Chords for the Arohana and Avarohana of the Ragas of Indu and Rishi Chakra

Thesis submitted in partial fulfilment of the

Degree of Master of Arts

By

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DECLARATION

DECLARATION

I declare that the dissertation entitled, "**Chords for the Arohana and Avarohana of the Ragas of Indu and Rishi Chakra",** submitted by me for the degree of **Master of Arts in Music**, is the record of work carried out by me, **Sreemeera.M** during the year 2020-2022 from under the guidance of **Dr.V.Janaka Maya Devi, Professor, Head,** Department of Music, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore-641043 and has not formed the basis for the award of any Degree, Diploma, Associateship, Fellowship, Titles in this University or any other University or Institution of higher learning.

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CERTIFICATE

CERTIFICATE FROM THE SUPERVISOR

I certify that the dissertation entitled, "**Chords for the Arohana and Avarohana of the Ragas of Indu and Rishi Chakra"** submitted for thedegree of **Master of Arts in music** by **Sreemeera.M** is the record of research work carried out by her during the period from 2020-2022 under my guidance and supervision and that this work has not formed the basis for the award of any Degree, Diploma, Associateship, Fellowship or other Titles in this University or any other University or Institute of higher learning.

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CONTENT

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INTRODUCTION

INTRODUCTION

Carnatic music, known as Karnataka sangita or Karnataka sangitam in the South Indian languages, is a system of music commonly associated with South India, including the modern Indian states of Karnataka, Andhra Pradesh, Telangana, Kerala and Tamil Nadu, and Sri Lanka. Carnatic music is very rich in Melody. It consists of numerous ragas creating an exotic Melody. Ragas are melodic framework consisting a succession of pitches. There are two systems in music. The first one is melodic system and the second one is harmonic system. The melodic system consists of linear arrangement of pitches whereas the harmonic system consists of polyphonous arrangement of pitches. Carnatic music has only melodic system but it is far superior than any other melodic systems in the world. The melodic system of carnatic music is complex and consists of microtones and intricate ornamentations also called as gamakas. A similar music system which is as evolved as carnatic music is Western classical music. It has both melodic and Harmonic system. Unlike carnatic music it doesn't have a complex Melody but it has a well developed harmonic system. This work deals with the fusion of components of Western music and carnatic music.

Aim of the study

This study aims to highlight the concept of creating chords for the Arohana and Avarohana of the ragas of Indu and Rishi chakra.

Limitation

This work is limited to the use of only Indu and Rishi chakra of melakarta raga system but it can be easily adapted to other melakarta chakras as well.

This work is limited to the use of only melakarta system. The other kinds of ragas in carnatic music such has janya raga, vakra raga etc has not been included.

Methodology

The researcher analysis the concept of harmonising melakarta raga using Western classical music chords. Having collected data from various books, this work involves descriptive method. The analysis of chords extends the experimental method.

Sources

The secondary sources are collected from the library

1. Avinashilingam Institute of Home science and Higher Education for Women, Coimbatore

Objective

To create bridge between Carnatic music and Western classical music

To create a foundation for Harmony in Melakarta system

Chapterization

In this work there are four chapters excluding Introduction and Conclusion.

The chapters are

1. **72 Melakarta Raga system**: This chapter deals with the history, rules for a melakarta Raga and it's classification.

2. **Harmonising Arohana and Avarohana of a melakarta Raga**: This chapter deals with the components of Harmony and an

3. **Chords for the Arohana and Avarohana of Indu chakra**: This chapter deals in detail about the chords for the Arohana and Avarohana of the six ragas in Indu chakra

4. **Chords for the Arohana and Avarohana of rishi chakra**: This chapter deals in detail about the chords for the Arohana and Avarohana of the six ragas in Rishi chakra

In the end of the thesis an appropriate bibliography has been given.

CHAPTER 1

72 MELAKARTA RAGA SYSTEM

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INTRODUCTION

The literary meaning of the word 'Mela' is combination of svaras. Musical scales with the potential to generate new ragas or melodies are called as mela. Melakarta ragas are fundamental ragas from which other ragas may be generated. For this reason the melakarta ragas are also known as janaka (parent) ragas. Melakarta ragas are also known as Sampoorna ragas as they contain all seven svaras (notes) of the octave in both the ascending and the descending mode. There are 72 melakarta ragas and they are arranged according to a definite plan. This plan of arrangement helps one to give the svaras taken by any one of the 72 mela ragas without difficulty. The scheme of 72 parent modes is mathematically and logically accurate and is based on the universally recognised twelve semitones of the gamut. The fixed notes sa and pa are present in all the 72 karta ragas and serve to give a certain fixity to their melodic character.

1.1 RULES FOR MELAKARTA RAGA

The four characteristic features of a janaka raga are :-

(1) The Sampurna character of the arohana and avarohana ; i.e., the full complement of the seven notes being represented in both the ascent and the descent.

(2) The ashtaka character of the Arohana and Avarohana. i.e. taking srgmpdns-śndpmgrs .Nadanamakriya taking srgmpdn-ndpmgrsn, though has a sampurna ascent and descent, still is not a mela, since it lacks the ashtaka character.

(3) The krama sampurna character of the arohana and avarohana ; i.e., the ascent and descent being regular i.e.,in the sarala gati or krama gati and not zigzag or vakra. In other words, taking the arohana and avarohana separately, each svara letter occurring only once.

(4) The homogeneous character of the svaras in both the arohana and avarohana ; i.e., the individual svaras being of the same kind in both the ascent and descent.

1.2 HISTORY

The mela system of ragas was first propounded by Raamamaatya in his work Svaramelakalanidhi c. 1550**.** [1] He is considered the father of mela system of ragas. Later, Venkatamakhi, a gifted musicologist in the 17th century, expounded a new mela system known today as melakarta in his work Chaturdandi Prakaasikaa. He made some bold and controversial claims and defined somewhat arbitrarily 6 svaras from the known 12 semitones, at that time, to arrive at 72 melakarta ragas. The controversial parts relate to double counting of R2 (and similar svaras) and his exclusive selection of madyamas for which there is no specific reasoning (also known as asampurna melas as opposed to sampurna ragas). However, today the 72 melakarta ragas use a standardized pattern, unlike Venkatamakhi's pattern, and have gained a significant following. Govindhacharya is credited with the standardization of rules and known for giving different names for standard ragas that have a different structure but the same svaras as those proposed by Venkatamakhi.

1.3 THE SCHEME

The 72 melakarta ragas are grouped under twelve chakras, each chakra comprising within it six mela ragas, The scheme is divided into two halves. In the first half which includes Chakras I to VI and the melas 1-36, the suddha madhyama occurs as a constant note and in the second half, which includes Chakras VII to XII and melas 37 - 72, the prati madhyama occurs as a constant note. For this reason, the first six chakras are referred to as the Suddha madhyama chakras and the second six chakras as the Prati madhyama chakras. The first half or the suddha madhyama half is referred to as the purva group and the second half or the prati madhyama half as the uttara group. Every purva melakarta has its corresponding uttara melakarta and vice versa. The note ma is thus the bisecting line in the melakarta scheme. The uttara half is a repetition of the purva half, with the difference that the prati madhyama takes the place of the suddha madhyama.

Each melakarta raga has a different scale. This scheme envisages the lower Sa (Keezh Shadja), upper Sa (Mael Shadja) and Pa (Panchama) as fixed svaras, with the Ma (Madhyama) having two variants and the remaining svaras Ri (Rishabha), Ga (Gandhaara), Dha (Dhaivata) and Ni (Nishaada) as having three variants each. This

leads to 72 seven-note combinations (scales) referred to as the Melakarta ragas as follows. There are twelve semitones of the octave S, R1, R2=G1, R3=G2, G3, M1, M2, P, D1, D2=N1, D3=N2, N3. Finding melakarta ragas is a mathematical process. By following a simple set of rules one can find the corresponding raga and the scale associated with it.

1.4 KATAPAYADI SANKHYA

The Katapayadi sankhya is a way of determining the number of a melakarta ragam from the first two syllables of the name of the raga.[2] To use the sankhya, take the first two syllables of the name of the ragam, and locate the corresponding columns on the table. Then take the two numbers and reverse them to get the mela number.

KATAPAYADI FORMULA	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**0**
Kadi nava (a series of 9 letters from ka)	K	KH	G	GH	NG	CH	CHH	J	JH	JN
Tadinava (aseries of 9 letters from ta)	T	TH	D	DH	N	T	TH	D	DH	N
Padi pancha (a series of 5 letters from pa)	P	PH	B	BH	M	-	-	-	-	-
Yadyaksha (a series of 8 letters from ya)	Y	R	L	V	S	SH	S	H	-	-

Example I.

Suppose the name of the melakarta whose serial number to be determined is Harikambhoji

The first two syllables of this raga are ha and ri ; ha occurs in column 8 and ri or ra in columa 2; the resulting figure is therefore 82. Now reverse this number; the result is 28. The serial number of the Harikambhoji melakarta is thus 28.

Example II.

Suppose the serial number of the melakarta, Namanarayani is to be determined :

The first two syllables herein are n and ma and they give the figure 05. By reversing this we get 50. 50 is thus the serial number of the melakarta,Namandrayani.

Other examples may be worked out similarly.

Where samyuktaksharasa or conjunct consonants figure in the Katapayadi prefixes, the rule is, that the second or the last component letter of the conjunct consonant (i.e. the consonant immediately preceding the vowel) should be taken into consideration. Thus in Ratnangi, Suryakanta, Jhankaradhvani, Gangeyabhushani, Shadvidhamargini, Shanmukhapriya, Dharmavati and Kanta mani, the correct serial numbers are obtained in this manner.

But in the case of the following melakartas :

Chakravaka, Divyamani, Visvambhari, Syamalangi, Simhendra madhyama, Chitrambari and Jyotisvarupini, the first component letter of the concerned conjunct consonant has to be taken (as shown in the following table), in order that the application of the katapayadi formula might give the correct serial number. Thus these mela names were hurriedly coined and constitute an exception to the katapayadi rule.

NAME OF THE MELAKARTA	NUMBER	**NUMBER AFTER REVERSAL**
Cha kra vaka	6 1	16
Di vya mani	8 4	48
Vi svam bhari	4 5	54
Sya ma langi	5 5	55
Si mhendra madhyama	7 5	57
Chi tra mbari	6 6	66
Jyo ti svarupini	8 6	68

The katapayadi prefixes are the key syllables for determining the serial numbers of melas. Since the application of the Katapayadi formula is confined to consonants, the mela names have necessarily to begin with the consonants and not with vowels

1.5 CHAKRA

The 72 Melakarta ragas are split into 12 groups called chakras, each containing 6 ragas. The name of each of the 12 chakras suggest their ordinal number as well. Indu, Netra, Agni, Veda, Bana, Rutu, Rishi, Vasu, Brahma, Dishi, Rudra, Aditya are the names of the chakra[3].

