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EXISTENCE OF INVERSE RAGA SCALES OF HINDUSTANI SYSTEMS
OF INDIAN MUSIC



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Short Profile

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ABSTRACT:

'Raaga' 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 of the world. The raaga system is the most unique and glorious feature of Indian music. It may not be hyperbolic to say that it makes the very backbone of our musical system as no form of our music, whether classical or light, can have their existence without it.

KEYWORDS

Indian music , scientifically , Inverse Raga Scales , Hindustani Systems .

INTRODUCTION

The raaga system is no doubt the most complicated and scientifically evolved feature of our music. Though, originally the talented artists took their inspirations from the simple folk songs but their creative genius, their constant search for finding something marvel and beautiful and their powerful desire for self expression has given rise to the thousands of artistic patterns and hundreds of scales of music. Simultaneously, the scientists also had kept themselves busy in discovering some law and order i.e. the basic principles governing the structure of raagas and prepared its grammar and tried to bring the art under the flow of scientific order and had given the art of music, a science and discipline of raaga. But, it was not in the artist's nature to remain bound within the rigid discipline of the science. He, therefore, deviated very often from these rigid rules and gave birth to new and original combinations of swaras/notes to create various melodies. Scientists, in their turn found out new scientific basis for such deviations and also kept on making the scientific theories more & more general which had/could have had wider applicability.

With this background in mind and listening to many live concerts of the legendary performers it had been observed that only the selected few raaga scales had been performed by the different artists, whether they were vocalists or instrumentalists. Artists of Carnatic music also were found repeating the selected few raagas in their performances. However, while analyzing these raaga scales in the light of scientific rules, which govern the laws of sound, the researcher had felt & experienced that many popular raagas are very closely related with one another. For example if the sequence of music intervals of swaras used in raaga Bhupali (Sa,Re,Ga,Pa,Dha,Sa) are reversed keeping the tonics 'Sa' as the base, we get swaras of one other very popular raaga i.e. raaga Malkaus (Sa, komal Ga, Ma, komal Dha, komal Ni, Sa) which itself is one of the established raagas and is as melodic in nature as raaga Bhupali. (the process & logic of reversal of order has been explained in detail later in the document).

It was seen that the resemblance in these two raagas is of similar nature as that of one object & its visual mirror image. We all know that the mirror image of an object has the same ratios of its length & breadth as that of the object itself, the change only takes place in its orientation as the left side/lower side of the object becomes the right side/upper side of the mirror image & vice versa, keeping all other proportions/ratios among various other parts of the picture, the same. Also, that the mirror image keeps the basic visual appeal of the original object. In raagas and melodies too, while reversing the order of swaras/notes, the music intervals of both the original & the mirror image remain the same, and it is only the order of the swaras i.e. their sequence that changes from aarohi/avrohi (ascending/descending) to avrohi/aarohi (descending/ascending), keeping the intervals between them intact and thereby keeping the tonal ratios/proportions between them also intact.

Similar observations had also been made while reversing the sequence of musical intervals of swaras used in raaga Durga (Sa,Re,Ma,Pa, Dha,Sa). In doing so the Swaras of raaga Dhani (Sa, komal Ga, Ma, Pa, komal Ni, Sa), which also is an established Raaga were found. Such observations had also been made in few of the raagas used in Carnatic music, such as raaga Hindolam & Mohana where, the sequence of musical intervals of swaras used in both raagas are the mirror images of one another.

It was seen that such pair of raagas are related with one another in the same way as that of the visual mirror images of any object, as explained above and therefore they could, on the similar analogy, be termed as the audio mirror images of one another. Such raaga pairs though would be having the same musical intervals between their various swaras but will have a totally different audio appeal. This

phenomenon will be in the same way as the mirror images of a tree or a bus; though their mirror images have the same proportions of length & breadth as the original object but, they have a totally different visual appeal than their originals.

Though the theory, that the two swaras having one particular harmonic relationship will have the same degree of consonance or dissonance, even when the harmonic relationship between them is reversed, has been propounded by the earliest mathematicians of 3rd century B.C, the great Greek mathematician, Pythagoras was the first scholar to suggest the following cyclic musical scale based on the above principle.

$F \pm C \pm G \pm B \pm A \pm E \pm B$ i.e. $Ma \pm Sa \pm Pa \pm Re \pm Dha \pm Ga \pm Ni$

In this scale, the positive ascending order (ascending 5th) is of swaras

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 $F + C + G + D + A + E + B$ i.e. $Ma + SA + Pa + Re + Dha + Ga + Ni$

& the negative descending order of fifth (i.e. descending 5th) is

$F - C - G - D - A - E - B$ i.e. $Ma - Sa - Pa - Re - Dha - Ga - Ni$.

By following the same principle we get the Inverse order of the Raaga which have their unique aesthetic appeal.

This concept has been discussed by many scholars of musicology at many forums which include a seminar of Psychology of Music held at Pune in 1975 and thereafter a seminar on Musicology in 1980 held at IIT Madras.

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