

Preface

Music is “nothing but the organized sounds”.

It employs consonance for a pleasant and bright effect. Sound being the medium of music, physical laws of harmony prevail in every aesthetic scheme of the same. Music is a dual entity and, though an art by nature, is a science as an exigency or need. As a science it has to follow the fundamental laws of musical sound which are the result of purely physical causes & observation and, therefore, are universally true. However, as an art it follows the aesthetic taste, expertise, methods prevalent in a culture in which it flourishes, which vary from place to place and, therefore, cannot obviously be applicable universally. The development of scientific side of music had immensely widened the scope of the intellectual element in music while the emotional side is governed by the physical, psychological and cultural associations of mankind.

Indian system has always restricted its attention to the consideration of the melodic & harmonic relationship between notes (swaras) and the interpretation of their aesthetic value. Hence in India, the science of music means the science of classical music only. In fact the harmonically poor forms of music have really no science of their own. Ignorance of perfect knowledge of the acoustic laws, poor & faulty accompaniment and want of fineness in performance are usually responsible for the poor musical effect of the early forms of music. However, with growing understanding and knowledge of acoustic laws, music has always evolved in to a higher form. Thus from speech evolved recitation and verse, from recitation and verse, the folk songs and from folk songs, the songs of classical type. It is then apparent that a study of the science of classical music may provide a rational basis for explaining and understanding the development of the entire structure of music both classical and non classical. Consequently, there is no further necessity of extending our investigation beyond considering the essential features and processes of classical Indian music alone.

‘Raaga’ (राग) the unique feature of Indian music and its appeal to emotion has captured the minds and hearts of art pilgrims all over the world. However, the fundamental concepts of consonance and dissonance, which are employed to build a ‘Raaga’, are the same, which are universally applicable to all the music systems. The rules that differ from system to system and prima facie appear arbitrary become clear

once their rationale is understood. The understanding of this rationale lays the foundation of the laws of science of music in general.

The quest to know such rationale and understanding of these laws of science of music has given birth to the present work of study and research by the author in the year 2000, when the researcher had started taking up the formal lessons in vocal music in Sri Ram Bharatiya Kala Kendra, New Delhi. His background of Physics and Electronics engineering had helped him a lot in appreciating the subject better. The exposure of Acoustic Engineering, which deals with various principles governing the nature of sound and which also was the part of the subject matter of engineering graduation of the researcher, virtually forced him to become further inquisitive about the above subject. He, thereafter, attended many formal & informal seminars organized by Sangeet Natak Academy, New Delhi, Indian Musicological Society, Mumbai, Dept. of Music, University of Mumbai etc. and also attended the live performance of almost all the legendary performers in the field of Raaga music including Pt.Jasraj (Vocal music), Pt.Hari Prasad Chaurasia (Flute), Pt. Shiv Kumar Sharma (Santoor), Ustad Amzad Ali Khan (Sarod), Pt.Debu Chaudhari (Sitar), Bharat Ratna Ustade Bismillah Khan (Shahnai), Padma Bhushan Pt.Rajan Sajan Mishra (Vocal music), Pt.Ram Narayan (Saarang), Pt Srinivas (Mandolin, Carnatic music), Dr.Ms.N.Rajam (Violin), Begum Parveen Sultana (Vocal music), Pt.Ajay Chakravorty (Vocal music), Ms.Kishori Amonkar (Vocal music), Ustade Sujaat Khan (Sitar), German symphonies orchestra and Jazz performances organized in ICCR presentations etc, in the last 10-12 years. While the exposure in various seminars broadened his theoretical base, the live performance of the above artists helped him to appreciate the aesthetics of various musical patterns employed by them better, particularly in Hindustani music. The researcher, in between, had also taken up the formal study of the subject further & studied up to the Master of Arts degree in Classical Vocal music from Rabindra Bharati University, Kolkata in the year 2006.

Objectives of the study;

The main objective of the study has been to understand the various processes involved, both scientific & aesthetic, in the formation of Raagas in Indian music, mainly Hindustani Music, right from the inception of this term Raaga, its historical background etc and to see the possibility of existence of inverse relationships (explained in the later part of the document) in various Raagas.

In simple words, 'Raaga' is a melodic law or order. Technically, it is a swara pattern obeying the laws of consonances & dissonances. The present study undertakes to examine the existence & validity of inverse Raaga scales formed by the audio mirror images of the already established Raagas in the background of all the above mentioned general rules of the formation of Raagas and also it tries to ascertain, if the new inverse Raaga scales do have any independent aesthetic appeal and character, personality of their own etc.