1. Indu means moon and there is only one moon. The name naturally suggests the number one, for the first chakra.
2. Netra means eyes and all livingbeings have two eyes. The name naturally suggests the number two, for the second chakra.
3. Agni stands for number three, suggesting the three sacrificial fires, Dakshina, Aahavaniya and Gaarhapataya
4. Veda stands for number four. There are four vedas; Rig, Yaju, Saama, Atharvana
5. Bana stands for number five. The pancha banas of Manmatha or the five arrows of Cupid are the five kinds of flowers; Lotus, Mango, Asoka, Jasmine, Blue water-lilly
6. Rutu stands for number six. The shadrutus or the six seasons of the ear, according to the Indian calender are Vasanta, Grishma, Varsha, Saara, Hemanta, Sisir
7. Rishi stands for number seven. The saptha rishis being Vasishta, Gautama, Bharadwaja, Vishwamithra, Jamadagani, Kasyapa, Atri
8. Vasu stands for number 8. The ashta vasus are Aapa, Dhruva, Soma, Dhare, Anila, Anala, Pradyusha, Prabhasa
9. Brahma stands for number nine.the navabrahmas or 9 prajapathis are Vasishta, Angirasa, Atri, Kasyapa, Pulastya, Plaha, Brigu, Marichi, Daksha
10. Dishi suggests the number ten. It represents the ten directions: North, South, East, West, North west, South west, North east, South east, Above (Akaasa), Below (Paataala)

11. Rudra stands for number eleven. It represents the concept of ekadasa rudras in the sacred literature: Aja, Ekapaata, Ahirbhudni, Dvasha, Rudra, Hara, Sambhu, Tryambakha, Aparaajitha, Isaana, Tribhuvana
12. Aditya stands for number twelve. It represents the concept of dvadasa adityas. They are, Mitra, Ravi, Surya,Bhaanu, Bhaga, Pusha, Hiranyagharba, Marchi, Adithya, Savitra, Arka, Bhaskara

1.6 MNEMONIC SYLLABLE

PA	SRI	GO	BHU	MA	SHA

The syllables, mnemonically represent the first, second, third, fourth, fifth and sixth melas of each chakra. These may be styled the mela mnemonics. These syllables by themselves indicate the numbers 1, 2, 3 4, 5, and 6 according to the Katapayadi formula Thus, when these syllables are tacked on to the chakra names, one can calculate the serial numbers of the melas. Thus netra-pa, netra- sri, netra-go, netra-bhu, netra- ma and netra-sha signify respectively the melakartas of serial numbers, 7, 8, 9, 10, 11 and 12. Again agni-go stands for the third mela in the III chakra and is the 15th mela, Mayamalavagaula ; bana-bhu stands for the 4th mela in the V chakra and is the 28th mela, Harikambhoji and so on. It may be noted that in the phrases: agni-go and bana-bhu, the name of the chakra gives the clue to the purvanga svaras and the mela mnemonic, to the uttaranga svaras of the melakarta.

1.7 TABLE OF 72 MELAKARTA RAGA

CHAKRA NO. AND NAME	**PURVANGA SVARAS**	**UTTARANGA SVARAS**	**NAME OF THE MELAKARTA AND ITS SERIAL NUMBER**
I INDU	ra-ga	dha - na dha - ni dha - nu	1. Kanakangi 2. Ratnangi 3. Ganamurti

		dhi - ni dhi - nu dhu - nu	4. Vanaspati 5. Manavati 6. Tanarupi
II NETRA	ra-gi	dha - na dha - ni dha - nu dhi - ni dhi - nu dhu - nu	7. Senavati 8. Hanumattodi 9. Dhenuka 10. Natakapriya 11. Kokilapriya 12. Rupavati
III AGNI	ra-gu	dha - na dha - ni dha - nu dhi - ni dhi - nu dhu - nu	13. Gayakapriya 14. Vakulabharanam 15. Mayamalavagaula 16. Chakravakam 17. Suryakantam 18. Hatakambari
IV VEDA	ri-gi	dha - na dha - ni dha - nu dhi - ni dhi - nu dhu - nu	19. Jhankaradhvani 20. Natabhairavi 21. Kiravani 22. Kharaharapriya 23. Gaurimanohari 24. Varunapriya
V BANA	ri-gu	dha - na dha - ni dha - nu dhi - ni dhi - nu dhu - nu	25. Mararanjani 26. Charukeshi 27. Sarasangi 28. Harikhamboji 29. Dhirasankarabharana 30. Naganadini
VI RUTU	ru-gu	dha - na dha - ni dha - nu dhi - ni dhi - nu dhu - nu	31. Yagapriya 32. Ragavardhani 33. Gangeyabhusani 34. Vagadhibhusani 35. Sulini 36. Chalanata

VII RISHI	ra-ga	dha - na dha - ni dha - nu dhi - ni dhi - nu dhu - nu	37. Salagam 38. Jalarnavam 39. Jhalavarali 40. Navanitam 41. Pavani 42. Raghupriya
VIII VASU	ra-gi	dha - na dha - ni dha - nu dhi - ni dhi - nu dhu - nu	43. Gavambhodi 44. Bhavapriya 45. Subhapantuvarali 46. Sadvidhamatgini 47. Suvarnangi 48. Divyamani
IX BRAHMA	ra-gu	dha - na dha - ni dha - nu dhi - ni dhi - nu dhu - nu	49. Dhavalambari 50. Namanarayani 51. Kamavardhani 52. Ramapriya 53. Gamanasrama 54. Visvambari
X DISI	ri-gi	dha - na dha - ni dha - nu dhi - ni dhi - nu dhu - nu	55. Syamalangi 56. Sanmukhapriya 57. Simhendramadhyama 58. Hemavati 59. Dharmavati 60. Nitimati
XI RUDRA	ri-gu	dha - na dha - ni dha - nu dhi - ni dhi - nu dhu - nu	61. Kantamani 62. Risabhapriya 63. Lantangi 64. Vachaspati 65. Mechakalyani 66. Chitrambari
XII ADITYA	ru-gu	dha - na dha - ni dha - nu	67. Sucharitra 68. Jyotisvarupini 69. Dhatuvardhani

		dhi - ni dhi - nu dhu - nu	70. Nasikabhusani 71. Kosalam 72. Rasikapriya

1.8 UTILITY OF THE SCHEME

The utility of the scheme lies in the fact that, from the serial number of a melakarta raga, one can readily find the svaras taken by it.

1.8.1 Suddha madhyama raga:

Suppose the svaras of the 27th melakarta are to be determined ; proceed as follows:

(1) Insert the svaras : sa, pa and the higher octave sa in their appropriate places leaving blank spaces for the remaining svaras as follows:
sa - - - pa - - sa

(2) Notice whether the given number belongs to the purva group or the uttara group. The given number 27, belongs to the purva group and is therefore a suddha madhyama melakarta. Now insert ma in its appropriate place in the line as follows:
sa - - ma pa - - sa

(3) Next, in order to determine the notes of the purvanga, find out the chakra to which the given number belongs. The number 27 belongs to the 5th chakra (comprising melakartas 25 - 30) and hence ri (chatussruti rishabha) and gu (antara gandhara) are the notes taken. Now insert ri and gu in their proper places thus :
sa ri gu ma pa - - sa

(4) Now, to determine the notes of the uttaranga find the rank of the given melakarta within the chakra. The number 27 occupies the 3rd rank; hence dha (suddha dhaivata) and nu (kakali nishada) are the notes taken. Now insert dha and nu in the line as follows:

sa ri gu ma pa dha nu sa

Thus the melakarta raga No. 27 takes the notes, sa ri gu ma pa dha nu or shadja, chatussruti rishabha, antara gandhara. suddha adhyama, panchama, suddha dhaivata and kakali nishada. This is the melakarta raga known as Sarasangi and its mnemonic phrase will be bana-go.

1.8.2 Prathi madhyama raga:

In case the given number belongs to the uttara group (comprising melakartas 37- 72) subtract 36 from the given number and the resulting figure gives the number of the corresponding suddha madhyama melakarta. Determine the lakshana of this suddha madhyama melakarta by adopting the process mentioned above and by substituting prati madhyama for the suddha madhyama the svaras of the melakarta raga of the given number will be obtained.

1.9 OBSERVATIONS AND LIMITATIONS

In the formation of melakarta ragas, all possible combinations of notes which a refined ear can tolerate and easily distinguish have been included. The melakarta scheme is the rocky foundation upon which South Indian Music firmly rests today. Viewed in the light of mere permutations and combinations, the scheme might appear at first sight as an artificial and dry arithmetical process. But the charm and beauty of music lie deep in the theory of numbers and every musical sound and intervel has its exact number of vibrations and ratios. The melakarta scheme is highly comprehensive and systematic and includes within its fold all the modes used in ancient as well as modern systems of music of the different parts of the world. It is a complete and exhaustive scheme evolved by the simple and natural combinations already explained. To the question, whether the mere substitution of the prati madhyama in the place of the suddha madhyama of the purva group of melakartas, gives rise to a totally different set of melakartas, Venkatamakhi answers by saying that even as a drop of butter-milk converts the entire milk of a vessel into curd, the substitution of the prati madhyama does effect such a radical change and gives rise to an entirely new set of melakarta ragas.

1.10 SIGNIFICANCE OF MA

It may incidentally be pointed out, that the note ma is like the fulcrum amongst the sapta svaras. It is the central pivotal note with three notes (srg) below and three notes (pdn) above. Thus it is in a position to control and influence the colouring resulting from the change of Suddha madhyama to Prati madhyama. Again in a sruti vadya, when the notes sa and pa are sounded, it is the shadja svara that dominates; pa being the 3rd harmonic gets, lost in sa. But when a change to the madhyama sruti is made and sa and ma are

sounded together, it is the suddha madhyama that asserts itself. It becomes the tonic note and the original sa becomes a fourth note or panchama below it. Madhyama svara not being a harmonic or svayambhu svara, asserts itself in bold relief. So great was Venkatamakhi's joy when he formulated the scheme, that he declared in his immortal work that even Lord Paramasiva could not devise a scheme containing one more or one less than the 72 melakartas. But as he himself admitted in his work, only 19 of these 72 melakarta-ragas were popular in his time. He called these 19 as prasiddha melakartas and also kalpita melakartas i.e., melakartas already made and in currency. He classified the remaining 53 melakartas under

1.Kalpyamana i.e., in the process of making and

2.Kalpayishyamana i. e., to be made hereafter,

Happily now, after the advent of master composers like Tyagaraja. Muthuswamy Dikshitar, Maha Vaidyanatha Ayyar and others, more and more of these visualised melakartas of Venkatamakhi's time have passed into the realm of practical possibilities and are at present living ragas.

1.11 MELAKARTA CLASSIFICATION

The 72 melakartas may be classified and studied from the following points of view :-

(1) Vivadi and Non-vivadi melas[4].

