Variations of Portamenti in Bayan

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Abstract
Tabla is a widely used percussion in North Indian Style of Classical Music. It is a set of two drums, with the dayan playing the treble and the bayan playing the bass sound. One unique characteristics of one particular strike of bayan is its ability to perform various types of portamenti or gliding of the sound. There is a lack of notations to describe these variations. This study tries to collect different techniques of portamenti from existing literature and illustrate them in a way that can be useful especially for the beginners in tabla.

Keywords:
Tabla, Bayan, Portamenti, North Indian Classical Music

Introduction
Tabla is a set of two drums and the most popular type of percussion in North Indian Style of Classical Music. The dayan (or dahina or dayna) denotes the right drum, which plays the ‘treble’ sound. The bayan (or baya) denotes the left drum, which plays the ‘bass’ sound (Khan 1988). There are many different sounds which can be produced by striking different areas on the top surface of the tabla with different techniques. The three main parts on the top surface of each drum are as follows: (1) sur (or maiden or puri), referring to the main resonating membrane, (2) kaani (or chat), referring to the extra outer section on top of sur, and (3) gaab (or syahi), referring to the black circular spot on the sur, which is a mixture of organic gum, soot, and iron fillings (Courtney 2008). Figure 1 shows these three major striking areas on the tabla.

Figure 1: The three major parts of the playing surface of tabla
Source: Courtney 2008, Authors

1. Tabla bols
A series of syllables are used to correspond to the particular strikes, and these syllables are called bols, a word derived from the Hindi word ‘bolna’ (to ‘speak’) (Pathak 1976, Courtney 2000). The notation system used for tabla has been the bhatkhande system (Courtney 1998). One significant aspect of the
bhatkhande system is that it has never associated itself with the script of any particular language. In fact, to notate tabla bols in this system, it only requires a language to be phonetic enough to notate the exact sound produced. Roman scripts share the characteristics of being phonetic languages and thus serve the same purpose of retaining the phonetic sounds of the tabla bols in notation. The widespread acceptance of Roman script, even in India, means that it has a worldwide acceptance (ibid). For this reason, it has also been used in this study as well.

However, the use of any script to notate bhatkhande system for tabla is not without its deficiencies. The biggest problem is that it absolutely requires a firm understanding of the structure and theory of North Indian Classical Music. Otherwise, there is every chance that actual phonetics may be distorted while retrieving from the written form (Courtney 2008). However, this study does not intend to identify those discrepancies in notations, but at this stage a very brief introduction of basic bols notated in Roman script seems to be useful here. The bols follow the reference of particular researchers and they are shown in Romanized script (in bold font).

Different researchers mentioned different number of basic bols for tabla. Among them, ‘simple’ bols refer to those which are produced with one single strike of one hand only (right or left) (Das 2006, Rai 1984, Gottlieb 1993, Saxena 2008). For example, Ta is a ‘simple’ dayan bol, which is played with the index finger striking the kaani, with the ring finger resting on gaab and middle finger in the air. Ge is a ‘simple’ bayan bol, which is played with the middle finger striking the sur followed by its immediate release to create an open sound (Gottlieb 1993).

Bols other than simple ones refer to those which are produced with more than one strike. There are two ways to do that. Either the bols can be played together by both hands, or they can be played in a quick succession (with one hand or both). Though ideally a succession should not be ‘one’ bol, but due to their cohesion, different researchers usually consider them as ‘one’ bol. Most researchers did not distinguish between them and used the same term to describe both. For example, Das (2006) mentioned any bol other than simple ones as ‘compound bols’, Gottlieb (1993) referred to them as ‘combination bols’, Rai (1984) defined them as ‘complex bols’. For simplification, this study defines the former one as ‘complex’ bols (Example: Dha, which is produced by simultaneously playing Ge and Ta), and the latter one as ‘compound’ bols (Example: Gran is composed of two simple bols, Ge and Ta played in quick succession)

2. Portamenti in bayan bol

Bayan has two major bols. The first one is a muted sound produced by a slap with a flat palm on gaab. The other one is an open sound, which is the context of this study. It starts from the ‘home position’ of the left hand and is produced by a gentle strike on the sur with the tip of middle or index finger and immediately releasing it (Rai 1984, Gottlieb 1993, Courtney 1998, Das 2006). While the former is quite straightforward, the latter is not. It has the potential to create different variations in order to make the sound more interesting by varying the power, intensity or duration of the strike.

