

Rasa Analysis of Sthūla-Paśyantī id est Non-Lyrical Non- Percussive Indian Pure Music: A Pragmatic Approach in Therapeutic Context

by Abirlal Gangopadhyay

Submission date: 24-Jun-2022 04:26PM (UTC+0530)

Submission ID: 1862262696

File name: 18HSPH01_2022_Thesis.pdf (20M)

Word count: 51512

Character count: 266044

Rasa Analysis of Sthūla-Paśyantī id est **Non-Lyrical Non-Percussive Indian Pure Music:** **A Pragmatic Approach in Therapeutic Context**

*A thesis submitted to the University of Hyderabad in partial fulfilment of
the requirements for award of the degree of*

Doctor of Philosophy
in
Sanskrit Studies

by
Abirlal Gangopadhyay
18HSPH01



Department of Sanskrit Studies
School of Humanities
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Department of Sanskrit Studies
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June 2022



Declaration

I, **Abirlal Gangopadhyay**, declare that the thesis entitled ***Rasa Analysis of Sthūla-Paśyanṭī id est Non-Lyrical Non-Percussive Indian Pure Music: A Pragmatic Approach in Therapeutic Context*** submitted by me under the supervision of **Prof. J. S. R. Prasad**, and the co-supervision of **Prof. B. R. Shamanna** is bonafide research work. I also declare that it has not been previously submitted in part or in full to this university or any other university or institution for the award of any degree or diploma.

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This thesis is free from plagiarism and has not been submitted previously in part or in full to this university or any other university or institution for the award of any degree or diploma.

Further, the student has the following publications before submission of the thesis for adjudication. He has produced evidence for the same in the form of an acceptance letter or the reprint in the relevant area of his research:

1. Gangopadhyay, A., & Prasad, J. S. R. (2020). Adhigītaṃ Mokṣasvrūpavicāraḥ [Concept of Liberation in Sanskrit Musicology: A Study]. *Mahasvinī*, 1(1 & 2), 111–122. <https://nsktu.ac.in/wp-content/uploads/2022/03/Volume-01-2020.pdf>
2. Gangopadhyay, A., & Prasad, J. S. R. (2022). Therapeutic elements of music in ancient India: a brief review in Bṛhatṭrayī. *Indian Journal of History of Science*, 57(2), 78-86. <https://doi.org/10.1007/s43539-022-00043-3>

and has made presentations in the following conferences:

1. सङ्गीतवैद्यकीयम् – त्रिदोषाणामुपरि स्वराणां प्रभावः (Music Therapy: Effect of *Svara* on *Tri-doṣa*) in the *Three-day International Conference on Dispassionate Churning of Indology*, organized by Bharatiya Vidvat Parishat and Tattwa Samshodhana Sam-sat(R), Udupi, Karnataka, during 04-06 January, 2019.
2. अधिगीतं मोक्षस्वरूपविचारः (Concept of Liberation in Sanskrit Musicology: A Study) in an international workshop on *Myriad Sparkles of Vedānta: A Kaleidoscopic View to the Holistic Wisdom*, organized by the Department of Sanskrit, Jadavpur University, Kolkata, under the aegis of RUSA 2.0, during 06-11 January, 2020.

Further, the student has passed the following courses towards fulfilment of the course-work required for the PhD degree:

Sl.	Course Code	Course Title	Credits	Pass/Fail
1	SK801	Research Methodology	4	Pass
2	SK830	Dissertation Related Readings	4	Pass
3	SK802	Padārthavijñānam	4	Pass

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Acknowledgements

विवेकप्रभरामस्थां कृष्णप्रख्यां च सारदाम्।
स्वप्रभां नौमि मे मातः प्रसन्नां मयि शुद्धिदाम्॥

It seems that a few days ago I defended my interview to get an admission as a PhD researcher in this department. It is over now. My typical academic journey as a student, though I always WILL be a student, is now ended thus.

Tāntric philosophy teaches one of the most vital, fascinating and illuminating phenomena of the universe that there is no single entity that can survive alone, even God in His creatorship. So is “the present researcher”. From the first day, I became indebted to several people regarding my present job.

Prof. J. S. R. Prasad and Prof. B. R. Shamanna, my respected supervisors, enthusiastically made me onward to complete my research comprehensively. They were undoubtedly my guardians at this university. I need a significant word other than ‘thank’, which is not enough to pay my thankfulness to them.

Mentioning Prof. Anuradha J. is important, as she helped me improve my research thoughts as an esteemed research advisory committee member and always encouraged me. I thank her sincerely.

Prof. Amba Kulkarni helped me a lot by suggesting and lending various books on Indian music. It is necessary to mention that because of her suggestion, I was introduced to the writing of Sri Govinda Tembe, one of the essential phases that mobilised this research.

Names of some senior scholars and pundits are worth mentioning, as the discussions with them helped me untie my knotted thought threads at times. I am thankful to them—

Dr. Sandeep Kar, Dr. Y. Srinivasa Sarma, Dr. Vinod Vidwans, Vidwan A. Mallikarjuna Sarma and Dr. Jayant Kirtane. I also thank Kalamandalam Piyal Bhattacharya, whose enthusiastic teaching regarding Sanskrit musicological texts with their practical aspects moved my research in an exciting direction. He and his students, Sri Sayak Mitra and Sri Subhendu Ghosh helped me a lot. My thanks to them. Sayak da enabled me to get all COSMICs with patience and creativity by rendering them on Rudra Vīṇā. Subhendu da's immediate responses and sending the ṣaḍjagrāmic *mūrcchanās*, and *jāti*-clips on *Mat-takokilā* are worth mentioning.

Dr. M. V. R. Sharma did a great favour by allowing me to conduct music therapy sessions in his rehab. I convey my utmost thanks to him.

I am grateful to Mr. Sudhir Gadre, the author of the celebrated website [Ocean of Ragas](#). Mr. Gadre did a great help by sharing the vadi-samvadi-information of Hindusthani ragas with me. His support is unforgettable.

How can I forget Dr. Rakesh Das, my teacher? The first person with whom I had discussed my research topic for days to make that prominent before the UoH interview happened.

My sincere pranams to Swami Kripakarananda (Debotosh Maharaj), as I got so many path-clearing ideas while discussing the inner philosophy of music with him. The concept of intonation that took a significant part in my thesis is firstly hinted at by Maharaj, which made me enthusiastic to think about that more and more. As a result, I found the *kākuṣyañjanā* of Bharata.

I cannot overlook my beloved and closest teacher, friend and elder brother, Mr. Arnab Chakraborty, whose encouragement haunted me every time to complete such fascinating work. Not only in this research, but from my ninth standard, when I just started to learn Sanskrit, his positive support followed me and is following me.

I am thanking Mr. Aneesh Raghavan, my dear friend. His courageous participation in

the academic debate regarding many theoretical parts helped me to have better clarifications.

Mr. Sanal Vikram, Sanalji, my batchmate and roommate, is worth mentioning separately. I am heavily grateful to him regarding uncountable things. Because of him, I could present some parts of my research computationally. He conveyed his brotherly attention to those matters, making this thesis more significant.

Of course, Mr. Malay Maity, my other batchmate and roommate, is worth mentioning. He often used to be the first one with whom I used to share my research thoughts from a logical standpoint. I am thankful to him for being with me from my adolescence.

I should thank Brajesh Da, Mr. Brijesh Kr. Mishra. As a senior and big brother of the department, he supported me a lot.

Last but not least, I am conveying my thanks to all our department seniors, friends and juniors — Madhusoodanji, Sanjeevji, Anil, Sriramji, Samar, Sae, Amruta M and Amruta B, and others. Their companionship was a great help to breathe freshly.

June.2022

Abirlal Gangopadhyay

It is the power of expressing one's love and appreciation and sympathy for others, that enables one person to succeed better in spreading the idea than others...

Swami Vivekananda

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Text Initialism*

AH *Aṣṭāṅgahr̥daya*=Vāgbhaṭa et al., [2010](#)

Aṣ *Aṣṭādhyāyī*

BB *Bharatabhāṣya*=Nānyabhūpāla, [1961](#), [1976](#)

BBR *Bhagavadbhaktirasāyana*=Madhusūdanasarasvatī, [1962](#)

BD *Bṛhaddeśī*=Mataṅga, [1992](#), [1994](#)

BG *Bhagavadgītā*=Vedavyāsa and Śaṅkarācārya, [2018](#)

CS *Carakasamhitā*=Agniveśa et al., [2011](#)

Dhv *Dhvanyāloka*=Ānandavardhana and Abhinavagupta, [1983](#)

DLo *Dhvanyālokalocana*=Ānandavardhana and Abhinavagupta, [1983](#)

LS *Lakṣyaśaṅgīta*=Bhatkhande, [1910](#)

NS *Nāṭyaśāstra*=Bharata and Abhinavagupta, [1956](#), [2001](#), [2006](#)

PD *Pāṇinīyadhātupāṭha*=Shailaja and Kulkarni, [2011](#)

RV *Rāgavibodha*=Somanātha, [1609/1945](#)

*Only abbreviated books' names are accounted. Cited works are the editions of those Sanskrit books, from which original texts are quoted or mentioned.

- Rā** *Rāmāyaṇa*=GRETIL e-texts, Niedersächsische Staats- und Universitätsbibliothek Göttingen, [2008](#)
- SB** *Śatapatha Brāhmaṇa*=*Śatapatha Brāhmaṇam*, [1970](#)
- SDp** *Sāhityadarpaṇa*=Viśvanātha, [1936](#)
- SP** *Saṅgītapārijāta*=Ahobala, [1965](#)
- SR** *Saṅgītaratnākara*=Śārṅgadeva, [1978](#), [1989](#)
- SS** *Suśrutasamhitā*=Suśruta and Ḍalhaṇa, [2014](#)
- TA** *Tantrāloka*=Chaturvedi, [2002](#)
- TB** *Taittirīya Brāhmaṇa*=*kṛṣṇayajurvedīyaṃ taittarīyabrāhmaṇam Sāyaṇācāryaviracitabhāṣyasametam*, [1898](#)
- YV** *Yajurveda*
- Rg** *Rgveda*=Rajwade et al., [1933](#); Sontakke and Kashikar, [1946](#); Sontakke et al., [1936](#)

Abbreviations

J^5 *Auḍavajāti*=Pentatonic Scale

J^6 *Ṣāḍavajāti*=Hexatonic Scale

J^7 *Sampūraṇajāti*=Septanonic Scale

dM *Druta madhya* (*kākusthāna*)

mMn *Mandra mandra* (*kākusthāna*)

nMn *Nīca mandra* (*kākusthāna*)

uT *Ucca tāra* (*kākusthāna*)

vM *Vilambita madhya* (*kākusthāna*)

^{di}T *Dīpta tāra* (*kākusthāna*)

$_kS^h$ *Sthūlavaikharī* = linguistic sound

$_kS^m$ *Sthūlapaśyantī* = pure music

$_kS^p$ *Sthūlamadhyamā* = percussion sound

S_j *Śruti Jāti*

FDF Foundational Determinant Factor=*Ālambana Vibhāva*

GCC Gesture as Consequent

^{PE}CC Psychophysical Emotions as Consequent

^SCC *Svara* as Consequent

^SDF Stimulant Determinant Factor=*Uddīpana Vibhāva*

^WCC Word as Consequent

CC Consequent Component=*Anubhāva*

DCT $DF \cdot CC \cdot TE = Vibhāva \cdot Anubhāva \cdot Vyabhicāribhāva = vibhāvādi$

DF Determinant Factor=*Vibhāva*

KS *Kākusthāna*

NIM North Indian Music (Hindusthani)

PE Psychophysical Emotions

RE *Rasa*-Equation

RM *Rasa*-Matrix

RT *Rasa* Theory

RV *Rasa*-Value

SE Stable Emotion=*Sthāyibhāva*

SIM South Indian Music (Carnatic)

SRD *Svara-Rasa-Doṣa*

SS-22 22 *Śruti* Scale

TE Transitory Emotions=*Vyabhicāribhāva/Sañcāribhāva*

Indic Notation Scheme

These notations are basically for Sanskrit texts, but in some cases for other Indian languages like Hindi (specially इ) and Bengali* (specially ঁ, ষ, ঞ etc.) these are only used.

a	ā	i	ī	u	ū	ṛ	ṝ	ḷ	e	ai	o	au
अ	आ	इ	ई	उ	ऊ	ऋ	ॠ	ऌ	ए	ऐ	ओ	औ

ka	kha	ga	gha	ṇa	ya	va	ra	la
क	ख	ग	घ	ङ	य	व	र	ल
					ज्ञ*			

ca	cha	ja	jha	ña	śa	ṣa	sa	ha
च	छ	ज	झ	ञ	श	ष	स	ह

ṭa	ṭha	ḍa	ḍha	ṇa	ḷa	ṛa	ṁ	ṁ̄
ट	ठ	ड	ढ	ण	ळ	ड़	ं	ँ

ta	tha	da	dha	na	ḥ	ṃ
त	थ	द	ध	न	ः	य*

pa	pha	ba	bha	ma
प	फ	ब	भ	म

Used *Svara* Notation Schemes

Ancient *Svara* Notation Scheme

Used Notation ² (<i>svara</i> ^{<i>śrutis</i>})	<i>Svara</i> names according to NS	
	<i>Śuddha</i>	<i>Vikṛta</i>
Sa ⁴	<i>Ṣaḍja</i>	
Ri ³	<i>Rṣabha</i>	
Ga ²	<i>Gāndhāra</i>	
Ma ⁴	<i>Madhyama</i>	
Pa ⁴	<i>Pañcama</i>	
Dha ³	<i>Dhaivata</i>	
Ni ²	<i>Niṣāda</i>	
Sa ²		<i>Cyuta Ṣaḍja</i>
Pa ³		<i>Kaiśika Pañcama</i>
Dha ⁴		<i>Catuṣśruti Dhaivata</i>
Ni ³		<i>Kaiśika Niṣāda</i>

²There were 12 *vikṛta svaras* according to SR, but only mentioned *svaras* are given here.

General *Svara* Notation Scheme

<i>Used Notation</i>	Hindustani Name (Popular Notation)	Carnatic Name (Popular Notation)
Sa	<i>Ṣaḍja</i> (S)	<i>Ṣaḍja</i> (S)
R	<i>Komala Rṣabha</i>	<i>Śuddha Rṣabha</i> (R ₁)
Ri	<i>Śuddha Rṣabha</i> (R)	<i>Catuḥ-śruti Rṣabha</i> (R ₂)/ <i>Śuddha Gāndhāra</i> (G ₁)
G	<i>Komala Gāndhāra</i> (g)	<i>Sādhāraṇa Gāndhāra</i> (G ₂)/ <i>Ṣaṭśruti Rṣabha</i> (R ₃)
Ga	<i>Śuddha Gāndhāra</i> (G)	<i>Sādhāraṇa Gāndhāra</i> (G ₃)
Ma	<i>Śuddha Madhyama</i> (M)	<i>Śuddha Madhyama</i> (M ₁)
M	<i>Tīvra Madhyama</i> (m)	<i>Prati Madhyama</i> (M ₂)
Pa	<i>Pañcama</i> (P)	<i>Pañcama</i> (P)
Dh	<i>Komala Dhaivata</i> (d)	<i>Śuddha Dhaivata</i> (D ₁)
Dha	<i>Śuddha Dhaivata</i> (D)	<i>Catuḥ-śruti Dhaivata</i> (D ₂)/ <i>Śuddha Niṣāda</i> (N ₁)
N	<i>Komala Niṣāda</i> (n)	<i>Kaiśikī Niṣāda</i> (N ₂)/ <i>Ṣaṭśruti Dhaivata</i> (D ₃)
Ni	<i>Śuddha Niṣāda</i> (N)	<i>Kākalī Niṣāda</i> (N ₃)

General *Svara* Notation Scheme for Septets

<i>Mandra Saptaka</i> (Lower Septet)	<i>Madhya Saptaka</i> (Middle Septet)	<i>Tāra Saptaka</i> (Higher Septet)
sa	Sa	Sā
r	R	Ṛ
ri	Ri	Rī
g	G	Ḡ
ga	Ga	Gā
ma	Ma	Mā
m	M	Ṣ
pa	Pa	Pā
dh	Dh	Ḍh
dha	Dha	Dhā
n	N	Ṇ
ni	Ni	Nī

Ancient *Svara* Notation Scheme in Septets

<i>Mandra Saptaka</i> (Lower Septet)	<i>Madhya Saptaka</i> (Middle Septet)	<i>Tāra Saptaka</i> (Higher Septet)
sa ⁴	Sa ⁴	Sā ⁴
ri ³	Ri ³	Rī ³
ga ²	Ga ²	Gā ²
ma ⁴	Ma ⁴	Mā ⁴
pa ⁴	Pa ⁴	Pā ⁴
dha ³	Dha ³	Dhā ³
ni ²	Ni ²	Nī ²

Rasa Abbreviation Policy

Abbrev.	<i>Rasa</i>
Sr	<i>Śṛṅgāra</i> ³
H	<i>Hāsyā</i>
B	<i>Bībhatsa</i>
Bh	<i>Bhayānaka</i>
R	<i>Raudra</i>
V	<i>Vīra</i>
A	<i>Adbhuta</i>
S ₁	<i>Sambhoga Śṛṅgāra</i>
S ₂	<i>Vipralambha Śṛṅgāra</i>
K	<i>Karuṇa</i>
S	<i>Śānta</i>

³Used to denote relation in ancient contexts.



The originality of the race seemed to have been lost. In music no more were there the soul-stirring ideas of the ancient Sanskrit music, no more did each note stand, as it were, on its own feet, and produce the marvellous harmony, but each note had lost its individuality. The whole of modern music is a jumble of notes, a confused mass of curves. That is a sign of degradation in music.

Swami Vivekananda



(Complete Works of Swami Vivekananda, Vol. III, Lectures from
Colombo to Almora, The Work Before Us)

Introduction

Herbs used in Ayurvedic therapeutics require a standard process to be transformed into effective medicines. Similarly, non-percussive, non-lyrical pure music presupposes a standard method to use it as therapeutic technique. It is believed that music can impact the psyche of beings in a positive way. But, music of any kind cannot bring a therapeutic effect. Music certainly evokes emotions in some form, but if evoked emotions are assistive in therapeutic applications, then it demands a thorough inquiry into the aspects of music.

Therapeutic application of music is also possible through pure Indian music. Pure music is called ‘*sthūlapaśyantī*’ (elaborated in [chapter 1](#)) in the Indian philosophical tradition. Pure music means non-lyrical, non-percussive in nature. This term encompasses all music that exists in other parts of the world including any instrumental music. In order to minimize the scope, the phrase ‘pure music’ is prefixed with the adjective ‘Indian’, so that it is confined to Indian context only.

The genre of music discussed in this thesis is restricted to Indian traditional music. It is a general perception that rhythms and lyrics have identical impact on psycho-emotional cognitive behaviour because they generate a typical blend of music. Such blended music is not helpful in our present study in order to identify the relish of *rasa* in its pure form. We have excluded all related renditions (viz., rendering *bandiśa* or *kṛti*) with percussions and lyrics from the present study including any hymnal chanting etc.

From a typical śāstric approach, such renditions can only be considered as music (*gīta*

or *saṅgīta*) that are rendered using five *svaras*, at least. Hence, the present effort neither included hymns or hymn-like utterances wherein very few musical notes (3-4) are used to execute nor any lyrical music whose primary focus is mostly on lyrics. Chanting hymns can also bring therapeutic effects, but that cannot be called as music therapy. Possibly they could be termed as ‘hymnal therapy’, ‘mantric therapy’ and so on.

Rasa analysis, as it is done in poetics and related contexts, has been neglected in the musical context. But, experiencing *rasa* from a musical rendition is a common experience to us. Hence, always there is an excellent scope of research to go deep into the nuances of using music as a therapeutic technique.

The present thesis is focussed on knowing the therapeutic efficacy of music. Since humans (beings rather) enjoy music, the relation between music and humane constitution has also become a part of the present study. Indeed, there is no direct reference in any available Sanskrit text which informs such a relation, but a thorough logical interpretation and analysis could unveil new dimensions of research in Sanskrit Studies.

Research Statement

Presumably, there is a relation between musical notes, aesthetic emotions, and somatic humours, which can be established by using concepts unearthed from Sanskrit texts.

Aim

- To establish the inherent relation between musical notes, emotions, and somatic humours towards developing a therapeutic model based on Indian intellectual tradition

Objectives

- To study the philosophical concepts and theories of musical sound
- To identify the conventional *svara* positions on 22 *śruti* scale to interpret and analyse *rasa* connection as referred in *śāstras*
- To analyse the significant factors of music in *rasa* evocation based on *rasa* theory
- To devise the evaluation procedure to identify *rasa* of pure music
- To explore the inherent relation between *svara* and *rasa*
- To identify the interrelationship between *svara*, *rasa* and *doṣa*
- To design a therapeutic model of *rasa* centric music for individuals with stress and related issues

Methodology

The primary resources are various Sanskrit texts of musicology, aesthetics, and philosophy. Popular texts like *Śaṅgītaratnākara* (ca. 1200–1300 AD.), *Tantrāloka* (ca. 1000–1100 AD.), *Vyaktiviveka* (ca. 1100 AD.) provide quite a good information to study the power of musical sound philosophically and psychologically. The relation between *rasa* and *svara* was mentioned in important texts like *Nāṭyaśāstra* (ca. 300 BC. –300 AD.), *Sarasvatī-hṛdayālāṅkāra* (aka *Bharatabhāṣya*) (900 AD.), *Śaṅgītaratnākara*, and *Śaṅgītapārijāta* (1600-1700c AD.) and have discussed based on the ancient note positions on SS-22. Hence, understanding the conventional note positions on SS-22 helps to extract the critical identification of *rasas* with *svaras*. *Rasa* theory, with its three components, factors (*vibhāva*), reaction and responses (*anubhāva*), and transitory emotion (*vyabhicāribhāva*): also known as *Rasasūtra* (Rasa-aphorism) of Bharata Muni are widely discussed

in the context of poetic and dramatic works. Description of the psychological process of the evocation of *rasa* from non-lyrical non-percussive music is scattered in various traditional texts. However, that is not sufficient to fulfil all required components of *Rasasūtra*. Hence, a critical study in lines of conventional music system, hypothetical *rasa* connections are attempted. In this regard, the 17th chapter of *Nāṭyaśāstra* rendered a great help as it deals with intonations. This intonation is one of the keys to unlock the factors to achieve desirable *rasa* from pure music.

Ayurvedic texts helped further to establish the interrelation of *svara*, *rasa* and *doṣa*, which further helped to establish a basis of SRD (=Svara-Rasa-Doṣa) theory in Indian music therapy. Before investigating into the Ayurvedic texts, the connection of *svara* and *rasa* is established. Therefore, the possible connection of *rasa* and *doṣa* helped the researcher to propose the entire concept of SRD.

With the help of the primary style of rendering Indian music, *rasa* centric music and the emotional responses with a pilot survey supported the holistic *rasa* analysis of pure music. Statistical analysis helped to prove the significances *rasa* appearances and to back the proposed theories of *rasa* regarding music. The present researcher used ANOVA, logistic regression, Cronbach's alpha formula and others to produce results that fulfilled the survey process.

Rasa centric music and its effect on stressed individuals further helped to claim the practicality of the proposed theory and its possible therapeutic application. In this phase, paired t-test (using IBM SPSS), based on the BP data before and after music therapy, was used to understand the significance of the music therapy effect of individuals.

Detailed methods of evaluation process of practical studies are mentioned in the related chapters ([chapter 7](#) & [chapter 8](#)).

Gaps in Research

Identifying *rasa* of a musical rendition is one of the primary focusses of this research. In the fourth volume *Hindusthāni Saṅgīt Paddhati*, Pt. V. N. Bhatkhande (1957) spoke a few words regarding the concept of *rasa* in music. He had hypothetically expressed his views and left the discussion for further research (Bhatkhande, 1957, p. 26).

Unfortunately, some scholars (Karuna et al., 2013) reiterated his hypothesis without any further analysis.

Prof. Prem Lata Sharma (1970) tried to discuss this topic from *śāstras*. She tried to justify the *rāga-dhyāna* concept in past music tradition (now lost forever) which was an attempt after separating music from drama.