The vivadi melas are 40 in number. They include all the melas in chakras I, VI, VII and XII (24 in all) and the Pa and Sha melas of each of the remaining eight chakras (16 in all) Chakras I, VI, VII and XII are called the Vivadi mela chakras.

The non-vivadi melas are 32. They are the Sri, Go, Bhu and Ma melas of chakras II, III, IV, V, VIII, IX, X and XI chakras.

(2) Number of vikrta svaras taken,

The first mela Kanakangi alone does not take even a single vikrta svara. In svaras all are suddha. All the other melas take 1, 2, 3, 4 or 5 vikrta svaras.

Melas taking 1 vikrta svara are : 2.3, 7, 13 and 37.

Melas taking 2 vikrta svaras are: 4, 5, 6, 8, 9, 14, 15, 19, 25, 31, 38, 39, 43, and 49.

Melas taking 3 vikrta svaras are : 10, 11, 12, 16, 17, 18, 20, 21, 26, 27, 32, 33, 40, 41, 42, 44, 45, 50, 51, 55, 61 and 67.

Melas taking 4 vikrta svaras are : 22, 23, 24, 28, 29, 30, 34, 35, 36, 46, 47, 48, 52, 53, 54, 56, 57, 62, 65, 68 and 69.

Melas taking 5 vikrta svaras are: 58, 59, 60, 64, 65, 06, 70, 71 and 72.

3. (a) Purva prasiddha melas i. e., melas known before Venkatamakhi's time like Sankarabharana and Malavagaula.

(b) Adhuna prasiddha melas i. e., melas which became known after Venkatamakhi's time like Chakravaka and Sharmukhapriya.

4. (a) Melas wherein the Katapayadi syllables are an integral part of the mela name as in Vanaspati, Vakulabharanam, Sarasangi, Latangi and Vachaspati.

(b) Melas where in the Katapayadi syllables are distinct and separate prefixes as in Maya malavagaula, Dhirasankarabarana, Chalanata and Mecha kalyani.

(5) Melas which claim a large number of Janya ragas like 15, 22, 28 and 29 ; and Melas which claim a few Janya ragas like 16, 27 and 64.

(6) Melas peculiar to South Indian Music like 21 and 56: and Melas common to South Indian Music and North Indian Music like 15 and 22; and Melas common to South Indian Music and the music of other countries like 29 and 57.

(7) Melas with symmetrical tetrachords (i. e, wherein the Purvanga and Uttaranga are of similar patterns) like 1, 8, 15, 22, 29 and 36, and melas with non-symmetrical tetrachords like 16, 23, 56 and 64.

(8) Murchchanakaraka melas i.e., those which give rise to new scales by the process of modal shift of tonic like 20, 22, 28 and 29

(9) Amurchanakaraka melas i. e, those which cannot give rise to any new scale by the process of modal shift of tonic, whichever note of the scale is taken as the tonic note like 31, 39, 52, and 67.

1.12 DEDUCTIONS

The facts pertaining to the scheme of 72 melas are re-stated here by way of recapitulation:

(1) All the melakarta-ragas take the sapta svaras sa ri ga ma pa dha ni and the octave sa in both the arohana and the avarohana. Of these the sa and pa svaras are immutable and are constant in all the melakarta ragas.

(2) Of the remaining five svaras, ri ga ma dha and ni, melakarta ragas No., 1-36 take the suddha madhyama and melakarta ragas 37–72 take the prati madhyama ; i.e., the melakarta-scheme is bifurcated into two parts; Purva part wherein the melakarta-ragas take the suddha madhyama (F Natural) for their fourth and the Uttara part wherein the melakarta-ragas take the prati madhyama (F Sharp) for their fourth.

(3) Melakarta-ragas 1-18 and their corresponding prati madhyama varieties 37–54 (comprised within chakras I, II, III, VII, VIII and IX) take the suddha rishabha.

(4) Melakarta-ragas 19-30 and their corresponding prati madhyama varieties 55-66 (comprised within chakras IV, V, X and XI) take the chatussruti rishabba.

(5) Melakarta-ragas 31-36 and their corresponding prati-madhyama varieties 67-72 (comprised under chakras VI and XII) take the shatsruti rishabba.

(6) Melakarta-ragas 1-6 and their corresponding praji- madhyama varieties 37-42 (comprised under chakras 1 and VII) take the suddha gandbara.

(7) Melakarta-ragas 7-12, 19-24 and their corres- ponding prati-madhyama varieties 43-48 and 55-50 (comprised under chakras II, IV, VIII and X take the sadharana- gandhara.

(8) Melakarta-ragas 13-18 and 25-36 and their corresponding prati-madhyama varieties 49–54 and 61-72 (comprised under chakras III, V, VI and IX, XI and XII) take the antara gandhara.

(9) Within each chakra, whether in the purva group or the uttara group, melakarta-ragas of the 1st 2nd and 3rd rank take the suddha dhaivata, melakarta-ragas of the 4th and 5th rank take the chatussruti dhaivata and the melakarta-ragas of the 6th rank takes the shatsruti dhaivata.

(10) Within each chakra, whether in the purva group or the uttara group, the melakarta-ragas of the 1st rank takes the suddha nishada. Melakarta-ragas of the 2nd and the 4th rank take the kaisiki nishada and melakarta-ragas of the 3rd , 5th and 6th rank take the kakali nishada.

Thus it will be found that the variations of the rishabha-gandhara group of notes and the dhaivata nishada group of notes are quite symmetrical. While the variations of the rishabha-gandhara group belong to the different chakras, the variations of the dhaivata-nishada group belong to the individual melakarta of each chakra.

CONCLUSION

If Melakarta system had not been created it would have been impossible to experiment with new ragas. This system has laid a very strong foundation that it can be adapted to other world music systems such as the Western Harmony. The Melakarta system provides a stable base for melodic system in carnatic music. The Melakarta system is also very user friendly. Any beginner can understand the system. From the names of the chakra to finding the serial number of the raga, everything has been carefully constructed. Thus Melakarta system is the backbone of the melodic system of carnatic music.

FOOT NOTE

S.No	Author	Title	Pg.no
1.	P Sambamoorthy	South Indian Music Book III	P.28
2.	Ibid		P.22
3.	Ibid		P.26
4.	P Sambamoorthy	A practical course in Carnatic music	P.41
5.	Ibid		P.45

CHAPTER 2

HARMONISING THE AROHANA AND AVAROHANA OF A MELAKARTA RAGA

CHAPTER :2 HARMONISING AROHANA AND AVAROHANA OF A MELAKARTA RAGA

INTRODUCTION

2.1 COMPONENTS OF A HARMONY

2.1.1 NOTES

2.1.2 INTERVAL

2.1.3 SCALE

2.1.3.1 REASONS TO CHOOSE MAJOR SCALE

2.1.4 CHORD

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2.2 TURNING MELAKARTA RAGA INTO A SCALE

2.3 CREATING CHORDS FOR MELAKARTA RAGA WITH WESTERN MUSIC CHORDS

CONCLUSION

CHAPTER :2 HARMONISING AROHANA AND AVAROHANA OF A MELAKARTA RAGA

INTRODUCTION

Western classical music refers to the formal musical tradition of the Western world. It is distinct from folk music and pop culture music. Western classical music has as complex concepts as carnatic music. Carnatic music has only melodic system whereas Western music has both melodic and harmonic system. Melodic system refers to the linear melody or a linear arrangement of pitches. Harmonic system refers to the polyphonous arrangement of pitches. The goal is to use the harmonic system of Western music in carnatic music. The scope is limited to the melakarta system i.e., To the notes of Arohana and Avarohana of melakarta raga. This chapter deals in detail about the components of Harmony, Reason for selecting melakarta raga for harmonising and the procedure to harmonise a melakarta raga.

2.1 COMPONENTS OF A HARMONY:

To understand harmony one must understand its components. Harmony is a very deeper and a complex prospective in music. In simple words harmony is the background music, the one which follows the lead tune in harmony without overpowering it. One cannot directly understand Harmony without learning its fragments. The components of harmony are as follows,

1. Notes
2. Interval
3. Scale
4. Chord

2.1.1 NOTES

Western music typically uses 12 notes – **C, D, E, F, G, A and B**, plus five flats and equivalent sharps in between, which are: **C sharp/D flat** (they're the same note, just named differently), **D sharp/E flat, F sharp/G flat, G sharp/A flat and A sharp/B**

flat. **Accidental**[1] is a sign placed immediately to the left of (or above) a note to show that the note must be changed in pitch. A sharp (♯) raises a note by a pitch; a flat (♭) lowers it by a pitch; a natural (♮) restores it to the original pitch. When two notes are placed next to each other a significant distance happens between the both. That distance is called as interval. Thus interval is a derivative of note.

2.1.2 INTERVAL

An interval is a difference in pitch between two sounds. As music cannot be seen, one can imagine intervals like a stair. C on the lower step, C# a step higher, D a step higher than C# etc. There are two types of interval in Western music, They are Semitone and Tone. Semitone means one step and Tone means two step. For example,

The order of notes should be written as C, C#, D, D#, E, F, F#, G, G#, A, A# and B.

Now, To find a semitone from C, one step has to be progressed from C. Hence that would be C#.

Now to find a tone from C, Two steps have to be progressed. Hence a tone from C would be D.

If 6 intervals join together it creates a scale. Scales are the basis of melodies.

2.1.3 SCALE

Scales are succession of intervals. To understand its graphival natire one can imagine a stairs going higher. Each interval sits on top of the previous interval creating a succession. A set of interval structure is formulated to create a scale. There are several types of scales in Western music, They are,

1. Major scale
2. Minor scale
3. Harmonic minor scale
4. Melodic minor scale
5. Blues scale
6. Pentatonic scale

But the foundation of all scales is Major scale. All the other scales are a derivative of major scale.

To create a major scale, the interval structure applied is,

2 2 1 2 2 2 1

Here, the numeric refers to the number of semitones. A major scale has 8 notes. The first note is called as Root. It is also called as Tonic. This above formula can be applied on all 12 notes in Western music.

For example, when C is taken as a Root,

1) First one has to write the order of notes as follows C, C#, D, D#, E, F, F#, G, G#, A, B. C is the root taken hence the first note is C.

   C

2) In the interval structure the first number given is 2. So 2 semitones should be counted from C. Now one will arrive at D i.e., C to C# then C# to D. Two notes have been found.

   C D

3) For the third note one has to check the second number in the interval structure. The second number is 2 again. So 2 semitones from D would be E i.e., D to D# and D# to E. Three notes have been found

   C D E

4) For the fourth note one has to check the third number in the interval structure. The third number is 1. So 1 semitone from E would be F. Four notes have been found.

   C D E F

5) For the fifth note one has to check the fourth number in the interval structure. The fourth number is 2. So 2 semitones from F would be G i.e., F to F# and F# to G. Five notes have been found.

   C D E F G

6) For the sixth note one has to check the fifth number in the interval structure. The fifth number is 2. So 2 semitones from G would be A i.e., G to G# and G# to A. Six notes have been found.

