

MICROTONALITY IN SOUTH INDIA: NOT SO MODAL

Article by Rafael Reina published by the Foundation for Microtonal Music, Huygens-Fokker, in its annual magazine 2000.

Would you find it shocking to discover that for the majority of the Indian population, Michael Jackson typifies western music, and for an extremely small elite, Mozart? Berio, Xenakis, Stockhausen, even Stravinsky or Schönberg are totally unknown for, I daresay, 99,99 % of the Indian population.

And what are your first thoughts at the mention of Indian music? Some sort of "World Music", "New Age" or folkloric music? Just as it is time for Indians to rethink their concept of Western music, so is it time for us to rethink our conceptions and indeed our pre- and misconceptions of Indian music.

The mutual ignorance which has led the avant-garde of both the West and India to consider each other's music as "easy listening" or commercial, is precisely what I tried to pin-point in an article I wrote for a Bangalore-based newspaper during one of my visits to South India, in July, 1997. I had been asked to explain the significance and, somehow, uniqueness of the seminar and concerts which Jahnvi Jayaprakash (my main teacher and eminent vocalist) held in Amsterdam in April 1998.

Due to the experience of staying with my karnatic music teachers and consequently my contact with what could be considered part of South India's intellectual elite of musicians (and non musicians), I became all too aware of the total ignorance (my apologies for the word but it has no condescending connotations) among Indians, referred to above, of classical contemporary western music. This ignorance, together with the success that most Indian musicians harvest in the West in the so-called "World Music" or "New Age" circuit, has misled the elite in India, that smiles with a certain paternalistic attitude whenever I attempt to explain what has happened here in the last century.

Similarly, every time I have tried to explain the different aspects of karnatic music to what could be considered a parallel to the Indian elite here, the response has often been much the same: condescending smiles or replies in the line of "not bad for non-western music" (of course, always polished with a politically correct euphemism). The reason the image that most westerners have of Indian music, mirrors that held by Indians of western music, is simple: the Indian musicians we tend to hear in the West are either musicians who perform a sort of "Indian pop" or those who come to the already mentioned "World Music" circuit, playing a very simple and "easy listening" form of Indian music. (I could write a book about all the anecdotes I have heard on my trips to India from musicians who literally made a mockery of western audiences, when they performed a

piece or a trick considered childish, amateur or of doubtful taste in India, but which obtained loud applause or the praise of many people here).

With the benefit of this information to hand, I attempted to challenge the Indians' perceptions regarding the attitude of many westerners towards - in the Indians' own words - such "cheap" concerts, by informing them that there are in fact, many people in the West who do not buy this approach. I tried to explain that, in my view, if the real essence of karnatic music would be the norm in such concerts, the spiral of mutual ignorance currently existing in the attitudes of Indians and westerners to one another's music systems could be reversed, to the mutual benefit of both.

Now is the time to explain the same here. South Indian music has one of the most sophisticated melodic, formal and rhythmical systems in the world. The reader may say, "What about harmony, orchestration or counterpoint?". The answer is simple: they don't exist in Indian music. We have developed them and the Indians have developed the former. Which implies that if we could combine the best of both worlds, after thorough study and trial and error, perhaps another stream of music could be generated in both parts of the world (a real fusion and not con-fusion). And the different means of achieving this are as many as the people who would attempt a piece of music.

To illustrate this, I will try first to explain four karnatic melodic techniques, a choice I have made from a hundred different possibilities. These techniques can be "baptised" as follows:

- 1) Use of pitches outside the mela
 - Sruti, soram and PA bheda
 - Raising and lowering of sorams by means of pythagorian comma

- 2) Modulation of ragas
 - Ragamalika
 - Grahabheda

Sruti bheda

Before commencing with this theory, I must first explain the very important distinction between *mela* and *raga*. For most westerners, a *raga* is a scale used by musicians to realize melodies, never using another note or notes outside the scale. In Indian music, this is termed *mela*. Mela is the soram configuration chosen among the 16 *sorams* system. However, Indian musicians never think in terms of pitches, but in terms of soram-function relationships and, because of this concept, other pitches may be used in a given

composition, without changing the name of the *mela*: This is what turns it into a *raga* (among other things that I would rather omit to avoid deviating from the main issue).

The question that then arises is, which pitches can be chosen and how can they be inserted in the raga? This is not an easy question. There exists a "holy" principle that must be followed when making up a raga: *pramana sruti* distances (basically 1/4 tones) can only be used around SA (tonic) and PA (5th) of the raga. Between any other two sorams, there must be a distance of no less than 70 cents. In actual fact, the carnatic raga system has devised a way by which this 1/4 tone distance can basically, only happen around SA/PA.