Prof. Sharma made some observations regarding the application of *Rasa-sūtra* in pure music. She has tried to apply the cause (*kāraṇa*) and effect (*kārya*) behavior of *vibhāva* and *anubhāva* (Sharma, 1970). When she suggested that there is no physical suggestion that could relate to any particular situation in life, it does not satisfy the suggestiveness of musical sound (Sharma, 1970). It is established among traditional critics like Ānandavardhana⁴ and Mahimabhaṭṭa⁵ that there is no primary meaning (*vācyārtha*) of musical sound, so the expectation of any physical suggestion, especially in the form of character, is basically impossible. It is unsure that there is no suggestive meaning without a primary meaning.

Interestingly, she did not share her views about *vyabhicāribhāvas* regarding music. Nevertheless, she impressively stated that in the conventional music system, only five emotions could be identified: *śānta*, *śṛṅgāra*, *karuṇa*, *vīra*, and *adbhuta* (Sharma, 1970).

⁴*gītādiśabdebhyo'pi rasābhivyaktiḥ asti | na ca teṣāṃ antarā vācyaparāmarśaḥ; avācakasyāpi gītāśab-dāde rasādilakṣaṇārthāvagamadārśanāt* etc. (3.33) see in Durgāprasād & K. P. Parab ed. 1990, p. 228, 235

⁵*na hi asya geyasya iva ratyādibhiḥ bhāvaiḥ svābhāvika eva sambandhaḥ, sarvasya eva tat-pratīti-prasaṅgāt*; see in R. Mukherji trans. 2005, p. 217

Govinda S. Tembe (1970), in his article, critically observed the *rāga-rasa* relationship.

Tembe (1970) cited Pt. Bhatkhande's hypothesis regarding *rasa*. Tembe shifted his focus of discussion towards the *vādin svara*. He (Tembe, 1970) mentioned the importance of *vādin svara* and remarked thus—“The only satisfactory way to determine the sentiment of a raga is, therefore, to base it on the leading (*vadi*) note of the raga (p. 25).”

It is essential to mention that Tembe's observations generate great hope to find a better hypothesis regarding the connection between *svara* and *rasa*.

Dr. J. Pal (1938) tried to relate each of the seven *svaras* with somatic humours based on some Sanskrit verses which speak of the colours and other metaphysical characteristics of *svaras*. Unfortunately, conventional characteristics of *svaras* are changed from the ancient system. In the ancient system, *svaras* were fixed in their natural frequency and are attributed with different colours regarding the *mūrcchanās*. It will be elaborately explained in the forthcoming chapters. Moreover, *śuddha* and *vikṛta* concepts of *svaras* are also changed now. It means to elaborate on the characteristic of Ri, people expect to know the two textures of it, i.e., *komala ṛṣabha* or *śuddha ṛṣabha* and *śuddha ṛṣabha* or *caturṣruti ṛṣabha*. Hence, it is difficult to state the connection between *svara* and somatic humour based on the ancient interpretations of music. In this regard, whoever (Sinha, 2015) supported the hypothesis of Pal committed the same mistake.

Also, when scholars mention research studies with *rāga* in connection with some specific health issues, they do not mention the exact cause behind choosing of that *rāga* for that particular problem (Deshmukh et al., 2009; Kamat-Nadkarni, 2012; Kar et al., 2015; Singh, 2015).

The Thesis Outline

The present thesis is divided into eight chapters besides an introduction and the conclusion.

In the first chapter *Philosophy of Musical Sound* it was attempted to understand how music could be philosophically interpreted in the Indian tradition. In this context, Abhinavagupta's excellent insights paved the way for this study as he is only one who expressed his thought clearly about the powers of music and its philosophy. Interestingly, the music which Abhinavagupta considers is pure and untouched by percussion and lyrics. It is also logical that to understand the potential of music, it should be pure in form, i.e., without the touch of lyrics and percussion. Philosophically, this pure music is called '*Sthūla-Paśyanti*'.

In the context, it is tried to respond on possible instance/s of music employed by Ayurvedic physicians as a therapeutic technique. Interestingly, supportive instances are found in authentic Ayurvedic texts, instilling confidence in the current approach from Ayurvedic aspect. These historical aspects and a historical overview of music therapy as an individual science are discussed in the second chapter titled *A Brief Historical Study on Music Therapy in India*.

On the question of what *rasa* can be identified from a particular poetic expression, scholars primarily evaluate it according to the three standard components in the evocation of a *rasa*. This is indeed a psychological phenomenon behind the *rasa* evocation explained in an aphorism by Bharata Muni. Previously, it was not found in the literature until Bharata revealed it in *rasa* aphorism regarding pure music. This present research tried to explain all *rasa*-aphoristic components regarding pure music, which helped to identify which and which specific *rasa* could be experienced as an effect of pure music. To understand the application of core *rasa* theory in the conventional pure music, it needs to convert the ancient *svara* positions on the 22 *śruti*-scale (henceforth SS-22) and their connection with *rasas* described in the ancient works of musicology into the conventional *svara* positions on SS-22, which is elaborately described in the third chapter titled *Svara-Rasa Relationship in Śāstras*. Later, in the fourth chapter titled *Application of Rasa-Sūtra in Pure Music*, the three traditional components to understand *rasa* are described in the context of pure music.

The fifth chapter titled *Interrelationship of Svara-Rasa-Doṣa* elaborately discussed how the connection of *svara-rasa-doṣa* can be established. When music is fixed to be used as a therapeutic tool, emotions are the essential factors that music can control. Emotions are innate psychological aspects. Hence, the psycho-somatic relations, and the possible connection between *rasa* and somatic humours is discussed and identified further in this chapter.

Interestingly, the present researcher found a therapeutic context in *Aśvamedha* called *Gāthāgāna* or *Uttaramandrā-gāna* which has inspired him to design a therapeutic model, which is termed as ‘Fourfold Vedic Music Therapy’ (FVMT). It is observed that music is prescribed to protect the realm and the kingship of a king who takes a vow to perform *Aśvamedha* sacrifice. It is deduced that music helps a king to maintain his psychological well-being, which further helps him to be confident in reinstating his realm and kingship. This discovery again strongly supports the proposed *svara-rasa-doṣa* interrelationship. The interpretation and the prototypical description of the FVMT model are elaborated in the sixth chapter titled *Fourfold Vedic Music Therapy: A Prototype*.

Based on the *rasa* interpretation of music according to *rasa* aphorism, music clips recorded on Rudravīṇā are used to elicit responses from the public. A questionnaire is designed based on the *rasa* theory to obtain required data on a suggested scale. This online survey helped the researcher to understand how much *rasa* centric music can be created based on the proposed interpretation of *rasa* theory. The same is elaborated in the seventh chapter titled *Understanding Rasa: A Pilot Survey*.

Finally, to understand how much such *rasa* centric music is effective in practice, music therapy sessions are conducted through a field study. This practical study results are discussed in the eighth chapter titled *Effect of COSMIC⁶: An Observational Pilot Study*.

⁶Stands for — Consonance Scale Music / *Samvādayātīgīta*

1

Philosophy of Musical Sound

Music as a subject of research demands the knowledge of its very foundation called *sound*. According to the Indian approach of musicology, scholars technically express the word ‘*nāda*’, that is equivalent to the word ‘*sound*’. Laymen know that manifested sound is the foundation of music as unmanifested sound is impossible to put into use. Indian musicologists found the path of music to be a way of salvation, which automatically absorbs more subtle aspects like unmanifested sound. Hence, the concept of manifested sound and unmanifested sound in Indian traditional thought is a matter of thorough investigation.

Every discussion about *nāda* in Sanskrit musicological texts (*saṅgītaśāstra*) starts with a metaphysical form of sound to physical sound. So, *nāda* has the key to the power of

music which opens the door to test whether music has a potential to be used as a therapeutic technique.

This chapter tries to explain the philosophical aspects of pure musical sound, without lyrics and accompaniments. This is one of the objectives in context of the present study.

Clarity of understanding is the key in successfully deriving a precise result. Knowing any concept in the domain of knowledge is dependent upon understanding the meaning first. For instance, one might be aware of the term called ‘mind’. The conceptual understanding comes only when one studies the theories of mind from various school of philosophy. So, conceptual understanding leads to knowing a proper meaning. Therefore, in any context, knowing the meaning is essential, and its subsequent etymological discussion is necessary.

1.1 Etymological Analysis of ‘Nāda’

Etymologically, the Sanskrit word ‘nāda’ is derived from the verbal root $\sqrt{nad}$ ¹, both in transitive² and intransitive³ forms, with the *ghañ* affix. Generally, this affix supports the meaning of its verbal root only. According to Kṣīrasvāmin (before 1165 AD.) — author of the *Kṣīratarāṅgīnī*, a work of meanings and explanations on the *Pāṇinīya-dhātupāṭha*

¹The root is found in the *Pāṇinīya-dhātupāṭha* as ‘*ṇadam*’. According to a grammatical rule, *upadeśe* ‘*janunāsika it*’ (Aṣ, 1.3.2), *am* is elided from the stem. Next, by another rule — *ṇo naḥ* (Aṣ, 6.1.65) — the first letter ‘*ṇ*’ will be changed as ‘*n*’. Finally, ‘*nad*’ is the stem that could connote more than one meaning.

²For instance: (*droṇaḥ*) *pātayāmāsa samare* **siṃhanādaṃ** **nanāda** *ca* | (*Mahābhārata*, 6.49.27_{ab} in GRETEL e-texts 2008); *nṛttāvasāne naṭarājarājo* **nanāda** **ḍhakkāṃ** *navapañcavāram* | (*Nandikeś-varakāśikā*, 1_{ab}, in P. Dvivedī ed. 1989, p. 273) [Underlined words are subjects, bolded words are verbs, and bolded nonitalic words are objects]

³As in these examples: *śataṃ varṣāṇi* *varṣanti* **nadanti** *rabhasasvanaiḥ* | (*Śrīmadbhāgavata*, 12.4.13_{ab} in GRETEL e-texts 2008); *bhidyamānā yasumatī* **nanāda** *raghunandana* || (Rā, 1.38.19_{cd} in GRETEL e-texts 2008) [Underlined words are subjects and bolded words are verbs]

(henceforth PD) — the sense of $\sqrt{nad}$ is *avyakta-śabda* i.e. unmanifested sound. Wherein, the *Mādhavīya-dhātuvṛtti* of Sāyaṇa (ca. 1400 AD.) describes the same to be as *śabda*, sound.⁴

According to the PD, all verbal roots are classified into ten groups (*gaṇas*). $\sqrt{Nad}$ comes under the first group, i.e., *bhvādi-gaṇa*. Here, both Kṣīrasvāmin and Sāyaṇa mention that when $\sqrt{nad}$ appears again under the tenth group, i.e., *curādi-gaṇa*, the meaning is changed. According to the former, it is *bhāsārtha* (to shine?), and according to the latter, it is *bhāṣārtha* (to speak?).⁵ Hence, there are four meanings of the said verbal root altogether (see Table 1.1).

Verb in PD	Meaning in <i>Kṣīratarāṅginī</i>		Meaning in <i>Mādhavīya-dhātuvṛtti</i>	
	<i>bhvādigāṇa</i>	<i>curādigāṇa</i>	<i>bhvādigāṇa</i>	<i>curādigāṇa</i>
<i>ṇadam</i>	unmanifested sound (<i>avyakta śabda</i>)	to shine (<i>bhāsārtha</i>)	sound (<i>śabda</i>)	to speak (<i>bhāṣārtha</i>)

Table 1.1: Four meanings of $\sqrt{nad}$

It can be observed that Sāyaṇa does not adjectivise the word ‘*śabda*’ (sound). Hence, the term is impregnated with the sense of ‘unmanifested’ along with ‘manifested’. It is the power of the adjectival phrase that signifies an attribute of its signifier. Amara also says in his tripartite that ‘*nāda*’ is a synonym of sound.⁶ From the accounts of Sāyaṇa and Amara, it is evident that the sense of *nāda* stands for the overall aspects of sound.

⁴See in Shailaja and Kulkarni, 2011

⁵It is difficult to find an example of the $\sqrt{nad}$ of tenth *gaṇa*. At least, the researcher has neither been able to find a single usage nor any other (Dinda, 2021, p. 273). Hence, we confine to the first two meanings only.

⁶*śabde nināda-ninada-dhvani-dhvāna-rava-svanāḥ | svāna-nirghoṣa-nirhrāda-nāda-nisvāna-nisvanāḥ | āravā-rāva-saṃrāva-virāvāḥ; Amarakoṣa, 1.6.22_{cd}-23* (Synonyms of *śabda* (sound) in Sanskrit are *nināda*, *ninada*, *dhvani*, *dhvāna*, *rava*, *svana*, *svāna*, *nirghoṣa*, *nirhrāda*, ***nāda***, *nisvāna*, *nisvana*, *ārava*, *ārāva*, *saṃrāva*, and *virāva*.)

1.1.1 Contextual Sense of Unmanifested Sound

What should one understand by unmanifested and manifested sound here? It is an admitted truth that the relation between sound and meaning is innate. For instance, the uttering sound of ‘tree’ innately represents an object consisting roots, branches, leaves, etc. Whereas, the sound emanated from ringing of a bell or the bellow of an ox is not objective but rather a mere sound. Such sounds would just illuminate the subjects, nothing else. Hence, manifestation is keenly related to an object and illumination of a subject is the concerned area of unmanifested sound.

In the case of the word ‘tree’, the meaning is called *vācyārtha*, the direct meaning. These types of sounds are called as manifested sounds in Indian philosophy. For instance, the verbal root $\sqrt{vad}$ means manifested or articulated sound, *vyakta-vāk*.⁷ Therefore, the present author talk about the unmanifested sound to maintain the propriety of the context.

Though there are a few examples of $\sqrt{nad}$ expressing both unmanifested and manifested sounds, the sense of manifested sound is quite related to some Vedic utterances. Hence, from this aspect also, we shall focus on the unmanifested approach of the term in the present study:

1. In case of manifested sound, the Veda counts such sense: *nādasya mā rudhataḥ kāmā āgānnīta ājāto amutaḥ kutāscit | lopāmudrā vṛṣāṇaṁ nī riṇāti dhīramadhīrā dhayati śvasantām*||⁸ Sāyaṇa states the meaning of *nādasya* as *japādhyayana-kartuḥ* — genitive case of the *prātipadika* (nominal root) ‘*japādhyayana-kartṛ*’ that means reciter of hymns and reader of the Vedas.⁹ According to the *Nighaṇṭu* (3.16), *nada* and *nāda* words are synonymous with the meaning of chanter (*stotr*).¹⁰ In all such

⁷*vada vyaktāyām vāci* – the root $\sqrt{vad}$ used to express sense of manifested sound, generally humane sound.

⁸See Rg, 1.179.4 in Rajwade et al., 1933; also check with Rg, 10.11.2 in Sontakke and Kashikar, 1946

⁹Though the word ‘*nada*’ does not contain the same affix, the source of meaning is inherent in the verbal root.

¹⁰See in L. Sarup ed. 1967, p. 19

cases, object is essential and glimpses of such examples show the manifested shades of meaning.

2. On the other hand, examples like *nṛttāvasāne/ pātayāmāsa samare* etc. (see [foot-note 2](#)) disclose the unmanifested approach similar to earlier examples of bell and ox. But, still, there could be a question as: from the sound of the double drum (*ḍhakkā*) of Śiva, how did Pāṇini perceive *Māheśvara-sūtras*¹¹ in *nṛttāvasāne* like examples? Patañjali says, “By making Samyama on word, meaning and knowledge, which are ordinarily confused, comes the knowledge of all animal sounds.”¹² The expression ‘*animal sound*’ in the above quote, refers those are not commonly decodable sounds (*madhyamā?*).

However, it is clear that the unmanifested sound is not unusable, but it has no possibility of being identified with a material object or something significantly separated from it.

¹¹ *aiuṇ, ṛḷk...*, *śaśasar, hal* | 14 aphorisms, foundations of Pāṇiniyan grammar

¹² *Śabdārtha-pratyayānām itaretarādhyāsāt saṅkaras-tat-pravibhāga-samyamāt sarva-bhūta-rutajñānam* | *Yogasūtra*, 3.17; This is the translation of Swami Vivekananda. Swamiji explains thus: “The word represents the external cause, the meaning represents the internal vibration that travels to the brain through the channels of the Indriyas, conveying the external impression to the mind, and knowledge represents the reaction of the mind, with which comes perception. These three, confused, make our sense-objects. Suppose I hear a word; there is first the external vibration, next the internal sensation carried to the mind by the organ of hearing, then the mind reacts, and I know the word. The word I know is a mixture of the three — vibration, sensation, and reaction. Ordinarily these three are inseparable; but by practice the Yogi can separate them. When a man has attained to this, if he makes a Samyama on any sound, he understands the meaning which that sound was intended to express, whether it was made by man or by any other animal.” (CWV, Vol. I, *Raja Yoga*)

1.2 Classifications of Sound & Disposition of Musical Sound

B. S. Raikote (2008) observes in the introduction, “This cosmic *om* found new expressions generally as *śabda* in *Sāṅkhya*; *dhvani* or *śabda* in *Nyāya-Vaiśeṣika*, *Mīmāṃsā* and *Vedānta*, and as *nāda* in *Yoga*, *Āgamas* and in musicology. However, the grammarians used both. In fact all these expressions — *śabda*, *dhvani* and *nāda*, in relation to human *vāk* — stand for “sound” in English (p. 1).”

It is observable that the primary schools of Indian thoughts have their insights about sound. Some consider that sound is only a matter to be produced (*kārya*). Others believe it to be eternal (*nitya*) too. Whereas, musicologists consider that sound is both eternal and a product. Our focus in this research is on the musicological aspects of sound. Śārṅgadeva in his *Saṅgītaratnākara* (henceforth SR), says that *nāda* is the Brahman, the universal reality (1.3.1). *Upaniṣad* says in contrast, “The Brahman is not sound!”¹³ Hence, Kallinātha, the famous commentator on SR, clarifies that when one meditates upon the *nādabrahman*, the cosmic sound (it is also known in scriptures as *praṇava*, *Śabdabrahman*, *parā vāk*, *Om*, *Brahmaśakti* etc.), it makes one to attain the Brahman just like the illumination of precious gem from distance makes one to attain the very gem itself after approaching it.¹⁴ One may argue that such illumination might be illusion of something else leading to false knowledge. To solve this complexity, one has to accept *śabda* as a *pramāṇa* (verbal testimony) that is accepted in major Indian philosophical schools. Interestingly, in the above example, *śāstra* interprets the type of illusion as an ‘apparent illusion’ called as *saṁvādhibhrama*¹⁵ / *avisṁvādhibhrama*.¹⁶ *Upaniṣads* also back this present statement of attaining ultimate truth:

¹³*aśabdām asparśam arūpam avyayam ...*; *Kāthopaniṣad*, 1.3.15

¹⁴*parāvāk-paryāyasya brahmaśakteḥ nādasya brahmaṇaḥ atyantapratyāsannatvāt tadupāsanāyāṃ kṛtāyāṃ brahmaprāptiḥ maṇiprabhāpravṛttasya maṇilābhavad bhaved*; SR, p.76

¹⁵*yathā kaścinmaṇiprabhāṃ maṇibuddhyā paśyan bhrānta eva tathāpi tadgrahaṇakāle maṇiṃ labhate taḥ sa saṁvādhibhramaḥ* | Śrīdhara-svāmin in his commentary on *Gītā*, 13.26

¹⁶*Siddhāntaleśasaṅgraha*, 3.5

etad vai satyakāma param cāparam ca brahma yad oṅkārah | tasmād vidvān etenaivā yatanenaikataram anveti||¹⁷

“O Satyakama, this very Brahman, that is (known as) the inferior and superior, is but this *Om*. Therefore the illumined soul attains either of the two through this one means alone (trans. 2006, p. 470)”

Śaṅkara Bhagavatpāda (trans. 2006, pp. 470-471) gives his minute insight on the above:

param hi brahma śabdādyupalakṣaṇānarhaṁ sarvadharmaviśeṣavarjitam, ato na śakyamatīndriyagocaratvātkevalena manasāvagāhitum | oṅkāre tu viṣṇvādipratimāsthānīye bhaktyāveśitabrahmabhāve dhyāyinām tatprasīdatītyavagamyate śāstraprāmāṇyāt | tathā param ca brahma | tasmātparam cāparam ca brahma yadoṅkāra ityupacaryate | tasmādevaṁ vidvān etenaiva ātmaprāptisāadhanenaiva oṅkārabhidhyānena ekataram paramaparam vā anveti brahmānugacchati | nediṣṭhaṁ hyāḷambanam oṅkāro brahmaṇah ||

“As the supreme Brahman cannot be (directly) indicated by words etc. and is devoid of all distinctions created by attributes—and as It is (on that account) beyond the organs—therefore the mind by itself cannot explore It. But to those who meditate on *Om*, which is comparable to the images of Viṣṇu and others and on which is fixed the idea of Brahman with devotion, that Brahman becomes favourable (and reveals Itself).¹⁸ This is understood and the authority of scriptures. Similar is the case with the inferior Brahman. Hence it is said in a secondary sense that, that Brahman which is both inferior and superior is but *Om*. *Tasmāt*, therefor; *vidvān*, one who knows, thus; *anveti*, attains; *ekataram*, either of the two—the superior or the inferior Brahman; *etena āyatanena eva*, through this means alone, through this that is a means

¹⁷*Praśnopaniṣad*, 5.2 in Gambhirananda trans. 2006

¹⁸Also see *Brahmasūtra*, 4.1.5

for the attainment of the Self, consisting in meditation on *Om*; for *Om* is the nearest symbol of Brahman.”

1.2.1 Divisions of Sound

Various Indian schools of philosophical thought have divided the sound into four or three categories:

1. *Parā* (Supreme/Cosmic)
2. *Paśyantī* (Subtle/Visible)
3. *Madhyamā* (Perceiving/Intermediate/Psychological)
4. *Vaikharī* (Physical/Articulated/Gross)

Patañjali in his *Mahābhāṣya* explains that the word ‘*catvāri*’ in the Vedic verse *catvāri śṛṅgā trayo asya pādā* etc.,¹⁹ is meant to be “the classes of words known as noun, verb, preverb and particle.”²⁰ To support the above, on the commentary of Kaiyaṭa’s (1000-1100 AD.) *Mahābhāṣya-pradīpa*, Nāgeśa Bhaṭṭa (1700-1800 AD.) says that Patañjali intended to refer to *parā*, *paśyantī*, *madhyamā*, and *vaikharī* by saying ‘the classes of words—*padajātāni*’ in the *Bhāṣya*.

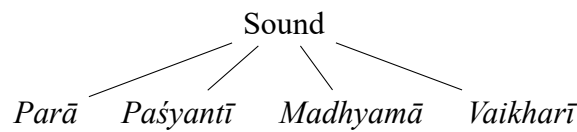


Figure 1.1: Fourfold Sound

Bhartṛhari does not consider *parā* to be the first one, but the ultimate one. To him, *parā* is the supreme Brahman, “beyond language and cannot be described” (Senani, 2016,

¹⁹See Rg, 4.85.3 in Sontakke et al., 1936

²⁰*padajātāni nāmākhyātopasarganipātāśca* — in Patañjali’s *Vyākaraṇa-Mahābhāṣya: Paspasāhnikā*, 1986, p. 52

p. 212). Hence, he gives a threefold concept of sound, which starts from *paśyantī*.²¹ This school of thought is known as ‘*Śabdādvaita*’. In the present context, musicologists agree with the Advaitic way of thinking; therefore, we will go with the previously mentioned concept that the *parā vāk* or *Om* is the nearest to the ultimate reality or the Parabrahman. In the words of Bhagavān Śrī Rāmakṛṣṇa Paramahansa, “The sandhya merges in the Gayatri, the Gayatri in Om. A man is firmly established in spiritual life when he goes into samadhi on uttering ‘Om’ only once.”²²

In the commentary of *Brahmasūtra*, 1.3.28, Śaṅkara Bhagavatpāda (trans. 2009, pp. 209-210) points out that this *parā vāk* is an instrumental cause (*nimitta-kāraṇa*) of the origin of the world:

sthite vācakātmanā nitye śabde nityārtha-sambandhini śabdavyavahārayogyārtha-vyaktiniṣpattiḥ ‘ataḥ prabhavaḥ’ iti ucyate | ... tathānyatrāpi ‘sa manasā vācam mithunaṁ samabhavat’ ityādinā tatra tatra śabdapūrvikā sṛṣṭiḥ śrāvya-ate; smṛtirāpi — ‘anādinidhanā nityā vāgutsṛṣṭā svayaṁbhuvā | ādau vedamayī divyā yataḥ sarvāḥ pravṛttayaḥ’ iti

“...there is first a word without a beginning and bearing a meaning with which it has an eternal connection, then only is there a possibility of an individual cropping up which can be fit to be referred to by that word. In that sense it is said to originate from a word... “He (Prajāpati) brought about the union of speech (the Vedas) with the mind”, and other places where the Vedas speak of creation as preceded by words. The Smṛti also speaks similarly: “In the beginning was projected by Prajāpati, the eternal speech in the form of the Vedas which have no beginning and end, which are divine (i.e., run through the traditional line alone), and from which proceed all activities.” ”

²¹ *Vākyapadīya*, 1.143 in K. Raghavan Pillai trans. 1971

²² *The Gospel of Sri Ramakrishna*, II.3 (Thursday, October 2, 1884) [সন্ধ্যা গায়ত্রীতে লয় হয়, গায়ত্রী ঔঁকারে লয় হয়। একবার ঔঁ বললে যখন সমাধি হয় তখন পাকা। [sandhyā gāyatrīte lay hay, gāyatrī ōṅkāre lay hay. ekabār om balale yākhan samādhi hay takhan pākā.]]

