

Loanword phonology in Jahai

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Introduction

Jahai, a language belonging to the Northern Aslian subgroup of the Aslian branch of Austroasiatic, is spoken by a community of approximately one thousand individuals in remote parts of Perak and Kelantan, Peninsular Malaysia, and reportedly also by a small community in the adjacent part of southernmost Thailand. Jahai speakers have long been in frequent contact with speakers of neighbouring languages, notably Temiar, a Central Aslian language, and Malay, the Austronesian majority language. Malay in particular has been an important source of borrowing, and a considerable portion of the Jahai vocabulary is of Malay origin. The present article describes the phonological changes that these words undergo when borrowed into Jahai¹.

Previous research

It has been customary in the field of Aslian linguistic research to comment on the phonological nature of Malay loanwords. For instance, see Benjamin 1976b:147-52 for Temiar; Diffloth 1976b:112 for Jah Hut; Bauer 1991:313 for Trang Kensiw; Bishop 1996:234-35 for Yala Kensiw; and Kruspe 1999:41-45 for Semelai. A short summary is also presented by Matisoff (to appear). Focal points of interest include e.g. the presence of intervocalic /h/, the closure of open syllables by means of glottal /h/ or /ʔ/, the realisation of the trill /r/, and the deletion of voiced stops in intervocalic clusters where such stops are preceded by their homorganic nasal.

Some features are considered to be retentions of historic or dialectal/colloquial Malay forms not found in present-day Standard Malay, others are viewed as Aslian innovations. An interesting example of the latter is provided by Benjamin 1976b:147-52, who describes a pattern of consonantal

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substitution in Malay words borrowed into Temiar, which he suggests is the result of a deliberate special phonological treatment of loans.

For Malay loan rates in all Aslian languages, see Benjamin 1976a:73; in press. For a full description of Jahai phonology, see Burenhult 2000, and for a reasonably complete list of references related to Aslian linguistics in general, see Burenhult 1999.

Evidence of lexical borrowing in Jahai

The present study is based on a rhyming-list containing 1,360 lexical items collected among speakers of the To' variety of Jahai in Kampung Sungai Banun, in the Hulu Perak district of Perak, Peninsular Malaysia, during the period 1998-2000. About one-fifth of these can be shown to be Malay loanwords, although such words are consistently integrated into the indigenous phonological system. The Malay loans probably represent several different strata and have been borrowed at different times in history. Many of them denote foreign phenomena which have been introduced into the Jahai community from outside, such as /kritəh/ from *kereta* 'car', /kamiŋ/ from *kambing* 'goat', and /juwal/ from *jual* 'to sell'. Others represent more basic vocabulary, e.g. /batu?/ from *batu* 'stone', /gaʒah/ from *gajah* 'elephant', and /kuceŋ/ from *kucing* 'cat'.

A number of words can be tentatively identified as loans from Temiar, a Central Aslian neighbour. There is also a category of words which may have been borrowed historically from a different Austronesian (non-Malay) source. Examples of such words include /kbis/ 'to die' and /bgiw/ 'wind'.²

Furthermore, a rather large number of English words has entered the Jahai vocabulary. Some of these have been borrowed via Malay, but many may have been borrowed directly from British troops stationed in the area during the Communist Emergency. These words typically include military terminology such as /grinet/ 'grenade', /bubi? tɾɛp/ 'booby-trap', /pos/ 'post', and /trineŋ/ 'training'.

Jahai phonology: an overview

This section contains a brief summary of the phonological features of Jahai. For a full treatment, the reader is referred to Burenhult 2000.

²I am grateful to Geoffrey Benjamin for bringing these examples to my attention.

Phonemic inventory

The vowel system is of a rather typical Aslian type, distinguishing three degrees of height for the front, central and back positions. Oral vowels contrast with a slightly reduced set of phonemically nasal equivalents (see Table 1). Neither vowel length nor diphthongisation has phonemic significance.

Table 1. Vowel phonemes in Jahai.

