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More on the Generation of Tones From Registers (Part II)

Timothy Friberg, Barbara Friberg, Richard Pittman

In the 1972 Workpapers of the Summer Institute of Linguistics at the University of North Dakota a beginning was made on an article purporting to show how tones have developed from voice registers in some of the languages of Southeast Asia. This second part of the same article seeks to introduce two more details: 1. The register harmony rule of Western Cham; and 2. A formula to predict the number of vowel possibilities which result in a tonic syllable if the vowels are lost from an atonic syllable.¹

1. The register harmony rule of Western Cham is similar to that of Khmer, being based on the following chart:

<table>
<thead>
<tr>
<th>First Register</th>
<th>Second Register</th>
</tr>
</thead>
<tbody>
<tr>
<td>p t c k</td>
<td>b d j g</td>
</tr>
<tr>
<td>Stops ph th ch kh</td>
<td>bh dh jh gh</td>
</tr>
<tr>
<td>?b ?d ?j ?</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Chart of the consonants of Western Cham

Rule: Syllables beginning with the consonants shown above have the register (vowel and voice quality) characteristics of their respective registers, except that a syllable beginning with a continuant is changed to the opposite register if it is preceded, in the same word base, by a syllable beginning with a stop of the opposite register. In other words, stops are dominant, continuants are recessive, when continuants follow stops. This is true even when the vowel of the first syllable is reduced or lost.

The significance of this rule, and of the corresponding rules in Khmer, lies in the fact that the tone patterns of languages which have more than two tones are considered, by the present authors, to be artifacts of sequences of two different registers which, through contraction and vowel or syllable loss have been fused into one pitch prosody. The manner in which these have been fused and the distinguishing characteristics of the resulting tone depend on the register harmony rules.

2. The large number of vowels which appears in such languages as Khmer and Bru is a consequence of the contraction formula \((2n)^2\), in
which \( n \) is the assumed number of vowels in the language before contraction took place, the exponent figure represents the number of syllables which are assumed to have been contracted into one, and the figure on the line is the number of registers in the language.

Assuming, for illustration, that a language has only three vowels \(-i, a, u\) - and that its wordbases have two syllables, the loss of the vowels in the first syllable would have to be squared, giving nine, in order to keep the same total range of contrast in the monosyllabic word bases as existed in the previous disyllabic word bases. If, in addition, there were two registers, the number of vowels - three - would have to be doubled - six - before being squared, so that the resulting number of vowels would be 36. If the original language had three possible vowels in the first, and four possible vowels in the second syllable of disyllabic wordbases, the result of contraction would be two times three - six - and two times four - eight - which, multiplied together give 48.

Footnote

1. The Fribergs were not available for consultation on this draft of this paper, so the wording is Pittman's. They however supplied the register harmony chart and rule. The authors are indebted to David Thomas for the expression "register harmony" and for other comments on the paper. We are indebted to Alan and Karen Buseman for the contraction formula and other helpful comments.