10 *More (on) Kerinci sound-changes*

HEIN STEINHAUER

> To the memory of Jack Prentice, whose love for the beauty and absurdities of language shattered on the ugliness of life.

1 Introduction[1]

1.1 In January 1977 Jack Prentice and I started working at Leiden University in the same department on the same day. At that time the Indonesian linguist Amir Hakim Usman was studying there, with the consequence that we both concentrated our research on his language, the Sungai Penuh dialect of Kerinci. Our first publications written in Leiden, with Amir Hakim Usman as co-author, were a result of that research: Prentice and Usman (1978; henceforth P&U) discussed the typologically rather aberrant Kerinci phenomena from a diachronic viewpoint, while Steinhauer and Usman (1978; henceforth S&U) presented the basis for a synchronic description.

1.2 P&U leaves no doubt that Kerinci is a close relative of Malay which probably is nearest to Minangkabau. It has, however, undergone a number of remarkable changes which sharply mark it off from its relatives: 'extensive diphthongisation of high vowels in final syllables, further differentiation in the same area of words which contain a G-class phoneme [i.e. a non-prenasalised voiced stop] from those which do not, development of distinctive phrase-final and phrase-medial forms, the assignment to this distinction of the role of marking a number of important syntactic functions, and, finally, loss of all suffixes' (P&U:154).

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A few examples suffice to illustrate this typical character of (the Sungai Penuh dialect of) Kerinci as compared to, for instance, standard Indonesian as a representative of a more widespread type of Malay. The Kerinci sample sentences are written phonemically, following the analysis of P&U (p.122), but with IPA symbols (with *j* and *y* replacing *ɟ* and *j*). High offglides of diphthongs will be rendered with semivowels (the Sungai Penuh inventory being *ey, ɔy, ay, ew, ow, ɛw, aw*). Indonesian parallel translations are in standard Indonesian spelling. Phrase-final and phrase-medial forms are glossed as ABS (absolute) and OBL (oblique) respectively.[2]

The opposition between such forms in noun phrases are illustrated in (1a-e):

(1) a. *bateŋ*
          batang/pohon
          stem/tree(ABS)
          'stem/tree'[3]

     b. *batɔn ɲo*
          batangnya/pohonnya
          stem/tree(OBL) 3SG
          'his/her/its stem/tree'

     c. *batɔn   pinaŋ*
          pohon   pinang
          tree   areca.nut
          'areca nut tree'

     d. *batɔn   pinan   licayn*
          pohon   pinang   licin
          tree(OBL) areca.nut(OBL) smooth(ABS)
          'smooth areca nut tree'

     e. *batɔn   pinan   (licen)   itoh*
          pohon   pinang   licin   itu
          tree(OBL) areca.nut(OBL) smooth(OBL) that
          'that (smooth) areca nut tree'

Sentences (2a-d) are illustrations of the same opposition (phrase-final versus phrase-medial) in verb phrases:

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2   These not very felicitous terms were introduced by S&U and P&U. Van Reijn (1976) uses the terms 'pausal' for the ABS and 'non-pausal' for the OBL forms, but this is synchronically no longer correct (see §2.2 below). Usman (1988) prefers the neutral though uninformative labels FORM I and FORM II. As the discussion in §2.2 suggests, the labels INDEFINITE and DEFINITE would probably describe the functions of the ABS and OBL forms better. However, for old times' sake I continue to use the terms ABS and OBL. In the English glosses of sample sentences and quoted forms I will indicate whether the forms in question belong to one or another of these categories. Function words, some pronouns, some morphological categories and some loan words do not participate in an ABS-OBL opposition. In the running translations of ABS forms '(the)' should not be interpreted as specific, but rather as 'the phenomenon of there being ...'

3   The Kerinci root can be interpreted as 'stem' or 'tree'. In (1c-e) the latter interpretation is the most likely one. The Indonesian etymon only means 'stem', the equivalent of 'tree' being *pohon*.

(2) a. *akaw   ideʔ   bisə   nəbeŋ*
     aku   tidak   bisa   menebang
     1SG   not   can   fell (ABS)
     'I cannot fell (trees)'

   b. *akaw   nəbɔn   batɔn   pinaŋ*
     aku   menebang   pohon   pinang
     1SG   fell (OBL)   tree (OBL)   areca.nut (ABS)
     'I fell areca nut trees'

   c. *batɔn   itoh   ditəbeŋ*
     pohon   itu   ditebang
     tree(OBL)   that   be-felled(ABS)
     'that tree is felled'

   d. *batɔn   itoh   ditəbɔn   ɲo*
     pohon   itu   ditebangnya
     tree(OBL)   that   be-felled(OBL)   3SG
     'that tree is felled by him/her'

The ABS-OBL pairs *bateŋ — batɔn* versus *pinaŋ — pinan* in (1a-e) show the effects of the presence versus the absence of a non-prenasalised voiced stop. The bold -VC sequences are the reflexes of Pre-Kerinci *-aŋ, respectively in a 'G-word' (a word containing a non-prenasalised voiced stop) and in a 'K-word' (a word without such a consonant).

The sound changing effects of the presence versus the absence of a non-prenasalised voiced stop are also apparent in the morphology of the verb. The passive verb forms of (3a-b) are 'G-words', whereas the active forms of (4a-b) belong to the category of 'K-words':

(3) a. *ɲo   digaŋgɛw*
     dia   diganggu
     3SG   be-hindered(ABS)
     'he/she was hindered'

   b. *ɲo   digaŋ**gu**   burewŋ*
     dia   diganggu   burung
     3SG   be-hindered(OBL)   bird(ABS)
     'he/she was hindered by birds'

(4) a. *burewŋ   ŋaŋgaw*
     burung   mengganggu
     bird(ABS)   hinder(ABS)
     'birds are a hindrance'

   b. *burewŋ   ŋaŋgow   ɲo*
     burung   mengganggunya
     bird(ABS)   hinder(OBL)   3SG
     'birds hindered him/her'

The bold (sequences of) phonemes in (3) and (4) are all reflexes of Proto Kerinci *-u.

1.3 P&U is a meticulous and comprehensive account of the sound patterns of Sungai Penuh Kerinci in comparison with Standard Malay and a number of Malay(-like) vernaculars. Correspondences with Proto Malay are presented in terms of sound-changes. Given the scope of that pioneering task, it stands to reason that 'no attempt has been made ... to determine the relative chronology of the changes' (P&U:154). Moreover P&U concentrates on the ABS forms only.

It is the aim of this paper to make such an attempt, especially with regard to the sound-changes which affected root-final V(C) sequences. At the same time I shall present some hypotheses on the origin of the ABS-OBL opposition and the loss of all suffixes in Sungai Penuh Kerinci. Apart from P&U and Usman (1988), my main data sources were Jack Prentice's copy of Usman (1976) and my own, both with handwritten notes and additions by the author and ourselves.

1.4 The core area of Kerinci is the central region of the Kerinci district, nowadays belonging to the province of Jambi (Sumatra). Usman (1988:11–12) mentions furthermore the existence of a few Kerinci speaking villages in other districts of the same province, one such village in the province of North Sumatra (Tanjung Morawa), and four in the Ulu Langat district of Selangor, Malaysia (Sungai Lui, Sungai Gahal, Sungai Semungkis and Pansen).

Although criteria for distinguishing Kerinci dialects from more common Malay varieties are not mentioned explicitly, the presentation of six Swadesh lists for language varieties spoken in the Kerinci district indicates that the typical Kerinci features are found only in four of the six dialects (Usman 1988:148–159). The dialects compared are Sungai Penuh, Pondok Tinggi, Dusun Baru and Rawang, which belong to the central or core group of dialects, and Semurup and Lempur, which presumably are representative of the northern and southern groups.[4] The list representing the northern dialects does show a considerable number of ABS-OBL oppositions (about twenty per cent), but the sound-changes appear to have been less dramatic, and there is only a suggestion of a differentiation of K- and G-words. The list representing the southern dialects is practically standard Malay/Indonesian: sound-changes are minimal, G- and K-words show the same developments, while there seem to be only four ABS-OBL oppositions. In what follows I shall not make use of the data from Kerinci dialects other than Sungai Penuh: some *-VC combinations are underrepresented in the Swadesh lists, information on phonology and phonetics of these dialects is incomplete, whereas information on morphology is absent altogether.

2 The ABS-OBL opposition; loss of suffixes

2.1 P&U (p.149), discussing the ABS-OBL opposition which exists for most words in Kerinci, draws a parallel with the modification of final syllables in Minangkabau root morphemes; this type of modification depends on the absence or presence of a following suffix beginning with a vowel; two examples are *manih* 'sweet (adj.)' (Indonesian

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4   Pondok Tinggi and Dusun Baru are uphill satellites of Sungai Penuh. Rawang lies about four kilometres to the east. Semurup lies an estimated twelve kilometres north of Sungai Penuh. All these places are north of Lake Kerinci. Of the villages from which Swadesh lists are available Lempur is the only one south of the lake, at a distance of some forty kilometres from Sungai Penuh.

manis), versus *manisan* 'sweets (n.)', and *ayiǝ* 'water' (Indonesian *air*), versus *paŋairan* 'irrigation'. Yet, it is difficult to imagine that this would be the origin of the ABS-OBL opposition in Kerinci: there does not seem to be any motive for extrapolating a phonological, mere word-internal phenomenon to the level of the phrase. For another, perhaps more likely scenario, the following observations should be taken into account.

