

## GAMAKA BOX NOTATION SYSTEM

New possibilities in melodic music education and creativity from Music Temple  
(incubated by Indian Institute of Technology Madras, Pravatark, Chennai India)  
by Dr. Jeremy Woodruff

Any well-trained musician with the desire, and enough dedication, can learn to play music from another tradition authentically to a high level. It is commonly known that conventional staff notation however, is not an adequate tool for the task of learning music from certain music traditions of the world, such as Arabic and Indian and Chinese music, among others, nor is it useful for many types of improvised music either. Gamaka Box notation now enables musicians to learn complex melodic movements such as are found in Indian, Arabic and other classical music systems many times faster than was previously possible, thanks to the assistance of a clear, unambiguous notational system. In this way it could enable a leap forward in musical creativity as well as analysis. The notation draws its name from *Gamakas*, (or *Gamaks*) the term for the nuanced, intricate movements of pitch which, along with tone groupings, distinguish the various *ragas* of Indian music from each other.

Music education and curatorship in the West finds itself in a historical process of restructuring. And classical music traditions from other cultures are finding new hybridized, globalized formats. It is therefore time that history gives us a notation system from India (inventor: Ramesh Vinayakam) to revolutionize music education by encompassing **musical gesture** (the way the Indian *swara* does, the basic unit of musical sound in Indian classical music). Harkening back to the medieval *neume*, Gamaka Box notation goes beyond the melodic descriptive capability of the historical European "note" writing system, which is based on stationary nodes of pitch. Below, an overview of the basic concepts of the Gamaka Box Notation System (GBNS) are laid out, along with some of its implications.

In most other notation systems besides conventional staff notation, solfège syllables (or sometimes numbers) are used rather than noteheads on a staff-line. In GBNS this universal system of the solfège syllable appears beneath a three-line staff. The upper and lower lines of the 3-line staff then represent the upper and lower adjacent pitch areas of the main note's immediate surrounding melodic/harmonic context respectively (for Indian music they symbolize the immediate upper and lower tones of the *raga* but it could, for all intensive purposes, also easily represent proximate pitches in an Arabic *maqam*, a *gamelan pathet* or any other network of tones).

Melodic movement from one melodic step above  
gliding down to the main note:

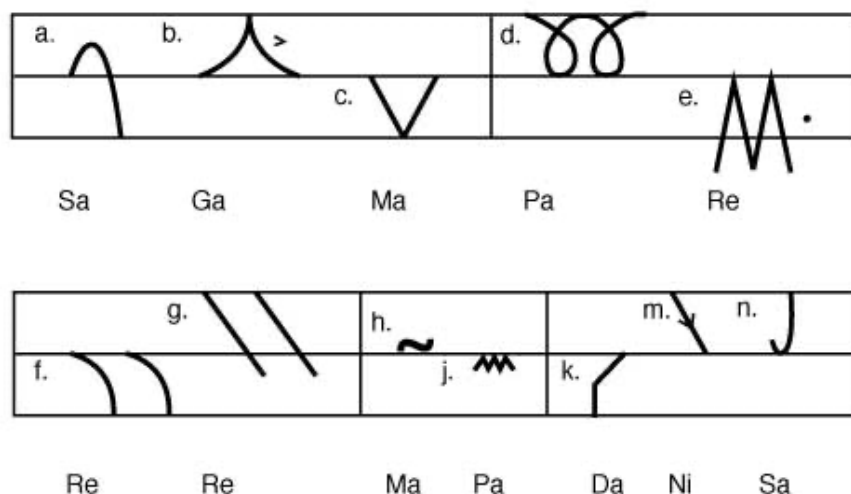
*Slow (smooth) vs. fast (straight) glides*



### Example 1

Example 1 above therefore shows a slow, smooth glide in pitch moving from *Re* to *Do* or a faster, straight glide in pitch moving from *La* to *Sol* (Indian solfège syllables and degree numbers are also included in this example by means of explanation, but only one is used in GBNS).

