$ruti

INDIA'S PREMIER MAGAZINE FOR THE PERFORMING ARTS

SINCE 1983

THE GAMAKA BOX
A powerful system of notation

Jeremy Woodruff

The Gamaka Box notation system, devised by Ramesh Vinayakam, (*Sruti* 320, May 2011) was a revelation to me, not only as a student of Carnatic music, but also as composer and musicologist, for the insights it allows which can facilitate the comprehension of Indian music, on the level of musical grammar, and especially for the purpose of learning and playability. I started learning it in September 2014. In the meantime, the Gamaka Box has made enormous strides, gaining accolades. I subsequently brought the notation to one of the foremost ensembles in Europe, the Kammerensemble Neue Musik in Berlin, who recognised its genius, and instantly acquired funding from the Max Mueller Bhavan in Chennai, as well as the Cultural Senate of the State of Berlin, Germany, to perform a set of Indian classical compositions in a concert at Kalakshetra on 30 September, under the direction of Ramesh Vinayakam. Thanks to the Gamaka Box, Indian classical music will also newly grace the stage of one of Europe's most prestigious music festivals for the first time: the Kammerensemble will play Indian classical music in the MaerzMusik Festival at the Berliner Festspiele in March 2017.

As in the discovery of any form of writing, the sensation I had from reading Gamaka Box notation after learning it, was like having a spotlight of knowledge shone on a place hitherto mysterious, dark and incomprehensible. Where previously, while learning Carnatic music in 2004 I had felt like a blind man groping in the dark, barely perceiving amorphous, unnamed, and unnamable forms, now
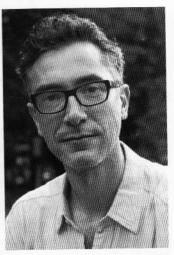
Ramesh Vinayakam

Jeremy Woodruff

through the logic of Gamaka Box notation I could not only play, but also hear and understand the music in a totally new way. This has subsequently opened up so much more of the artistry, beauty and divinity of Carnatic music to me. The revelation of Gamaka Box has in fact made me think about music itself in a completely different way. In what follows I briefly articulate the main features of the Gamaka Box notation of Ramesh Vinayakam as differentiated from the European one which set it apart and make it capable of this powerful transformation in understanding and accessibility.

As a composer and musicologist, one of my main interests has always been interpretation. Thus when I started studying Carnatic music, my desire was to discover and comprehend something of the myriad differences in the ways that Carnatic musicians perform compositions. I am interested in what it is that keeps performances "authentic" when they contain so much diversity. To this end, I wrote in 2004 a Masters Thesis at the

Conservatorium van Amsterdam on Carnatic Music Education (available at: http://www.klangzeitort.de/uploads/documentation2/Jeremy%20Woodruff.pdf) in which I struggled to put three different versions of *Sree Gananatha*, the Malahari geetam, into Western staff notation. An exercise, which, although it revealed certain differences, nevertheless always seemed to me afterwards unrewarding, in that the substance of the differences between the versions nevertheless still remained elusive to me somehow. Ten years later I now have the chance to amend that problem and revise those transcriptions using the Gamaka Box. In the process I can also demonstrate why the Gamaka Box is so well suited to revealing the essence and structural musical differences between versions of Carnatic compositions, as well as for enabling a performer to play them correctly.
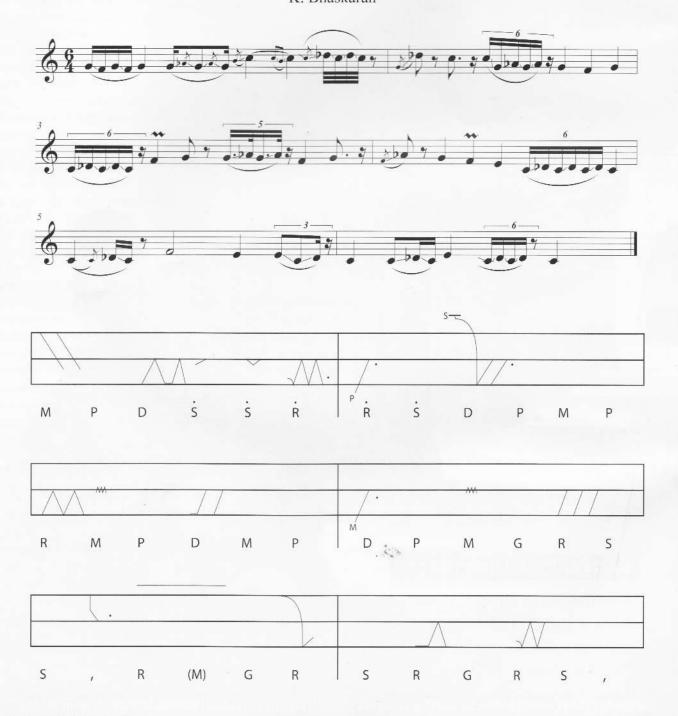
In my original thesis I had versions from my flute teachers K. Bhaskaran, Bhanu Jayaprakash (son of the late

