

CONTENTS

Invitation

Dr. Prakash Boominathan and
an abstract of his talk on
Vocal Dynamics in Carnatic Singers

Vidwan Mannarkoil J. Balaji and
An outline of Precision and Aesthetics

Vidwan Anayampatti S. Ganesan

A note on Jalatarangam

A note on Mridangam

The Chairman and Members of the Governing Council of
WATERFALLS INSTITUTE OF TECHNOLOGY TRANSFER, CHENNAI

Cordially invite you & your friends interested in the area of Science & Carnatic Music
to a **Lecture-cum-Demonstration on**

The Art and Science of Carnatic Music

Curated by

Nadabhushanam Dr Vijayalakshmy Subramaniam

Dr Prakash Boominathan

(Professor, Dept. of Speech Language & Hearing Sciences,
Sri Ramachandra Medical College & Research Institute)

will share his experience on

Vocal Dynamics in Carnatic singers - some Vocal Health aspects

Vidwan Manarkoil J. Balaji, Mridangam exponent,

(Visiting Faculty, Music Academy Teachers College and A-Grade Artist
with AIR & Doordarshan)

will present, through an innovative Lecture-Demonstration, the

Precision and Aesthetics in South Indian Rhythm

**Gayaka Ratnam, Kalaimamani Anayampatti S. Ganesan,
Jalatarangam Vidwan**

will, through an interactive Concert, provide insights on the

The Science of Jalatarangam

VENUE: Indira Ranganathan Trust
(next to Nilgiris Supermarket)
No. 52, C.P. Ramaswamy Road
Alwarpet, Chennai

Date : Sunday, January 21, 2018

Time : 3.30 pm – 7.00 pm

RSVP: wittchennai@gmail.com or vjjisubra07@gmail.com or pvjaisankar@gmail.com



WATERFALLS INSTITUTE OF TECHNOLOGY TRANSFER

New No.32, 'Waterfalls', Saigeeth Apartments
Thirumurthy Street, T.Nagar, Chennai – 600 017



Prakash Boominathan, PhD

Professor, Department of Speech language and Hearing Sciences,
Sri Ramachandra Medical College & Research Institute (Deemed
University),

Porur, Chennai, Tamil Nadu, India.

Prakash_boominathan@sriramachandra.edu.in

Dr. Prakash Boominathan is currently a Professor, Department of Speech, Language and Hearing Sciences at Sri Ramachandra University, Chennai, India. He completed his graduate degrees in speech and hearing from the All India Institute of Speech and Hearing, University of Mysore, India. He received his Ph.D. from Sri Ramachandra University, Chennai. In the year 2005-06, he had received the prestigious Fulbright Research Fellowship. As part of the fellowship, he visited University of Cincinnati, Ohio, and other voice centers in USA. He is a qualified clinical educator and adjunct faculty at University of Toronto. His area of clinical focus and research are fluency and voice with emphasis on professional voice care.

He serves as an advisor in PhD research committees at various universities in the country and has guided many graduate and research students. He has published numerous scientific papers, a few book chapters and two instructional videos. He has to his credit, over 70 presentations at seminars, and conferences at regional, national and international meetings, and 50 publications in peer reviewed journals including The laryngoscope and Journal of Voice. He has conducted seven international and fourteen national workshops on Professional Voice Care, assessment and management of voice. He serves as invited faculty and lead faculty in national seminars and workshops on Voice.

Prakash Boominathan has been an active member in various professional organizations. He has served in the EC of the Indian Speech & Hearing Association, is currently an Expert member for Speech and Hearing to Rehabilitation Council of India and a member/inspector in peer visit team of NAAC and RCI. He is a member of the Academic Senate of Sri Ramachandra University and Member, Board of Studies (Speech & Hearing) at four Indian universities. He serves on the Board of Research Advisory Council of the All India Institute of Speech & Hearing, Mysore. He is also an examiner for various speech and hearing programs at PhD, masters and bachelors level in the country.

Abstract --Vocal Dynamics in Carnatic Singers – Some Vocal Health Aspects

Chennai is considered as the cultural capital of south Indian classical Carnatic music. Carnatic singing is a refined fine art with chaste traditional values, and it often requires rigorous training to become a professional singer. Carnatic singing is a popular form that many aspiring singers learn and practice.

