

Review

Music technology: A perceptive prospect

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Carnatic Music is holistic and scientific with physics and mathematics. Nowadays songs are taught, not music. It is practiced as a copying art, but not with innovation. To alleviate this, concept oriented initiative by adopting modern frontiers of scientific knowledge under "Music Technology Courses" is conceived to unfathom the music doctrinaire treatise by R&D. Isolation of science and technology is unrealistic in modern technological society. Our living, legendaries, Dr. M. Balamurali Krishna (MBK) and Prof. Yella Venkateswara Rao (Yella) are testimony of creativity, among others. MBK made innovations, his music therapy gave new lease of life to M.G.Ramachandran (MGR) and became Chief Minister twice. Prof. Yella added new dimensions to the percussions and music therapy for physically challenged is yielding results. Music is useful for all ages. For children it improves intelligence, for working class relaxation and for the aged mental solace, bliss, tranquility and therapeutic value. Animal and plant yields increases by playing music. Research visionaries under Global scenario, have forecasted this millennium will have large-scale mental depressions. Music listening suggested to alleviate. Music Technology/Administration course up to PhD are in vogue in West. Music Technology (B.Tech, M.Tech and PhD) are to be taught as enshrined and enunciated. Job potential exists. Whosoever starts, they will be the first in India. These degrees are not only useful in music and allied but also useful in engineering discipline, including computers and also for other jobs, where a degree is a pre-requisite like in Civil services, Banks and allied.

Key words: Carnatic, karnatik, music, scientific basis concepts, concept oriented teaching learning, music technology.

INTRODUCTION

Carnatic music is supposedly to be known as a divine art. But a perusal with fresh look at a closer scrutiny with the available modern frontiers of knowledge, do depict that definitely its genesis stems out from a thoroughly based scientific concepts. Hence, amenable for technological adoption. Essential endeavor of this note is to impress upon the learned that music is a perfect science and hence this should be taught, learnt and practiced with modern scientific and technological up-dating. In essence, it is like a road map in facilitating desired target location with ease in a big city, otherwise a herculean task, perhaps a great miss too. Similarly road map in this context is concept oriented learning, as Music

Technology (B.Tech, M.Tech and Ph.D), so that things can be easily learnt with concept, thus helps in real creative learning as true artist, so that true Academicians, Researchers and Professionals will be produced and available to preserve, protect, promote and perform this Great Art skillfully for the present and to the posterity. As we know there is lot of treatise, which is unfathomed and needs R and D to fully explore and exploit. But the reason for not full utilization largely stems out due to the missing knowledge-link between the original creators and the present generation, mainly owing due to the cultural cut-off for best reasons known to all. With the result we are producing skilled artists but not true artists,

warranting re-establishing the missing knowledge-link.

CARNATIC MUSIC

The foundation of the CM is holistic and a derivative from Vedas in its classical form. Any form of melodious harmonics can be derived from CM, be whatever the musical style that is, Hindustani or Western or Light music etc. That is the centrality of CM. The cardinal three notes (Sa, Pa and Sa) were deduced from "AUM Kara or Pranava Nada" (Aa kara, U kara, Ma kara) as articulated by seven notes (Saptha Swaras, identified and extracted from the Nature's animal kingdom). Various frequency variations provide 12 workable basic notes (swaras). 'Ma' plays a Pivotal or Fulcrum role. With lower frequency 36 and with higher frequency another 36 (almost mirror imaging), 72 melakartha ragas (major scales) were derived, giving rise to 34,848 ragas in permutations and combinations (excluding many other variants). Dhandapani and Pattammal (2002), in their work 'Raga Pravaham' referred to literature and compiled swaras for about 5,000 ragas, whereas more than 300,000 ragas are theoretically possible. They also refer a thought provoking procedure on scientific naming of upangava ragas to name about 126,936 ragas.

