

Several Miles to Ramanujam

*A study in the application of Indian rhythmic concepts
for western musicians*

Culminating experience reflection paper

The logo for Berklee College of Music, featuring the text "Berklee college of music" in a white serif font centered within a solid orange square.

Berklee
college of
music

M.T. Aditya Srinivasan

Master of music in Contemporary Performance

Berklee College of Music, Valencia Campus

Project advisor: Professor Enrich Alberich

Acknowledgements

Matha. Pitha.Guru. Devam.

My first and foremost thanks are to the greatest parents in the world, who have sacrificed more than they have had at every stage for me in order for me to live my dream, for being the strongest support system one could ever ask for. To the best friends every person dreams of having, who made no demands of me over the past year and allowed me to give my musical growth priority over them and without ever holding it against me. To every single one of my fellow Berklee classmates, for being fantastic comrades in arms, for being constant sources of inspiration throughout what has definitely been the best year of my life so far, in the knowledge that we have made relationships that will last a lifetime.

To my guru, Pt.Yogesh Samsi, for any idea that I present in this project emerges out of the seeds that he has sown, through his visionary thinking and guidance in every aspect of music and life and in his pursuit of sadhana, showing us that it is possible to be a great performer, great human being and an even better teacher, all in one. To my guru, the living legend, Padma Vibushan Umayalpuram K.Sivaraman for inspiring me with the beauty of my own heritage, tradition and music. To Shri Sriram Parasuram, Shri Sai Shrivani, Shri Ramesh Vinayagam and Pt.Dhruba Ghosh for being strong forces in my growth and nurturing of the potential they have seen in me. To the ever energetic Maestro Yoel Paez for being who he is and exposing me to a whole new world of rhythm.

To all the fabulous professors, faculty and staff here at Berklee Valencia, in particular to Enrich Alberich, Mariano Steimberg and Victor Mendoza for their constant support, guidance and encouragement on this project. To the inimitable Ghatam Kartik for his brilliant conceptualization on Indian rhythm. To the numerous scholars right from Maestro Trichy Sankaran to T.M.Krishna, to Martin Clayton, to Jamey Haddad, Jerry Leake and several others who's pioneering works in this direction have shaped this project. My thanks and namaskar to all the aforementioned.

Foreword

I am delighted by this concept of a culminating experience. In my previous masters, I was both limited and daunted by the rigidity demanded by a traditional thesis. Here the project is more oriented toward the learning than toward the product (in the traditional sense), which I find infinitely more relevant to the life of a musician. This meant that the written part of my thesis, particularly the readings incorporated into this paper, would help me advance my theoretical knowledge and highlight which aspects of it influenced the direction I took with my proposal. In particular this has given me the chance to quote directly from scholars rather than re-interpret their words in my own. While this would be plagiarism in the context of an academic paper, I am not presenting their ideas as my own. I am collecting their ideas and presenting the ones I find relevant to my study. Many of these ideas I need to evolve as part of further study in this direction. I have also quoted out of context within this paper, in order to arrive at my own point.

In many parts of this document, I am searching not for literary review but for thoughts, ideas and suggestions that are relevant to what I must consider before framing a syllabus for rhythm. It wasn't particularly analysis or critique of these numerous sources, but the understanding of the studies themselves and the implications. These are not my words, it is merely me framing the work of scholars to my own benefit - for I see the ultimate purpose being learning.

This paper contains important but not all aspects of this project. A complete document will be prepared as part of my post graduate fellowship here at Berklee Valencia.

Contents

Chapter	Title	Page
1	The project proposal	1
1.1	Aim	
1.2	Objectives	
1.3	Uniqueness of the project	2
1.4	Purpose	
1.5	Learning outcomes	4
1.6	Statement of purpose	
1.7	Methodology	5
2	Reflection on a year	7
2.1	The year at Berklee Valencia	
2.2	Interactions at Berklee	8
2.3	A change in my understanding of my own rhythmic background	
2.4	Ear training classes	9
2.5	Birth of an idea	
2.6	Getting started	10
2.7	What this project needs to accomplish	11
3	Findings and conclusions	12
3.1	Readings in the context of the “Culminating Experience”	
3.2	The three challenges	
3.3	Designing the project	13
3.4	The ship of Theseus	
3.5	General observations and noteworthy aspects from analysis and trial execution of the project	16
3.6	Harmony and the Raga	24

3.7	Pattern recognition	
3.8	South Vs North	25
3.9	The use of syllables	
3.10	Approaching rhythmic ideas	27
3.11	The stigma of mathematics	28
3.12	Grammar and technique - The need to internalize concepts	29
3.13	The repertoire	
3.14	Pathway of growth through material	31
3.15	Application of concepts	32
3.16	Attitudes towards this project	
4	The project beyond this thesis	36
4.1	Agenda for this project over the next academic year	37
4.2	A final word	38
	Appendix	
I	Artists who's material was studied	40
II	Berklee students who participated in this project	42
III	Bibliography: Books, research papers and other online sources (audio/Video) analyzed	44
IV	Revathi Thillana score sample	47
V	Course design overview	50
VI	Course material samples	52
VII	DVD of presentation material	56

1. The Project Proposal

1.1 Aim

The primary objective of the study is to develop a syllabus and material for Indian rhythmical ideas to be taught as a structured course to students at music universities.

1.2 Objectives

1. To understand how Indian rhythmic concepts can be transcribed into western notation without compromising their aesthetic quality. To write compositions in western notation in such a way that the original mathematical and poetical beauty will remain intact even when the transcriptions are sight-read without prior context.
3. To develop a written repertoire of compositions that creates a foundation for rhythmic interaction for musicians from other traditions with Indian musicians.
4. To identify rhythmic structures and ideas that is useful as compositional and performance ideas for other genres of music (with specific reference to jazz).
5. To understand, identify and incorporate Indian rhythmic exercises that are beneficial to western musicians in the context of structured course work.
6. To learn how to teach these concepts as a course for western musicians with little or no prior exposure to Indian classical music, by understanding different approaches to learning rhythm and create a uniform repertoire for further dissemination.
7. To create repertoire for a percussion ensemble based on Indian rhythmic ideas that can also be taught as a course at a music school.

1.3 Uniqueness of the Project

1. This study will incorporate notation of not just the mathematical and structural ideas, but also the poetry of Indian rhythm, which has never been done to a high level of detail so far, merely touched upon.
2. This study is by an Indian percussionist approaching a western mindset, instead of the other way around, which is how it has almost always been.
3. Most other research in this area has had a theoretical focus, whereas the primary focus of this project is the incorporation of the repertoire into performance.

1.4 Purpose

Everything that this study will go forth to talk about under a purpose for this project takes me to the furthering of these career goals:

1. To be able to teach Indian rhythmic concepts at a contemporary music school upon my graduation from Berklee. I have a passion for teaching and believe it to be one of my strengths.
2. To create a foundation for myself for further research in Indian rhythm.
3. This project will lay the foundation for future research into how Indian rhythmic ideas can be transcribed into standardized notation without compromising their integrity, which has far reaching implications into not just musical dissemination but also in technological music identification and many other areas.

Richard Hoffman, William Pelto, and John W. White have written in detail about the goals of Effective Rhythm Pedagogy in their paper, *Takadimi: A Beat-Oriented System of Rhythm Pedagogy*, which I find to be highly applicable to this project.

This study shall strive to satisfy these objectives as well;

1. It should lead to accuracy and musicality in performance, both studies and sight-read, including the ability to recognize and perform musical gesture.
2. It should require and reflect an understanding of rhythmic structure, recognition of metric and rhythmic interaction, and an awareness of precise contextual location of beats and attack points.
3. It should facilitate aural recognition and identification of rhythmic patterns and metric divisions.
4. It should provide a precise and consistent language for the discussion of temporal phenomena. There should be no need to create new terms or separate categories for performance, transcription, or analytical work.
5. It should address rhythmic issues presented by musics outside the realm of traditional tonal literature such as asymmetric meters, modulation of meter or tempo, complex syncopations, complex tuplet groupings, and passages that combine these in novel and challenging ways.
6. It should be a system that is easily applied and adapts to broad applications, and it should be a tool for life-long use.

1.5 Learning Outcomes

A mastery of the concepts and exercises contained herein would be more than simply a beginning. It will put one well into the process of realizing rhythm as a higher science and art, opening up new pathways of rhythmic discovery. Studying this coursework will prepare one to be able to deal with a wide variety of advanced applications in rhythm. If for instance, they are to attend a workshop on Indian rhythms by an Indian exponent, they will be able to grasp all of the concepts in much more detail because of the foundation this course will provide.