(i)   Sungai Penuh Kerinci today has a clearly observable words stress and consequently phrase stress, namely on the final word syllable and on the final syllable of the phrase. Original unsuffixed forms may have undergone sound changes which were a corollary to this phrasal intonation, whereas final syllables of roots followed by a suffix, or occurring phrase-internally, were protected from these changes.

(ii) In the declarative mood (active voice), undergoer noun phrases following the verb require the OBL verb form (such as *ŋaŋgow* in example (4b)). Imperatives of transitive verbs (which consist of the unprefixed verbal roots), however, always have the ABS form, even though they are followed by an undergoer noun phrase; compare (5)–(7):

(5)   *ano?*   *guru*   *itoh* *minon*   *ayɛ*
      anak   *guru*   *itu*   *minum*   *air*
      child(OBL)   teacher that   drink(OBL)   water(ABS)
      'that teacher's child drinks water'

(6)   *ano?*   *itoh* *minawŋ*
      anak   *itu*   *minum*
      child(OBL)   that   drink(ABS)
      'that child drinks'

(7)   *minawŋ*   *ayɛ!*
      minum   *air!*
      drink(ABS)   water(ABS)
      'drink water!'

(8)   *minawŋ*   *akaw?*
      minum   *aku?*
      drink(ABS)   1SG
      'was I drinking?'

   The difference between (7) and the lexically parallel sequence *minon ayɛ* in (5) is a matter of word shape, *combined with* a difference in intonation: *ayɛ* in (5) bears the main stress of the phrase and the sentence, with a rise-fall on the final syllable. In (7) it is *minawN* which bears the main stress, whereas the stress on the final syllable of *ayɛ* is less prominent; there is a sharp rise-fall on the second syllable of *minawŋ* followed by a further but more gradual fall in the pronunciation of *ayɛ*. The word order predicate-subject in which the subject is a kind of afterthought, such as in (8), has the same intonation.

(iii) A similar intonational phenomenon is described in Usman (1988:212). In possessive constructions the expression of the possession precedes the expression of the possessor: the former is consequently phrase-internal and should therefore

appear in the OBL form. This is indeed what usually happens (see the OBL forms *ano?* in (5) above). However, with first and second person pronominal possessors there is a choice: in (9) it is the *possessor* which is stressed and which causes the preceding expression for the entity possessed to become OBL, in (10) it is the *possession* which is stressed and which therefore is in the ABS form.

(9)   *indow?*   *akaw*   *lah*   *dateŋ*
       ibu   saya   sudah   dating
       mother(OBL) 1SG   already   come(ABS)
       '*my* mother has already come' (yours hasn't)

(10)   *indɔ?*   *akaw*   *lah*   *dateŋ*
       ibu   saya   sudah   dating
       mother(ABS) 1SG   already   come(ABS)
       'my *mother* has already come' (my father hasn't)

(iv)   In 75 per cent of the compounds of the shape X-Y (X and Y being lexical morphemes), X has the OBL form, whereas Y participates in the A B S-OBL opposition (Usman 1988:261–262). In other words, the first segment of a compound behaves like a phrase internal lexical word. The word for 'tomato', for instance, is a compound formed from the roots *təhawŋ/təhon* 'egg-fruit (ABS/OBL)' and *aka/ako* 'root (ABS/OBL)'; compare its shapes in the following sentences ((11)–(13)).

(11)   *ɲo*   *sədɔn*   *makan*   *təhon aka*
       dia   sedang   makan   tomat
       3SG   be-...ing   eat(OBL) tomato(ABS)
       's/he is eating tomatoes'

(12)   *təhon ako*   *itoh*   *gədeŋ gədeŋ*
       tomat   itu   besar-besar
       tomato(OBL)   that   big(ABS) big(ABS)
       'those tomatoes are all very big'

(13)   *bukɔn*   *maɛŋ*   *gədɔn gədɔn*   *təhon ako*   *itoh*
       bukan   main   besar-besarnya   tomat   itu
       no   play(ABS)   big(OBL) big(OBL)   tomato(OBL)   that
       'amazing the size of those tomatoes'

These examples also show that reduplication is not a special case of compounding: both elements of the reduplicated form are either ABS or OBL. The audible difference with compounds is that the latter are intonationally one word, with stress on the final syllable, whereas in reduplicated forms both constituents have practically the same stress pattern.

The observations discussed in (i-iv) strongly suggest that Kerinci phrase-internal and word-internal changes have the same origin: they are an intonational rather than a collocational phenomenon. Historically therefore, intonation must have been the decisive factor triggering the sound-changes which resulted in the ABS-OBL paradigms.

2.2 Once these formal oppositions existed, a new semantic opposition emerged. For an ABS form such as *umah* 'house(s)' any unspecified number of entities having house-like

features would be an appropriate referent. For the OBL form *umoh*, however, it could only be a subset of the set of appropriate referents of *umah*: *umoh* would always be followed by a specification and has therefore acquired the meaning of a specific set of one or more entities having house-like properties. Given this meaning the OBL forms came to be used phrase-finally with a definite meaning, the referent being retrievable from the preceding context. Example sentences (14)–(17) are quoted from Usman (1988:226, 230, 232, 240). The ABS counterparts of the OBL words at the end of the sentences are *kandaŋ, minawŋ, dikawayn* and *baju ije.*

(14) *ayaŋ   dikuhɔŋ   dalɔn   kandan*
      ayam   dikurung   dalam   kandang(nya)
      chicken(ABS) be-locked-up(ABS) inside   pen(OBL)
      'the chicken was locked up in its pen'

(15) *didiŋɔyn   dulowh ayey   itoh, bahu   buleyh*
      didinginkan   dulu   air   itu   baru   boleh
      be-cooled(ABS) first   water(OBL) that only.then may(ABS)

      ikɔ   minon
      engkau   meminum(nya)
      2SG   drink(OBL)
      'only after the water has been cooled first, you can drink it'

(16) *ano?   mamo?   ɲo   dikawen*
      anak   mamaknya   dikawini(nya)
      child(OBL) mother's-brother(OBL) 3SG be-married-to(OBL)
      'he married his maternal cross-cousin'

(17) *indɔ?   kailan   baju   ijow*
      ibu   kehilangan   baju   hijau(nya)
      mother(ABS) suffer-loss(OBL) blouse(OBL) green(OBL)
      'mother lost her green blouse'

2.3 Pre-Kerinci, like some other Malay varieties, must have been poor in suffixes. There are no traces of suffixes corresponding to the Indonesian verbal suffixes *-kan* and *-i*.[5] Adelaar (1984) derives Indonesian *-kan* from an earlier preposition **akAn* (see also Collins 1986). It may have been absent therefore from Pre-Kerinci, in any case as a suffix. Whether a Pre-Kerinci suffix **-i* should be reconstructed is questionable.[6] A

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[5]   Usman (1976) does contain several sub-entries with such a suffix, e.g. *malahɛkan* 'give birth to', *sədəŋkan* 'whereas', *dikaluakan* 'be taken out', *disalidiki* 'be investigated'. But these are obviously borrowings from Indonesian, Minangkabau or regional (Jambi?) Malay.

[6]   According to my (limited) experience, Minangkabau informants are hesitant to come up with suffixed equivalents of Indonesian verbs ending in *-i*. They prefer prepositional paraphrases, or produce forms with a suffix which is cognate with Indonesian *-kan*. Both Van der Toorn (1891) and Moussay (1981) contain many examples of forms with a suffix *-i*. From Medan (1980:104–106) it appears that a suffix *-i* is found in twenty-three of his twenty-five Minangkabau investigation points, all over the province of West Sumatra. In the peripheral northern and southern investigation points (Rao and Tapan) only, is it absent. It is the southern area which borders on the Kerinci district, but it is unclear to what extent the Tapan dialect is representative of the Minangkabau

suffix corresponding to Indonesian *-an* was presumably the most salient. After the differentiation of ABS and OBL roots suffixes were preceded by an OBL root.

The obligatory obliqueness of roots preceding suffixes was apparently a sufficient condition for dropping the suffixes completely. I assume that this process started with anaphoric **-nya*. Once the OBL form conveyed the notion of definiteness, it made the anaphoric pronominal third person singular suffix or clitic rather redundant. Also for the **-an* suffix, redundancy may have been a factor contributing to its disappearance. In many cases **-an* formed the suffix part of a circumfix. Even when it was not, the semantic contribution of the suffix was nearly always supported by syntax: as a deverbal noun the suffixed form occurred in other positions than the verbal forms with the same root. This again made the suffix redundant. In the rare cases where syntax was not disambiguating, the ABS-OBL opposition did the job. Compare (18) and (19), which both have the same intonation, i.e. with a prominence peak on the equivalent of 'kiss':

(18)   *ciawŋ akaw*
        cium   aku
        'kiss me'

(19)   *cion   akaw*
        ciuman aku
        'my *kiss*'[7]

For most Sungai Penuh Kerinci derivations the Indonesian cognates of which end in *-nya* or *-an* the only trace of a suffix is the fact that they only occur in an OBL form. My data contain some 100 cases which belong to the seven morphological types represented in (20). The derivational base is given in the ABS and OBL forms (in that order),[8] the Indonesian cognate of the derivation (if extant) is added in parentheses.