Taking this basic concept further, an "alphabet" of symbols for melodic gesture are defined by the system based on a principle of logical kinetic association:



Example 2

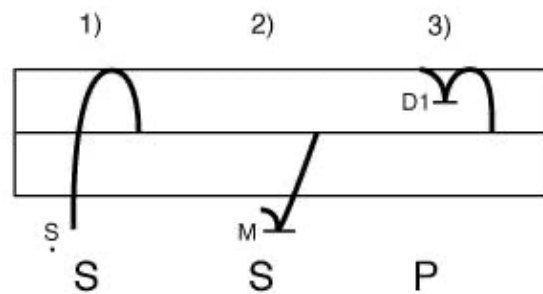
If you have ever tried to learn complex melodic nuance from a computer spectrogram-style display showing a continuous line of moving pitch, you will have probably found it quite frustrating. The advantage offered by Gamaka Box notation is that such a line of abstract curves and jagged movements can be broken down into a system of coherent, consistent and learnable units as musical shape symbols.

Example 2 contains the following selected symbols:

- a. A single slow oscillation that goes up from the note Sa (1st scalar degree) but not quite to the next higher note, then descends to the note below Sa which is Ni (7th degree)
- b. A single slow oscillation up a step to the note Ma (4th degree) from Ga (3rd degree) and back again with an accent on the middle of the descent back to Ga
- c. A single fast oscillation from Ma (4th) to Ga (3rd) and back again
- d. A very slow, very smooth double oscillation from the note above Pa (5th) which is called Da (6th) which ends up on Da again
- e. A fast double oscillation up from a third below Ri (2nd) which is the note Ni (7th), with a staccato dot at the end which means the sound cuts off abruptly
- f. A slow double oscillation in which only the descent side is heard, from the note Re (2nd) to Sa (1st)
- g. A fast double oscillation in which only the descent side is heard starting from the note Ga (3rd) and descends to an indefinite pitch just slightly under the note Re (2nd)
- h. a slow vibrato which goes just slightly above the note Ma (4th) in pitch
- j. a fast vibrato which starts and ends just below the note Pa (5th) in pitch

- k. a very fast, "struck" glide from Pa (5th) up to Da (6th)
- m. a very fast lightning quick glide from Sa (1st) down to Ni (7th)
- n. a very fast flick of pitch up to Re (2nd) at the end of the note Sa (1st)

"Ledger lines" for indicative notes show accidentals which deviate from the main collection or include pitches which are outside the span of a melodic 3rd around the main note (and therefore can't simply be displayed in the space of the upper and lower lines/spaces of the box without a special indication).



Example 3

In Example 3, 1) we have a single slow oscillation from a Sa (1st degree) one octave below the main note Sa (this is indicated by the dot below the solfège symbol in this case) which goes up to the Ri (2nd) a 9th above that lower Sa and back down to the upper main Sa. In Example 3, 2) we have quick smooth glide down to a Ma (4th) below the main note Sa and then glides quickly up to that Sa. In Example 3, 3) in a raga which takes the note Da2 (here the major 6th) a slow glide down from Da2 to Da1 (the minor 6th) and then a single slow oscillation up again and down to Pa (5th).

These ledger lines are also used inside the staff to indicate microtonal inflections and other deviations of pitch away from the main tone collection of the raga (or other harmonic context) in ways which are not demonstrated here.

Already the Kammerensemble Neue Musik Berlin successfully learned and authentically played South Indian Carnatic music using the Gamaka Box notation in Berlin, [Maerzmusik 2017](#). Teachers from Music Temple are waiting for the right educational partners in England, Germany, Holland and other countries in order to teach musicians in the West Carnatic music, and faculty of the Indian Institute of Technology Madras are looking for conservatory and university partners in Europe for grant applications. For the first time in history the rules of the ragas can be captured with 100% accuracy - before GBNS this wasn't possible.

Furthermore, melodic possibilities open more generally through GBNS for free improvisation, new music and efficiently transcribing and learning the music of other cultures. We are looking forward to cooperating with you in developing the unique musical possibilities that Gamaka Box notation offers.