DEVOICING, ASPIRATION, AND VOWEL SPLIT IN HAROI:
EVIDENCE FOR REGISTER (CONTRASTIVE TONGUE-ROOT POSITION)

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0. INTRODUCTION

Haroi has the most complex vowel system of any Chamic language, having eleven simple vowel positions plus length contrast, glided vowels, and nasalisation (cf. Mundhenk in this volume). Contrast this with Roglai which has six simple vowels plus length and nasalisation. The Roglai vowel inventory quite closely parallels the vowel inventory reconstructed for Proto-Chamic (Lee 1966). At least part of the inventory of vowels in Haroi came from the splitting of vowels of the reconstructed Proto-Chamic. The most obvious split, because of its frequency, is the development of Haroi ʾa (a glide from high central unrounded to a neutral central quality) and ə, both from PC *a. The development of ʾa shows a clear connection with a preceding Proto-Chamic voiced obstruent in the majority of instances, but in other instances ʾa is connected with a preceding Proto-Chamic high vocoid (either syllabic or non-syllabic). Either the voiced obstruent or the high vocoid, however, may be separated from the affected vowel by one to three phonetic segments. In addition the reconstructed voiced obstruents regularly show up as voiceless (except those which are preglottalised) and often as aspirated in Haroi.

The purposes of this paper are: 1) To note the various historical developments of devoicing, aspiration, and vowel split in Haroi. 2) To postulate that a single feature of tongue-root position (with probable concomitant larynx lowering) as a register system\(^1\) which originated from obstruent voicing and vowel height can alone account for all of these diverse developments that otherwise appear to be motivationally unrelated
and also account for the apparent distance of the motivating feature from the affected segment. 3) To suggest that devoicing of the syllable initial obstruents may actually be caused by tongue-root advancement.

1. HISTORICAL DEVELOPMENTS

1.1. DEVOICING

Of the Chamic languages, devoicing of syllable initial voiced obstruents (Rule 1) has occurred in Eastern Cham (Doris Blood 1962.12), Western Cham (Hor and Friberg, in this volume), Cat Gia Roglai (my own word lists) and in Haroi (word list by Hella Goschnick and from examples given by Mundhenk in this volume).

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\text{Rule 1. } * \begin{bmatrix} +\text{cons} \\ -\text{son} \\ +\text{vd} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{cons} \\ -\text{son} \\ -\text{vd} \end{bmatrix} / . _{\text{ }}.
\]

The evidence for reconstruction of voiced obstruents for Proto-Chamic is twofold: 1) Other Chamic languages as Rade, Jorai, and Northern Roglai have both voiced and voiceless obstruents for the lexical items reflected only by voiceless stops in Haroi and Cham: PC *dlai, Rade dlie, Jorai dlai, Roglai dlai, Haroi tliai 'forest'; PC *tlau, Rade tlau, Jorai tlau, Roglai tlau, Haroi tlu 'to laugh'. 2) Many of the items are of Austronesian origin and voiced obstruents have been reconstructed for Proto-Austronesian. These contrast with voiceless obstruents: PA *pay, PC *padai, Haroi pathlai 'unhusked rice'.

Other examples of devoicing in Haroi are: 1) In the presyllable (any non-ultimate syllable): PC *darah, Haroi çarih 'blood'; PC *danau, Haroi çanau 'pond'. 2) In the main syllable (the stressed ultimate syllable): PC *kubau, Haroi kaphtau 'water buffalo'; PC *habau, Haroi kaphau 'ashes'; PC *blah, Haroi plah 'to split'; PC *bras, Haroi prah 'husked rice'; PC *tugha, Haroi ?akh 'root'.

Proto-Chamic preglottalised stops do not devoice, but in these cases the voiced elements are not syllable initial: PC *ja?bu, Haroi çabu 'to dry (in sun)'; PC *pa?dia?, Haroi padea? 'hot' (Haroi /b/ and /d/ are phonetically preglottalised).

1.2. ASPIRATION

The obstruents which devoiced in Haroi also regularly became aspirated if the obstruent was immediately preceding the vowel of the main syllable of the word (Rule 2): PC *kubau, Haroi kaphtau 'water buffalo'; PC *pubah, Haroi paphiah 'mouth'; PC *dada, Haroi çathia 'chest'; PC *habau, Haroi ?aphiah 'ashes'; PC *bap, Haroi phiah? 'full'; PC *digei, Haroi
čakhī 'tooth'; PC *ʔade, Haroi ʔathī 'younger sibling'.

