

## **The Application of konokol to the guitar improvisation and composition**

**Title:** Konokol and its application to the guitar improvisation and composition.

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Keywords:

- \* Tani Avartanum: A collective percussion composition.
- \* Tala: A rhythmic cycle of a finite number of beats shown through hand gestures.
- \* Yati: Rhythmic pattern or groupings.
- \* Konokol: The art of vocalising of mridangam patterns for performance.
- \* Mridangam: A south Indian two-headed drum.
- \* Mukthayam: A rhythmic cadence usually repeated three times.
- \* Solkattu: The vocalisation of mridangam syllables used for teaching.
- \* Sum: The first beat of a tala cycle.
- \* Akshara: Refers to a single clap and also to syllables per beat.
- \* Eka Tala: A tala made up of a single clap and finger counts.
- \* Nadai: The number of subdivisions per Akshara.
- \* Gopuccha Yati: A *yati* where each successive phrase becomes shorter.
- \* Sama Yati: A *yati* in which equal length phrases occur.
- \* X sum first beat of a tala cycle.
- \* e,i,m,a. fingers starting from the little finger.

### **Abstract**

*There are many theoretical rhythmic concepts in carnatic music. As part of my masters proposal I would like to explore these concepts through the use of solkattu and konokol and examine ways how these concepts can be used for improvisation, harmony and composition with a specific focus on the guitar. To make this clear I will outline the theory and demonstrate with musical examples some of the south Indian rhythmic concepts I will explore. The prime objective of my research is to produce a konokol reference book specifically for guitarists. However any musician who would like to improve and understand rhythmic concepts outside the western musical tradition would benefit from this study. Secondary objectives will include a CD of original compositions included in the book and a series of performances of these compositions.*

### **Concepts**

The rhythmic concept known as the family of ‘ta di gi na toms’ is a fundamental concept in carnatic music. This is a concept used for both the construction of tani avartanum, solo and accompanying in mridangam playing. The methodology I will use to explore these concepts will be through private konokol lessons through skype, transcriptions, a field trip to India to collect data and experimentation with the application of these concepts to guitar playing and composition. ‘Ta di gi na toms’ are one concept amongst many in carnatic music, what I’m interested in is the methodology that south Indian percussionists use for learning these rhythms i.e. All rhythmic concepts must be learnt vocally before playing on an instrument; This concept is called solkattu and is a concept that lacks any serious development in western music.

Tala and konokol are arguably the most complex aspects of carnatic music and ‘ta di gi na toms’ play an important role in this complexity and are used extensively in the construction of conceptual frameworks for extended compositions and improvisation. Other rhythmic concepts include: reduction (Gopuccha Yati); augmentation (Srotovaha Yati); symmetry (Sama Yati); reduction and augmentation (Damaru Yati); (Mrdanga Yati) augmentation plus reduction; (Visama Yati) random phrases of all of the above. Mora, korvai and ‘ta di gi na toms’ are all rhythmic cadential formulas. I will examine these concepts and explore how they can be incorporated into western musical frameworks. This includes rethinking and modifying standard guitar techniques, as conventional guitar techniques are not always technically adequate in this context. I will also investigate the application of these new techniques to guitar improvisation strategies and composition.

Although western music uses these concepts to a certain extent they are represented and used very differently in carnatic music. This difference will be explored and will be demonstrated through the use of (tala) hand gestures and practical musical demonstrations. The book will also examine the possibilities of using these concepts in harmonic contexts and briefly look at Indian music and its relationship to Indian thought.

### **Oral tradition and notation.**

Articulating in written form the musical concepts of an oral musical tradition defeats some of the basic methodologies of that tradition. For example, carnatic musicians never read music during performance and any written notation used in teaching konokol/solkattu or percussion playing are purely used as a memory aid. In other words a carnatic percussionist is expected to memorise all rhythmical calculations and rests aurally before any attempt is made at playing an instrument. The term *konokol* is used to indicate the vocal performance of drum syllables. When South Indian percussionists learn and calculate rhythms to be practiced on their chosen instrument they use the term solkattu. The syllables differ considerably to accommodate each practice. In konokol syllables are often chosen for vocal flexibility. In solkattu the syllables have a more onomatopoeic relationship with the sounds of the mridangam.