Six of these sorams (RI1, GA3, MA1, MA2, DA1 and NI3) have two srutis (or pitches) to choose from (which turns the 16 sorams system into a 22 srutis system). These two srutis that share only one soram-name are always a *pramana sruti* (basically one 1/4 tone) apart and the two of them would never be together in a *mela* (note that I write *mela* and not *raga*). Now, if any of these sorams with dual sruti appear in the *mela* in both ascending and descending order, in many cases (and in every raga there is a whole new world of rules and reasons for everything) the two srutis may co-exist in the raga following a basic set of rules:

1) In the raga, one of the two srutis is chosen as **the sruti of the raga**. This sruti has total freedom of movement.

2) The other sruti of the same soram can be used, but always only **momentarily replacing (bhedom)** the sruti of the raga. If the latter was the low sruti of the soram, the "replacing sruti" must always go up to any other soram of the raga (therefore, it is not like a raised sixth in a melodic minor). On the contrary, if the chosen sruti of the raga was the high sruti of the soram, the "replacing sruti" must always go down to any other soram of the raga.

3) The two srutis of the same soram must never be played consecutively.

4) The set of regulations of the raga (called raga **lakshana**) will determine and reduce all the theoretical possibilities to one of the two following cases:

a) One sruti of the soram only goes up and the other one only goes down.

b) The sruti of the raga is used approximately 2/3 of the time that the soram is used and the other sruti is used 1/3 of the time.

In order to use one of the previous choices, the soram has to be a "life note" (important or characteristic pitch of the raga), otherwise it is discarded as a **sruti bhedom**. But the possibility exists to eventually use this technique with other sorams with dual srutis that are not considered "life notes" of the raga, provided that they just appear as a "color" (this is very occasionally, maybe 2, 3 or 4 times in the whole piece, but always quite

noticeably). This choice is left up to the performer in the improvised sections of the piece or to the composer in the written part. In this way, a mela with, for example, 8 sorams, could be using 11 pitches in the raga and an undetermined number of pitches that may be played a few times throughout the whole piece.

(There is an exception to this rule: NI3 normally uses both srutis regardless of whether is a life note or not).

Soram bhedom

In addition to the sorams with dual sruti already mentioned, there are some sorams of different degrees that are separated by a *pramana sruti*:

-RI2-GA1 (1tone-3/4 above SA)

-DA2-NI1 (1 tone-3/4 above PA)

-RI3-GA2 ($1+1/4-1+1/2$ above SA)

-DA3-NI2 ($1+1/4-1+1/2$ above PA)

These sorams are considered as "combinations to be avoided" in any mela. Therefore they can never be used together when making up a mela.

However, the previous explanation about **sruti bhedom** is equally applicable to these sorams. As the reader can deduce, the principle that lies behind these two techniques, is that any two pitches in the chart of 22 srutis that are separated by a *pramana sruti* (whether under the same soram or a different one), cannot be used together in any mela (unless they are around SA and PA). They may, however, replace each other in any raga, provided that a hierarchy is established and they follow the Raga Lakshana regulations (or, as explained above, they appear as a mere color).

Examples of sruti and soram bhedom are innumerable, but I would like to give an example of a very well known raga (Gana Murte).

Mela: SA, RI1, GA1, MA1, PA, DA1, NI3

Under the typical western mentality regarding modes, these seven pitches are to be used exclusively and any other note would be discarded. But all sorts of things happen within this raga.

-GA1 is systematically replaced by RI2 when going up. As a matter of fact, the main cell of the piece is the following: GA1, GA1, RI1, SA, **RI2**, MA1, GA1, GA1, RI1, SA (if we were to translate this cell to western pitches in equal temperament, taking the key of G as the SA, the melody would be: A(1/4flat) x2, G+, G, **A**, C, A(1/4 flat) x2, G+, G.

-RI1 chooses the high sruti (72 cents above SA) as the sruti of the raga, but quite a few times the low sruti can be heard, usually going to SA or NI3.

-NI3 behaves in the same way as RI1, but with more leaps to other sorams.

Therefore, three more pitches are always part of the raga, without having to change the mela.

PA bhedam

Probably because PA is continuously audible in the tambura throughout the entire concert, many ragas have a tendency to do all kind of twists and turns with it. There are three pitches that can replace PA without changing the name of the raga or mela or scale:

-DA1-, provided that there is not another DA1 in the mela. This pitch can only go up, since it is higher than PA.

