in root-initial position
- | | | | |
|---------------|----------|--------------|--------------|
| <i>Bali</i> | /bali/ | [ˈmba.li] | ‘place name’ |
| <i>Blitar</i> | /blitar/ | [ˈmbli.ʈar] | ‘place name’ |
| <i>Dinòyò</i> | /ðinaja/ | [n̄di.nɔ.jɔ] | ‘place name’ |

The fifth type of consonant cluster, a nasal that is followed by a liquid, can appear both in root-initial and root-medial position (72)-(73). Note that the clusters /ŋr/ and /ŋl/ do not appear in root-initial position.

- (72) Nasal + liquid cluster in root-initial position
- | | | | |
|------|---------------|------------|--------|
| /mr/ | <i>mripat</i> | [ˈmri.paʈ] | ‘eye’ |
| /ml/ | <i>mlarat</i> | [ˈmla.raʈ] | ‘poor’ |
- (73) Nasal + liquid cluster in root-medial position
- | | | | |
|------|-----------------|------------|------------------------|
| /mr/ | <i>amrin</i> | [ʔa.mrim] | ‘boy/girlfriend’ |
| /ml/ | <i>jumlah</i> | [j̄u.mlah] | ‘sum’ |
| /ŋr/ | <i>angrem</i> | [ʔa.ŋrəm] | ‘to sit on eggs’ |
| /ŋl/ | <i>pangling</i> | [pa.ŋlm] | ‘to fail to recognize’ |

In §3.2.10, a different type of consonant cluster with a nasal in word-initial position is described. They are different from the clusters I describe here, because they are formed as a result of a nasal prefix (N-), an active verb marker, whereas the nasals in the clusters in (72) and (73) are part of the root.

Further, another type of cluster of two consonants is a glide followed by a liquid (74). In root-medial position, the cluster /wr/ is very rare, and /wl/ is not attested (75).

- (74) Glide + liquid cluster in root-initial position
- | | | | |
|------|---------------|-----------|--------------|
| /wr/ | <i>wrenò</i> | [wrə.nɔ] | ‘color’ |
| /wl/ | <i>wlingi</i> | [ˈwli.ŋi] | ‘place name’ |
- (75) Glide + liquid cluster in root-medial position
- | | | | |
|------|---------------|-----------|-------------|
| /wr/ | <i>kawruh</i> | [ka.wrɔh] | ‘knowledge’ |
|------|---------------|-----------|-------------|

In root-medial position, Malangan Javanese allows for a maximum of three consonants to occur in sequence. In native words, the first consonant in the sequence can be a homorganic nasal consonant or a fricative. The second consonant is either a stop or a fricative, while the third consonant is a liquid (76).

(76) Three consonant cluster in root-medial position

/mbj/	<i>ambyar</i>	[ʔa.mbjar]	‘shattered’
/ɲʝl/	<i>anjlog</i>	[ʔa.ɲʝlɔk]	‘plummeted’
/ndr/	<i>slendro</i>	[sle.ndro]	‘sloppy’
/ɲsl/	<i>méngslé</i>	[me.ɲsle]	‘not straight’
/str/	<i>istri</i>	[i.s̺tri]	‘wife’
/str/	<i>listrik</i>	[l̺.s̺triʔ]	‘electricity’ (from Dutch)

A three consonant cluster with a fricative as the first consonant of the sequence also appears in the root-initial position of a number of loanwords (77).

(77) Three consonant cluster in root-initial position

/spr/	<i>spréntò</i>	[sprɛ.ɲtɔ]	‘jumping rope’ (from Dutch)
/str/	<i>strip</i>	[striɸ]	‘stripe’ (from Dutch)
/skr/	<i>skripsi</i>	[skriɸ.si]	‘thesis’ (from Dutch)

In the next chapter, where the rules of reversal in Walikan are discussed, we will revisit which attested clusters in Malangan Javanese are permitted in a reversed language. They can be seen in Table 4.2 and 4.3 of §4.3.2.4.

3.2.8 Sequences of Consonants

The term ‘consonant sequences’ is used here to refer to two consonants that are adjacent to each other but that are heterosyllabic. In other words, they are separated by a syllable boundary.

Malangan Javanese words have sequences of a liquid in coda position that is followed by either an obstruent, a nasal, or a glide in the onset of the following syllable (78). This follows the Sonority Sequencing Principle, in which segments with a higher sonority precede those with a lower sonority (Clements 1990).

(78) Heterosyllabic liquid + obstruent/glide/nasal sequences

/r.t̚/	<i>arti</i>	[ʔar.t̚i]	‘meaning’
/r.d̚/	<i>pardhi</i>	[ʔar.d̚i]	‘a name’
/r.c/	<i>mercon</i>	[mər.ˈcɔn]	‘fireworks’
/r.k/	<i>murkò</i>	[mər.kɔ]	‘greedy’
/r.g/	<i>mergi</i>	[mər.ɡ̊i]	‘road’
/r.s/	<i>kersò</i>	[kər.ˈsɔ]	‘to want’
/r.m/	<i>germò</i>	[ɡ̊ər.ˈmɔ]	‘pimp’
/r.w/	<i>garwò</i>	[ɡ̊ər.wɔ]	‘spouse’

The other type of heterosyllabic consonant sequences in Malangan Javanese constitutes an obstruent in coda position followed by another obstruent in the onset of the following syllable, in loanwords only (79).

(79) Heterosyllabic obstruent + obstruent sequences

/k.t̚/	<i>praktek</i>	[prak.t̚ɛk]	‘practice’ (from Dutch)
/b.s/	<i>absara</i>	[ʔap.ˈsa.ra]	‘god, deity’ (from Sanskrit)

3.2.9 Sequences of Vowels

Vowel sequences in Malangan Javanese are separated into two syllable peaks (80).

(80) Examples of two-vowel sequences

<i>taék</i>	/t̚æ̯k/	[t̚.ɛʔ]	‘excrement’
<i>sinau</i>	/si.nau/	[ˈsi.na.u]	‘study’
<i>préi</i>	/prei/	[pre.i]	‘holiday’

Diphthongs can be found in a handful of loanwords, as shown in the following examples from Hokkien (81).

(81) Examples of diphthongs in loanwords

<i>cincao</i>	/cincao/	[cin.ˈca ^o]	‘sweet gelatinous drink’
<i>capcai</i>	/capcai/	[cap.ˈca ⁱ]	‘stir-fried vegetables’
<i>lihai</i>	/lihai/	[li.ˈha ⁱ]	‘sly’

3.2.10 Nasal Prefix (N₋)

Malangan Javanese has a nasal prefix (represented here as N-) that acts as an active verb marker, glossed as ‘AV’ below. The prefix N- is attached to the initial consonant of a bisyllabic root, and assimilates in terms of place of articulation with the following consonant when that consonant is a heavy stop. As shown in Table 3.12, the assimilated prefix N- does not replace the root-initial consonant.

Word-initial consonant	Realization of N-	Example	Gloss	Derived form	Gloss
/b/	[mb-]	/baɲiŋ/	‘squirrel’	[ˈmba.ɲiŋ]	‘to mug.AV’
/d/	[nd-]	/duŋo/	‘prayer’	[ˈndu.ŋo]	‘to pray.AV’
/d/	[nd-]	/dakon/	‘a children’s game’	[ˈnda.kon]	‘to play the game.AV’
/ɟ/	[ŋɟ-]	/jaɟan/	‘snack’	[ˈŋja.ɟan]	‘to snack.AV’
/g/	[ŋg-]	/golek/	‘to find’	[ˈŋgo.lɛʔ]	‘to find.AV’

TABLE 3.12: Roots with heavy stops in root-initial position taking prefix N- ‘AV’

When the following consonant is a light stop or a fricative, it is completely replaced or deleted, see Table 3.13. This nasal substitution process is common in many Austronesian languages (Blust 2004; Cohn 1990; Kurniawan 2016).

Word-initial consonant	Realization of N-	Example	Gloss	Derived form	Gloss
/p/	[m-]	/paŋan/	'to eat'	[^h ma.ŋan]	'to eat.AV'
/t̚/	[n-]	/t̚əkəl/	'tile'	[^h nɛ.kəl]	'to put tile.AV'
/t/	[n-]	/tuʈuk/	'to knock'	[^h nʊ.ʈʊʔ]	'to knock.AV'
/c/	[ŋ-]	/cikrak/	'waste-basket'	[^h ni.kraʔ]	'to put the waste in the basket.AV'
/k/	[ŋ-]	/kəmpit̚/	'to carry under arm'	[^h ŋə.mpit̚]	'to carry under arm.AV'
/s/	[ŋ-]	/suruŋ/	'to push'	[^h ŋʊ.rʊŋ]	'to push.AV'
/h/	[ŋ-]	/hojaŋ/	'to shake'	[^h ŋʊ.jak]	'to shake.AV'

TABLE 3.13: Roots with light stops and fricatives in root-initial position taking prefix N- 'AV'

In Table 3.14, the prefix N- is realized as a velar nasal before root-initial consonants that are either the liquids /r, l/ or the approximant /j/. When the root-initial consonant is the approximant /w/, the prefix N- is realized as [m].