(20)   *tajeŋ/tajɔn* 'sharp'   > *satajɔn-tajɔn* 'extremely sharp'
                                        (*setajam-tajamnya*)

        duə/duow 'two'   > *kaduow* 'both'
                                        (*keduanya*)

        abɔyh/abih 'finished'   > *dadə abih-abih* 'unceasing'
                                        (*tiada habis-habisnya*)

        ijaw/ijow 'green'   > *kaijow-ijow* 'greenish'
                                        (*kehijau-hijauan*)

        lapa/lapo 'hungry'   > *kalapo* 'hunger, starvation'
                                        (*kelaparan*)

        idɛwʔ/iduʔ 'live'   > *pangiduʔ* 'way of living'
                                        (*penghidupan*)

        pəloʔ/pəlowʔ 'embrace' (v.)   > *pəlowʔ* 'embrace' (n.)
                                        (*pelukan*)

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dialects which may be closest to Kerinci. In any case it is highly deviant from the other Minangkabau dialects, as well as from Kerinci, for one thing in that it largely preserves the original final consonants. I leave the question open.

[7]   Example (19) with a prominence peak on *akaw* only, would be '*my* kiss' (see (9) and (10) above).

[8]   Henceforth two Kerinci forms separated by a slash always represent the ABS and the OBL forms respectively.

In only twelve of these cases a more overt trace of the original suffix *-an* has been preserved. They are listed in (21). All have a root which ended in a vowel. All but one lost the vowel of the suffix. All but two have only one shape, typically an OBL form.

(21)   *adɛw/adu* 'report'   > *paŋadun* (<**paŋadun*) 'denunciation' (*pengaduan*)

        cahay/cahey 'seek'   > *pancahen* (<**pancahin*) 'livelihood' (*pencaharian*)

        matay/matey 'die, dead'   > *kamaten* (<**kamatin*) 'bereaved' (*kematian*)

        mudə/mudow 'young'   > *kamudɔn* (<**kamudan*) 'lecherous (of old men)' (<**kəmudaan*)

        ragɛw/ragu 'hesitate'   > *karagun* (<**karagun*) 'hesitation' (*keraguan*)

        ramay/ramey 'busy'   > *karamen* (<**karamin*) 'noise, bustle' (*keramaian*)

        bukə/bukow 'break one's fast' > *bukɔn* (<**bukan*) 'fast breaking drink/snack' (<**bukaan*)

        jadɔy/jadi 'become'   > *[imo] jadin* (<**jadin*) 'were[-tiger]' (*jadian*)

        titay/titey 'cross a bridge' > *titen* (<**titin*) 'log-bridge' (*titian*)

        tumpaw/tumpow 'basis'   > *tumpon* (<**tumpun*) 'ricefield closest to village' (<**tumpuan*)

        lakaw/lakow 'deed'   > *kalakawŋ/kalakon* 'behaviour' (<**kalakun*) (*kelakuan*)

        təpay/təpey 'edge'   > *tapiaŋ/tapian* (<**tapian*) 'place to wash and defecate' (*tepian*)

In my data, however, there are also derivations of roots ending (originally) in a vowel which do not have the expected suffix:

(22)   *sukɔ/suko* 'like'   > *kasuko* 'joy' (*kesukaan*)

        sampɛ/sampe 'arrive'   > *kasampe* 'accomplished' (*kesampaian*)

        rindaw/rindow 'long for'   > *karindow* 'longing' (*kerinduan*)

        abɛw/abu 'ash'   > *kaabuabu* 'greyish' (*keabu-abuan*)

        balandə/balandow 'Holland'   > *kabalandowbalandow* 'act (too) Dutch' (*kebelanda-belandaan*)

As it is unlikely that all overtly suffixed forms are borrowings, one must assume that with some lexical roots the suffix had fused with the root, whereas with others it had remained syllabic and separable, which finally resulted in its total disappearance.

The ABS-OBL opposition for the derivations in the last two examples of (21), the lack of vowel contraction in *tapiaŋ/tapian*, and the OBL-only paradigm for all other overtly suffixed roots suggest a long history of lexical diffusion for the changes involved. Without more systematic morphological research no chronology of these changes can be established.

3 Sound-changes: introduction

3.1 None of the Kerinci dialects show any indication of *ə and *a not being merged in final (root) syllables. It is possible that Proto Malayic root-final *i and *u had split into Pre-Kerinci *i and *ε, and *u and *ɔ respectively. But the number of roots that demonstrably have undergone this lowering is much smaller than that of Standard Malay/Indonesian, or even Minangkabau, which is more conservative than Standard Malay in this respect. In most cases historical high vowels seem to underlie the current Kerinci reflexes. There are a few cases which seem to show reflexes of inherited *ε and *ɔ, but some of these could well be loan words. The cases for which borrowing is an unlikely explanation are too few in number to enable the discovery of clear patterns. For the purpose of this paper I shall therefore assume that Pre-Kerinci had a three-vowel system in final root syllables:[9]

	[front]	[central]	[back]
[high]	*i		*u
[low]		*a	

As indicated in §2.1 above these vowels could be stressed (i.e. occur in phrase-final syllables), and unstressed (occur in phrase-medial syllables).

I further assume that, at least in root-final position, the consonantal system of Pre-Kerinci did not differ from the Proto Malayic one as reconstructed by Adelaar (1992:102), with the addition that there are no indications that in word-final position there was an opposition between (voiceless) velar and glottal stop: *-k merged with *-ʔ independently of all other sound-changes. Theoretically it may have been one of the most recent changes to occur, but given its wide spread (it is found in all documented Kerinci dialects and in most varieties of Malay), I assume that the merger antedated Pre-Kerinci times, and I shall write *-ʔ instead of *-k as a reflex of Proto Malayic *-k.

It is likely that Pre-Kerinci had two trills, one alveolar, the other uvular or velar,[10] but this is not relevant for the topic of this paper, since root-finally they were never distinguished or had merged at an early stage. The conditions of the sound-changes

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9   In other syllables there may have been mid front and back vowels, but they have all become high now. Even recent loan words assimilate to this pattern, e.g. *uto* 'car' (from Dutch *auto* [oto]), *kudaʔ* 'camera; photograph' (from *Kodak*).

10   The latter is reflected as zero root-initially and as *h* root-medially, the former in both positions as *r*. Their lexical distribution is at variance with the reconstructed distribution of Proto Austronesian *R and *r. See P&U (pp.129–132) for a discussion. See also Adelaar (1992:83–93), who considers *r* a borrowing.

discussed below suggest that this root-final trill was a back consonant, rather than alveolar. Since a back articulation for the word-final trill is found in many varieties of Malay, I assume that it is a change which antedated Pre-Kerinci as well, and I shall write *R as the Pre-Kerinci input.

Possibly the most typical feature of Kerinci sound-changes is the diverging development of root-final syllable nuclei in roots which contained a non-prenasalised voiced stop (called G-words), and those which did not (K-words).[11] Apparently phonetic voicedness of stops was not a sufficient condition for the classification of a root as a G-word: what counted as a G-word had to contain a stop that was voiced in a well-defined way: voice had to be phonemic. Although sonorants were presumably voiced as well, they were not phonemically so. In what in current Sungai Penuh pronunciation are sequences of a nasal and a homorganic stop, voicedness or voicelessness of the latter is phonemic: e.g. *kandaŋ* 'cage' versus *kantaŋ* 'beat up, lynch'. Now, several languages in Sumatra have developed an opposition between two kinds of nasals: a plain one and a 'checked' one (e.g. in Rejang, see Blust 1984:423), or a 'funny' one (such as in Acehnese; see Durie 1985:15); both these latter types of nasal, which in Blust (1997:170) are described as 'postploded' derive historically from a homorganic sequence of a nasal followed by a voiced stop. In Urak Lawoiʔ, a variety of Malay spoken in some insular villages along the south-west coast of Thailand, original sequences of a nasal followed by a homorganic voiced stop lost their stops, whereas original sequences of a nasal and a homorganic voiceless stop lost their nasals (see Steinhauer to appear). Similar phenomena are known from other Malay or Malay-like languages. I assume therefore that also in Pre-Kerinci original sequences of a nasal and a homorganic voiced stop had developed into nasals with a denasalised release. The effect of this articulation was that voice for the resulting set of unit phonemes was no longer phonemically relevant: words with such a phoneme could not therefore be classified as G-words.

The fusion of the nasal-voiced stop sequences into single phonemes antedated the divergence of G- and K-words. Since in other, distantly related, varieties of Malay a similar development of the original nasal-voiced stop sequences can be observed, I assume it was Pre-Kerinci input. Below I shall write *mb, *nd, *ɲj, *ŋg instead of *mb, *nd, *ɲj and *ŋg.[12]

3.2 Table 1 is a summary, based on this Pre-Kerinci input, of the vowel and consonant changes in root-final *-V(C) sequences which characterise the dialect of Sungai Penuh. The table clearly shows that splits in the vowels are the rule, both in stressed (i.e. originally phrase-final), and in unstressed (originally phrase-medial) positions. It also

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[11] Some polysyllabic words containing a prenasalised voiced stop should be classified as G-words, however. See footnote 12.