Those participating in this course will have practical knowledge backed by theoretical understanding, and the foundation to pursue the highest order of skill levels . They will not necessarily understand the social and cultural context of the concepts, but will understand that the concepts that have been chosen have applicability outside of such context. The course will strengthened rhythmic foundation, train the logical mind, inspire creative ideas and increase player confidence in any performing context.

1.6 Statement of purpose

To this day Indian classical music remains a largely unwritten form of music, where true learning can only take place by traveling to India and dedicating many years to rigorous practice of the art. There are however, many musicians from of other musical forms who seek to understand various aspects of Indian classical music to incorporate into their own music, who are unable to undergo such dedicated learning of the art. This project aims to bridge that gap.

1.7 Methodology

Three parallel methodologies were selected to execute this project.

1.7.1 Study and analysis of similar work

Many artists, researchers, educators and scholars (among others) have carried out extensive research and work, with many publications in a similar direction (toward incorporating Indian rhythmic ideas in western music styles). The scope of the study though focused on these artists, is not limited to their works. (A full list of these sources is given in the bibliography). Study of their work will include detailed analysis and understanding of their works and also transcriptions and selection of interesting ideas to incorporate into the repertoire proposed under this project.

1.7.2 Focused group study

1. Hour long weekly sessions where Indian rhythmic ideas are taught to students at Berklee. The group comprises of students from Berklee Valencia, along with drums teacher Marian Steimberg.
2. Feedback is obtained after each session in the following areas (among others) – Content, Usefulness of concepts, teaching method and style, quality of supporting material, suggestions of different approaches to understanding.
3. The sessions help teaching abilities, identify the repertoire to propose for a syllabus, also providing regular deadlines to create material.
4. The philosophy: The focus group doesn't know that they want to learn Indian Rhythm - they must be shown exactly how useful it would be for them. But for that, it is important to understand how they utilize. As Steve Jobs was famous for

believing, a lot of times, people do not know what they want until you show it to them. The idea is to observe them discover what they want.

1.7.3 Sample repertoire

1. **Preparing content for a percussion ensemble performance** (content useable as repertoire to teach an ensemble course) with completely transcribed arrangements for Cajon, Conga, Drum set and other percussion based completely on the Tabla solo format/repertoire.
2. **Arrangements of Indian classical compositions known as thillanas** in jazz like format to highlight some use of the concepts. These would also come in as available repertoire for an ensemble. (Listed in the appendix). These recordings are also used to evaluate how musicians approach the melodic and rhythmic development of such compositions, to try and understand whether such compositions remain interesting when taken out of the context of Indian classical music.
3. **Assimilating recordings of musicians** that have used similar concepts in their own composition and improvisation, both as examples and for transcription and analysis. (Listed in the appendix)

2. Reflection on a year

2.1 The year at Berklee Valencia

Over this past year, I have had the fortune of interacting with some truly great musicians from traditions other than mine. There was always an eagerness among them to understand Indian rhythm and I found myself searching for more efficient methods to share my tradition with them. To find that crucial middle ground where they can find reference points to their own music. In the process I realized that I was learning more intricate details about my own music.

Interaction has always been the greatest attraction for me as a musician. The sharing of ideas with others is actually more exciting to me than performance. Teaching music is a way of satisfying my need for interaction at the highest level. With that came the love of sharing my own thoughts, in the hope of making significant contribution toward my own musical tradition.

I had a major fear that coming to Valencia and spending a year away from my musical roots would remove me from the musical atmosphere of India, that my adherence to my own culture and traditions would suffer. But far from it, I found that the atmosphere at Berklee appreciated the cultural diversity.

I had a renewed respect and pride in my own cultural identity and gained a wonderful outsider's perspective of it as well. I took extra effort to study my rhythmic tradition in much more detail, reviewing and analyzing several videos, articles, research papers and books. All of that has come together for this project.

2.2 Interactions at Berklee

Apart from interaction with fellow students, visiting scholars had some highly incisive ideas that led me to think about their connection and relevance to my project.

Yoron Israel spoke about how improvisation could realize new paradigms ? It is about the possibility of interesting possibilities. That is what I see Indian rhythmic concepts as being able to inspire. The possibility of innovative ideas in composition, improvisation and accompaniment.

Interactions with Danilo Perez and the rest of the Global Jazz institute as well made me wonder, “Why do Indian ideas have to be exotic” - what is an “Indian Idea” ? Whenever I was collaborating with musicians on campus, I was also deemed to bring in exotic ideas and an exotic instrument. It was my trump card and I certainly took advantage of it, but it also made me wonder if my instrument and the concepts that I brought into a collaboration could ever be looked at as an extension of some western music ideas. I realized that this perception of these ideas as not being exotic, was essential for western musicians to utilize the concepts I propose as part of this study. As Allan Chase put it for me, “Creative improvisation through inter disciplinary collaboration” was my goal.

2.3 A change in my understanding of my own rhythmic background

Many musical scholars consider India’s rhythmic system to be the most highly developed in the world, particularly for its thorough and logical treatment of the various principles of movement in time. I observed that there is a certain fascination for the Indian system of music for those from other systems of music. I knew that this opened up a phenomenal window of possibilities for me and this project is geared towards taking advantage of that.

2.4 Ear Training classes

In my first semester at Berklee, I had the tremendous advantage of being the only student in the ear training class, allowing for me to proceed at my own pace and focus on the elements that were essential for me. It gave me tremendous insight into how courses were structured, designed, how are the components of classwork and homework divided. But more importantly, it gave me insight into how western musicians approach and understand rhythm and notation.

2.5 Birth of an Idea

My initial project idea was to extend my previous research which was a study in online education in Indian classical music - I had read before coming here that Professor Enrich Alberich had conducted extensive research in the subject. However the more the year progressed, the more I realized that I could definitely offer something more unique.

It was here at Berklee that I actually got exposed to jazz and its related styles of music. Because of the melodic and rhythmic history that I come from - at some point I was annoyed by the fact that I was always hearing a short melodic line followed by extensive soloing. Even after a year here, I cannot listen in harmony as jazz musicians do. The melodic development is a pre-disposition I am unable to shed. I then noticed the rhythmic development of these solos was drastically limited the moment we were dealing with odd time signatures. People were unable to think beyond the bar. All ideas were contained within that organizational item, which was all of a sudden limiting phrasal development of the music. Even in compositional terms, complicated time signature changes were being brought into play when a single time signature would suffice, because it seemed blasphemous at some levels to break the half bar rule or extend phrases beyond bars (this may not be entirely true, or even partly true, but it remains my observation - therefore true for me).

But, the seed for my idea was planted more than 3-4 years ago, when drummer Eric Harland conducted a workshop for Tabla players in Mumbai, India. I asked him a question about how he approached the idea of a drum solo. Tabla players for instance, have various different kind of compositions that shape a solo and in many ways the format is predetermined. His answer however, did not leave me satisfied. It did not suggest a repertoire for drummers that was independent of accompaniment of music, which was something I felt was limiting the growth of possibilities.

What emerged from that discussion was the thought - how can I share my own tradition in such a way that it translates into usefulness outside of its own context. I wanted to see whether my tradition could help break these barriers that I perceived. How can the bar stop being a barrier ? That was the question. I decided to experiment to see if this would make an interesting project.

2.6 Getting started on the idea

One immediate similarity that struck me between south Indian classical music and Jazz was standards. The idea of standards is very similar to the idea of Kritis (or fixed compositions that allowed for improvisation). I wanted to pick compositions that displayed focussed melodic development that had strong rhythmic ideas - and thillanas (compositions that are developed by applying melodic lines to rhythmic motifs) were the natural conclusion. I had some favorites in terms of thillanas and composers and I dived into their recordings to identify the thillanas that I could use for this experiment.

At the same time I started putting together all the fundamental exercises that I had learnt as part of my rhythmic training and transcribing them in western notation to see what arose. What emerged was the biggest ego crusher I had ever experienced. Indian musicians have this sense of ego about their rhythmic “superiority” over all other musical traditions. I had picked some of the most complicated rhythmic ideas I could think off,

but on paper they were quite simply quarter notes and rests. It was somehow, reduced. That told me I needed to test these exercises on my classmates. This led to my researching other percussionists who had similar ideas about adapting Indian rhythmic concepts to western notation.

While this dealt with the mathematical aspect of rhythm, Indian rhythm also has poetical aspects to it. So I started transcribing some poetical pleasing compositions for drums and congas. This has been done before but on a personal level by various musicians. (I shall delve more into this at a later point in the paper).