Word-initial consonant	Realization of N-	Example	Gloss	Derived form	Gloss
/r/	[ŋr-]	/rabi/	'to marry'	[ʔŋra.βi]	'to marry someone.AV'
/l/	[ŋl-]	/laut/	'sea'	[ʔŋla.ʊʔ]	'to sail.AV'
/l/	[ml-]	/laju/	'run'	[ʔmlaju]	'to run.AV'
/j/	[ŋj-]	/jakin/	'to believe'	[ʔŋja.ki.ni]	'to believe in something.AV'
/w/	[m-]	/wedok/	'woman'	[ʔmɛ.ɖɔʔ]	'to have an affair.AV'

TABLE 3.14: Roots with sonorants in root-initial position taking prefix N-‘AV’

In a number roots with initial /l/, such as *mlayu* ‘to run’, *mlaku* ‘to walk’, and *mlebu* ‘to enter’, the attached nasal prefix is [m-] instead of [ŋ-]. In this case speakers no longer realize that the initial [m-] is a prefix (and historically an infix [-um-]) and consider it part of the root. A more detailed explanation of the prefixes can be seen in Appendix D.

Table 3.15 shows that when the root is monosyllabic, or when the stem has a vowel in its initial position, the nasal prefix marker is always the velar nasal /ŋ/. Note that the monosyllabic stem receives an epenthetic vowel, /ə/, after the nasal prefix.

Root	Gloss	Realization of N-	Derived form	Gloss
/dɔl/	'to sell'	[ŋə-]	[ŋə.ɖɔl]	'to sell.AV'
/pek/	'to take away'	[ŋə-]	[ŋə.pɛʔ]	'to take away.AV'
/aɖah/	'container'	[ŋ-]	[ŋa.ɖa.hi]	'to put in the container.AV'

TABLE 3.15: Nasal prefix /ŋ-/

When the nasal prefix is attached to a root with two consonants in the initial onset position, they form clusters of three consonants in word-initial position, as illustrated in Table 3.16.

Root	Gloss	Nasal pre-fix	Derived form	Gloss
/blakrak/	'to roam'	[m-]	[mbla.kraʔ]	'to roam.AV'
/gladrah/	'nonsense'	[ŋ-]	[ŋgla.ɖraʔ]	'to do nonsense.AV'
/ʃronoʔ/	'to stick out'	[n-]	[nʃrɔ.ŋoʔ]	'to stick out.AV'

TABLE 3.16: Clusters of three consonants

In sum, the nasal prefix in Malangan Javanese forms numerous words with a nasal consonant in the initial position. It also creates clusters of two or three consonants with a nasal as the first consonant in the initial position. However, they should be differentiated from consonant clusters that occur within the roots, discussed in §3.2.7.

3.2.11 Reduplication

Reduplication is a feature often found in languages across the Austronesian family (Blust 2013; Klamer 2002). It can be defined as “the repetition of a word or phonological material within a word for semantic or grammatical purposes” (Miyake 2011:46). Reduplication patterns can be seen as a type of affixation, but “since they arise from copying the base, reduplication patterns

occupy an ambivalent position between morphology and phonology...” (Blust 2013:406). There are three types of reduplication in Malangan Javanese: 1) full reduplication of a root or derived word; 2) full reduplication that is accompanied by vowel alternation; and 3) partial reduplication. Partial reduplication is not discussed here because it does not appear in my Walikan data.

Full reduplication of roots in Javanese can be applied to nouns, verbs, adverbs, adjectives, and numerals. Reduplication is used to express different meanings, such as plurality, resemblance, repetition, manner, attenuation, intensity, or sequence (82).³

³See Miyake (2011) for a more detailed discussion on the semantic function of full reduplication and reduplication with vowel alternation in Javanese.

(82) Reduplications in Malangan Javanese

Nominal base	<i>kòncò</i>	‘friend’
	<i>kòncò-kòncò</i>	‘friends’
	RDP~friend	(indicating plurality)
Nominal base	<i>ibu</i>	‘mother’
	<i>ibu-ibu</i> ⁴	‘resembling a woman’
	RDP~mother	(indicating resemblance)
Verbal base	<i>bengok</i>	‘to scream’
	<i>bengok-bengok</i>	‘to scream on and on’
	RDP~scream	(indicating repetition)
Adverbial base	<i>alon</i>	‘slow’
	<i>alon-alon</i>	‘slowly’
	RDP~slowly	(indicating manner)
Adjectival base	<i>ijo</i>	‘green’
	<i>ijo-ijo</i>	‘greenish’
	RDP~green	(indicating attenuity)
Adjectival base	<i>isuk</i>	‘morning’
	<i>isuk-isuk</i>	‘very early in the morning’
	RDP~morning	(indicating intensity)
Numeral base	<i>telu</i>	‘three’
	<i>telu-telu</i>	‘three by three’
	RDP~three	(indicating sequence)

⁴Note that *ibu-ibu* and related examples can also indicate plurality (‘mothers, ladies’), depending on the context of usage.

Affixes are attached after reduplication, indicating that they are not part of the reduplicated base (83).

- (83) Reduplication of roots
- | | | |
|--------------|-----------------------|---------------------------------|
| Nominal base | <i>kòncò-kòncò-né</i> | ‘his/her friends’ |
| | [RDP~friend]-3SG.POSS | |
| Nominal base | <i>bal-bal-an</i> | ‘to play football’ |
| | [RDP~ball]-MOD | |
| Nominal base | <i>uwong-uwongan</i> | ‘doll’ |
| | [RDP~person]-an | |
| Verbal base | <i>ke-pisah-pisah</i> | ‘being separated to many parts’ |
| | PASS-[RDP~separate] | |

The second example in (83) shows that the suffix *-an*⁵ is attached after reduplication. The pattern reduplication + *-an* is used to derive an inanimate meaning from an animate being (Miyake 2011). In (84), the suffix *-an* is used as a nominalizer to change a verb into a noun. In this case *-an* is attached before reduplication to express plurality.

- (84) Reduplication of derived words
- | | | |
|--------------|--------------------------|-----------------|
| Nominal base | <i>pangan</i> | ‘to eat’ |
| | <i>pangan-an</i> | ‘food’ |
| | [food-NMLZ] | |
| | <i>panganan-panganan</i> | ‘a lot of food’ |
| | RDP~[food-NMLZ] | |
| Nominal base | <i>dulin</i> | ‘to play’ |
| | <i>dulin-an</i> | ‘toy’ |
| | [toy-NMLZ] | |
| | <i>dulinan-dulinan</i> | ‘many toys’ |
| | RDP~[toy-NMLZ] | |

The reduplicated part of a verbal base may have a different vowel than the root base. This principle in Javanese is called *dwilinggò salin swòrò* ‘reduplication with vowel alteration’, and is used to express repetitive movement.

⁵*-an* is productive in Javanese. It can be attached to nouns, verbs, and adjectives, with a range of different functions. See Robson (2002) for its functions in standard Javanese.

The final vowel in the root base is replaced with /a/ to create the reduplicated form. If the penultimate vowel of the base is /a/, it becomes /ɔ/ in this type of reduplication. The reduplicated form is put before the original form (85).

- (85) Reduplication with different vowel
- | | | |
|-------------|--------------------|--------------------------|
| Verbal base | <i>tuku</i> | ‘to buy’ |
| | <i>tuka-tuku</i> | ‘to buy again and again’ |
| | RDP-buy | |
| Verbal base | <i>walik</i> | ‘to reverse’ |
| | <i>wɔlak-walik</i> | ‘to reverse on and on’ |
| | RDP-reverse | |
| Verbal base | <i>mlayu</i> | ‘to run’ |
| | <i>mloya-mlayu</i> | ‘to run here and there’ |
| | RDP-run | |

In Walikan, reduplication is used in the same way and to express the same types of meaning (see §4.4) as in Malangan Javanese.

3.2.12 Stress

Word stress does not affect the meaning of words in Malangan Javanese, nor in Javanese varieties in general. The penultimate syllable in Malangan Javanese is generally stressed.⁶ When the penultimate syllable contains /ə/, the stress is moved to the final syllable, except in two conditions: 1) if the final syllable also has a schwa, and 2) if the final syllable has an NC cluster. In such situations the stress remains in the penultimate syllable. This general pattern is applied to bisyllabic and trisyllabic words (86).

- (86) Stress patterns in bisyllabic and trisyllabic words
- | | | | |
|-----------------|-------------|---------------|---------------------|
| <i>manuk</i> | /manuk/ | [ˈma.nʊʔ] | ‘bird’ |
| <i>telu</i> | /t̚əlu/ | [t̚ə.lu] | ‘three’ |
| <i>thekel</i> | /t̚əkəl/ | [t̚ə.kəl] | ‘muscular’ |
| <i>Madhura</i> | /maɖura/ | [ma.ɖu.ra] | ‘place name’ |
| <i>tembelek</i> | /t̚əmbələk/ | [t̚ə.mbə.lɛʔ] | ‘chicken droppings’ |

⁶This is consistent with the stress patterns of most Austronesian languages (see Klammer (2002:937); Blust (2013:251)).

In quadrisyllabic compound words (as discussed in §3.2.6), stress patterns are applied to each base root in its penultimate syllable.

- (87) Stress patterns in words with more than two syllables
kòlòmònggò /kalamangka/ [ˈkɔ.lɔ.ˈmɔ.ŋgɔ] ‘spider’
mòròtuwò /maratua/ [ˈmɔ.rɔ.ˈtʰu.wɔ] ‘parent-in-law’

Stress is confined within the root to which affixes are attached. This means that attaching prefixes or affixes does not affect the stress patterns of the root (88).