The notation for carnatic rhythm seems on the surface quite simple and in fact it is compared to western music. The complexity of konokol lies in its many rhythmic concepts, which in theory extend to infinity; in practice this is a borderline, which is constantly explored within the limits of what is physically and mentally possible. Carnatic rhythmic geometric shapes are not as easily discernable or memorised in western notation so I will include different types of carnatic notational practices as a guide (I might explore a gestalt relationship between different notational practices as to why this is the case).

Konokol is often represented in notational form but it is the practical application and memorisation of concepts that is important. The emphasis on memorisation and conceptual understanding is what so deeply establishes this oral tradition over the development of notational practices. The most obvious disadvantage of an oral tradition is the slow dissemination of knowledge. The advantage is that oral traditions do not become fixed. For the purposes of this paper and my proposal I will take

liberties with both Indian and western notational practices so as to bridge a gap between the two. Both notation systems have advantages and the usage of which will depend on the concept I will be exploring. *Konokol* is based on a linear arrangement of mathematical formulas. These formulas are sung against a cyclic form called tala, on paper these calculations appear simple that is until you try and sing them. To a large extent singing linear mathematical formulas is what konokol is, but after many years of konokol practice numbers and formulas become less important than formal and aesthetic considerations. The premise behind writing a book like this is; any musician should be able to sing a rhythm before he/she decides to play it on an instrument.

### **Why write a book on konokol?**

Konokol is rarely performed in India today and there are many reasons for this. One reason in particular is South Indian audiences primarily want to hear familiar songs about something that provides specific meanings. This cultural phenomena and expectation towards vocal music culturally drives performance practice and by comparison results unfortunately in little instrumental music and even less konokol performed in South India today. This is not dissimilar to western audiences attitude to instrumental versus vocal music. Abstract relationships of notes give little meaning to some audiences perhaps because the audience plays an active part in constructing that meaning from their own unique musical, cultural and personal history. This is an important point because the marginalisation of performance practices like konokol by more dominant forms of musical ideology can drive very rich musical practices like konokol into the background. Although solkattu is primarily used as a learning device for south Indian percussionists its application in other musical forms and musical education could be extensive.

Konokol as a learning system is far superior to the (French time name system) because whatever linear arrangement you can think of can be vocalized easily in konokol. The French system is adequate for much of western music but there is not enough flexibility in the French system to execute difficult rhythms. For example, ba-na-na for triplets and hipp-o-pot-a-mus for five is often used as a replacement for French time names. In fact using words to understand rhythm is often better than the French time names because you can choose a word and pronunciation that suits you - this is flexibility that konokol provides. The reason for using words like ba-na-na is because western music lacks an adequate system for teaching and learning complex rhythms so musicians resort to other systems that will help them. This can be quite discursive i.e. scatting in jazz or just using familiar words like ba-na-na or French time names.

### **Pronunciation**

Some of the differences in konokol pronunciation and spelling differ considerably. This is due to a myriad of factors including dialect, language aesthetics and audience expectations. Westerners change konokol syllables because it is difficult for them to pronounce complex phrases at fast tempos due to the slow pace of the English language and the unfamiliar dental retroflex and extra consonants used in Indian languages. Some of the Indian pronunciations and spellings include (ta di gi na tom), ta di ki ta tom, tha dhin ke na tom. Various attempts have been made to codify a system of spelling and notation and as yet no standard notation system has been

achieved however as an oral tradition, konokol and solkattu are perfectly complete. I will need to take this into consideration when choosing what syllables to use for the English speakers.

### **Tala**

In my research I will outline the basics of konokol and tala first as this foundation is very important. The following is an example of how I would notate some of this material. The ‘tala’ used in Example 1 (below) is called ‘*khanda eka tala*’ a five beat cycle with even stresses on all beats except for the sum and is a combination of claps finger movements, (X e a m i) unlike *Khanda chapu tala* which is grouped as (2+3) and is a combination of claps and rests (X. X X.). All tala is articulated through handclaps, hand-waves finger counts and silent pulses. For the purposes of this proposal tala will be articulated as follows.