[12] This development of the nasal-voiced stop sequences seems to have been without exception in bisyllabic roots. The vast majority of roots *are* bisyllabic. Prenasalised voiced stops before the penultimate vowel in polysyllabic roots behave unpredictably. Sometimes the stop disappears, while the word behaves like a K-word, e.g. *camuhaw/camuhow* (<*camburu) 'jealous'. In other cases the stop is preserved, which mostly, but not always, turns the word into a G-word, e.g. *paɲjarə/ paɲjarow* 'jail' (<* pəɲjara) (a G-word), but *saɲjatə/saɲjato* 'weapon' (<*səɲjata) (a K-word).

shows that in current Sungai Penuh Kerinci the resulting vowels or diphthongs can only be followed by the root boundary, or by one of the following consonants: *?, h, ŋ, n, t*.[13]

Table 1: Changes in root-final *-V(C) sequences in Sungai Penuh Kerinci

final root vowel *V	changes in G-words into:	in K-words into:	in the position before root-final:		
*í	ɔy	ay	# < *# n < *m, *n, *ŋ, *l	? < *p, *t	h < *s
	ey	ε	# < *R, *l	? < *?	h < *h
*i	i	ey	# < *#, *R	? < *p, *t, *?	h < *s, *h
		e	# < *l n < *m, *n, *ŋ, *l		
*ú	εw	aw	# < *# ŋ < *m, *n	? < *p, *t	h < *s
	ew	ɔ	# < *R, *l[13] ŋ < *ŋ, *l	? < *?	h < *h
*u	u	ow	# < *#, *R, *l[14]	? < *p, *t, *?	h < *s, *h
		o	n < *m, *n, *ŋ, *l		
*á	ə	ɔ	# < *#, *w		
	e	a	# < *#, *R, *l, *w ŋ < *m, *n, *N, *l w < *w[13]	? < *p, *t, *?	h < *h
		ε	# < *y		h < *s
*a	ow	o	# < *#, *R, *l, *w w < *w[15]	? < *?	h < *h
	ɔ	a	t < *p, *t n < *ŋ, *m, *n, *l		
	ey	e	# < *y		h < *s

At first sight the impression raised by this table is one of prevailing madness. On closer inspection, however, some sense can be made of it. The observed Sungai Penuh word shapes, illustrated in Table 1, are the result of the following eighteen sound-changes:

1   Split of *-l.
2   Merger of all root-final nasals.
3   Nasalisation of some *-l after *-i-.
4   Merger of root-final anterior stops.

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13   With the exclusion of recent loan words (see S&U:484).
14   Examples with *l are found in two G-words only.
15   Examples with w <*w are found in a few K-words only.

5 Monophthongisation of *-*ay*, and fronting of *-*a*- before *-*s*.

6 Loss of *-*w* in some roots.

7 Rounding of *-*a*.

8 Raising and rounding of unstressed +-*a*- before back consonants.

9 Loss of *-*w* in some other roots.

10 Diphthongisation of stressed high vowels.

11 Centralisation of +-'*ɔ* in G-words.

12 Merger of +-*t* with +-*ʔ*, and of *-*s* with *-*h*.

13 Loss of +-*R*.

14 Diphthongisation of mid vowels in the final syllables of G-words, and diphthongisation and lowering of high vowels in the final syllables of K-words.

15 Raising of low and lower mid vowels in the final syllables of G-words.

16 Loss of +-*y*.

17 Assimilation of +-*n* after +-*w*-.

18 Biphonemic reinterpretation of the nasals with denasalised voiced release.

These sound-changes can be grouped into four subsequent sets of sound-changes. The first set (1–9) is valid for all roots, i.e. for both G- and K-words. They set the stage for those sound-changes which make Kerinci so different from other Malay vernaculars: these latter changes are all directly related to the presence or absence of a non-prenasalised voiced stop in the root. They will collectively be referred to as the 'primary G-effect', which is limited to stressed syllables only (sound-changes 10 and 11). After two intermediate consonant changes (12 and 13), the G-effect continues with vowel changes occurring mainly in syllables which were originally unstressed (sound-changes 14 and 15). The final set of changes (16–18) are consonant changes which presumably occurred after this secondary G-effect.

In the following section the sound-changes are discussed in detail.

4 Sound-changes: chronology

4.1 Each sound-change is numbered with a slash code x/y, in which x corresponds to the order of presentation, while y — if not empty — is the number of the earliest sound-change in which the result of sound-change x figures as input or constraint. A higher number does not imply that the sound-change came later, but a later sound-change always has a higher number than an earlier one.

In the sound-change formulas the following conventions will be used:

*X stands for a Pre-Kerinci phoneme or phonemic form; as a phoneme it may be an unchanged reflex of a Pre-Kerinci phoneme at a later stage of development. X is a phoneme or phonemic form attested in current Sungai Penuh Kerinci. +X is the reflex of one or more Pre-Kerinci phonemes or of a phonemic form at an intermediate stage; as a phoneme it may be the same as a Pre-Kerinci phoneme, but it is always the result of some sound-change (a shift, a merger or a split). Y stands for Y in stressed and

unstressed position, unless it is in opposition to Ý, in which case Y and Ý indicate Y in unstressed and stressed position respectively.

Each sound-change is illustrated with examples of roots undergoing the change. If the immediate input of the change is some intermediate form, the original Pre-Kerinci form and meaning will be given in parentheses followed by the symbol $>_{n(,...)}$, in which the index corresponds to the number(s) of the intermediate sound-change(s) leading to the input of the sound-change in question: (*XYZ 'xyz' $>_{2,7}$ +ABC > +OPQ or OPQ.

No separate OBL form will be presented in these illustrations, unless it is already different from the ABS form, either in shape or in history.

Sound-changes other than those concerning *-V(C)# are in principle independent of the latter. The most conspicuous of these other sound-changes are raising of mid high vowels (see footnote 9), loss of *h- and *R-, changes of *-R- to -h- (see footnote 10), lowering of *-ə- to -a- in antepenultimate syllables.[16] In the illustrations of the sound-changes below, these other changes are presented as cooccurring with the first change of *-V(C)#.

4.2.1 Early changes

1/2 Split of *-l

This was apparently an unconditioned change. In many roots *-l became velarised *and* nasalised, in others it behaved more or less like *-R (see the discussion and examples in P&U:139–141):

   *-l   > +-ŋ in most roots

Examples: *gatal 'itch'   > +gataŋ

            *tiŋgal 'stay'   > +tiŋgaŋ

            *tampil 'appear'   > +tampiŋ

            *bətul 'true'   > +bətuŋ

            *pikul 'carry on shoulder'   > +pikuŋ

The nasalisation of *-l after *-a- occurred in eight G-words and in sixteen K-words, and after *-u- in all K-words and all but two G-words. After *-i- this nasalisation process must have been relatively slower than after other vowels: at this stage *tampil is the only non-suspect example. In six other cases in which *-l after *-i- changed into a nasal[17] the change must have postdated the merger of root-final nasals into +-n after a high vowel (sound-change 2/7).

In other roots, in which *-l was not nasalised, it became only velarised, merging with *-R after vowels other than *-i-, but preserving a separate articulation after (stressed and unstressed) *-i-:

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[16] This may have been only a phonetic change — if any — since there may not have been a n opposition between *ə and *a in this position to begin with.

[17] Some of these are loan words, lacking an ABS/OBL opposition, such a s *aden* from I ndonesian *adil* 'fair'. Although it would be a G-word because of its -d- it apparently underwent the changes typical of the OBL form of a K-word deriving f rom a form in *-il.

*-l	> +-γ after *-i-[18]
*-l	> +-R elsewhere

Examples:
*sabil 'the Holy Way'	> +sabiγ
*katil 'small bench'	> +katiγ
*gundul 'bold'	> +gunduR
*kidal 'left-handed'	> +kidaR
*kumal 'lump'	> +kumaR

This velarisation of *-l to +-R after *-i- occurs in four G-words and in five K-words, and after *-a- in four G-words and eleven K-words. After *-u-, however, it was attested in two G-words only (*gun^dul 'bold' and *gumul 'wrestle').

2/3 Merger of root-final nasals

*-m and *-n	> +-ŋ after *-á-
*-m	> +-n elsewhere
+-ŋ	> +-n after any unstressed vowel and after *-í-

In other positions *-n and +-ŋ remained unchanged.

The difference between the stressed vowels seems to have been a matter of assimilation: openness of the vowel caused the nasals to become back. It is likely that the mergers of all three nasals were in fact gradual, *-m and *-n changing into +-n first. Moreover, the process may have spread from one vocalic environment to the next.

Examples:

*dalam 'deep'		> +dalaŋ/+dalan
*malam 'night'		> malaŋ/malan
*badan 'body'		> +badaŋ/+badan
*ləŋan 'arm'		> ləŋaŋ/ləŋan
*kiRim 'send'		> +kihin
*jarum 'needle'		> +jarun
*cium 'smell'		> +ciun
*dataŋ 'come'		> +dataŋ/+datan
*ləŋaŋ 'quiet'		> ləŋaŋ/ləŋan
(*gatal 'itch' >₁)	+gataŋ	> +gataŋ/+gatan
(*tiŋgal 'stay' >₁)	+tiŋgaŋ	> +tiŋgaŋ/+tiŋgan
*bətuŋ 'k.o. bamboo'		> +bətuŋ/+bətun
(*bətul 'true' >₁)	+bətuŋ	> +bətuŋ/+bətun
*patuŋ 'statue'		> patuŋ/+patun
(*pikul 'carry on shoulder' >₁)	+pikuŋ	> +pikuŋ/+pikun
*dindiŋ 'wall'		> +dindin
*caciŋ 'worm'		> +cacin
(*tampil 'appear' >₁)	+tampiŋ	> +tampin

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18   The exact phonetic nature of this back consonant +-γ is unclear, but it must have been different from other consonants at this stage of development.

The merger of nasals must have been completed before the primary G-effect (sound-change 10/12). However, the obvious parallellism with sound-change 4/10 justifies the assumption that it antedated the raising and rounding of unstressed +-*a*- before back consonants (sound-change 8/9). This is corroborated by the conditions for 8/9: if +-*ŋ* had not become +-*n* by then, one would expect to find **-*on* < *-*aŋ*, instead of attested -*an*.