- (88) Stress patterns based on roots
pangan /paŋan/ [ˈpa.ŋan] ‘eat’
di-pangan /dʲipaŋan/ [dʲi.ˈpa.ŋan] ‘PASS-eat’
pangan-an /paŋanan/ [ˈpa.ŋa.nan] ‘eat-NMLZ’

3.3 Malangan Indonesian

Malangan Indonesian refers to the local dialect of Indonesian that is spoken in the area of Malang. The people of Malang are bilingual in Javanese and Indonesian. For most of them, Malangan Javanese is their mother tongue. They generally learn standard Indonesian in school and colloquial Indonesian from the media and their peers (see §1.3.2).

The following subsections describe the phonology of Malangan Indonesian with a focus on how it differs from Malangan Javanese, but also how the two varieties influence each other.

3.3.1 Segment Inventory

In this section I discuss the phonemes of Malangan Indonesian. Malangan Indonesian has 18 consonants, as presented in Table 3.17.

	Bilabial	Dental	Alveolar	Palatal	Velar	Glottal
‘Light Stops’	p	t̚		c	k	
‘Heavy Stops’	b		d	ʃ <j>	g	
Nasals	m		n	ɲ <ny>	ŋ <ng>	
Fricatives			s			h
Trill			r			
Lateral			l			
Ap-proximants	w			j <y>		

TABLE 3.17: Consonant inventory of Malangan Indonesian (the orthographic representations of phonemes which differ from IPA are given in pointy brackets)

There are six vowels in Malangan Indonesian. The inventory is listed in Table 3.18. The distribution of allophones is given later in Table 3.21.

	Front	Central	Back
Close	i		u
High-Mid	e <é>		o
Mid		ə <e>	
Low		a	

TABLE 3.18: Vowel inventory of Malangan Indonesian (the orthographic representations of phonemes which differ from IPA are given in pointy brackets)

Similar to Malangan Javanese, the high vowels /i/ and /u/ each have a slightly lower allophone [ɪ] and [ʊ] respectively. Similar to Malangan Javanese, [ɛ] and [ɔ] are allophones of the high-mid vowels /e/ and /o/. The allophones are conditioned by the syllable structure of the root: they appear in closed syllables and in open syllables before a closed syllable containing a high-mid vowel, a mid vowel, or a low vowel. The allophones also appear in an open syllable when the following open syllable has a high vowel or a low vowel.

3.3.2 Description of the Consonants

3.3.2.1 The Stops

The stops in Malangan Indonesian comprise the following sets: /p, t̚, c, k/ and /b, d, ʃ, g/. Descriptions of Indonesian varieties have characterized both sets as voiced and voiceless respectively (Lapoliwa 1981; Soderberg and Olson 2008). However, based on my fieldwork observations, Malangan Indonesian speakers who speak Javanese as their first language realize both sets as voiceless and differentiate them in tenseness. Similar to the stops in Malangan Javanese, the breathy pronunciation can be heard in the vowels that occur after heavy stop consonants (cf. §3.2.2.1). The heavy voiced consonants are represented with an added superscript [C̣].

The stops in Malangan Indonesian occur at five places of articulation: bilabial, dental, alveolar, palatal, and velar. The /t̚/ in Malangan Indonesian is dental, while the /d/ is a heavy alveolar stop. The /d/ is realized by raising the tongue tip touching the alveolar ridge. This is different from Malangan Javanese, which has a set of heavy and light dental stops /t̚, d̚/ and a set of heavy and light retroflex stops /t̚, d̚/.

The phonemic contrast between the stops in Malangan Indonesian in word-initial and word-medial position is shown in (89) and (90).

(89) Contrast between the stops in word-initial position

/p/ - /b/	<i>pagi</i>	/p̚agi/	[ˈpa.ŋi]	‘morning’
	<i>bagi</i>	/ba.ŋi/	[ˈba.ŋi]	‘to share’
/t̚/ - /d/	<i>tahan</i>	/t̚ahan/	[ˈt̚a.han]	‘hold’
	<i>dahan</i>	/dahan/	[ˈḍa.han]	‘branch’
/c/ - /ʃ/	<i>cari</i>	/cari/	[ˈca.ri]	‘to find’
	<i>jari</i>	/ʃari/	[ˈʃa.ri]	‘finger’
/k/ - /g/	<i>kali</i>	/kali/	[ˈka.li]	‘time’
	<i>gali</i>	/gali/	[ˈg̣a.li]	‘to dig’

- (90) Contrast between the stops in word-medial position
- | | | | | |
|-----------|--------------|---------|-----------|-----------------|
| /p/ - /b/ | <i>kapur</i> | /kapur/ | [ka.pʊr] | ‘chalk’ |
| | <i>kabur</i> | /kabur/ | [ka.bʊr] | ‘to run away’ |
| /t/ - /d/ | <i>roti</i> | /roṭi/ | [rɔ.ṭi] | ‘bread’ |
| | <i>rodi</i> | /roḍi/ | [rɔ.ḍi] | ‘forced labour’ |
| /c/ - /ɟ/ | <i>kecap</i> | /kəcap/ | [kə.ˈcap] | ‘to taste’ |
| | <i>kejap</i> | /kəɟap/ | [kə.ˈɟap] | ‘to wink’ |
| /k/ - /g/ | <i>akar</i> | /akar/ | [ʔa.kar] | ‘root’ |
| | <i>agar</i> | /agar/ | [ʔa.ɡar] | ‘in order that’ |

In word-final position, the light stops /p/ and /t/ are unreleased and realized as [p̚] and [t̚] (91).

- (91) Examples of /p/ and /t/ in coda position
- | | | | | |
|----|--------------|---------|-----------|---------|
| _# | <i>asap</i> | /asap/ | [ʔa.sap̚] | ‘smoke’ |
| | <i>kabut</i> | /kabuṭ/ | [ka.bʊṭ̚] | ‘fog’ |

Similar to Malangan Javanese, in word-final position the palatal stops /c/ and /ɟ/ are not permitted. In root-final position the heavy stops /b/ and /d/ are always realized as their light stop counterparts (92).

- (92) Examples of /b/ and /d/ in coda and root-final position
- | | | | | |
|--|----------------------|--------------|--------------------|---------------------------|
| | <i>jawab</i> | /jawab/ | [j̥a.wap̚] | ‘to answer’ (from Arabic) |
| | <i>jawab-an</i> | /jawaban/ | [j̥a.wa.pan̚] | ‘an answer’ |
| | <i>abjad</i> | /abjad/ | [ʔap̚.j̥aḍ̚] | ‘alphabet’ (from Arabic) |
| | <i>peng-abjad-an</i> | /pəŋabjadan/ | [pə.ŋap̚.j̥a.ṭan̚] | ‘alphabetization’ |

The heavy velar stop /g/ is also realized as the light velar stop [k] in word-final position, including in loanwords such as *blog* [ˈblɔk] ‘weblog’ and *wig* [ˈwik] ‘artificial hair’. On the other hand, the light velar stop /k/ is realized as a glottal stop [ʔ] in root-final position (93) as is the case in Malangan Javanese. Likewise, the glottal stop [ʔ] also occurs phonetically before a vowel-initial onset, such as in *akan* [ʔa.kan̚] ‘will’.

- (93) Examples of [ʔ] in root-final position
- | | | | | |
|----|-----------------|------------|----------------|-----------------|
| _# | <i>tarik</i> | /tarik/ | [ṭa.rɪʔ] | ‘to pull’ |
| | <i>tarik-an</i> | /ṭarikan/ | [ṭa.rɪʔ.an̚] | ‘pulling lever’ |
| | <i>gerak</i> | /gərak/ | [ɡ̊ə.ˈraʔ] | ‘to move’ |
| | <i>gerak-an</i> | /gəranken/ | [ɡ̊ə.ˈraʔ.an̚] | ‘movement’ |

Malangan Indonesian speakers can be distinguished from monolingual Indonesian speakers or Indonesian speakers of other regional origins on the basis of their breathy pronunciation of a vowel that occurs after a heavy stop consonant, as well as their tendency to realize /k/ as [ʔ] in root-final position and phonetically before a word-initial vowel. Due to the voiceless stops and the tendency of realizing /k/ as a glottal stop, Malangan Indonesian speakers are considered *medhòk*, a Javanese word that means ‘provincial, heavily accented’ (also see Adisasmito-Smith (2004:29)).

3.3.2.2 The Nasals

The nasals /m, n, ɲ, ŋ/ in Malangan Indonesian can occur in word-initial and word-medial position, similar to the nasals in Malangan Javanese. Their phonemic contrasts are shown in (94) and (95).

