

# KARNATIC RHYTHMICAL STRUCTURES AS A SOURCE FOR NEW THINKING IN WESTERN MUSIC

PhD Thesis by Rafael Reina

## Introduction

### Summary

My research addresses ways in which the Karnatic rhythmical system can enhance, improve or even radically change the teaching of rhythmical solfege at a higher education level and how this learning can influence the creation and interpretation of complex contemporary classical and jazz music.

Since 1995 I have been teaching a programme at the Amsterdam Conservatoire based on the deep research I conducted between 1993-97 in all aspects of Karnatic Music. The present text is the result of re-examining and deepening throughout the years in the material learnt in that period, in addition to various trips to South India realized in the period 2010-2012.

One of the main goals of the research and subsequent explanation of the different techniques is to use the architecture and skeleton of this musical culture not only to improve, modify, enhance or, even, replace the current rhythmical solfege system imparted in music centers all over the West, but also to increase the array of tools, awareness and accuracy among musicians to perform western complex composed or improvised music. I have developed these ideas into a PhD thesis that aims to:

- Systematize those rhythmical Karnatic devices which can be considered sufficiently universal to be integrated with western classical and jazz aesthetics, so there is finally a comprehensive and complete text providing access to many rhythmical elements used in Karnatic music;
- Provide a methodology for how these devices can be taught within a western framework, enhancing enormously the current western solfege rhythmical system;
- Explain how these techniques can be used as a source of creative ideas for composers and improvisers;
- Make a CD with recordings to demonstrate every step of every technique.
- Analyze sections of pieces of existing contemporary repertoire (both classical and jazz) where parallels with karnatic concepts can be established or where karnatic techniques can be used to perform passages with more accuracy and understanding.
- Analysis and audio recording of two improvised pieces, performed by a small jazz ensemble, and two pieces by two composition students<sup>1</sup>.

### Research topic

The expansion of rhythmical possibilities has been one of the cornerstones of musical developments in the last hundred years, whether through western development or through the borrowing from non-western traditions.

---

<sup>1</sup> *All performers and composers are or have been students of my program at the Conservatoire.*

Most classical musicians, whether in orchestral or ensemble situations, will have to face a piece by Ligeti, Messiaen, Varèse or Xenakis, to mention just a few well-known composers, while improvisers face music influenced by Dave Holland, Steve Coleman, Aka Moon, Weather Report, Irakere or elements from the Balkans, India, Africa or Cuba. Furthermore, many creators, whether they belong to the classical or jazz worlds, are currently organizing their music not only in terms of pitch content but with rhythmical structures and are eager to obtain information that would structure and classify rhythmical possibilities in a coherent and practicable way<sup>2</sup>.

One of the triggering factors that led me to embark upon creating the present text was the interview to Pierre Boulez that I came across a few years ago; I felt that I had acquired a knowledge that could eventually lead to bridge what he mentions as one of the main obstacles for communication between composers and public.

Pierre Boulez has said that,

“For me, what still has to be acquired is the degree of precision you need from an orchestra. This is not only because I am obsessed by precision, but also because the orchestral sonority changes completely. The clarity is suddenly there; you can really hear the score as it is written. Sometimes with a piece of Stockhausen, Berio or myself, the precision is not in the performer's head before playing. As a conductor I have to be demanding. If you have sixteen violins playing a quintuplet (which is, by the way, something quite easy compared to a lot of music composed after 1950), they have to really be thinking a quintuplet. The kind of tempo modulation you have in Elliot Carter's music - well, it has to be very precise or otherwise is not effective. This type of precision is still not really a musician's habit, shall we say” (....)

“If the rhythms and phrasing that are peculiar to contemporary music would be taught in the best conservatories in an intensive way, the future of contemporary music would certainly change and performers and general public would really start enjoying pieces by Berio, Xenakis or myself. The lack of accuracy in orchestras is the biggest obstacle for communication between composers and public”.

‘Pierre Boulez the Composer and Musician’s Musician’,  
interview by Jed Distler in August of 2000 with composer/ conductor Pierre Boulez.  
<http://www.andante.com/article/article.cfm?id=12737>

I would argue that today’s music demands a new approach to rhythmical training, a training that will provide musicians with the necessary tools to face with accuracy more varied and complex rhythmical concepts, while keeping the emotional content.

---

<sup>2</sup> *Risking becoming reiterative, I cannot emphasize enough the fact that the present text is structured and catered for classical and jazz performers, as well as for any creator, be it an improviser or a composer.*

The incredible wealth of rhythmical techniques, devices and concepts, the different types of Tala construction, the use of rhythm as a structural and developmental element and, last but not least, the use of mathematics to sometimes very sophisticated levels in South India, enable the western musician to improve and enhance their accuracy and/or their creative process and make the study of Karnatic rhythm a fascinating adventure of far-reaching consequences. The large variety of rhythmical devices used in Karnatic music is one of the elements most unknown and least documented, yet potentially most universal.