2.7 What this project needs to accomplish

With this project I hope to lay the foundation for what I foresee will be my chance to make significant contribution to my own musical tradition as well as the world of music at large. The ideas proposed under the study are meant to create a foundation for further work in the direction. The research serves as a means to understand the advantages of using a transcribed format and how it can also further the compositional repertoire of Indian classical music. The project will only transcribe select examples of the repertoire, establishing a precedent to carry out further transcription. The ideas proposed are changeable, creative, and open to interpretation and thus creating an endless realm of possibilities, of which I barely scratch the surface.

In the words of Romanian Sculptor Constantin Brancusi, “Simplicity is complexity resolved”. That is what this project should accomplish – resolving Indian rhythmic ideas for western musicians, retaining their aesthetic integrity without reducing them to mere transcriptions.

3. Findings and conclusions

3.1 Readings in the context of the “Culminating Experience”

The first thing I realized when going through all of my sources, books, videos or articles, is that this project cannot take the form of a traditional thesis format because that is not what it is. The subject of the material is predominantly approaches to teaching Indian rhythmic concepts in various situations ; books, syllabus, Indian masters teaching, western musicians learning and adapting the same concepts and so on.

It is important to remember that this is not a scientific paper. The readings and analysis helped me place my project in perspective. I was able to learn several new facets of my own tradition and understand how those concepts were applicable to my own project. Most of those highlighted sections from the readings will be adapted and incorporated into the theoretical section of the proposed coursework (or in a book that can be developed based on this material). I have opted to leave out specific analysis of all the material out of this paper in favor of brevity. Whenever I found useful approaches or exercises, I transcribed them, analyzed how I can use them or adapted the ideas, to incorporate them into this proposed coursework.

3.2 The three challenges

1. I needed a hands on understanding of how western musicians approached Indian musical concepts.
2. I needed to learn to notate compositions in such a way that they weren't reduced to paper
3. I needed to critically analyze similar endeavors in three categories - by western musicians & scholars, by Indian musicians & scholars and by students of both traditions.

3.3 Designing the project

I will share what I have learnt in my journey of executing the proposed aspects of the methodology. I have come to understand that a thesis on music must encompass a past, present and future that involves deepening the bed and strengthening the walls of tradition, faithfully recording and regulating practice, all while creating and indicating new directions. I now venture to try and outline how my project has accomplished all of this.

3.4 The Ship of Theseus

The ship of Theseus, also known as 'Theseus' paradox, is a thought experiment that raises the question of whether an object which has had all its components replaced remains fundamentally the same object. My understanding of its applicability to my project came from reading T.M.Krishna's book on south Indian classical music, from where I quote extensively in this project. When removed from the art music sphere, is it still Indian classical music? For me I had to evaluate whether the various aspects of this project survived this paradox.

This question arises because in this project, Indian classical music is being taken completely out of context, socially, culturally and in the music itself, the intent of the usage is also different. The altered intent, which also results in specific changes to the way each aesthetic element interacts with the other – and that in turn changes the aesthetic experience of the music.

It is important to understand the form, change and development of thought in an art form in order to absorb external influences, and yet retain the essential elements that make the music. When there is a lot of external influence on a musician lacking internal introspection, the end result is a musical direction that is disconnected. The acceptance or the lack of that is not the issue, but the aesthetic repercussions of such directional changes

is a matter of concern. Even when the context demands a change, it is important for artists to be sensitive to the form and intent of the art form. At the same time, we cannot exclude the distinct possibility of the transformed nature of their out-of-context, but nonetheless authentic, presentation creating an altogether new aesthetic identity and intent. Sometimes, as an art form is influenced by other factors or requirements (as is the case in this project), it can modify and even change character in order to adapt to the circumstances.

This understanding is very important in order to perceive music, when it moves into another art form, doing so not as an addition to the tradition of other performing arts, but as an integral aesthetic element in it, which is what this project aims for it to be.

The activity of giving shape to a music that is inspired by Indian music but is not Indian music. It is not a form derived by altering some elements of Indian music, but rather from a different aesthetic sound that the musicians discover in their journey. The element of Indian music and the other forms that may be a part of this discovery are incidental to the actual experience of the concepts. Music is an idea, but is also a specific contextual experience. In that specific experience, it is not universal and we should not seek universality there. This project has to be viewed exactly for what it is: a source for musical ideas.

Every music must be given the treatment that its history and aesthetics demand, irrespective of the musician's need to explore other systems. Indian classical music gives you a musical vision, but does not allow us to misuse its beauty to advance our personal yearning. We need to respect the music, yet use its vision to look outside if we so seek.

No musical form is universal. No doubt Indian music empowers the musician to understand different musical environments. This does not imply that Indian classical

music is universal. Every art music form gives musicians the ability to recognize the aesthetic structures that constitute music in any form. With vision, it is possible for musicians to use these skills to interpret all forms of music. In presenting Indian classical music as universally adaptable, we also believe its nature needs to be changed. Once we alter its nature, though, what remains is no longer Indian classical music.

3.4.1 How does my project fare against the ship of theseus

No aspect of this project survives the paradox. They cease to be Indian music, merely ideas borrowed for inspiration. However there is a notion among participants that they are learning something that is unique or from a different tradition. Which is why it is all the more necessary for me to highlight this paradox and explain its implications. Participants must see the ideas as merely concepts, maybe through which at a later point they will have a strong foundation to learn Indian music through, but not as learning Indian music. This was an aspect I found particularly relevant when working on thillanas.

3.4.2 The Indian-ness of the project

Thillanas were the compositions that were selected for this project keeping in mind a requirement for rhythmically intricate compositions. Everyone involved in the project for the most part saw it as an Indian melody and not as a melodic idea for jazz in itself and that created a general bias in the project, but I believe we were able to better overcome pre-conceived notions it as we got more into the project. For me, right from the outset it was important that these were not treated as Indian melodies, but simply as an inspiration. I am not sure that was entirely accomplished.

3.5 General Observations and noteworthy aspects from the analysis and trial execution of the project

3.5.1 Comparing western and Indian musical traditions based on readings as well as experiences over the past year

Indian classical music has a glorious tradition of intricately developed rhythmic philosophy that since sitar player Pt. Ravishankar's rise to international fame has caught the fancy of musicians and connoisseurs alike from all over the world. While Pt. Ravishankar's efforts were largely focussed on performance, there were several who created an impact in the educational field.

A) Indian classical musicians who had an educational impact in the west

L. Subramaniam (b. 1947) completed his post graduation in Western classical music at the California Institute of the Arts. L. Subramaniam and L. Shankar branched out into world music and fusion music. T. Viswanathan became a prominent ethnomusicologist in North America and taught at Wesleyan University. Around the same time, India was witness to one of the first recognized Indian classical musicians of American origin. Jon Higgins (1939– 84), popularly known in India as Higgins Bagavathar (Bagavathar is a title for accomplished musicians), a graduate of Wesleyan University, which was fast becoming a major center for Indian classical music outside of India.

UCLA provided the first home to higher education for Indian classical music instruction in 1958; in 1961, Wesleyan University offered courses on South Indian music and in 1971, Trichy Sankaran and Jon Higgins established a program in South Indian music at York University, Toronto. Resident artists at these institutions were brought from India to teach in academic settings and at this stage were not necessarily members of a large

immigrant community. Rather they appear to have responded to the American interest in Indian culture and spirituality.

T. Viswanathan's came from a special family that had been hereditary practitioners of music and interacted with non-Indian enthusiasts who were experimenting with diverse traditions of music. This not only enabled him to develop a special method of notation and to experiment with other forms of music but also freed him from the shackles of a convention that had been put in place in Madras by the first quarter of the twentieth century. Thus he was able to retain his family style which was known to be complex and difficult and which had a favorable reception in the United States. In an interview, he mentioned that in America he had been able to maintain his family's style which may not have been possible in India, where audiences demand a more accessible style.

All of this led to the inevitable construction of an alternative authentic tradition and its integration with diverse musical traditions.

B) Material produced by western musicians vs Indian musicians

The most extensive approaches in the field have been by western musicians approaching Indian rhythms, not the other way around. Almost all of these musicians have been percussionists, pioneered by Steve Smith, Pete Lockett, Jerry Leake, Bernhard Schimpelsberger and several others. I highlight these names because it is their work that I have found most interesting.

Percussionists of Pete Lockett's and Bernhard's calibre have phenomenal grasping ability and have studied the Indian tradition extensively (living and learning in India from the best rhythm masters). It is therefore very interesting to not only understand how they have translated those experiences into their own, but also understand how they share their learning with others. They have really internalized Indian rhythm to a level of mastery.