I =A clap followed by finger counts going towards the thumb (*Laghu*)

X= A clap of the hands. I have indicated this as *sum*

e= A clap of the hands leading with the index finger.

a= A clap of the hands leading with the anulum finger.

m= A clap of the hands leading with the medium finger.

i= A clap of the hands leading with the minimus finger

0= A clap followed by a wave with the back of the hand (*Drutam*)

(.)= A silent pulse.

In Indian notation an eight beat cycle (Adi tala) would be articulated as *Laghu*; one beat followed by three finger counts; *Drutam* a clap followed by a reversing of the palm. The diagram below shows several different tala and some of the different ways *ta di gi na toms* are notated.

### **Example of Different Notations**

$1 \underset{4}{0} 0 = 8\text{ beats}$ ,  $1 \underset{5}{=} 5 \text{ beats}$ ,  $1 \underset{9}{1} \underset{9}{0} 0 = 29 \text{ beats}$

X      I      I      I  
ta... di... gi... na... tom... = Chatusra

X      I      I      I      I  
Ta, di, gi, na, tom, ta, di, gin, na, tom= Chatusra

X      I      I      I      I      X  
ta di gi na tom ta di gi na tom ta di gi na tom ta di (etc) = Tisra

In the above example tala and rhythm should be practiced separately. It is important that this research contains an explanation and demonstration of all talas. I will outline this in a graphic table so students can access all the different rhythmic cycles.

### **The family of (Ta di gi na toms).**

Hand gestures and konokol pronunciation should be practiced separately and then simultaneously. Each *nadai* should be practiced from the easiest to the most difficult. This can be different for each individual but 7 and 9 *nadai* per *akshara* are generally

the most difficult (Example 1 and 2) and should be left until last. The final objective is to say (Example 1 and 2) and repeat it in reverse without varying the tempo, to do this you have to determine how fast you can say *ta di gi na tom* with 9 akshara per beat and phrased in groups of five.

This is a common concept and a student would be expected to put *ta di gi na toms* through all possible subdivisions (*nadai*) and common talas. Notice below in the **Nadia table** that 1, 2 and 6 are left out this is because 1, 2, 16, (.5) etc are included in 4 *Chatusra* or any other multiples and 6 is included in 3 or (1.5), (.75) and 12 etc. This is a concept that can be explored in great depth by singing a particular phrase in different *Nadia*.

### **Nadia**

Ta di gi Na tom can be practiced in the following *nadai*

Chatusra = 4 pulses or its multiples.

Tisra =3 pulses or its multiples.

Khanda =5 pulses.

Misra =7 pulses.

Sankirna =9 pulses.

If one ever decided to study konokol with a mridangam player and you were at the stage where the family of *Ta di gi na toms* were being introduced in your lessons this is perhaps what you might encounter.