Among the several essentials for learning and performing Carnatic singing, a healthy vocal apparatus is imperative, just as in case of any vocal art. Aspects of vocal health can be measured using objective physiological and acoustic parameters. This invited talk compiles findings from a few studies on Carnatic singing conducted at Sri Ramachandra Medical College and Research Institute in Chennai over the last decade.

The talk will address aspects related to methodology and findings related to (1) singing pedagogy, (2) acoustic parameterization of the nuances in singing including vocal ornaments, (3) physiological interpretations, and (4) vocal health aspects.

Some of the research questions that the voice lab has attempted to address are:

1. How well do Carnatic singers match the accompanying drone frequency? The chosen drone frequency is used to “tune” the singer’s pitch (and “key”) as well as “tune” the other accompanying instruments.
2. What is the frequency range used by trained Carnatic singers during practice and performance? This range involves three registers of the singing voice.
3. What aspects characterize singing voices that will reveal systematic use of voice in singers? This information will help counsel aspirant singers, provide explicit description of skills required of a singer, provide valid clues for healthy singing and describe possibilities of functional voice disorders of singing.
4. What are the basic vocal ornaments in Carnatic singing in terms of Fundamental frequency (Fo) modulation patterns – morphology, rates, and extents?
5. What are training, singing practice, life style, and non-singing vocal usage characteristics of a Carnatic singer, and how do these account for functional and organic voice disorders in singers? What are common voice problems in singers? How can they best be treated? Are there strategies for prevention of voice problems and maintenance of vocal health for this group of singers?

This presentation will share research findings and provide some basic overview on vocal health issues in Carnatic singers.

Suggested Reading:

- Arunachalam, R., Boominathan, P., & Mahalingam, S. (2014). Clinical voice analysis of Carnatic singers. *Journal of Voice*, 28(1), 128 e1-128 e9.
- Benniger, M. S., Jacobson, B. H., & Johnson, A. F. (1994). *Vocal arts medicine*. New York: Thieme Med Pub, Inc.
- Boominathan, P. (2017). Expanding frontiers in voice health & care - Applications for India. *Journal of All India Institute of Speech and Hearing*. 35, 9-13.
- Boominathan, P. (2010). Assessment of Elite Professional Voice – Singers. In *Professional Voice: Assessment and Management*. Mysore: All India Institute of Speech & Hearing (AIISH), 22-46.
- Boominathan, P. (2010). *Voice therapy for singers and Teachers*. [DVD]. Chennai: Swathi Soft Solutions.
- Boominathan, P. (2008). Acoustic analysis of the singing voice of trained Carnatic singers, untrained light music singers and non-singers. Doctoral thesis, Sri Ramachandra University, Chennai.
- Boominathan, P. (2008). Assessment of Professional Voice. In *Voice: Assessment and Management*. Mysore: All India Institute of Speech & Hearing (AIISH), 77-101.
- Boominathan, P. (Spring 2006). Why are multicultural studies on singing voice relevant? ASHA Kiran, Asian chapter of American Speech Language and Hearing Association, 5.
- Boominathan, P. (2005). Characteristics required for singing: Observations from South Indian Classical singers. In *Proceedings of the Seminar on Professional Voice care*, Mysore: All India Institute of Speech & Hearing (AIISH).
- Boominathan, P., & Desai, V. (2012). Synergy between speech language pathologists and ENT surgeons to promote patient care. *Journal of Laryngology and Voice*, 2(2), 51-52.
- Boominathan, P., Nagarajan, R., Krishnan, S. & Neelakantan, S. (2004). A profile of the vocal and non-vocal habits of Carnatic singers. *Journal of Sangeet Research Academy*, 18 (1), 77-88.
- Boominathan, P., Rajendran, A., Nagarajan, R., Seethapathy, J., & Gnanavel, M. (2008). Vocal abuse and vocal hygiene practices among different level professional voice users in India: A survey. *Asia Pacific Journal of Speech Language and Hearing*, 11 (1), 47-53.
- Heman-Ackah, Y. D. & Sataloff, R. T. (2007). The Professional voice. *Otolaryngologic clinics of North America*, 50(5)
- Leborgne, W. D., & Rosenberg, M. (2013). *The Vocal Athlete*. California: Plural Pub, Inc.
- Mahalingam S, Boominathan P. (2016). Effects of steam inhalation on voice quality-related acoustic measures. *The laryngoscope*;126(10);2305-2309.(Published online 29th Jan 2016, DOI: 10.1002/lary.25933)
- Mahalingam, S., Boominathan, P., & Balasubramanian, S. (2014) Voice Disorder Outcome Profile (V-DOP) – Translation and validation in Tamil language. *Journal of Voice*. Vol. 28., No. 6, PP 841 e21-32.
- S. A. K. Durga & Boominathan, P. (2010). *Sharira Sadhana*. [DVD]. Chennai: Swathi Soft Solutions.
- Samuel, J., Mahalingam, S., Subramaniyan, B., Boominathan, P., & Ravikumar, A. (2011). Stroboscopic and Multiparametric assessment of voice after Vocal Loading Task. *International Journal of Phonosurgery and Laryngology*. Volume 1(2), 47-51.
- Sataloff, R. T. (2006). *Vocal health and pedagogy: Advanced assessment and treatment*, Volume-II (2nd Ed.). California: Plural pub, Inc.
- Sataloff, R. T. (2006). *Vocal health and pedagogy: Science and assessment, Volume- I* (2nd Ed.). California: Plural pub, Inc.
- Scherer, R.C., Radhakrishnan, N., Boominathan, P. & Tan, H. (2008). Rate of change of Fo in performance singing. *Journal of Acoustical Society of America*, 123 (5): 3379.