Carnatic singer from Bengaluru Jahnavi Jayaprakash) and Ludwig Pesch. Since the audio to these versions from ten years ago was lost, I obtained new audio of the geetam from K. Bhaskaran again, as from my more recent teacher Shanthala Subramanyam (whose version bears some similarity to Jayaprakash's) and lastly in lieu of Ludwig Pesch's own version, Pesch referred me to the recording of Sreevidhya Chandramouli whose version of *Sree Gananatha* is found on the Carnatic e-learning site www.carnaticstudent. org. Here are six transcriptions of just the beginning of the three versions of *Sree Gananatha* from K. Bhaskaran, Shanthala Subramanyam and Sreevidhya Chandramouli side by side in both staff and Gamaka Box notation. The audio files from whence these versions were transcribed can be accessed at: https://soundcloud. com/jeremy-woodruff-1/sets/three-versions-of-malahari-geetham-sri-gananatha

Vinayakam's main notational innovation was to draw a performer's attention to a vocabulary of gestures
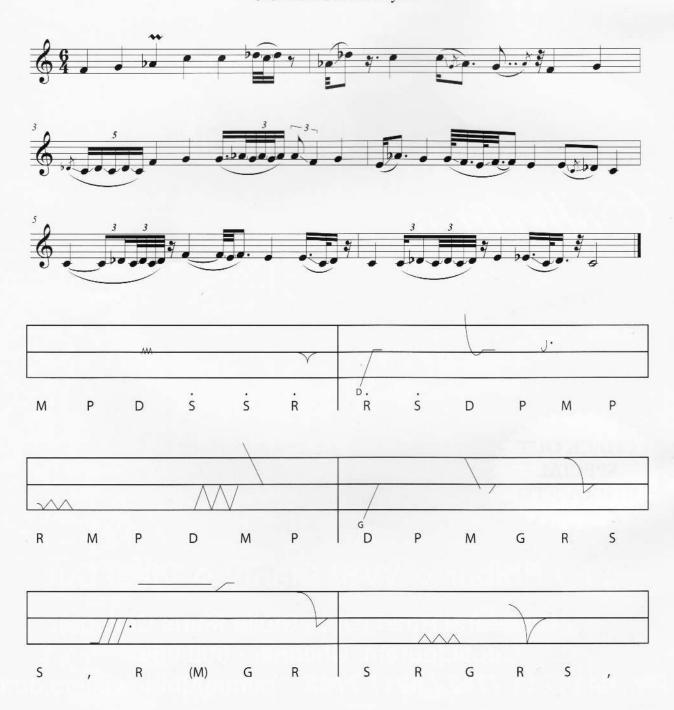
K. Bhaskaran

between swara syllables. Note heads in Western staff notation, often distract from pitch contours in Carnatic music. In Carnatic music curvature and oscillation are central melodic features of a rendition, as opposed to the single, discrete pitches of Western classical music. Swaras imply a certain flexibility of pitch, when written in staff notation, they are contradicted by the inert, static pitches implied by the Western note head symbols. A gamaka as written in Gamaka Box, already forms the perfect graphic analogy to describe the difference between the Indian *swara* and the European *note*: the dot implies only one pitch level while lines and curves imply constant flux.