After many years teaching and experimenting with these concepts in my music, I have refined my knowledge into what can be divided into 'local' and 'universal' techniques. The former implies, for example, ways of using rhythm to accompany the melody within a tala, or phrases that are a means and an end in itself and that are very 'aesthetically-charged'; they are, however, of no relevance to the goal of my project. 'Universal techniques', on the other hand, are those concepts which have a clear set of rules that enable the musician to elaborate his own phrases and combinations, stripped of any cultural context; they can also be used to establish a methodology for how to study and approach rhythm and rhythmical complexities. The latter will form the cornerstone of the thesis since a system as complete, compact, consistent and far-reaching as the one used in South India has no equivalent in Western musical cultures.

Through my research and through working together with Jahnavi Jayaprakash (who came to the Conservatoire of Amsterdam to give seminars between 1998-2002) and B.C Manjunath (between 2003-2011), I have been able to assemble a body of practical devices, all of which can, on the basis of my experience and research, greatly influence the thinking and development of western music. This process has involved a sifting of techniques: there are many devices used quite often in South Indian music which are not relevant to my project; similarly there are concepts used by only a handful of extremely good musicians in South India which can have enormous potential within a western context.

The reader may wonder why karnatic rhythmical structures can have this enormous potential and not any other non-western culture (or not to the same extent). Reflecting on my previous studies of Flamenco, Berber, African, Turkish and Maghreb music cultures in the light of my knowledge of Karnatic music, I have come to the conclusion that any rhythmical technique in these cultures can be studied using names and applications within Karnatic music; while many Karnatic music principles are unique to South Indian culture, many are susceptible to use in a completely different context.

The three main differences at a rhythmical level between Karnatic music and any other non-western music are:

- As in western contemporary music, the role of the percussion in Karnatic music is generally very active, providing layers of polyrhythms and polypulses, rather than providing a sort of 'mattress' for the melody or outlining the tala or meter. The most plausible explanation for this difference is the fact that in every concert of Karnatic music there is always someone 'conducting' (keeping tala) and thus providing a visual reference of the meter to the musicians.
- The percussionist can elaborate, while accompanying or soloing, phrases and frames of a high rhythmical complexity, always keeping in mind that any development needs to have a common

denominator. This point will be a very important issue in my thesis, as it is probably the element that enables the Karnatic musician to study very complex material and, simultaneously, to relate rhythmic relationships (3:5, 15:16 etc) to a wide array of specific concepts for how these can be developed and combined.

- All musicians undergo strict rhythmical training with instrumentalists reciting each phrase many times with the so-called '*solkattu*' (set of rhythmical syllables) before he adds a melody to it.

An account of this strict and deep rhythmical training forms the basis of my thesis. During my musical studies in South India, I concluded that their methodology could be divided into the way in which lessons are imparted and the methodology of the content. The former is diametrically opposed to the western way of teaching<sup>3</sup>, although the stereotype in the West of the 'old guru teaching a disciple', for example, while still part of the learning process in India now exists alongside university studies.

A study of the methodology of the content is at the very heart of my PhD research: how Karnatic musicians practise the elements, how these elements are interwoven and how one technique is the basis for a more advanced technique.

### **Publications and written material**

A majority of the books available on Indian music are dedicated to North Indian music, a very different musical culture to that of South India, in particular concerning form, raga development and, foremost, rhythmical devices and their development. Most publications produced in the West are more 'raga' or melody oriented and the few books trying to offer an overview of rhythm cover only a small part of the four-year programme 'Contemporary Music through Non-Western Techniques' which I teach at the Amsterdam Conservatoire. In an intense search over years for written material covering what I learned through my teachers, I have found nothing that properly describes, elaborates and analyses the variety of rhythmical concepts used by Karnatic musicians and, more importantly, how these techniques could be the basis for a fundamental change in the way we can teach and conceive rhythm in the West.

There are three main types of written source material:

- Books written in vernacular languages (Tamil, Kannada etc). These tend to be very practical, but inaccessible to the western musician, since there are no translations into English.
- Books written by Indians in English: these tend to be very specific, focusing on one particular aspect and are basically for musicians who already know the background information regarding the particular subject. Two considerable obstacles for most western musicians are the fact that westerners do not possess this background information and that Indian writers use exclusively Indian terms for every musical and emotional concept. In order to read any of these books, I had to learn at least 2,000 words, compared to the 150-200 Indian terms I teach to my students.

---

<sup>3</sup> A more elaborate explanation of the difficulties to obtain the right information from Indians will be presented later on in the introduction.

- Books written by westerners: As mentioned above, most publications produced in the West are more 'raga' or melody oriented and the few books trying to offer an overview of rhythm usually provide a rather superficial explanation of one or two of the five types of Tala construction and give only the very basics from which many other techniques and concepts are derived. Importantly, they omit any explanation about the most complex concepts that, though more rarely used in South-India, are of great interest for westerners as tools enabling them to approach complex composed or improvised contemporary music.

