Bansuri (North Indian transverse bamboo flute)

Description
The Bansuri is a transverse bamboo flute with 6 finger holes plus one hole for blowing. It is closed at the end closest to the blowing hole. Its fingered holes are large enough to permit half (or partial) holing, thus facilitating the playing of all ragas (modes) on one bansuri. It is very agile and, due to the open holed/unkeyed nature of its construction, all manner of glissandi and microtonal ornaments are possible.

Bansuris - Sizes and Pitches
(from highest/shortest to lowest/longest)

<table>
<thead>
<tr>
<th>* Tonic</th>
<th>Key</th>
<th>Piano Pitch</th>
<th>Approx.Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>C</td>
<td>C52</td>
<td>14&quot;</td>
</tr>
<tr>
<td>E</td>
<td>B</td>
<td>B51</td>
<td>15&quot;</td>
</tr>
<tr>
<td>Eb (or D#)</td>
<td>Bb (or A#)</td>
<td>A#50</td>
<td>16&quot;</td>
</tr>
<tr>
<td>D</td>
<td>A</td>
<td>A49</td>
<td>17&quot;</td>
</tr>
<tr>
<td>Db (or C#)</td>
<td>G#</td>
<td>G#48</td>
<td>18&quot;</td>
</tr>
<tr>
<td>C</td>
<td>G</td>
<td>G47</td>
<td>19&quot;</td>
</tr>
<tr>
<td>B</td>
<td>F#</td>
<td>F#46</td>
<td>20&quot;</td>
</tr>
<tr>
<td>Bb (or A#)</td>
<td>F</td>
<td>F45</td>
<td>21&quot;</td>
</tr>
<tr>
<td>A</td>
<td>E</td>
<td>E44</td>
<td>22&quot;</td>
</tr>
<tr>
<td>Ab (or G#)</td>
<td>D#</td>
<td>D#43</td>
<td>23&quot;</td>
</tr>
<tr>
<td>G</td>
<td>D</td>
<td>D42</td>
<td>24&quot;</td>
</tr>
<tr>
<td>Gb (or F#)</td>
<td>C#</td>
<td>C#41</td>
<td>25&quot;</td>
</tr>
<tr>
<td>F (bass)</td>
<td>C</td>
<td>C40 (middle c)</td>
<td>26&quot;</td>
</tr>
<tr>
<td>E (bass)</td>
<td>B</td>
<td>B39</td>
<td>27&quot;</td>
</tr>
<tr>
<td>Eb (or D#) bass</td>
<td>A#</td>
<td>A#38</td>
<td>28&quot;</td>
</tr>
<tr>
<td>D (bass)</td>
<td>A</td>
<td>A37</td>
<td>29&quot;</td>
</tr>
<tr>
<td>C (bass)</td>
<td>G</td>
<td>G35</td>
<td>30&quot; (very rare, and difficult to play)</td>
</tr>
</tbody>
</table>

* The **tonic** of the bansuri is the note sounded when 3 finger holes are closed. All 6 holes closed (the pipe note) determines the **key**. The same flute may be referred to by either its tonic or key.

**Naming**
We will call a Bansuri by its pipe note, i.e. the note which is rendered when all 6 holes are closed.
Range and Notation

The range of the bansuri is effectively 2 octaves and a major 3rd, though its full range is assumed to be 2 octaves and a fifth. Taking the pipe note $c^1$ bansuri, we can assume that all pitches to $e^3$ are playable. $f^3$ and $g^3$ are very difficult, and should be called for only in consultation with the performer. There may be some cross fingering techniques that may render some of the higher pitches, in the third octave, more playable, but in general cross-fingerings are not used in Bansuri playing.

In western notation one notates the bansuri at pitch and in the treble clef. Indian notation is possible, and is covered in the section on Indian notation systems.

The choice of bansuri can be left to the performer, but the composer may suggest the keys. Of course the range itself will in certain cases determine which bansuri the performer must play. The composer ought to ascertain which bansuris the performer owns before committing pen to paper.

Basic Scales

The scale rendered by beginning on the pipe note, and without half holing, is the diatonic major scale. Traditionally, the tonic note of the bansuri is sounded when the 3 lowest holes (farthest from the mouth) are open. Another way of saying this is that the three upper holes (closest to the mouth) are closed. In India this note is called $Sa$, which is equivalent to $Do$ in the western solfege system.

So we must differentiate between key (which is named in accordance with the actual pipe note), and tonic (a fourth above the pipe note). Calling the pipe note $Sa$ may confuse an Indian musician. One ought to be very clear about this.