![Side view](image1.png) ![Top view](image2.png)

Figure 2: Home position for bayan

Source: Authors
It is described as an art of *portamenti* by Kippen (2001). This technique of *portamenti* is also referred to as *meend* (gliding) by Gottlieb (1993), while it is frequently referred to as ‘pitching’ or ‘modulation’ as well by other researchers. This study uses the term *portamenti* to explain this art. Susheela Mitra in Kippen (2001) traces back to Kanthedar, who seems to be the first person to popularize the techniques of *portamenti*, though it is only more utilized by contemporary tabla players, who have gradually made this technique as an integral part of a serious performance. In fact Ustad Zakir Hussain has advanced this skill to another level when he was the first one to show that even melodies can be produced through *portamenti* (Robinson 2002). Skillful players do not usually bother to notate what exact *portamenti* should be associated with a particular strike of this *bol*, but for a beginner it becomes important to know the exact technique of the *portamenti*. Most researchers have probably targeted expert audience and assumed that the readers would automatically understand the exact phonetics of the *bayan portamenti* and therefore did not provide much detail about its various techniques. The aim of this study is to identify available *portamenti* from existing literature, and try to provide a more scientific description for them through illustration.

3. Variations in *Portamenti* and the confusions to notate them

Nath (1988) stated that any of Ge, Go, Ga, Gi, Ghe, Ghen, Ghin or Ghi can be used to describe any variation of this *portamenti* but suggested their indifferences. Das (2006) has stated Ge/Ghe/Gi/Ghi with no particular definition to distinguish them. Rai (1984) and Mani (2004) argued that Ge and Ghe are the only two valid variations of this *portamenti* with the latter being a strike with more power and intensity. Gottlieb (1993) referred to Ge and Ghe as the main variations where the first one is a one finger strike and the latter is by two, not mentioning about the power or intensity. He also mentioned Ga as an open strike probably assuming it to be of high intensity. Courtney (1998) used Ga to describe any intensity, but used the numbers ‘1’ and ‘2’ to describe how many fingers to be used, probably assuming a strike by two fingers would definitely yield a more powerful strike than by only one finger. Courtney (1998) has also made an attempt to notate *portamenti*. He used ‘up’ arrows, ‘down’ arrows, and arrows with dotted lines (such as ↓, ↑, ⬆) to indicate different *portamenti*. However, he did not explore all possible variations. Kippen (1988) mentioned that the index finger is the main striker in Lucknow style5, while the second and the third fingers are predominating strikers in other styles. But that did not explain any particular technique of *portamenti*, though he mentioned about three distinct variations in Ghin, Ghe, and Ge. Saxena (2008) also mentioned 3 (Gha, Ghey, Ghee), and had some description about the techniques, which is discussed in latter sections. It seems that there might be substantial number of variations of *portamenti* but no consistent way to notate them. Many researchers used different notations for same *portamenti* or same notations for different *portamenti*.

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Notation of Variations in <em>portamenti</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nath</td>
<td>Ghen/Ghin/Ge/Ghe/Go/Ga/Gi/Ghi</td>
</tr>
<tr>
<td>Das</td>
<td>Ge/Ghe/Gi/Ghi</td>
</tr>
<tr>
<td>Rai/ Mani</td>
<td>Ge, Ghe</td>
</tr>
<tr>
<td>Gottlieb</td>
<td>Ge, Ghe, Ga</td>
</tr>
<tr>
<td>Courtney</td>
<td>Arrows ↓, ↑, ⬆</td>
</tr>
<tr>
<td>Kippen</td>
<td>Ghin, Ghe, Ghe</td>
</tr>
<tr>
<td>Saxena</td>
<td>Gha, Ghey, Ghee</td>
</tr>
</tbody>
</table>

Note: ‘/’ sign shows similarity, while ‘,’ shows difference Source: Authors

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The original aim of the study was to identify variations from different researchers and notate them in Roman Script. However, the available notations appear to be quite misleading. Therefore, this study did not choose to notate *portamenti* but only to illustrate the techniques of available variations of *portamenti*. From existing literature, three major variables were identified during the strike, those combine in different ways to create different *portamenti*. They are: the power of the strike, the use of fingers such as the number of fingers to strike or the use of any particular finger to strike, and the technique of changing the pitch and combining it with the timing of the strike.

