“TENSE” AND “LAX” STOPS IN KOREAN

Korean is thought to be unique in having three kinds of voiceless stops: aspirated /pʰ tʰ kʰ/, tense /p* t* k*/, and lax /p t k/. The contrast between tense and lax stops raises two theoretical problems. First, to distinguish them either a new feature [tense] is needed, or the contrast in voicing (or aspiration) must be increased from two to three. Either way there is a large increase in the number of possible stops in the world’s languages, but the expansion lacks support beyond Korean. Second, initial aspirated and tense consonants correlate with a high tone, and lax and voiced consonants correlate with a low tone. The correlation cannot be explained in the standard tonogenesis model (voiceless-high and voiced-low). We argue instead that (a) underlyingly “tense” stops are regular voiceless unaspirated stops, and “lax” stops are regular voiced stops, (b) there is no compelling evidence for a new distinctive feature, and (c) the consonant-tone correlation is another case of voiceless-high and voiced-low. We conclude that Korean does not have an unusual phonology, and there is no need to complicate feature theory.

1. INTRODUCTION

Since C.-W. Kim (1965), it has become widely known that Korean has three kinds of voiceless stops, often described as aspirated /pʰ tʰ kʰ/, tense or fortis /p* t* k*/, and lax or lenis /p t k/. The classic examples are shown in (1).

(1) /thal/ ‘mask’
    /t*al/ ‘daughter’
    /tal/ ‘moon’

While languages with two kinds of voiceless stops are common, such as Hindi, Thai, and Chinese, Korean is the only language that reportedly has three.

To distinguish three voiceless stops, three proposals have been made. First, one can assume a new feature [tense] (not the same [tense] for vowels; the latter is often called [advanced tongue root]). Second, one can increase voicing contrasts from two to three – voiced, voiceless (the Korean tense stop), and unspecified (the Korean lax stop) – with two features [stiff] and [slack]. Third, one can increase aspiration contrasts from two to three – aspirated, unaspirated (the Korean tense stop), and unspecified (the Korean lax stop) – with two features [spread] and [constricted]. All the proposals have two problems: (a) there is an over-prediction of possible sounds, and (b) a new mechanism in consonant-tone interaction is needed.

First, consider the over-prediction problem. The traditional features [voice] and [aspirated] give four stops: \([p^h \ b^h \ b] \) (ignoring implosives and clicks), all of which have been found. With a new feature [tense], the number is doubled, shown in (2).

(2)  
\[
\begin{array}{cccccccc}
\text{[tense]} & - & + & - & + & - & - & + \\
\text{[aspirated]} & - & - & + & + & - & - & + \\
\text{[voice]} & - & - & - & - & + & + & + \\
\end{array}
\]

\(p \ p^* \ p^h \ p^{h*} \ b \ b^* \ b^h \ b^{h*}\)

However, there is no language that makes use of all the stops, or anywhere close. For example, no language distinguishes \([p^h] vs. [p^{h*}]\), or \([b] vs. [b^h]\), or \([b^h] vs. [b^{h*}]\). In addition, as Cho et al. (2002) point out, the only language that distinguishes \([p] vs. [p^*]\) is Korean. Thus, the Korean case remains unique. Similar problems exist when one expands the voicing or aspiration contrasts from two to three (see below).

Next, consider consonant-tone interaction. Phonetic studies have shown that there is a consonant-tone correlation in the Seoul and Jeonnam (Chonnam) dialects of Korean (hereafter Korean). Specifically, in neutral speech (we will discuss vocative chanting in section 5), if the word initial consonant is voiceless aspirated or voiceless tense, the word has the H pattern (plus a boundary tone), otherwise the word has the LH pattern (plus a boundary tone) (Gim (1969; 1975), Jun (1993), M.-R. Kim (2000), see Figures 1 and 2 in the Appendix). The domain of the consonant-tone correlation has been called an “accentual phrase” (Jun (1993)), which is usually made of a word or a compound plus its suffixes. Thus, in an accen-
tual phrase, tones are predictable from consonant types.

In the standard model of consonant-tone interaction (the tonogenesis model), voiceless consonants correlate with H, and voiced consonants correlate with L (voiceless-H and voiced-L). However, the Korean case presents a problem because voiceless lax stops correlate with LH instead of H. Because of this, Jun (1993; 1996) suggests that Korean tones are not subject to phonetic explanation; instead, they are underlying or a “phonologized” intonational property of a phrase. However, there remains the question of why the consonant-tone correlation is fully predictable from the prevocalic consonant. An alternative proposal is that, in addition to voiceless-H and voiced-L, there are other mechanisms for tonogenesis, such as “tense-H and lax-L”, “voiceless-H and unspecified-M”, or “non-breathy-H and breathy-L”. However, such proposals again lack independent support, and the Korean case remains unique.

There is a third problem with the traditional analysis. Given the tonal difference between words with initial tense stops and those with initial