Therefore, from this eternal sound known as *parā vāk*, the whole world is manifested, and it is the substratum of the latter.²³

In the process of the creation, *parā* to *paśyantī*, *paśyantī* to *madhyamā*, and *madhyamā* to *vaikharī* is the succeeding order. *Vaikharī* is the grossest manifestation of sound that humans use and can be grasped attentively, which is the physical sound or ‘articulate speech’ (Bhartṛhari, 1971, p. 157).

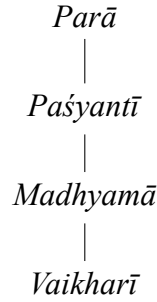


Figure 1.2: Hierarchy of Sound Manifestation

Madhyamā is the sound that is the cause of the physical sound. In other words, before one utters a sentence like ‘I am going’, a psycho-audio-phenomenon²⁴ in the psychological level takes place which is also dependent on auditory sense and sound, such stage of sound is *madhyamā*, “intermediate, since it is between the stage of being a principle and being uttered” (Bhartṛhari, 1971, p. 157).

Before the *madhyamā* stage, a state of sound (*paśyantī*) exists, which is unheard by the senses but can only be heard by the *yogins*.²⁵

²³See *Aitareya-āranyaka*, 2.1.6, and also see *Māṇḍūkyopaniṣadbhāṣya* (1st mantra) with *Ānandagiriṭīkā*

²⁴In next sections it will be understood that this phenomenon is the eternal ‘desire’ (*icchā*) as pointed out by Abhinavagupta.

²⁵Nāgeśa says this in his commentary on Kaiyaṭa’s *Mahābhāṣya-pradīpa*: *paśyantī tu lokavyavahārātītā | yoginām tu tatrāpi prakṛtipratyayavibhāgāvagatirasti |*

1.2.2 Concept of *Sthūla-Paśyantī*

Ācārya Abhinavaguptapāda (940 – 1015 AD.), the most authentic philosopher in the traditional Indian aesthetics, in his *Tantrāloka* (TA) again divides each of the *paśyantī*, *madhyamā* and *vaikharī* into three sub-categories: *sthūla*, *sūkṣma* and *para*, thus, makes the basic sound ninefold (trans. 2008, p. 125).²⁶

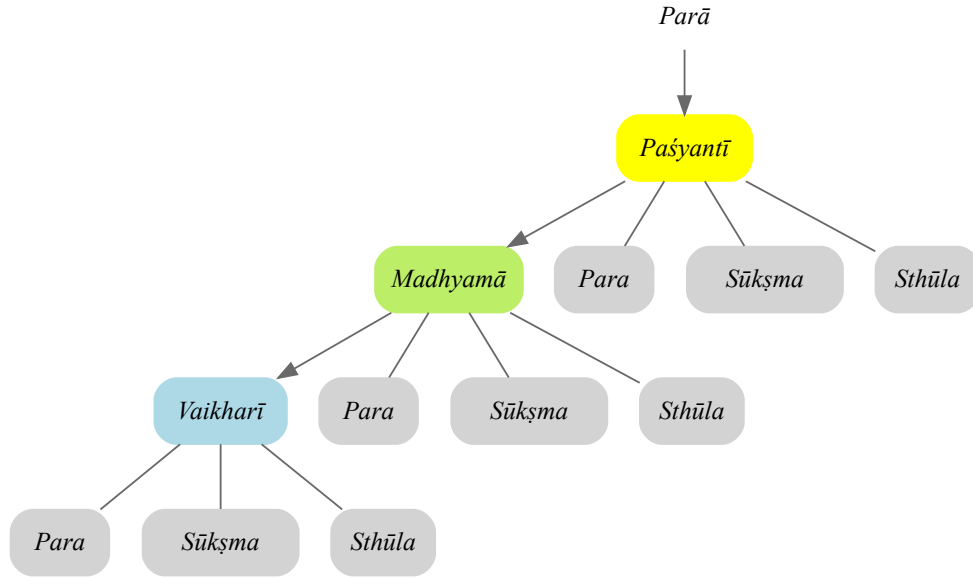


Figure 1.3: Ninefold Sound

The above division is from two extreme ends of humane audio-perception, wherein the first is linguistic speech and other is musical sound. It is exciting to discuss how Abhinavagupta observes and describes this ninefold sound that is more explicit and unique compared to the conventional thinking.

The *Vaikharī*, which is referred by Abhinavagupta is not the *Vaikharī*, that is explained by most of the Indian philosophers. Any articulated or physical sound is called *Vaikharī*. But according to Abhinavagupta, the physical sound has to be called as ‘*sthūla*’ (lit. gross), which the auditory organ perceives physically. He thus explains gross *vaikharī* (TA, 3.244), *madhyamā* (TA, 3.241) and *paśyantī* (TA, 3.237_{cd}-238_{ab}) as follows:

²⁶*tāsāmapī tridhā rūpaṃ sthūlasūkṣmaparatvataḥ* | 3.237

yā tu sphuṭānām varṇānām utpattau kāraṇaṃ bhavet |

sā sthūlā vaikharī yasyāḥ kāryaṃ vākyaḍi bhūyasā ||

“That which causes the gleaming of letters, is the grosser form (of *madhyamā*) *vaikharī*. Its work is preferably related to more sentences etc. (Abhinavagupta, trans. 2008, p. 127).”

yattu carmāvanaddhādi kiñcit tatraiṣa yo dhvaniḥ |

sa sphuṭāsphuṭarūpatvānmadhyamā sthūlarūpiṇī ||

“The somewhat sound, produces from *mṛdaṅga* etc. which are covered with leather, is *madhyamā vāk* of gross form out of *paśyantī* state causes broken (burst) and unbroken forms (Abhinavagupta, trans. 2008, p. 126).”

tatra yā svarasandarbhāsubhagā nādarūpiṇī ||

sā sthūlā khalu paśyantī varṇādyaprabhāgataḥ |

“In these, that which is beautiful form of *nāda* having *svaras* (musical aspects) is referred as *gross paśyantī* for (in comparison to beyond) this has no category of letters etc. (Abhinavagupta, trans. 2008, p. 125).”

Though the verses are placed according to gross *vaikharī* to gross *paśyantī*, the author opens the discussion by defining the gross *paśyantī* or the musical sound at the first place, which indicates that the observation is from the aspect of the perception of the gross subtle sound. Moreover, Abhinavagupta is the first seer who explicitly points out that *vaikharī*, *madhyamā*, and *paśyantī* these all are individually rooted to cosmic sound as all have their ‘*para*’ division (see Figure 1.4).

Before the discussion goes into further details, it is essential to explain Figure 1.4 in a short point, which will help to understand the present context. In Figure 1.4, *S*=sound, *h*=humane linguistic sound, *p*=sound of percussion etc., *m*=musical sound; *j*=*jñāna-śakti*, *i*=*icchā-śakti*, and *k*=*kriyā-śakti*. Horizontal view of this picture represents the conventional perception of *vaikharī*, *madhyamā* and *paśyantī*. The vertical view represents the process of sound manifestation as described by Abhinavagupta with their ninefold di-

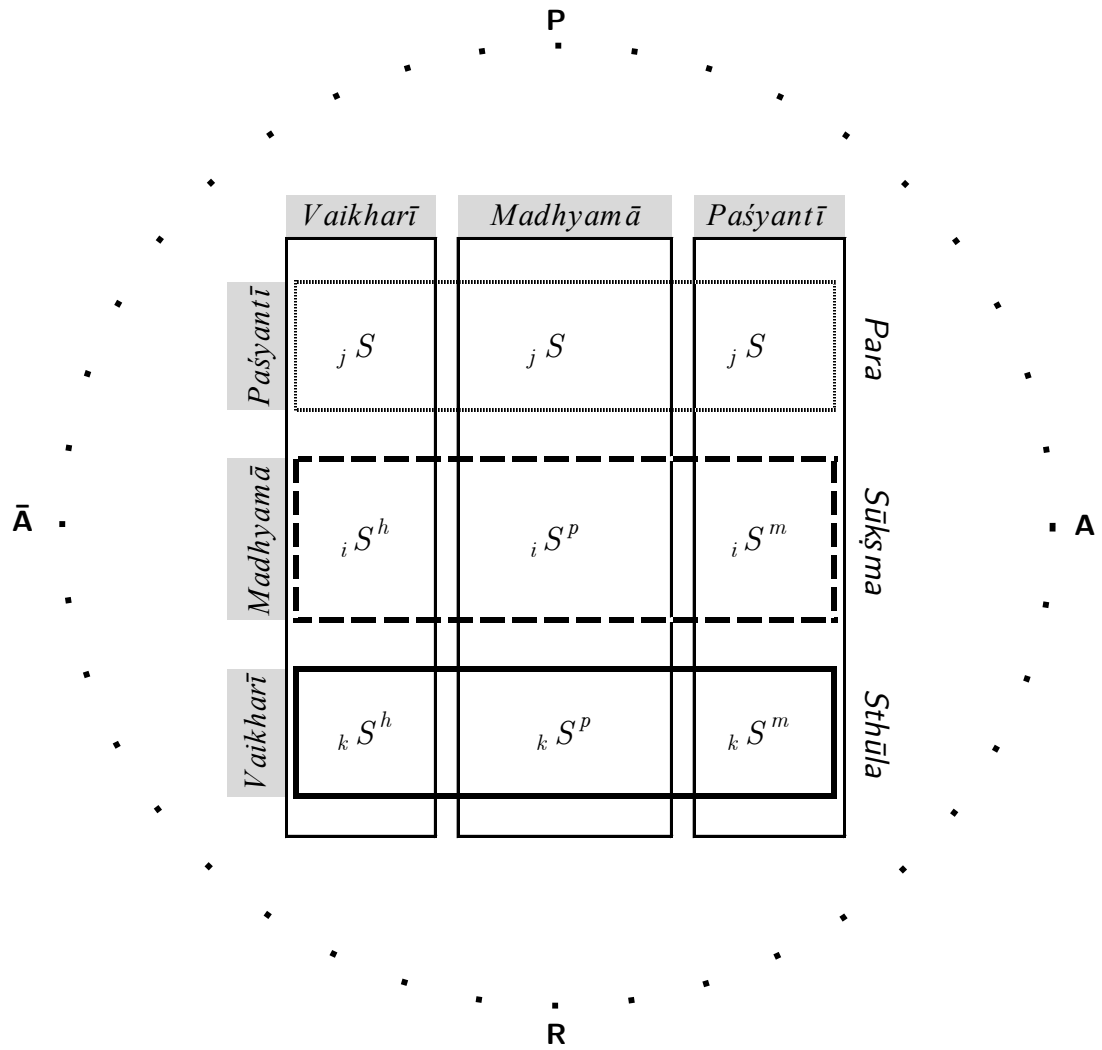


Figure 1.4: Holistic Presentation of Sound

vision, presented on the right side. Hence, ${}_kS^m$ means pure musical sound or *sthūla-paśyantī*. The outer circle represents the substratum of all sound creation, that is the *Parā Vāk* or the *Praṇava* which is previously discussed from the vedāntic perspective.

The most subtle of gross sounds are musical sounds according to Abhinavagupta, and the grossest manifestation is the speech sound. The base, on which the grossness is established, is the perception of letters. In the speech sound, we perceive sentences with separated letters. On the other hand, in musical sound, no letter is perceived there. Of course, all music woven with lyrics and accompanied by percussion instruments is excluded by musical sound. Pure music is our matter of discussion here. If music coupled with lyrics is a matter of discussion, then the investigative sound is an amalgam of gross *paśyantī* and gross *vaikharī* (i.e., ${}_kS^{h+m}$) since the presence of letters are felt. Music accompanied by percussions, which articulate the gross *madhyamā*, is again an amalgam (${}_kS^p + {}_kS^m = {}_kS^{p+m}$) and cannot satisfy a reasonable investigation.

All other sounds are placed under the *madhyamā*, i.e., intermediate, as these two extrema are identified. Abhinavagupta defends the base of putting these sounds in the intermediate category with two crucial words, *sphuṭa* and *asphuṭa*. These two words have the same root, i.e., $\sqrt{sphuṭ}$, means ‘*vikasana*’, that is to expand or to open or to blow or to blossom. Amongst these meaning possibilities, only ‘to blossom’ is more meaningful than others. Though Chatterjee translated it to be in the ‘to blow’ sense, that does not justify the intention of the original author as the translator translated the word ‘*sphuṭa*’ in the context of gross *vaikharī* as ‘gleaming’, which indeed is ‘to blossom’, but never in the sense of ‘to blast/blow’. Rājānaka Jayaratha (ca. 1300 AD.), the significant commentator on the text says as follows:

tatra carmāvanaddhe mṛdaṅgādau eṣa yo dhvaniḥ karāghātādyutthaḥ ṣaḍjādyekata-marūpatvena abhivyaakteḥ pūrvāpekṣayā sphuṭaḥ, varṇādivibhāgānullāsāt ca asphuṭaḥ, ata eva madhyamāśabdavyapadeśyaḥ (p. 474)

In the case of percussion instruments like *mṛdaṅga* etc. which are made of

leather, the articulated sound, produced by the beat with the hand, is manifested as the manifestation of musical notes like *ṣaḍja* etc. occurs more individually (hence prominently) regarding the previous sound (gross *paśyantī*). On the other hand, this kind of sound is unmanifested as the appearance of letters (as in gross *vaikhari*) is not there. This is why the sound of *mṛdaṅga* etc. is stated as intermediate.

It is fascinating to understand from the above passage that regarding the manifestation of *svaras*, musical sound is not manifested or *spṛṣṭa*, as *svaras* in *ālāpa* (as the contextual music is pure and could be found in this form only) have the nature to move to and fro, and so they are not manifested in this sense that they are not identified separately.²⁷ While explaining the perception of meaning from sentences, Jayanta Bhaṭṭa (ca. 820-900 AD.) does a remarkable observation related to this context which strengthens the above. He says, “*ṣaḍjarsabhaḡāndhāradhaivatādibhyaḡ arthāntaram eva grāmarāgaḡ — a grāma-rāga*²⁸ is different from (*svaras*, i.e.) *ṣaḍja*, *ṛṣabha*, *gāndhāra*, *dhaivata* etc.”²⁹

Therefore, musical sound is unmanifested in a unique way. Though it manifests all musical notes, it is unmanifested from the aspect of its perception. On the other hand, musical sound is clearly unmanifested regarding the manifestation of letters. Furthermore, this explanation concludes discussion of the previous sections as detailed below.

This unparallel explanation of musical sound becomes more meaningful for the word ‘*nāda*’. It is pointed out that the term is used in musicological texts to explain the fundamentals of the musical sounds rather than using ‘*śabda*’ or ‘*vāk*’, wherein *śabda* is a common word for all sounds, while *vāk* is mainly related to the vocal sound. There is also a fair reason to claim that the ‘*nāda*’ or the unmanifest sound, could never be perceived

²⁷Jayaratha says, “*tatra svarāṇām ṣaḍjādīnām yaḡ parasparam lolībhāvātmā sandarbhaḡ, ata eva ṣaḍjādyekamatve niyataḡ (aniyataḡ?) anudbhinnavarṇādivibhāga ālāpaḡ.*” See in R. Chaturvedi ed. 2002, p. 471

²⁸To understand *grāma-rāga*, see *Bṛhaddeśī* and *Śaṅgītarāntrākara*. Though, the intended meaning could be perceived from the present traditional music (without lyrics version) also.

²⁹*Nyāyamañjarī* in Gaurinath Sastri ed. 1983, p. 115

from the gross *vaikharī*, as *vaikharī* is always connected to the perception of letters.

Vikhara means physical body, and the sound produced through the vocal cord is called *Vaikharī*. So, Jayaratha (2002 ed.) in his commentary says, “*vikhare śarīre bhavatvād vaikharī* (p. 470).” Jayanta Bhaṭṭa also refers to the same meaning in his *Nyāyamañjarī*. However, this meaning is not to be found in any Sanskrit lexicons. Etymology of the very word was well-known in tradition— “*vikhara iti dehendriyasaṅghāta ucyate | tatra bhavā vaikharī* (*vikhara* means the aggregation of body and organs. *Vaikharī* is the product of such aggregation).”³⁰ Hence, it is convincing to say that musicologists monotonically use the word ‘*nāda*’ to explain the basics of musical sounds. While describing the musical sound, Abhinavagupta used ‘*nāda*’ in a compound denoting the form of music as ‘*nādarūpiṇī*’ (TA, 3.237_d) — ‘one which is the embodied form of *nāda*’.³¹

In light of the etymology of *vaikharī*, the following question may arise:

1. Could the vocal *ālāpa* be placed under *sthūla-vaikharī*?

No, since the primary intention is regarding the letters (*varṇādyaprabhāga* (TA, 3.238_b)—no separation of letters).

2. Would the letters (*te ta ra na, ri ra ra na, ā na na te tarana* etc.) uttered in *dhrupada ālāpa*, come under *sthūla-vaikharī*?

No, according to Abhinavagupta, *sthūla-vaikharī* (TA, 3.244) is the cause (*kāraṇam*) of the origination of the letters (*varṇānām utpattau*) and sentences (*vākyādi*) and the actions (or performable forms) (*kāryam*) of this sound. Therefore, the perception of *sthūla-vaikharī* could be fulfilled with sentence formation, which is not in *dhrupada ālāpa*.

³⁰*Nyāyamañjarī* in G. Sastri ed. 1983 (p. 118)

³¹Further related to *Lalitāsahasranāma*: *vīraḥ śhipriyā vīrā naiṣkarmyā nādarūpiṇī*

1.2.3 Inclusion of Fourfold Conventional Classification

From the above discussion, the nature of conventional *vaikharī* is observed as per the *sthūla* aspect of Abhinavagupta. Further, he describes the threefold classification of *sūkṣma* sound known as *madhyamā* in conventional system as follows (TA, 3.245-246_{ab}) (see [Figure 1.4](#)):

asmin sthūlatraye yat tadanusandhānam ādivat |
pr̥thak pr̥thak tat tritayaṃ sūkṣmaṃ ityabhidhīyate ||
ṣaḍjaṃ karomi madhuraṃ vādayāmi bruve vacaḥ |

“That which is first or root discovery in these three grosses, is called subtle within these three separately. I am making ṣaḍja (the first note of Indian musical octave), playing sweet, uttering speech, these three are subtle differences (Abhinavagupta, trans. [2008](#), p. 128)”

Jayaratha explains more clearly that the discovery is in the form of desires, i.e., desire to sing, to play, to speak.³² Hence, the psychological phenomenon which one can perceive before speaking is *sūkṣma-vaikharī*. In expressing rhythm physically, the psycho-audio-phenomenon is *sūkṣma-madhyamā*. Similarly, in the case of music, it is called *sūkṣma-paśyantī*.

Abhinavagupta explains further the *para* stage of *vaikharī*, *madhyamā* and *paśyantī* as follows (TA, 3.247_{cd}-248_{ab}):

etasyāpi trayasyādyam yadrūpam anupādhimat ||
tat param tritayaṃ tatra śivaḥ paracidātmakaḥ |

“The first statusless³³ form of these three is *para*, beyond and all these three

³²*jigāsā-vivādayiṣā-vivakṣātmakānusandhānatrayarūpam etat sūkṣmaṃ bhedatrayam iti tātparyārthaḥ* (2002 ed., p. 475)

³³“Without attributes” might be correct translation for ‘*anupādhi*’

are mixed forms. In these dwells Śiva as *parāsamvid* (Abhinavagupta, trans. 2008, p. 128).”

Jayaratha, in his commentary, says that the above stage is the attribution less condition of the discovery of the previous three, i.e., desire to sing, play, and speak. This is the state of knowledge before the desire of singing and the remaining. All the above discussion should not be linked with the objective knowledge gained from the world as the state of desire itself is put into the subtle psychological level. Hence, obviously, this state is beyond our normal psychological state. Abhinavagupta says that in the *para* stage of *vaikharī*, *madhyamā* and *paśyantī*, they are diluted as the self-luminous knowledge (the *parāsamvit* or *paracit* or Śiva). But how the undividable self-luminous knowledge could be divided? Hence, Abhinavagupta clarifies the motive behind the three divisions of *para*. Three primary energies should be accepted because of the perception of divisions (i.e., in the form of gross etc.) explained (TA, 3.248_{cd}) — *vibhāgābhāsanāyāṃ ca mukhyāstisro'tra śak-tayah*.

In this context, Rāmakaṇṭha (ca. 10th century AD.), the author of *Vivṛti* on *Span-dakārikā* of Vasugupta (ca. 8th century AD.), further clarifies to understand this subject more lucidly:

*sā iyaṃ eva vaikharīrūpatām āpannā (...) sthūlā kriyāśaktiḥ (...) tatpūrvā ca madhyamā vāk icchāśaktiḥ, tatpūrvā ca paśyantī jñānaśaktiḥ iti*³⁴

She (the *Parā Vāk*, the cosmic sound or the universal Mother) is the only one embodying Herself as *Vaikharī* being the gross power of any action (*kriyā-śakti*). Before that, She represents Herself as *Madhyamā*, the power of desire/will (*icchā-śakti*) and She is as the power of knowledge (*jñāna-śakti*) in *Paśyantī* preceding it.

In Figure 1.4, has the *kriyā-śakti* with *vaikharī*, *icchā-śakti* with *madhyamā*, and *jñāna-*

³⁴In J. C. Chatterji ed. 1913, pp. 153-154

śakti with *paśyantī* to be known vertically? Not exactly. Rāmakaṇṭha suggests that the manifestation of *kriyā-śakti* is in the gross level. Hence, the connections are horizontally appeared in the Figure 1.4, which means, connection of these energies are related to the conventional classifications. In other words, relationships are linked at *sthūla*, *sūkṣma* and *para* levels. Consequently, the intended sense expressed by Jayaratha that the *sūkṣma* level is the place of desire makes more sense. Hence, from the whole discussion, it becomes clear that in Figure 1.4, ${}_kS^m$, i.e., musical sound or gross *paśyantī*, is also an output of the cosmic power of action.

This is a good discussion regarding the philosophy and metaphysics of musical sound in Indian thought. There could be further psychological and metaphysical nuances to discuss, but they are out of context. In the next section, the philosophy behind pure music regarding its ability to make one delighted is discussed.

1.3 Musical Enjoyment: *Ānanda-Śakti* & *Mādhurya-Śakti*

Most probably, Abhinavagupta was the first critique and philosopher who made crucial philosophical observations regarding music that are easy to comprehend and relevant to the present times.