ORAL			NASAL		
Front	Central	Back	Front	Central	Back
i	ɨ	u	ĩ	ĩ	ũ
e	ə	o		ẽ	
ɛ	a	ɔ	ẽ	ã	õ

The consonant system, involving 20 phonemes, is also typically Aslian, with five places of articulation for stops (bilabial, alveolar, palatal, velar and glottal), four for nasals (bilabial, alveolar, palatal and velar), three for fricatives (bilabial, palatal and glottal), and two for approximants (bilabial and palatal). There is also a trill and a lateral, both alveolar. All stops except the voiceless glottal display a voiced/voiceless distinction. For easy transcription, the voiceless palatal fricative is symbolised by /s/ although its characteristics are clearly palatal. The unusual voiceless bilabial fricative, only found in syllable-final position, is unique to the Northern Aslian group (see Table 2).

Table 2. Consonant phonemes in Jahai.

	Bilabial	Alveolar	Palatal	Velar	Glottal
Plosive	p b	t d	c ʃ	k g	ʔ
Nasal	m	n	ɲ	ŋ	
Fricative	ɸ		s		h
Lateral		l			
Trill		r			
Approximant	w		j		

Allophonic variation of particular interest includes: (1) the common presence of 'preploded' nasals in word-final position, i.e. word-final nasal consonants which are initiated by a characteristic voiced plosive-like onset [-^bm, -^dn, -^ʃɲ, -^gŋ], typically following a non-nasal vowel; (2) the unreleased character of syllable-final stops [-p̚, -t̚, -c̚, -k̚].

Word and syllable structure

Roots may be monosyllabic, sesquisyllabic, disyllabic or, occasionally, trisyllabic. Monosyllabic roots always display the canonic structure CVC, e.g. [c^hep^h] /cep/ 'to catch'. Sesquisyllabic roots are phonetically disyllabic, but the vowel of the initial, open syllable is strictly epenthetic and predictable and is omitted in phonemic transcriptions: C.CVC, e.g. [kənɛic^h] /k.nec/ 'comb'.³ Truly disyllabic words have either an open initial syllable with a non-predictable vowel, usually /a/, or a closed initial syllable, the vowel of which may be either predictable or non-predictable: CV.CVC, e.g. [kawip^h] /ka.wip/ 'sun bear'; CC.CVC, e.g. [təmkaɪ] /tm.kal/ 'male'; or CVC.CVC, e.g. [kaltoŋ] /kal.tɔŋ/ 'knee'.

Trisyllabic roots are commonly Malay borrowings, although some are presumably indigenous, e.g. [kuruɦu] /ku.ru.ɦu/ '(a type of owl)'. However, trisyllabic derivatives of indigenous sesqui- and disyllabic roots are very common.

Word-final syllables are always closed, whereas pre-final syllables may be open or closed but always have a consonant as onset, meaning that words always begin and end with a consonant.

Stress patterns

Jahai has non-contrastive stress that falls invariably on the last syllable of a word, and there is no secondary stress.

Types of phonological change

As indicated earlier, words borrowed from Malay and other sources appear to become fully adapted to the indigenous phonological system. There is no sign, for instance, of the type of special treatment of loans described by Benjamin 1976b:147-52 for Temiar, or of any retentions of Malay features foreign to Jahai. Indeed, Jahai phonological features even pervade the Malay spoken by many Jahai as a second language. However, as pointed out by Kruspe 1999:41 for Semelai, it is sometimes difficult to establish whether Malay loanwords that do not conform to the phonology of Standard Malay involve indigenous adjustment or colloquial/archaic features already present in the Malay dialect from which they were borrowed. No systematic comparison has been made

³The term 'sesquisyllable' was coined by Matisoff (1973:86) and literally means 'one-and-a-half syllable'. Most writers on Aslian (including Diffloth 1976a; Matisoff, to appear; and Kruspe 1999) prefer to exclude the epenthetic vowel from phonemic transcriptions, and this is also the orthography employed here. For reasons of clarity and legibility, Benjamin 1976b:152-53 argues in favour of including it.

with the present-day Malay dialect spoken in Hulu Perak, and therefore no conclusions will be drawn about the origin of these unclear deviating patterns. Such features will be dealt with here on the basis of their divergence from Standard Malay. It is clear, however, that several patterns are indeed the result of indigenous innovation.