3/10   Nasalisation of some *-l after *-i-

> *-*l*   > +-*ŋ* after *-*í*-
> > +-*n* after *-*i*-

This is in fact the continuation of the split of *-*l* discussed above (sound-change 1/2). Since +-*ŋ* < *-*l* did not become **-*n* after *-*í*-, the pertinent roots must have become subject to the change into +-*ŋ* only after 2/3. The resultant forms did not change before the primary G-effect (sound-change 10/12). There are only a few non-suspect examples, one of them being:

Example: *kancil* 'mouse-deer'   > +*kanciŋ*/+*kancin*

4/10   Merger of root-final anterior stops

After *-*á*-, *-*p* and *-*t* merged into a glottal stop, whereas after (stressed and unstressed) high vowels they merged into +-*t*. This change of *-*p* into +-*t* also occurred in thirty-eight out of sixty-seven cases of *-*p* after unstressed *-*a*-. In the other twenty-eight reflexes of *-*ap* in my data *-*p* became a glottal stop):

> *-*p* and *-*t*   > +-*ʔ* after *-*á*-
> (*-*t* remained unchanged elsewhere)
> *-*p*   > +-*t* after (stressed and unstressed) *-*i*- and *-*u*-,
> > and in thirty-eight roots also after (unstressed) *-*a*-
> *-*p*   > +-*ʔ* after *-*a*- in twenty-eight other roots

Because of their parallelism, these sound-changes may have co-occurred or at least largely overlapped in time with the mergers of the nasals (sound-change 2/3). Like the mergers of all three nasals after *-*á*-, the merger of *-*p* and *-*t* with *-*ʔ* may have been gradual too, *-*p* and *-*t* changing into +-*t* first. At the latest this merger with *-*ʔ* was part of sound-change 12/14 (see there). The merger of *-*p* and *-*t* into +-*t* antedated the primary G-effect (sound-change 10/12). The twenty-eight cases of a direct change of *-*p* into +-*ʔ* must have antedated sound-change 8/9.

Examples: *səbap* 'reason'   > +*səbaʔ*/+*səbat*
             lalap 'raw vegetables' > +*lalaʔ*/+*lalat*
             ləbat 'dense'   > +*ləbaʔ*/+*ləbat*
             lalat 'fly'   > +*lalaʔ*/+*lalat*

hidup 'live'	> +*idut*
cukup 'enough'	> +*cukut*
wajip 'obliged'	> +*wajit*
lancip 'pointed'	> +*lancit*
gəlap 'dark'	> +*gəlaʔ*/+*gəlaʔ*
ləŋkap 'complete'	> *ləŋkaʔ*/+*ləŋkaʔ*

5/10 Monophthongisation of *-ay, and fronting of *-a- before *-s

The resulting vowels from these changes have different height in stressed and unstressed position.

-ay	> +*-ɛ* if stressed
	+*-e* if unstressed
-a-	> +*-ɛ-* before *-s if stressed
	+*-e-* before *-s if unstressed

The fact that *-s has the same fronting effect as *-y suggests that its articulation was palatal rather than alveolar.

As to the opposition between the higher and lower mid front vowels depending on stress, it is uncertain whether this was already phonemic at this stage of development. It appears to be a general tendency for the articulation to be less open in unstressed final root syllables than in their stressed counterparts. For the mid vowels this relative tongue height became phonemic at the latest after the loss of the suffixes, but probably already as a consequence of their diverging developments under the G-effect (see sound-change 10/12 below).

Examples:	*ləbay* 'mosque servant'	> +*ləbɛ*/+*ləbe*
	suŋay 'river'	> *suŋɛ*/*suŋe*
	bɛbas 'free'	> +*bibɛs*/+*bibes*
	ləmas 'week'	> +*ləmɛs*/+*ləmes*

6/7 Loss of some *-w

The only position where *-w occurred at this stage was after *-a-. The change occurred in a number of roots only.

-w	> 0 (zero) in some roots

The beginning of this process may have coincided with the monophthongisation of *-ay. In any case it must have been a process of slow lexical diffusion. Before the rounding of root-final +-a (sound-change 7/9) only three out of thirty-nine documented roots underwent the change: *igaw* 'rave', *kəmaraw* 'dry (season)', *kincaw* 'mix'; in twenty-two cases the loss of *-w only occurred after *-a- had become rounded in certain final root syllables (i.e. after the sound-changes 7/9 and 8/9). In the examples below this preserved *-w will be referred to as +-w.

Examples: **igaw* 'rave'   > +*iga*
             *kəmaRaw 'dry (season)'   > +*kəmaha*

but **danaw* 'lake', **lampaw* 'past' and **pulaw* 'island' remain at this stage unchanged.

7/9 Rounding of +-a

  +-*a*   > +-*ɔ* if stressed
            > +-*o* if unstressed

Also here the realisation of the resulting mid vowel, which I assume to have been rather low in stressed position, must have been higher in unstressed final root syllables (see sound-change 5/10).

Examples: **gila* 'crazy'   > +*gilɔ/* +*gilo*
             *rasa 'feel'   > *rasɔ/raso*
             (**igaw* 'rave' >6)   +*iga*   > +*igɔ/* +*igo*
             (**kəmaRaw* 'dry (season)' >6)   +*kamaha*   > *kamahɔ/kamaho*

8/9 Raising and rounding of unstressed +-a- before back consonants

  +-*a*-   > +-*o*- in unstressed final syllables before back consonants, i.e. before
            *-h, **-w*, +-*ʔ*, and +-*R*

At this stage there were no other back consonants after unstressed +-*a*-.
In stressed position +-*á*- remained unchanged before these consonants.
Phonetically, this rounding was a process of assimilation, the vowel becoming back before back consonants in unstressed position, where the pronunciation of +-*a* was presumably coloured by adjacent consonants.
The previous sound-change (7/9) is perhaps not completely independent of this change: it is likely that mutual reinforcement took place, with the implication that they coincided.

Examples: **basah* 'wet'   > +*basah/* +*basoh*
             *laŋkah 'step'   > *laŋkah/laŋkoh*
             *danaw 'lake'   > +*danaw/* +*danow*
             *lampaw 'past'   > +*lampaw/* +*lampow*
             *pulaw 'island'   > *pulaw/pulow*
             *bapaʔ 'father'   > +*bapaʔ/* +*bapoʔ*
             *awaʔ 'body'   > *awaʔ/awoʔ*
             (**gəlap* 'dark' >4)   +*gəlaʔ/* +*gəlaʔ*   > +*gəlaʔ/* +*gəloʔ*
             (**ləŋkap* 'complete' >4)   *ləŋkaʔ/* +*ləŋkaʔ*   > *ləŋkaʔ/ləŋkoʔ*
             *dataR 'flat'   > +*dataR/* +*datoR*
             *lapaR 'hungry'   > +*lapaR/* +*lapoR*
             (**kidal* 'left-handed' >1) +*kidaR*   > +*kidaR/* +*kidoR*
             (**kumal* 'lump' >1)   +*kumaR*   > +*kumaR/* +*kumoR*

9/10 Loss of *-w in some more roots

> *-w   > 0 (zero) in a number of roots

This change is to a certain extent the continuation of 6/7. According to my data, it covered another twenty-six roots, but left ten roots unchanged.[19]

The change did not effect the new diphthongs which developed out of the original root-final high vowels; consequently it must have antedated the diphthongisations of the primary G-effect (sound-change 10/12).

Examples: (*danaw* 'lake' >$_8$) $^+$*danaw*/$^+$*danow*   > $^+$*dana*/$^+$*dano*
              (*lampaw* 'past' >$_8$) $^+$*lampaw*/$^+$*lampow*   > *lampa*/*lampo*

As indicated above, the sound-changes 6/7–9/10 occurred in that order, with the possibility of 7/9 and 8/9 coinciding. But they are independent of the other changes and may in fact be dated back to a period before the sound-changes 1/2 and 2/3.

The fronting of *-a (sound-change 5/10) is also independent of the other changes discussed so far and may also have antedated the split of *-l. But since 5/10, 7/9 and 8/9 can all be seen as demonstrating the instability of stressed and unstressed *-a, it seems that there was a close temporal relation between these sound-changes.

Sound-changes 2 and 4 (merger of nasals and merger of stops) finally, are too similar not to be closely related in time. I assume that both preceded the rounding of unstressed $^+$*-a-* before back (oral) consonants (sound-change 8/9). The alternative (rounding of unstressed $^+$*-a-* before some *-p and subsequent change of *-p to -ʔ after all stressed and unstressed vowels except unstressed $^+$*-a-*) is less attractive because of the more complicated phonetic constraints.[20]

Whatever their exact relative order, these first changes set the stage for the next set, which were the result and the expression of a growing difference between K- and G-words.

4.2.2 Primary G-effect: vowel changes in stressed syllables

10/12 Diphthongisation of stressed high vowels

The sound-changes which occurred in this second stage in the development of Sungai Penuh Kerinci were presumably triggered by a difference in phonation type which developed between G- and K-words. G-words — I repeat it — are those roots which contain at least one functionally voiced stop; all other roots are K-words. The presence of one or more sonorants, including those with a voiced non-nasal release, is an insufficient condition for a root to qualify as a G-word.

Now, I assume that as a corollary of voicedness in the G-words a phonation type developed which had its effects throughout the word, but most noticeably in stressed, i.e. in phrase-final syllables. Whatever the exact phonetic nature of this phonation type may

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[19]   These ten roots all appear to be K-words, but since only twenty per cent of all roots in *-aw* are G-words, this may well be accidental.