Basic Talas are 7, with its 5 Variants comes to 35 or even goes beyond to 108, 175, 735 etc. In modern science we can define this entire acoustic or audio frequency analysis by connotation as a complex (sound) energy with the help of Digital Signal Processing for Music http://www.music.gatech.edu/ms_music_tech/curriculum, akin to fast fourier transform (FFT), wherein each broad frequency in essence by implication represents a melakartha and further micro-splitting (multi-frequencies) into several other ragas is explainable by harmonic (power spectrum) analysis. Thus physics and associated subtle and nanoscopic mathematics and beyond are the basis for CM in conceptualizing the sruti and laya (tala maths is highly complex and intricate). This great concept was visualized, conceptualized, perfected and professionally practiced, flawlessly, since ages. In fact with all modern developments we could almost add nothing, except by one or two to our predecessors efforts. Hence they were great Geniuses. CM genesis could be traced from Folk and Temple (devotional) music and Saint Thyagaraja systematized in its present form as available today and nourished by other two-trinity, as well. It is a common perception that the classical music is out of common man's range, precisely esoteric and common listeners are out of its ambit. This perception should be addressed for reversal. Lot more in this treatise is untapped, hence R and D is warranted (a notable fact).

LIVING LEGENDARIES

Balamurali (2005), a vocalist, discovered new Ragas and

a new Tala system it-self. When MGR was in deep coma and all hopes were lost and when final arrangements are being planned to dispose, Dr. MBK was allowed to see him through the glass of the Intensive Care Unit. He returned home and prepared a 9 minutes music therapy cassette. With MGR's wife's permission, he asked them to play non-stop, with time to time rewinding. After 18th play, he came into senses and became fit to travel to US for medical treatment. Later he became twice Chief Minister and lived long. Professor Yella Venkateswara Rao, Mrudangist, created Swaras and Musical Waves and Ragas and entered Guinness book of world records by playing simultaneously Saptha Mrudangas and Nava Mrudanga Vinyas, setting each Mrudagam in a particular Sruthi. He produced Vedic Hymens sounds by playing Mrudangas. His innovative music therapy for physically challenged, especially for mentally retarded is yielding good results in restoration of health to near normalcy. We recall the music trinity with great reverence for inspiration. These living legends are no way less. Both are recipients of several national and international prestigious awards, notably, emulatoe worthy. It is our duty to recognize this glaring fact.

Present scenario

Many are attracted towards cine or light music, because they can participate, appreciate and enjoy, thus popular. They are the melodious derivatives of the CM only. Unless CM base is strong enough and nourished, neither can an artist of any melodious musical form perform well nor can the existing teachers to teach well. Hence learning of CM is a mandatory requirement, which is on steep declining state. Thus, there exists a compelling immediate demand for remedial correction, with surgical precession to Preserve, Promote, Prefect, Practice Professionally with Academic blend associated with real R and D, the CM for the present and posterity, which our ancestors have gifted. Today music is taught with semblance than in its true form of semantics. This produces skilled artists, but not true artists. A mason can construct a building with good skills without knowing the engineering ingredients, but he cannot construct Sky-Cities, wherein, we require, true Architects and Civil Engineers. So is the case with music too. Present day teaching encompasses selective few ragas and kirtanas (in few tens only). So the performing artists are confined to those few. With the result, out of over 40,000 ragas we hardly hear ragas in few tens only, so as the case with kirthanas too, but with a difference either the artists change or change as a vocalist or instrumentalist or place. In this context this mute question needs to be addressed is how to solve. R and D according to Mallikarjuna (2007) is only the solution to achieve this unfathomed treatise to realize its fruits in its fullest extent. To achieve this objective concept oriented teaching and