   C D E F G A

7) For the seventh note one has to check the sixth number in the interval structure. The sixth number is 2. So 2 semitones from A would be B i.e., A to A# and A# to B. Seven notes have been found

   C D E F G A B

8) For the eighth note one has to check the seventh number in the interval structure. The seventh number is 1. So 1 semitone from B would be C. Eight notes have been found.

   C D E F G A B C

Thus a major scale with C as root is obtained.

2.1.3.1 REASONS TO CHOOSE MAJOR SCALE:

Major scale is akin to Melakarta in terms of the following facts:

1. The number of notes in arohana and avarohana are same just as the notes in the major scale are same.
2. Both Melakarta raga and Major scale follows symmetry that is having same order of notes in both ascending and descending.
3. Both melakarta raga and Major scale acts as the parent scale to other scales.
4. Both melakarta raga and major raga has a complexity and depth in its usage.

2.1.4 CHORD

Chords are sets of three or more notes. They are typically defined as the combination of intervals. Similar to the formation of scales there are separate interval structure for

creating different types of chord. The interval structure has numeric indicating semitone. The following are some of the basic chord types:

1. Major chord,
2. Minor chord,
3. Diminished chord,
4. Sixth chord,
5. Augmented chord and
6. Power chord.

2.1.4.1 Major chord:

A major chord[2] is made up of three notes. The interval structure for a major chord is **0 4 7.** The numeric refers to the number of semitones.

To create a major chord,

1) one has to select a root note in the place of **0.** The root note must be selected from the 12 notes i.e., C C# D# E F F# G G# A A# and B.
2) If **C** is taken as the root note in the place of **0,** the second note of the chord should be counted 4 semitones away from C. Thus the second note is E i.e., C to C#, C# to D, D to D# and D# to E.
3) To find the third note, 7 semitones should be counted away from C abiding by the interval structure. Hence the third note is G i.e., C to C#, C# to D, D to D#, D# to E, E to F, F to F#, F# to G.
4) Therefore **C E G** are the notes of C major chord.
5) The symbol for major chord is C maj or C

ROOT NOTE	**SYMBOL**	**EXPANSION**
C	C maj	C E G
C#	C# maj	C# E# G#
D	D maj	D F# A
D#	D# maj	D# G A#
E	E maj	E G# B
F	F maj	F A C

F#	F# maj	F# A# C#
G	G maj	G B D
G#	G# maj	G# C D#
A	A maj	A C# E
A#	A# maj	A# D F
B	B maj	B D# F#

2.1.4.2 Minor chord:

A minor chord[3] is made up of three notes. The interval structure for a major chord is **0 3 7.** The numeric refers to the number of semitones.

To create a minor chord,

1) one has to select a root note in the place of **0.** The root note must be selected from the 12 notes i.e., C C# D# E F F# G G# A A# and B.
2) If **C** is taken as the root note in the place of **0,** the second note of the chord should be counted 3 semitones away from C. Thus the second note is D# i.e., C to C#, C# to D and D to D#.
3) To find the third note, 7 semitones should be counted away from C abiding by the interval structure. Hence the third note is G i.e., C to C#, C# to D, D to D#, D# to E, E to F, F to F#, F# to G.
4) Therefore **C D# G** are the notes of C minor chord.
5) The symbol for minor chord is Cm.

ROOT NOTE	**SYMBOL**	**EXPANSION**
C	Cm	C D# G
C#	C#m	C# E G#
D	Dm	D F A
D#	D#m	D# F# A#
E	Em	E G B
F	Fm	F G# C
F#	F#m	F# A# C#

G	Gm	G B D
G#	G#m	G# C D#
A	Am	A C# E
A#	A#m	A# D F
B	Bm	B D# F#

2.1.4.3 Diminished chord:

A diminished chord is made up of three notes. The interval structure for a major chord is **0 3 6.** The numeric refers to the number of semitones.

To create a diminishedchord,

1) one has to select a root note in the place of **0.** The root note must be selected from the 12 notes i.e., C C# D# E F F# G G# A A# and B.
2) If **C** is taken as the root note in the place of **0,** the second note of the chord should be counted 3 semitones away from C. The second note is D# i.e., C to C#, C# to D and D to D#.
3) To find the third note, 6 semitones should be counted away from C abiding by the interval structure. Hence the third note is F# i.e., C to C#, C# to D, D to D#, D# to E, E to F and F to F#.
4) Therefore **C D# F#** are the notes of C diminished chord.
5) The symbol for diminished chord is C dim.

ROOT NOTE	**SYMBOL**	**EXPANSION**
C	C dim	C D# F#
C#	C# dim	C# E G
D	D dim	D F G#
D#	D# dim	D# F# A
E	E dim	E G A#
F	F dim	F G# B

F#	F# dim	F# A C
G	G dim	G A# C#
G#	G# dim	G# B D
A	A dim	A C D#
A#	A# dim	A# C# E
B	B dim	B D F

2.1.4.4 Sixth chord:

A sixth chord is made up of four notes. The interval structure for a sixth chord is **0 4 7 9.** The numeric refers to the number of semitones.

To create a powerchord,

1) one has to select a root note in the place of **0.** The root note must be selected from the 12 notes i.e., C C# D# E F F# G G# A A# and B.
2) If **C** is taken as the root note in the place of **0,** the second note of the chord should be counted 4 semitones away from C. The second note is E i.e., C to C#, C# to D, D to D# and D# to E.
3) To find the third note, 7 semitones has to be counted away from C. The third note is G i.e., C to C#, C# to D, D to D#, D# to E, E to F, F to F# and F# to G.
4) To find the fourth note, 9 semitones has to be counted away from C. The fourthnote is A i.e., C to C#, C# to D, D to D#, D# to E, E to F, F to F#, F# to G, G to G# and G# to A.
5) Therefore **C E G A** are the notes of C sixth chord.
6) The symbol for sixth chord is C6.

ROOT NOTE	**SYMBOL**	**EXPANSION**
C	C6	C E G A
C#	C#6	C# E# G# A#
D	D6	D F# A B
D#	D#6	D# G A# C
E	E6	E G# B C#

F	F6	F A C D
F#	F#6	F# A# C# D#
G	G6	G B D E
G#	G#6	G# C D# F
A	A6	A C# E F#
A#	A#6	A# D F G
B	B6	B D# F# G#

2.1.4.5 Augmented chord:

An augmented chord[4] is made up of three notes. The interval structure for a major chord is **0 4 8.** The numeric refers to the number of semitones.

To create an augmented chord,

1) one has to select a root note in the place of **0.** The root note must be selected from the 12 notes i.e., C C# D# E F F# G G# A A# and B.
2) If **C** is taken as the root note in the place of **0,** the second note of the chord should be counted 4 semitones away from C. The second note is E i.e., C to C#, C# to D, D to D# and D# to E.
3) To find the third note, 8 semitones should be counted away from C abiding by the interval structure. Hence the third note is G# i.e., C to C#, C# to D, D to D#, D# to E, E to F, F to F#, F# to G and G to G#.
4) Therefore **C E G#** are the notes of C augmented chord.
5) The symbol for augmented chord is C+.

ROOT NOTE	**SYMBOL**	**EXPANSION**
C	C+	C E G#
C#	C#+	C# E# A
D	D+	D F# A#
D#	D#+	D# G B
E	E+	E G# C
F	F+	F A C#

F#	F#+	F# A# D
G	G+	G B D#
G#	G#+	G# C E
A	A+	A C# F
A#	A#+	A# D F#
B	B+	B D# G

2.1.4.6 Power chord:

A power chord[5] is made up of two notes. The interval structure for a major chord is **0 7.** The numeric refers to the number of semitones.

To create a powerchord,

7) one has to select a root note in the place of **0.** The root note must be selected from the 12 notes i.e., C C# D# E F F# G G# A A# and B.
8) If **C** is taken as the root note in the place of **0,** the second note of the chord should be counted 7 semitones away from C. The second note is G i.e., C to C#, C# to D, D to D#, D# to E, E to F, F to F# and F# to G.
9) Therefore **C G** are the notes of C power chord.
10) The symbol for power chord is C5.

ROOT NOTE	**SYMBOL**	**EXPANSION**
C	C5	C G
C#	C#5	C# G#
D	D5	D A
D#	D#5	D# A#
E	E5	E B
F	F5	F C
F#	F#5	F# C#
G	G5	G D
G#	G#5	G# D#

A	A5	A E
A#	A#5	A# F
B	B5	B F#

2.2 TURNING MELAKARTA RAGA INTO A SCALE

In order to create chords for melakarta raga arohana and avarohana, the melakart raga has to be converted into a western scale.

Steps to turn a melakarta raga into a western scale:

1) Firstly, the carnatic swaras in the melakarta raga should be converted into western notes using the below table.

Carnatic swara	**Carnatic swara symbol**	**Western music note**
Shadja	S	C
Suddha rishaba	R1	C#
Chatushruti rishaba/ suddha gandhara	R2/ G1	D
Shatshruti rishaba/ sadharana gandhara	R3/ G2	D#
Antara gandhara	G3	E
Suddha madhyama	M1	F
Prati madhyama	M2	F#
Panchama	P	G
Suddha dhaivata	D1	G#
Chatushruti dhaivata/ suddha nishada	D2/N1	A
Shatshruti dhaivata/ kaisiki nishada	D3/N2	A#
Kakali nishada	N3	B

For example, in the case of Kanakangi melakarta raga, the notes of the raga should be converted as follows

S	C
R1	C#
G1	D
M1	F
P	G
D1	G#
N1	A
S	C

2) Secondly, the interval strcuture of the converted scale should be found. Here, the western kanakangi scale is C C# D F G G# A C.

C	0
C#	1
D	1
F	3
G	2
G#	1
A	1
C	3

C is taken as 0

The interval between C to C# is 1, C# to D is 1, D to F is 3, F to G is 2, G to G# is 1, G# to A is 1 and A to C is 3.

3) Using this interval structure one can find the scale with different root note.

Thus the above are the components of a harmony. Once the components are mastered it will be easy to harmonise a raga with chods. As told before, Harmony is nothing but a background to the melody with chords. In order to harmonise a raga one has to follow a simple three step procedure. The procedure has been dealt below.

2.3 CREATING CHORDS FOR MELAKARTA RAGA WITH WESTERN MUSIC CHORDS:

To create chords for a melakarta raga, the following steps should be followed,

1) Firstly, The equivalent western notes of the melakarta raga svara should be written. (Refer 2.2 TURNING MELAKARTA RAGA INTO A SCALE)
   For example: Western notes of melakarta kanakangi,
   C C# D F G G# A C
2) Secondly, Chords with the same root note should be chosen
   For example, To find the chord for C(the first note) in the scale, chords like C major, C minor, C augmented or C diminished chord etc can be chosen.
3) Thirdly, To determine the chord type such as major, minor or diminished etc, one has to check for foreign note. Foreign note means a note in the chord which is not present in the scale.
   For example, for the first note (C) in the scale of kanakangi, C major cannot be used as E is not in the scale of kanakangi but C5 chord can be used as its notes C and G are present in the scale. This way one has to avoid foreign note and form chords.