The phonological changes discussed have been organised below into four categories: *phonetic adaptation*, *phonemic replacement*, *reorganisation of syllabic structure* and *relocation of stress*.

Phonetic adaptation

The phonetic realisation of segments is usually very similar to that of Malay, but there are some clear examples of phonetic adaptation to indigenous realisation rules.

Preplosion of word-final nasals. In Jahai, word-final nasal consonants preceded by an oral vowel are preploded, whereas those preceded by a vowel nasalised by a nasal syllable onset are not. This pattern is consistently applied to Malay loanwords, as shown by the following examples:

[tanɛm]	/tanem/	from	<i>tanam</i>	'to plant'
[tomɛn]	/tomen/	from	<i>toman</i>	'snakehead'
[kunɪŋ]	/kuniŋ/	from	<i>kuning</i>	'yellow'
[ʃ ^z a ^b m]	/ʃam/	from	<i>jam</i>	'hour'
[bula ^d n]	/bulan/	from	<i>bulan</i>	'moon'
[gadiŋ]	/gadiŋ/	from	<i>gading</i>	'elephant's tusk'

Nasalisation of word-initials. According to a regular Jahai pattern, the voiced bilabial stop /b/ becomes nasalised [m] word-initially if the following consonant is nasal: [mɪnteŋ] /binteŋ/ from Malay *bintang* 'star', [mɪnataŋ] /binataŋ/ from Malay *binatang* 'animal'. This process occasionally results in ambiguous forms, as in the case of [mɛnɛŋ], which is phonemically either /mneŋ/ 'to win' (from Malay *menang*) or /bneŋ/ 'thread' (from Malay *benang*).

Palatalisation of /s/. The voiceless alveolar fricative of Malay is usually realised as the palatalised equivalent typical of Jahai.

Phonemic replacement

Many loanwords contain examples of often systematic replacement of certain phonemes. Only the most conspicuous processes will be described here.

Substitution of final syllable /a/. Final syllable /a/ in Standard Malay is in Jahai often replaced by other vowel phonemes. These varied substitutions possibly reflect different stages and sources of borrowing. The most common substitute is /ɛ/:

/ʔiŋɛt/	from	<i>ingat</i>	'to remember'
/buŋɛʔ/	from	<i>bunga</i>	'flower'
/tanɛm/	from	<i>tanam</i>	'to plant'
/pɛŋɛ/	from	<i>pegang</i>	'to hold'
/biɛŋɛ/	from	<i>bilang</i>	'to count'
/taŋɛl/	from	<i>tanggal</i>	'to fall'
/lantɛj/	from	<i>lantai</i>	'floor'

Sometimes /a/ is replaced by /ə/:

/tɛmpət/	from	<i>tempat</i>	'place'
/guləh/	from	<i>gula</i>	'sugar'
/katəm/	from	<i>katam</i>	'to cut'
/hantər/	from	<i>hantar</i>	'to send'

In yet other cases it is replaced by /ɔ/. This substitution is consistent before word-final /w/ as part of a reinterpretation of the word-final vowel sequence *au* in Malay. It is not phonotactically determined, however, as the word-final sequence [-aw] is allowed in Jahai, e.g. in /bukaw/ 'flower' and /blaw/ 'blowpipe'.