learning is only the solution, just like the help of a road map in easy locating the desired location in a great city, without which, it is simply impossible. It is a fact. Mostly, so far, the Carnatic music is learnt as a part-time hobby, without much serious concern. Very few are becoming professionals. That is not enough. Real R and D in core music is need of the hour in alleviating the stagnant status. This needs reorientation with technological background. In the present declining scenario of Carnatic music listeners, learners and teachers, a road map with technological syllabus teaching should be in place as envisaged, enshrined and enunciated (facilitates creative learning) in the original musical doctrine, utilizing the modern technological aids in accomplishing the envisaged endeavor for the present and posterity to produce true self confident Academicians, Researchers and Professionals, instead of skilled force (as exists now), with assured income. A need of the hour and thus reiterated. Listeners should have knowledge to go along with the technicalities of the concert and in case if any wrong is presented, audience must be in a position to point out. This issue should be addressed which is good for all the concerned (teachers, students, artists, listeners and organizers etc.). In addition real R and D in core music will get reoriented for betterment on various counts, because Carnatic music is a Great treatise with unlimited utilities.

COMPUTERIZATION AND ENGINEERING

It is arguable that music is a fine art and hence can not be taught as Technology. This is a miss-concept. Science invents; Technology adopts and then Engineered, the end product termed as fine art. In ultimate analysis, all activities will end-up as fine arts only. An idol of a presiding deity of a temple, sculptured by humans is a resultant composite culmination with full of maths, science, engineering and technology in the final form of magnificent idol and what we see in its finality as a great art. So is the case of many medical surgeries or many great paints. A simple X-Y (Jagannath, 2008) plot of presentation of Pitch notation (sahityam / swara notes) vs Surthi and Laya (tala) vis-a-vis raga graphic signatures (like ECG) are glaring testimony to define it as a definite science. An audio-video display out-put, really can help all artists, including learners to adhere to the path of correctness and accuracy. All carnatic music cardinal elements computerization with audio-video out-put of Swaras with all its variations, Ragas, Talas, Siruthis etc., are possible today with modern technology. The raga classification initially be attempted by data capture, storage and retrieval tools, followed by the development of suitable algorithm formulation. Computer aided educational instruction is possible. The generated, audio-video out-put play or display will be of immense help to all. Hence implementing this science as an engineering out-put we need technological innovative R and D.

Instrumentation R and D is an excellent domain. Few fruits are already in place like Sruthi and Laya boxes, Key board options, Learning through Skype etc. Audi-Video engineering can help better theatre management, reproduction etc. These are not possible by conventional skilled artists, because they need to be educated and re-orientated with modern approach. Hence, this technological adoption is mandatory.

Marketing strategies

The vital issue is how to market the CM? It has been proved beyond doubt by R and D studies all over the world that that music is useful for all ages. In children and students learning music increase IQ, memory power, concentration, creativity, innovation and inculcate discipline. The twin components of CM with aesthetic melody and composition (sahityam) provides inadvertent religious component too (Bhakti), thus the twin objective of entertainment and health are ensured. Listening music by working class and middle aged provides mental relaxation, which keeps them healthy. And for aged listening music provides mental relaxation (including bliss, solace etc.), time pass and healthy entertainment, therapeutic value, including for physically challenged, especially for mentally retarded etc. Visionaries have already forecasted emergence of "Large scale mental depressions, due to life style change" is inevitable in this millennium. To circumvent this problem the best solution would be simply listening music. It is not out of place to mention that musical play on animals and plants significantly do increases the yield. Hence these useful elements need to be emphasized during marketing, so that the entire spectrum of people (all ages), plants and animals are thus covered.

It may not be out of place to mention that it is desirable that the introduction of music as a compulsory subject from class 5th to 10th, followed by an optional elective in Intermediate and Graduation is suggested, so that children can frame their mind set to pursue music as a regular course and at PG and Ph.D levels to nourish further, if they desire. This aspect, has to be impressed upon the parents, children and educationalists, decision and policy makers, so that children can become intelligent, innovative and hard working students in any chosen field (even other than music like science, arts, engineering, commerce, medicine, etc.) with committed human values, finally, a good reward in terms academic learning and professionalism. It is appropriate to recall the US UG and PG courses in Music Administration, which will take care of all such related aspects.