They have produced material that reflects their learning of such tradition and their interpretation of this learning to their own musical background.

Indian masters have trained western seekers for decades and all of that experience has often been put together as books. Many Indian greats are faculty at universities across Europe and North America (as discussed earlier in this paper). In all this, westerners have either travelled to India extensively or studied Indian repertoire with these masters, but most Indian masters did not learn western approaches to music. What that means is that more often than not, the training imparted by scholars from either tradition is Indian music itself not its application outside of the traditional context. But more importantly, it means that most often, when western musicians are being taught by an Indian musician, they are learning from someone who does not understand their musical background entirely. When they are learning Indian concepts from a western musician, they are learning from someone who does not understand the original Indian music entirely. Of course, in many cases the scholars who teach these concepts are phenomenal musicians for whom this need not be necessarily relevant, but nevertheless, my exposure here at Berklee is an aspect that should make my contribution in this direction truly unique.

C) Sources of inspiration: Western vs Indian

I will not discriminate at any stage on adopting material, no matter where the source. There are several western musicians who have developed really interesting concepts in Indian music. For instance, Henrik Andersen has some very interesting mathematical chart concepts and Asaf Sirkis have some very good thoughts about how to take such course material forward. For instance, Henrik Andersen's exercise in one bar of 7/4 with the tala doing the groove change approach is something I think most Indian percussionists will not be able to do. Instead of doing just various speeds of recitation alone - also do various speed variations of the clapped tala cycle is a very interesting idea.

D) **The work of Ghatam Kartik**

Ghatam Kartik is one of the leading exponents of south Indian rhythm today. He teaches a course in Indian rhythms at the Swarnabhoomi academy of music, Chennai, India. For the purpose of this project, I managed to obtain several videos of the classes he teaches to western musicians studying at this school. Though they are focussed on percussionists and are strictly adhering to south Indian percussionist's view of rhythmic development, he has outlined some beautiful concepts that have wonderful applicability. He does not use western notation or even a mildly western approach. As part of the sessions I conducted through the year, I re-interpreted many of his concepts and found they had remarkable applicability for western musicians. My intention is to approach him for guidance in the future to turn this material into a book at a later stage.

3.5.2 Rhythmic organization

Richard Hoffman, William Pelto, and John W. White make some interesting points in their survey of rhythmic systems. They classify all rhythmic systems into two categories, those that emphasize counting within the measure and those that emphasize pattern or beat.

The rhythmic organization of Indian music seems to reflect not so much a unique Indian approach to music-making as just a different perspective on universal rhythmic concepts. Indian music seems to be exploiting the same possibilities, and attempting to solve the same problems, as any other repertoire, but doing so in unique ways which produce rather distinctive sonic results. Clayton Martin notes a general misconception that western music is teleological and develops, while Indian music is cyclical and recurs. He argues that such a dichotomy cannot exist, because whatever theory says, change and recurrence must continue to be aspects of both repertoires. The primary concept that induces this sense of cyclicity more prominently in Indian music is the importance given to the "One or Sum" of the rhythmic cycle.

The biggest difference in organization of rhythm seems to be that Indian music has devised extensive theoretical frameworks for rhythm that have immense practical applicability. That remains the biggest advantage of Indian rhythm. The concepts of meter, measure and the bar line seem to be inhibiting factors in the case of western music while the Tala system seems to create a more flexible measure of surface rhythms that enable musicians to more flexibly delve into several rhythmic layers. Western music theory has emphasized meter's aspect as time measurement and played down the aspect of recurrence, while Indian music theory has given expression to both aspects more equally. Meter, for many Western musicians, has been seen as a regrettable necessity rather than as the valuable source of order it has been to most Indian musicians. If there is a difference between meter in Indian and Western music it may lie not so much in one being cyclical and the other not, but in the fact that Indian theorists have not been troubled by the apparent paradox of musical time as both linear and recurrent, whereas Western theorists have been inclined to play down the sense of recurrence, let alone cyclicity, in favor of a more singular conception of linear development.

It is important to remember that to say that rhythmic organization as a whole is more complex in rag music than in any other repertoire would be a misconception, and show a lack of understanding of the variety of levels of organization found elsewhere, and of the very different ways in which broadly comparable levels of complexity can be realized in different repertoires. To an educated listener, there can be no metrical ambiguity in Indian music.

3.5.3 Strong and weak points

Meter seems to be a useful translation for tala (For the purposes of this discussion, Tala is the Indian name given to a rhythmic cycle). The commonality being that both are cyclical in nature and can exist in a range of tempi. However, Tala lacks the internal accent structure that western meter does, at least to a more obvious basic interpretation. For instance, a 3/4 meter is generally accepted as - Strong Weak weak Strong Weak Weak in western rhythm.

3.5.4 Episodic development of rhythm

This goes back to my discussion with Eric Harland and how he spoke about development or growth of performance in a drum solo. I believe the combination of fixed, semi-fixed and completely improvisational repertoire of Indian rhythm, with development in the form of several episodes of a story, is its biggest asset and remains the area where Indian rhythm can make the biggest contributions. This is backed up by the fact that most of the material analyzed has incorporated concepts from Indian rhythm that are particularly focussed in this direction.

3.5.5 Notation

An enigma that among other things gave Indian musicians a false ego – that we have achieved a complexity and intricacy in rhythmic development unmatched by any other musical form. I can find no better an example of a bruised ego than when I first transcribed Indian rhythmic compositions into western notation. It seemed like the complexity was resolved on paper, to an extent that they appeared somehow reduced.

Finding ways to notate the concepts in western format will be the biggest success and biggest failure of this project. My understanding of notation over the last year can be summed up as mildly confused because it stemmed from this point that while on one hand Staff as the dimension of music represented by a time signature, the bar supposedly

measures meter it appears to represent phrases more. Because of the need to give stress on the correct phrases, I have seen many transcriptions in multiple complicated time signatures when it could have simply been in one time signature (Eg: Ragabop, appendix). My notating the concepts of this course work have come together after several rounds of trial and error where I still do not find myself at complete ease with the process. Jerry Leake quotes David Nelson as saying that “ presenting a south Indian rhythm in western notation wrongly implies that a pattern is to be interpreted solely in one particular scheme and tempo. Indeed, the Indian percussionist is constantly creating alternate surface rhythms. Frozen in time transcriptions detract from the overall aesthetic truth and potential of a composition or phrase. However on occasion the advantages of using western notation outweigh the disadvantages.”

Marking the subtlety of Indian music, it is near impossible to express it accurately through notation. Jerry Leake goes on to state that any music which involves an array of grace notes defies absolute documentation. It is this inability of existing notation systems that gives rise to inconsistencies and misinterpretations.

In Indian music, the act of writing music was not an inherent part of the process of composing, and definitely not part of teaching. The writing was primarily a record. Authenticity itself is not a static entity. It is the living value of the composition, its essential core. The whole process of a composition's organic evolution is part of its authenticity.

I feel that because the concepts are essentially being taken out of their original context with this project, they are seemingly more effective in terms of the coursework. Khali bhari (Impression vs Expression or weighted vs unweighted strokes) is the one important aspect I have not been able to translate into a western mindset - which is why at this

stage, my project does not capture compositions with poetical complexity. This is also why transcriptions for the percussion ensemble remain at a nascent stage.

It became apparent from the sessions I conducted through the year that the notation was a necessity in order for more effective progress through the coursework and therefore I continue my search for more effective means of notation.

A) Notation: Harmonic rhythm, Patterns and phrases vs Bars

As the melodies started to get more intricate I noticed that the points of emphasis were eventually lost, or never interpreted in the way they were originally intended, which was very interesting for me. There was the particular instance of a thillana in Mand where my perception of the clave and its position within the melody was very different to every single person and often different even among those from a latin, cuban or european jazz background.

Many phrases of important sections had their points of emphasis in the middle of bars. As I was determined not to write the notation in multiple time signatures, it went against the general recognition of patterns. As the project grew I also learned how to write the phrases in such a way within the bars that they were more recognizable. My writing of notation certainly grew more efficient. I realized that the biggest failure of my notation and transcription of these melodies in such a manner, was the failure to account for harmonic rhythm. This became more evident during rehearsals when practicing particular sections, they would start rehearsing on bar number, which for me was the middle of a phrase (or a wrong starting point because I don't listen in harmony), but harmonically it made perfect sense.

3.6 Harmony and the Raga

These compositions do not highlight the qualitative aspect of the raga as intricately when taken away from context, particularly with the introduction of harmony. The musicians tended to follow the harmony more than the melodic flow of the raga, as was true to their musical background. That went against how such melodic phrases would be taken forward in the original context. When the entire melody of the thillana is used in the jazz context, because the harmony is limited by the raga, the melody seems to become repetitive or harmonically uninteresting, at least to the western musicians.

