

Remodeling Southeast Asian Tunings

Jay Rahn

Society for Music Perception and Cognition Biennial Conference, Ryerson University, Toronto, August 9, 2013

Abstract

Since the pioneering reports of Ellis (1884, 1885) and Stumpf (1901), studies of Southeast Asian tunings have been methodologically problematic. Abstract numbers, empirical measurements, indigenous claims, and perceptual responses have been conflated; generalizations, vague; sampling, selective. In contrast, the present account takes as its starting point a formalization of the Gestalt Grouping Principles of Proximity and Common Fate in order to analyze the most comprehensive published measurements of Southeast Asian fixed-frequency idiophone tunings (Surjodiningrat et al., 1993; Charoensook et al., 1997). The resulting analysis is consistent with a relatively modest, but falsifiable, set of models for the acoustically measured sizes of intervals between successive steps: specifically, for Central Javanese *sléndro*, 11111; for Central Javanese *pélog*, 1121112; for 'equiheptatonic' Thai, 1111111.

In these models, a) any interval whose hypothesized size (HS) is smaller than the HS of any other interval is also smaller in measured size (MS), but b) no two intervals of the same HS are necessarily the same in MS. For instance, in Central Javanese *pélog*, the MSs of all size-2 intervals (e.g., 2 and $1+1=2$) are a) smaller than the MSs of all size-3, size-4, etc. intervals (e.g., $1+2=3$, $2+1=3$, $1+1+1=3$; $1+1+2=4$, $1+2+1=4$, $2+1+1=4$, etc.) and b) 'the same' only by virtue of analogical relationships, namely, by sharing 'smaller-than' MS relationships with precisely the same group of intervals.

According to these models, one can clarify similarities and differences in trans-cultural realizations of 'the same' piece in contrasting tunings (e.g., Hughes 1992). In particular, *sléndro*, the 'usual' pentatonic (Clough & Douthett 1991), and well-formed (WF) 5-tone subsets of Thai equiheptatonic and Javanese *pélog* comprise successively greater numbers of differences, ambiguities and contradictions (Carey 2003). Moreover, these models provide a basis for re-framing experimental studies of inter-cultural responses to such tunings (e.g., Krumhansl & Perlmann 1996).