(94) Contrast between nasals in word-initial position

/m/ - /n/	<i>mémék</i>	/memek/	[mɛ.mɛʔ]	‘vagina’
	<i>nénék</i>	/nenek/	[nɛ.nɛʔ]	‘grandmother’
/ɲ/ - /ʃ/	<i>nyala</i>	/ɲala/	[ɲa.la]	‘flame’
	<i>jala</i>	/ʃala/	[ʃa.la]	‘fish net’
/ŋ/ - /k/	<i>ngéong</i>	/ŋeŋ/	[ŋɛ.jɔŋ]	‘to meow’
	<i>kéong</i>	/keŋ/	[kɛ.jɔŋ]	‘shell’

(95) Contrast between nasals in word-medial position

/m/ - /n/	<i>semang</i>	/səmaŋ/	[sə.maŋ]	‘host’
	<i>senang</i>	/sənaŋ/	[sə.naŋ]	‘happy’
/ɲ/ - /ʃ/	<i>punya</i>	/puɲa/	[pu.ɲa]	‘have’
	<i>puja</i>	/puʃa/	[pu.ʃa]	‘to worship’
/ŋ/ - /g/	<i>dengan</i>	/dəŋan/	[də.ŋan]	‘with’
	<i>degan</i>	/dəgan/	[də.ɡan]	‘young coconut’

All nasals can occur in word-final position, except for the palatal nasal /ɲ/. In word-final position /m/ and /n/ are unreleased as [m̚] and [n̚] respectively (96).

- (96) Contrast between nasals in word-final position
- | | | | | |
|-----------|---------------|---------|-------------------------|-------------|
| /m/ - /n/ | <i>awam</i> | /awam/ | [ʔa.wam ³] | ‘common’ |
| | <i>awan</i> | /awan/ | [ʔa.wan ³] | ‘cloud’ |
| /ŋ/ - /m/ | <i>serang</i> | /səraŋ/ | [sə.ʔaŋ] | ‘to attack’ |
| | <i>seram</i> | /seram/ | [sə.ʔa.m ³] | ‘scary’ |
| /ŋ/ - /n/ | <i>sarang</i> | /saraŋ/ | [sa.ʔaŋ] | ‘nest’ |
| | <i>saran</i> | /saran/ | [sa.ra.n ³] | ‘advise’ |

3.3.2.3 The Fricatives

Malangan Indonesian has two fricatives, the alveolar fricative /s/ and the glottal fricative /h/. Both can occur in all positions, as shown in the examples in (97).

- (97) Contrast between the alveolar fricative /s/ and the glottal fricative /h/ in all positions
- | | | | | |
|-----|---------------|----------|-----------|-----------------|
| #_ | <i>sama</i> | /sama/ | [sa.ma] | ‘alike’ |
| | <i>hama</i> | /hama/ | [ha.ma] | ‘pest’ |
| V_V | <i>dasi</i> | /dasi/ | [d̥a.si] | ‘tie’ |
| | <i>dahi</i> | /dahi/ | [d̥a.hi] | ‘forehead’ |
| _# | <i>tumpas</i> | /tumpas/ | [tu.mpas] | ‘to annihilate’ |
| | <i>tumpah</i> | /tumpah/ | [tu.mpah] | ‘spilled’ |

3.3.2.4 The Trill and the Lateral

The alveolar trill /r/ occurs in all positions, as does the alveolar lateral /l/. Their phonemic contrast is shown in (98).

- (98) Contrast between alveolar trill /r/ and alveolar lateral /l/ in all positions
- | | | | | |
|-----|-------------|--------|----------|----------------------|
| #_ | <i>rusa</i> | /rusa/ | [ru.sa] | ‘deer’ |
| | <i>lusa</i> | /lusa/ | [lu.sa] | ‘day after tomorrow’ |
| V_V | <i>beri</i> | /bəri/ | [b̥ə.ʔi] | ‘to give’ |
| | <i>beli</i> | /bəli/ | [b̥ə.ʔi] | ‘to buy’ |
| _# | <i>akar</i> | /akar/ | [ʔa.kar] | ‘root’ |
| | <i>akal</i> | /akal/ | [ʔa.kal] | ‘sense’ |

3.3.2.5 The Approximants

There are two approximants in Malangan Indonesian, the bilabial approximant /w/ and the palatal approximant /j/. Both have a similar distribution: they can occur in onset position but never in coda position. The phonemic contrast between the approximants is shown in (99).

(99) Contrast between bilabial approximant /w/ and palatal approximant /j/ in onset position

#_	<i>wawasan</i>	/wawasan/	[wa.'wa.san ⁷]	'insight'
	<i>yayasan</i>	/jajasan/	[ja.'ja.san ⁷]	'foundation'
V_V	<i>rawa</i>	/rawa/	[ra.wa]	'swamp'
	<i>raya</i>	/raja/	[ra.ja]	'large, great'

3.3.3 Description of the Vowels

3.3.3.1 The High Vowels

There are two high vowels in Malangan Indonesian, the unrounded front vowel /i/ and the rounded back vowel /u/. In both onset and coda position, /i/ is realized as [i] (100), and /u/ as [u] (101).

(100) Examples of the high front vowel /i/ in open syllables

#_	<i>ini</i>	/ini/	[⁷ i.ni]	'this'
C_C	<i>silang</i>	/silanj/	[⁷ si.lanj]	'to cross'
_#	<i>jari</i>	/jari/	[j ⁷ a.ri]	'finger'

(101) Examples of the high back vowel /u/ in open syllables

#_	<i>udang</i>	/udaŋ/	[⁷ u.ɗaŋ]	'shrimp'
C_C	<i>kubah</i>	/kubah/	[ku.b ⁷ ah]	'dome'
_#	<i>baru</i>	/baru/	[b ⁷ a.ru]	'new'

The phonemic status of /i/ is shown in example (102) by contrasting it with its phonetically close counterpart, the mid front vowel /e/. The minimal pair in (102) contrasts both vowels in coda position.

- (102) Contrast between the front vowels /i/ and /e/ in coda position
- | | | | | |
|-----|-------------|---------|------------------------|------------------------|
| C_C | <i>bio</i> | /bio/ | [^h b̥i.jo] | ‘organic’ (from Dutch) |
| | <i>béo</i> | /beo/ | [^h b̥e.jo] | ‘a kind of bird’ |
| _# | <i>tapi</i> | /t̥api/ | [^h t̥a.pi] | ‘but’ |
| | <i>tapé</i> | /t̥ape/ | [^h t̥a.pe] | ‘fermented cassava’ |

The phonemic status of /u/ is shown in example (103) by contrasting it with the open-mid back vowel /o/.

- (103) Contrast between the back vowels /u/ and /o/
- | | | | | |
|-----|-------------|--------|------------------------|--------------|
| #_ | <i>ulah</i> | /ulah/ | [^h ?u.lah] | ‘act’ |
| | <i>olah</i> | /olah/ | [^h ?o.lah] | ‘to process’ |
| C_C | <i>pula</i> | /pula/ | [^h pu.la] | ‘also’ |
| | <i>pola</i> | /pola/ | [^h po.la] | ‘pattern’ |

Following the vowel lowering rules in Malangan Javanese, in a closed syllable and its preceding syllable both vowels can be lowered into [ɪ] and [ʊ]. Malangan Indonesian speakers may realize *burung* [^hb̥u.ruŋ] ‘bird’ as [^hb̥ʊ.rʊŋ] and *bibir* [^hb̥i.b̥iɾ] ‘lip’ as [^hb̥ʊ.b̥iɾ].

3.3.3.2 The High-Mid Vowels

Malangan Indonesian has two high-mid vowels, the high-mid front vowel /e/ and the high-mid back vowel /o/. The phonemic status of /e/ was previously shown in example (102). The high-mid front unrounded vowel /e/ is realized as [e] in an open syllable, as exemplified in (104).

- (104) Examples of the high-mid front vowel /e/
- | | | | | |
|-----|-------------|--------|------------------------|-------------|
| C_C | <i>béda</i> | /beda/ | [^h b̥e.ɖa] | ‘different’ |
| _# | <i>soré</i> | /sore/ | [^h so.re] | ‘evening’ |

The phonemic status of /o/ has been shown in example (103). The high-mid rounded vowel /o/ is realized as a high-mid back rounded vowel [o] in an open syllable (105).

- (105) Examples of the high-mid back vowel /o/
- | | | | | |
|-----|-------------|---------|------------------------|-----------|
| #_ | <i>oléh</i> | /oleh/ | [^h ?o.leh] | ‘by’ |
| C_C | <i>soré</i> | /sore/ | [^h so.re] | ‘evening’ |
| _# | <i>teko</i> | /t̥eko/ | [^h t̥e.ko] | ‘jug’ |

In closed syllables, Malangan Indonesian speakers tend to lower and centralize /e/ into [ɛ] and /o/ into [ɔ] (106).

- (106) Examples of /e/, /o/ realized as [ɛ], [ɔ] in closed syllables
- | | | | |
|---------------|----------|-------------|-------------------------|
| <i>sersan</i> | /sersan/ | [ˈsɛr.sanˀ] | ‘sergeant’ (from Dutch) |
| <i>borgol</i> | /borgol/ | [ˈbɔr.ɡɔl] | ‘handcuffs’ |
| <i>karet</i> | /karet/ | [ˈka.rɛt̚] | ‘plastic’ |
| <i>lapor</i> | /lapor/ | [ˈla.pɔr] | ‘to report’ |

The process is also extended to the vowel of an open syllable that occurs before a closed syllables containing a high-mid or a low vowel (107).

- (107) Examples of /e/, /o/ realized as [ɛ], [ɔ] before a closed syllable
- | | | | |
|---------------|----------|-----------|-------------|
| <i>bérés</i> | /beres/ | [ˈbɛ.rɛs] | ‘ready’ |
| <i>tolong</i> | /tolong/ | [ˈtɔ.lɔŋ] | ‘to help’ |
| <i>énak</i> | /enak/ | [ˈɛ.naʔ] | ‘delicious’ |

The allophones [ɛ] and [ɔ] also occur in an open syllable if the following syllable is an open syllable that contains a high or low vowel (108).