In TA, after explaining gross *paśyantī*, he explains the cause that attracts and indulges a person into music. He comments thus (TA, 3.238_{cd}-240_{ab}):

avibhāgaikarūpatvaṃ mādhuryaṃ śaktirucyate ||
sthānavāyavādigharṣotthā sphuṭataiva ca pāruṣī |
tadasyāṃ nādarūpāyāṃ saṃvitsavidhavr̥ttitaḥ ||
sājātyāt tanmayībhūtirjagityevopalabhyate |

The gist of the above verses is as follows:

The nature of the complete non-separated state in letters (*avibhāgaikarūpatva*)³⁵ is called the power of sweetness (*mādhurya-śakti*). The coarseness (*pāruṣī*) is the articulated sound generated due to friction between internal air and vocal cords. In the case of articulating sounds, it is confined to the linguistic speech only. However, as the distinction of *svaras* does not stand separate and dilute into one musical experience, such pure musical sound expresses the power of sweetness (*mādhurya-śakti*) to make one indulged and delighted subsequently.

Due to the *mādhurya-śakti* only, the Yogins and enlightened souls find themselves identical (*tanmayībhūti*) with the pure music. Unlike other two forms of gross sounds, the *sthūla-paśyantī* maintains a deep connection with the *jñāna-śakti*³⁶ of the universal Mother (*parā vāk*). Enlightened souls can quickly identify themselves through music as they acquired the absolute knowledge, already.

Not only the music possesses the *mādhurya-śakti*, but it is also possessed with another vital energy of the cosmic Mother called — the ‘*Ānanda-śakti*’. Abhinavagupta says (TA, 3.209_{cd}-210):

tathāhi madhure gīte sparśe vā candanādike ||
mādhyaṣṭhyavigame yāsau hṛdaye spandamānatā |
ānandaśaktiḥ saivoktā yataḥ sahrdayo janah ||

When one is lost in a state of ecstasy by listening a song or by anointing and smooth touch of sandal paste etc., a vibration arises in the heart called as *Ānandaśakti* and such a person is called *sahrdaya*, an asthete (one who is attuned with heart).

Above verses reveal a direct connection with the *rasa* theory of Indian aesthetics. Abhinavagupta himself defines the term ‘*sahrdaya*’ (asthete) in his *Locana* (DLo) commentary on *Dhvanyāloka* (Dhv) (1.1) as follows:

³⁵Related with *varṇādyaprabavibhāga* (TA, 3.238_b)

³⁶*saṁvitsavidhavr̥tti*; *saṁvit*, *jñāna*, and *cit*, these are synonymous

yeṣāṃ kāvyānuśīlanābhyāsavaśād viśadībhūte manomukure varṇanīyatanmayībhavanayogyatā te svahr̥dayasaṃvādabhājaḥ sahr̥dayāḥ

“The word sahr̥daya (lit. “having their hearts with it”) denotes persons who are capable of identifying with the subject matter, as the mirror of their hearts has been polished by the constant study and practice of poetry, and who respond to it sympathetically in their own hearts (Ingalls, 1990, p. 70).”

These two above connotations from two different works of Abhinavagupta lead to a complete understanding of aesthetic enjoyment. In both poetic enjoyment and musical enjoyment, subjective identification or *tanmayībhāva*, and sensation in the heart or *hr̥dayasaṃvedana/spandamānatā*, are common. It means the power of bliss (*ānanda-śakti*) is standard in both. But in poetic enjoyment, it depends on the subject matter which is expressed through letters. It means that poetic enjoyment is based on the gross *vaikhari*, which is partially similar to the gross *paśyanti* as it makes aesthetes delighted without expressing letters. The following section will shed light on this matter in sharp detail.

1.3.1 Difference between Enjoyment of Linguistic and Musical Sound

Ānandavardhana (ca. 9th century AD.) authors in Dhv 1.4, as follows:

*pratīyamānaṃ punaḥ anyad eva vācyād vastu asti vāṇīṣu mahākavīnām |
yat tat sahr̥dayasuprasiddhaṃ prasiddhebhyaḥ alaṅkṛtebhyaḥ pratītebhyaḥ
vākyebhyaḥ vyatiriktatvena prakāśate lāvaṇyam iva aṅganāsu |*

“The suggested, on the other hand, is something which is found in the speech of great poets, different from the literal meaning. It is that which is well-known to sensitive readers and is separate from the know, ornamented, elements [of poetry], after they have been examined, being thus like charm in women (Ingalls, 1990, p. 79).”

The grossest sound or linguistic sound expresses three types of meanings in general:

1. primary meaning (*vācyārtha*)
2. secondary meaning (*lakṣyārtha*) and
3. third meaning or suggested meaning (*vyañgārtha*)

The above lines of Ānandavardhana make some advanced understanding that *sahṛdaya*³⁷ acquires the suggested meaning from poetry, and this is the soul of poetry that gives the third meaning, which makes the aesthetes delighted. “It is just this [suggested] meaning”, says Ānandavardhana (Dhv, 1.5), “that is the soul of poetry (Ingalls, 1990, p. 113).”³⁸ Further, this suggested meaning is expressed as *rasa*, the heart of the Indian aesthetics, or to say more directly in the words of Abhinavagupta (in DLo, 1.5), “... it is *rasa* that is the real soul of poetry (Ingalls, 1990, p. 115).”³⁹ Here, Ingalls (1990) makes a splendid observation — “Ānanda was the first Indian critic to state that a *rasa* cannot be directly expressed. (...) This can be done only by suggestion (p. 19).”

From the words of these maestros of Indian poetics, it is understood that poetry (*kāvya*), a unique form of gross *vaikharī*, makes aesthetes delighted through third or suggested meaning which is also popularly known as *rasa*. Unlike in the context of previous, wherein a suggested meaning could be derived, how is it possible to acquire the suggested meaning in pure music, that is not separated by letters? Hence, let us consider that since there is no *varṇa-vibhāga*, neither the primary nor the secondary meaning could be derived and subsequently no suggestion too. If one argues so, it is not viable. Bharata Muni (ca. 300 BC. —300 AD. ?), the pioneer of *rasa* theory says, “Any form of art without *rasa* could not be proceeded — *na hi rasād ṛte kaścid arthaḥ pravartate*.” Therefore, in the chapter 3, it

³⁷Translated as “sensitive reader”, as the Dhv is a book of poetics.

³⁸*kāvyaśāstrī sa evārthaḥ*

³⁹*sa eveti pratīyamānamātre 'pi prakrānte tṛtīya eva rasadhvaniḥ iti mantavyam ... tena rasa eva vastuta ātmā vastvalaṅkāradhvanī tu sarvathā rasaṃ prati paryavasyete iti vācyaḥ utkr̥ṣṭau tau ityabhiprāyeṇa dhvaniḥ kāvyasya ātmā iti sāmānyena uktam*

will be discussed that how Bharata mentions that such and such musical forms (*jāti*) are to be implied for such and such *rasas*.

In this context, Mahimabhaṭṭa (ca. 11th century) suggested a unique observation in his famous text called *Vyaktiviveka*:

*na hi asya geyasya iva ratyādibhiḥ bhāvaiḥ svābhāvika eva sambandhaḥ,
sarvasya eva tat-pratīti-prasaṅgāt*

“Nor does a natural relation exist between the word and the new meaning, similar to that existing between musical notes and feelings like love and the like; because such assertion is likely to lead to the conclusion that all persons are in a position to comprehend those meanings (Mahimabhaṭṭa, trans. 2005, p. 217).”

From the above passage, it becomes clear that the new meaning or suggested meaning is the primary meaning of musical sound. Does it mean musical sound always expresses *rasa*? No, that is why Mahimabhaṭṭa opines it to be ‘*ratyādi*’ (feelings like love and the like). *Rasa* is a unique expression of such feelings through an artistic approach. It is widely known that linguistic speech does not express emotions always. Hence, musical sound, which primarily instigates feelings, is indeed powerful to represent *rasa* more efficiently than the sound understood to be ‘other’.

In addition to the above, Ānandavardhana also mentions, more directly, that there is *rasa* perception from musical sounds, despite of any direct meaning, and musical sound expresses the suggested meaning only. Below passages related to the 33rd *kārikā* of the third chapter of *Dhv* (Ānandavardhana & Abhinavagupta, 1983, p. 228, 229, 235, 241, 250) will give a clear understanding of the perspective and the opinion of the original author (Ingalls, 1990, pp. 542, 555, 565–566, 585).

na hi śabdasya vācyapratītiparāmarśa eva vyañjakatve nibandhanam | tathā

hi gītādiśabdebhyo 'pi rasābhivvyaktirasti | na ca teṣāmantarā vācyaparāmarśaḥ

“Our reflection on its expressed meaning is not a prerequisite of a word’s suggestiveness, for the *rasas* can be suggested by the words (or sounds) of songs or the like; and no reflection on the expressed meaning of these [words] is needed first.⁴⁰”

yeṣām api svarūpaviśeṣapratītinimittam vyañjakatvam yathā gītādiśabdānām teṣām api svarūpapatīteḥ vyañgyapatīteḥ ca niyamabhāvī kramah |

“Even in the case of those words (or sounds) of songs and the like whose suggestiveness is brought about by our perception of their phonetic form, there must be a succession in which perception of the form comes first and perception of the suggested [*rasa*] comes after.”

na hi yā eva abhidhānaśaktiḥ sā eva avagamaśaktiḥ | avācakasyāpi gītaśabdādeḥ rasādilakṣaṇārthāvagamadarśanāt |

“For the power of denoting is not the same thing as the power of suggesting, because we see that the sounds of a song or the like, although they are not denotative, may suggest such things as the *rasas*.”

tathāhi gītadhvanīnām api vyañjakatvam asti rasādiviśayam | na ca teṣām vācakatvam lakṣaṇā vā kathañcit lakṣyate |

“Thus, the sounds of a song can also be suggestive of the *rasas* and the like, whereas no denotative or indicative power can possibly be found in these [sounds].”

tathaiva vyañjakatvam vācakānām śabdānām avācakānām ca gītadhvanīnām aśabdarūpāṇām ca ceṣṭādīnām yat sarveṣām anubhavasiddham eva tat kena

⁴⁰Notably, translators translated ‘*gīta*’ as ‘song’ in all the places. However, it is considered that the purpose of the original author is to convey the sense of pure music, which is also the target of the investigation of the present research. That is also logical in all these contexts as the original author, again and again, adjectivises ‘*gīta*’ with ‘*avācaka*’.

apahnūyate |

“So who can deny the suggestive power, which belongs to denotative words, to such non-denotative sounds as those of songs, and to non-verbal gestures and the like, and which is proven to exist by the experience of everyone?”

There are textual discussions of *rasas* regarding the musical sounds. In [chapter 3](#) and [chapter 4](#), all those traditional discourses and the process of *rasa* evocation from pure music will be discussed.

1.4 Summary

Some fundamental ideas of musical sound are discussed and analysed, which could have clarified the research idea to move forward. It is observed that in most of the Sanskrit musicological texts, the term ‘*nāda*’ is used to denote the unmanifested or non-articulated sound. From the remarkable insights of Abhinavagupta, profound metaphysics and philosophy of sound are observed, which also helped us to characterise the philosophy of pure musical sound or the *sthūla-paśyantī* critically.

In this thorough study to understand the power of pure music, it is found that there are two essential powers of it — the power of sweetness (*mādhurya-śakti*), and the power of bliss (*ānanda-śakti*). Therefore, there is no doubt that well-rendered pure music has an immense potential to please one and fill with sweetness to enjoy the bliss subsequently. The fundamental discussion in this chapter, ensures the *causa sine qua non* of music that supports it as a therapeutic technique further.

2

A Brief Historical Study on Music Therapy in India

Before this research goes into deep theoretical analysis, this chapter is a humble effort to explain some historical practices in ancient India, considering some practices as music therapy. Ancient physicians clearly mentioned the words, viz. ‘*gīta*’, ‘*vāditra*’, ‘*vīṇā*’ which were fundamentally used to denote music, while using music in remedial aspect (Gangopadhyay & Prasad, [2022](#)).

In this chapter, the present researcher would argue that in some modern literary writings, unjustifiable evidences are shown in regard of music therapy in ancient or mediaeval

India. Therefore, in this chapter he tried to demonstrate authentic references that could directly support the practice of music as a therapy in the ancient India. A Vaidya's (doctor's) alternate choice of music considering its therapeutic purposes is discussed here, historically and traditionally. Further, an overview of new age practices would clarify the position of this present research. Initially, let us observe some historical music therapy practices in other cultures.

2.1 Glimpses of Music Therapy in Different Cultures (ca. 400 BC.–1200 AD.)

In ancient Greece, in the Pythagorean tradition, some practices were closely related to music in context of psychotherapy. On the accounts of Aristoxenus and Iamblichus, Pythagoreans applied music, and in some cases particular melodies, for purifying the soul in countering despondency and vexation, subduing lust etc. (West, 2016). West (2016) argued that despite these practices, one should not misunderstand that these are attributed to Pythagoras himself, who lived around sixth-century BC. , as “there is no reliable basis for attributing it to Pythagoras (p. 57).”

In Jewish history, in the first book of Samuel (the Old Testament), there is an account of music meant for healing related to the remedies of evil spirit (Shiloah, 2016). But, it is a scripture, not a medical evidence. However, Maimonides (1135-1204 AD.), the famous Jewish philosopher and a physician, suggested music as a healing technique in the form of songs and melodies if the black bile aggravated in an individual (Shiloah, 2016). Shiloah (2016) explains a treatment modality of Maimonides with music, which is very interesting:

“... sleep in the afternoon and at night should be induced by singing and music. The performance should be given by a singer to the accompaniment of a stringed instrument. The singer should decrease gradually the volume

of his voice and attenuate the sound of the strings so that it becomes mere whispering; both should cease completely when the patient falls asleep. (...) all this is enjoyable for the heart and helps in dissipating gloomy thoughts' (pp. 72-73)."

Joseph ibn 'Aqnīn (ca. 1226 AD.), a disciple of Maimonides, also has referred to specific instruments to listen to in the case of melancholy (Shiloah, 2016).

In Islamic history, some good sherds of evidence were traced. In Islamic hospitals, patients who had insomnia were treated with music. Also, in the Brethren of Purity (ca. tenth century AD.), implications of music as therapy is found, which was used in the hospitals. Suggestions for musicians were located in al-Kindi's (ca. 801-873 AD.) work, an Islamic polymath who was also a musicologist (Shiloah, 2016). He argued that musicians should develop diagnostic skills, as he did, parallel to physicians to prescribe needful treatment (Shiloah, 2016). In addition, Ibn Hindū (ca. 1019 AD.), an Islamic physician, mentions in his treatise *Miftāḥ al-ṭibb* (Key to Medicine) that they (physicians) often used music to treat patients with melancholy or epilepsy (Nasser & Tibi, 2007).

Observing the above, in ancient Greece and Jewish cultures, one cannot construct that music was used as a therapeutic technique. In the latter times, ninth to the thirteenth century, significant developments regarding the therapeutic nature of music are traced in Jewish thinkers' works and quantitatively in Islamic scholars' works.

In Indian context, evidence of music as a therapeutic technique is found more directly than the above in Ayurvedic compendiums. Before we elaborate on them, it is essential to understand briefly when music became a distinguished research interest and flourished further since it is started. Nonetheless, all above accounts cannot be equated with the kind of music therapy that is popularly known today. However, the next section is to understand the direct approach of music therapy as a separate doctrine.

2.2 Music Therapy as an Independent Research Area

As an independent research area and distinguished clinical discipline, music therapy is wholly evolved in the western world, specifically in the United States of America. The USA was the world's first country where professional music therapy organisation was established in 1950. According to the most available information over the Internet, including Encyclopaedia Britannica, the modern earliest source of information that could be documented music as a therapy was evidently found in the USA on February 1789 in an unsigned article (see [Figure 2.1](#)) in the Columbian Magazine, Philadelphia (Howland, 2017; "Music physically considered," 1789). After fifteen years of this publication, on June 1804, from the same city in the USA, Edwin A. Atlee submitted his dissertation for his MD, titled *An Inaugural Essay on the Influence of Music in the Cure of Diseases*, in the University of Pennsylvania (see [Figure 2.2](#)). After two years, on April 1806 in the same university, Samuel Mathews submitted his MD dissertation, titled *On the Effect of Music in Curing and Palliating Diseases* (see [Figure 2.3](#)). The above instances were focussing purely on theoretical grounds devoid of any practical efforts in clinical discipline using music as a therapy. After several decades, in the early 1900s, many eminent persons collectively thought to establish associations for music therapy and to bring in various publications.

Meanwhile, in the middle of the 1800s, therapeutic aspects of music were developed in France. Nevertheless, these approaches were not the same as American approaches. According to Edith Lecourt (1992), the early phase of music therapy in France could be placed between 1820-1880. This period of music as a therapy in France was more enthusiastic than the USA's. Obligatory music education in public schools and the establishment of the National Academy were part of that period.

Interestingly, Lecourt (1992) pointed out that the first students of the Academy were also the first music therapists in France. They were used to send to hospitals. Unfortunately, that effort could not sustain because of political and other reasons (Lecourt, 1992).



Figure 2.1: Content page and the article page of Columbian Magazine, 1789

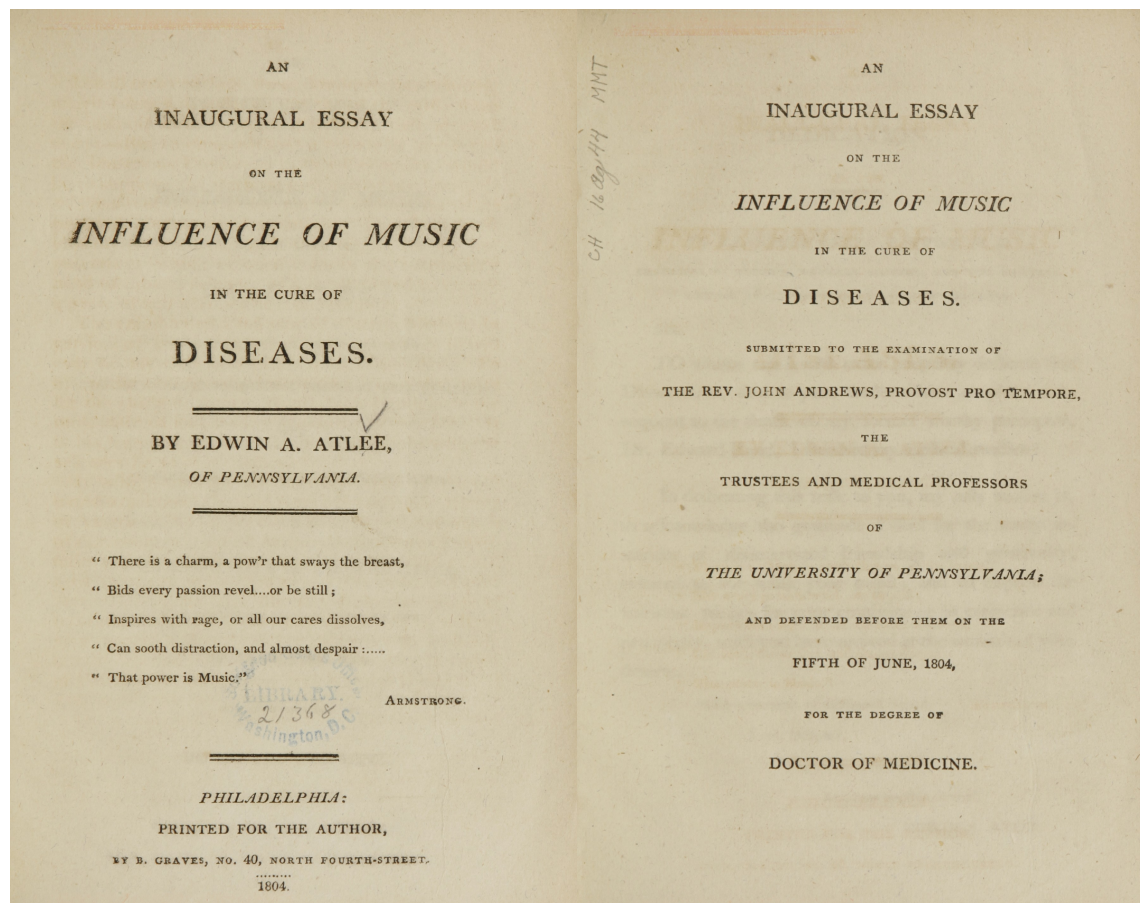


Figure 2.2: MD dissertation's title pages of Dr. Edwin A. Atlee, 1804

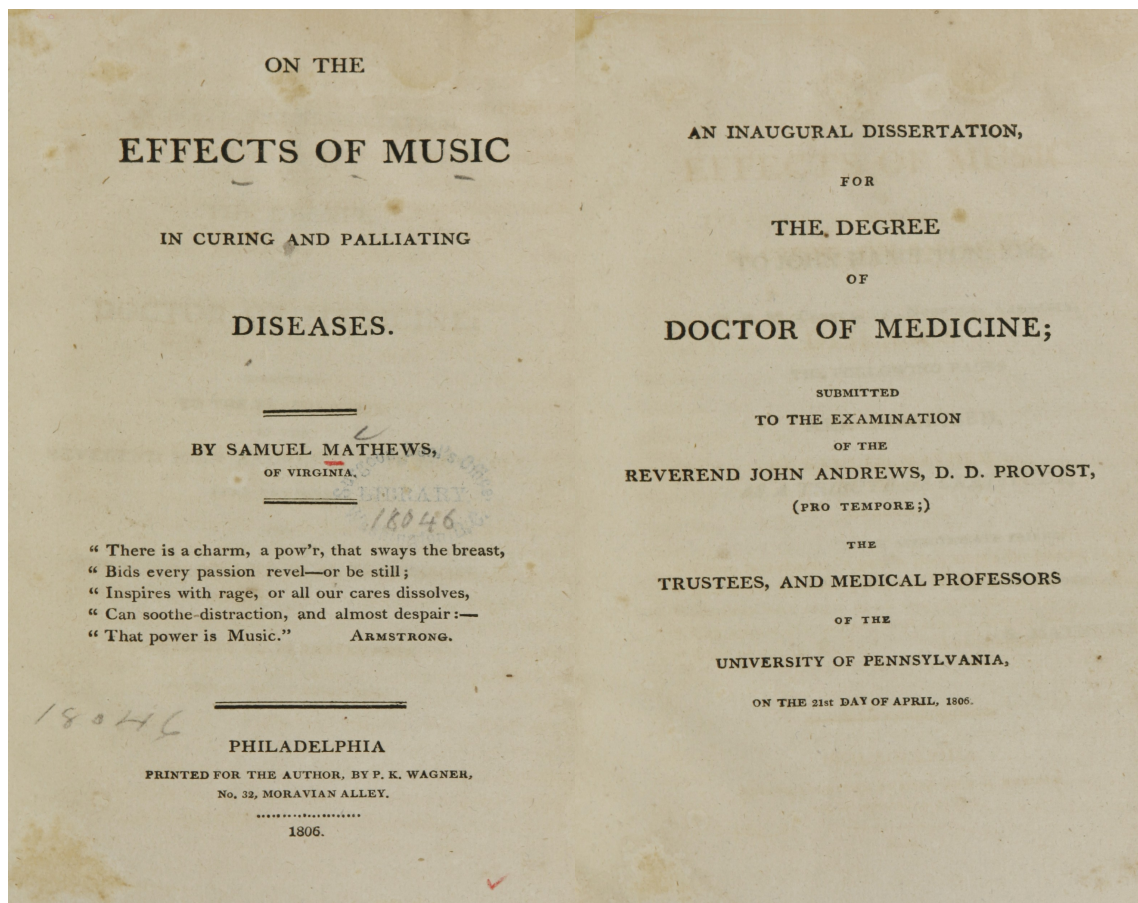


Figure 2.3: MD dissertation's title pages of Dr. Samuel Mathews, 1806

Except for France and the USA, other western countries had no account of music therapy in the 1800s (as much it is observed). Therefore, the initial wave of music as a therapy began in the early 1900s in the western world, spearheaded by the USA and Germany.

In the Germany, scholarly discussion on music therapy started with Karl-Heinz Polter's dissertation, titled *Musik als Heilmittel* [Music as a Remedy], in 1934, where he highlighted the efforts of American physicians (Riesman, 1936). It seems that the USA was the leading state in acceptance of music as a therapeutic agent, which was critically explored by William Van de Wall in his *Music in Institute* (1936) and later on by E. Thayer Gaston, who was also known as *the Father of Music Therapy*. In 1958, the UK also acknowledged music as a healing technique by establishing a music therapy society called "Society for Music Therapy and Remedial Music" ("British Association for Music Therapy :: History," n.d.). France again started her exposers regarding music therapy from 1965 and witnessed the first world congress of music therapy in 1974 in Paris (Benenzon, 2009). Meanwhile, the organisational establishment, the National Association of Music Therapy, started in America in 1950. The second organisation, American Association for Music Therapy, was established in 1970, and finally, in 1998, these two merged into a new organisation, called American Music Therapy Association (Howland, 2017). In 1990, the European Music therapy Confederation was also established (Howland, 2017). Interestingly, in the Europe, music therapy has been accepted by various countries since the middle of the 1900s.