Mannarkoil J Balaji is a disciple of Tanjore Shri.R Ramadoss and Ramanathapuram Shri. M N Kandaswamy. He has performed widely in India and abroad and accompanied various artistes of repute in over 3500 concert appearances. He has travelled to many countries like USA, Canada, Hongkong, Malaysia, Singapore, Japan, Indonesia, South Africa, Estonia (Russia), Germany, France, England, Australia and New Zealand.

He has won numerous prizes and awards during his long tenure -- Best Sub-Senior Mridangist award (Palani M Subramania Pillai Award) from Music Academy, Meritorious Award for Excellence from Maharajapuram Santhanam Trust, Asthana Vidwan from Kanchi Kamakoti Mutt, Laya Kala Vipanchee from Vipanchee and Kartik Award of Excellence from Kartik Fine Arts Chennai in 2014. He has also been awarded the Guru Karaikudi Mani award for a mridangist instituted by Karaikudi Mani at Kartick fine arts for the year 2014.

He has conducted lectures and workshops to international students at England, South Africa and many other places. Balaji has also given many lectures on aspects of Tala and Laya. Recently he has been included as a Visiting Faculty at the Madras Music Academy Teachers College to handle sessions on Layam exclusively for the students where he teaches various nuances of south indian rhythm including the art of Konnakol, making moras and korvais etc.

Academically, Balaji is a post graduate in English, Hindi and Journalism. He is currently pursuing his phd with Sastra University, Thanjavur. He is also one of the founders of the Youth Association for Classical Music. He is an A grade artiste of the All India Radio and Doordarshan.

A banker by profession, Balaji is a musician by passion.

Recently Balaji has also been associated with an exclusive and intensive music retreat called "Sameeksha" at Kotagiri Hills, to demystify various aspects of tala and laya in Carnatic Music.

Precision and Aesthetics in South Indian Rhythm

Introduction about South Indian Rhythm

Carnatic rhythm is one of the highly developed and sophisticated systems in the world of rhythm. Many of the varieties are specific to Carnatic Music and have no parallel in the world.

Tala

The metre in Carnatic Music is called Tala and there are various tala schemes or tala sets or groups of talas are available in Carnatic Music. The development of tala system has also been very scientific and logical in the sense that there is a specified sequence in which the talas have been figured out and used how to find out if a tala is valid or invalid according to Prastara is "Mathematical concept".