4. Effect of different variables to create variations in *portamenti*

4.1. Differences in the power of the strike

There are definitely a difference between a gentle strike and a more powerful strike (Gottlieb 1993). For example, describing the techniques to play the set of *bols*: ‘GoDiGheNe’, Nath (1988) refers to two particular *bayan bols* (*Go* and *Ghe*) as a less powerful strike and a more powerful strike respectively. Gottlieb (1993) distinguishes *Ge* and *Ghe* as same, only that middle finger to be used to produce *Ghe* while index finger to be used to produce *Ge*, probably suggesting *Ghe* being the more powerful strike than *Ge*, as middle finger is likely to produce the stronger sound.

4.2 Differences in the striking finger and the number of fingers to be used

Different fingers can be used to strike for the comfort of playing particular set of *bols*, but it is not clear whether different finger can create variations in *portamenti*. Gottlieb (1993) stated that index finger and middle finger can both be the striking finger. Saxena (2008) mentioned that the ring finger or the middle finger both can also be used as the main striker. Courtney (2008) stated that there can be simultaneous use of both fingers as well. Kippen (2001) mentioned *Ghin* which is produced by all four fingers striking the *sur* and producing a heavy accentuated sound. Nath (1988) mentioned that in case of two successive strikes as in ‘*GeGe*’ or ‘*GheGhe*’, index and middle finger can be used in turns though the order may not be fixed, and the power may also vary. Courtney (2008) used the number 1 and 2 to denote how many fingers to play for a particular *bol* if it involved such strike. However, Courtney (ibid) insisted that each individual can develop the artistic maturity to make their own decision about which finger to be used and how many to be used to produce a particular *portamenti*.

4.3. Differences in the technique of pitching

If the *sur* is pressed by the wrist, a pitched sound is generated. A pitched sound has less duration than a non-pitched sound. Depending on the amount of pressure and the time difference between the strike and the pressing, different *portamenti* can be achieved. The following variations were noted.

4.3.1. Pressing the wrist before strike

Saxena (2008) gave one hint of *portamenti* through the notation of ‘*Ghey*’, where the wrist is pressed before the strike. Thus a pitched sound occurs. Das (2006) mentioned this variation as well, but used ‘*Ghe*’ to indicate the one with the higher pitch and ‘*Ge*’ as the one with the lower pitch. Courtney (1998) mentioned about this *portamenti* but notated it as *Ga*. He used the symbol ‘↑’ for that. Gottlieb (1993) added that the pitching can also be of varied degrees depending on the pressure exerted.

4.3.2. Press before strike with immediate release

According to Courtney (1998), another variation is a reverse slide. It is a strike with a pressed wrist and then sliding backwards, thus releasing the pressure gradually. It is assumed to be quite difficult to achieve. He denoted it with a symbol ‘↓’
4.3.3 Pressing the wrist after strike
Rai (1984) indicated this particular *portamenti* as *Ghe* as playing *Ge*, the non-pitched strike followed by a press of the wrist.
One of Courtney’s (1998) modulation techniques is also close to this one. Though he described it as a combined technique starting with the previous technique (press before the strike), followed by releasing the sound and then without re-striking, pressing without losing the sound. He used the symbol ‘\(\hat{\cdot}\)’ alongside the notation but did not suggest a fixed notation for that.

4.3.4 Strike with the wrist in the air
Saxena (2008) notated ‘*Gha*’, which he described as a strike with the middle finger with the wrist in the air.
Gottlieb (1993) also introduced *Ga*, which appeared to be similar to *Gha* by Saxena (2008), but interestingly mentioned that it is only used as the ‘final stroke of a performance’.