## Kanda Eka Tala (Example1)

**ta di gi na tom x1**

X e a m i | ta di gi na tom

**ta di gi na tom x2**

X e a m i X e a m i | ta di gi na tom ta di gi na tom

**ta di gi na tom x3**

X 3 e 3 a 3 m 3 i 3 | ta di gi na tom ta di gi na tom

**ta di gi na tom x4**

X e a m i | ta di gi na tom x4

**ta di gi na tom x5**

X 5 e 5 a 5 m 5 i 5 | ta di gi na tom x5

**ta di gi na tom x6**

X 6 e 6 a 6 m 6 i 6 | ta di gi na tom x6

**ta di gi na tom x7**

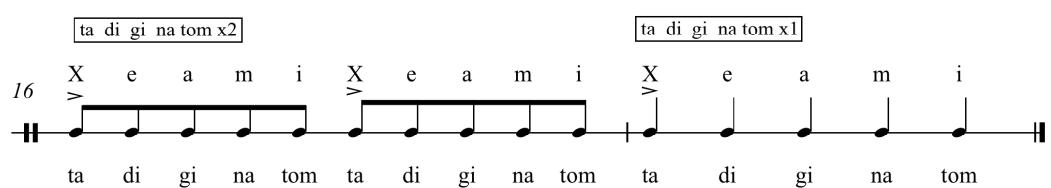
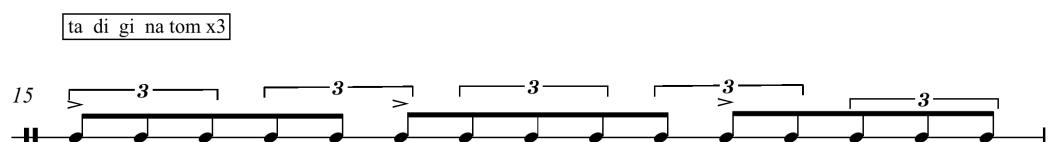
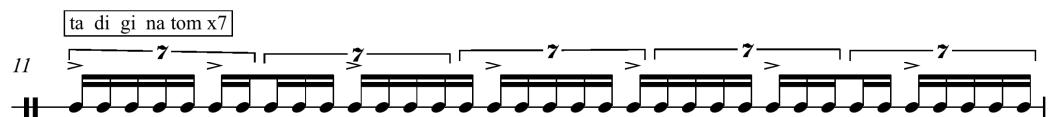
X 7 e 7 a 7 m 7 i 7 | ta di gi na tom x7

**ta di gi na tom x8**

X > e > a > m > i | ta di gi na tom x8

**ta di gi na tom x9s**

X 9 e 9 a 9 m 9 i 9 | ta di gi na tom x9s



Ta di gi na toms can be extended by incorporating rests to accommodate larger rhythmic frameworks. This extension is an important concept in the construction of moras and mukthayams.

Ta di gi na tom =5  
Ta di. gi na tom =6  
Ta. di. gi na tom =7  
Ta di. gi. na. tom =8  
Ta. di. gi. na. tom =9  
Ta ki ta dim . ta di gi na tom =10

The following exercise (Ta di gi na toms and their extensions - Example 2) are notated in both western and Indian notation, the exercise should be practiced from *Khanda* to *Sampoorna* and then from *Sampoorna* to *Khanda* and also in any other random combinations. Once completed all other possible permutations of *Chatusra* should be explored. The same idea is then repeated in different *nadia* i.e. Tisra 3, (1.5), 6 aksharas per beat and all other possible multiples. This involves calculating backwards from the *Sum* and will involve a different set of mathematical calculations. To calculate these rhythms you have to calculate the number of aksharas backwards from the first beat.

The other concept introduced here is *Mukthayam*. It is a rhythmic cadential formula repeated three times resolving on the *Sum*. It is assumed that the phrase will start again on the *Sum* but this sets up a false expectation. Here the percussionist resolves the *Mukthayam* by accenting the first beat of the cycle and continuing with a more simple accompaniment pattern. Generally the *Sum* is considered to be the first beat of the cycle but also considered to be the last depending on context, Indian music is considered cyclical but there is no real beginning or end just a series of beginnings and endings. There is also no harmonic rhythm in carnatic music so I have grouped the notes to how they would be phrased by a carnatic percussionist Example 3 (below). The first stave includes the relative pitch of the mridangam, which gives a good sense of how these rhythms sound phonetically. This is informative to percussionists, vocalists and instrumentalists who want to imitate these phrases in different ways but also consider the original musical syntax.

The second stave Example 3 (below) includes an example of the same exercise and how it might be applied to the guitar as a linear arrangement, its primary function would be used to end phrases. Although the example here outlines only one chord the possibilities of harmonic interpretation of mukthayams can be utilised in different ways by superimposing a static linear phrase over changing harmony or changing harmony with each new linear repetition (in this case three different harmonies). The last stave is a more harmonic approach, which is useful in solo or accompaniment finger style guitar playing. However the application of konokol concepts can be applied to any instrument and is only limited by the players imagination and instrument. This harmonic concept is one I will explore in the many other carnatic rhythmic concepts. It could be argued that the student should just learn konokol. My argument against this idea is twofold there is no book that I'm aware of that applies konokol to melodic or harmonic instruments and the Indian notation and language are alienating factors hence there is no practical konokol literature available for harmonic/melodic instrumentalists.

## Example 2.

(Ta di gi na toms) Mukthayams and their extensions.