Rhythmic Syllables – Mathematics and mnemonics

Syllable representation is a process by which the basic numbers will be transformed into musical solfas and in turn they will be used for construction of a special types called "Solkattu". The basic syllable in Carnatic Rhythm is called "sol" and combining many such "Sol" into patterns is called "Solkattu". Various types of solkattu have been developed over many years and are still getting developed.

Rhythmic Terms and some quick methods

There are various terms in South Indian rhythm and they have deep rhythmic and musical applications. These terms basically have some structure and logic, which will be explained in this module.



Anayampatti S. Ganesan , son and disciple of Mysore Asthana Vidwan Anayampatti Sri. K. Subbaiyer.

Anayampatti S. Ganesan hails from a musical family that has dedicated itself to the preservation and propagation of the art of music in general and the Jalatharangam in particular.

Hailing from a musical family, he comes in the 3rd generation of inheriting this traditional Art. Apart from the Jalatharangam, Sri. Ganesan is equally adept at the playing the violin and is a well recognized vocalist. His grandfather **Sri Kuppuswamy Iyer** was a great Vocal Vidwan. His guru was **Chembai Sri. Vaidyanatha Bhagavathar** in Vocal and **Uncle Sri. Narayana Iyer** in Violin.

At the behest of **Poojya Sri. Mahaswamy of Kanchi Kamakoti Peetam** in Oct. 1984, Ganesan took to playing the Jalatharangam. With the Acharya's continued blessings, he has emerged as the leading artist of this rare instrument, treasured and nurtured by his family. He has done special video recordings of the Jalatharangam, displaying various sophisticated playing techniques. To mention some--

1. Sangeetha Natak Academy New Delhi – 1992.
2. Indira Gandhi International Center of Arts, New Delhi – 1992.
3. Iyela Isai Nataka Mandram – Govt. of Tamil Nadu, Chennai – Audio – 1994
4. Sampradhya – Lecture and Demonstration Audio – Chennai – 1999.

He has authored two books –

1. Sathguru Sri Thyagaraja Swamigal Pancharathna
2. Nadadur Nambi -- Compositions in Tamil.

Some of the many awards he has received --

Sri Kanchi Kamakoti Peeta Asthana Vidwan -1992

Kalaimamani award by Govt. of Tamil Nadu Iyal Isai Nataka Mandram -- 1993.

Jalatharanga Nada Rathnam – given by Sri Sri Sankaracharya Swamigal Sri kanchi Kamakoti

Peetam – 2001

Sringeri Sri Sharada Peeta Asthana Vidwan 2002.

Honoured on the occasion of the Swarna Peetarohana Jayanthi of Poojya Sri Jayendra

Saraswathi Swamigal of Sri Kanchi Kamakoti Peetam

“Sahrudhaya Ranjaka” – given by Bharath Vikas Parishad – 2004.

T T K Memorial Award, The Music Academy - Chennai -- 2004

D K J Foundation – Memorial Award – 2004.

Anayampatti Ganesan has travelled abroad and generated interest and awareness about this rare instrument. Visited France in 1982 with his elder brother and again toured France and Germany in 2002 & 2006. He has participated in the World Music festival in Paris ,France 2006 organized by Cite de la Musique & Triveni, Paris.

Anayampatti S. Ganesan had a long record of service with All India radio, Pondicherry as a Music Artist. He has produced many Special Musical Features on **Purandara Dasa, Arunagirinathar** and others.

He was instrumental in the production of the Special recording of the **72 Melakarta Talas** along with Stalwarts Ghatam Maestro Late K M Vaidhyanathan, Mridangam Vidwan Thinniyam Krishnan, Mridanga Vidwan Mylatoor Ramachandran and Musicologist Sri B M Sundaram.

He recorded several Special Pallavis and Tiruppugazh in his vocal concerts and also conducted Music Lessons over the air.

(Abridged from Wikipedia)

The **jaltarang**, **jaltarang**, **jal-tarang**, **jal-yantra**, **jalatarangam** or **jalatharangam** is an Indian melodic percussion instrument. It consists of a set of ceramic or metal bowls tuned with water. The bowls are played by striking the edge with beaters, one in each hand.