- (108) Examples of /e/, /o/ realized as [ɛ], [ɔ] before an open syllable
- | | | | |
|--------------|---------|-----------|----------------------------|
| <i>kéju</i> | /keʝu/ | [ˈkɛ.ʝu] | ‘cheese’ (from Portuguese) |
| <i>péta</i> | /pet̪a/ | [ˈpɛ.ʈa] | ‘map’ (from Sanskrit) |
| <i>rompi</i> | /rompi/ | [ˈrɔ.mpi] | ‘waistcoat’ (from Dutch) |
| <i>kota</i> | /koʈa/ | [ˈkɔ.ʈa] | ‘city’ (from Sanskrit) |

3.3.3.3 The Mid Vowel

The mid central vowel /ə/ occurs in word-initial and word-medial position of both open and closed syllable. It does not occur in word-final position. See example (109).

- (109) Examples of the mid central vowel /ə/
- | | | | | |
|-----|---------------|----------|-------------|------------|
| #_ | <i>entah</i> | /ənʈah/ | [ˈʔə.nʈah] | ‘either’ |
| C_C | <i>bandel</i> | /bandəl/ | [ˈb̪ə.ndəl] | ‘stubborn’ |

The schwa has no allophonic variants. It is also used as an epenthetic vowel to break up consonant clusters in loanwords, or other consonant clusters for ease of pronunciation, for example in *gréja/geréja* [g̊ə.rɛ.ʃa] ‘church’, which is borrowed from Portuguese *igreja* ‘church’.

In order to show that /ə/ is phonemic, it is contrasted with the low central vowel /a/ (110).

- (110) Contrast between the central vowels /ə/ and /a/
- | | | | | |
|-----|--------------|----------|-------------|----------------|
| #_ | <i>entah</i> | /ənt̪ah/ | [ʔə.n̪t̪ah] | ‘either’ |
| | <i>antah</i> | /ant̪ah/ | [ʔa.n̪t̪ah] | ‘unknown land’ |
| C_C | <i>tebu</i> | /t̪əbu/ | [t̪ə.b̪u] | ‘sugarcane’ |
| | <i>tabu</i> | /t̪abu/ | [t̪a.b̪u] | ‘taboo’ |

3.3.3.4 The Low Vowel

Malangan Indonesian has one low vowel, the low central vowel /a/. It occurs in all positions, as can be seen in (111).

- (111) Examples of the low central vowel /a/
- | | | | | |
|-----|----------------|----------|-----------|--------|
| #_ | <i>aku</i> | /aku/ | [ʔa.ku] | ‘I’ |
| C_C | <i>kandang</i> | /kandaŋ/ | [ka.ndaŋ] | ‘cage’ |
| _# | <i>tanda</i> | /t̪anda/ | [t̪a.nda] | ‘sign’ |

The phonemic status of /a/ was demonstrated in (110) by contrasting /a/ with the mid central vowel /ə/.

3.3.4 Phonotactics

3.3.4.1 Consonants

The number of places of articulation in Malangan Javanese and Malangan Indonesian stops is not the same. Malangan Javanese has two contrastive sets: the dental stops /t̪, d̪/ and the retroflex stops /ɖ, d̪/. However, Malangan Indonesian does not have retroflex stops, and only a dental /t̪/ and an alveolar /d/. The rest of the consonants have the same distribution as their Malangan Javanese counterparts. They can all occur in word-initial and word-medial positions. In coda and word-final position, the palatal stops /c, ʃ/, the palatal nasal /ɲ/, and the approximants /w, j/ do not occur.

Table 3.19 shows the phonetic realizations of the consonants in different positions.

Position	p	b	t̚	d	c	ɟ	k	g	s	h	m	n	ɲ	r	l	w	j
Syllable level																	
onset	p	b	t̚	d	c	ɟ	k	g	s	h	m	n	ɲ	r	l	w	j
coda	p̚	p̚	t̚	-	-	-	ʔ	k̚	s	h	m̚	n̚	-	ɲ	r	l	-
Word level																	
initial	p	b	t	d	c	ɟ	k	g	s	h	m	n	ɲ	r	l	w	j
medial	p	b	t	d	c	ɟ	k	g	s	h	m	n	ɲ	r	l	w	j
final	p̚	p̚	t̚	-	-	-	ʔ	k̚	s	h	m̚	n̚	-	ɲ	r	l	-

TABLE 3.19: Phonetic realizations of Malangan Indonesian consonants (=-unattested)

Similar to Malangan Javanese, Malangan Indonesian shows neutralization of heavy and light stops in root-final position. In this position, the heavy bilabial stop /b/ is realized as the light bilabial stop [p] and the alveolar stop /d/ is realized as the light dental stop [t̚]. In addition, the heavy velar stop /g/ is realized as the light velar stop [k].

It is important to note that the glottal stop [ʔ] is not included in the consonant inventory, but similar to in Malangan Javanese, it phonetically appears before word-initial vowels, and it is also the realization of /k/ in root-final position.

3.3.4.2 Vowels

Malangan Indonesian has six vowels, as in many other Indonesian varieties (Adisasmito-Smith 2004; Soderberg and Olson 2008). Almost all Malangan Indonesian vowels can occur in onset and coda position. In word-final position, /ə/ is not permitted (Table 3.20).

Similar to the situation in Malangan Javanese, the high vowels /i, u/ and the high-mid vowels /e, o/ in Malangan Indonesian each have an allophone. Their distribution is governed by the type and position of the syllable, as well as the type of vowel that appears in the adjacent syllable (Table 3.21).

Position	i	u	e	o	ə	a
word-initial	x	x	x	x	x	x
word-medial	x	x	x	x	x	x
word-final	x	x	x	x	-	x

TABLE 3.20: Malangan Javanese vowels (x= attested, -= unattested)

Phoneme	Penultimate closed syllable	Subsequent syllable	Example
/i/	[ɪ]	[V]	[ʃɪl.b̥ap] ‘headscarf’
/u/	[ʊ]	[V]	[sʊr.ɡ̊a] ‘heaven’
/e/	[ɛ]	[V]	[sɛr.san] ‘sergeant’
/o/	[ɔ]	[V]	[b̥ɔr.ɡ̊ɔl] ‘handcuffs’
Phoneme	Penultimate open syllable	Final closed syllable	Example
/i/	[V]	[ɪ]	[t̥a.b̥ɪr] ‘screen, curtain’
/u/	[V]	[ʊ]	[ka.b̥ʊr] ‘to run away’
/i/	[ɪ]	[ɪ, ʊ]	[b̥ɪ.b̥ɪr] ‘lip’
/u/	[ʊ]	[ʊ, ɪ]	[b̥ʊ.rʊŋ] ‘bird’
/e/	[V]	[ɛ]	[ka.rɛt̥] ‘plastic’
/o/	[V]	[ɔ]	[la.pɔr] ‘to report’
/e/	[ɛ]	[ɛ, ɔ, ə, a]	[b̥ɛ.rɛs] ‘ready’
/o/	[ɔ]	[ɔ, ɛ, ə, a]	[t̥ɔ.lɔŋ] ‘to help’
Phoneme	Penultimate open syllable	Final open syllable	Example
/e/	[ɛ]	[i, u, a]	[pɛ.t̥a] ‘map’
/o/	[ɔ]	[i, u, a]	[kɔ.t̥a] ‘city’

TABLE 3.21: Malangan Indonesian allophones (V = any other vowels)

In a closed syllable, as in Malangan Javanese, the high vowels /i/ and /u/

in Malangan Indonesian are lowered to [ɪ] and [ʊ] respectively in a closed syllable. The lowering may also affect the /i/ and /u/ that occurs in the preceding open syllable.

Furthermore, the high-mid vowels /e, o/ are realized as [ɛ, ɔ] respectively in a closed syllable. The allophones [ɛ] and [ɔ] in a penultimate open syllable are triggered by a subsequent closed syllable that contains either a high-mid vowel, a mid vowel, or a low vowel. Next, the allophones [ɛ, ɔ] also appear in an open syllable preceding an open syllable that has a high vowel or a low vowel.

In addition, in word-final position, [ɛ] and [ɔ] sometimes appear as the realization of diphthongs /ai/ and /au/ (see §3.3.9). Different from the situation in Malangan Javanese, the low vowel /a/ in Malangan Indonesian does not have a different allophonic realization.

In any other positions and distributions not illustrated in Table 3.21, the phonemes appear as themselves and not as their allophones.

3.3.5 Syllable Structure

The typical structures of Malangan Indonesian syllables are (C)V(C). The preferred onset consists of one consonant and the nucleus consists of one vowel.

When it comes to loanwords, syllables show more complex onset structures. Sometimes speakers break the clusters with an epenthetic vowel or delete a consonant. However, generally a maximum of three consonants in the onset of a syllable, both in word-initial and word-medial position, is accommodated in Malangan Indonesian. On the other hand, a consonant cluster in root-final position is still not preferred.

All syllable types can occur in both word-initial and word-final position. The overview of syllable types in Malangan Indonesian is presented in (112).