/kapɔʔ/	from	<i>kapak</i>	'axe'
/lɔs/	from	<i>lepas</i>	'after'
/krbɔw/	from	<i>kerbau</i>	'buffalo'
/hiʝɔw/	from	<i>hijau</i>	'green'
/pulɔw/	from	<i>pulau</i>	'island'
/gurɔw/	from	<i>gurau</i>	'to jest'

However, there are also numerous examples of Malay loanwords in which final syllable /a/ has been retained:

/tiŋkap/	from	<i>tingkap</i>	'window'
/kilat/	from	<i>kilat</i>	'lightning'
/badaʔ/	from	<i>badak</i>	'Sumatran rhinoceros'
/bras/	from	<i>beras</i>	'husked rice'
/gajah/	from	<i>gajah</i>	'elephant'
/papan/	from	<i>papan</i>	'plank'

Word-final glottal stop. In Malay, the glottal stop [ʔ] is an allophone of the voiceless velar stop /k/, typically in word-final position. In Jahai, however, the glottal stop has full phonemic status and contrasts with /k/ word-finally: /tek/

'to sleep', /teʔ/ 'soil'. The final /k/ in Malay is therefore consistently reinterpreted as phonemic /ʔ/ in loanwords:

/ʔiteʔ/	from	<i>itik</i>	'duck'
/taseʔ/	from	<i>tasik</i>	'lake'
/badaʔ/	from	<i>badak</i>	'Sumatran rhinoceros'
/sjuʔ/	from	<i>sejuk</i>	'cold'
/loboʔ/	from	<i>lobok</i>	'pool'
/kapɔʔ/	from	<i>kapak</i>	'axe'

Voiceless labio-dental fricative. Standard Malay has a rather rare voiceless labio-dental fricative phoneme /f/ of Arabic origin. In Jahai, this is consistently represented by the voiceless bilabial stop /p/ in all positions. Most probably, this pattern of replacement has been taken over from the local Malay dialect.

/maʔap/	from	<i>maaf</i>	'pardon'
/paham/	from	<i>faham</i>	'to understand'
/pikir/	from	<i>fikir</i>	'to think'

Reorganisation of syllabic structure

Malay forms that do not conform to the syllabic structure of Jahai are modified in different ways so that they fit the indigenous system. Such modifications include the closure of certain syllables, the reinterpretation of vowel sequences, and the deletion of voiced stops in some positions.

Closure of syllables. Syllables in Jahai require a consonant onset, and word-final syllables are always closed by a consonant coda, implying that words always begin and end with a consonant. Malay words beginning with a vowel receive an initial consonant onset in the form of glottal /h/ or /ʔ/:

/hobiʔ/	from	<i>ubi</i>	'tuber'
/hajam/	from	<i>ayam</i>	'poultry'
/hŋan/	from	<i>enggang</i>	'rhinoceros hornbill'
/ʔanʔet/	from	<i>angkit</i>	'to take'
/ʔasiŋ/	from	<i>asing</i>	'different'

Similarly, words ending with a vowel receive a glottal final coda in Jahai, usually /ʔ/ and occasionally /h/:

/nasiʔ/	from	<i>nasi</i>	'cooked rice'
/limeʔ/	from	<i>lima</i>	'five'
/lataʔ/	from	<i>lata</i>	'waterfall'
/kriɛh/	from	<i>kereta</i>	'car'
/puŋhuluh/	from	<i>penghulu</i>	'headman'

Both of these processes of syllable closure may have been present in the variety of Malay from which the words were borrowed.

The final consonant requirement is also enforced on Malay words displaying the word-final vowel sequences *-au* and *-ai*, in which the offglides are reinterpreted as approximant consonants /w/ and /j/ respectively:

/halow/	from	halau	'to scare'
/pulow/	from	pulau	'island'
/lantej/	from	lantai	'floor'