This is the main reason why the Gamaka Box is also simultaneously more graphically efficient and poetic for Indian music. To understand a jaru in staff notation my mind must grasp two graphic objects – the beginning and ending points separately – while the trajectory of the sound is graphically omitted; here the gamaka becomes split into two cognitive objects, two

Shanthala Subramanyam

M P D Ṡ Ṡ R | Ṙ Ṡ D P M P

R M P D M P | D P M G R S

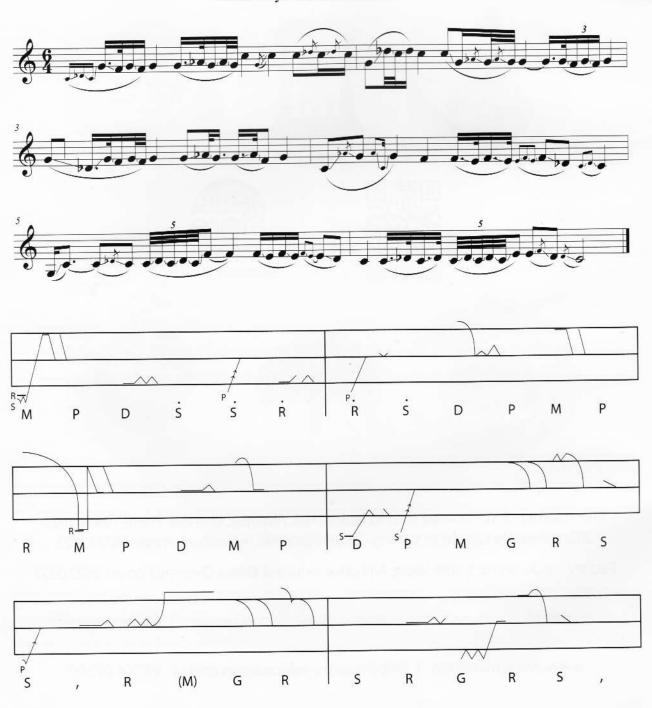S , R (M) G R | S R G R S ,

symbols, a beginning and an end, apart. To understand the same jaru in the Gamaka Box, my mind only need grasp one object, a unity, which at the same time instantly describes a certain type of melodic gesture used, for example, fast or slow, oscillation or vibrato. The problem for staff notation gets more acute the more note heads are required to describe this flux.

Notice for example the complexity of the appearance of some of the gamakas on *Da* in the staff transcriptions compared to their elegant counterparts in Gamaka Box. The compounded impact of translating many gamakas into staff notation creates an almost contradictory maze for the eye of the musician. It is easy to see visually how this translation into staff notation

to some extent simply goes against its nature in how convoluted it appears, whereas in Gamaka Box the gestures are simplified, clarified, and the relevant patterns are highlighted in relief.

The rhythm in the staff notation appears more "exact" compared to that in the proportionally drawn

Sreevidhya Chandramouli

Gamaka Box, another disadvantage of the European notation. Although both rely on quantising (simplifying) the rhythm, the rule of thumb for staff notation implies that generally all notes of the same rhythmic denomination (1/8th of a bar, 1/16th of a bar, etc.) should be played equally in duration. In contrast, the Gamaka Box clearly implies that the rhythms drawn are only a loose approximation – a guide. In other words, it is the starting assumption in the Gamaka Box that the rhythm is a quantised representation, whereas it is the starting assumption in staff notation that the rhythm is to be played as shown. In Carnatic music the gamakas cause a constant, complex rhythmic pull on the metric regularity of the phrases. Throughout all the transcriptions in staff notation, the rhythm of the musical phrases as notated there are metrically over-determined as mentioned above. The flowing lines of the Gamaka Box notation, on the other hand, capture the rhythmic tension created by the gamakas better, with their non-Cartesian relation to the pulse.