-MA2+, provided that there is not another MA2 in the mela. This pitch can only go down, since it is lower than PA.

-Eventually, a note that lies between PA and MA2+ (these are 70 cents apart) is used. This note does not belong to the 22 srutis chart and does not respond to the technique of the pythagorian comma raising or lowering of sorams. It can appear at all times.

The main difference between PA and other soram replacements is that it does not follow any rule of frequency of usage and, in addition PA can precede or follow any of its replacing sorams. Indeed, even in simpler compositions that do not use any other Bhedam possibility, PA bhedam is not a rarity.

Pythagorian comma raising and lowering of srutis

Essentially, any soram that is not followed or preceded by another soram with a pramana sruti interval, can be raised or lowered 22 cents (a pythagorian comma). This change in cyclic cents may occur sometimes as part of the Raga Lakshana (thus, the sruti is altered every time it is used). This is the case in a very well known raga (Todi), which always uses a GA2 lowered 22 cents.

However, I consider this to be of greater interest when it occurs as a color alteration of a soram of the raga. The rules are much simpler than with the Bhedams: Any sruti can be raised, usually in the higher octaves, to add brilliance to the pitch, provided that this raised sruti ascends (again, not necessarily to the next soram of the raga). Any sruti can be lowered, usually in the lower octaves (sometimes in the middle octave as well), to add depth to the pitch, provided that this lowered sruti descends. Frequency of appearance is left up to the improviser or composer. Total amount of notes that can be used through this technique is raised to 39 por octave.

To summarise, it can be seen that not only does the idea that many westerners tend to have of (South) Indian music being "straight forward modal music" fail to reflect the reality, in some cases the total amount of pitches used in a composition is higher than in many western microtonal compositions that use atonal or serial techniques as a starting point. One raga I have used in one of my latest pieces ("Drag on... Claustrophobia") called

Madhumanti, makes usage of 14 differentiated pitches. Of course, and this is something that karnatic music shares with contemporary western music, the hierarchy of sorams in every conceivable aspect is what differentiates two ragas with "many notes" from one another.

Ragamalika

This is a modulating technique which maintains always the same SA or tonal center throughout the whole piece or section of a piece. There exists a variation called Ragatalamalika that introduces very complex meter and tempo changes, but for present purposes, I will remain within the field of microtonality.

A minimum number of four ragas must be used (I have heard pieces with as many as 14 ragas). Changes may be more or less abrupt, depending on the number of ragas. The change of three or four sorams between two consecutive ragas (where, for example, only one soram change is automatically discarded) is considered ideal. However, and possibly with the function of reminding the listener of the original raga, this occurs at irregular intervals. And, since the rule of three or four changes is only applicable between two consecutive ragas without taking into consideration their relation to the first, sometimes this return will result in highly surprising twists in the microtonal development of a piece.

Ragamalika can be used as a form in itself or as a modulatory concept in sections of other structures. In the former, a very specific set of regulations is to be observed and in the latter, these rules will always be adapted to those of the section. Since the mere enumeration of these rules would imply a whole new article, I will just try to explain the concept of "soram development" versus "intervallic development" that is so specific to all forms of karnatic music but, particularly in Ragamalika, acquires new relevance.

I will never forget the day when, almost inadvertently, Jahnvi explained to me the concept of developing motifs or themes through "soram-function" relationships. For someone like me, a westerner used to developing material by drawing on intervallic principles, the way ragamalika "developed" ideas was far too obscure, which made me wonder if there was any relationship whatsoever or just a sort of "gluing" of lines one to another without any guiding idea(s). I expressed my concern to Jahnvi who did not, at least initially, understand what I was getting at. When I finally finished my soliloquy about intervallic relationships and how important these have been for western classical and contemporary music, Jahnvi and two other reputed musicians who happened to be there at the time drew, I daresay, a condescending smile and asked me: "Where is the challenge for the musician and the listener? Is it not boring or repetitive to mainly use one or two intervals?" I was astonished.

All of a sudden one of the main pillars on which our musical system is built, fell and I found that I was unable to articulate a word in its defence. Then Jahnvi proceeded, quite casually, to underline the way they develop ideas based on strict and orderly "soram relationships". What this implies is that, if the main cell is RI, MA, RI, GA, DA, every soram will take the Number used by that raga (RI 1 or RI 2 etc) and, of course, the pitches from raga to raga will be different. At the same time, they develop melodic ideas as if the same soram-degrees of every raga were the same pitches, while keeping in mind the soram-contour ignoring any intervallic relationship.