History

The earliest mention of the jal tarang is found in Vātsyāyana's Kamasutra as playing on musical glasses filled with water. It is one of the 64 Arts and Science to be studied. In modern times, it has fallen into obscurity. Literally, jal tarang means "waves in water" but indicates motion of sound created or modified with the aid of water. In the wave-instruments, it is the most prominent and ancient instrument. This traditional instrument is used in Indian classical music. Some scholars think that in the ancient period these were in routine use around the eastern border of India.

Details

Jal-tarang finds its first mention in Sangeet Parijaat. This medieval musical treatise categories this instrument under Ghan-Vadya (Idiophonic instruments in which sound is produced by striking a surface, also called concussion idiophones.) SangeetSaar considered one with 22 cups to be complete jal tarang and one with 15 cups to be of mediocre status. Cups, of varying sizes were made of either bronze or porcelain.

Currently only china bowls are preferred by artistes, numbering around sixteen in normal use. Cups for Mandra Swar (notes of lower octave)are large while those for Taar Swar (notes of higher octaves) are smaller in size.

Water is poured into the cups and the pitch is changed by adjusting the volume of water in the cup. The number of cups depends on the melody being played. The bowls mostly are arranged in a half-circle in front of the player who can reach them all easily.

The player softly hits the cups with a wooden stick on the border to get the sound. It's not easy to tune the instrument and it needs lot of skill. During playing fine nuances can be reached if the performer is accomplished. SangeetSaar mentions that if the player can rotate the water through a quick little touch of the stick, nuances and finer variations of the note can be achieved.

Jal-tarang was also called jal-yantra in the medieval times. Poets of Krishna cult (also called Asht-chhap poets) have mentioned this instrument, but there is no mention in literature prior to this. Some contemporary Jal-tarang players of Carnatic music do attempt to produce Gamak often in the face of sounds going awry lacking required control.

Water drum

Water drums are a category of membranophone characterized by the filling of the drumchamber with some amount of water to create a unique resonant sound. Water drums are used all over the world, including American Indian music, and are made of various materials, with a membrane stretched over a hard body such as a metal, clay, or wooden pot.

Water drumming, the *tambor de agua* (Spanish: drum of water), *bungo*, or *liquindi*, of African origin, is water, such as a river, which is played by striking the surface directly with one's hands. It is performed by the Baka in Africa, and in South America with strokes comparable to the *culoepuya*.



Two Water Drums

Construction

Currently they are made of both wood and clay. Wooden water drums are made either by hollowing out a solid section of a small soft wood log, or assembled using cedar slats and banded like a wooden keg. Clay drums are either handmade or an old crock is used. An Iroquoian or Wendat/Wyandot drum stick is carved from a piece of hardwood with a small rounded tip. Each drum style has a unique way of tightening the hide to maximize the sound. The drum head must be both tight and saturated with water for best results.

Native American Church ceremonies often use a water drum made from iron, brass or copper kettle. The distinctive sound of the drum characteristic of the Native American Church is created because: "The water inside is in constant motion and produces a special resonance. The player's thumb, pressed against the drum head, holds the tone at a constant pitch.

A NOTE ON MRIDANGAM (Abridged from Wikipedia)

The **Mridangam** is a percussion instrument from India of ancient origin. It is the primary rhythmic accompaniment in a Carnatic music ensemble.

During a percussion ensemble, the mridangam is often accompanied by the ghatam, kanjira, or morsing.



The earliest mention of the mridangam in Tamil literature is found perhaps in the Sangam literature where the instrument is known as 'tannumai'. The word "Mridangam" is Sandhi of the two Sanskrit words *mṛt* (clay or earth) and *anga* (limb), as early Mridangam were made of hardened clay.

In ancient Hindu sculpture, painting, and mythology, the mridangam is often depicted as the instrument of choice for a number of deities including Ganesha (the remover of obstacles) and Nandi, who is the vehicle and follower of Shiva. Nandi is said to have played the mridangam during Shiva's primordial *tandava* dance, causing a divine rhythm to resound across the heavens. The mridangam is thus also known as "**Deva Vaadyam**," or "**Divine Instrument**".

Over the years, the mridangam evolved to be made of different kinds of wood due to its increased durability, and today, its body is constructed from wood of the jackfruit tree. It is widely believed that the tabla, the counterpart, was first constructed by splitting a mridangam in half. With the development of the mridangam came the tala (rhythm) system.