The above discussion shows that music therapy as an independent discipline is heavily western biased, exclusively American. Recently in Asian countries, interest towards music therapy has started in the 2000s and progressing gradually. However, in China and Japan, they have been employing music as a therapy since 1970s (Ikuno, 2001; Wu, 2019).

2.3 Superficial Evidences in Indian Context

Most scholars who wrote about music therapy in ancient Indian context, miserably failed to trace perfect references in original Sanskrit texts. There is a Sanskrit treatise called *Rāgacikitsā*, most probably which is not noticed by majority so far (Sanivarapu, 2015).¹ Jyoti Sinha (2015) also mentions a book called *Śabdakutūhala*, an out-of-reach reference. In addition to these, references from *Saṅgītamakaranda*, a mediaeval musicology text, show that heptatonic and pentatonic are meant for curing diseases (Sundar, 2007). They are not direct references to therapeutic use of music since they are just *phalaśrutis* (white lies) occurring somewhere in the text (Gangopadhyay & Prasad, 2022).

Healing through mantras do not consist any therapeutic angle related to music. From the next section onwards, the excerpts related to music as therapy shall be elaborated considering the three most important Ayurvedic compendiums using which ancient vaidyas and healers used to focus mainly on musical sound other than lyrics. The musical tradition of India considers a rendition as music when consisted of five notes minimum, This is absent in any chanting. In the case of *sāma-gāna*, scholars make sure that there are only two *sāma-gāna* in tradition which are sung in all seven *svaras*. Most of them consist three to four *svaras*.

Vedic renditions might have a potential to generate a therapeutic effect. But, they are not accepted as music (*saṅgīta*) that is considered worldly (*laukika*), and the Vedic renditions are non-worldly (*alaukika/vaidika*). Hence, in any way, chanting could not be regarded as music therapy but as *mantric therapy*, *hymnal therapy* or something else.

Therefore, to show the therapeutic evidence of music in Ancient India, one should explore the text references from medical works using which physicians directly prescribed

¹Katz (2016) mentions it clearly — “A tantalizing reference in one of the reference books on south Indian music states that there was once a Sanskrit manuscript in a Tanjore collection, called *Rāgacikitsā*, ‘rāga therapeutics’. The work is now lost, but the title *may suggest* that it was a work using rāgas for medical therapy (p. 96).”

music for therapeutic purposes. Some scholars tried to explore and show some such references, but there is something more to explore further. The following section details further textual shreds of evidence of clear and specific usages at least from 1000 BC. and later on how physicians had applied them in a traditional way.

2.4 *Bṛhatrayī*: Three Major Ayurvedic Compendiums

Carakasamhitā (henceforth CS) of Caraka (ca. 1000-800 BC.), *Suśrutasamhitā* (henceforth SS) of Suśruta (ca. 600 BC.) and *Aṣṭāṅgahṛdaya* (henceforth AH) of Vāgbhaṭa (ca. 200-300 AD.)— these three seminal works of Ayurveda are commonly termed in tradition as ‘*Bṛhatrayī*’.

By exploring the *Bṛhatrayī*, the present researcher found a total of eighteen instances where the textual evidence indicates that music was used as therapy in some specific and critical cases. For instance, music is recommended with other treatment protocols in critical issues like coma or unconsciousness.

2.4.1 Views of Caraka

is the most ancient treatise of Ayurvedic literature. References related to music as a therapeutic agent were considered almost in the same way in the latter two compendiums of Ayurveda, i.e., SS and AH, however with some minor changes.

Musicians as Hospital Staff

In the first section (*Sūtrasthāna*) of the CS, Caraka included musicians among the other supporting staff to establish a hospital:

tathā gīta-vāditrollāpaka-śloka-gāthākhyāyiketihāsa-purāṇa-kuśalān abhiprāya-

jñān anumatān ca deśakālavidaḥ pāriṣadyān ca ... upakalpayet (1.15.7)

(*In the hospital along with supporting staff*) “People well-versed with vocal, instrumental music, panegyrics, recitation of verses, ancient lores, short stories, itihāsa (the Mahābhārata, etc.), purāṇa (mythology), those who can grasp the inner desires, who are obedient, and who have, knowledge of time and place should also be arranged (Caraka, trans. 2016a, p. 290).”

The above is indeed an exciting information, while one can only notice the therapeutic use of music in hospitals in the early Islamic era. In the late 700 AD, Manka (Maṅkha/Māṇikyā) translated the CS into Persian in Baghdad at the time of Hārūn al-Raṣḥīd, the fifth Caliph.² References of music interventions in Islamic hospitals were observed in the late 800 AD. It is probable that there was a significant influence of CS on such references. Hence, on the account of the CS, perhaps, India was the first country where physicians considered the influence of music in a hospital setup.

In Post-Coma Complications

Same chapter in the CS has the following reference in context of post-coma patients:

... priya-śrutibhir-eva ca|
paṭubhir-gīta-vāditra-śabdaiś-citraiś-ca darśanaiḥ||...
Prabuddha-sañjñam matimān anubandham upakramet|
tasya samrakṣitavyam hi manah pralaya-hetutaḥ|| (1.24.51-53)

“...the patient regains consciousness. Thereafter, his consciousness should be maintained by various psychological and physical devices and his mind should be diverted from the aetiological factors of unconsciousness. He should be made to remember some surprising event, hear pleasing fine songs, music and other sounds and see wonderful sights (Caraka, trans. 2016a, p. 412).”

²See Meulenbeld, 1999a, p. 116 and Meulenbeld, 1999b, pp. 202-204

Aldridge et. al. (1990) applied music therapy in modern music therapy studies, but the approach is to regain from coma. In SS (6.46.22_{ab}-23_{ab}) we found that Suśruta prescribed similar modern approach.

In *Pitta* Aggravation

In the third section (*Vimānasthāna*), while describing the sixteen remedies to aggravated pitta, CS considered music as one among them:

tasya avajayanaṃ ... śrutisukha-mṛdu-madhura-mano'nugānāṃ ca gīta-vāditrāṇāṃ śravaṇam ... (3.6.17)

“The following therapies alleviate this doṣa ... Hearing of songs and music which are pleasing to ears, mild, sweet and agreeable (Caraka, trans. 2016b, p. 194)”

Previously, it was noticed that Maimonides (see [section 2.1](#)) in the 11th century mentioned music in the context of black bile treatment. This is an exciting topic for further research regarding the efficacy of music in the context of *pitta* aggravation and to what extent this treatment protocol could help pragmatically. *Pitta* aggravation is inclusive of several disorders hence, from the Ayurvedic and modern aspects it is indeed an huge topic of research.

Protection of New-borns

In the fourth section (*Śārīrasthāna*), Caraka prescribed that the labour room of new-borns should be engaged with music:

athāsya rakṣāṃ vidadhyāt ... anuparatapradānamaṅgalāśīḥstutigītavāditram annapānaviśadam anuraktaprahṛṣṭajanasampūrṇaṃ ca tadveśma kāryam (4.8.47)

“Thereafter measures should be taken for the protection of the child ... The whole house should be kept crowded with people who are pious, affectionate and happy, and engaged constantly in gifts, propitious blessings, praise, song, music, food and drinks (Caraka, trans. 2016b, p. 501).”

Contradictory to the above, recent researches showed the effect of music therapy in labour room deliveries (Browning, 2000; Chang & Chen, 2005; Lin et al., 2019). Some researchers also mentioned the effect of music to reduce stress and anxiety for pregnant mothers (van Willenswaard et al., 2017). Such references are found in *Kāśyapasaṃhitā*, which would be explained in a forthcoming section.

As a Booster of Virility

In the third *pāda* of the second chapter of sixth section, there occurs a reference to season wise psychological stimuli of virility in the model of spring season, CS included music along with others:

gāndharvaśabdāśca sugandhayogāḥ sattvaṃ viśālaṃ nirupadravaṃ ca ||
... harṣasya yoniḥ paramā narāṇām || (6.2/3.29_{cd},30_d)

“... sound of the music, mind which is broad and free from afflictions...—
these are excellent erotic factor for men (Caraka, trans. 2016c, p. 94).”

Chakrapāṇidatta (ca. 11th century) commented that all prescribed psychological stimuli of spring season are to be applicable in other seasons.

In the eighth chapter of the sixth section, CS considered music as one of the prescribed remedies for tuberculosis, as follows:

gītavāditraśabdaiḥ ... rogarājo nivartate || (6.8.186-188)

(Along with many other regimes) “Tuberculosis, the king of diseases, gets cured by... hearing vocal and instrumental music... (Caraka, trans. 2016c, p. 406)”

In modern times, researchers studied the effect of music therapy in tuberculosis to empower patients at individual and community levels (Oosthuizen, 2012). The above textual reference from CS is a critical observation of ancient physicians, that warrants to explore further in this direction.

Management of Alcoholism

Overcoming factors from alcoholism were discussed in the twenty fourth chapter of the sixth section of CS. Among many kinds of alcoholism, *sannipātaja*, wherein all somatic humours become aggravated, is the most critical one. Music was considered as one of the solutions to this kind of alcoholism:

gāndharvaśabdāḥ ... nāśayanti madātyayam || (6.24.192-193)

“The following factors help a person to overcome alcoholism: ... Musical performances; ... (Caraka, trans. 2016d, p. 427).”

In the late 1900s, there were few studies regarding the effect of music therapy on alcoholism (Dougherty, 1984; James, 1988a, 1988b) and a few in the present century (Aletraris et al., 2014).

Reviving the Unconscious

In the eighth section, while Caraka describes the traditional policies in the context of improper therapeutic emesis (*vamana*) and purgation (*virecana*), music was specifically mentioned to deal with unconsciousness:

gudaṃ bhraṣṭaṃ kaṣāyaiśca stambhayitvā praveśayet |
sāma gāndharva-śabdāṃśca sañjñānāśe 'śya kārayet || (8.6.85)

“If there is prolapse of the rectum (*guda-bhraṣṭa*), it should be made stiff by applying astringent drugs, and pushed into its own location. If there is less of consciousness (*sañjñā-bhraṣṭa*), then the patient should be consoled and he should be entertained with soothing music (Caraka, trans. 2016e, p. 288).”

The above is an interesting and only context where Caraka mentioned music specifically, not alternatively, for treatment purposes.

2.4.2 Views of Suśruta

In SS³, all instances of using music as a therapy are the same as in CS. However, Caraka defined music as an integral component in medical practice beyond Suśruta's references. The following text from the fourth section, describes music as a psychological stimulus in virility:

gītaṃ śrotramanohāri tāmbūlaṃ madirāḥ srajaḥ ... vājīkurvanti mānavam ||
(4.26.8_{cd}-10_d)

“... melodious song, betel, wines, garlands, ... —these act as aphrodisiac to a man (Suśruta, trans. 2005, p. 521).”

In the fourth section of SS, treatment protocol advised by Caraka in the improper therapeutic emesis and purgation is considered, specific mention of the same regarding the therapeutic purgation is noted as follows:

tasmin eva vamanātiyoge pravṛddhe śoṇitaṃ ṣṭhīvati chardayati vā... visañjñe
veṇu-vīṇā-gīta-svanaṃ śrāvayet (4.34.12)

³See in Suśruta and Dalhaṇa, 2014

“When excessive application of emesis is advanced further there occurs haemoptysis or haematemesis along with these complications ... in loss of consciousness, he should be entertained with sound of flute, lute and vocal music. (Suśruta, trans. 2005, pp. 593-594)”

Ḍalhaṇa (ca. 1200 AD), in his commentary on SS, clarified the below statement of Suśruta, wherein the latter mentioned that all remedial measures taken in improper therapeutic emesis have to be considered identical in the case of improper therapeutic purgation too.

virecanātiyoge ca ... jihvāniḥsaraṇādiṣu uktaḥ pratīkāraḥ (4.34.13)

In the improper therapeutic purgation ... same remedies have to be taken in *jihvāniṣsaraṇa* (protrusion or retraction of tongue) etc. [where unconsciousness is included]

Coming out of Coma

The sixth section of SS has the exciting statement where the father of surgery mentions that music is one of the essential tools to come out of coma:

... cikitset tvarayā bhiṣak tam ... vāditragītānunaṇṇaiḥ ... (6.46.22_{ab}-23_a)

... a physician should immediately treat the patient ... with music and musical instruments, kind words (along with others) ...

2.4.3 Views of Vāgbhaṭa

It seems that Vāgbhaṭa was in a complete consensus with Caraka. In AH, he accepted music as a treatment protocol in *pitta* aggravation (1.13.6), tuberculosis (4.5.83), post-coma

complications (4.7.113), therapeutic emesis and purgation (5.3.39), and a psychological stimulus of virility (6.40.46).⁴

Music: A Daily Activity for Good Health

Interestingly in the *Sarvāṅgasundarā* commentary on 3.1.6 of AH, Aruṇadatta mentions music as one of the essential daily activities if appropriately used in the way of listening and playing or singing. The excerpt from the AH is as follows:

hetu-vyādhi-viparyasta-viparyastārtha-kāriṇām |
auśadhāṇṇa-vihārāṇām upayogaṃ sukhāvaham ||
vidyād upaśayaṃ vyādheḥ sa hi sātmyam iti smṛtaḥ |
viparīto 'nupaśayo vyādhyasātmyābhisamjñitaḥ || (3.1.6-7)

“Administration of either medicine, food or activity which is the *viparīta* (opposite) of either the cause, the disease or of both, or though not actually opposite (but of identical nature) yet produces the effect of the opposite (*viparītārthakāri*) - that of giving comfort to the patient is known as *Upaśaya*. It is also called *sātmya* (suitable to the disease and the patient). The opposite of *upaśaya* is *anupaśaya* and *asātmya* (unsuitable) to the disease (Vāgbhaṭa, trans. 2012, p. 5).”

Aruṇadatta included music in the daily activities as follows:

vihāro vāg-deha-mano-nirvartitaḥ ceṣṭāviśeṣaḥ vyāyāma-vyavāya-jāgaraṇādhyayana-
gīta-bhāṣaṇa-dhyāna-dhāraṇādirūpaḥ

Routine activities are performed through speech, body, and mind in the form of exercise, coitus, awakened state, study, music, talking, meditation, concentration, etc. The above references show that music was considered a remedial agent in particular cases like

⁴See in Vāgbhaṭa et al., 2010

pitta aggravation, coma, virility, protection of new-borns, tuberculosis, acute alcoholism, and unconsciousness. The music itself is a healthy activity; whether it is listened or practiced.

2.5 An Overview of Other Ayurvedic Sources

In addition to the *Bṛhatṭrayī*, music was mentioned in other Ayurvedic texts too. As previously mentioned, *Kāśyapasaṃhitā* (ca. 7th century AD.) has an account where the author suggested constant music playing in the room of a pregnant mother. The text is as follows:

brahmaghoṣaiḥ savāditrairvāditam veśma śasyate

In this same compendium, Vṛddhajīvaka, the author, mentioned that listening to music while taking food is good for digestion (8.5.55):

*svāsīnasya sukhenānnam avyatham paripacyate |
vīṇāveṇusvanonmiśram gītām nāṭyaviḍambitam ||*

Ānandakanda (1.6.91), a mediaeval text of Indian alchemy, accounts for the medicative use of music. It was mentioned that listening to music is one of the beneficial factors while consuming *rasa* (mercury), as follows:

*nartanālokanam gītaśravaṇam ...
etat sarvam rasendrasya krāmaṇam kathitam priye*

All the above references discussed from seminal Ayurvedic treatises and other minor works of Ayurveda, valuable information including more than twenty instances classified into ancient and mediaeval times is unveiled. Consequently, there is a dire need for a

further critical study into all available Ayurvedic texts, which would certainly add value to the ancient Indian history regarding the authentic implications of music as a therapeutic technique. However, in the present study, for practical reasons as stated before, possible references in non-medical texts are ignored.

Nevertheless, though it becomes imminent to say that music could be considered as a therapeutic technique, one can never claim it to be an independent research discipline similar to the other nations of the ancient or mediaeval period. Therefore, the disciplinary approach of music as a '*music therapy*' is undoubtedly a western, especially an American approach which has influenced several countries worldwide.

2.6 Modern Indian Approaches

As an independent discipline in India, music therapy started its journey in the present century. A report published by Times of India daily in 2002 might be the first available information in this regard (Chatterjee, 2002). However, in 1938, an interesting book on music therapy in Hindi, titled *Sangit Chikitsa* [Saṅgīta Cikitsā] was published by the author, Dr. J. Pal (Pāl), himself (see Figure 2.4). By observing the title page, it is assumed that he was a traditional scholar of *Sāmaveda* and perhaps founded an institution called Musico Medical Institute (Pal, 1938). It is exciting to find an approach in India, before her independence, that a scholar tried to explain the possibilities of somatic impacts of music in the Indian context and established an institute regarding music therapy (or music medical) before there was any such institute of music therapy existed in the world.

Unfortunately, there is no information regarding this institute and the author over the Internet. If possible, researchers may be encouraged to trace out Dr Pal's works from the present Pakistan. It might explore new dimensions in Indian music therapy. He might be the first who presented a hypothesis regarding the relationship between *svara* and Ayurvedic *doṣa*. Most probably, Dr. Pal's book could be the primary source to many

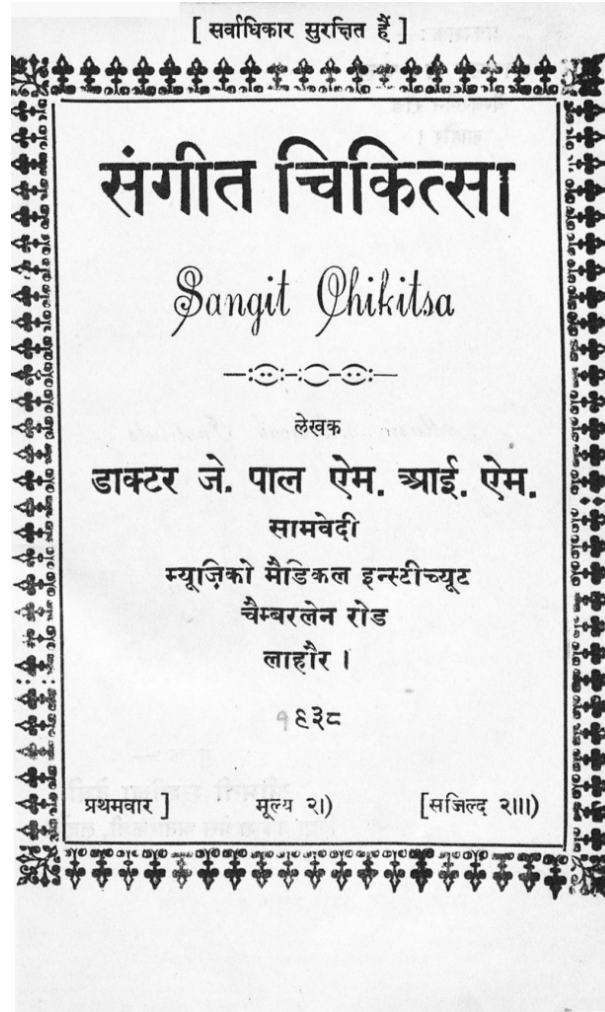


Figure 2.4: Book title page of Pal, 1938

people's claims regarding healing powers of several *rāgas* since similar to his proposal, nothing is seen in modern Indian context.

There have been several approaches to music therapy in India (perhaps) from 2007 onwards. Whoever tried to explore music therapy, made an effort to explain the latter in the Indian context with cursory evidences and has shown empirical scientific studies. As it was also mentioned in the introduction of this thesis, the fundamental research gap is— not mentioning the scientific logic behind choosing a particular *rāga* for therapeutic purposes. Researchers collect references from ancient and mediaeval Sanskrit musico-logical texts without considering the then Indian music scenario. Same is the problem

with J. Pal also. He tried to connect the somatic humours with *svaras* from an unknown text wherein no current approach to mentioning *svaras* was described. In all these cases, the first question comes here is that only one Ri, Ga and others have an alternative texture in the contemporary situation, hence what is the plight of other variations? It is not that the colours of the two Ri's are the same. Hence, lingering with these ideas cannot show any analytical support regarding Indian music therapy. Explicit references of *rasas* in music could only be found in ancient and mediaeval Sanskrit texts. Therefore, it is a general tendency to quote and follow those musicological treatises. Nevertheless, due to the sporadic and unclear research, such efforts cannot yield proper results to justify the therapeutic component of music. However, some scholars try to consider the words of Pt. V. N. Bhatkhande (1957), whose views are also established on proper grounds (Karuna et al., 2013). Pt. Bhatkhande's views will be discussed elaborately in the fifth chapter.

There is also a tendency of mentioning *kuṇḍalinī śakti* (coiled energy) and *cakras* (energy points) when they talk about music therapy, traditionally. They argue that seven *svaras* are connected with seven *cakras*, and uttering these *svaras* could activate *cakras*. Interestingly, there is no direct evidence in any authentic Sanskrit musicological text which claims such information. However, this need not be a subject of academic discussion as in the appendix of *Raja Yoga*, Swamiji quotes and translates the verses of Yājñavalkya as quoted by Śaṅkara Bhagavatpāda as follows:

tricaturvatsaram cāpi tricaturmāsameva vā ||
guruṇoktaprakāreṇa rahasyevaṃ samabhyaset |

“This should be practiced for three or four years, or three or four months,
 according to the directions of a Guru, in secret (alone in a room)”

Hence, three realised souls had their consideration that discussion related to *cakras* is a purely secret practice, that is never been a critical academic/intellectual discourse. So, that is not part of the current discussion.

However, researchers tried to establish possible connections between *svara* and somatic humours in some works, which are also modern try in understanding music as a therapy traditionally. These aspects are discussed in the literature review as this is one of the objectives of this research; hence, it will not be elaborated on further.

2.7 Summary

By briefly studying the history of world music therapy, it is perceivable that there are enough references that could support the idea that ancient vaidyas of India had a clear and specific understanding regarding the use of music as a therapeutic agent. This must be the earliest instance in the world. Of course, it neither had become a distinct interest of study in the pure medical domain nor in other parts of the world. Therefore, music therapy as an independent research discipline is an American initiation and any subsequent efforts would be under its influence. Culture and music two are intricately interwoven. Splendid is the words of Stige (2016), “If you do not respect the culture of another person then you do not respect the person. Culture enables and restricts human life and development and Culture-Centered Music Therapy facilitates constructive and critical re-examination of practice, theory, and research in this light (p. 538).”

Therefore, to develop Indian music therapy, culture is always a crucial component and devoid of that proper communication will never be established.

With a rich legacy of ancient Indian use of music in therapy, Indian music therapy has a great opportunity to build up based on own traditional approach. From the current study it is also observed that there are enough possibilities to explore the new field in this regard. The next chapter details a critical analysis of Indian music and the plausible logic of its physical impact.

3

Svara-Rasa Relationship in *Śāstras*

It is well-known that the Indian concept of *svara* positions is based on 22 *śruti*-scale (hereafter SS-22), and the conventional *svara* positions on that are different regarding the ancient. So, to understand the inherent *svara-rasa* relation, critically based on the 22 *śrutis*, it becomes contextual to realise the conventional *svara* positions on SS-22, which would help us to understand the hypothetical *svara-rasa* relation in modern tradition.

It is appropriate to say that the *svara-rasa* relation is not like *svaras* are individually capable of expressing *rasas*. As Prem Lata Sharma (1970) argues:

“It may be observed here that Bharata does not mean the use of isolated *svara*-s here, but implies that respective *svara*-s have to be made the *amsa svara*-s.”

The concept of *aṁśa svara* will also be discussed in this present chapter to understand its aspects. A brief discussion done regarding conventional *svara* positions and their possible relations with *rasas* concerning the traditional Sanskrit musicology.

3.1 *Svara* and *Śruti* — what are they?