Rule 2.  *  
[+cons  
-son  
+vd ]  →  
[+cons  
-son  
-vd  
+asp ]  / -VC₀ #

The alveo-palatal PC *j would appear to have become first aspirated and then later became an alveopalatal fricative [ʃ] alternating with an affricate [tʃ] (cf. Mundhenk in this volume): PC *hujān, Haroi ʔasían (s=[ʃətʃ]) 'rain'.

A Proto-Chamic voiced obstruent in a presyllable before a main syllable beginning with the liquid /l/ is also reflected by aspiration in Haroi: PC *jala, Haroi čala [ˇvala·an] 'road'.

In the other positions the obstruent simply devoices without concomitant aspiration: 1) Preceding a consonant in the main syllable as in PC *dlai, Haroi tliai 'forest'; PC *bla, Haroi plii 'to buy'; PC *brai, Haroi prii 'to give'; PC *bras, Haroi priah 'husked rice'; 2) Presyllable preceding non-liquids as in PC *danau, Haroi čanaiu 'pond'; PC *bunā, Haroi paŋa 'flower'.

1.3. VOWEL SPLIT

1.3.1. Related to voicing feature of preceding obstruent

Along with the devoicing of the obstruents in Haroi is a consistent split of vowels. From the word list available, the most evident shift (Rule 3) is that main syllable PC *a (long or short, oral or nasal) went to ųa (a high central unrounded vocoid gliding to a neutral central vowel): PC *hujān, Haroi ʔasían 'rain', PC *dlai, Haroi tliai 'forest'; PC *padai, Haroi pathi 'unhusked rice'. The shift of main syllable *a to ųa takes place not only where there is a devoiced obstruent in the main syllable as above, but also where there is a more remote devoiced obstruent in the presyllable: PC *gunām, Haroi kaniam 'cloud'; PC *bunā, Haroi paŋa 'flower'; PC *bala, Haroi pali 'tusk'; PC *jala, Haroi čala 'road'.

Rule 3.  *a  →  ųa  / .  
[+cons  
-son  
+vd ]  x-C₀ #

Proto-Chamic murmured stops (phonemicised as stop plus h) do not show the same effect on vowels which suggests that they either devoiced earlier than the plain voiced stops or that the devoicing preceded the development of the aspiration of 1.2.: PC *jhāt, Haroi sat 'bad'; PC *ʔugha, Haroi ʔakha 'root'.

If there was no original voiced obstruent between an original voiceless obstruent and the main syllable vowel, then the main syllable *a did not shift (Rule 4): PC *pināŋ, Harol panaŋ 'areca nut'; PC *takai, Harol čakai 'leg'; PC mata, Harol mata 'eye'; PC *tlau, Harol tlau 'to laugh'; PC *rusa, Harol lasa 'deer'.

Rule 4. *a → a / .

Less common, but still quite evident is the reflection of PC *əi by i where there was a preceding voiced obstruent in the proto-language (Rule 5), but by o when there was a preceding voiceless obstruent (Rule 6): PC *digei, Harol čakhi 'tooth'; PC *brei, Harol prii 'to give'; PC *ʔadəi, Harol ?athii 'younger sibling'; PC *blai, Harol plii 'to buy'; but PC *kuməi, Harol kamoi 'female'; PC *l_sei, Harol lasoi 'cooked rice' (PC *əi reflects Proto-Austronesian *-ih in all of these examples).

Rule 5. *əi → i / .


Proto-Chamic *əu apparently was reflected only by au (Rule 7) at some stage with a subsequent shift of au to iau (Rule 8) along with the shift of *a to ia in the same environments described above: PC *habeu, Harol ?aphtau 'ashée'; PC *bahræu, Harol pariau 'new'; PC *bilau, Harol pailau 'feather'; but PC *pateu, Harol patau 'stone'; PC *kukeu, Haroi kakau 'claw, nail'; PC *ʔasəu, Haroi ?asau 'dog'.

Rule 7. *əu → au


Proto-Chamic *u is reflected by u in Harol following reconstructed syllable initial voiced obstruents (Rule 9), but by o following syllable initial voiceless obstruents (Rule 10): PC *tijuh, Harol časuh 'seven'; PC *ʔiduŋ, Haroi ?athuŋ 'nose'; but PC *pitu?, Haroi patō? 'star'; PC *thun, Harol thōn 'year'; PC *ʔapui, Haroi ?apōi 'fire'.