The principles of consonance & dissonance, being mathematical in nature, are universal in their applicability. The present study has tried to examine if the concept of mirror images of audio patterns of Raagas discussed above as used in Indian Music, is also applicable to the other systems of the world also viz; Chinese, Arabian & mainly in the Western system which is based on harmony and chords. It has been seen that this concept of musical inverses has universal applicability as it is based on principles, which are scientific in nature and are applicable all over like all other principles of science such as Newton's laws of motion in Physics, Pythagoras theorem of right angle triangles in Geometry & Trigonometry etc.

Researcher's contribution;

The researcher had a fair idea of both the subject of Physics and Music as he had passed his Master degree of Engineering in the subject of Electronics Engineering and Master of Arts degree in Vocal Music. Also, while in Delhi, Mumbai and in West Bengal, the researcher had the opportunity to attend to the live in concerts of many exponents of Indian classical music, Carnatic music and Western music etc. The researcher also had the opportunity to attend to the various seminars on the subject of Raaga music and Musicology in Delhi, Mumbai, Siliguri-West Bengal and Kolkata. This had given him an opportunity to interact with many renowned personalities on the subject including Dr.S.A.S.Durga, a world renowned musicologist from Chennai, Padma Bhushan, Prof. R.C.Mehta, ex-president of Indian Musicology Society, Padma Bhushan Prof Dr (Mrs) N.Rajam, a world renowned Violinist and ex Dean dept of Music, BHU, Varanasi, Dr.Vidya Dhar Vyas, ex-Principal, Department of Music, University of Mumbai, Dr.Ashok Ranade, a world renowned authority on Indian Musicology & music and also the performing artists on Raaga music including Sangeet Martand Pt. Jasraj and others. During the various such interactions with the above personalities the subject of the present study was also discussed in detail.

Barring Pt. Shiv Kumar Sharma (Santoor), all other scholars were very positive about the idea of exploring the existence of the Inverse Raagas. Pt. Sharma too, though had agreed on the idea of the present work in principle, but was of the view that since already there are many established Raagas for which one will take more than a life time to master, there is hardly any need for further exploration of the new Raagas even if they were found to be melodious and having the independent existence etc. The concept of inverse relationship of Raaga was also presented by the researcher in an International seminar at National Center of Performing Arts, Mumbai in January, 2010, wherein it was accepted and appreciated by the audience, which included Padma Bhushan, Prof. R.C.Mehta, Dr.S.A.S.Durga, Ms.Shubha Mudgal, Ud Zakir Hussein, Ms.Anita Sai Ram, Pt.Arvind Parikh, Prof Richards Widdess (Professor of Musicology, University of London) , Prof.Wim Van der Meer, associate professor, University of Amsterdam and many others in the field of music.

Since, the researcher had the opportunity to get the exposure on both the scientific and the artistic aspects of Indian music, it was comparatively easy for him to combine the knowledge of both the two entirely different fields of Physics & Music and come out with the present concept of the ‘inverses’, which is unique and revolutionary in nature. Also the work done in the present study has not been done anywhere in India or abroad so far, which is evident from the non availability of virtually any literature on the subject. Since the subject is new, it was very difficult for the researcher to get it across to the performing artists, who generally had not been exposed to the scientific side of the music in that detail and had a particular scheme of using various swaras of the Raaga, which they had been keeping in mind for designing their performances etc. However, the musicologists readily accepted the idea, this being totally different and new, and they had also confirmed that it has not been dealt and deliberated so far anywhere in the world.

The entire writing work of the study has also been done by the researcher himself. However, at places where the contents had been taken from the other sources, published or unpublished and reproduced in the work, the same has been done only to authenticate the statements made in the study and to explain a specific point of view. Also, every such reproduction has adequately & properly been acknowledged in the reference section.

The data base of all the existing raagas has been made by using MS Access, an application of MS Word on Window 7 environment, on a Personal Computer. The

inverse raagas patterns have been derived by the researcher using the above discussed principles and the matching of those inverse raaga patterns with the existing raagas has been done with the help of a program on the Personal Computer. This has not only made the process of matching faster but, also has made it possible to avoid manual mistakes to a very large extent. Because of this, the researcher feels, the results drawn in the study had been sufficiently reliable.

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