Svaras that are independent and prominent are twelve taught at beginners' level. This is common to both Hindustani and Carnatic classical music. Nuances of *svaras* are visible in various *rāgas*. For example, in Hindustani, *śuddha niṣāda* of *rāga Candrakaumṣa* is higher than usual. Similarly, *komala ṛṣabha* of *rāga Māravā* is lower than the standard. In Carnatic tradition, *śuddha ṛṣabha* (R_1) of *rāga Toḍi* is lower than the usual, and *kākalī niṣāda* of *rāga Śaṅkarābharaṇa* is higher than the usual N_3 . In some traditions, they call this as '*kākalī niṣāda* with an *anusvāra* of *ṣaḍja*.' Therefore, apparently, there is something more than the standard notes. Ancient musicologists named these subtle sounds in general, as *Śruti*, since we can differentiate such sounds from another musical sound with our auditory sense. The etymological explanation of the very word makes sense so: *śrūyate iti śrutiḥ*, i.e., *Śruti* means which can be heard.

According to the ancient Indian system, the fourth *śruti* is of *ṣaḍja*, and with this statement, maestros considered that a *svara* is nothing but a *śruti* only. If so, then what is the distinction between *śruti* and *svara*? Veṅkaṭamakhin (1700 AD.), a stalwart and reformer of modern Carnatic classical music, distinguishes the difference with a beautiful example. There is a difference between golden ingot (*svarṇṭaṅka*) and golden crown (*kirīṭa*); similar is the difference between *śruti* and *svara*. The former is the subject to transformation (*pariṇāmin*) and the latter is the evaluation (*pariṇāma*). Broadly, one can say that the effect is *svara* whereas its cause is *śruti*. Thus, Veṅkaṭamakhin says:

śrutir-nāma bhaven-nāda-viśeṣaḥ svara-kāraṇam |
nanu nāsti svara-śrutyor-bhedo nādaika-rūpayoḥ ||

vidyate pariṇāmatva-pariṇāmitva-sambhavaḥ |
*asti bhedastayor-yadvat-svarṇaṭaṅka-kirīṭayoḥ ||*¹

“ ‘*Śruti*’ means particular (or special) sound-substrate <*nada*> which is the cause of *svara*. ”

“If it is objected that there is no difference between *svara* and *Śruti* because they are both of the form of the same *nāda*, (the answer is:) there is a difference between them, namely the difference between that which transforms and that which is transformed, just as in the case of gold ingot and gold crown (Veṅkaṭamakhin, trans. 2002, Vol. I, p. 151). ”

Ṣaḍja with four *śrutis* in ancient system becomes pure note or *śuddha svara*, whereas *ṛṣabha* with three *śrutis* is considered as *śuddha*.² Otherwise, *ṣaḍja* with two *śrutis*³ becomes non-pure or *vikṛta svara* (namely *cyuta-ṣaḍja*=*ṣaḍja* which is fallen from its actual *śruti* position).⁴ On the other hand, *ṛṣabha* takes the fourth *śruti* of *ṣaḍja*, and with four *śrutis* it becomes *vikṛta*⁵ (namely *catuḥ-śruti-ṛṣabha*=*ṛṣabha* with four *śrutis*) (see Table 3.1).

1	2	3	4	5	6	7
			Sa ⁴			Ri ³
1	2	3	4	5	6	7
Ni ³		Sa ²				Ri ⁴

Table 3.1: Relation of *śruti* with *svara*

One example each for conventional Hindustani and Carnatic system could help to understand it better. In both these systems, *ṣaḍja* and *pañcama* are fixed, we have to consider

¹ See *Caturdaṇḍiprakāśikā*, 2.2-3 in Veṅkaṭamakhin, 2002

² *catuḥśrutirbhavet ṣaḍja ṛṣabhaśrutiḥ smṛtaḥ* (NS, 28.25_{ab})

³ In such case *śuddha niṣāda* takes one *śruti* of *ṣaḍja* and becomes *kaiśika niṣāda*. See SR, 1.3.40,45_{ab}

⁴ *cyuto 'cyuto dvidhā ṣaḍjo dviśrutirvikṛto bhavet* (SR, 1.3.40_{ab})

⁵ *sādhāraṇe śrutiṃ ṣaḍjīm ṛṣabhaḥ saṁśrito yadā |*

catuḥśrutitvam āyāti tadaiko vikṛto bhavet || (SR, 1.3.41)

some other svaras to clarify this concept. In Hindustani, *ṣaḍja* takes two *śrutis*, followed by *śuddha ṛṣabha* taking four *śrutis*. *Śuddha gāndhāra* takes three *śrutis*. *Śuddha ṛṣabha*, fallen by two *śrutis*, becomes *vikṛta* or *komala* (soft) *ṛṣabha*. At this position, *śuddha gāndhāra* is of five *śrutis* (see Table 3.2). However, it is not called by a new name, like in the ancient system.

1	2	3	4	5	6	7	8	9
	Sa				Ri			Ga
1	2	3	4	5	6	7	8	9
	Sa		r					Ga

Table 3.2: Relation of *śruti* with *svara* in Hindustani

In Carnatic, if we consider *rāga Kanakāṅgī* with all pure notes (according to *Catur-daṇḍiprakāśikā*), *śuddha ṛṣabha* takes two *śrutis*, and *śuddha gāndhāra* takes two (see the first row of Table 3.3) When *ṛṣabha* takes the two *śrutis* of *śuddha gāndhāra*, it is called *Catuḥ-śruti-ṛṣabha* consisting four *śrutis* and with next two *śrutis* of *madhyama*, *gāndhāra* becomes *Sādhāraṇa-gāndhāra*. (see the second row of Table 3.3)

1	2	3	4	5	6	7	8	9	10	11
				Sa		Ri ₁		Ga ₁		
1	2	3	4	5	6	7	8	9	10	11
				Sa				Ri ₂		Ga ₂

Table 3.3: Relation of *śruti* with *svara* in Carnatic

There are explicit discussions on *śruti* mainly in NS (the most ancient account), *Bṛhad-deśī* (henceforth BD) and *Bharatabhāṣya* (henceforth BB) (aka *Sarasvatī-hṛdayālāṅkāra* or *Sarasvatī-hṛdaya-bhūṣaṇa*). BD has the most detailed account, which gives a detailed conceptual evaluation of this theory (from the concept of one *śruti* to infinite *śrutis*). Besides this, BD has a brief account that explains the relationship between *svara* and *śruti* in comprehensive details.⁶ However, all those critical studies are not part of the present

⁶See BD, 1.28-43 in P. L. Sharma ed., 1992

context. The present approach shall deal directly to explore the available accounts of the *svara-rasa* relation in *śāstras*. *Śruti* system would be discussed as much as the concept is necessary to understand and make out the fundamentals of this current discussion.

3.2 Important Observations

In ancient and mediaeval Sanskrit musicological texts like NS, BB, SR and *Sanḡitapāri-jāta* (henceforth SP), the relation between *rasas* and *svaras* is found. Among these, SR maintains the same view as NS.⁷ BB and SP refers to a unique observation as these texts mentioned the relation between *rasas* and *śrutis*. However, though the approach is same, the opinions of SP and BB are slightly different.

3.2.1 In *Nāṭyaśāstra*

Ancient *Śruti* System

NS is the most ancient text wherein the concept of SS-22 is found initially and there was no conflict of opinion until literature on musicology was created after ca. 1300 AD.

On SS-22 *madhyama* (Ma⁴, the middle note) as a mirror, Sa⁴, Ri³, Ga² and Pa⁴, Dha³, Ni² were equally distributed in 4-3-2 *śruti* distribution. It formed the basic *śaḍja-grāma* (standard scale?) with *śuddha* (standard) *svaras* (see Figure 3.1).⁸ In this, *grāma* notes

⁷ *sarī vīre'dbhute raudre dho bībhatse bhayānake |*

kāryau ganī tu karuṇe hāsya śṛṅgārayormapau || NS, 1.3.59_{cd}-60_{ab}

⁸ *tisro dve ca catasraśca catasrastisra eva ca |*

dve caivādya catasraśca śaḍjagrāme bhaved vidhiḥ ||

catuḥśrutirbhavet śaḍja ṛṣabhastrīśrutih smṛtaḥ |

dviśrutiścaiva gāndhāro madhyamaśca catuḥśrutih ||

pañcamastadvad eva syāt triśrutirdhaivato mataḥ |

dviśrutiśca niṣādaḥ syāt śaḍjagrāme vidhirbhavet || NS, 28.24-26

started from Sa⁴.



Figure 3.1: *Svaras* on Ancient SS-22

Modern researchers tried to understand the mathematical distribution of 22 *śrutis*, subsequently different results emerged.⁹ However, fundamental problem with such efforts is that they were focussed to understand 22 *śrutis* on a single string, whereas, the discovery of the same as found in NS and others is based on a kind of Asian harp, *Mattakokilā vakra-vīṇā*. Here, each *svara* has its own particular string. However, the frequency distribution is not much important in our present aspect, so there would be no critical discussion in regard of this.

There was another *grāma*, called *madhyama-grāma*, notes had started from Ma⁴. The primary difference between *śadja-grāma* and *madhyama-grāma* was the Pa³ of the latter¹⁰ was of three *śrutis*, which naturally made the Dha⁴ with four *śrutis*. In the *madhyama-grāma*, Pa³ and Dha⁴ were moved from their natural standard positions and are called *vikṛta* (modified) *svaras*.¹¹ Other *vikṛta svaras*¹² (viz. *kākalī*, *kaiśika*, *sādhāraṇa* and others) would not be explained further as they are not relevant here.

Rasa and Svara Relation

Bharata (ca. 300 BC. – 300 AD.) considered that Sa⁴ and Ri³ were connected with *vīra*, *raudra*, and *adbhuta rasas*. *Karuṇa rasa* was connected with Ga² and Ni². Ma⁴ and Pa⁴ were connected with *hāsyā* and *śṛṅgāra rasas*. Dha³ was with *bībhatsa* and *bhayānaka*.

⁹See Vidwans, 2016, pp. 90-93

¹⁰*madhyamagrāme tu pañcamah śrutypakṛṣṭaḥ kāryaḥ* | NS, chapt. 28, p. 20 in 2006 ed.

¹¹*pañcamo madhyamagrāme triśrutiḥ ...* (SR, 1.3.43_{cd}); *dhaivato madhyamagrāme vikṛtaḥ syāc-catuḥśrutiḥ* (SR, 1.3.44_{cd})

¹²See SR, 1.3.39_{cd}-46_{ab}

Śārṅgadeva also accepted all these relations accordingly (see [Table 3.4](#)). NS (17.101-103) reveals the link of *svara* and *rasa* as follows:

tatra saptasvarāḥ nāma ṣaḍjarṣabha gāndhāramadhyamapañcamadhaivataniṣādāḥ
 | *te ete raseṣu upapādyāḥ* | *yathā* —
hāsyāśṛṅgārayoḥ kāryau svarau madhyamapañcamau ||
ṣaḍjarṣabhau tathā caiva vīraraudrādbhuteṣvatha |
gāndhāraśca niṣādaśca kartavyau karuṇe rase ||
dhaivataścaiva kartavyo bībhatse sabhayānake |

“Seven svaras are ṣaḍja, ṛṣabha, gāndhāra, madhyama, pañcama, dhaivata, and niṣāda. These should be used in different Sentiments (*rasas*).”

“In the Comic and the Erotic Sentiments the notes should be made Madhyama and Pañcama. Similarly in the Heroic, the Furious and the Marvellous Sentiments they should be made Ṣaḍja, and Ṛṣabha. In the Pathetic Sentiment the notes should be Gāndhāra and Niṣāda, and in the Odious and the Terrible Sentiments they should be Dhaivata (Bharata, trans. 1967, p. 345).”

Needless to say, that *svaras* do not express *rasas* individually but they express in a group known as *grāma*.¹³ In the *Gāndharva*¹⁴ form of music, *jātis*, *grāma-rāgas* used to be sung based on an instructed *grāma*. The instructed *grāma* itself carried the possible notes of a *jāti* or a *grāma-rāga* and if there was any instruction of modified notes that must be applied accordingly. For example, *Ṣaḍjī*, *Ārṣabhī* etc. were connected with *ṣaḍja-grāma*,¹⁵ and *Gāndhārī*, *Kaiśikī* etc. were related to *madhyama-grāma*¹⁶.

Notes in a cluster had their characteristics, viz., *vādin* (sonant), *saṃvādin* (consonant),

¹³This is also connected with the statement of Jayantabhaṭṭa, which is mentioned in the second chapter (footnote 29); also see Sharma, 1970

¹⁴Ancient classical or modified music form; see Tarlekar, 1991; also see NS, 28.8 with *Abhinavabhāratī* in 2006 ed., p. 5

¹⁵*ṣaḍjī caivārṣabhī caiva ... ṣaḍjagrāmasamāśrayāḥ* (NS, 28.40_a-41_d)

¹⁶See NS, 28.41_{cd}-43

vivādin (dissonant) and *anuvādin* (assonant).¹⁷ In a *jāti* or in a *grāma-rāga*, the kind of note had been mentioned as an *aṁśa*, has become the *vādin*.¹⁸ Depending on the *vādin*, *saṁvādins* used to be identified. For example, in *Ṣāḍjī*, *Sa*⁴ is the *vādin*. *Samvādins* had to be recognised from *Sa*⁴ notes, situated in 9th and 13th *śrutis*.¹⁹ Hence, a note could have two maximum possibilities of having *saṁvādins*. In the case of *Sa*⁴, *Ma*⁴ and *Pa*⁴ are the two possible *saṁvādins*. *Svaras*, which were in the distance of two *śrutis*, were called *vivādins*.²⁰ For example, the distance between *Ri*³ and *Ga*² were of two *śrutis*. Therefore, *Ri*³ and *Ga*² were mutually *vivādins*. The same was with *Dha*³ and *Ni*².

An *aṁśa svara*, in *Gāndharva* music, by default had become *vādin*, *graha* (starting), *apanyāsa* (resting), and *nyāsa* (ending) *svara*²¹ and that the *svara* become the most dominant note in a rendition, explained as follows (2006 ed., NS, 29.9):

yo yadā balavān yasmin svarō jāti-samāśrayāt |
tatpravṛttaṁ rase kāryaṁ gānaṁ geyē prayokṭṛbhiḥ ||

“When a note [representing a particular Sentiment (*rasa*)] is prominent (lit. strong)²² in a *Jāti*, the producers, in regard to the production of such a Sentiment (*rasa*) should combine the song with it, i.e., should give it prominence there (Bharata, trans. 1961, p. 30).”

This above utterance of Bharata Muni clarifies the original doubt that how a single

¹⁷*caturvidhatvam eteṣāṁ vijñeyaṁ gānayokṭṛbhiḥ |*

vādī caivātha saṁvādī vivādī cānuvādyapi || NS, 28.22

¹⁸*tatra yo yadaṁśaḥ sa tadā vādī* (NS, chapt. 28, 2006, p. 15)

¹⁹*yayoḥ ca navakatrayodaśakam antaram tau anyonyaṁ saṁvādināu* (NS, chapt. 28, 2006, p. 15)

²⁰*vivādinah tu te yeṣāṁ dvīśrutikam antaram* (NS, chapt. 28, 2006, p. 15); modern concept of *vivādin* is totally different in Hindustani — *vivādī varjitasvaraḥ* (*Lakṣyaśāṅgīta*, 1.43_d (Bhatkhande, 1910)); however, sometimes it is used to bring different colours in a *rāga*. The Carnatic concept about it is quite similar and it has a special emphasis regarding the *vivādī-rāgas* in *Melakarṭapṛastāra*.

²¹*graha-nyāśāpanyāśāḥ tāvat vādinā eva prāyeṇa grhītāḥ*, Abhinavagupta in *Abhinavabhāratī*, 2006 ed., p. 16

²²The present researcher translated the word ‘*balavān*’ (lit. strong) in the verse as ‘*dominant*’ which is more suitable than ‘*prominence*’.

svara could evoke certain *rasas*. Therefore, the relation of *rasa* with some particular *svara* was mentioned in this sense: the domination of one specific note indicates that in which *rasa/s* a distinctive melodic tune could be used. If we count the number of Sa⁴ in the example of *Śāḍjī*, which is the *vāḍin/aṁśa*, we can find that it occurs 37 times which is more than any other applied *svaras*.²³

3.2.2 Relation in *Bharatabhāṣya*

The author of BB, Nānyabhūpāla or the King Nānya, extended the thought regarding the *svara-rasa* relation. He mentioned the *rasa* relations of all 22 *śrutis* instead of only seven *svaras*.

In the traditional Sanskrit musicology texts, each *śruti* had its individual name. But from their manifestation, ancient musicologists considered that in general, they are five only which were called *jātis* (classes) of *śrutis* (*śruti-jāti*= S_j). Remarkably, this classification of *śrutis* is found firstly in BB. On 1.3.27_c-28_b of SR, Shringy (1978, pp. 138-139) gives his valuable comment as follows:

“The basis of this classification has not been made explicit in the text, nor have the commentators found it necessary to elucidate it. However, it seems that the different classes of *śruti*-s have something to do with the relationship of notes and the *rasa*-s or the aesthetic colours attributed to them in the ancient theory of Indian music. This is implied in their nomenclature and elucidated as under:”

- (i) *Dīptā*, ‘dazzling’; literally, illumined,
- (ii) *Āyatā*, ‘vast’; literally, extended,
- (iii) *Mṛdu*, ‘tender’; literally, soft,

²³See Śārṅgadeva, 1978, p. 300

(iv) *Madhyā*, ‘moderate’; literally, medium or central, and

(v) *Karuṇā*, ‘compassion’.

“The names signify tonal sequence in melodic development and are representative of emotional colour; (...)”

Nānya mentioned that *hāsyā* and *śṛṅgāra rasas* were connected to *dīptā S_j*, *vīra*, *raudra*, and *adbhuta* are associated with *āyatā S_j*, *bībhatsa* and *bhayānaka* are connected with *karuṇā S_j*. *Śrutis* which are classified as *mṛdu S_j* and *madhyā S_j*, could be implied in all *rasas* (see Table 3.4).²⁴

3.2.3 Relation in *Saṅgītapārijāta*

Ahobala (ca. 17th century AD.) in SP suggested the *svara-rasa* relationship similar to BB from the *S_j* aspects. Still, the relationship differs from the latter in some cases. Nevertheless, the names of *jātis* of *śrutis* are similar to BB. There is a great possibility that after around five hundred years when Ahobala was authoring SP, the *rasa* relations with *S_j* were changed regarding *rasa* perceptions.

On the account of SP, *vīra*, *adbhuta* and *raudra* are connected with *dīptā S_j*. *Mṛdu S_j* and *āyatā S_j* are associated with *śṛṅgāra* and *hāsyā* respectively, and these two *rasas* are also linked with *madhyā S_j*. *Karuṇā*, *bībhatsa* and *bhayānaka* are connected with *karuṇā S_j* (see Table 3.4).²⁶

²⁴*hāsyāśṛṅgārayordīptā śrutirbharatasammatā |*

āyatā cāpi kartavyā vīraudrādbhuteṣu ca ||

karuṇā hi śrutih proktā bībhatse sabhayānake |

mṛdurmadyā ca sarveṣu raseṣu viniyujyate || BB, 3.134-135 in 1961 ed., p. 107

²⁵See chapter for abbrev. scheme of *rasas*.

²⁶*rase vīre’dbhute raudre dīptā jātirudīritā |*

mṛdujātīśca śṛṅgāra āyatā hāsyake rase ||

dainye ca karuṇājātirbībhatse ca bhayānake |

hāsyāśṛṅgārayormadyā raseṣveteṣu jātayaḥ || SP, 491-492 in 1965 ed., p. 216

<i>Śruti No.</i>	<i>S_j</i>	<i>Svara</i>	<i>Rasa</i> ²⁵		
			<i>NS</i>	<i>BB</i>	<i>SP</i>
1	<i>Dīptā</i>			Sr H	V A R
2	<i>Āyatā</i>			V A R	H
3	<i>Mṛdu</i>			All	Sr
4	<i>Madhyā</i>	Sa	V A R	All	Sr H
5	<i>Karuṇā</i>			B Bh	K B Bh
6	<i>Madhyā</i>			All	Sr H
7	<i>Mṛdu</i>	Ri	V A R	All	Sr
8	<i>Dīptā</i>			Sr H	V A R
9	<i>Āyatā</i>	Ga	K	V A R	H
10	<i>Dīptā</i>			Sr H	V A R
11	<i>Āyatā</i>			V A R	H
12	<i>Mṛdu</i>			All	Sr
13	<i>Madhyā</i>	Ma	Sr H	All	Sr H
14	<i>Mṛdu</i>			All	Sr
15	<i>Madhyā</i>			All	Sr H
16	<i>Āyatā</i>			V A R	H
17	<i>Karuṇā</i>	Pa	Sr H	B Bh	K B Bh
18	<i>Karuṇā</i>			B Bh	K B Bh
19	<i>Āyatā</i>			V A R	H
20	<i>Madhyā</i>	Dha	B Bh	All	Sr H
21	<i>Dīptā</i>			Sr H	V A R
22	<i>Madhyā</i>	Ni	K	All	Sr H

Table 3.4: *Svara-Rasa* Relationships in Major Texts

3.3 Inviolable *Rasa*-factors in Music

Besides the domination of a *svara*, which is a fundamental factor of probable *rasa* evocation, there are a few more certain factors. The primary reference of NS (17.101-103)

regarding the *svara-rasa* relation was from the seventeenth chapter, which is a fascinating part of NS where Bharata explained how intonation (*kāku*) dramatically influences the evocation of *rasa*. This whole context comes under the section called ‘*pāṭhyaguṇa*’, i.e., qualities (more aptly, assistants²⁷) of recitation or presentation of poetry (*pāṭhya*, lit. that must be read). There are six assistants of *pāṭhya*, wherein *svara* is the first assistant, and others are *sthāna*, *varṇa*, *kāku*, *alaṅkāra* and *aṅga*. *Svaras* are seven and the passage is described in a previous section. Others are three, four, two, six and six (see Figure 3.2) respectively.²⁸

3.3.1 About *Kākuvyāñjanā*

Of all these assistants, except *varṇa*, others are connected with musical context too. Nevertheless, the next chapter describes how *varṇa* could also be a valuable music component in *rasa* evocation. However, the whole concept is fundamentally based upon the three *sthānas*. Three *sthānas* are as follows (NS, 17.104):

śārīryāmatha vīṇāyām tribhyaḥ sthānebhya eva tu |
urasah śirasaḥ kaṇṭhāt svarah kākuḥ pravartate ||

“In the human body as well as in the Vīṇā, notes and their pitches proceed from the three registers: the breast, the throat and the head (Bharata, trans. 1967, p. 345).”

The concept of *sthāna* clarifies that it is divided into two regarding the human body and musical stringed instruments. It is predictable that when somatic *sthānas* are divided as

²⁷Abhinavagupta clarifies the meaning of *guṇa*. He argued that *guṇa* does not express the sense of ‘*dharma*’, i.e., ‘quality’, but ‘*upakaraṇa*’, i.e., ‘assistant’ in this context— *guṇaśabdo na dharmavacanah pāṭhyaguṇān iti kiṃ tu upakaraṇavacanasthānam ca yad eva upakaraṇam bhavati* (NS, chapt. 17, 2001 ed., p. 388)

²⁸*pāṭhyaguṇān idānīm vakṣyāmaḥ | tadyathā saptasvarāḥ, trīṇi sthānāni, catvāraḥ varṇāḥ, dvividhā kākuḥ, ṣaḍalaṅkārah, ṣaḍaṅgāni iti* | NS, chapt. 17, 2001 ed., p. 385

Figure 3.2: *Pāṭhyaguṇas*: Assistants of Recitation

breast (*uras*), throat (*kaṇṭha*) and head (*śiras*), in the case of stringed instruments, these are lower (*mandra*), middle (*madhya*) and higher (*tāra*)²⁹ septets³⁰. So said Abhinavagupta (2001 ed.) in his commentary before making his comments on the context of *sthānas*: *atha eṣāṃ svarāṇāṃ āśrayaṃ darśayati* — now the dependence of these *svaras* is elaborated (p. 387). He also clarified that intonation is the most crucial component in this context, and three *sthānas* also come under intonation. These are mentioned as follows (NS, chapt. 17, 2001 ed., p. 386, 385):

kākurūpatvam eva sarvatra anuyāyi atīśāyitve mukhyopayogāt

The intonation model is followed in all cases, as it is abounding all and applicable primarily.

iha kākuṣu svarā eva vastutaḥ upakāriṇaḥ

In the context of intonations, *svaras* are the most favourable factors.

