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Pocket Gamelan: playing Mandala 6: a demonstration

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Publication Details
ABSTRACT
In this demonstration, I will present the Pocket Gamelan, a new
genre of interactive performance by groups of musicians playing
microtonal music using mobile phones. The demonstration will
show how phones are swung to create chorusing and how
operations on handheld phones affect the tuning of flying phones.
I will describe cues that performers follow to play the work and
demonstrate how to launch musical applications on mobile
phones. Ideally, the demonstration will be presented in an
enclosed space large enough for an audience of delegates to watch
four people swinging phones. The performance space should be
level with no obstruction from seating, furniture, music stands,
microphones, projection equipment, etc. and should be reasonably
reverberant, free from motor or pedestrian traffic noise and
friendly to relatively low-powered sound sources. The
demonstration, lasting about twenty five minutes, will culminate
in a performance of a work called Mandala 6 for mobile phones.
The work itself is meditative and uses a microtonal scale
attributed to 8th century tuning theorist Al Farabi. It lasts seven
minutes thirty seconds. Earlier works in this genre, Mandala 3
and Mandala 4 have been presented in Paris at NIME in June
2006, when performers were flown from Australia and Singapore
to take part in the event. The premiere performance of Mandala 6
took place in Los Angeles at Microfest, on May 6th 2007. In this
workshop, Mandala 6 will be presented by four players who have
not taken part in any previous performance of the work. The
object is to demonstrate the underlying design objective of the
Pocket Gamelan, viz. a system for performing microtonal music
that is easy to play and quick to learn.

1. INTRODUCTION
Mandala 6 is an interactive performance work created to be
played by non-expert performers using 4 mobile phones. Each
phone is mounted in a pouch attached to a cord approximately 2
metres (or 6 feet) long. Each phone is swung slowly on the end of
a cord. Each phone is programmed to produce sustained tones that
produce Doppler shifts as the sound source moves away from
reflecting surfaces. The work is performed indoors so that fixed
pitch tones mix with Doppler-shifted tones to produce chorusing.

Categories and Subject Descriptors
J.5 ARTS AND HUMANITIES - Performing Arts (music)

General Terms
Performance

Keywords
Interactive performance, Bluetooth, microtonal.

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2. INITIALISING BLUETOOTH

*Mandala 6* uses tandem connection, a configuration in which pairs of phones operate in tandem, as shown in Figure 3. This is described in more detail elsewhere in these proceedings [1].

![Figure 3 Tandem connection](image)

When Bluetooth is enabled, phones are initialized so phone A finds and connects with phone C, while phone B finds and connects with phone D. Once both tandem connections have been established, the players of phone A and phone B manually synchronize the start of the piece by pressing 0 simultaneously. LCD phone displays are colour-coded: A (blue), B (green), C (yellow), and D (red).

2.1 Initialization

All players move to the centre of the performance space and press the power button at the top end of the phone, above the LCD.

2.1.1 Launch 1st connection

Player A and C select: Menu, Applications, Collection, Select Application, Mandala 6, Open

2.1.2 Launch 2nd connection

Player B and D select: Menu, Applications, Collection, Select Application, Mandala 6, Open

2.1.4 Go

Player A and Player B manually synchronize the start of the performance, using a silent verbal countdown e.g. 3 2 1 0. The first note of the piece is heard on phone A.

3. PLAYING

The total duration of work is 7 minutes 30 seconds. The set up time is between 30 seconds to 60 seconds.

3.1 Playing sequence

Pre-programmed sequences on all phones begin to play synchronously. Entry and exit of sequences is pre-programmed, as shown by the 15 cues in the following diagram. Each cue is 30 seconds apart, i.e. a tone enters or exits every 30 seconds.

![Figure 1 Pre-programmed sequence](image)

3.2 Swinging instructions

As phone A starts to make sound, all players take up their positions and remain stationary while the player on phone A swings slowly.

Other players swing as their phone starts to sound and continue swinging until it stops, whereupon the player stops swinging and remains stationary; when sound resumes, player resumes swinging.

The piece ends when all tones have stopped.

3.3 Hand-held instructions

In performance, players may interact with sounds made by a swinging player to which they are connected. By pressing numeric keys, a player may affect one of three voices sounding on a remote phone. Pressing one key repeatedly will advance through a menu for that voice allowing the player to change the octave, mode and melodic contour, as shown in Table 1.

![Figure 2 Player A - Player C](image)

![Figure 6 Player B - Player D](image)

<table>
<thead>
<tr>
<th>voice</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>octave</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>mode</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>contour</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 1 Keys used to select octave, mode and melodic contour

The octave menu for each voice is selected by pressing either 1, 2 or 3; each voice has four possible octaves. The mode menu for each voice is selected by pressing 4, 5 or 6; each voice has seven possible modes. The contour for each voice is selected by pressing 7, 8 or 9; each voice has 256 possible contours.

Interaction between players may happen at prescribed times during the performance. Player A may interact with player C and vice versa during the times shown in figure 5. Similarly, player B and player D may interact during the times shown in figure 6.

4. PRE-PROGRAMMED PHONES

Four mobile phones handsets are used for the performance. These will be provided by the composer, preprogrammed and with cords attached ready to swing.

5. AUDIO-VISUAL DOCUMENTATION

A brief quicktime movie of a related performance (*Mandala 4*) can be played at