Justification

Introduction of Music Technology up to Ph.D and beyond holds certainty in centrality. It encompasses all the

essential pre-requisite ingredients. The true emphasis should be on only concept oriented learning with creativity and ingenuity, but not as a mimicry or imitative or copying art, as is in vogue, nowadays. Parents, Teachers and Students should not be eager to give stage concert, unless and otherwise qualified in its fullest sense, as per norms. In the present un-employment scenario this can attract lot of students as the job potential and guarantee exists, provided the message goes to the public in the right earnest way. Mandatory Check of Music Aptitude and Ability test before entrance test is a must. Scholarly learned to draft a suitable syllabus for Vocal, Instrumental and Percussion etc.

Course centrality design should encompass, essentially, augmentation and integration of concept oriented creative learning of all the 72 Melkatha Ragas as envisaged, enshrined and enunciated in the original musical doctrine (Balamuralikrishna, 2005), utilizing the modern technological aids in accomplishing this envisaged endeavor for the present and posterity to produce true self confident Academicians, Researchers and Professionals with assured financial earning capacities, which is the need of the hour. End of each semester one month and full final year should include practical training under a renowned professionals and organizations, including assisting the main performing artist and individually on the stage, radio, TV etc. If, Music Technology degree holders wish to take-up a job unrelated to music, they can do so, under any degree is a pre-requisite, as, these degrees are at par in academics with other degrees being awarded by Universities.

BROAD SYLLABUS OUTLINE

English for Professionals, Engineering Mathematics, Engineering Physics, Engineering Drawing, Indian Culture, Genesis and Evolution of Music and Fine arts, Design aspects of various musical instruments, Computer basics, Programming, Data bases, Computer Multi-Media and other utilities, Introduction of Cardinal Concepts of Carnatic Music with Concept Oriented Creative Teaching of all the 72 Melakatha Ragas with illustrations (starting with easy ones and slowly ascending towards difficult ones), Physical fitness (Yoga and Meditation), Concepts of Digital Signal Processing vis-à-vis Sound Energy analysis vs Carnatic music ragas and Talas classification, Sanskrit, Applied Literature (Music), Vaggeya karakas, Electronics and Instrumentation, Moral-Ethical-Human values, Sama-Yajur Vedas as applied to Music-Tala essentials, Music Prosody, Concert's Musical Content planning and Organizing, Other Musical forms, Computer aided Audio and Video Engineering, Project work with thesis in core music content and live audio and video artist performances recordings, Carnatic Music Computerization. Last one year internship as live performing artist, including full-pledged performances under the umbrella of more than two renowned Organizations.

MUSIC TECHNOLOGY IN WESTERN COUNTRIES

In US Bachelor and Master of Science in Music Technology (http://www.music.gatech.edu/ms_music_tech/overview) and Music Business Administration (<http://www.durhamcollege.ca/programs/music-business-administration-music-business-management/>) and (http://www.ontariocolleges.ca/SearchResults/ARTS-CULTURE-MUSIC-BUSINESS/_/N-lh8f) are in vogue (Indian equivalents of B.Tech, M.Tech, BBA and MBA). In UK: Music Technology (<http://www.kent.ac.uk/careers/musicprod.htm>) and (<http://www.kcollege.ac.uk/courses-in-kent/music-courses/744-level-2/8847-btec-level-2-in-music-technology.html>) and BSc (Hons) (<http://www.derby.ac.uk/music-technology-and-production-bsc-hons>) and (<http://www.herts.ac.uk/courses/Music-Technology.cfm>) (Indian Equivalent of B.Tech). Several websites on "Music Technology" are available and one can search through.

CONCLUSION

Music evolved on scientific basis (Janakiraman, 2008; Iyengar, 2003). A fact, it is inevitable to replace the current copying art with concept orientated teaching and learning, with adoption of modern frontiers of knowledge. Science and technology are inseparable in our present modern technological society. Music Technology will entail production of creative and innovative artists, who will be endowed with R and D spirit to unfathom this great treatise for societal needs, including therapeutic and in furtherance. Production of skilled artists also is been continued.

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