In addition, Bharata himself explained that *sthānas* are also intonation (henceforth it will be abbreviated as *kāku-sthāna*=KS), when he expressed about these words in the 28th chapter, saying the following words (NS, chapt. 28, 2006 ed., p. 27):

sthānaṃ ca trividhaṃ pūrvoktalakṣaṇaṃ kākuvidhau

Sthāna is threefold, as explained while describing intonation.

Besides this, when Bharata mentioned twofold *kāku*, viz. *sākāṅkṣā* and *nirākāṅkṣā*, this is related to the sense of linguistic sentences and the sense of this term is different from KS, but the former is dependent on the latter. However, as this twofold *kāku* is semantic, it has little significance to be a part of the ongoing discussion.

²⁹This can be related with *Viṣṇudharmottara Purāṇa* (3.18): *trīṇi sthānāni — uraḥ kaṇṭhaḥ śiraśca, tebhyo mandra-madhyā-tārotpattiḥ* — Three are the registers – breast, throat and head. From these (three), *mandra*, *madhya* and *vilambita* are originated.

³⁰Septet (*saptaka*), i.e., group of seven *svaras* is apt for Indian system, not octave (*aṣṭaka*), i.e., group of eight.

Six *alaṅkāras*, the fifth assistant of *pāṭhya*, are directly connected with *svaras*. Sixfold *alaṅkāra* is: *ucca*, *dīpta*, *mandra*, *nīca*, *druta* and *vilambita*, as mentioned below (NS, 17.109):

atha ṣaḍalaṅkāra nāma — ucco dīptaśca mandraśca nīco drutavilambitau |
pāṭhyasyaite hyalaṅkārah ... ||

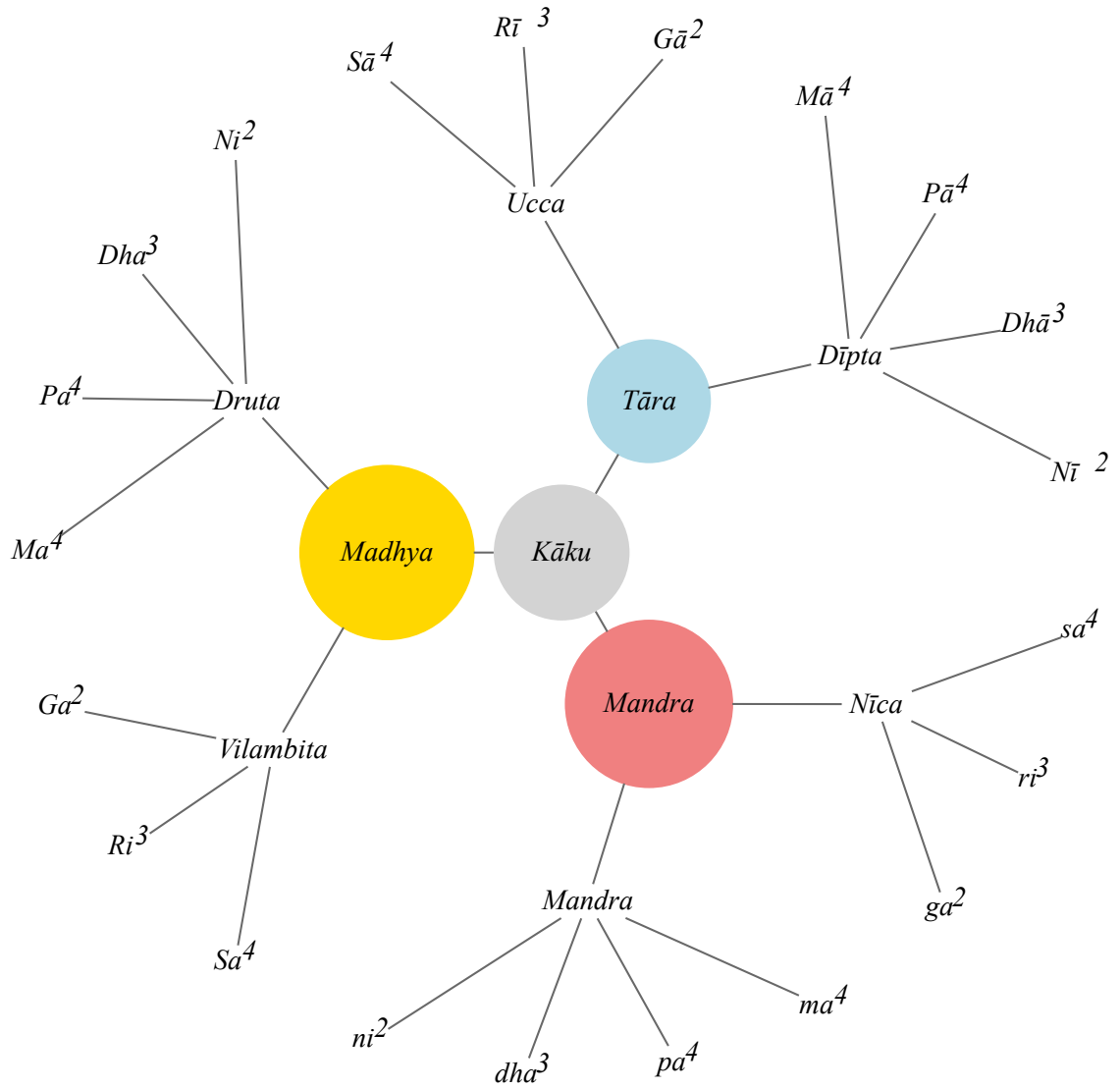
Abhinavagupta (2001 ed.) explains the contextual meaning of *alaṅkāra* as thus: *alaṁ paryāptaṁ kākoḥ svarūpaṁ yena sampādyate saḥ alaṅkārah* (p. 392)— which justifies the comprehensive nature of intonation is called *alaṅkāra*.

This critical observation denotes the twofoldness of each KSs. Hence, seven *svaras*, divided into three KSs, become twenty-one in total. They are divided into two parts according to the nuances of each KS, i.e., *alaṅkāras*. For example, the *madhya* KS is divided into two parts *druta* and *vilambita*. Therefore, seven *svaras* that could not be divided equally, Ma^4 , should be distributed for both *druta* and *vilambita*. Nevertheless, from the aspect of SS-22, each KS could be divided into 11:11. As a result, the *svara* separation will be like 3:4 (see Figure 3.3 & Figure 3.4), and Ma^4 will come under the second group (of four *svaras*), so is with other KSs (see Figure 3.3).

The ultimate assistant, *aṅga*, is also sixfold and equally applicable in all three KSs. The first of sixfold *aṅga* is *viccheda*, which is also called *virāma* or *laya* — one of the most important factor for this present study. Abhinavagupta (2001 ed., p. 399) leaves his valuable comment thus:

vicchedo virāmaḥ, sa ca kiyantaṁ kālam iti layaḥ api tenaiva svīkṛtaḥ

[In other words,] *viccheda* is *virāma* (lit. pause). What is the time limit of that pause? (As an answer to this question) *laya* is accepted by that [term] itself.

Figure 3.3: Manifestation of *Kāku*

Laya (timing of rendition or recitation) is threefold: *druta* (first), *madhya* (moderate) and *vilambita* (slow). Other five *aṅgas*, viz. *arpaṇa*, *visarga*, *anubandha*, *dīpana* and *praśamana*, are described as follows:

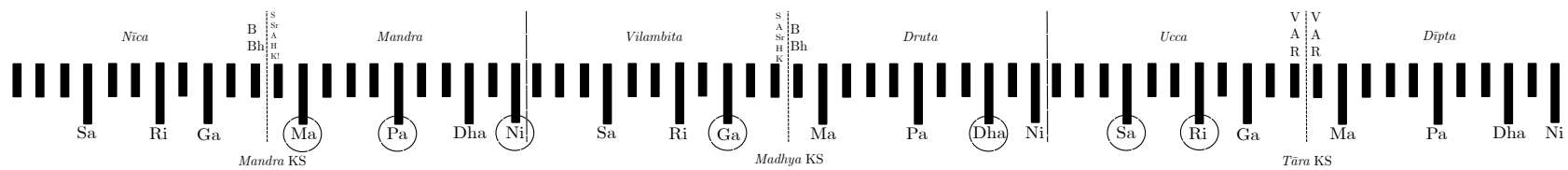
*arpaṇam nāma līlāyamānamadhuravalgunā svareṇa pūrayateva raṅgam yat
paṭhyate tad arpaṇam | visargo nāma vākyanyāsaḥ | anubandho nāma padāntareṣu
avicchedaḥ, anucchvasanam vā | dīpanam nāma trīsthānaśobhi vardhamā-
nasvaram ceti | praśamanam nāma tāragatānām svarāṇām praśāmyatāmavai-
varyeṇa avataraṇam iti |*

“Presentation (*arpaṇa*) means reciting something by filling up the auditorium with graceful modulation of voice. Closure (*visarga*) means the finishing of a sentence. Continuity (*anubandha*) means the absence of separation between words [in a sense group] or not taking breath while uttering them. Brilliance (*dīpana*) means the gradually augmented notes which proceed from the three voice registers and Calming (*praśamana*) means lowering the notes of high pitch without making them discordant (Bharata, trans, 1967, p. 349).”

From this overview of all six assistants of *pāṭhya*, we can divide them again into two categories for the sake of a better understanding. Of these six, *svara*, *sthāna*, and *alaṅkāra* are elements (=E₃) and the other three, viz. *varṇa*, *kāku*, and *aṅga* are the ways to execute those elements (=W₃). The following section will describe the *rasa* evocative possibilities regarding E₃ and W₃.

3.3.2 *Rasa* relation of Intonations

Amongst E₃, the *rasa* relations with *svaras* have been already described. There is no direct evidence of *rasa* relation with *sthānas*, but as it is combined and elaborated with *alaṅkāras* (as three KSs), the relation between *rasas* and KSs is sufficient to understand the *rasa* evocative possibilities of *tāra*, *madhya*, and *mandra*.

Figure 3.4: *Svaras* and *Rasas* in All *Kākusthānas*

Let us understand the whole *rasa* relation with Figure 3.4. According to the twofold division of SS-22, $Sa^4-Ri^3-Ga^2$ were connected with the first half of KSs and rest *svaras* with others. According to Bharata, *nīca* of *mandra* KS ($=^n Mn$) and *druta* of *madhya* KS ($=^d M$) are applicable in *bībhatsa* and *bhayānaka* *rasas*. *Vīra*, *adbhuta* and *raudra* are connected with both *ucca* and *dīpta* of *tāra* KS ($=^u T$ & $=^{di} T$). *Vilambita* of *madhya* KS ($=^v M$) is related to *śṛṅgāra*, *hāsyā* and *karuṇa* (see Figure 3.4).³¹ Surprisingly, in NS, there is no mention of *rasa* outcome from *mandra* of *mandra* KS ($=^m Mn$). The 17.121 verse of NS could solve this problem. The verse is as follows:

yāni saumyārthayuktāni sukhabhāvakṛtāni ca |
mandrā vilambitā caiva tatra kākurvidhīyate ||

“Grave (*mandra*) and slow (*vilambita*) intonations have been prescribed for words containing pleasant sense and bringing in happiness (Bharata, trans. 1967, p. 348).”

The above verse directly says that pleasant and happy sentiments connect with $^m Mn$ and $^v M$. Among the eight *rasas*³², *śṛṅgāra*, *hāsyā* and *adbhuta* these three bestow pleasantness and happiness. Therefore, these *rasas* are connected with $^m Mn$. There is a high possibility to connect *śānta* with $^m Mn$, but it will be discussed in the next chapter only.

Despite the relation of *śṛṅgāra*, *hāsyā* and *adbhuta* with $^m Mn$, *karuṇa* should have a relation with $^m Mn$. In 17.121, Bharata mentioned that pleasantness and happiness are connected with $^m Mn$ and $^v M$, but in 17.123, *karuṇa* is also accepted under $^v M$. More-

³¹*hāsyāśṛṅgāra karuṇeṣviṣṭā kākurvilambitā |*
vīra audrādbhuteṣūccā dīptā vāpi praśasyate ||
bhayānake sabībhatse drutā nīcā ca kīrtitā |
evaṃ bhāvarasopetā kākuḥ kāryā prayokṭrbhiḥ || (NS, 17.123-124)

³²Uptill now, it observed that *rasa* relation with *svaras* is limited to eight *rasas* only. *Śānta* *rasa* has some evidence of implication which will be discussed in the next section. However, why *śānta* was not mentioned by Bharata is also explained by Abhinavagupta, which will be discussed in the next chapter. Therefore, for now, we are just focusing on eight only.

over, Bharata did not mention the *rasa* relation with mMn . Therefore, it is fair to see that the sage considered the *rasa* relation with mMn is conceivable by mentioning the *rasa* relation with vM .

As we identified the fundamental *svara-rasa* relation, and KS and *svaras* are inter-linked, it is interesting to identify the *rasa* relations with *svaras* in the present descriptive KS concept. For instance, Sa^4 and Ri^4 were identified as connected with *vīra*, *adbhuta* and *raudra* (see the NS column in Table 3.4). In the KS position, such Sa^4 and Ri^4 could be found only in the uT & ^{di}T (rounded *svaras* in Figure 3.4). Can we say that the *rasa* relation with a *vādin* also indicates a rendition's essential KS? It is a point of a deep investigation for later.

As like the KS position of *svara* with their connected *rasas* is detected in T , other information could be derived applying the same process. As a result, Ga^2 and Ni^2 are found in vM and mMn , respectively, and Dha^3 is found in the dM (see Table 3.4 along with Figure 3.4).

The previous argument regarding the placement of *karuṇa* in mMn , helped us to identify Ni^2 in mMn . Though we got Ga^2 , connected with *karuṇa*, in vM there is no clue for Ni^2 , which could be only solved if we place it in mMn (see Figure 3.4).

Among the *rasa* relations regarding W_3 , *laya* is one of the most important factors for musical renditions. Bharata mentioned the *rasa* relations of three *layas* thus (NS, chapt. 17, 2001 ed., p. 399):

*eṣāṃ ca drutamadhyavilambitāḥ trayo layāḥ raseṣu upapādyāḥ | tatra hāsyas-
śṛṅgārayoḥ madhyalayaḥ, karuṇe vilambitaḥ, vīraraudrādbhutabībhatsab-
hayānakeṣu druta iti |*

“The three kinds of tempo (*laya*) of these notes are to be utilised in different Sentiments. In the Comic and Erotic Sentiments, the tempo should be medium, in the Pathetic it should be slow and in the Heroic, the Furious, the

Marvellous, the Odious and Terrible Sentiments quick (Bharata, trans. 1967, p. 349-350).”

Others of sixfold *aṅga* had their application in specific *rasa/s*.³³ In *hāsyā* and *śṛṅgāra*, *arpaṇa*, *dīpana* and *praśamana* are applicable. *dīpana* and *praśamana* are applicable in *karuṇa*. *Anubandha*, *dīpana*, and *praśamana* are for *vīra*, *adbhuta* and *raudra*. *Visarga* is for *bībhatsa* and *bhayānaka*. Twofold *kāku* of W_3 has no *rasa* relation specifically as its activity stops at the level of semantic presentation, whereas *rasa* is suggestive as it is understood.

3.4 Scant References of Śānta

3.4.1 Direct References

The available reference that could establish relation of *śānta rasa* with *svāra* is found in *Viṣṇudharmottara Purāṇa* (3.18):

*hāsyāśṛṅgārayoḥ madhyamapañcamau, vīraraudrādbhuteṣu śaḍjarṣabhau,
karuṇe niṣādagāndhārau, bībhatsabhayānakayoḥ dhaivatam, śānte madhyamam
(prayuñjīta?)*

According to the above reference, Ma^4 was connected with *śānta*. Apart from this, other *rasa* relations are the same as that of NS.

Saṅgītamakaranda (1.1.47-48)³⁴ also has its account on *svāra-rasa* relation along with *śānta rasa* which has a relation with *gāndhāra*:

³³*tatra hāsyāśṛṅgārayoḥ ākāṅkṣāyām arpaṇavicchedadīpanapraśamanayuktaṁ pāṭhyam kāryam | dīpanapraśamanayuktaṁ karuṇe | vicchedapraśamanadīpanānubandhabahulaṁ vīraraudrādbhuteṣu, visargavicchedayuktaṁ bībhatsabhayānakayoḥ iti* | NS, chapt. 17, 2001 ed., p. 398

³⁴See Telang ed., 1920

śadjasyādbhutavīrau ca ṛṣabhasya ca raudrakah |
 gāndhārasya ca śāntam ca hāsyākhyam madhyamasya ca ||
 pañcamasya ca śṛṅgāro bībhatso dhaivatasya ca |
 karuṇā niṣādasya saptasthānārasā nava ||

But the above account is very different from the traditional Sanskrit musicological texts viz. NS, SR etc. and does not help much in the present research. There is no mention of *bhayānaka*, and stated relations are so much different from the other notable works. The intention behind such statements may be a matter of further investigation but could not be placed in the present study.

3.4.2 Some Indirect References

From the time of BD, while mentioning the *rasa* applications of *rāgas*, musicologists mentioned *śānta* in some cases. In those contexts, along with referred *rasa*, the *vādin* is also mentioned. Hence, as per the *svāra-rasa* relation theory, referred *rasa* could be connected with mentioned *vādin svāra*. For instance, in BD, Maṭaṅga says while describing *rāga Sauvīra*, “*śāntarase ca asya viniyogaḥ* — application of this *rāga* has to be known in *śānta rasa* (1994 ed., p. 110).” The *vādin*, starting and resting note of this *rāga* was Sa⁴. Another *rāga* called *Vesaraṣāḍava* is also suggested for application in *śānta*³⁵ in which dominant *svāra* is Ma⁴ (1994 ed., p. 110). Maṭaṅga also mentioned that *Boṭṭa rāga* is also applicable to evoke *śānta rasa*³⁶ which had Pa⁴ as its dominant *svāra* (1994 ed., p. 112).

Śārngadeva had accepted the *śānta rasa* relation of *Vesaraṣāḍava* along side *śṛṅgāra* and *hāsyā* (SR, 2.2.49).³⁷ Similar to BD, description of SR regarding *Sauvīra* had also suggested its relation with *śānta*, along with *vīra*, *adbhuta* and *raudra*³⁸ (2.2.121_d-122_{ab})

³⁵ *śāntarase ca asya prayogaḥ*

³⁶ *śāntādiko rasaḥ*

³⁷ *sampūrṇaḥ śāntaśṛṅgārahāsyēṣūśanasah priyaḥ ||*

³⁸ ... *rase śānte śivapriyaḥ ||*

prayojyaḥ paścime yāme vīre raudre'dbhute rase |

rasas. According to SR, *Varāṭī* (*Varāṭikā/Baṭukī*) was also applicable in *śānta*.³⁹ It had Sa^4 as its *vādin svara* (2.2.123_{cd}-124_{ab}) .

Therefore, from all the above observations, Sa^4 and Pa^4 could be connected with *śānta* along with Ma^4 . From the KS aspect, as in 17.121 of NS clearly indicates that mMn and vM are connected with happiness and pleasantness, KS of *śānta* could be placed in both mMn and vM (see Figure 3.4). More interestingly, these two KSs have Sa^4 , Ma^4 and Pa^4 , which protects the logic.⁴⁰

3.5 A Comparision

The discussed *svara-rasa* relationship, as observed in this chapter, carries a history of more than one thousand and five hundred years (maybe more than that). From the time of NS (ca. 300 BC.) to the time of SP (17th century AD.), drastic changes were taken place. Despite some similarities in the relationships, there exist more inequalities (see Table 3.4). It seems that musicologists practically suggested these relationships according to the observations of the then *rasa* perceptions.

It is noticeable that Nānya suggested a more significant ground of relative *rasas*. Except for Ga^2 and Pa^4 , all other *svaras* according to Nānya's observation were connected with all *rasas*. After more than five hundred years (see Table 3.4), Ahobala found the relationships differently. As Nānya had covered all *rasas* for *svaras*, except the above two *svaras*, Ahobala's suggested relationship was already available in BB (see Table 3.4). Only Pa^4 was said to have an extra *rasa* relation in the time of Ahobala (see Table 3.4). Nevertheless, in the case of some specific *rasa* relations, differences were observed more than similarities.

³⁹*sanyāsāṃśagrahā tārasadhā śānte niyujyate* |

⁴⁰It should be noted that all *svaras* which were of four *śrutis* are found to be related with *śānta*. On the other hand, *Saṅgītamakaranda*'s *śānta* relation with *gāndhāra* is somehow a frame breaking statement.

3.5.1 Association of *Rasas*

Considering references from NS to SP, some *rasas* always come in groups. *Vīra*, *adbhuta* and *raudra* *rasas* always come in contact with each other (see Table 3.4). Similarly, *bībhatsa* and *bhayānaka* are grouped together, similarly *śṛṅgāra* and *hāsyā* *rasas* (see Table 3.4). *Karuṇa*, on account of the NS, is individually connected with Ga² and Ni². Nānya did not include *karuṇa* separately. In SP, *karuṇa* comes under the influence of *bībhatsa-bhayānaka* pair (see Table 3.4).

These associations could be achieved with the help of *rasa* theory. In the sixth chapter of NS, Bharata explained the correlation of a *rasa* with another *rasa* (NS, 6.39-41):

teṣāṃ utpattihetavaḥ catvāraḥ rasāḥ | tadyathā — śṛṅgāro raudro vīro bībhatsaḥ iti | atra —
śṛṅgārāddhi bhaveddhāsyō raudrācca karuṇo rasah |
vīrāccaivādbhutotpattirbībhatsācca bhayānakaḥ ||
śṛṅgārānukṛtiryā tu sa hāsyastu prakīrtitaḥ |
raudrasyaiva ca yatkarma sa jñeyaḥ karuṇo rasah ||
vīrasyāpi ca yat karma so 'dbhutaḥ parikīrtitaḥ |
bībhatsadarśanam yacca jñeyaḥ sa tu bhayānakaḥ ||

“Sources of these Sentiments are the four [original] Sentiments *e.g.* Erotic, Furious, Heroic and Odious.”

“The Comic [Sentiment] arises from the Erotic, the Pathetic from the Furious, the Marvellous from the Heroic, and the Terrible from the Odious.”

“A mimicry of the Erotic [Sentiment] is called the Comic, and the result of the Furious Sentiment is the Pathetic, and the result of the Heroic Sentiment is called the Marvellous, and that which is Odious to see results in the Terrible (Bharata, trans. 1967, p. 107).”

As it is understood from the chapter 1, music is naturally the language of emotions.

In linguistic works like poetry, drama etc., the possible the *rasa* generation is prominent, unlike music that is totally an abstract art form. This is why all musicologists opined that so and so *svaras* are applicable in so and so *rasas*. This is in spite of attributing with a specific *rasa*.

There is an exception in NS as Pa⁴ gets a single relation with *karuṇa* (see Table 3.4). However, the solution should be like this: *Vimpralabha śṛṅgāra*, part of the twofold *śṛṅgāra*, instigates the shade of *karuṇa*. No exaggeration, wherever *karuṇa* is mentioned, *vimpralabha śṛṅgāra* becomes coterminous by default.

Bharata says that the *adbhuta* is a result of *vīra*.⁴¹ Again, in the context of *svara-rasa* relation, Bharata mentions *raudra* along with *adbhuta* and *vīra*. Therefore, it could be deduced that *raudra* should also be considered as a result of the other two, contextually thus making a indivisible triad. From the above context, mutual association of *śṛṅgāra* and *hāsyā*, *bībhatsa* and *bhayānaka* sounds logical.

3.5.2 The Melodic Relation

It becomes necessary to ask from which musical form did the ancient musicologists connect these *rasas*?

From the account of NS, where *Gāndharva* forms dominantly existed, arched harps used to be the primary musical instrument (Coomaraswamy, 1930). There is no trace of evidence to a drone instrument like today's *tānpurā/tamburā* in ancient India. This kind of drone instrument holds a tonic note, which is now Sa, along with another possible consonance or any other supportive note for a rendition. A tonic note primarily decorates the ground of a rendition and the musical expressions.