CONCLUSION

Carnatic music is rich in melody. By adapting the western theory and the addition of harmony in carnatic music, one can create exotic musical work. A complete work of chords for arohana and avarohana of melakarta of Indu and Rishi chakra have been dealt in the upcoming chapters**.**

FOOT NOTE

S.No	Author	Title	Pg.No
1.	Jono Kornfeld	Music Notation and Theory for Intelligent Beginners	P.26
2.	Policastro, Michael A	Understanding How to Build Guitar Chords and Arpeggios	P.95
3.	Schoenberg, Arnold	Structural Functions of Harmony	P.87
4.	Howard	Harmonic Materials of Modern Music	P.82
5.	Ibid		P.83

CHAPTER 3

CHORDS FOR THE AROHANA AND AVAROHANA OF INDU CHAKRA

CHAPTER:3 CHORDS FOR THE AROHANA AND AVAROHANA OF INDU CHAKRA

Introduction

3.1 Kanakangi

3.1.1 Structure and lakshana

3.1.2 Chords for raga with different root note

3.2 Ratnangi

3.2.1 Structure and lakshana

3.2.2 Chords for raga with different root note

3.3 Ganamurthi

3.3.1 Structure and lakshana

3.3.2 Chords for raga with different root note

3.4 Vanaspati

3.4.1 Structure and lakshana

3.4.2 Chords for raga with different root note

3.5 Manavati

3.5.1 Structure and lakshana

3.5.2 Chords for raga with different root note

3.6 Tanarupi

3.6.1 Structure and lakshana

3.6.2 Chords for raga with different root note

Conclusion

CHAPTER:3 CHORDS FOR THE AROHANA AND AVAROHANA OF INDU CHAKRA

INTRODUCTION

The first chakra in the melakarta Raga system is called as Indu chakra. Indu means moon. The Earth has only one moon. Same way, In mythologies, Lord Rama is said to have one wife, Goddess Sita. Praising his devotion to his wife he is often referred as "Oka patni vitrudai". Hence Indu chakra is often connected to the singularity, purity and devotion to one person. First chakra is also called as Root chakra and it is said to store the energy of the body. The six ragas of Indu chakra are,

1. Kanakangi
2. Ratnangi
3. Ganamurti
4. Vanaspati
5. Manavati
6. Tanarupi

This chapter deals in detail about the chords for the Arohana and Avarohana of the six ragas in Indu chakra.

3.1 KANAKANGI

Kanakangi (pronounced kanakangi, meaning the golden bodied one) is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 1st Melakarta ragam in the 72 melakarta ragam system of Carnatic music. It is called Kanakambari in the Muthuswami Dikshitar school.[1]

3.1.1 STRUCTURE AND LAKSHANA

It is the 1st ragam in the 1st chakra Indu. The mnemonic name is Indu-Pa. The mnemonic phrase is sa ra ga ma pa dha na. Its arohana-avarohana structure (ascending and descending scale) has all shuddha swaras, as follows

1. arohana: S R_1 G_1 M_1 P D_1 N_1 Ṡ
2. avarohana: Ṡ N_1 D_1 P M_1 G_1 R_1 S

(the notes are shuddha rishabham, shuddha gandharam, shuddha madhyamam, panchamam, shuddha dhaivatham, shuddha nishadham)

It is a sampurna ragam – a ragam that has all seven swaras (notes) and is often dubbed the shuddha scale, owing to its swarasthanas. It is the shuddha madhyamam equivalent of Salagam, which is the 37th melakarta.

3.1.2 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C	C5	C G
C#	C#	C# E# G#
D	Dm	D F A
F	Fm	F G# C
G	G5	G D
G#	C#5	C# G#
A	D5	D A

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D	D F A
D#	D#m	D# F# A#
F#	F#m	F# A C#
G#	G#5	G# D#
A	D5	D A
A#	D#5	D# A#

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D	D5	D A
D#	D#	D# F# A#
E	Em	E G B
G	Gm	G A# D
A	A5	A E
A#	D#5	D# A#
B	E5	E B

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E	E G B
E#	E#m	E# G# B#
G#	G#m	G# B D#
A#	A#5	A# E#
B	E5	E B
C	E#5	E# B#

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F	F G# C
F#	F#m	F# A C
A	Am	A C E
B	B5	B F
C	F5	F C
C#	F#5	F# C#

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C
F#	F#	F# A C#
G	Gm	G A# C#
A#	A#m	A# C# F
C	C5	C F#
C#	C#5	C# G#
D	D5	D A

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G	G A# D
G#	G#m	G# B D
B	Bm	B D F#
C#	C#5	C# G
D	D5	D A
D#	D#5	D# A#

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#	G# B D#
A	Am	A C D#
C	Cm	C D# G

D	D5	D G#
D#	D#5	D# A#
E	E5	E B

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G#	G#5	G# D#
A	A	A C E
A#	A#m	A# C# E
C#	C#m	C# E G#
D#	D#5	D# A
E	E5	E B
F	F5	F C

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#	A# C# F
B	Bm	B D F
D	Dm	D F A
E	E5	E B
F	F5	F C
F#	F#5	F# C#

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# F
B	B	B D# F
C	Cm	C D# G

D#	D#m	D# F# A#
F	F5	F C
F#	F#5	F# C#
G	G5	G D

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION
B	B5	B F
C	C	C E G
C#	C#m	C# D# G#
E	Em	E G B
F#	F#5	F# C#
G	G5	G D
G#	G#5	G# D#

3.2 RATNANGI

Ratnangi (pronounced ratnangi, meaning the one with a gem-like body) is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 2nd melakarta ragam (parent scale) in the 72 melakarta ragam system of Carnatic music. It is called Phenadhyuti in Muthuswami Dikshitar school of Carnatic music.[2]

3.2.1 STRUCTURE AND LAKSHANA

It is the 2nd ragam in the 1st chakra Indu. The mnemonic name is Indu-Sri. The mnemonic phrase is sa ra ga ma pa dha ni. Its arohana-avarohana structure (ascending and descending scale) is as follows

1. arohana: S R_1 G_1 M_1 P D_1 N_2 Ṡ
2. avarohana: Ṡ N_2 D_1 P M_1 G_1 R_1 S

The scale uses the notes shuddha rishabham, shuddha gandharam, shuddha madhyamam, shuddha dhaivatham and kaisiki nishadham. As it is a melakarta ragam, by definition it is a sampoorna ragam (has all seven notes in ascending and descending

scale). It is the shuddha madhyamam equivalent of Jalarnavam, which is the 38th melakarta scale.

3.2.2 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C	C5	C G
C#	C#	C# E# G#
D	Dm	D F A
F	Fm	F G# C
G	G5	G D
G#	C#5	C# G#
A#	Gm	G A# D

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D	D F A
D#	D#m	D# F# A#
F#	F#m	F# A C#
G#	G#5	G# D#
A	D5	D A
B	G#m	G# B D#

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D	D5	D A
D#	D#	D# F# A#

E	Em	E G B
F	Gm	G A# D
A	A5	A E
A#	D#5	D# A#
C	Am	A C E

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E	E G B
F	E#m	E# G# B#
F#	G#m	G# B D#
A#	A#5	A# E#
B	E5	E B
C#	A#m	A# C# F

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F	F G# C
F#	F#m	F# A C
G	Am	A C E
B	B5	B F
C	F5	F C
D	Bm	B D F#

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C
F#	F#	F# A C#
G	Gm	G A# C#
G#	A#m	A# C# F
C	C5	C F#
C#	C#5	C# G#
D#	Cm	C D# G

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G	G A# D
G#	G#m	G# B D
A	Bm	B D F#
C#	C#5	C# G
D	D5	D A
E	C#m	C# E G#

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#	G# B D#
A	Am	A C D#
A#	Cm	C D# G
D	D5	D G#
D#	D#5	D# A#
F	Dm	D F A

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G#	G#5	G# D#
A	A	A C E
A#	A#m	A# C# E
B	C#m	C# E G#
D#	D#5	D# A
E	E5	E B
F#	D#m	D# F# A#

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#	A# C# F
B	Bm	B D F
C	Dm	D F A
E	E5	E B
F	F5	F C
G	Em	E G B

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# F
B	B	B D# F
C	Cm	C D# G
C#	D#m	D# F# A#
F	F5	F C
F#	F#5	F# C#

G#	Fm	F G# C

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION
B	B5	B F
C	C	C E G
C#	C#m	C# D# G#
F#	Em	E G B
G	F#5	F# C#
A	G5	G D
B	F#m	F# A C#

3.3 GANAMURTHI

Ganamurti (pronounced ganamūrti, meaning the idol of music) is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 3rd Melakarta ragam in the 72 melakarta ragam system of Carnatic music.It is called Ganasamavaraḷi in Muthuswami Dikshitar school of Carnatic music.[3]

3.3.1 STRUCTURE AND LAKSHANA

It is the 3rd ragam in the 1st chakra Indu. The mnemonic name is Indu-Go. The mnemonic phrase is sa ra ga ma pa dha nu. Its arohana-avarohana structure (ascending and descending scale) is as follows

1. arohana: S R_1 G_1 M_1 P D_1 N_3 Ṡ
2. avarohana: Ṡ N_3 D_1 P M_1 G_1 R_1 S

The notes used in this scale are shuddha rishabham, shuddha gandharam, shuddha madhyamam, shuddha dhaivatham, kakali nishadham.

As it is a melakarta ragam, by definition it is a sampoorna ragam (has all seven notes in ascending and descending scale). It is the shuddha madhyamam equivalent of Jhalavarali, which is the 39th melakarta.