(112) Overview of syllable types

Onset	Nucleus	Coda	Position
C	V		word-initial/medial
	V		word-initial/medial
C	V	C	word-initial/medial
	V	C	word-initial/medial
CC	V		word-initial/medial
CC	V	C	word-initial/medial
CCC	V		word-initial/medial
CCC	V	C	word-initial/medial

The combination of complex onsets in Malangan Indonesian is very similar to that of Malangan Javanese. It is represented in (113).

(113) Overview of complex onsets

Onset			Nucleus	Coda
C _{obstruent}	C _{liquid}		V	(C)
C _{obstruent}	C _{glide}		V	(C)
C _{fricative}	C _{stop}		V	(C)
C _{nasal}	C _{obstruent}		V	(C)
C _{nasal}	C _{liquid}		V	(C)
C _{nasal}	C _{obstruent}	C _{liquid}	V	(C)
C _{fricative}	C _{stop}	C _{liquid}	V	(C)

Note that Malangan Javanese has a cluster that consists of a glide followed by a liquid, which is not found in Malangan Indonesian.

As in Malangan Javanese, the cluster of three consonants with nasal + obstruent + liquid composition cannot occur in root-initial position in Malangan Indonesian while the fricative + stop + liquid composition can be found in both root-initial and root-medial positions. This is discussed further in §3.3.7.

3.3.6 Root Structure

Monosyllabic Malangan Indonesian roots from loanwords (Table 3.22).

Type	Example	Transcription	Gloss
CVC	<i>cap</i>	/cap/	‘seal’ (from Hindi)
CCVC	<i>krim</i>	/krim/	‘cream’ (from English)
CCCVC	<i>strés</i>	/stres/	‘stress’ (from English)

TABLE 3.22: Monosyllabic roots in Malangan Indonesian

The majority of roots in Malangan Indonesian is bisyllabic (Table 3.23). The permitted shape is (C)(C)(C)V(C)(C)(C)V(C), similar to Malangan Javanese.

Type	Example	Transcription	Gloss
V.V	<i>ia</i>	/i.a/	'3sg'
V.VC	<i>air</i>	/a.ir/	'water'
V.CV	<i>apa</i>	/a.pa/	'what'
V.CVC	<i>orang</i>	/o.raŋ/	'person'
V.CCV	<i>asli</i>	/a.sli/	'real' (from Arabic)
V.CCVC	<i>iklan</i>	/i.klan/	'advertisement' (from Arabic)
V.CCCV	<i>indra</i>	/i.ndra/	'senses' (from Javanese)
V.CCCVC	<i>astral</i>	/a.sʈral/	'like stars' (from Dutch)
VC.CV	<i>ilmu</i>	/il.mu/	'science' (from Arabic)
VC.CVC	<i>arsip</i>	/ar.sip/	'archive' (from Dutch)
VC.CCCVC	<i>abstrak</i>	/ab.sʈrak/	'abstract' (from Dutch)
CV.V	<i>dua</i>	/du.a/	'two'
CV.VC	<i>baik</i>	/ba.ik/	'nice'
CV.CV	<i>jemu</i>	/jə.mu/	'bored'
CV.CVC	<i>bakar</i>	/ba.kar/	'burn'
CV.CCV	<i>rambu</i>	/ra.mbu/	'sign'
CV.CCVC	<i>tabrak</i>	/ʈa.brak/	'to collide with' (from Javanese)
CV.CCCV	<i>santri</i>	/sa.nʈri/	'Islamic school students' (from Sanskrit)
CV.CCCVC	<i>listrik</i>	/li.sʈrik/	'electricity' (from Dutch)
CVC.CV	<i>pergi</i>	/pər.gi/	'to go'
CVC.CVC	<i>terkam</i>	/ʈər.kam/	'to bite (for animal)'
CCV.V	<i>pria</i>	/pri.a/	'man'
CCV.CV	<i>skala</i>	/ska.la/	'scale' (from Dutch)
CCV.CVC	<i>status</i>	/sʈa.ʈus/	'status' (from Dutch)
CCV.CCV	<i>presto</i>	/pre.sʈto/	'pressured cooking' (from English)
CCV.CCVC	<i>trampil</i>	/ʈra.mpil/	'skillful'
CCVC.CVC	<i>traktir</i>	/ʈrak.ʈir/	'treat' (from Dutch)

TABLE 3.23: Bisyllabic roots in Malangan Indonesian

As in Malangan Javanese, the first consonant of a cluster occurring in root-medial position is not analyzed as the final consonant of the preceding syllable. However, the number of possible bisyllabic root structure in Malangan Indonesian is fewer than Malangan Javanese.

Malangan Indonesian has trisyllabic roots, as shown in Table 3.24. Many of them are loanwords. The following list may not be complete due to the limited Malangan Indonesian corpus in this study and the number of loanwords incorporated to Malangan Indonesian.

Root	Example	Transcription	Gloss
V.CV.CV	<i>udara</i>	/u.da.ra/	‘air’ (from Sanskrit)
V.CVC.CV	<i>alergi</i>	/a.ler.gi/	‘allergy’ (from Dutch)
VC.CV.CV	<i>alpaka</i>	/al.pa.ka/	‘alpaca’ (from Dutch)
VC.CV.VC	<i>ikhtiar</i>	/ik̚.t̚i.ar/	‘effort’ (from Arabic)
VC.CV.CVC	<i>alkohol</i>	/al.ko.hol/	‘alcohol’ (from Dutch)
V.CCV.CV	<i>istana</i>	/i.s̚ta.na/	‘palace’ (from Sanskrit)
CV.V.CV	<i>suami</i>	/su.a.mi/	‘husband’ (from Sanskrit)
CV.V.CVC	<i>pailit</i>	/pa.i.liṭ/	‘bankrupt’ (from Dutch)
CV.CV.CV	<i>bahasa</i>	/ba.ha.sa/	‘language’ (from Sanskrit)
CV.CV.CVC	<i>kalimat</i>	/ka.li.maṭ/	‘sentence’ (from Arabic)
CV.CCV.CV	<i>bandara</i>	/ba.nda.ra/	‘airport’ (from Portuguese)
CV.CV.CCV	<i>kelinci</i>	/kə.li.nci/	‘rabbit’ (from Dutch)
CCV.CV.CV	<i>tragedi</i>	/ṭra.ge.di/	‘tragedy’ (from Dutch)
CCCV.CV.CV	<i>strategi</i>	/s̚tra.t̚ə.gi/	‘strategy’ (from Dutch)

TABLE 3.24: Trisyllabic roots in Malangan Indonesian

3.3.7 Consonant Clusters

This section describes the types of cluster that are attested in Malangan Indonesian. Loanwords are also included to show that language contact and borrowing have expanded the amount of possible clusters. The next chapter (§4.3.2.4) examines which of these clusters are also attested in reversed forms.

As shown in Section 3.3.5, Malangan Indonesian allows clusters of two consonants in root-initial and root-medial position, but only one consonant in root-final position. There are only two loanwords from English *boks* ‘box’ and *séks* ‘sex’, which have a /ks/ cluster in word-final position.

Table 3.25 shows that the same combinations on Malangan Javanese clusters of two consonants discussed in §3.2.7 can also be seen in Malangan Indonesian, with the exception of clusters of glide + liquid. They can be categorized into cluster of: 1) obstruent + liquid; 2) obstruent + glide; 3) fricative + stop; 4) nasal + obstruent; and 5) nasal + liquid.

	/p/	/b/	/t̚/	/d/	/c/	/ɟ/	/k/	/g/	/s/	/r/	/l/	/w/	/j/
/p/	-	-	-	-	-	-	-	-	-	/pr/	/pl/	-	-
/b/	-	-	-	-	-	-	-	-	-	/br/	/bl/	-	/bj/
/t̚/	-	-	-	-	-	-	-	-	-	/tr̚/	/tl̚/	-	-
/d/	-	-	-	-	-	-	-	-	-	/dr̚/	-	-	-
/ɟ/	-	-	-	-	-	-	-	-	-	/ɟr̚/	/ɟl̚/	-	-
/k/	-	-	-	-	-	-	-	-	-	/kr̚/	/kl̚/	/kw̚/	-
/g/	-	-	-	-	-	-	-	-	-	/gr̚/	/gl̚/	-	-
/m/	/mp/	/mb/	-	-	-	-	-	-	-	/mr̚/	/ml̚/	-	-
/n/	-	-	/nt̚/	/nd/	/nc/	/nɟ/	-	-	-	-	-	-	-
/ŋ/	-	-	-	-	-	-	/ŋk/	/ŋg/	/ŋs/	/ŋr/	/ŋl/	-	-
/s/	/sp/	/st/	-	-	-	-	/sk/	-	-	/sr̚/	/sl̚/	/sw̚/	-

TABLE 3.25: Clusters of two consonants in Malangan Indonesian

The first type of consonant cluster found in Malangan Javanese is an obstruent followed by a liquid. Although they do not appear as frequently as in Malangan Javanese, they can occur in root-initial and root-medial position (114) - (115).