Another advantage of Gamaka Box notation is lexical: contours are shown to land on, or take off from, either a line (which indicates a note of the raga, and hence a clear pitch step with a definite intonation) or a space (which symbolises in-between notes of the raga, and are to be played in unceasing movement, or hardly landing on the note at all). In other words, tones are supposed to be played in differing degrees of transience in gamakas. You could say that sometimes a tone is supposed to be played as if it were not really there; when they are reduced to note heads on the five-line staff however, a performer invariably interprets an undue fixity or emphasis into their sounding by virtue of the note head symbol meaning. There is hardly a way to convey certain subtleties with available staff notation symbols. Gamaka Box notation's lines and spaces however are adapted to the hierarchy of tone stability and

instability created by gamakas in the raga system, as opposed to the Western notation in which lines, spaces, and note head dots are, as a measurement, essentially equivalent in meaning and importance.

In this way the Gamaka Box system of lines and spaces has also organically solved the problem of microtones to a large extent. Experts agree that microtones in Indian music, where they exist, manifest practically exclusively through gamakas. Gamakas and microtones exist in cooperation in the Gamaka Box rather than as a superimposition. In other words, the real situation wherein microtones are not a result of a fixed frequency but rather of constant pitch movement is adequately represented visually therein. Compare especially instances in my transcriptions on *Ri* and *Dha* where the swara should only receive a hint of the pitch. For example, the Gamaka Box shows this effect clearly, where the singer hardly leaves *Sa* and *Pa* respectively, while in the staff notation *Ri* and *Dha* are often overstated in being one of the twelve pitches. In staff notation one has constant need of the glissando lines that show a glide between pitches, but these lines cannot demonstrate how slight the inflection from *Ri* to *Sa* should be, for example look at the very last swara of the version sung by Sreevidhya Chandramouli. In staff notation a *D-flat* is a *D-flat* is a *D-flat* (or similarly for a *D-quarter-flat*) whereas the Gamaka Box shows in many instances exactly how no two *Ri*-s are alike!

Gamaka Box transcriptions allowed me to comprehend the essential differences between versions of the first geetam, *Sree Gananatha*, which were impossible for me to find ten years ago. From staff notation you may derive the statistical number of times a so called "pitch class" (one of twelve) occurs, and how decorated the melody is. But only with the graphic advantages of the Gamaka

Box can you clearly see how the types of movement in between the pitches define a style that at the same time maintains the essence of the raga. For example, it is clearly seen in Gamaka Box transcriptions how K. Bhaskaran's *Sree Gananatha* employs the fastest glides among the three musicians; how Sreevidhya Chandramouli uses the slowest glides, and how her *Ri*-s and *Dha*-s stay the closest to *Sa* and *Pa*, how Shanthala Subramanyam elegantly employs a great variety of gamaka types economically dispersed throughout the geetam, with *Ri*-s occuring at the end of melodic phrases, before resolving to *Sa* that typically include a signature incremental dip from *Ga* through *Sa* into *Ri* (this happens three times). These elements are invisible in the graphic presentation of staff notation.

Finally, and most significantly of all, you cannot underestimate the incontrovertible fact that written symbols have cultural meanings (especially sonic ones) attached to them, which automatically replicate these meanings when imposed on top of another system and this is especially pertinent to Indian music written in Western staff notation. Because of the limited time frame for the Kalakshetra project, Ramesh Vinayakam offered the Kammerensemble Neue Musik players a hybrid notation from which to learn, using both staff and Gamaka Box notation. Theo Nabicht, the renowned clarionetist of the Kammerensemble answered tellingly as follows, to indicate his strong preference for using the Gamaka Box notation only (I paraphrase), "[with the hybrid notation] (1) I have to read twice the amount of time. (2) I will automatically catch the European style when seeing the staff notation. (3) The presence of the staff notation does not allow me to fully dive into Carnatic music."

" Written symbols
have cultural meanings
(especially sonic ones)
attached to them."