3.7 Pattern recognition

The Indian system reinforces the fact that much of the rhythm we encounter is based on a relatively small number of patterns, which can be notated in different ways. By learning and thinking in terms of patterns, students are taught strategies for chunking and learn to practice higher-level listening skills. They come to regard rhythm as identifiable and interrelated units of sound rather than a simple stream of attack points. To separate patterns in music from patterns in the listener, and to separate features necessarily in the music from patterns expected to be in the music, are not easy tasks. Chunking is a critical factor in how music is perceived and enjoyed. A conversation with the students from the Global Jazz institute threw up interesting ideas of how people perceive patterns in music and go on to think in patterns. This was an area where I could clearly identify the advantages of using the Indian rhythmic system.

3.7.1 Pattern recognition through poetry

The idea of being able to identify the key phrases or kriya padh of any composition should not be limited to rhythmic or even Indian repertoire. Identifying and understanding the inherent phrases, not defined by a bar can help give better emotion to the music. This is indicative of the approach not to play tabla solo repertoire on the drums for the sake of playing tabla, but to develop groove and accompanying ideas, which for me is the

desirable approach. One of the initial, essential steps in this direction is definitely establishing a relationship between sounds of strokes on the tabla and those on the drumset. Jerry Leake has done just that, in his book, *Drum Set Adaptations of North Indian Tabla*. He has classified them based on the nature and sound quality - with a set of possible interpretations on a drum set. It was interesting for me to see someone who entered and experienced the tradition from a different perspective explain the same concepts. The idea of using a specific corresponding drum notation was definitely a visionary idea with immense benefits and one that I considered very much for this project - however, after careful examination I realized that at times it has limitations that render the emotional context of the poetry ineffective. To his credit, he has made provisions for expanding his interpretations.

3.8 South vs North

While the north favors a certain degree of flexibility, invention and even pure improvisation. The south Indian system is more universal because there is no apparent direct co-relation between stroke and the spoken syllable. This along with the general mathematical intricacy makes south Indian system more applicable for developing purely mathematical rhythmic concepts.

3.9 The use of syllables

Several systems of rhythmic learning have employed different ideas of syllables. Zoltan Kodaly, Allan McChose and Ruth Tibbs, Richard Hoffman, William Pelto, and John W. White with their Ta-ka-di-mi system and so on. Edwin Gordon analyzes many such systems in his book *Learning sequences in Music* (Chicago: GIA Publications, 1993).

The Takadimi system advocated by the aforementioned authors, was influenced by the authors' extensive study of Indian music. They have justified their borrowing of these syllables by citing other instances of rhythmic systems that have done the same

(borrowing from Indian rhythm). None of these systems, they point out, is entirely systematic, nor does any account for the variety of Western rhythmic practice.

None of these systems' use of syllables piqued my interest. I believe that in most cases they failed to capture not just the importance of the poetry, but in many cases, the main advantage of using syllables, which is for me pattern recognition.

Reasons for avoiding the poetical compositions in the first stage also include the fact that I feel the basic rhythmic foundation needs to be established before comprehending poetry as well. Therefore I must probably insist on teaching some of the concepts of the basics course before adventuring into poetry based development.

The human voice is the primary tool for teaching melodic or rhythmic instrumentalists their art. Vocalizing rhythms tends to help internalize those concepts in such a way that eventually the method of vocalization will be secondary to the patterns they help identify with. Drum syllables aide in the complex process of memorization and recollection of large bodies of repertoire, connecting the musician more intimately to the instrument and tradition by recitation. Poetry used here is not indicative of the poetical beauty of concepts but simply of a representation of the mathematical aspects for recitation.

Rhythmic poetry simplify the memorization process and allow the mind to digest long phrases that develop as a natural sequence of musical events. Any musician, whether drummer or melodic, could use Indian syllables to work out a rhythmically challenging passage—perhaps the broadest implication of this approach. The act of vocalizing before playing forces the performer to internalize the music. This moves the syllabic language into the world of general rhythmic analysis and training.

In the rhythm sessions, I initially tried teaching the same rhythmic concepts that traditionally use the south Indian syllable system, but by using western melodic solfeggi

or number counting. However, as the concepts grew in complexity, it became evident that this methodology would not suffice. Also, the participants eagerness to learn the solfeggi system of south Indian rhythms cannot be entirely ignored.

Many approaches to rhythm study have been devised over the years and remain in use today. A set of rhythm syllables is frequently a hallmark of such systems. At the simplest level, a system may rely entirely on a single neutral syllable, like “da” or “la.” Such a system does not ascribe meaning to its syllable, but merely uses it for intoning rhythmic materials. As a result, analytic activities regarding duration, beat value, and meter are not explicitly conveyed in the vocalization. Other systems use syllables to provide labels for temporal phenomena, in a manner analogous to the use of solfège syllables to label pitch phenomena. They are designed to help students learn, remember, and quickly identify recurrent patterns, and they provide a link—a translator—between aural and visual domains.

3.10 Approaching rhythmic ideas

Pre-conceived notions were a major factor here. There is general consensus that westerners without extensive experience have tended to misunderstand, or completely fail to understand, Indian rhythm - because understanding depends to some extent on both experience and training. But there was something peculiar that I noticed with participants in my project. Detailed rhythmic transcriptions may in many cases suggest a rhythmic complexity which is illusory. All of the musicians involved in these experiments have used the same rhythmic ideas throughout their performing careers and this past year subconsciously, but the moment they had to think about using ideas that were seemingly from a different tradition, there was a panic. There was stigma - because the approach changed. This was not exclusive to just the rhythm sessions but also the thillanas project.

3.11 The stigma of Mathematics

Indian rhythm has the reputation of being extremely mathematical, it is true, but also not; because rhythm in its essence is mathematics. The Indian rhythmic system has fantastic formula that have been given deep thought. It is architecture in time giving beautiful ideas on how to use space. India is not the only ancient civilization to comprehend mathematics in music. The Pythagorean and Neopythagorean doctrines of the mysterious mathematical proportions of musical intervals, their imaginary connection with the movements of planets and the harmony of the spheres, formed the subject of many writings on mathematics in music. Pythagoreans saw geometry in rhythm and believed that different geometric rhythm structures would convey different emotions through the music.

When I approached some of the concepts of the coursework mathematically, I could instantly see participants switch off, get bored and quite often get scared. Mathematics is not natural to everyone, but the mathematics in music is something that all musicians possess. I believe that they are just afraid of what it unfolds, unaware of their own capability for it. One of the biggest challenges in framing the coursework was to ensure that the mathematics, which is the center of Indian rhythm, never got associated with a stigma, nor become too theoretical.

3.11.1 Application of Concepts - The mathematical approach to composition

Albert Einstein famously said “Not everything that counts can be counted, and not everything that can be counted counts”. All these technical aspects of time and measure are of no consequence if they do not dissolve into the experience of music. In this coursework I have tried to cut out the purely mathematical ideas in favor of those that can be used in practical, everyday composition and performance. I have tried to ensure that emphasis is given to not just learning the concepts but applying them in performance or composition. I do believe that calculation, inspiration and application - that comes

from mathematics can inspire wonderful frameworks, that can bring in a whole new variety of western composition.

3.12 Grammar and Technique - The need to internalize concepts

There are 4 fundamental components to music - science or theory, technique, content knowledge, artist sensibility and aesthetic sensibility. These must remain at the roots and shoots of this coursework. The technique can only be acquired by practice. They involve more doing than knowing. (in this project students will do, the masters can help them no) This art goes beyond the limits of mental knowledge - into execution. Music originates in inspiration and is expressed by performance or execution. This should not be obstructed by inadequate technique .They can translate thought into action instantly. That is why technique is essential for translating inspiration into expression.

Sometimes technique can be used excessively. As the statement goes, Learn the technique , master the technique forget the technique. This applies not just to technique - at the moment of creation, on the stage, the artist needs to put aside all consciousness of knowledge and technique learned, and bring it to bear automatically. This forgetting of learning means the artist is engaged in a far seeing vision of the whole performance. This vision of utilization of technique applies to every aspect of this course. The students must be enabled to internalize all the concepts in such a way that their utilization is natural.

3.13 The repertoire

A lot of the material available, with very few exceptions is oriented towards percussionists, and often even more focussed on learning Indian rhythmic repertoire for Indian percussion, just taught in a western manner. For instance, whenever Indian masters have approached this area of teaching or research, the focus has always been on repertoire of percussion meant to be implemented within the context of Indian classical music. Otherwise it is more of a seminar on Indian rhythms.