(114) Obstruent + liquid cluster in root-initial position

/pr/	<i>prangko</i>	[ˈpraŋ.ko]	‘postage’ (from Dutch)
/pl/	<i>plakat</i>	[ˈpla.kat̚]	‘placard’ (from Dutch)
/br/	<i>brosur</i>	[ˈbr̥.sur]	‘brochure’ (from Dutch)
/bl/	<i>blaster</i>	[ˈbl̥a.s̥t̚ər]	‘mixed descent’ (from Dutch)
/tr/	<i>tradisi</i>	[ˈtra.ði.si]	‘tradition’ (from Dutch)
/dr/	<i>drama</i>	[ˈdra.ma]	‘drama’ (from Dutch)
/kl/	<i>klakson</i>	[ˈklak̚.s̥ɔn̚]	‘horn’ (from Dutch)
/gr/	<i>gratis</i>	[ˈg̥ra.t̚is]	‘free’ (from Dutch)
/gl/	<i>gladi</i>	[ˈg̥la.ði]	‘to exercise’
/sr/	<i>sriti</i>	[ˈsri.t̚i]	‘a kind of bird’
/sl/	<i>slogan</i>	[ˈsl̥o.g̥aŋ̚]	‘slogan’ (from English)

(115) Obstruent + liquid cluster in root-medial position

/pr/	<i>kaprah</i>	[kə.ˈprah]	‘ordinary’
/pl/	<i>taplak</i>	[ˈta.plaʔ]	‘tablecloth’ (from Dutch)
/br/	<i>dobrak</i>	[ˈd̥ɔ.braʔ]	‘to smash’ (from Dutch)
/bl/	<i>coblos</i>	[ˈc̥ɔ.bl̥ɔs]	‘to make a small hole’
/tr/	<i>katrol</i>	[ˈka.t̚rɔl]	‘pulley’ (from Dutch)
/dr/	<i>kodrat</i>	[ˈk̥ɔ.d̥raʔ]	‘original characters’ (from Arabic)
/ʃr/	<i>hijrah</i>	[ˈhi.ʃraʰ]	‘to migrate’ (from Arabic)
/kr/	<i>cakra</i>	[ˈca.kra]	‘gear’ (from Sanskrit)
/kl/	<i>takluk</i>	[ˈta.kl̥ɔʔ]	‘to surrender’ (from Arabic)
/gr/	<i>migrasi</i>	[mi.ˈg̥ra.si]	‘migration’ (from Dutch)
/gl/	<i>iglo</i>	[ˈʔi.g̥l̥ɔ]	‘iglo’ (from Dutch)
/sr/	<i>asrama</i>	[ʔa.ˈsra.ma]	‘dormitory’ (from Sanskrit)
/sl/	<i>muslim</i>	[ˈmu.slm̚]	‘Islam followers’ (from Arabic)

Words that seem to have the potential consonant clusters /cr/, /cl/, and /kl/ optionally often receive vowel epenthesis to break the cluster in root-initial position. Therefore, *clònd* ‘trousers’ in Malangan Javanese is *celana* [cə.ˈla.na] in Malangan Indonesian.

The second type of consonant cluster in Malangan Indonesian is an obstruent followed by a glide, shown in (116) and (117).

(116) Obstruent + glide cluster in root-initial position

/kw/	<i>kwitansi</i>	[ˈkwi.t̚an̚.si]	‘bill’ (from Dutch)
/sw/	<i>swasta</i>	[ˈswa.s̥ta]	‘private sector’ (from Sanskrit)

- (117) Obstruent + glide cluster in root-medial position
 /bj/ *subyek* ['su.bjɛk] 'subject' (from Dutch)
 /sw/ *siswa* ['si.swa] 'student' (from Sanskrit)

Some more clusters of this combination that only occur in Javanese loan-words, such as /tj/ and /gj/, are not included here, because they are already discussed in §3.2.7.

Thirdly, consonant clusters that consist of a fricative followed by a stop can occur in root-initial and root-medial position, as shown in (118) and (119).

- (118) Fricative + stop cluster in root-medial position
 /sp/ *spasi* ['spa.si] 'space' (from Dutch)
 /st/ *stadion* ['st̪a.di.ɔn] 'stadium' (from Dutch)
 /sk/ *skala* ['ska.la] 'scale' (from Dutch)

- (119) Fricative + stop cluster in root-medial position
 /sp/ *inspirasi* ['ʔin'.spi.ra.si] 'inspiration' (from Dutch)
 /st/ *pésta* ['pɛ.st̪a] 'party' (from Portuguese)
 /sk/ *baskét* ['ba.skɛt̪] 'basketball' (from English)

Further, Malangan Indonesian also has a nasal followed by an obstruent cluster in root-medial position (120). In root-initial position, this type of cluster only includes words that originate from Malangan Javanese (70).

- (120) Nasal + obstruent cluster in root-medial position
 /mp/ *tumpah* ['tu.mpah] 'spilled'
 /mb/ *gambar* ['g̃a.mbar] 'picture'
 /n̪t̪/ *cantik* ['ca.n̪t̪iʔ] 'pretty'
 /nd/ *tanda* ['ta.n̪da] 'sign'
 /nc/ *kencang* ['kə.nc̪aŋ] 'tight'
 /n̪ʃ/ *panjang* ['pa.n̪ʃaŋ] 'long'
 /ŋk/ *lengkap* ['lɛ.ŋkap] 'complete'
 /ŋg/ *bangga* ['ba.ŋg̃a] 'proud'
 /ŋs/ *angsur* ['ʔa.ŋs̪ɔr] 'to pay in installments'

The next type of consonant cluster is a nasal followed by a liquid. Unlike in Malangan Javanese, in Malangan Indonesian this cluster can only occur in root-medial position (121).

- (121) Nasal + liquid cluster in root-initial position
- | | | | |
|------|----------------|-----------|-----------------------------------|
| /mr/ | <i>pamrih</i> | [pa.mrih] | ‘strings attached’ |
| /ml/ | <i>imlek</i> | [ʔi.mlɛʔ] | ‘Chinese New Year’ (from Hokkien) |
| /ŋr/ | <i>ningrat</i> | [ni.ŋraʔ] | ‘nobility’ |
| /ŋl/ | <i>pungli</i> | [pu.ŋli] | ‘extortion’ |

The nasal followed by obstruent sequence and the nasal followed by liquid sequence in root-initial position might have been described as heterosyllabic (Lapoliwa 1981) due to the sonority principle (Clements 1990) mentioned in §3.2.8. Speakers of Malangan Indonesian, however, are influenced by Malangan Javanese, and realize these sequences as tautosyllabic. This behavior is in line with Adisasmito-Smith (2004)’s description that they are tautosyllabic, or occurring in the same syllable, especially in the speech of Javanese speakers.

In Malangan Indonesian, clusters of three consonants are necessarily loanwords from Javanese, Dutch, or English. The nasal + stop + liquid sequence can only be found in root-medial position. In root-initial and root-medial position, the fricative + stop + liquid combination occurs more frequently than in Javanese. They have been exemplified in (76) and (77).

In addition, influenced by Malangan Javanese, another type of consonant cluster is also found in Malangan Indonesian. This type includes homorganic consonant clusters that take place in the initial position of words through the addition of nasal prefixes. The distribution and realization of the nasal prefix (N-) is similar to that in Malangan Javanese (see §3.2.10).

The occurrence of this nasal prefix is not as regular as in Malangan Javanese. However, when Malangan Javanese speakers speak Indonesian, they sometimes replace the verbal prefix *meN-* in Standard Indonesian with the prefix *N-* that is used in Malangan Javanese. Some of these are exemplified in Table 3.26 but note that the assimilation process for different types of root-initial consonant have already been illustrated in §3.2.10.

Word-initial consonant	Realization of N-	Example	Gloss	Derived form	Gloss
/b/	[mb-]	/baca/	'to read'	[mba.ca]	'to read.AV'
/b/	[ŋg-]	/gam-bar/	'picture'	[ŋga.mbar]	'to draw.AV'
/l/	[ŋl-]	/lamar/	'to propose'	[ŋla.mar]	'to propose.AV'

TABLE 3.26: Nasal prefix *N-* in Malangan Indonesian

In the next chapter, where the rules of reversal in Walikan are discussed, we will revisit which attested clusters in Malangan Indonesian are permitted in a reversed language. They can be seen in Table 4.2 and 4.3 of §4.3.2.4.

3.3.8 Sequences of Consonants

The term consonant sequences is used here to refer to two consonants that are adjacent to each other but that are heterosyllabic. In other words, they are separated by a syllable boundary.

Malangan Indonesian words, like those of Malangan Javanese, also have consonant sequences that are heterosyllabic, or separated by syllable boundaries. They can take the form of a liquid in coda position that is followed by either an obstruent, a nasal, or a glide in the onset of the following syllable (122), or an obstruent in coda position that is followed by another obstruent in the onset of the following syllable (123).

(122) Heterosyllabic liquid + obstruent/glide/nasal sequences

/r.t̚/	<i>gertak</i>	[g̊ər.t̚aʔ]	'to bluff'
/r.d/	<i>gardu</i>	[g̊ər.ɗu]	'substation' (from Portuguese)
/r.c/	<i>cercah</i>	[cər.cah]	'glimmer'
/r.k/	<i>berkas</i>	[b̥ər.kas]	'file'
/r.g/	<i>harga</i>	[har.g̊a]	'price' (from Sanskrit)
/r.s/	<i>kursi</i>	[k̥ər.si]	'chair' (from Arabic)
/r.m/	<i>kurma</i>	[k̥ər.ma]	'dates' (from Persian)
/r.w/	<i>arwana</i>	[ʔar.wa.na]	'a kind of fish'

- (123) Heterosyllabic obstruent + obstruent sequences
 /k.t̚/ *sakti* [ˈsak.t̚i] ‘magic’ (from Sanskrit)
 /b.s/ *absén* [ˈʔap.sɛn] ‘absent’ (from Dutch)

3.3.9 Sequences of Vowels

Malangan Indonesian syllables prefer one vowel only. Native words do not have diphthongs, and a vowel cluster will naturally be split into different syllables, sometimes by adding an epenthetic glide consonant (124).