4.3.5 Strike, push and press together
This is described by Courtney (1998). This implies striking while in a momentum of pushing forward, and pressing at the same time, which produces a ‘whooping’ sound. However, he did not use any particular notation or symbol for that.

4.3.6. Strike and push forward
Another *portamenti* is to strike and then push the wrist directly forward, or sometimes at a diagonal direction. It is close to the previous one and also intended to produce a ‘whooping’ sound but the movement of the wrist is more, and the time difference between the strike and the push is comparatively larger. It is more often associated with folk songs (Kippen 2001).

4.4. Discussion and Findings
From the discussion, it may be concluded that the power of the strike may be subjective and can vary from person to person. The number of fingers or use of a particular finger also may not have any specific impact as it can vary from person to person as well. Therefore, the more significant variables to produce distinct variations in *portamenti* are the exerted pressure (or ‘push’ in some cases), and the time difference between it and the strike. In the following table, those six techniques are illustrated. The waveform shows two parameters. The vertical distance from horizontal axis reflects the amount of pressure exerted on the *sur*, and the horizontal length shows the time duration of the strike. The waveform is generated by using the software ‘Audacity’.
<table>
<thead>
<tr>
<th>Steps</th>
<th>Spectrum</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><img src="image1.png" alt="Image" /></td>
<td>Standard Strike&lt;br&gt;High Intensity&lt;br&gt;High pitch&lt;br&gt;Less duration</td>
</tr>
<tr>
<td>2</td>
<td><img src="image2.png" alt="Image" /></td>
<td>Low Intensity&lt;br&gt;High pitch&lt;br&gt;Less duration</td>
</tr>
<tr>
<td>3</td>
<td><img src="image3.png" alt="Image" /></td>
<td>Standard Intensity&lt;br&gt;Pitch low to high&lt;br&gt;Duration shortened</td>
</tr>
<tr>
<td>4</td>
<td><img src="image4.png" alt="Image" /></td>
<td>High Intensity&lt;br&gt;Low pitch&lt;br&gt;More duration</td>
</tr>
<tr>
<td>5</td>
<td><img src="image5.png" alt="Image" /></td>
<td>High Intensity&lt;br&gt;High Pitch&lt;br&gt;Less duration</td>
</tr>
<tr>
<td>6</td>
<td><img src="image6.png" alt="Image" /></td>
<td>Intensity varied&lt;br&gt;Pitch low to high&lt;br&gt;Duration shortened</td>
</tr>
</tbody>
</table>

Note: Pitch and Duration are inversely proportional as pitching tightens the striking surface

Source: Authors

### Conclusion

*Portamenti* is regarded as a unique skill of the *tabla* player. The *tabla* players are often judged by their skill of *portamenti*. However, there are discrepancies in notating *portamenti*. This study tries to provide...
illustrations of various *portamenti* in *bayan* with particular details on how they are produced. It is expected to help *tabla* students, especially the beginners, to understand the various *portamenti* in *bayan*, which can help them gradually to master this skill.

**References:**

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Nath, Samir (1988),Tabla Shikkha, Kolkata: Sahityam, 18b Shyama Charan Dey Street.

**Endnotes:**

1 In this study, the term *tabla* is used to describe the instrument as a set of two.
2 Although, for a left-handed person, the drums will be played with the opposite hand, to avoid complicacy we will associate *dayan* with right hand and *bayan* with left hand in this study.
3 *Bhatkhande* notation system was introduced by Vishnu Narayan Bhatkhande. The notation is based on an old practice of writing the *bol* down. According to Courtney (1998), it is customary in India to adapt the *Bhatkhande* system to the script of the regional languages, for example, Devanāgarī and other derivative, including Gujarati, Guru Mukhi, Bangla, etc. as they are phonetic languages. (Courtney 1998:46).
4 The ‘home position’ for *bayan* is described by Courtney (1998) as resting the wrist of left hand along the edge of the *gaab* (shown in fig 2), while arcing the palm over it, with the middle finger (or index finger in some cases) resting on the *sur*, while the other fingers are suspended in the air.
5 Lucknow Style is one of the six major *tabla gharanas* (schools) in India (Sahai and Shepherd 2000).
Authors Bio-profile

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