An excerpt from my analysis of Pete Locket's book on Drum-set adaptations of Indian tabla, (which I have largely left out of this paper) will highlight these suggestions.

“ Some of the groove ideas specially the tuples grooves are fantastic extrapolations of Indian rhythmic concepts. Often though the orchestrations are basic and nothing that drummers cannot come up with on their own if they understand or know the concepts themselves. Which is why I think being strong with the fundamental concepts is more important than random interesting orchestrations. This is why I feel I have an advantage - one who has natively studied north Indian rhythmic poetry, who understands the syllabic orchestration of south Indian sensibilities - I have a melody in my head to orchestrate on the drums that keeps the Indian aesthetic. He uses a variant of the clave five exercise He highlights an exercise or korvai. And then shows different orchestrations of it as a theme throughout the book. So yes the ideas are developed to a great detail but I do not think it trains the readers as to how these ideas were arrived upon, what are the aesthetic and mathematical concepts and how they can be expanded. “

Another passage from my analysis of Jerry Leake's book, North Indian Tabla for the drum-set, will highlight similar aspects. “The idea of rhythm as melody or as a harmonic layer requires a lot of exploration and is one of the goals of this project. All research prior has been limited to drums and percussion - musicians as a whole can benefit from the Indian rhythmic philosophy. The philosophy gives a phenomenal foundation for musical development.”

Percussionists are ahead of the curve of musicians who have identified the useful aspects of the Indian rhythmic system outside of India. For all instrumentalists and composers - its about structures and patterns and how you can apply them - no matter which style of music you find it relevant to. Because everything is defined as grouped phrasings that are pronounceable - its easy to build on them. Indian rhythmic systems build on rhythmic

confidence. An explosion of something new, something fresh, because Influences are really important in rhythmic growth.

3.14 Pathway of growth through material

None or very few books have been written allowing the melodic musician to combine improvisation with rhythmic techniques. There does not seem to be a linearity of growth in terms of the prescribed learning pattern of the material. There often isn't a coherent growth through the material that allows for a thorough foundation.

There is the general agreement that the south Indian system provides better building blocks for learning rhythm than the north Indian system, at least at the first stages. Very few cases were founded where the scholar was equally knowledgeable in both the south Indian and north Indian systems of rhythm. Unlike in north Indian style, the south Indian style need not necessarily have a one-one correspondence between the spoken syllable and the stroke. It is more about the interplay of the logic of the apparent relationship between the two. The syllables themselves will eventually become redundant, they merely serve as a means for pattern recognition.

Also, usage of phrases in their respective time signatures seems to be the agreed upon starting point - with the initial emphasis being on phrase groupings and recognition of patterns. But the flow of ideas from that point is highly arbitrary and often ends up confusing the pattern of learning.

I would largely attribute this ambiguity to the fact that these rhythmic concepts are not taught even to Indian musicians as a separate repertoire, on their own. Therefore there is no established paradigm for pedagogy.

This is why I feel that such material should be taught by someone with the proper traditional exposure to the art only. For instance, Everyone seems quite eager to get into tuples - but I will wait for the more advance program - I remain convinced that the stronger foundations will serve them well when they enter tuples so they can fully exploit the possibilities. the historic importance of giving triplet priority over all else must change when setting precedent on a tuples course. Therefore just delving into triplets alone at the early stages will not satisfy this condition.

3.15 Application of concepts

Most materials don't outline clearly enough on “How to think” - how to develop on each of these ideas and to make them your own. It makes a few mentions but not significantly or with clarity. So at the end of the book you are almost limited to only the information you have learnt from the book.

Almost none of the material available outlines application of the concepts outside of the original context of their intent. All material stays within the social and cultural context of Indian classical music, which means the learning can never be thorough or effective, because the learning atmosphere is never recreated to the same degree. However, many of these will survive the theseus paradox. Quite often the material require some basic understanding of Indian music in order to interpret effectively.

3.16 Attitudes towards this project

“Life is not designed to discover our limitations. It is designed to discover our infinity. The only way to find out who you are, what your capabilities are, is to explore”- Herbie Hancock.

How must students approach the concepts and coursework proposed as part of this project. My teacher, Pt.Yogesh Samsi always says to me “ You can easily be told a number

of concepts, but when you realize them yourself, they have whole new meaning”. The coursework is designed in such a way that each student can personalize their learning and therefore their own attitudes towards the coursework will shape their learning.

Developing this project pushed me to re-visit my experiences as a student of rhythm, evaluate my experience teaching the concepts as part of this study, as well as read extensively about the philosophy of learning.

It is not only knowledge of music, but the attitude that informs it that affects perception. Ultimately the musician must seek an understanding of the aesthetics of the music. In this search, the musician must be willing to give up personal notions and conditioning and look beyond his practice. This often required the musician to seriously reorient her view of music and approach musical tradition as an art. Both will face situations of conflict, with some being totally irreconcilable. This does not mean history is wrong, or that the current practice is wrong. It only gives each one of them another layer to break through. Over a period of time, clarity will emerge from both their journeys.

3.16.1 Being a seeker of the finer aspects of the art

In order to experience music beyond personal confines, the receiver also needs to be a serious seeker of art and aware of the art itself. Without that insight, the receiver may not be able to inhabit that created space, for the music will be received as personal feeling alone, and to that extent be incomplete. At the same time, a truly evolved connoisseur may be able to draw out a sense of emotional abstraction from an art form that is primarily aimed at personal emotion, purely by her attitude towards it. The seriousness and appropriate attitude towards understanding art have to be cultivated by every art seeker.

3.16.2 Propelled by instinct

Beyond what is learnt from the teacher and the understanding that comes from listening, a certain instinct propels a musician's quest. Learning techniques, acquiring skill development and understanding musical parameters are necessary requirements of the art.

3.16.3 Making the concepts their own

The student must let the received experience lodge in the mind, not as a frozen fixity but an organic impulse. When this occurs, the phrase or ideas that come from the reception are no longer independent technical and aesthetics ideas. They are part of the aesthetic direction of that particular musician.

3.16.4 Acquiring clarity through inquiry

With a deepening of the musician's inquiries in this direction, their music acquires a certain special clarity, which is the result of a completeness acquired from a conscious linking of various musical aspects. In this process, the musician may completely change previously held positions on music. Therefore, they come to hold and subscribe to a conscious body of thought that defines every musical action. It evolves from an understanding of the concepts learnt, the internalizing of other influences and finally a reinterpretation of their own music.

This is neither a journey of negation nor acceptance, but one of realization. The student must accept the challenges that these concepts present and use their own sensibilities to navigate through them. It is about extracting information, re-learning rhythm that already exists within them.

Ace percussionist Jamey Haddad had penetrating words in this direction when he said that the key to learning this or any other system that tests our ability will be the honesty

to face our personal, temporary boundaries, that the ability to observe the truth about our personal rhythm will set us free.

3.16.5 Attitude towards teaching

Through this past year I saw clear evidence of how it is possible for an artist to conform to a social context of practice, yet take the music innovatively beyond that context. I realized that it is something I must aspire to. The belief that teaching is the best form of learning was reiterated. It is brutal and honest and tests you to the best of your abilities. It was also evident that very few artists can explain as well as they can play. In teaching it is important to go beyond matter and manner. A teacher must infuse the disciple with energy. This energy must inspire resolve, diligence, trust, confidence, energy and impetus. It is how I approach teaching that will give this course work a vision and form.

4. The project beyond this thesis

So far the project has only managed to transcribe the mathematical concepts of Indian rhythm. But I do know that the future of the project lies in being able to translate the poetry into applicability as well. I do strongly believe that the poetry of Indian rhythm has implications beyond percussion and this also remains a completely unexplored area. Developing a mathematical repertoire of transcription and notation through the first phase of this project has helped me identify several key aspects about retaining the aesthetics and integrity of the original rhythmic intent. This is the foundation I need to realize the full potential of the project. The next stage of focus has to be an effective mechanism by which to translate poetry as well. In his books Jerry Leake has left out a major set of implications or potential for his work. That is the implications of work in this direction beyond their applicability to percussionists, or drummers in particular. There are several technological research projects underway in universities across the world that are working on identification and classification of Indian classical music. I believe that a notational system backed by a solid repertoire of coursework will go a far way in making those projects more effective.

These technological projects are crippled by the fact that the computation engineers who understand the technology required to take such initiatives forward do not have the required understanding of Indian classical music. However, the understanding they require is not contextual - neither the cultural nor social development alongside the musical is necessary. Which is why my project has implications in their work. My project can provide an understanding of the technical aspects of the music and their application without requiring the rigor demanded by the music in its original form.