- (124) Examples of two-vowel sequence
dua /dua/ [ˈd̥u.wa] ‘two’
buah /buah/ [ˈb̥u.wah] ‘fruit’
liat /liat/ [ˈli.ʃat̚] ‘to watch’

Similar to the situation in Malangan Javanese, in Malangan Indonesian diphthongs are mostly found in loanwords from Hokkien, as shown in (81). The diphthongs /ai/ and /au/ in Standard Indonesian in word-final position, such as in *ramai* [ˈra.maⁱ] ‘noisy’ and *kalau* [ˈka.la^u] ‘if’, are realized as [e/ɛ] and [o/ɔ].

Table 3.27 shows the realization of diphthongs in Malangan Indonesian.

Words	Standard Indonesian	Malangan Indonesian	Gloss
<i>ramai</i>	[ˈra.ma ⁱ]	[ˈra.me]	‘noisy’
<i>gulai</i>	[ˈgu.la ⁱ]	[ˈgu.le]	‘curry’
<i>pantai</i>	[ˈpa.nta ⁱ]	[ˈpa.ntɛ]	‘beach’
<i>sungai</i>	[ˈsu.ŋa ⁱ]	[ˈsu.ŋɛ]	‘river’
<i>kalau</i>	[ˈka.la ^u]	[ˈka.lo]	‘if’
<i>pulau</i>	[ˈpu.la ^u]	[ˈpu.lɔ]	‘island’

TABLE 3.27: Examples of the disappearance of diphthongs

3.3.10 Reduplication

Along with Malangan Javanese, Malangan Indonesian has three types of reduplication: 1) full reduplication of a root or derived word; 2) full reduplication that is accompanied by vowel alternation; and 3) partial reduplication. The

latter form of reduplication does not appear in the Walikan data, so is not further discussed here.

Full reduplication of roots in Malangan Indonesian can be applied to nouns, verbs, adverbs, adjectives, and numerals. Reduplication is used to express different meanings, such as plurality, resemblance, repetition, manner, attenuation, intensity, or sequence (125).

(125) Reduplications in Malangan Indonesian

Nominal base	<i>kawan</i>	'friend'
	<i>kawan-kawan</i>	'friends'
	RDP~friend	(indicating plurality)
Nominal base	<i>bapak</i>	'father'
	<i>bapak-bapak</i>	'resembling a man'
	RDP~father	(indicating resemblance)
Verbal base	<i>panggil</i>	'to call'
	<i>panggil-panggil</i>	'to call again and again'
	RDP~call	(indicating repetition)
Adverbial base	<i>cepat</i>	'quick'
	<i>cepat-cepat</i>	'quickly'
	RDP~quick	(indicating manner)
Adjectival base	<i>hitam</i>	'black'
	<i>hitam-hitam</i>	'somewhat black'
	RDP~black	(indicating attenuuity)
Adjectival base	<i>pagi</i>	'morning'
	<i>pagi-pagi</i>	'very early in the morning'
	RDP~morning	(indicating intensity)
Nominal base	<i>satu</i>	'one'
	<i>satu-satu</i>	'one by one'
	RDP~one	(indicating sequence)

Affixes are attached after reduplication, indicating that they are not part of the reduplicated base (126).

- (126) Reduplication of roots
- | | | |
|--------------|-----------------------|-----------------------------|
| Nominal base | <i>teman-teman-ku</i> | ‘my friends’ |
| | [RDP~friend]-1SG.POSS | |
| Nominal base | <i>orang-orangan</i> | ‘doll’ |
| | [RDP~person]-an | |
| Verbal base | <i>di-buang-buang</i> | ‘be thrown away many times’ |
| | PASS-[RDP~throw away] | |

The function of the suffix *-an* in the second example in (126) is the same as in Malangan Javanese.

Further, in (127), the reduplication of derived words is exemplified.

- (127) Reduplication of derived words
- | | | |
|--------------|------------------------|-----------------|
| Nominal base | <i>makan</i> | ‘to eat’ |
| | <i>makan-an</i> | ‘food’ |
| | [food-NMLZ] | |
| | <i>makanan-makanan</i> | ‘a lot of food’ |
| | RDP~[food-NMLZ] | |
| Nominal base | <i>main</i> | ‘to play’ |
| | <i>main-an</i> | ‘toy’ |
| | [toy-NMLZ] | |
| | <i>mainan-mainan</i> | ‘many toys’ |
| | RDP~[toy-NMLZ] | |

Next, Malangan Indonesian also exhibits a type of reduplication in which the reduplicated part of a verbal base displays a different vowel than the root base (see §3.2.11), although the occurrence in my corpus is not as frequent as in Malangan Javanese.

It follows the same principle in Malangan Javanese. The final vowel in the root base is replaced with /a/ to create the reduplicated form. If the penultimate vowel of the base is /a/, it becomes /ɔ/ in this type of reduplication. The reduplicated form is put before the original form (128).

- (128) Reduplication with different vowel
 Verbal base *balik* 'to reverse'
bolak-balik 'to reverse on and on'
 RDP~reverse

3.3.11 Stress

Malangan Indonesian, similar to Malangan Javanese, does not have phonemic word stress. Regular stress falls on the penultimate syllable of bisyllabic and trisyllabic words. When the penultimate syllable contains a schwa, the stress is moved to the final syllable. If the final syllable also has a schwa or an NC cluster, the stress remains on the penultimate syllable (129).

- (129) Stress in Malangan Indonesian
- | | | | |
|----------------|-----------|-------------|------------|
| <i>sabun</i> | /sabun/ | [ˈsa.bʊn] | ‘soap’ |
| <i>kalimat</i> | /kalimat/ | [ka.li.mat] | ‘sentence’ |
| <i>benang</i> | /bənən/ | [bən.nən] | ‘thread’ |
| <i>kedelé</i> | /kədələ/ | [kə.də.le] | ‘soy’ |
| <i>empat</i> | /empat/ | [ˈʔə.mpa] | ‘four’ |

3.4 Conclusions

This chapter has described the phonologies of Malangan Javanese and Malangan Indonesian and has underlined how the two systems influence each other.

The influence of Malangan Indonesian on Malangan Javanese can be seen in the realization of Malangan Javanese retroflex stops /t, d/ and dental stops /t̪, d̪/. The light retroflex stop /t/ is sometimes realized as the light dental stop [t̪], and the heavy dental stop /d̪/ as the heavy alveolar stop [d]. This is because in Malangan Indonesian, the *t* is dental and the *d* is alveolar. The same influence is also described in an acoustic study by Zen (2019).

However, the influence of Malangan Javanese on Malangan Indonesian is greater. Following the realization of Malangan Javanese stops, the stops in Malangan Indonesian are acoustically voiceless. The heavy stops are followed by breathy vowels except when they are prenasalized. In root-final position, the heavy stops are neutralized as their light counterparts.

The glottal stop [ʔ] appears in both Malangan Javanese and Malangan Indonesian as the realization of /k/ in root-final and word final position. It is also the result of a number of other processes in Malangan Javanese.

Malangan Javanese has also influenced Malangan Indonesian vowels and their allophonic realizations. These allophones are conditioned by the segments that follow them. Malangan Javanese and Malangan Indonesian vowels and allophones seem to have the same distributions, except for the word-final low central vowel /a/, which in Malangan Indonesian remains [a] and is not realized as [ɔ] as was historically the case in Malangan Javanese.⁷

The majority of native Malangan Javanese and Indonesian roots are bisyllabic. In general, syllables have one consonant in the onset and coda, and one vowel in the nucleus. However, a maximum of three consonants can occur in the onset of a syllable, both in root-initial and root-medial positions. The root-final position cannot hold any consonant cluster, except in recent loanwords. The word-medial homorganic consonant clusters in Malangan Javanese and Indonesian are not separated by syllable boundaries.

Malangan Indonesian consonant clusters have more or less the same combinations as Malangan Javanese, with the exception of a glide followed by a liquid (/wr/, /wl/). This type of cluster is only found in Malangan Javanese.

The discussion on the structure of Walikan in Chapter 4 will refer back to certain phonological features of Malangan Javanese and Malangan Indonesian phonologies in this chapter. Some of the key issues discussed in §4.3.2 are the neutralization of final consonants in §4.3.2.1, the realization of velar and glottal consonants in §4.3.2.2, the reversal of consonant sequences and clusters in §4.3.2.4, and the realization of vowels and their allophones in §4.3.2.6.

⁷Vowel lowering in syllables preceding a closed syllable (*[ʔḡu.nuŋ] > [ʔḡɔ.nuŋ] ‘mountain’) is not attested, for example, in Jakarta Malay (Wallace 1976) and eastern Indonesian Malay varieties (Pauw 2008). It occurs in Jambi Malay (Yanti 2010) and Papua Malay (Kluge 2014), but the underlying historical processes are unrelated.