[20]   This objection can be circumvented by splitting the nasal mergers into a change of $^+$-ŋ to -n after unstressed $^+$*-a-* preceding 8/9, and the other mergers, which then could have postdated 8/9. For the moment I prefer the more generalising scenario.

have been, it was most likely related to relative advancement of the tongue root. In contrast, K-words were pronounced with relatively retracted tongue root. The effect of the advanced tongue root articulation was raising of root-final stressed vowels, whereas retraction of the tongue root resulted in lowering. In G-words the following sound-changes occurred in stressed position:

*í	> ɔ́y	word-finally and before *-s, +-n, and +-t
	> éy	before *-h, *-ʔ, *-R, and +-ɣ
*ú	> ɛ́w	word-finally and before *-s, +-n, and +-t
	> éw	before *-h,*-ʔ, +-R, and +-ŋ.

In fact, the effect may also be analysed as raising from a high vowel to a corresponding glide, with concomitant syllabification by insertion of a preceding mid vowel. This vowel differed, inversely depending on the nature of the final consonant. Before non-diffuse consonants this vowel was higher than in the other positions (word-finally and before diffuse consonants): *-e(w(C))* versus *-ɛ(w(C))*; before *-y(C)*, however, there was (and still is) no opposition between a lower and a higher mid *front* vowel; the given reflexes, *-e(y(C))* versus *-ɔ(y(C))*, are the only way to realise a relative difference in height in this position.

Examples:	*gigi 'tooth'		> gigɔy/ gigi
	*bətis 'calf of leg'		> +bətɔys/ +bətis
	*diŋin 'cold'		> diŋɔyn/diŋin
	(*dindiŋ 'wall' >2)	+dindin	> +dindɔyn/+dindin
	*bukit 'hill'		> +bukɔyt/+bukit
	(*wajip 'obliged' >4)	+wajit	> +wajɔyt/+wajit
	*ləbih 'more'		> +ləbeyh/+ləbih
	*cabiʔ 'torn'		> cabeyʔ/cabiʔ
	*bibiR 'lip'		> +bibeyR/+bibiR
	(*sabil 'the Holy Way' >1)	+sabiɣ	> +sabeyɣ/+sabiɣ
	*bulu 'feather'		> bulɛw/bulu
	*buŋkus 'wrap up'		> +buŋkɛws/+buŋkus
	*dusun 'village'		> +dusɛwn/+dusun
	(*jarum 'needle' >2)	+jarun	> +jarɛwn/jarun
	*kabut 'mist'		> +kabɛwt/+kabut
	(*hidup 'live' >4)	+idut	> +idɛwt/+idut
	*basuh 'wash'		> +basewh/+basuh
	*duduʔ 'sit'		> dudewʔ/duduʔ
	*kubuR 'grave'		> +kubewR/+kubuR
	(*gundul 'bold' >1)	+gunduR+	> +gundewR/+gunduR
	(*bətuŋ 'k.o.bamboo' >2)	+bətuŋ/bətun	> bətewŋ/bətun
	(*bətul 'true' >1,2)	+bətuŋ/bətun	> bətewŋ/bətun

The absence of the phonation type which developed in G-words, or to put it more positively, the relatively retracted tongue root position, triggered lowering of the high vowels in stressed syllables in K-words. This lowering is realised as maximal diphthongisation before diffuse consonants and word-finally; before non-diffuse consonants the lowering results in a lower mid vowel:

$*^{1}i$	$> áy$	word-finally and before *-s, +-n, and +-t
	$> ɛ́$	before *-h, *-ʔ, *-R, +-ɣ, and +-ŋ
$*^{1}u$	$> áw$	word-finally and before *-s, +-n, and +-t
	$> ɔ́$	before *-h, *-ʔ, *-R, and +-ŋ

There are no other diffuse and non-diffuse consonants in the relevant positions than those given in these formulas.

Examples:			
*pipi 'cheek'			> pipay/+pipi
*taŋis 'weep'			> +taŋays/+taŋis
*cincin 'ring'			> cincayn/+cincin
(*kirim 'send' >₂)		+kihin	> kihayn/+kihin
(*caciŋ 'worm' >₂)		+cacin	> cacayn/+cacin
(*tampil 'appear' >₁,₂)		+tampin	> tampayn/+tampin
*kulit 'skin'			> +kulayt/+kulit
(*lancip 'pointed' >₄)		+lancit	> +lancayt/+lancit
*pilih 'choose'			> pilɛh/+pilih
*titiʔ 'dot'			> titɛʔ/+titiʔ
*pikiR 'think'			> +pikɛR/+pikiR
(*katil 'small bench' >₁)		+katiɣ	> +katɛɣ/+katiɣ
(*kancil 'mouse deer' >₃)		+kanciŋ/+kancin	> kancɛŋ/+kancin
*kuku 'nail'			> kukaw/+kuku
*halus 'fine'			> +alaws/+alus
*tənun 'weave'			> +tənawn/+tənun
(*cium 'smell' >₂)		+ciun	> +ciawn/+ciun
*lutut 'knee'			> +lutawt/+lutut
(*cukup 'enough' >₄)		+cukut	> +cukawt/+cukut
*kukuh 'steady'			> kukɔh/+kukuh
*kutuʔ 'curse'			> kutɔʔ/+kutuʔ
*kapuR 'chalk'			> +kapɔR/+kapuR
(*patuŋ 'statue' >₂)		+patuŋ/+patun	> patɔŋ/+patun
(*pikul 'carry on shoulder' >₁,₂)		+pikuŋ/+pikun	> pikɔŋ/+pikun

11/ Centralisation of +-ɔ́ in G-words

Also the reflex of root-final *-á was changed in G-words. In K-words it remained unchanged.

   $+-ɔ́$ $> -ə́$ in G-words

This latter change is in fact independent of the developments of the stressed *high vowels. The process can only be qualified as raising — and thus become consonant with the general pattern — if one assumes that +-ɔ́ was rather low (see sound-change 7/9).

Being part of the G-effect, the process should not antedate 10/12. At the latest, however, it is part of the secondary G-effect, but it is independent of those changes as well. Its inclusion in the set of changes belonging to the primary G-effect is admittedly rather arbitrary.

Examples: (*gila* 'crazy' >7)   +gilɔ/+gilo   > gilə/+gilo
          (*igaw* 'rave' >6,7)   +igɔ/+igo   > igəl+igo

4.2.3 Intermediate consonantal changes

Also, other root-final vowels, such as those which are unstressed, split as a result of advanced and retracted tongue root position. However, the environmental conditions are different, and it is likely therefore that first the following consonant changes occurred.

12/14 Merger of +-t with +-ʔ and of *-s with *-h

    +-t   > -ʔ   except after unstressed *-a- where it remained unchanged
    *-s   > -h

Although these mergers are probably independent of each other, they are grouped together here since they both involve a shift to a glottal articulation.

The change of *-t to +-ʔ after *-á- was already postulated for 4/10, mainly because of the parallelism with 2/3. However, if it was a more gradual process, its final stage coincided with 12/14.

Examples: (*bukit* 'hill' >10)   +bukɔyt/+bukit   > bukɔyʔ/bukiʔ
          (*kulit* 'skin' >10)   +kulayt/+kulit   > kulayʔ/+kuliʔ
          (*wajip* 'obliged' >4,10)   +wajɔyt/+wajit   > wajɔyʔ/wajiʔ
          (*lancip* 'pointed' >4,10)   +lancayt/+lancit   > lancayʔ/+lanciʔ

          (*kabut* 'mist' >10)   +kabɛwt/+kabut   > kabɛwʔ/kabuʔ
          (*lutut* 'knee' >10)   +lutawt/+lutut   > lutawʔ/+lutuʔ
          (*hidup* 'live' >4,10)   +idɛwt/+idut   > idɛwʔ/iduʔ
          (*cukup* 'enough' >4,10)   +cukawt/+cukut   > cukawʔ/+cukuʔ

          (*bətis* 'calf of leg' >10)   +bətɔys/+bətis   > bətɔyh/bətih
          (*taŋis* 'weep' >10)   +taŋays/+taŋis   > taŋayh/+taŋih
          (*buŋkus* 'wrap up' >10)   +buŋkɛws/+buŋkus   > buŋkɛwh/buŋkuh
          (*halus* 'fine' >10)   +alaws/+alus   > alawh/+aluh
          (*bɛbas* 'free' >5)   +bibɛs/+bibes   > bibɛh/+bibeh
          (*ləmas* 'week' >5)   +ləmɛs/+ləmes   > ləmɛh/ləmeh

13/14 Loss of +-R

    +-R   > 0 (zero)

Examples: (*dataR* 'flat' >8)   +*dataR*/+*datoR*   > +*data*/+*dato*

(*lapaR* 'hungry' >8)   +*lapaR*/+*lapoR*   > *lapa*/*lapo*

(*kidal* 'left-handed' >1,8)   +*kidaR*/+*kidoR*   > +*kida*/+*kido*

(*kumal* 'lump' >1,8)   +*kumaR*/+*kumoR*   > *kuma*/*kumo*

(*bibiR* 'lip' >10)   +*bibeyR*/+*bibiR*   > *bibey*/*bibi*

(*pikiR* 'think' >10)   +*pikɛR*/+*pikiR*   > *pikɛ*/+*piki*

(*kubuR* 'grave' >8)   +*kubewR*/+*kubuR*   > *kubew*/*kubu*

(*kapuR* 'chalk' >10)   +*kapɔR*/+*kapuR*   > *kapɔ*/+*kapu*

(*gundul* 'bold' >1,10)   +*gundewR*/+*gunduR*   > +*gundew*/+*gundu*

The existence of ABS/OBL pairs such as +*kida*/+*kido*, *kuma*/*kumo*, +*data*/+*dato*, and *lapa*/*lapo* caused loan words in -*a*, which presumably came into the language at this stage, to assimilate to this pattern:

Examples: *istana* 'palace'   > *istana*/*istano*

bandɛra 'flag' (< Portuguese *bandeira*)   >+*bandira*/+*bandiro*

4.2.4 Secondary G-effect: vowel changes in originally unstressed syllables

At this stage root-final stressed syllables were sufficiently differentiated from their unstressed variants in suffixed forms, so that suffixes had become redundant and were dropped. Now, the root-final syllables all had become word-final, and the formal oppositions in final root-syllables acquired the semantic value 'indefinite' versus 'definite' (ABS versus OBL).