The $c^1$ tonic (middle C tonic) flute is rare, since this flute's pipe note (all holes closed) would be $g$ (below middle C) - this flute is extremely long and very difficult to play, as one would need enormous hand spans to cover all the finger holes. The $c^2$ tonic flute is more common, since this flute would have a pipe note of $g^1$, a medium sized flute.

The pipe note $c^1$ bansuri ($f^1$ tonic) is very common.

Scales, Modulations, Chromaticism, and Harmony

Modulation from one mode to another is possible, contingent only on the skill of the performer. Thus, melodically speaking, one may assume the entire gamut is possible on the bansuri; however, since many of these notes will have to be produced by half holing it is unwise to assume the performer can produce precise pitches for harmonic purposes. Harmonic demands are not impossible, but unusual, especially in the context of Indian musical training. The given pitches of the bansuri, that is those rendered by completely covering and uncovering the finger holes, are more easily rendered in a discrete enough manner for harmonic purposes. Even these however require some care. The background of the performer and the tuning of the bansuri itself, are factors. Again, melodically one may assume the entire gamut is playable, but consultation with the performer is called for in cases of where much chromaticism and/or harmony is desired.
**Bansuri...continued**

**Tuning**

Within the bansuri itself the scale may be tuned; but its overall pitch cannot be tuned, since by shaving a bit off its overall length the holes would be out of place. For two flutes to be in tune with each other one would have to get flutes that are close enough in pitch to allow for lipping to take care of the rest. Any hole can be made bigger or smaller to adjust the pitch of that particular note within the scale.

The tuning of a bansuri may differ slightly from that of western notation, certainly the bansuri is not constructed with equal temperament in mind. In most cases, tuning discrepancies can be overcome by embouchure placement and force of breath, but here again the individual bansuri may or may not be conducive to a given intercultural situation.

A pipe note c¹ bansuri is well intoned up to e³, but above this it is very difficult to control and intonation depends upon the instrument. A well tuned instrument is essential.

**Dynamics**

**Lower Octave**

In lower octave the sound quality is breathy, and there is not as much volume as in the western (silver) flute, but it is possible to project well once the flute is warm.

**Higher Register**

Volume can be quiet up to around d³; e³ may not render a true p but rather a mp or mf. f³ and g³ are very difficult to produce quietly, let alone produce in tune.

**Speed of Execution**

In diatonic progressions the bansuri is very quick, as agile as the western flute. If utilizing half holings the pace is just as fast, especially once the performer has grasped the mode or scale requested. However, jumps and intervals will slow down the pace.

**Techniques**

**I. Tongueing**

All kinds of tongueing are performable, single, double, triple and flutter. Fluttertongueing usually takes you straight to the second octave of the scale - it is very difficult to fluttertongue in the lower octave. The fluttertongue also brings out the 5th of the note being played.

**II. Vibrati and Glissandi**

Vibrati are no problem, at various speeds. A slow delicate vibrato is possible either with a head shake or with the diaphragm. Finger rocking over a hole renders a vibrato which is very controllable.

Portamento (glissed) grace notes are no problem as well as glissandi between notes and even over larger intervals. The exception is movement across the pipe note, which is impossible to execute as a glissando, since the fingering changes abruptly when crossing the pipe note in a stepwise manner.
Bansuri...continued

III. Harmonics

On the **pipe note** $c^1$ bansuri one can play up to the 7th harmonic. On pitches other than the pipe note (e.g. - the pitch produced with the lowest hole open) it may be difficult to obtain harmonics. On shorter bansuris the higher partials may be more difficult to produce than on longer bansuris.

IV. Accents

All accents are performable: staccato, legato, tenuto and the combinations of these.

V. Special Techniques

**Janta Svaras**

A janta svara is created by striking with the fingers at the edge of a hole while playing a note. The air keeps flowing, and a little 'bump' in the sound articulation is created. It is an effective way of playing a repeated note without tongueing or renewing the breath.

**Related Instruments**

**Venu** - A transverse bamboo flute from South India, in most respects it is just like the North Indian Bansuri. However, it has 8 finger holes plus one hole for blowing, rather than the bansuri's 6 finger holes. It is generally smaller than the bansuri and perhaps has a wider bore as well. Its fingered holes are large enough to permit half (or partial) holing, thus facilitating the playing of all ragas (modes) on one venu. It is very agile and, due to the open holed and unkeyed nature of its construction, all manner of glissandi and microtonal ornaments are possible.