As I mentioned before in this document, I was not wholly impressed by the paper on the TaKaDiMi system of learning rhythm. However, there was an important note to

remember from the paper on document was a rather insignificant statement that says - identification and labeling occur before notation, moving from the perceived sound through a process of translation and verbal description, before addressing issues of graphic description. This was the statement that helps me define the methodology by which this research can have an impact in technology and computation.

This is where being selected as the graduate fellow for the next academic year at Berklee Valencia comes into the picture. I have identified key areas that I must look into as part of my fellowship in order to fulfill the potential of this project:

4.1 Agenda for this project over the next academic year

1. Teach the proposed coursework to students at Berklee and obtain feedback, evaluating how the students used the concepts in their own music. Develop the next stage of mathematical development of this coursework, branching into areas such as tuplets, advanced applications and so on. One of the outcomes of the trial of this coursework could be the conversion of this material into a book.
2. Organize a workshop by a senior Indian rhythm maestro and evaluate whether those who partook of this coursework are able to comprehend this workshop better than others.
3. Develop a sample library of tabla strokes and develop a notational system for them to be written in staff alongside on this sample library. This will be the first step toward the computational side of the project.
4. Conduct further research into how the khali-bhari aspect of Indian rhythm can be extrapolated out of context. This will, among other things, require in-depth interviews with drummers and senior tabla players.

4.2 A final word

The demand for musical rhythm is as much a part of human nature as that for melody. The rhythmical sense, like the melodic, varies with individuals, and is probably entirely wanting in a few cases, which, if they exist, must be as rare as those who want the sense of relative pitch, generally alluded to as "want of musical ear." Where the rhythmical sense exists, in however slight a degree, it is capable of more or less development by cultivation. In this respect it is the same as any other faculty, and it will atrophy if entirely neglected, or will grow in a wrong direction if not carefully guided. If music is to be something more than a mere social distraction, if it is to penetrate into our nature, it must be made to express itself through a carefully conceived and carefully executed rhythm (Jerry Leake, *Relating sound and Time*).

David Nelson points out that many musicians in the west have become interested in the rhythmic intricacy of Indian music, but most of these musicians do not have the time or inclination to take up a full study of Indian music or dance. He advocates a course in Indian rhythm to bridge this gap. He attributes four primary advantages of learning -

- The physical confidence
- Portability or adaptability outside of context
- Inherent musicality
- and that it can make rhythmic learning which is often dry and abstract, become accessible and fun

I believe that with this coursework I have satisfied these advantages with the possibility of many more to come. Putting this project together has been an experience that tested every aspect of who I am, the tradition of music I come from, my learning over this past year at Berklee and it has truly defined a wonderful set of possibilities of a future in music.

I borrow from the several documents I analyzed to conclude with this. In the dynamic world of music and music education where students often come to college ill prepared for their encounter with increasingly complex literature, rhythm pedagogy must keep pace with the challenge. It is no longer enough to leave rhythm to chance or to assume students learn it in lessons or ensembles. Rhythm must now be taught. Systems based on Indian rhythm are not new, either in Western or non-Western music education. I strongly believe that this course work addresses many of the needs of contemporary music education and presents a healthy alternative means of understanding rhythm.

Appendix I

List of artists who's material
was studied for this project

List of artists

Performances, tutorials, recordings, workshops and other material available of these artists was studied and analyzed for this project

Tabla Players

Yogesh Samsi, Zakir Hussain, Sushil Kumar Jain, Suresh Talwalkar,
Taufiq Qureshi (percussionist who's repertoire is based on tabla repertoire)

South Indian percussionists

Umayalpuram K. Sivaraman, Ghatam Kartik, Erode Nagaraj, T.H. Vinayakaram, Trichy Sankaran, T.H. Subhas Chandran, Selvaganesh Vinayakaram, Uma Shankar Vinayakaram

Non Percussionists

Lalgudi Jayaraman, M. Balamuralikrishna, Abishek Raghuram, John Mclaughlin,
Prasanna Ramaswamy, Avishay Cohen, Victor Wooten

Western percussionists

Bernhard Schimpelsberger, Steve Smith, Pete Lockett, David Nelson, Jerry Leake, Jamey Haddad, Todd Isler, Dan Weiss, Henrik Anderssen, Asaf Sirkis

Appendix II

List of Berklee Valencia
batch of 2013-14 students
involved in this project

Student

Alexey Leon

Andrea Fraenzel

Juan Christobal Aliaga

Luis Regidor Pain

Miguel Angel Lous

Miguel Ruiz Santos

Mikael Chauvet Jorgensen

Peter Connolly

Piotr Orzechovsky

Ricardo Curto

Stephen Mchale

Involvement

Saxaphone

Contra-Bass, participant in rhythm sessions

Guitar, transcription and arrangement

Participant in rhythm sessions

Flute

Clarinet, participant in rhythm sessions

Drums

Guitar, participant in rhythm sessions

Piano

Arrangement of tunes and Piano player

Arrangement of tunes, guitar and participant in the rhythm sessions

(Technicians, sound engineers and mix engineers have not been included in this list. They can be found in Appendix VII)

Appendix III

Bibliography
Books, research papers
and other online sources
(audio/Video)

Bibliography

_____. (N.D.). Learning Rhythm With The Takadimi System Of Rhythm Solfege.

Adler, J. A Study Of Rhythm. (2011)

Balslev, Anindita Niyogi. A Study Of Time In Indian Philosophy, Wiesbaden.(1983)

Berendt, Joachim-Ernst. Nada Brahma: The World Is Sound (Trans. H. Bredigkeit), Rochester, Vt. (1987)

Brower, Candace, 'Memory And The Perception Of Rhythm', Music Theory Spectrum. (1993)

Brown, Robert E. The Mrdariga: A Study Of Drumming In South India, Ph.D. Diss., UCLA.(1965)

C.F. Abdy Williams. The Aristoxenian Theory Of Musical Rhythm, Cambridge University Press. (1911)

Clayton, M. R. L. Free Rhythm: Ethnomusicology And The Study Of Music Without Metre. Bulletin Of The School Of Oriental And African Studies. (2009)

Clothey, Fred W. Rhythm And Intent (Ritual Studies From South India), Madras. (1983)

Dan Fox, The Rhythm Bible, Alfred Publishing Co.

Essentials Of Musicology In South Indian Music - Professor S.R. Janakiraman. (2008)

Frishman, Marcie Lea. Patterning And Cadential Formulation In The South Indian Drum Solo, MA Disc., Wesleyan University. (1985),

Ghosh, Nikhil. Fundamentals Of Raga And Tala With A New System Of Notation, Bombay. (1968)

Goldberg, Daniel. Reconsidering Additive Rhythm In Balkan Music.

Grimmer, S. Trinity Laban Conservatoire Of Music And Dance, UK Institute Of Education, University Of London, UK. Royal Northern College Of Music, 5(Special Issue), 79–95. (2012)

Hadfield, B. J. Applying Carnatic Rhythmic Principles To The Drumset. (2011)

Hartenberger, John Russell. Mrdangam Manual: A Guidebook To South Indian Rhythm For Western Musicians.

Hartigan, Royal James. Blood Drum Spirit: Drum Languages Of West Africa, African-America, Native America, Central Java, And South India.

Hoffman, R., Pelto, W., & White, J. W. Takadimi: A Beat-Oriented System Of Rhythm Pedagogy. Journal Of Music Theory Pedagogy, 10, 7–30. (1996)

Hulin, M. (N.D.). Towards An Ecology Of Rhythm, The Seminal Contribution Of Rhythmanalysis For The Comparative Study Of Some Rhythm Based Epistemologies, 1–6.

Introduction To The Principle Of Layam - Being An Exposition Of The Thala System - Part 1 Professor K. Ramachandran. (1929)

J. Leake, Drum Set Adaptations Of North Indian Tabla. (1989)

Jerry Leake, Relating Sound & Time: A Percussionist's Journey Through African And Indian Music, Rhombus Publishing

Kiba, Norman. Creation, Form, And Tradition: A Cybernetic Study Of North Indian Tabla Drumming

Krishna, TM .A Southern Music. Harpercollins Publisher. (2013)

Lomax, Alan. 'The Cross-Cultural Variation Of Rhythmic Style', In M. Davis, Ed., Interaction Rhythms, New York.(1982)

Martin, Clayton. Time In Indian Music: Rhythm, Metre, And Form In North Indian Rag Performance (Oxford Monographs On Music)

Morris, R. (N.D.). Sets, Scales And Rhythmic Cycles - A Classification Of Talas In Indian Music. Eastman School Of Music, University Of Rochester.