Theo Nabicht's intuition is completely right. Indian music played from staff notation almost inevitably takes on audible trappings of the elements of European playing style. This is extremely hard to avoid. Now that the Gamaka Box exists, if authenticity is the criteria, writing Indian music in Western notation is simply incorrect. It is time to move on in this respect.

Apart from all the above advantages, since the Gamaka Box was especially conceived by an expert within the tradition of Indian music to do so, it fits elegantly atop the sargam notation to complete it, while also leaving it undisturbed. Visually, sargam and Gamaka Box have a noticeably cultural synergy, in that, for instance, the lines of the Gamaka Box gamakas are in some ways not unlike certain characters from Indian alphabets themselves. And it is interesting to note that Rabindranath Tagore, although he had something else in mind, once suggested a three-line staff for Indian music notation around a hundred years ago, a coincidence that now seems prescient in respect to the Gamaka Box. Around that same time A.M.G. Mudaliar (proponent of preserving Indian music in staff notation) commented that, the more he tried to notate the gamakas into staff notation, the more these transcriptions lost the essence of the structure of the composition. Later, experts like Harold Powers, Karaikudi Subramanian and others have tried to amend this problem by even having two staves simultaneously one atop the other, one with detailed notation and the other with the transcribed sargam. Luckily it is no longer necessary

" **The Gamaka Box fits elegantly atop the sargam notation to complete it, while also leaving it undisturbed.** "

to go to such lengths outside the Indian classical notation system itself in order to record gamakas accurately – the Gamaka Box is an ingenious solution to this age old problem.

Music notation has at times been a controversial subject not only in Indian classical, but also in Western classical music. Since the mid-twentieth century, music notation as it has existed in the Western classical canon for 500 or so years, has come under fire in Europe and America mainly from improvising musicians in jazz and avant-garde music, but also from composers and musicologists of the Western classical tradition itself. Many Western composers who have intervened drastically into music notation, who started from scratch in creating their own new systems of notation or disposing of it entirely, have in part based their arguments on the cultural (even suggesting an imperialist) dominance of the style of the Western canon, the Western concept of the composer, and the unavoidability of playing with a certain approach and style when using conventional staff notation. It is exactly at this point of intersection, at the realisation of the unfitness of staff notation for Indian music, that Ramesh Vinayakam's Gamaka Box and the Kammerensemble Neue Musik's traditions meet. And together they have the chance to do something extraordinary, never before accomplished in history.

On the other hand, many Western improvisers from jazz and the avant-garde have argued that notation can generally have a deleterious effect on music, as some Indian musicologists still claim now, and have claimed in the past. In America and Europe this argumentation has also at least in part rested on the belief in the existence of the "pure oral tradition" of India. Could this same "pure" oral tradition exist, however without the many historical incitations to

record them on paper in sargam for posterity? Would countless examples of Indian music still exist which were saved from obscurity by the widespread adoption around the turn of the 20th century of sargam notation?

Furthermore, we have reached a crucial juncture where although a great diversity of Carnatic music is currently still preserved, with every passing year, as the guru-sishya parampara system has essentially become all but extinct, and as musicians can, and do peruse all the different banis simultaneously on the Internet, the art form becomes increasingly more homogenous. Because of this effect, unfortunately, we simply do not have the leisure any more to contend that Carnatic music in its "pure" form is distorted by transcription on the page. The Gamaka Box is the best hope to definitively preserve beautiful rarities of this diversity for future generations from the effects of this increasing homogeneity. It is a vital task.

The Gamaka Box Notation System is a precious jewel, an indigenous technology which, like the melakarta scheme itself, has the capability to capture new truths, not only about Indian music, but about world music. Should the proper funding be allotted, so that intensive research and development with this remarkable technology can progress as required, then an era will be born in which India leads a new renaissance for music globally. A whole new branch of music theory stemming from India will blossom, and musicologists and musicians all over the world will make new progress. I have whole-heartedly launched into advancing the Gamaka Box to the best of my ability because of this belief.

(The author is Head of Music Theory and Lecturer in Composition and Sound Studies at Istanbul Technical University, Center for Advanced Studies in Music, MIAM)