This, as I have seen from my students' reactions on teaching them this concept, is relatively easy to follow. The real problem arises when they use this concept in retrograde, palindrome, fragmentation and other developmental techniques currently used in South India. Naturally, they think that **this** is a real challenge for the performer for he has simultaneously to be in tune and to make sense.

For us, this is far too complex. I took the time to transcribe a few melodies in ragamalika to check whether they use this concept accurately or "approximately" and I could not find a single note that, according to this system, would be out of place. Now, the question that arises is: which system is more advanced - the west with its strong intervallic relationships, or the Indian system with its "soram development"?

I think they are just different. Before we, as westerners, pass judgment on how "incoherent" or "random" Indian developmental ideas may initially appear to us, we should first reach a real understanding of what these involve and always bear in mind that no one system provides the only, or necessarily the best answer. There may be different methods for developing ideas which, while alien to us, may be more appropriate when working with different tuning systems. In the same way, our system of equal temperament calls for certain methods which are unsuitable for other types of music and/or tuning.

Grahabheda

Karnatic musicians consider this technique the pinnacle of melodic sophistication (and quite rightly so). Few people even attempt to begin to study it. I can, however, assure the reader that everyone I have explained the principles of grahabheda to, who then goes on to listen to a recording of my main teacher (Jahnvi uses this technique as a matter of course), has been absolutely stunned not least by its complexity but by a strange and striking beauty inherent in this technique.

Grahabheda is a method used to produce new pitches (out of the 22 srutis chart) by shifting the modal center. If one of the existing sorams of the raga becomes the new SA (or root), the pre-existing distances in cyclic cents between sorams may have to be adjusted to

keep the new soram-function distance. The musician must, therefore, get used to keeping in mind the 22 sruti relationships from any given point. Thus, although the tambura maintains the same SA throughout, the musicians have to be able to ignore this note and establish a new set of soram-function relationships from the new theoretical center.

For instance, let us say that we go from Raga 1 to Raga 2 and we decide to take GA3 of Raga 1 (essentially a third above the drone pitch) as the SA of Raga 2. Let us consider a Raga 1 containing NI3-. The distance from NI3- to SA is of 112 cents (1 semitone and 12 cents). When the grahabheda is realised, NI becomes PA and SA becomes DA1+. If we take a closer look at the cyclic cents distances chart, we will observe that from PA to DA1+ there is a distance of 72 cents. Why not keep 112 cents from PA to the following soram in Raga 2 as we had from NI3- to SA in Raga 1? Because such an interval (112 cents) does not exist from PA to any other soram. So, since the twenty two functional sorams have to be respected, this grahabheda produces one or more non pre-existing pitches. The total amount of theoretical pitches that can be produced within an octave are over 400 (this is taking into consideration the 21 possible modulations to all the sorams) that, however, are reduced to 'only' 98 for practical purposes, since any distance below 6 cyclic cents is somehow adjusted or discarded.

To conclude, I would like to mention that I have been trying to use all these concepts in my compositions, in which orchestration colors and counterpointistic ideas continue to constitute the main foundation. I do not try to compose or teach Karnatic music. Rather, I use karnatic music techniques to form a better understanding of many events which have occurred in the musical arena in the west over the last 50 years or so, and to enhance the range of possibilities within our system. The Indians are extremely good at what they do best. I have been exposed to too many cultures or styles to believe in monolithic approaches to music. Every musical culture may be worth studying if we avoid analyzing them in the light of our own parameters, or put aside our preconceptions.

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CHART OF 22 SRUTI

Name	Cents	Distance	West	Cents
SA	0	0	C	0
RI1-	22	22	C+	50
RI1+	70	48	C#	100
GA1	162	92	D-	150
RI2	204	42	D	200
RI3	274	70	D+	250
GA2	316	42	D#	300
--	--	--	E-	350
GA3-	386	70	E	400
GA3+	428	42	E+	450
MA1-	498	70	F	500
MA1+	520	22	F+	550
MA2-	590	70	F#	600
MA2+	632	42	G-	650
PA	702	70	G	700
DA1-	724	22	G+	750
DA1+	772	48	G#	800
NI1	864	92	A-	850
DA2	906	42	A	900
DA3	976	70	A+	950
NI2	1018	42	A#	1000
--	--	--	B-	1050
NI3-	1088	70	B	1100
NI3+	1130	42	B+	1150
SA	1200	70	C	1200

The absence of E- and B- does not imply that these pitches do not exist in Karnatic music, only that they do not exist when SA is in the key of C.