Construction and use

The mridangam is a double-sided drum whose body is usually made using a hollowed piece of jackfruit wood about an inch thick. The two mouths or apertures of the drum are covered with a goatskin and laced to each other with leather straps around the circumference of the drum. These straps are put into a state of high tension to stretch out the circular membranes on either side of the hull, allowing them to resonate when struck. These two membranes are dissimilar in width to allow for the production of both bass and treble sounds from the same drum.

The bass aperture is known as the *thoppi* or *eda bhaaga* and the smaller aperture is known as the *valanthalai* or *bala bhaaga*. The smaller membrane, when struck, produces higher pitched sounds with a metallic timbre. The wider aperture produces lower pitched sounds. The goat skin covering the smaller aperture is anointed in the center with a black disk made of rice flour, ferric oxide powder and starch. This black tuning paste is known as the *satham* or *karanai* and gives the mridangam its distinct metallic timbre.

The combination of two inhomogeneous circular membranes allows for the production of unique and distinct harmonics. Pioneering work on the mathematics of these harmonics was done by Nobel Prize–winning physicist C. V. Raman.

Immediately prior to use in a performance, the leather covering the wider aperture is made moist and a spot of paste made from semolina (*rawa*) and water is applied to the center, which lowers the pitch of the left membrane and gives it a very powerful resonating bass sound. Nowadays, rubber gum is also used to loosen the membrane helping in creating the bass sound. The artist tunes the instrument by varying the tension in the leather straps spanning the hull of the instrument. This is achieved by placing the mridangam upright with its larger side facing down, and then striking the tension-bearing straps located along of circumference of the right membrane with a heavy object (such as a stone). A wooden peg is sometimes placed between the stone and the mridangam during the tuning procedure to ensure that the force is exerted at precisely the point where it is needed.

The mridangam is played resting it parallel to the floor. A right-handed mridangam artist plays the smaller membrane with their right hand and the larger membrane with the left hand. The mridangam rests upon the right foot and ankle, the right leg being slightly extended, while the left leg is bent and rests against the hull of the drum and against the torso of the artist.



Dr. Vijayalakshmy Subramaniam

With her career in music extending over two decades, **Dr. Vijayalakshmy Subramaniam** is today among the most sought after vocalists of the Carnatic Music tradition, uniquely known for her captivating voice, *bhava* rich music and extensive repertoire. She has been performing since the age of twelve and has an impressive list of achievements to her credit. With a mesmerizing voice and distinct vocal style, Vijayalakshmy is known for her authentic rendering of compositions with flawless diction, perfect control of rhythmic aspects and handling complex

& rare *ragams* with élan.

Vijayalakshmy Subramaniam started her training in Carnatic Music at New Delhi at the age of five under **Shri K. Padmanabhan**, a disciple of **Harikesanallur Shri Muthiah Bhagavathar** from the Swati Tirunal Academy, Trivandrum. Vijayalakshmy further honed her skills under the guidance of eminent Vidwans **Shri K Krishnaswamy**, Sangeetha Kala Acharya **Shri S.Rajam**, **Prof T.R.Subramaniam** and **Shri V.R.Krishnan**.

She has innumerable concerts to her credit, and has performed special concerts including exclusive concerts of composers and thematic concerts. She has presented '**Kshetra Sangeetham**' (since 2010) – a musical journey through temple towns experiencing the temples' uniqueness and their musical significance. She has travelled widely and presented concerts and lecdems with great success.

Vijayalakshmy is a **TOP** ranked artist of All India Radio. She has published many audio CDs. She has brought out two books—

--**Apoorva Kriti Manjari**—a collection of twenty rare kritis of the Trinity

--**Kshetra Sangeetam Thanjavur** , based on her concert series

Vijayalakshmy has received many awards, including the **US Fulbright Fellowship in 2010**.

She worked with All India Radio as a **Programme executive** before joining Saregama India as **Executive Director**. Thereafter she was with **Worldspace** radio as a **freelance producer**.

Vijayalakshmy has also taught underprivileged children and under her series—**Music for a cause**—performs for special children and senior citizens.

www.vijayalakshmysubramaniam.com

+91 9952969538