X\*

tam

ta di gi na tom ta di gi na tom ta di gi na tom

ta di gi na tom ta di gi na tom ta di gi na tom

ta di gi na tom ta di gi na tom ta di gi na tom

ta di gi na tom ta di gi na tom ta di gi na tom

ta di gi an tom ta di gi an tom ta di gi na tom

ta di gi an tom ta di gi an tom ta di gi na tom

ta ki ta dim ta di gi na tom ta ki ta dim ta di gi na tom ta ki ta dim ta di gi na tom

X e r m x o x o

**Khanda 5+5+5=15**

.... | .... | .... | .... | . ta di gi | na tom ta di | gi na tom ta | di gi na tom ||

**Tisra 6+6+6=18**

ta m ... | .... | .... | .. ta di | . gi na tom | ta di . gi | na tom ta di | . gi na tom ||

**Misra 7+7+7=21**

ta m ... | .... | . . . ta | . di . gi | na tom ta . | di . gi na | tom ta . di | . gi na tom ||

**Chatursra 8+8+8=24**

ta m ... | . . . | ta di . gi | . na . tom | ta di . gi | . na . tom | ta . di . | gi . na tom ||

**Sankirma 9+9+9=27**

ta m ... | . ta . di | . gi . na | . tom ta . | di . gi . | na . tom ta | . di . gi | . na . tom ||

**Sampoorna khanda 10+10+10=30**

ta m. ta ki | ta dim . ta | di gi na tom | ta dim . gi | na tom | ta ki ta dim | ta di gi na tom || tam X

Example 3.  
(Ta di gi na toms) Mukthayams and their Extensions.

**Khanda 5+5+5=15**

**Tisra 6+6+6=18**

**Misra 7+7+7=21**

### **Example 4 - Gopuccha Yati, Sama Yati and Srotovaha Yati**

*Gopuccha Yati* is a pattern where each successive phrase becomes shorter and shorter, it literally means ‘cows tail’ the western equivalent is reduction or diminution. This exercise is based on the *Gopuccha Yati* concept ending with a *mukthayam*. This mukthayam is considered a *sama yati* in which phrases of equal length occur. *Srotovaha Yati* is basically *Gopuccha* inverted - each successive phrase become longer and longer. This mathematical arrangement allows varied structural flexibility because each phrase can be ordered differently - this is a useful for both composing and improvisation. If you reordering each line in a random order, it becomes *visama yati*.

#### **Gopuccha Yati**

(ta . di . gi na tom) x 4

(ta di . gi na tom) x 4

(ta di gi na tom) x 4

(di gi na tom) x 4

(gi na tom) x 4

(na tom) x 4

(tom) x 4

(ta di gi na tom) x 3 || Tam (*Mukthayam*) *sama yati*.

Sum

#### **Srotovaha Yati**

(tom) x 4

(na tom) x 4

(gi na tom) x 4

(di gi na tom) x 4

(ta di gi na tom) x 4

(ta di . gi na tom) x 4

(ta . di . gi na tom) x 4

(ta di gi na tom) x 3 || Tam (*Mukthayam*) *sama yati*.

Sum

### **Example 5 - Mora plus sub Mora**

The following example is a *mora* characterized by being repeated three times. It also includes a *sub mora* which is also repeated three times and is included in the structure of the complete *mora*. *Mukthayam* is often called *mora* when included in a larger structural frameworks.

(The following example is to be practiced in Adi tala).

Structure

(ta... di... gi... na... tom...

ta.. di ..gi ..na ..tom ..

ta . di .gi .na .tom .

ta di gi na tom x2)

ta... di... gi... na... tom...

ta.. di ..gi ..na ..tom ..

ta . di .gi .na .tom .

