Balungan Pélog Tones of Gamelan Kyai Parijata
Compared with Sine Tones

Relatively Long Tones

In the following audio files:

5-second Saron Demung Pélog Tones of Gamelan Kyai Parijata Compared with Sine Tones of the Same Frequency.wav:
http://yorkspace.library.yorku.ca/xmlui/handle/10315/31069

5-second Saron Barung Pélog Tones of Gamelan Kyai Parijata Compared with Sine Tones of the Same Frequency.wav:
http://yorkspace.library.yorku.ca/xmlui/handle/10315/31070

individual pélog tones of the gamelan Parijata are preceded and followed by sine tones having the same fundamental frequency.

The original tones were produced by metallophones that generally play the skeletal melodies (balungan) of traditional Central Javanese multi-section pieces (gendhing): namely, saron demung and saron barung.

Recordings of the original tones are accessible as streamed mp3 files at the following url: http://www.marsudiraras.org/gamelan/ and as wav files in a downloadable zip file at http://www.marsudiraras.org/gamelan/wav/.

At the webpage for the wav files, the filenames for the seven saron demung tones are DemungPl1.wav, Demungpl2, …, and DemungPl7 , and the filenames for the seven saron barung tones are SaronPl1, SaronPl2, …, and Saron Pl7.

The software employed to determine the fundamental frequency for each of the 14 tones was wavanal, which is accessible as freeware at http://www.hibberts.co.uk/wavanal.htm. To run wavanal on a Macintosh laptop (OS X) required installing wine freeware beforehand: https://www.winehq.org/.

Audacity freeware (http://www.audacityteam.org/download/) was employed to edit the original wav files. Because wavanal analyzes only the first five seconds of an audio file, all but the initial five seconds was deleted from each of the original wav files. To prevent potentially annoying clicks on playback, Audacity was employed to fade-out the final 50 milliseconds (i.e., 1/20 of a second) of each five-second copy of the original wav files.

The file Fundamental Frequencies and Other Partials of Balungan Pélog Tones in Gamelan Kyai Parijata.xlsx: http://yorkspace.library.yorku.ca/xmlui/handle/10315/31068 displays graphic and numerical results of wavanal's spectral analyses of the balungan instruments' relatively long tones. Without exception, a single partial was disproportionately louder than any other partial within the spectrum of a tone produced

by a saron demung or saron barung. In subsequent analyses, the frequency of this disproportionately loudest partial was considered a tone's fundamental frequency.

The pitches of the original tones were rendered comparable with pitches produced by sine tones by employing Audacity to generate a sine tone whose frequency was the same as the loudest partial that wavanal identified in the spectrum of the original tone.

To facilitate comparison, each sine tone was generated to have the same duration and peak amplitude as the original tone: respectively, 5 seconds and 6.0 decibels (dB) below maximum. As well, to prevent potentially annoying clicks, Audacity was employed to fade-in for the first 50 milliseconds and fade-out for the last 50 milliseconds of each sine tone.

The pitches at the beginning of the relatively long saron demung and saron barung tones were heard as the same as the pitches of their sine-tone counterparts. Thereupon, the relatively long saron demung and saron barung tones were generally heard as rising. In order to facilitate perception of this effect, each sine tone was inserted both immediately before and immediately after each original tone.

Relatively Short Tones

In contrast to the rise in pitch one can hear during the first five seconds is the relatively steady pitch during the first half second (500 milliseconds).

In the following audio files:

500-millisecond Saron Demung Pélog Tones of Gamelan Kyai Parijata Compared with Sine Tones of the Same Frequency.wav:
http://yorkspace.library.yorku.ca/xmlui/handle/10315/31071

500-millisecond Saron Barung Pélog Tones of Gamelan Kyai Parijata Compared with Sine Tones of the Same Frequency.wav:
http://yorkspace.library.yorku.ca/xmlui/handle/10315/31072

relatively brief pélog tones of the gamelan Parijata are preceded and followed by sine tones having the same fundamental frequency.

The original tones and the generated sine tones were edited in the same way as described above for the relatively long tones, except that each relatively short original tone was included twice, immediately preceded both times by a generated tone of the same duration (0.5 seconds) and amplitude (-6.0 dB).