Parncutt, Richard. 'The Perception Of Pulse In Musical Rhythm', In Alf Gabrielsson, Ed., Action And Perception In Rhythm And Music, Stockholm: Publications Issued By The Royal Swedish Academy Of Music, No. 55, 127-38.(1987)

S.Naipalli, Theory And Practice Of Tabla. (2005)

Sangita Sastra Sangraha - A Guide To Theory Of Indian Music By Dr. M.B. Vedavalli. (2006)

Shelar, S. (N.D.). Tabla Kal-Akshar Notation System.

Shyammonk, Big, Small And One More – Indian Music Notation (Sa Ri Ga Ma) & Western Interval Naming – 2 & 3 Note Systems.

Simundza, M. Messiaen 'S Rhythmical Organisation And Classical Indian Theory Of Rhythm Published By: Croatian Musicological Society. (2008)

Subramaniam, L. Culture and consumption: Classical Music In Contemporary India And The Diaspora. Transforming Cultures Ejournal. (2008)

T.Viswanathan The Hindu. (January 4, 1998)

Theory Of Indian Music Ram Avtar' Vir. (1999)

Wickwire, Wendy C. Cultures In Contact: Music, The Plateau Indian, And The Western Encounter.

Young, L. The History And Development Of Solkattu - The Vocal Syllables - Of The Mridangam. (2010)

Appendix IV

Score sample of Revathi Thillana

Original composition by
Lalgudi Shri Jayaraman,
arranged by Ricardo Curto
and M.T. Aditya Srinivasan

Revathi Thillana

♩ = 100

G^ø9 C7(b9sus4) Fm⁹(b6) **A** G^ø9

5 C7(b9sus4) Fm⁹(b6) Dbmaj7(#11) Bbm7

9 Eb7 Fm⁹(b6) To A without repeats G^ø9

C7(b9sus4) Fm⁹(b6) **B** Bbm7 Eb7

Bbm7 Eb7 Bbm7 Eb7 Bbm7(add13) Eb7

Bbm7(add13) Eb7 G^ø9 C7(b9sus4) Fm⁹(b6)

C Bb7(add4) A7^{alt.} Ab7(add4)

Eb7(sus4) Fm⁹(b6) G7(b5sus9) rit. Db7

♩ = 110 Diatonic G starting below Play 4ths

D Play 4ths

Db7(#5) Eb7(#11)

E Bbm7 Eb7 Bbm7

Eb7 Gø9 C7(b9sus4) Fm9(b6)

Appendix V

Course design overview

MT-607

Several Miles to Ramanujam

Stage 1: Designed in 15 phases of development

Instructor: M.T. Aditya Srinivasan

athiagarajan@berklee.edu

Course outline

Phase 1: Ashtak exercise and learning basic phrases from 1 to 14 and reciting them in their respective time signatures (also with basic clap patterns and claves)

Phase 2: Introducing silences and mixing-matching the basic phrases in multiple speeds and various time signatures

Phase 3: Combing phrases and silences into Yati patterns

Phase 4: Silence exercises in 60 for 4/4 time signature

Phase 5: Extending silence exercises and Yati patterns to odd time signatures

Phase 6: Endings in 32

Phase 7: Using phrases of 2 and 3 for endings in 32

Phase 8: Filling up sequences using basic phrases to approach endings in 32 leading to basic 64 count korvais

Phase 9: 64 count korvais (advanced)

Phase 10: 128 count korvais (basic)

Phase 11: 128 count korvais (advanced)

Phase 12: Korvais in silence

Phase 13: The art of composing korvais and its application toward a mathematical approach to music composition

Phase 14: Korvais applicable in multiple time signatures

Phase 15: Application of cadences to claves and other emphasis points

Materials

Material is presented in western notation, mathematical representation, optimized for the instructor to explain concepts

Examples and activities

Audio Samples

Each set of exercises will have background relevant theory and audio samples of how they are utilized in performance, from musicians such as Prasanna, Victor Wooten and Steve Smith

In class activity

Every stage will have in-class activities pre-designed to be adaptable to the requirements of students in the class

Homework activity

Homework activities will include practicing the exercises, transcribing applied concepts from recordings and composing music based on the concepts discussed in the class

Appendix VI

Course material sample drafts

Indian rhythmic Exercises for Melody - Set 1

MT Aditya Srinivasan

Traditional Exercises

1' e & a 2 e & a e & a 2 e & a & a 2 e & a a 2 e & a

5 2 e & a e & a & a a

9 tha ka dhi mi tha ka jo nu tha ka dhi mi tha ka

11 jo nu tha ka dhi mi tha ka jo nu tha ka dhi

13 mi tha ka jo nu tha ka dhi mi tha ka jo nu tha ka dhi mi tha ka jo nu tham

18

22

27

31

Basic syllables under the South Indian recitation system for rhythm (Konakkol)

- 1 - Tha
- 2 - Tha ka
- 3 - Tha ki Ta
- 4 - Tha ka Dhi mi / Tha ka Jo nu
- 5 - Tha dhi gi na thom
- 6 - Tha dhi . gi na thom
- 7 - Tha . dhi . Gi na thom
- 9 - Tha . dhi . gi . na. thom

As you will notice, from 5 onwards, the syllables are the same, it is only the spacing (gap inbetween) syllables that changes.

A standard method of counting gap between notes is to enunciate the gap, to increase convenience of recitation . A gap of a beat + 2 counts is denoted as **Thangu** (3 counts total).

A gap of a beat + 1 count (2 counts total) is denoted as **tham**.

Endings for one avarthana of a Adi Tala (with just a few additional possibilities)

1 , 2 , 3 , 4 , 5

- 6 - 2+2+2
- 7 - 1+2+1+2+1
- 8 - 2+1+2+1+2
- 9 - 3+3+3
- 10 - 2+2+2+2+2
- 11 - 3+1+3+1+3
- 12 - 2+3+2+3+2
- 13 - 3+2+3+2+3
- 14 - 4+1+4+1+4
- 15 - 5+5+5
- 16 - 4+2+4+2+4
- 17 - 5+1+5+1+5
- 18 - 6+6+6
- 19 - 5+2+5+2+5
- 20 - 6+1+6+1+6
- 21 - 7+7+7 = 5+3+5+3+5
- 22 - 6+2+6+2+6
- 23 - 7+1+7+1+7 = 5+4+5+4+5
- 24 - 6+3+6+3+6
- 25 - 7+2+7+2+7
- 26 - 8+1+8+1+8 = 6+4+6+4+6
- 27 - 9+9+9 = 7+3+7+3+7
- 28 - 8+2+8+2+8
- 29 = 9+1+9+1+9 = 7+4+7+4+7
- 30 = 10+10+10=8+3+8+3+8=6+6+6+6+6=4+6+4+6+4+6
- 31= 7+5+7+5+7 = 9+2+9+2+9
- 32 = 8+4+8+4+8=10+1+10+1+10

Appendix VII

Material Included

1. Copy of **Final presentation** used for thesis defense
2. **Videos used in the final presentation**
 Video 1: Pictures and videos from this last year at Berklee Valencia. Background tracks are music recorded and produced by me over this last year.
 Video 2: Feedback by participants about the project
3. Demo tracks of **music from the thillana project recorded over this last year**

Song Name	Artists	Technicians
Brindavani Thillana	Ricardo Curto (piano), Andrea Fraenzel (bass), Peter Connolly (guitar), Alexey Leon (saxophone), Mikael Chauvet Jorgensen (drums)	Session Engineer- Timothy Shull Jr. Overdubs engineer & Mixing- M.T.Aditya Srinivasan
Revathi Thillana	Ricardo Curto (piano), Andrea Fraenzel (bass), Miguel Angel Lous (flute), Mikael Chauvet Jorgensen (drums)	Session Engineer- Alan Tishk Overdubs engineer & Mixing- Mixing- M.T.Aditya Srinivasan
Kalyani Thillana	Ricardo Curto (piano), Andrea Fraenzel (bass), Alexey Leon (saxophone), Mikael Chauvet Jorgensen (drums)	Session Engineer- Beth Schofield Overdubs engineer & Mixing- Mixing- M.T.Aditya Srinivasan
Parakeet (Based on thillana in Mohana Kalyani)	Stephen Mchale (guitar), Andrea Fraenzel (Bass), Piotr Orzechovsky (piano) and Mariano Steimberg (Drums)	Session Engineer - Pablo Schueller