3.3.2 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C	C5	C G
C#	C#	C# E# G#
D	Dm	D F A
F	Fm	F G# C
G	G5	G D
G#	C#5	C# G#
B	B dim	B D F

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D	D F A
D#	D#m	D# F# A#
F#	F#m	F# A C#
G#	G#5	G# D#
A	D5	D A
C	C dim	C D# F#

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D	D5	D A
D#	D#	D# F# A#
E	Em	E G B
G	Gm	G A# D

A	A5	A E
A#	D#5	D# A#
C#	C# dim	C# E G

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E	E G B
F	E#m	E# G# B#
G#	G#m	G# B D#
A#	A#5	A# E#
B	E5	E B
D	D dim	D F G#

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F	F G# C
F#	F#m	F# A C
A	Am	A C E
B	B5	B F
C	F5	F C
D#	D# dim	D# F# A

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C

F#	F#	F# A C#
G	Gm	G A# C#
A#	A#m	A# C# F
C	C5	C F#
C#	C#5	C# G#
E	E dim	E G A#

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G	G A# D
G#	G#m	G# B D
B	Bm	B D F#
C#	C#5	C# G
D	D5	D A
F	F dim	F G# B

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#	G# B D#
A	Am	A C D#
C	Cm	C D# G
D	D5	D G#
D#	D#5	D# A#
F#	F# dim	F# A C

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION

G#	G#5	G# D#
A	A	A C E
A#	A#m	A# C# E
C#	C#m	C# E G#
D#	D#5	D# A
E	E5	E B
G	G dim	G A# C#

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#	A# C# F
B	Bm	B D F
D	Dm	D F A
E	E5	E B
F	F5	F C
G#	G# dim	G# B D

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# F
B	B	B D# F
C	Cm	C D# G
D#	D#m	D# F# A#
F	F5	F C
F#	F#5	F# C#
A	A dim	A C D#

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION
B	B5	B F
C	C	C E G
C#	C#m	C# D# G#
E	Em	E G B
F#	F#5	F# C#
G	G5	G D
A#	A# dim	A# C# E

3.4 VANASPATI

Vanaspati (meaning the lord of the forest) is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 4th melakarta ragam in the 72 melakarta ragams of Carnatic music, following the Katapayadi sankhya system. In the Muthuswami Dikshitar school of music, this raga is called Bhanumati. [4]

3.4.1 STRUCTURE AND LAKSHANA

Vanaspati is the 4th ragam in the 1st chakra Indu of the melakarta system. Its mnemonic name is Indu-Bhu. Its mnemonic phrase is sa ra ga ma pa dhi ni. Its arohana-avarohana structure is as follows (see swaras in Carnatic music for details on this notation):

1. arohana S R_1 G_1 M_1 P D_2 N_2 Ṡ
2. avarohana Ṡ N_2 D_2 P M_1 G_1 R_1 S

Shuddha rishabham, shuddha gandharam, shuddha madhyamam, chathusruthi dhaivatham and kaisiki nishadham are the swaras used in this scale. As it is a melakarta ragam, by definition it is a sampoorna ragam (has all seven notes in ascending and descending scale). It is the shuddha madhyamam equivalent of Navaneetam, which is the 40th melakarta ragam.

3.4.3 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C	C5	C G
C#	C#	C# E# G#
D	Dm	D F A
F	Fm	F G# C
G	G5	G D
A	A +	A C# F
A#	A#	A# D F

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D	D F A
D#	D#m	D# F# A#
F#	F#m	F# A C#
G#	G#5	G# D#
A#	A#+	A# D F#
B	B	B D# F#

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D	D5	D A
D#	D#	D# F# A#
E	Em	E G B
G	Gm	G A# D
A	A5	A E
B	B+	B D# G
C	C	C E G

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E	E G B
F	E#m	E# G# B#
G#	G#m	G# B D#
A#	A#5	A# F
C	C+	C E G#
C#	C#	C# E# G#

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F	F G# C
F#	F#m	F# A C
A	Am	A C E
B	B5	B F
C#	C#+	C# F A
D	D	D F# A

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C
F#	F#	F# A C#
G	Gm	G A# C#
A#	A#m	A# C# F

C	C5	C F#
D	D+	D F# A#
D#	D#	D# G A#

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G	G A# D
G#	G#m	G# B D
B	Bm	B D F#
C#	C#5	C# G
D#	D#+	D# G B
E	E	E G# B

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#	G# B D#
A	Am	A C D#
C	Cm	C D# G
D	D5	D G#
E	E+	E G# C
F	F	F A C

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G#	G#5	G# D#
A	A	A C E
A#	A#m	A# C# E

C#	C#m	C# E G#
D#	D#5	D# A
F	F+	F A C#
F#	F#	F# A# C#

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#	A# C# F
B	Bm	B D F
D	Dm	D F A
E	E5	E B
F#	F#+	F# A# D
G	G	G B D

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# F
B	B	B D# F
C	Cm	C D# G
D#	D#m	D# F# A#
F	F5	F C
G	G+	G B D#
G#	G#	G# C D#

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION

B	B5	B F
C	C	C E G
C#	C#m	C# D# G#
E	Em	E G B
F#	F#5	F# C#
G#	G# +	G# C E
A	A	A C# E

3.5 MANAVATI

Manavati (pronounced manavati, meaning the bride) is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 5th Melakarta ragam in the 72 melakarta ragam system of Carnatic music. In Muthuswami Dikshitar school of Carnatic music, the 5th melakarta is Manōranjani.[5]

3.5.1 STRUCTURE AND LAKSHANA

It is the 5th ragam in the 1st chakra Indu. The mnemonic name is Indu-Ma. The mnemonic phrase is sa ra ga ma pa dhi nu. Its arohana-avarohana structure (ascending and descending scale) is as follows

1. arohana: S R_1 G_1 M_1 P D_2 N_3 Ṡ
2. avarohana: Ṡ N_3 D_2 P M_1 G_1 R_1 S

(this scale uses the notes shuddha rishabham, shuddha gandharam, shuddha madhyamam, chathusruthi dhaivatham, kakali nishadham)

As it is a melakarta ragam, by definition it is a sampoorna ragam (has all seven notes in ascending and descending scale). It is the shuddha madhyamam equivalent of Pavani, which is the 41st melakarta.

3.5.2 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C	C5	C G
C#	C#	C# E# G#
D	Dm	D F A
F	Fm	F G# C
G	G5	G D
A	A +	A C# F
B	Bm	B D F#

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D	D F A
D#	D#m	D# F# A#
F#	F#m	F# A C#
G#	G#5	G# D#
A#	A#+	A# D F#
C	Cm	C D# G

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D	D5	D A
D#	D#	D# F# A#
E	Em	E G B
G	Gm	G A# D
A	A5	A E
B	B+	B D# G
C#	C#m	C# E G#

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E	E G B
F	E#m	E# G# B#
G#	G#m	G# B D#
A#	A#5	A# E#
C	C+	C E G#
D	Dm	D F A

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F	F G# C
F#	F#m	F# A C
A	Am	A C E
B	B5	B F
C#	C#+	C# F A
D#	D#m	D# F# A#

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C
F#	F#	F# A C#
G	Gm	G A# C#
A#	A#m	A# C# F

C	C5	C F#
D	D+	D F# A#
E	Em	E G B

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G	G A# D
G#	G#m	G# B D
B	Bm	B D F#
C#	C#5	C# G
D#	D#+	D# G B
F	Fm	F G# C

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#	G# B D#
A	Am	A C D#
C	Cm	C D# G
D	D5	D G#
E	E+	E G# C
F#	F#m	

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G#	G#5	G# D#
A	A	A C E
A#	A#m	A# C# E

C#	C#m	C# E G#
D#	D#5	D# A
F	F+	F A C#
G	Gm	G A# D

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#	A# C# F
B	Bm	B D F
D	Dm	D F A
E	E5	E B
F#	F#+	F# A# D
G#	G#m	G# B D#

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# F
B	B	B D# F
C	Cm	C D# G
D#	D#m	D# F# A#
F	F5	F C
G	G+	G B D#
A	Am	A C E

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION

B	B5	B F
C	C	C E G
C#	C#m	C# D# G#
E	Em	E G B
F#	F#5	F# C#
G#	G# +	G# C E
A#	A#m	A# C# F

3.6 TANARUPI

Tanarupi (pronounced tanarūpi, meaning the one that embodies tanam) is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 6th melakarta ragam in the 72 melakarta ragam system of Carnatic music. It is called Tanukeerti in Muthuswami Dikshitar school of Carnatic music.[6]

3.6.1 STRUCTURE AND LAKSHANA

It is the 6th ragam in the 1st chakra Indu. The mnemonic name is Indu-Sha. The mnemonic phrase is sa ra ga ma pa dhu nu. Its arohana-avarohana structure (ascending and descending scale) is as follows

1. arohana: S R_1 G_1 M_1 P D_3 N_3 Ṡ
2. avarohana: Ṡ N_3 D_3 P M_1 G_1 R_1 S

The notes used in this scale are shuddha rishabham, shuddha gandharam, shuddha madhyamam, shatsruthi dhaivatham and kakali nishadham. As it is a melakarta ragam, by definition it is a sampoorna ragam (has all seven notes in ascending and descending scale). It is the shuddha madhyamam equivalent of Raghupriya, which is the 42nd melakarta ragam.

3.6.2 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C	C5	C G

C#	C#	C# E# G#
D	Dm	D F A
F	Fm	F G# C
G	G5	G D
A#	A#m	A# C# F
B	Bm	B D F#

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D	D F A
D#	D#m	D# F# A#
F#	F#m	F# A C#
G#	G#5	G# D#
B	Bm	B D F#
C	Cm	C D# G

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D	D5	D A
D#	D#	D# F# A#
E	Em	E G B
G	Gm	G A# D
A	A5	A E
C	Cm	C D# G
C#	C#m	C# E G#

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E	E G B
F	E#m	E# G# B#
G#	G#m	G# B D#
A#	A#5	A# E#
C#	C#m	C# E G#
D	Dm	D F A

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F	F G# C
F#	F#m	F# A C
A	Am	A C E
B	B5	B F
D	Dm	D F A
D#	D#m	D# F# A#

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C
F#	F#	F# A C#
G	Gm	G A# C#
A#	A#m	A# C# F
C	C5	C F#
D#	D#m	D# F# A#
E	Em	E G B

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G	G A# D
G#	G#m	G# B D
B	Bm	B D F#
C#	C#5	C# G
E	Em	E G B
F	Fm	F G# A

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#	G# B D#
A	Am	A C D#
C	Cm	C D# G
D	D5	D G#
F	Fm	F G# A
F#	F#m	F#A C#

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G#	G#5	G# D#
A	A	A C E
A#	A#m	A# C# E
C#	C#m	C# E G#
D#	D#5	D# A
F#	F#m	F# A C#

G	Gm	G A# D

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#	A# C# F
B	Bm	B D F
D	Dm	D F A
E	E5	E B
G	Gm	G A# D
G#	G#m	G# B D#

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# F
B	B	B D# F
C	Cm	C D# G
D#	D#m	D# F# A#
F	F5	F C
G#	G#m	G# B D#
A	Am	A C E

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION
B	B5	B F
C	C	C E G
C#	C#m	C# D# G#

E	Em	E G B
F#	F#5	F# C#
A	Am	A C E
A#	A#m	A# C# F

CONCLUSION

The chords for the Arohana and Avarohana of the ragas of Indu chakra was completely listed. Thus the above topic has been dealt successfully. The upcoming chapters deals with the chords for the Arohana and Avarohana of Rishi chakra.

FOOT NOTE

S.No	Author	Title	Pg.No
1.	S. Rajam	A confluence of art and music on 72 Melakarta raga	P.2
2.	Ibid.		P.5
3.	Dr. S. Bhagyalekshmy	Ragas in Carnatic music	P.23
4.	Ibid.		P.24
5.	P. Subba Rao	Raganidhi	P.54
6.	Ibid.		P.60

CHAPTER 4

CHORDS FOR THE AROHANA AND AVAROHANA OF RISHI CHAKRA

CHAPTER:4 CHORDS FOR THE AROHANA AND AVAROHANA OF RISHI CHAKRA

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CHAPTER:4 CHORDS FOR THE AROHANA AND AVAROHANA OF RISHI CHAKRA

INTRODUCTION

The seventh chakra in the melakarta Raga system is called as Rishi chakra. Rishi means sages. In Hinduism there are seven Rishis called as Saptarishis. They are Vasishta, Gowthama, Viswamithra, Kashyapa, Kamadagni, Atri and Bharadwaja.