Both forms could now occur phrase-finally; in other words, the formal oppositions were no longer a matter of stress versus its absence; both forms could now be equally stressed. I assume that also phrase-internally root-final syllables became less outspokenly unstressed. Consequently stress will no longer be marked in the formulas below.

The effect was that the originally unstressed final root syllables became sensitive to the phonation types that differentiated G- and K-words. The following sound-changes were the result.

14/15 Diphthongisation of mid vowels in G-words, and lowering and diphthongisation of high vowels in K-words

In K-words retracted tongue root position caused the higher mid vowels to remain what they were. In G-words, however, they were raised to the corresponding diphthongs:

+*e*   > *ey*
+*o*   > *ow*

Examples: (*labay* 'mosque servant' >5)   +*labɛ*/+*labe*   > +*labɛ*/*labey*

(*bɛbas* 'free' >5,12)   *bibɛh*/+*bibeh*   > *bibɛh*/*bibeyh*

(*gila* 'crazy' >7,11)   *gilə*/+*gilo*   > *gilə*/*gilow*

(*igaw* 'rave' $>_{6,7,11}$) igə/⁺igo   > igə/igow
(*danaw* 'lake' $>_{6,8,9}$) ⁺dana/⁺dano > ⁺dana/danow
(*kidal* 'left-handed' $>_{1,8,13}$) ⁺kida/⁺kido > ⁺kida/kidow
dataR 'flat' $>_{8,13}$) ⁺data/⁺dato > ⁺data/datow
(*bəndŕa* 'flag' $>_{13}$) ⁺bandira/⁺bandiro > ⁺bandira/
⁺bandirow

(*basah* 'wet' $>_8$) ⁺basah/⁺basoh > ⁺basah/basowh
(*bapaʔ* 'father' $>_8$) ⁺bapaʔ/⁺bapoʔ > ⁺bapaʔ/bapowʔ
(*gəlap* 'dark' $>_{4,8}$) ⁺gəlaʔ/⁺gəloʔ > ⁺gəlaʔ/gəlowʔ

With the *high vowels the roles were changed: in G-words advanced tongue root position caused these vowels to remain high. Retracted tongue root position in K-words, however, caused them to be lowered. Where the coda of the final root syllable before the change was defined merely by the position of the vocal cords (open: ⁺-V, closed: ⁺-Vʔ, half closed: ⁺-Vh) the nucleus became a relatively high diphthong, before the other consonants (⁺-y and ⁺-n) the *high vowel was lowered to the corresponding higher mid vowel. Consequently in K-words the following changes occurred:

*i   > ey   word-finally and before ⁺-ʔ and ⁺-h
     > e   before ⁺-y and ⁺-n

*u   > ow   word-finally and before ⁺-ʔ and ⁺-h
     > o   before ⁺-n

Examples: (*pipi* 'cheek' $>_{10}$) pipay/⁺pipi   > pipay/pipey
(*pikiR* 'think' $>_{10,13}$) pikɛ/⁺piki   > pikɛ/pikey
(*titiʔ* 'dot' $>_{10}$) titɛʔ/⁺titiʔ   > titɛʔ/titeyʔ
(*lancip* 'pointed' $>_{4,10,12}$) lancayʔ/⁺lanciʔ > lancayʔ/lanceyʔ
(*kulit* 'skin' $>_{10,12}$) kulayʔ/⁺kuliʔ > kulayʔ/kuleyʔ
(*pilih* 'choose' $>_{10}$) pilɛh/⁺pilih > pilɛh/pileyh
(*taŋis* 'weep' $>_{10,12}$) taŋayh/⁺taŋih > taŋayh/taŋeyh

(*katil* 'small bench' $>_{1,10}$) ⁺katɛy/⁺katiy > ⁺katɛy/⁺katey
(*cincin* 'ring' $>_{10}$) cincayn/⁺cincin > cincayn/cincen
(*kirim* 'send' $>_{2,10}$) kihayn/⁺kihin > kihayn/kihen
(*caciŋ* 'worm' $>_{2,10}$) cacayn/⁺cacin > cacayn/cacen
(*tampil* 'appear' $> 1,2,10$) tampayn/⁺tampin > tampayn/tampen
(*kancil* 'mouse deer' $>_{3,10}$) kancɛŋ/⁺kancin > kancɛŋ/kancen
(*kuku* 'nail' $>_{10}$) kukaw/⁺kuku > kukaw/kukow
(*kapuR* 'chalk' $>_{10,13}$) ⁺kapɔ/⁺kapu > ⁺kapɔ/⁺kapow
(*kutuʔ* 'curse' $>_{10}$) kutɔʔ/⁺kutuʔ > kutɔʔ/kutowʔ
(*lutut* 'knee' $>_{10,12}$) lutawʔ/⁺lutuʔ > lutawʔ/lutowʔ
(*cukup* 'enough' $>_{4,10,12}$) cukawʔ/⁺cukuʔ > cukawʔ/cukowʔ
(*kukuh* 'steady' $>_{2,10}$) kukɔh/⁺kukuh > kukɔh/kukowh
(*halus* 'fine' $>_{10,12}$) alawh/⁺aluh > alawh/alowh

$$*(t\partial nun \text{ 'weave'} >_{10}) \qquad {}^{+}t\partial nawn/{}^{+}t\partial nun \qquad > {}^{+}t\partial nawn/t\partial non$$
$$*(cium \text{ 'smell'} >_{2,10}) \qquad {}^{+}ciawn/{}^{+}ciun \qquad > {}^{+}ciawn/cion$$
$$*(pat u\eta \text{ 'statue'} >_{2,10}) \qquad pat\eth\eta/{}^{+}patun \qquad > pat\eth\eta/paton$$
$$*(pikul \text{ 'carry on}$$
$$\text{shoulder'} >_{1,2,10}) \qquad pik\eth\eta/{}^{+}pikun \qquad > pik\eth\eta/pikon$$

To what extent these opposite vowel changes co-occurred is uncertain, but they are grouped together here, since the two sets of changes are complementary.

The results of both sets of changes confirm the already familiar picture of lower vowels in K-words and higher ones in G-words.

15/ Raising of low and lower mid vowels in G-words

With the higher mid vowels out of the way, there was room for the lower vowels to be raised in G-words:

$$^{+}\text{-}\varepsilon \qquad > \text{-}e$$
$$*\text{-}a \qquad > \text{-}e$$
$$*\text{-}a\text{-} \qquad > \text{-}e\text{- before } ^{+}\text{-}\text{?}, *\text{-}h, \text{ and } ^{+}\text{-}\eta$$
$$\qquad\qquad > \text{-}\text{ɔ-} \text{ before } ^{+}\text{-}n, \text{ and } ^{+}\text{-}t$$

The latter two changes show vowel-consonant dissimilation: before back consonants the vowels are fronted, before anterior consonants they become back.

Examples:　(*$l\partial bay$ 'mosque servant' >$_{5,14}$)　$^{+}l\partial b\varepsilon/l\partial bey$　　> $l\partial be/l\partial bey$

　　　　　　(*$b\varepsilon bas$ 'free' >$_{5,12,14}$)　　$^{+}bib\varepsilon h/bibeyh$　　> $bibeh/bibeyh$

　　　　　　(*$b\partial nd\varepsilon ra$ 'flag' >$_{13,14}$)　$^{+}bandira/{}^{+}bandirow$　>$^{+}bandire/$
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　$^{+}bandirow$

　　　　　　(*$danaw$ 'lake' >$_{6,8,9,14}$)　　$^{+}dana/danow$　　> $dane/danow$

　　　　　　(*$kidal$ 'left-handed' >$_{1,8,13,14}$)　$^{+}kida/kidow$　　> $kide/kidow$

　　　　　　(*$dataR$ 'flat' >$_{8,13,14}$)　　$^{+}data/datow$　　> $date/datow$

　　　　　　(*$bapa\text{?}$ 'father' >$_{8,14}$)　　$^{+}baba\text{?}/bapow\text{?}$　> $bape\text{?}/bapow\text{?}$

　　　　　　(*$s\partial bap$ 'reason' >$_{4}$)　　$^{+}s\partial ba\text{?}/{}^{+}s\partial bat$　> $s\partial be\text{?}/s\partial b\partial t$

　　　　　　(*$l\partial bat$ 'dense' >$_{4}$)　　$^{+}l\partial ba\text{?}/{}^{+}l\partial bat$　> $l\partial be\text{?}/l\partial b\partial t$

　　　　　　(*$basah$ 'wet' >$_{8,14}$)　　$^{+}basah/basowh$　> $baseh/basowh$

　　　　　　(*$data\eta$ 'come' >$_{2}$)　　$^{+}data\eta/{}^{+}datan$　> $date\eta/dat\partial n$

　　　　　　(*$dalam$ 'deep' >$_{2}$)　　$^{+}dala\eta/{}^{+}dalan$　> $dale\eta/dal\partial n$

　　　　　　(*$badan$ 'body' >$_{2}$)　　$^{+}bada\eta/{}^{+}badan$　> $bade\eta/bad\partial n$

　　　　　　(*$gatal$ 'itch' >$_{1,2}$)　　$^{+}gata\eta/{}^{+}gatan$　> $gate\eta/gat\partial n$

4.2.5 Final consonantal changes

16/ Loss of $^{+}\text{-}\gamma$

$$^{+}\text{-}\gamma \qquad > 0 \text{ (zero)}$$

This change occurred after 14/15. As a hypothetical reflex of *-l* after *-i-*, the phonetic nature of this +-γ is rather enigmatic. It has to be postulated only for sound-change 14/15. Where it conditions other sound-changes (notably 10/12), it cannot be distinguished from -R, the more common reflex of *-l*.