There is no book in the West that would explain all these devices used in Karnatic Music. No text provides a complete explanation of the techniques and their construction, developmental rules, etc. The goal of this thesis is to create such a text, presenting systematically in one document the results of my almost two decades of research along with the experience of teaching and composing with these elements for over 16 years. This text will include:

- All the main rhythmical techniques, concepts and devices in Karnatic music that are suitable to be used within a western contemporary composed or improvised framework.
- An explanation of each technique, describing it and distinguishing it from other similar devices.
- Written examples in western notation together with an explanation of how I express the Karnatic principles within a notation that tries to fuse the best of both worlds.
- A CD with the audio result of each technique.
- An account of how these techniques, stripped of any cultural or aesthetic element, can be taught to western musicians within higher education.

My intention is to explore the subject as comprehensively as possible, since my work is the first step in bringing the attention of western musicians to the rich possibilities of Karnatic rhythmical devices. In India many of the techniques are taught orally and although no written information is available, most musicians know the techniques through their professional practice. In the West, all these techniques need to be compiled and explained so that the western musician can have at his disposal a clear, complete and comprehensive summary of techniques, a clear and complete guide that will enable future solfege teachers and students to use these techniques and their methodology to greatly improve their rhythmical skills.

Therefore, my thesis will provide the very first comprehensive study of one of the richest rhythmical music cultures in the world, perhaps the most complex and structured in its complexity. Karnatic music is influencing musicians all over the world and attracts students in increasing numbers every year. My thesis offers an introduction to this music for a western audience, but also the seeds for further research and a tool for musicians and students.

### **Literature references**

Although my research has been essentially field research, I have used the following books to enhance the understanding of lessons, rehearsals and concerts as well as in my contact with my teachers and musicians:

- Prof. P. Sambamurthy, *South Indian Music* (a six volume work)
- Dr. Radha Venkatachalam, *A rational approach to Manodharma Sangitam*
- B.M. Sundaram, *Tala Sangraha*
- Akella Mallikarjuna, *Permutative Genius in Tala (-Prastara) in South Indian music*
- L. Subramanian, *Euphony*
- Vidwan S.R. Iyer, *Sangeetha Akshara Hridaya* (a new approach to tala calculations)
- Dharmala Ramamurthy, *The theory and practice of Mridangam*

### **Working plan and methods**

As mentioned before, the research I have conducted has essentially been field research, taking lessons with various highly regarded musicians in South India as well as attending hundreds of concerts and rehearsals. Around trips to India in the years 1993-97 and 2010-2013, I continually analysed the content of recorded lessons, studio recordings and live concerts, comparing how the same concept was developed differently by different musicians, how theory was applied, respected or ignored, and how exceptions to the rule would be justified.

Karnatic music is a highly regulated music culture but with great scope for innovation within the tradition. My main teachers (Jahnvi Jayaprakash, N.G. Ravi and B.C. Manjunath) are known for their vast knowledge of theoretical elements, great improvisational skills, respect for the tradition and innovative attitude. Their knowledge of the theory and practice allowed me to compare and analyze concepts in the light of different interpretations by other reputed musicians. My conclusion is that the rules are made after the practice, never the other way around. Once a new concept or technique has been accepted (whether in the XIV century or today), the rules provide a comprehensive theoretical backbone for other musicians, while leaving space for further innovation. Most professional musicians would never simply copy what is given to them.

However, **it cannot be stressed enough**, the way the concepts and techniques are explained in this text differ greatly from the way karnatic music is taught in South India, whether to Indians or westerners.

As previously mentioned, the main source of information for any student is lessons with his 'guru'. The lessons are always addressed to performers and the manner in which all techniques are imparted is by first teaching phrases that the student will practice without knowing the theoretical backbone that enables their creation. Only in an ulterior stage, the student *may* learn this theory (and not always) but with many aesthetic connotations and, I would daresay, conditionings.

In my case, as a composer, I was not willing to go through the extremely lengthy process of learning how to sing, or play a percussion instrument (all of them requiring great technical complexity). This made the process for all my teachers and for myself quite problematic and laborious, since there exists no methodology to explain only concepts, and certainly not in the way the reader will find it in this text.

Therefore, next to my studies, I had to resort to listening to many recordings, reading the aforementioned books and asking many times the same question in different ways in order to conclude something concrete. The

bottom line is that, despite the amazing mathematical and logical Indian mind, many social and cultural differences have formed a way of explaining not only music, but essentially anything, that is diametrically opposed to the general western way. It was only during my third visit, that I began to fully realize this difference and understand what to ask and how to phrase questions in order to receive an answer I could understand. This does not imply by any means that our way is better than theirs; it is simply very different and takes a long and winding process to arrive at a common ground. After many years, what I have finally concluded is that the western way of thinking and formalising derives from an Aristotelian tradition, while the Vedanta concepts of *buddhi* and *manas* (roughly translated as intellect and emotions) are responsible for the Indian approach.

Consequently, what is set out here is by no means the way I received the information; rather, it is the distillation of a long-lasting process of analysis and comparison of karnatic material along with a translation of these concepts for a western mind.