The seventh chakra is also called as the Divine chakra and it is said to work on one's vocal chords power. The six ragas of Rishi chakra are,

1. Salagam
2. Jalarnavam
3. Jhalavarali
4. Navanitam
5. Pavani
6. Raghupriya

This chapter deals in detail about the chords for the Arohana and Avarohana of the six ragas in Rishi chakra.

4.1 SALAGAM

Salagam (pronounced salagam) is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 37th melakarta ragam in the 72 melakarta ragam system of Carnatic music. It is called Sowgandini in Muthuswami Dikshitar school of Carnatic music.[1]

4.1.1 STRUCTURE AND LAKSHANA

It is the 1st ragam in the 7th chakra Rishi. The mnemonic name is Rishi-Pa. The mnemonic phrase is sa ra ga mi pa dha na. Its arohana-avarohana structure (ascending and descending scale) is as follows

- arohana: S R_1 G_1 M_2 P D_1 N_1 Ṡ
- avarohana: Ṡ N_1 D_1 P M_2 G_1 R_1 S

In this scale, the notes shuddha rishabham, shuddha gandharam, prati madhyamam, shuddha dhaivatham and shuddha nishadham are used. As Salagam is a melakarta ragam, by definition it is a sampoorna ragam (has all seven notes in ascending and descending scale). It is the prati madhyamam equivalent of Kanakangi, which is the first melakarta.

4.1.2 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C	C5	C G
C#	C#5	C# G#
D	D	D F# A
F#	F#m	F# A C#
G	G5	G D
G#	C#5	C# G#
A	D5	D A

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D5	D A
D#	D#	D# G A#
G	Gm	G A# D
G#	G#5	G# D#
A	D5	D A
A#	D#5	D# A#

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D	D5	D A
D#	D#5	D# A#
E	E	E G# B
G#	G#m	G# B D#
A	A5	A E
A#	D#5	D# A#
B	E5	E B

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E5	E B
E#	E#	E# A B#
A	Am	A C E
A#	A#5	A# E#
B	E5	E B
C	E#5	E# C

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F5	F C
F#	F#	F# A# C#
A#	A#m	A# C# F
B	B5	B F#
C	F5	F C
C#	F#5	F C#

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C
F#	F#5	F# C#
G	G	G B D
B	Bm	B D F#
C	C5	C G
C#	C#5	C# G#
D	D5	D A

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G5	G D
G#	G#	G# B# D#
C	Cm	C D# G
C#	C#5	C# G#
D	D5	D A
D#	D#5	D# A#

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#5	G# D#
A	A	A C E
C#	C#m	C# E G#

D	D5	D A
D#	D#5	D# A
E	E5	E B

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G#	G#5	G# D#
A	A5	A E
A#	A#	A# C# F
D	Dm	D F A
D#	D#5	D# A#
E	E5	E B
F	F5	F C

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#5	A# E#
B	B	B D F#
D#	D#m	D# F# A#
E	E5	E B
F	F5	F C
F#	F#5	F# C#

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# E#
B	B5	B F
C	C	C E G

E	Em	E G B
F	F5	F C
F#	F#5	F# C#
G	G5	G D

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION
B	B5	B F
C	C5	C G
C#	C#	C# F G#
F	Fm	F G# C
F#	F#5	F# C#
G	G5	G D
G#	G#5	G# D#

4.2 JALARNAVAM

Jalarnavam (pronounced jalarnavam, meaning the ocean) is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 38th Melakarta ragam in the 72 melakarta ragam system of Carnatic music. It is called Jaganmōhanam in Muthuswami Dikshitar school of Carnatic music. [2]

4.2.1 STRUCTURE AND LAKSHANA

It is the 2nd ragam in the 7th chakra Rishi. The mnemonic name is Rishi-Sri. The mnemonic phrase is sa ra ga mi pa dha ni. Its arohana-avarohana structure (ascending and descending scale) is as follows

1. arohana: S R_1 G_1 M_2 P D_1 N_2 Ṡ
2. avarohana: Ṡ N_2 D_1 P M_2 G_1 R_1 S

(the specific notes used in this scale are shuddha rishabham, shuddha gandharam, prati madhyamam, shuddha dhaivatham, kaisiki nishadham)

As it is a melakarta ragam, by definition it is a sampoorna ragam (has all seven notes in ascending and descending scale). It is the prati madhyamam equivalent of Ratnangi, which is the 2nd melakarta.

4.2.2 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C	C5	C G
C#	C#5	C# G#
D	D	D F# A
F#	F#m	F# A C#
G	G5	G D
G#	C#5	C# G#
A#	Gm	G A# D

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D5	D A
D#	D#	D# G A#
G	Gm	G A# D
G#	G#5	G# D#
A	D5	D A
B	G#m	G# B D#

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION

D	D5	D A
D#	D#5	D# A#
E	E	E G# B
G#	G#m	G# B D#
A	A5	A E
A#	D#5	D# A#
C	Am	A C E

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E5	E B
E#	E#	E# A B#
A	Am	A C E
A#	A#5	A# E#
B	E5	E B
C#	A#m	A# C# F

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F5	F C
F#	F#	F# A# C#
A#	A#m	A# C# F
B	B5	B F#
C	F5	F C
D	Bm	B D F#

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C
F#	F#5	F# C#
G	G	G B D
B	Bm	B D F#
C	C5	C G
C#	C#5	C# G#
D#	Cm	C D# G

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G5	G D
G#	G#	G# B# D#
C	Cm	C D# G
C#	C#5	C# G#
D	D5	D A
E	C#m	C# E G#

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#5	G# D#
A	A	A C E
C#	C#m	C# E G#
D	D5	D A
D#	D#5	D# A
F	Dm	D F A

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G#	G#5	G# D#
A	A5	A E
A#	A#	A# C# F
D	Dm	D F A
D#	D#5	D# A#
E	E5	E B
F#	D#m	D# F# A#

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#5	A# E#
B	B	B D F#
D#	D#m	D# F# A#
E	E5	E B
F	F5	F C
G	Em	E G B

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# E#
B	B5	B F
C	C	C E G
E	Em	E G B
F	F5	F C
F#	F#5	F# C#

G#	Fm	F G# C

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION
B	B5	B F
C	C5	C G
C#	C#	C# F G#
F	Fm	F G# C
F#	F#5	F# C#
G	G5	G D
A	F#m	F# A C#

4.3 JHALAVARALI

Jhalavarali (pronounced Jhalavarali, meaning A moon with the sun's heat), is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 39th Melakarta ragam in the 72 melakarta ragam system of Carnatic music. It is called Dhalivarali in Muthuswami Dikshitar school of Carnatic music.[3]

4.3.1 STRUCTURE AND LAKSHANA

It is the 3rd ragam in the 7th chakra Rishi. The mnemonic name is Rishi-Go. The mnemonic phrase is sa ra ga mi pa dha nu. Its arohana-avarohana structure (ascending and descending scale) is as follows ():

1. arohana: S R_1 G_1 M_2 P D_1 N_3 Ṡ
2. avarohana: Ṡ N_3 D_1 P M_2 G_1 R_1 S

(the notes in this scale : shuddha rishabham, shuddha gandharam, prati madhyamam, shuddha dhaivatham, kakali nishadham)

As it is a melakarta ragam, by definition it is a sampoorna ragam (has all seven notes in ascending and descending scale). It is the prati madhyamam equivalent of Ganamoorti, which is the 3rd melakarta.

4.3.2 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C	C5	C G
C#	C#5	C# G#
D	D	D F# A
F#	F#m	F# A C#
G	G5	G D
G#	C#5	C# G#
B	Bm	B D F#

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D5	D A
D#	D#	D# G A#
G	Gm	G A# D
G#	G#5	G# D#
A	D5	D A
C	Cm	C D# G

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D	D5	D A
D#	D#5	D# A#
E	E	E G# B

G#	G#m	G# B D#
A	A5	A E
A#	D#5	D# A#
C#	C#m	C# E G#

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E5	E B
E#	E#	E# A B#
A	Am	A C E
A#	A#5	A# E#
B	E5	E B
D	Dm	D F A

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F5	F C
F#	F#	F# A# C#
A#	A#m	A# C# F
B	B5	B F#
C	F5	F C
D#	D#m	D# F# A#

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C
F#	F#5	F# C#

G	G	G B D
B	Bm	B D F#
C	C5	C G
C#	C#5	C# G#
E	Em	E G B

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G5	G D
G#	G#	G# B# D#
C	Cm	C D# G
C#	C#5	C# G#
D	D5	D A
F	Fm	F G# C

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#5	G# D#
A	A	A C E
C#	C#m	C# E G#
D	D5	D A
D#	D#5	D# A
F#	F#m	F# A C#

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G#	G#5	G# D#

A	A5	A E
A#	A#	A# C# F
D	Dm	D F A
D#	D#5	D# A#
E	E5	E B
G	Gm	G A# D

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#5	A# E#
B	B	B D F#
D#	D#m	D# F# A#
E	E5	E B
F	F5	F C
G#	G#m	G# B D#

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# E#
B	B5	B F
C	C	C E G
E	Em	E G B
F	F5	F C
F#	F#5	F# C#
A	Am	A C E

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION
B	B5	B F
C	C5	C G
C#	C#	C# F G#
F	Fm	F G# C
F#	F#5	F# C#
G	G5	G D
A#	A#m	A# C# E#

4.4 NAVANEETAM

Navaneetam (pronounced navanītam, meaning the eternal new one) is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 40th Melakarta ragam (parent scale) in the 72 melakarta ragam system of Carnatic music. It is called Nabhōmani in Muthuswami Dikshitar school of Carnatic music. Navaneetham is a Sanskrit word meaning fresh butter. 'Nava' meaning fresh (new) and 'neetham' meaning butter.[4]

4.4.1 STRUCTURE AND LAKSHANA

It is the 4th ragam in the 7th chakra Rishi. The mnemonic name is Rishi-Bhu. The mnemonic phrase is sa ra ga mi pa dhi ni. Its arohana-avarohana structure (ascending and descending scale) is as follows

1. arohana: S R_1 G_1 M_2 P D_2 N_2 Ṡ
2. avarohana: Ṡ N_2 D_2 P M_2 G_1 R_1 S

(this scale uses the notes shuddha rishabham, shuddha gandharam, prati madhyamam, chatushruti dhaivatam, kaisiki nishadam)

As it is a melakarta ragam, by definition it is a sampūrna ragam (has all seven notes in ascending and descending scale). It is the prati madhyamam equivalent of Vanaspati, which is the 4th melakarta ragam.