(ta di gi na tom ) x3

*(sub mora) Sama Yati*

### Example 4.

Goppuccha Yati ending with Mukthayam in Adi Tala

1 ta di gi na tom ta di gi

2 na tom ta di gi na tom ta di

3 gi na tom ta di gi na tom di gi na tom di gi na tom di gi na tom gi na

4 tom gi na tom na tom na tom na tom tom tom tom ta di gi na tom ta di gi na tom

5 tøm

### Example 5. Mora with sub mora in Adi tala

6 ta di gi na tom ta di gi na tom ta di gi na tom ta di gi na

8 tom ta di gi na tom ta di gi

10 (sub mora) x 3

na tom ta di gi na tom ta di gi na tom ta di gi na tom tam

## **Example 6 - Damaru and Mrdunga Yati In Adi Tala**

### **Damaru Yati**

ta di gi na tom  
di gi na tom  
gi na tom  
na tom  
tom  
na tom  
gi na tom  
di gi na tom  
ta di gi na tom    *Tisra Yati 3 pulses per beat*

### **Mrdunga Yati**

tom  
na tom  
gi na tom  
di gi na tom  
ta di gi na tom  
dim . ta di gi na tom  
ta dim . ta di gi na tom  
ki ta dim . ta di gi na tom  
ta ki ta dim . ta di gi na tom  
ki ta dim . ta di gi na tom  
ta dim . ta di gi na tom  
dim . ta di gi na tom  
ta di gi na tom  
di gi na tom  
gi na tom  
na tom  
tom   || tam              *Chatusra yati 4 pulses per beat*  
Sum

Both *Damaru* and *Mrdanga* yatis are a combination of *Gopuccha* and *Srotovaha* Yatis. Example 6 is in *Adi tala* and is a combination of two structures *Damaru* in *tisra nadai* and *Mrdanga* in *Chatusra nadai*. The two combined perfectly together and end on the sum. *Visama Yati* is a random combination of phrase patterns of different lengths, which do not follow any discernable order. I haven't shown here how some of these concepts can be applied to guitar improvisation and composition a lot of this will be done through experimentation composition and performance. What I wanted to show here were some of the basic concepts that I will explore in relation to the guitar improvisation and composition. Will this research fill a gap in the literature? Yes I think it will because the Indian music that has largely been explored in western music is north Indian music i.e. Olivier Messian is a good example of this with his use of nonretorgradable rhythms. As a system for learning rhythm konokol is a superior system to any other system I have come across because in essence it is very simple.

## (Example 6)

### Damaru and Mrdanga Yati in Adi Tala

**1**

ta di gi na tom di gi na tom gi na tom na tom tom tom na tom gi na tom di gi na

**2**

tom ta di gi na tom tom na tom gi na tom di gi na tom ta di gi na tom dim ta di gi na tom ta dim

**3**

ta di gi na tom ki ta dim ta di gi na tom ta ki ta dim ta di gi na tom ki ta dim ta di gi

**4**

na tom ta dim ta di gi na tom dim ta di gi na tom ta di gi na tom di gi na tom gi na tom na tom tom

**5**

tam

## **Guitar techniques**

To perform south Indian rhythmic concepts on guitar it is necessary to explore how south and northern Indian instrumentalists perform these concepts. The main instruments I will focus on are the Indian violin, sitar, sarode and vina which all have different techniques. I will explore and experiment with these techniques and find how useful and applicable they are to the guitar, and then compose some compositions for guitar using these techniques.

Konokol is not a new idea in fact it is very old, what makes it new is the way in which it can be applied to other rhythmic styles of music. Its application is especially significant for rhythmic styles of improvisation and extended rhythmic structures in composition. This is because theoretically many of the carnatic rhythmic concepts extend to infinity.

It is no surprise then that Indian music relies so heavily on maths because the concept of zero and infinity have their birth place in India. It is an idea that is inclusive in many other areas of Indian culture and thought i.e. the phenomenal world emerges from emptiness (infinity) and when this phenomenal world is realised as illusory the individual consciousness is restored to its formless and empty state (apparently). This idea runs deep in Indian religion, philosophy and music. This idea of numbers plays a very significant role in carnatic music and because its essence is numbers its application is easily adaptable and applicable to other musical systems. It is the relationship and application between European and South Indian music systems I whish to explore more fully in my research. Hopefully this research will culminate in a reference book for guitarists improvisers and composers, included with he book will be a series of original compositions and a CD demonstrating my attempts to use konokol in new melodic and harmonic contexts. These original compositions will be workshoped and performed as part of this research. My time line to achieve this would be approximately three years

## **Bibliography**

This paper is in part the result of three months of studying konokol with Amrit. N and Erode Nagaraj in Bangalore. In 2008

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