Examples: (*katil* 'small bench' >[1,10,14])   +*katεγ*/+*kateγ*   > *katε*/*kate*

(*sabil* 'the Holy Way' >[1,10])[21]   +*sabeyγ*/+*sabiγ*   > *sabey*/*sabi*

17/ Assimilation of +-n to a preceding +-w

+-*n*   > -*η* after -*w*-

Only originally stressed syllables of roots which once ended in *-um*, *-un* or *-uη* provided the necessary condition for this change. It obviously postdated the primary G-effect on the stressed high vowels (sound-change 10/12), but is independent of all other later changes.

Examples: (*cium* 'smell' >[2,10,14])   +*ciawn*/*cion*   > *ciawη*/*cion*

(*tanun* 'weave' >[10,14])   +*tanawn*/*tanon*   > *tanawη*/*tanon*

(*jarum* 'needle' >[2,10])   +*jarεwn*/*jarun*   > *jarεwη*/*jarun*

(*dusun* 'village' >[10])   +*dusεwn*/*dusun*   > *dusεwη*/*dusun*

18/ Biphonemic reinterpretation of the nasals with voiced denasalised release

+-*m*[b]-, +-*n*[d]-, +-*ɲ*[j]-, and +-*η*[g]-   > -*mb*-, -*nd*-, -*ɲj*-, and -*ηg*-

This reinterpretation corresponds to current Sungai Penuh Kerinci pronunciation. The change must have postdated the secondary G-effect (sound-changes 14 and 15), but was independent of the other later changes.

Examples: (*gam*[b]*aR* 'picture' >[8,13,14,15]) +*gambe*/+*gambow*   > *gambe*/*gambow*

(*bandεra* 'flag' >[13,14,15])   +*bandire*/+*bandirow* > *bandire*/*bandirow*

(*gundul* 'bold' >[1,10,13])   +*gundew*/+*gundu*   > *gundew*/*gundu*

(*dindiη* 'wall' >[2,10])   +*dindɔyn*/+*dindin*   > *dindɔyn*/*dindin*

(*paɲjaη* 'long' >[2])   +*paɲjaη*/+*paɲjan*   > *paɲjaη*/*paɲjan*

(*tiηgal* 'stay' >[1,2])   +*tiηgaη*/+*tiηgan*   > *tiηgaη*/*tiηgan*

5   Conclusion

5.1 The above chronology of sound-changes is summarised in Figure 1. The figures refer to the numbers of the sound-changes discussed above. It should be stressed that the chronology is relative, which implies that beginning and end of the subsequent sound-

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[21]   Instead of +-*iγ* as the reflex of *-il* in *sabil* according to sound-change 1/2, one could also propose another split, whereby some *-il* became +-*iR* and others +-*iγ*. However, I prefer the more general formulation in this case, which may be a matter of loan word adaptation.

changes cannot be related to real time. A thick horizontal line indicates that the vertical borders between subsequent sound-changes above and below it have no real time connection to each other. Although it is likely that 2 and 4 largely coincided, the picture illustrates the possibility that 4 was a more gradual process, which for part of its effects may have been effective until sound-change 12.

split of *-l (1)	monophthongisation of *-ay fronting of *-a- before *-s (5)				diph-thong-isation of stressed high vowels (10)	*-s >- h (12) +-t > -ʔ (12) (4?)	diph-thong-isations in G- and K- words (14)	raising of lower vowels in G-words (15)	+-mb- etc. > -mb- etc. (18)
	merger of stops (4)								
	merger of nasals (2)	*-l > -ŋ (3)	round-ing of *-a- (8)	loss of some more *-w (9)		loss of +-R (13)		loss of +-ɣ (16)	
loss of some *-w (6)	rounding of *-a (7)					assimilation of +-n after -w- (17)			
					centralisation of + ɔ in G-words (11)				

order of sound-changes in time ---->

Figure 1: Relative chronology of sound-changes in Sungai Penuh Kerinci

5.2 The chronology proposed in this paper remains hypothetical. Basic concepts in the reconstruction are the stressed-unstressed opposition, the phonetic definition of G-words, and the corollary of the latter: advanced tongue root position with the effect of vowel raising.

It remains rather unsatisfactory that some neo-hocus-pocus is required to analyse diphthongisation of high vowels in one case (*í > ay and *ú > aw) as raising, and in another case (*i > ey and *u > ow) as lowering. Yet, a more plausible solution does not seem to be obvious. Whatever the solution might be, it remains typologically amazing that the G-effect jumps syllables.[22]

The sound-changes of Kerinci appear to be quite regular. Nonetheless, there *are* exceptions. Some of these have been incorporated in the above chronology in terms of unconditioned splits (*-l in 1/2 and *-p in 4/10), and slow lexical diffusion (*-w in 6/7 and 9/10). Borrowing was suggested as a source of some other exceptions (*-a > -e/-ow as discussed in 13/14).

To what extent borrowing is an explanation depends on factors such as statistics, source, domain and time of borrowing. I hope to return to these questions on another occasion.

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[22]   In a recent paper Blust describes similar (but not identical) phenomena (fronting of *a, triggered by the presence of a voiced consonant earlier in the word) in a number of languages in and around northern Sarawak (Blust 2000).

References

Adelaar, K.A., 1984, Some Proto-Malayic affixes. *Bijdrafen tot de Taal-, Land- en Volkenkunde* 140:402–421.

  1992, *Proto Malayic: the reconstruction of its phonology and parts of its lexicon and morphology*. Canberra: Pacific Linguistics.

Blust, R.A., 1984, On the history of the Rejang vowels and diphthongs. *Bijdragen tot de Taal, Land- en Volkenkunde* 140:422–450.

  1997, Nasals and nasalization in Borneo. *Oceanic Linguistics* 36:149–179.

  2000, Low-vowel fronting in northern Sarawak. *Oceanic Linguistics* 39:285–319.

Collins, J.T., 1986, Kajian dialek daerah dan rekonstruksi bahasa purba. In J.T. Collins, *Antologi kajian dialek Melayu*, 171–194. Kuala Lumpur: Dewan Bahasa dan Pustaka.

Durie, Mark, 1985, *A grammar of Acehnese on the basis of a dialect of North Aceh*. Verhandelingen van het Koninklijk Instituut voor Taal-, Land- en Volkenkunde 112. Dordrecht/Cinnaminson: Foris Publications.

Medan, Tamsin, 1980, *Dialek-dialek Minangkabau di daerah Minangkabau/Sumatra Barat (suatu pemerian dialektologi)*. [Stencilled report for Pusat Pembinaan dan Pengembangan Bahasa, Jakarta].

Moussay, G., 1981, *La langue Minangkabau*. Paris: Association Archipel.

Prentice, D.J. and A. Hakim Usman, 1978, Kerinci sound-changes and phonotactics. In S.A. Wurm and Lois Carrington, eds *Second International Conference on Austronesian Linguistics. Fascicle I. Western Austronesian*. 121–163. Canberra: Pacific Linguistics.

Steinhauer, H., to appear, On the history of *Urak Lawoi'* Malay. In David Gil and Uri Tadmor, eds *Malay/Indonesian linguistics*. Richmond: Curzon Press.

Steinhauer, H. and A. Hakim Usman, 1978, Notes on the morphemics of Kerinci (Sumatra). In S.A. Wurm and Lois Carrington, eds *Second International Conference on Austronesian Linguistics. Fascicle I. Western Austronesian*. 483–502. Canberra: Pacific Linguistics.

Usman, A. Hakim, 1976, *Kamus Umum Kerinci-Indonesia*. Jakarta: Proyek Pengembangan Bahasa dan Sastra Indonesia dan Daerah. Pusat Pembinaan dan Pengembangan Bahasa [stencilled publication].

  1988, *Fonologi dan Morfologi Bahasa Kerinci Dialek Sungai Penuh*. Jakarta: Universitas Indonesia Fakultas Pascasarjana [dissertation].

Van der Toorn, J.L., 1891, *Minangkabausch-Maleisch-Nederlandsch Woordenboek*. 's-Gravenhage: Martinus Nijhoff.

Van Reijn, E.O., 1976, The reduction of diphthongs to cardinal vowels in the dialects of North-Kerintji (Sumatra), *Actes du XXIXe Congrès International des Orientalistes. Indonésie* 3:173–176.