4.4.2 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C	C5	C G
C#	C#5	C# G#
D	D	D F# A
F#	F#m	F# A C#
G	G5	G D
A	A6	A C# E F#
A#	Gm	G A# D

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D5	D A
D#	D#	D# G A#
G	Gm	G A# D
G#	G#5	G# D#
A#	A#6	A# D F G
B	G#m	G# B D#

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D	D5	D A
D#	D#5	D# A#
E	E	E G# B
G#	G#m	G# B D#
A	A5	A E
B	B6	B D# F# G#

C	Am	A C E

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E5	E B
F	E#	E# A B#
A	Am	A C E
A#	A#5	A# E#
C	C6	C E G A
C#	A#m	A# C# E#

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F5	F C
F#	F#	F# A# C#
A#	A#m	A# C# F
B	B5	B F#
C#	C#6	C# F G# A#
D	Bm	B D F#

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C
F#	F#5	F# C#
G	G	G B D

B	Bm	B D F#
C	C5	C G
D	D6	D F# A B
D#	Cm	C D# G

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G5	G D
G#	G#	G# B# D#
C	Cm	C D# G
C#	C#5	C# G#
D#	D#6	D# G A# C
E	C#m	C# E G#

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#5	G# D#
A	A	A C E
C#	C#m	C# E G#
D	D5	D A
E	E6	E G# B C#
F	Dm	D F A

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G#	G#5	G# D#
A	A5	A E

A#	A#	A# C# F
D	Dm	D F A
D#	D#5	D# A#
F	F6	F A C D
A#	D#m	D# F# A#

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#5	A# E#
B	B	B D F#
D#	D#m	D# F# A#
E	E5	E B
A#	F#6	F# A# C# D#
G	Em	E G B

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# E#
B	B5	B F
C	C	C E G
E	Em	E G B
F	F5	F C
G	G6	G B D E
G#	Fm	F G# C

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION
B	B5	B F
C	C5	C G
C#	C#	C# F G#
F	Fm	F G# C
F#	F#5	F# C#
G#	G#6	G# C D# F
A	F#m	F# A C#

4.5 PAVANI

Pavani (pronounced pavani, meaning the purifier) is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 41st melakarta ragam in the 72 melakarta ragam system of Carnatic music. It is called Kumbhini in Muthuswami Dikshitar school of Carnatic music.[5]

4.5.1 STRUCTURE AND LAKSHANA

It is the 5th ragam in the 7th chakra Rishi. The mnemonic name is Rishi-Ma. The mnemonic phrase is sa ra ga mi pa dhi nu. Its aroh a n -avarohana structure is as follows

1. arohana: S R_1 G_1 M_2 P D_2 N_3 Ṡ
2. avarohana: Ṡ N_3 D_2 P M_2 G_1 R_1 S

The notes used in this scale are shuddha rishabham, shuddha gandharam, prati madhyamam, chathusruthi dhaivatham and kakali nishadham. It is a sampurna ragam – a ragam that has all seven swaras (notes). It is the prati madhyamam equivalent of Manavati, which is the 5th melakarta scale.

4.5.2 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION

C	C5	C G
C#	C#5	C# G#
D	D	D F# A
F#	F#m	F# A C#
G	G5	G D
A	A6	A C# E F#
B	Bm	B D F#

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D5	D A
D#	D#	D# G A#
G	Gm	G A# D
G#	G#5	G# D#
A#	A#6	A# D F G
C	Cm	C D# G

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D	D5	D A
D#	D#5	D# A#
E	E	E G# B
G#	G#m	G# B D#
A	A5	A E
B	B6	B D# F# G#
C#	C#m	C# E G#

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E5	E B
F	E#	E# A B#
A	Am	A C E
A#	A#5	A# E#
C	C6	C E G A
D	Dm	D F A

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F5	F C
F#	F#	F# A# C#
A#	A#m	A# C# F
B	B5	B F#
C#	C#6	C# F G# A#
D#	D#m	D# F# A#

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C
F#	F#5	F# C#
G	G	G B D
B	Bm	B D F#
C	C5	C G
D	D6	D F# A B
E	Em	E G B

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G5	G D
G#	G#	G# B# D#
C	Cm	C D# G
C#	C#5	C# G#
D#	D#6	D# G A# C
F	Fm	F G# C

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#5	G# D#
A	A	A C E
C#	C#m	C# E G#
D	D5	D A
E	E6	E G# B C#
F#	F#m	F# A C#

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G#	G#5	G# D#
A	A5	A E
A#	A#	A# C# F
D	Dm	D F A
D#	D#5	D# A#
F	F6	F A C D

G	Gm	G A# D

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#5	A# E#
B	B	B D F#
D#	D#m	D# F# A#
E	E5	E B
A#	F#6	F# A# C# D#
G#	G#m	G# B D#

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# E#
B	B5	B F
C	C	C E G
E	Em	E G B
F	F5	F C
G	G6	G B D E
A	Am	A C E

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION
B	B5	B F
C	C5	C G
C#	C#	C# F G#

F	Fm	F G# C
F#	F#5	F# C#
G#	G#6	G# C D# F
A#	A#m	A# C# F

4.6 RAGHUPRIYA

Raghupriya (meaning The one dear to Raghu) is a ragam in Carnatic music (musical scale of South Indian classical music). It is the 42nd melakarta ragam (parent scale) in the 72 melakarta ragam system of Carnatic music. It is called Ravikriya in Muthuswami Dikshitar school of Carnatic music. [6]

4.6.1 STRUCTURE AND LAKSHANA

It is the 6th ragam in the 7th chakra Rishi. The mnemonic name is Rishi-Sha. The mnemonic phrase is sa ra ga mi pa dhu nu. Its arohana-avarohana structure (ascending and descending scale) is as follows

1. arohana: S R_1 G_1 M_2 P D_3 N_3 Ṡ
2. avarohana: Ṡ N_3 D_3 P M_2 G_1 R_1 S

(the notes shuddha rishabham, shuddha gandharam, prati madhyamam, shatsruthi dhaivatham, kakali nishadham are used in this scale)

As it is a melakarta ragam, by definition it is a sampoorna ragam (has all seven notes in ascending and descending scale). It is the prati madhyamam equivalent of Tanaroopi, which is the 6th melakarta scale.

4.6.2 CHORDS FOR RAGA WITH DIFFERENT ROOT NOTE

If C, is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C	C5	C G
C#	C#5	C# G#
D	D	D F# A
F#	F#m	F# A C#
G	G5	G D

A#	Gm	G A# D
B	Bm	B D F#

If C# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
C#	C#5	C# G#
D	D5	D A
D#	D#	D# G A#
G	Gm	G A# D
G#	G#5	G# D#
B	G#m	G# B D#
C	Cm	C D# G

If D is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D	D5	D A
D#	D#5	D# A#
E	E	E G# B
G#	G#m	G# B D#
A	A5	A E
C	Am	A C E
C#	C#m	C# E G#

If D# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
D#	D#5	D# A#
E	E5	E B

F	E#	E# A B#
A	Am	A C E
A#	A#5	A# E#
C#	A#m	A# C# F
D	Dm	D F A

If E is taken as the root,

SCALE	CHORD	CHORD EXPANSION
E	E5	E B
F	F5	F C
F#	F#	F# A# C#
A#	A#m	A# C# F
B	B5	B F#
D	Bm	B D F#
D#	D#m	D# F# A#

If F is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F	F5	F C
F#	F#5	F# C#
G	G	G B D
B	Bm	B D F#
C	C5	C G
D#	Cm	C D# G
E	Em	E G B

If F# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
F#	F#5	F# C#
G	G5	G D
G#	G#	G# B# D#
C	Cm	C D# G
C#	C#5	C# G#
E	C#m	C# E G#
F	Fm	F G# C

If G is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G	G5	G D
G#	G#5	G# D#
A	A	A C E
C#	C#m	C# E G#
D	D5	D A
F	Dm	D F A
F#	F#m	F# A C#

If G# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
G#	G#5	G# D#
A	A5	A E
A#	A#	A# C# F
D	Dm	D F A
D#	D#5	D# A#
F#	D#m	D# F# A#
G	Gm	G A# D

If A is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A	A5	A E
A#	A#5	A# E#
B	B	B D F#
D#	D#m	D# F# A#
E	E5	E B
G	Em	E G B
G#	G#m	G# B D#

If A# is taken as the root,

SCALE	CHORD	CHORD EXPANSION
A#	A#5	A# E#
B	B5	B F
C	C	C E G
E	Em	E G B
F	F5	F C
G#	Fm	F G# C
A	Am	A C E

If B is taken as the root,

SCALE	CHORD	CHORD EXPANSION
B	B5	B F
C	C5	C G
C#	C#	C# F G#
F	Fm	F G# C
F#	F#5	F# C#
A	F#m	F# A C#

A#	A#m	A# C# E#

CONCLUSION

The chords for the Arohana and Avarohana of the ragas of Rishi chakra was completely listed. Thus the above topic has been dealt successfully.

FOOT NOTE

S.No	Author	Title	Pg.No
1.	S. Rajam	A confluence of art and music on 72 Melakarta raga	P.11
2.	Ibid.		P.13
3.	Dr. S. Bhagyalekshmy	Ragas in Carnatic music	P.56
4.	Ibid.		P.58
5.	P. Subba Rao	Raganidhi	P.97
6.	Ibid.		P.101

CONCLUSION

CONCLUSION

Music is universally adored by all kinds of people throughout the world. Every culture has rich musical traditions that continue to expand and adapt in order to reflect the times. In today's society, people of different backgrounds, whether they are religious, cultural, or ethnic backgrounds, are divided by politics. Music can serve as a way to bridge cultural gaps and increase understanding among people who may discriminate against others because of these differences.

Music can educate people about the different cultures that exist in our world while reducing the fear of the unknown that is typically prejudice and discrimination thrive from. More specifically, fusion music that combines the practices of different cultures will allow people around the globe to realize the power of collaboration, rather than division.

Fusion music offers a way to synthesize the best aspects of different cultures into an art form that everyone will enjoy. Thus this thesis is done to promote Harmony between two different cultures. Western music and carnatic music can be fused together to take each culture to the eyes of international audience.
Thus the following four chapters have been dealt in the thesis.

1. **72 Melakarta Raga system**: This chapter deals with the history, rules for a melakarta Raga and it's classification.

2. **Harmonising Arohana and Avarohana of a melakarta Raga**: This chapter deals with the components of Harmony and an

3. **Chords for the Arohana and Avarohana of Indu chakra**: This chapter deals in detail about the chords for the Arohana and Avarohana of the six ragas in Indu chakra

4. **Chords for the Arohana and Avarohana of rishi chakra**: This chapter deals in detail about the chords for the Arohana and Avarohana of the six ragas in Rishi chakra

In the end of the thesis an appropriate bibliography has been given.

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