Reinterpretation of word-medial vowel sequences. Intervocalic /h/ in Malay loanwords has been described for other Aslian languages (see e.g. Kruspe 1999:42; Bauer 1991:313; Diffloth 1976b:112; Matisoff, to appear) and is considered to reflect borrowing and retention of dialectal/archaic Malay forms not found in present-day Standard Malay (compare dialectal/archaic *tihang* and standard *tiang* 'house pole'). This retention is in keeping with the syllable structure of Jahai in that sequences of vowels are not allowed and that the retained /h/ forms the obligatory consonantal onset of the final syllable. It is surely also motivated by stress, which in Jahai is always on the final syllable. However, Jahai has only sporadic examples of this phenomenon, e.g. /tu.ha?/ 'to ripen' (cf. *tua*), /p.ra.hu?/ 'boat' (cf. *prau*). Instead, vowel sequences of Malay words are much more likely to be broken up by the approximant consonants /w/ and /j/, as in the following examples:

/ku.wat/	from	kuat	'strong'
/la.wot/	from	laut	'sea'
/du.wa?/	from	dua	'two'
/ba.wuŋ/	from	baung	'a type of catfish'
/la.jin/	from	lain	'other'
/ci.juŋ/	from	tiung	'mynah'
/ka.jil/	from	kail	'to fish'

Again, the inserted consonant occupies the final syllable onset position and thereby splits up the two vowels of the original vowel sequence between different syllables, in order to bring the word into conformity with Jahai word structure and stress patterns. This process appears to be productive and is likely to be a case of indigenous adaptation rather than borrowing from local Malay dialects.

Deletion of voiced stops. In Jahai, clusters of nasal consonant and its homorganic voiced stop are very rare. When Malay words containing such clusters are borrowed into Jahai, the voiced stop is invariably deleted as a

result of assimilation. The nasal, originally in pre-final coda position, is thereby transformed into being the onset of the following syllable. A very similar pattern of assimilation occurs in Semelai (Kruspe 1999:42-43).

/l.mu?/	from	lembu	'cattle'
/t.ma.kow/	from	tembakau	'tobacco'
/r.nah/	from	rendah	'low'
/ba.nin/	from	Banding	'(place-name)'
/ʃa.ŋut/	from	janggut	'beard'
/h.ŋaŋ/	from	enggang	'rhinoceros hornbill'

Relocation of stress

Malay loanwords receive the final syllable stress characteristic of Jahai, rather than the penultimate syllable stress typical of Standard Malay: /ga'jah/ from 'gajah' 'elephant', /bi'leŋ/ from 'bilang' 'to count'.

Summary

In many ways, Jahai behaves like other Aslian languages with respect to the phonological treatment of Malay loanwords. Patterns of phonetic adaptation, phonemic replacement, reorganisation of syllabic structure and relocation of stress bear witness to extensive adaptation of foreign elements to the indigenous phonological system.

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Permutational Grammar for free word order languages

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1 Abstract and introduction

Permutational Grammar, PG, is a grammar inspired by the Free Word Order grammar, FOG, presented in Vladimir Pericliev & Alexander Grigorov 1992. Some languages, notably Latin, are said to have free word order, see e.g. Siewierska 1988. The name Permutational Grammar is derived from the use of permutations in order to generate order variation. The general problem to be solved by FOG and PG is the generation and analysis of a great number of word order variants with (roughly) the same meaning. PG accomplishes this by specifying some basic phrase structure orders with their functional (and semantic) representations, and then permuting the corresponding sequences of constituents to obtain all the other sequences with the same meaning.

Permutational Grammar can be regarded as a generative phrase structure grammar with transformations represented by permutations. It is developed from SWETRA grammar (see Sigurd 1994). The constituent parsing trees are not represented explicitly. PG is written with generative rewrite rules and implemented in Prolog via the Definite Clause Grammar (DCG) formalism. The Prolog implementation used here is LPAProlog. The rules state that permutations of the constituents to the right of the rewrite symbol have the functional representation given as an argument to the left of the rewrite symbol. These rewrite rules can be compiled into rules that generate all possible permutations of the basic word order 'on the fly'.

It is possible to apply constraints to the permutations generated. One may, for example, introduce an order constraint like `imbefore(C1, C2, M)`, which states that a constituent matching the description C1 must occur immediately before another constituent matching C2 in the list of constituents M. Another example is `last(C, M)`, which states that a C must occur last in the list M.