Further, Sa is not fixed in our conventional music system. D/D# could be one's Sa,

⁴¹ Interestingly, by referring to the context of *Veṇīsaṃhāra*, Abhivavagupta says that *śṛṅgāra* is another result of *vīra* (NS, chapt. 6, 1956, p. 298).

and C or the other is Sa of another. However, this was not a condition in the ancient times, especially in the time of NS and BB. Pt. Ratanjankar (1970) beautifully expresses this fact, as follows:

“The ancient musicologists had a standard keynote and definite degrees of pitch in mind when they made this statement. The calls of the peacock, the ox, the goat, etc., referred to as representing the successive degrees of pitch of the Indian musical scale would also lend support to this idea. Even if that were so the idea, of musical notes individually expressing a specific *rasa*, an emotion, an abnormal state of mind, passes my understanding.”

“In the present system of music, anyway, the *svaras* are not absolute. They are all relative.”

The ancient music system had fixed frequencies for *svaras*. Hence, when Sanskrit musicologists speak about Sa⁴, Ri³ and others in ancient texts, it means there was a specific sound frequency on which all theories are described.

In BB and SR, examples of ancient *Jāti* songs are found with notations.⁴² All *jātis*, as previously mentioned, were rendered in a prescribed form. For example, two *jātis* will be selected to observe the perceptual variety based on the domination of a *svara*.

Ṣāḍjī and *Ārṣabhī* respectively had Sa⁴ and Ri⁴ as their dominant notes.⁴³ The basic scale of these two was the same, called the *śāḍja-grāma*, but if they were executed in an Asian arched harp, one would receive different audio-perception from both of them.

Kalamandalam Piyal Bhattacharya in 2006 tried to reconstruct the primary *vīṇā* of Bharata's *Mattakokilā*⁴⁴, a 21 stringed arched harp, along with some others (Banerjee,

⁴²See Śārṅgadeva, 1978, pp. 300-365; also see Nānyabhūpāla, 1976, pp. 24-125

⁴³29.2_{ab} of NS says — *ṣāḍjī tvathārṣabhī caiva svasvarāṃśaparigrahāt*, where Abhinavagupta clarifies the meaning of ‘*svasvarāṃśaparigraha*’ (nominal root of *svasvarāṃśaparigrahāt*) thus: *svaḥ nāma svaraḥ tasya yaḥ aṃśatvena parigrahaḥ ityarthah*.

⁴⁴ It is to be noted that Nānya (1961 ed.) in 1.84 of BB mentions that *vīṇā* is of three in kind: *Vakrā*

2016). His student Subhendu Ghosh was requested by the present researcher to record excerpts of those *jātis* as mentioned above with reconstructed *Mattakokilā* (see Figure 3.5). By listening to those two in audio clips, one could understand the practical sense of domination of a *svara* and the *rasa* relationship with that of *svara* in ancient *śāstras*.⁴⁵

3.6 Summary

So far, the most important sources of the *svara-rasa* relationship have been discussed. The tagging policy of *svara* and *rasa* by ancient musicologists is now apparent this way: When a *svara* in a rendition process becomes the most dominant one, whatever *rasa/s* perceived by a wise listener could be tagged with that particular *svara* for theoretical explanation. Besides this, the KSs are also important factors as it is discussed, but *raudra* could not be expressed from *madhya* or *mandra* septet.

These *rasa* relation with dominant *svaras* and KSs are crucial for the next chapter. Based on these theories, it is attempted to identify the possible *rasa* relation of conventional (bent/arched), *Kaurmī* (of tortoise) and *Alābū* (of gourd). The first one, i.e., *vakrā vīṇā* is arched harp because while mentioning the verities of *vakrā vīṇā*, Nānya states *vipañcī*, *citrā*, and *mattakokilā* which are also mentioned in NS, 29.118 and 34.14, and also by Abhinavagupta in his commentary of NS, 28.4. The name *mattakokilā* is not properly mentioned in this part of commentary. According to Abhinavagupta, the term *vaiṇika* (maestro of *vīṇā*) in NS, 28.4 is specifically for him who plays *mattakokilā*, he mentions that *vipañcī* is *apūrṇatantrikā* i.e., which is deficient regarding its strings, but that is *vīṇā*, which is with 21 strings (where only 7 standard notes in all upper, middle and lower septets could be found) and complete in nature (*vīṇā tu ekaviṃśatitantrikā*) (2006 ed., p. 3). In the commentary of 29.112 of NS, Abhinavagupta specifically mentions that *mattakokilā* is the primary *vīṇā* because *mattakokilā* is only able to express all notes in lower, middle and upper septets (*tatra mattakokilā pradhānabhūtā | ekaviṃśatitantrikatvena anyūnād-hikam trishānasvarasāraṇājātigītivīṇāśarīram ucyate*) (2006 ed., p. 122). Hence it makes clear the reason why a player of *vipañcī* is called *vaipañcika*, while *vaiṇika* i.e., maestro of *vīṇā* is referred to a player of *mattakokilā*. It elucidates that the main *vīṇā* of NS is *mattakokilā* itself and the explanations of 22 *śrutis* and others are based on that only.

⁴⁵Listen first parts of two ancient *jātis* of *gāndharva* music with this link: <https://drive.google.com/drive/folders/1Vsw6zP2QqfGpUFnV-LxEk0qk1J6nt4hg?usp=sharing>



Figure 3.5: Reconstructed Bharata's *Mattakokilā vakrā vīṇā* by Piyal Bhattacharya

tional *svaras* on SS-22. BB and SP are the most significant references, as they tagged *rasas* with all *śrutis*. Otherwise, Sa⁴ of the ancient system, do not have any *rasa* relation with that of Sa⁴ with the Sa of current practice. There would be no practical importance of ancient musicological texts in this modern era if one do not achieve the *svara-rasa* relation for all *śrutis* in the *rasa* context. Since, to know the *rasa* relation of present Ri, Ri³ of three *śrutis* will never help to establish a *rasa* relation in this era.

Rasa evocative factors of Indian traditional music will be discussed in the following chapter that help one to understand the causes of *rasa* evocation from pure music in a traditional manner.

4

Application of *Rasa-Sūtra* in Pure Music

Scholars expressed that it is challenging to translate the term ‘*rasa*’ into English, since no equivalent word could denote the depth of the meaning conveyed by *rasa* (Dace, 1963).¹ However, some prefer to indicate *rasa* as ‘aesthetic emotion’ (Sundararajan, 2010) or as ‘sentiment’ (accepted by M. Ghosh, 1967), but these equivalents cannot match the etymological meaning, i.e., *rasyate*² *āsvādyate iti rasaḥ* — *rasa* is that which is tasted or delighted or relished. ‘*Rasa*’ translated as ‘sentiment’ expresses the sense of the Sanskrit

¹Even Gnoli (1985) did not translate this term in English. There was a try in early stage of english translations to translate ‘*rasa*’ as ‘flavour’ (in The Sāhityadarpaṇa or Mirror of Composition, a treatise on literary criticism by Viśvanātha Kavirāja, in 1851) which also did not sustain.

²*√ras āsvādanasnehanayoḥ* (PD, 10.316) — a verbal root of *curādigāṇa*. Also see NS, chapt. 6, 1956ed., p. 288 (*rasa iti kaḥ padārthaḥ | ucyate āsvādyatvāt | katham āsyadyate rasaḥ* etc.)

term ‘*bhāva*’ (general term for emotion or sentiment). Sense of aesthetic emotion does not connote the actual sense of *rasa*. For instance, one may derive joy by listening to a particular music. It is fine to say that that individual felt joy aesthetically, but not experienced *rasa*. This means intricacies are involved to experience *rasa* out of any aesthetic object. We shall discuss the dependency factors of *rasa* evocation in this chapter.

In [chapter 1](#), it was discussed that music is the subtlest manifestation of gross sound. It possesses two potential energies sweetness and bliss — *mādhurya śakti* and *ānanda śakti*. Any linguistic sound expresses threefold sense. A musical sound expresses the third sense as its primary meaning. Therefore, suggestions as emotions are the meanings of musical sounds. In suggestive meanings, all suggestions do not express the *rasa*. For example, by listening to an expression like “father has come home” uttered by mother, a child is afraid who committed some wrong deed. Here, fear as *bhāva* is suggested, but not the *rasa*.

The musical sound does not automatically evoke the *rasa*. Hence, it is fair to state that music naturally expresses sense of emotion, but it generates *rasa* when presented in a particular manner. Therefore, Mahimabhaṭṭa wrote ‘*ratyādi*’ not ‘*śṛṅgārādi*’ in *Vyaktiviveka* which was discussed in [chapter 1](#).

The psychology of *rasa* evocation is critically discussed in the treatises of poetics and other related texts to identify it from dance-drama, drama, poetry and prose. In the previous chapter, the *rasa* relationship of certain melodic forms based on the domination of a *svara* in the then practice of renditions was discussed. Notwithstanding the above, the psychological explanation of *rasa* evocation from music in the light of the foundation of *rasa* theory (henceforth RT), i.e., *Rasa-Sūtra*, is not observed. Prof. Sharma (1970) and others had their own observations, but they did not explain from this aspect. In this chapter, explaining the psychological process of *rasa* evocation considering the *Rasa-Sūtra* is attempted. An overview is presented further.

4.1 Outline of *Rasa* Theory

4.1.1 The *Rasa-Sūtra*

The heart of the RT is *Rasa-Sūtra* (the Aphorism of *Rasa*), which promotes three components behind the evocation of *rasa*. Bharata Muni authored the *Rasa-Sūtra*, as follows (NS, chapt. 6, 1956 ed., p. 272):

vibhāvānubhāvavyabhicārisaṃyogād rasaniṣpattiḥ

“the Sentiment [*rasa*] is produced (*rasa-niṣpattiḥ*) from a combination (*saṃyoga*) of Determinants (*vibhāva*), Consequents (*anubhāva*) and Complementary Psychological States (*vyabhicāribhāva*[/*sañcāribhāva*]) (Bharata, trans. 1967, p. 105).”

There are two other important concepts, i.e., stable/permanent emotions [aka durable states] (*sthāyibhāva*) (=SE) and psychophysical responses (*sāttvikabhāva*) (=PR), which will be explained further. Before that, some essential principles of the RT, which are unavoidable, should be discussed.

4.1.2 *Rasa* Relishment

The above mentioned three components [determinants or determinant factors (=DF), consequent components (=CC), and complementary psychological states/transitory emotions (=TE)] can not be seen in a normal (*laukika*) transactional state. DF which represents characters (like, Rāma, Bhīma, Sītā, Śakuntalā, John Nash etc.) from literary works are not in the normal state or worldly, since they are represented through an artistic approach. In this approach, it consists some private activities like *rati*, *duḥkha* which civilised people would like to watch/read such described activities and could get delighted. According to

Bhaṭṭanāyaka, it is *sādhāraṇīkaraṇa* (generalisation) in the art that helps civilised people to be involved. With worldly matters, people have both attachment (*rāga*) or detachment (*dveṣa*). In context of *rāga*, it is a personal attachment with a person or thing which does not allow others' interference and in *dveṣa*, one develops an aversion towards a person or thing. In experiencing the poetic bliss, no *rāga* and *dveṣa* are become part of that since they are generalized from the *kāvya* point of view. Accordingly, Viśvanātha Kavirāja in his *Sāhityadarpaṇa* (3.12 in 1936 ed.) (henceforth, SDp) says thus:

parasya na parasyeti mameti na mameti ca |
tadāsvāde vibhāvādeḥ paricchedo na vidyate ||

“At [the time of] the gustation thereof [i.e., of Flavour], there is no distribution of the Excitants, &c., [of emotion—such as could put it into the head of a spectator to say] “this is the other’s [i.e. the hero’s]—that is not the other’s—this is mine—that is not mine (Viśvanātha, 1851, pp. 46-47).” ”

Furthermore, the above verse makes the poetic presentation non-worldly or super-normal (*alaukika*).

DF, CC and TE in worldly context are respectively— cause, efforts and assistant in the manifestation of a SE. For example, when one sees a mother with near her dead child, one will be deeply and equally grieved for which mother is the cause, her actions (like, crying, beating forehead and others), and her various other expressions (her love for her child, her anger on God as to why it happened so, and others) generate the effect in him. One does not want to see such pathetic incidents repeatedly. One might indeed pray - “May such grief could never ever occur to anyone” as one never wants to watch such things anymore. Notwithstanding the above, in the poetic world³, such worldly reaction does not occur and one wants to read/see that again and again. In the poetic world, unlike the everyday

³the famous example is *Rāmāyaṇa* or in *Pather Pāncālī* (পথের পাঁচালী) where Harihar comes back to home and comes to know that his daughter was dead days back.

world, all three (DF, CC, and TE [in combination it will be mentioned as DCT in plural henceforth]) together become a cause in *rasa* evocation, which is as follows (SDp, 3.14_d):

rasabodhe vibhāvādyāḥ kāraṇānyeva te matāḥ ||

they are held to be Causes alone in respect of the apprehending of Flavour
(Viśvanātha, 1851, p. 48).

Nevertheless, there is a room for a critical observation here. Abhinavagupta describes that if DCT are causes of *rasa*, they should continue even after the incident is over. That is why, in SDp (3.15-16_{ab}) it is clarified further as follows:

pratīyamānaḥ prathamam pratyekaṁ heturucyate |
tataḥ saṁvalitaḥ sarvo vibhāvādiḥ sacetasām |
prapānakarasanyāyāccarvyamāṇo raso bhavet ||

“First each reason is mentioned separately as being perceived; and let all this commingled—the Excitants and the rest—constitute, like the [composite] flavour of sherbet, the Flavour tasted by the intelligent (Viśvanātha, 1851, p. 48).”

Therefore, the causal stand of DCT is not the ultimate. Hence, *rasa* is not precisely the effect or product of DCT but the manifestation or appearance (*abhivyakti/pratīti*). Traditionally, this conclusion is supported by the *pānakarasa* maxim. In relishing the sherbet, ingredients are not separately tasted, but they are tasted as a mix of all ingredients called as sherbet, so is *rasa*. Abhinavagupta concludes this topic as follows (NS, chapt. 6, 1956 ed., p. 285):

ata eva vibhāvādayo na niṣpattihetavaḥ rasasya | tadbodhāpagame api rasa-
sambhavaprasaṅgāt | nāpi jñaptihetavaḥ yena pramāṇam adhye pateyuḥ | sid-
dhasya kasyacit prameyabhūtasya rasasya abhāvāt | kiṁ tarhi etat hi vib-
hāvādayaḥ iti | alaukika eva ayaṁ carvaṇopayogī vibhāvādivyavahāraḥ | kva

anyatra itthaṃ dr̥ṣṭam iti ced bhūṣaṇam etad asmākam alaukikatvasiddhau |
pānaka-rasāsvādaḥ api kiṃ guḍamaricādiṣu dr̥ṣṭaḥ iti samānam etat |
nanu evaṃ rasaḥ aprameyaḥ syād evam | yuktaṃ bhavitumarhati | rasyataika-
prāṇo hyasau na prameyādisvabhāvaḥ | tarhi sūtre niṣpattiḥ iti katham | na
iyam rasasya | api tu tadviṣayarasanāyāḥ | tanniṣpattyā tu yadi tadekāy-
attaḥjīvitasya rasasya niṣpattiḥ ucyate na kaścīd atra doṣaḥ | sā ca rasanā
na pramāṇa-vyāpāraḥ, na kārakavyāpāraḥ | svayaṃ tu na aprāmāṇikaḥ |
svasaṃvedanasiddhatvāt | rasanā ca bodharūpā eva | kintu bodhāntarebhyaḥ
laukikebhyaḥ vilakṣaṇā eva | upāyānāṃ vibhāvādīnāṃ laukikavilakṣaṇyāt |
tena vibhāvādisaṃyogād rasanā yataḥ niṣpadyate, ataḥ tathāvidharasanā-
gocaraḥ lokottaraḥ arthaḥ rasa iti tātparyam sūtrasya |

“For this reason (*ata eva*) the determinants are not the causes of the production (*niṣpatti*) of *Rasa*; otherwise, *Rasa* should continue to exist even when they no longer fall under cognition. Nor are they the cause of its cognition (*jnapiti*) (if they were, they would have to be included among the means of knowledge (*pramāṇa*), because *Rasa* is not an objective thing (*siddha*), which could function as a knowable object. What is it, then, that is designated by the expressions, “determinants etc.?” We reply to this question that the expressions “determinants etc.” do not designate any ordinary thing, but what serves to realise the gustation (*carvaṇopayogī*). Does any such thing appear elsewhere.? But the fact that it does not occur elsewhere, we reply, can do nothing but strengthen our thesis of their non-ordinary character. Does the taste of the *rasa* of *pānaka* perhaps occur in molasses, peppers, etc., (of which, however, it consists)? The case is perfectly analogous.”

“ “But (someone might say) in this way *Rasa* is not an object of cognition (*aprameya*)” That is why really occurs, we reply and suitably. *Rasa*, indeed, consists solely of a tasting and has not the nature of an object of cognition, etc. “But how then do you think that the expression which Bharata uses in the *sūtra* can be justified when he says: “The production of *Rasa* (*rasaniṣpatti*)”?”

This expression, we reply, must be understood in the sense of a production not of the *Rasa*, but of the tasting which refers to the *Rasa* (*tadviṣayarasanā*). Likewise, if the expression “The production of *Rasa*” is understood in the sense of production of a *Rasa* whose subsistence is exclusively depending on the said tasting, our thesis is not be set by any difficulty. Besides, this tasting is neither the fruit of the operation of the means of cognition nor of the means of action. On the other hand, it can be said that, in itself, it is not ascertained by any means of knowledge (*aprāmāṇika*), for its real existence is an inconfutable datum of our own consciousness (*svasaṃvedanasiddha*). This tasting, moreover, is, no doubt, solely a form of cognition, but a form of cognition different from any other ordinary perception. This difference is due to the fact that the means of it, that is, the determinants, etc., are of a non-ordinary character. To conclude: what is produced by the combination (*saṃyoga*) of the Determinants, etc., is the tasting (*rasanā*); and the *Rasa* is the non-ordinary reality, which is the matter of this tasting. This is the sense and purport of the *sūtra* (Gnoli, 1985, pp. 84-86).”

4.1.3 The *Sthāyibhāva*

Another most crucial factor in RT is SE. The best example is of sage Vālmīki, the first poet—Ādikavi. In *Ramāyaṇa*, by observing the pathetic wailing of a curlew, Muni impulsively uttered the poetry, and after that, he himself was astonished on uttering. Wisely he identified the reason and found that his grief was itself expressed in such artistic and poetic form and he termed such composition as *śloka* (Rā, 1.2.18):

pādabaddho 'kṣarasamastantrīlayasamanvitaḥ |
śokārtasya pravṛtto me śloko bhavatu nānyathā ||

‘With equal lines of even feet,
 With rhythm and time and tone complete,

The measured form of words I spoke

In shock of grief be termed a s'loke (Griffith trans., 1870).'

Ānandavardhana (Dhv, chapt. 1 (*kārikā* 5), p. 32) beautifully points out this in a critical way to explain the SE in the context of RT:

[ca ādikaveḥ vālmīkeḥ sm]nihatasahacarī-virahakātara-krauñcākranda-janitaḥ śokaḥ eva ślokatayā pariṇataḥ

“... it was that the grief (*śoka*) of the first poet, Vālmīki, born of the wailing of the cock curlew desolated by loss of its slain mate, turned into verse (*śloka*). For grief is the basic emotion of the flavor of compassion (*karuṇarasa*) [which, as has been said, appears only as suggested] (Ingalls, 1990, p. 114).”

Though it is generally mentioned that SE becomes *rasa*, but that is not the exact state as elaborated by Abhinavagupta, as follows (DLo, chapt. 1 (*kārikā* 5), p. 33):

karuṇasya ca carvaṇāgocarātmanaḥ śokaḥ sthāyibhāvaḥ | śoke hi sthāyibhāve ye vibhāvānubhāvāḥ tatsamucitā cittavṛttiḥ carvaṇātmā rasaḥ iti aucityāt sthāyinaḥ rasatāpattiḥ iti ucyate |

“Grief is the basic emotion of the *rasa* of compassion, for compassion consists of relishing (or aesthetically enjoying) grief. That is to say, where we have the basic emotion grief, a thought-trend that fits with the *vibhāvas* and *anubhāvas* of this grief, if it is relished (literally, if it is chewed over and over), becomes a *rasa* and so from its aptitude [toward this end] one speaks of [any] basic emotion as becoming a *rasa* (Ingalls, 1990, p. 116).”

Hence, it is apt to say that a SE expresses through DCT and the *rasa* is the manifestation of the relishing of the latter. The relishment of *rasa* just indicates that there is a related SE, e.g., like in *vīra rasa—utsāha*. (i.e., energy).

It could be asked here: did not the first poet felt grief, which subsequently was produced as the verse? No, if the poet was feeling grief, that can not become a matter of relishment.⁴ Furthermore, the grief could not manifest as a *rasa*. It is same with unpolished anger in the normal world, which could never be compared with *bhayanaka rasa* (in such case from everywhere people might relish *rasa*). Nevertheless, anger that is polished and presented through an artistic approach—that relishable anger could express *bhayānaka rasa*.

4.1.4 Three Components — DCT

There is a need for a brief understanding of the three fundamental components of RT, individually:

- i ***Vibhāva*** — The DF boosts the stable emotion in the manifestation of a *rasa*. There are two DF: (i) foundational (*ālambana*) (=FDF), and (ii) stimulant (*uddīpana*) (=SDF).⁵ FDF is the character⁶ along with its decorations (previously mentioned). SDF is the atmosphere and the body movements.⁷ For example, in an illustration like in the battle between Duṣśāsana and Bhīma, the battlefield along with the body movements related to battle are SDFs.
- ii ***Anubhāva*** — CC is experienced through words (*vāk*) (=WCC), gestures (*aṅga*) (=GCC), and PE (=PECC).⁸ For instance, the energetic words of Bhīma, his ges-

⁴So said Bhaṭṭatauta as cited by Abhinavagupta (DLo, chapt. 1, p. 34): “*yaduktam asmadupādhyāyabhaṭṭatautena ‘nāyakasya kaveḥ śrotuḥ samāno’ nubhavastataḥ*” it—“As my teacher Bhaṭṭatauta has said, “This is why the experience of hero, poet, and audience is the same.” (Ingalls, 1990, p. 120)”

⁵See SDp, 3.29_{ab} (*ālambanoddīpanākhyau tasya bhedāvubhau smṛtau*)

⁶See SDp, 3.29_{cd} (*ālambanaṃ nāyakādistamālambya rasodgamāt*)

⁷See SDp, 3.131 (*uddīpanavibhāvāste rasam uddīpayanti ye | ālambanasya ceṣṭādyā deśakālādayas-tathā ||*)

⁸*vāgaṅgābhīnayeneha yatastvartho’ nubhāvīyate | śākhāṅgopāṅgasamyuktastvanubhāvastataḥ smṛtaḥ ||* NS, 7.5 (“As in it the play (lit. meaning) is *anubhāvīyate* (made to be felt) by means of Words and Gestures, it is called *anubhāva*, and it relates to words as well

tures (angry eyes, fighting movements and others), body sweating, change of facial colour (due to anger), change in voice (due to anger) and others are respectively ^WCC, ^GCC and ^{PE}CC. ^{PE}CCs are eight⁹ in numbers.

- iii *Vyabhicāribhāva/Sañcāribhāva* — TEs are thirty-three in number. NS (chapt. 7, p. 355) defines the TE thus: “*vividham ābhimukhyena raseṣu caranti iti vyabhicāriṇaḥ*—those that move in relation to the Sentiments towards different [kinds of objects] (Bharata, trans. 1967, p. 127).” Comparatively, attendees come and go after serving a king, so these transitory emotions are (Bharata, trans. 1967, p. 122).¹⁰

This whole process is natural and psychological, the evocation of *rasa*. When Bharata says, “*na hi rasād ṛte kaścid arthaḥ pravartate*”, it was indicated by the word ‘*artha*’ (subject) that maybe it is drama or any other aesthetic work, *rasa* is there. Since it is apt to say that any aesthetic work is a medium of emotions through which an artist expresses them, and the spectators enjoy the *rasa*.

Sattva is one among the most important factors in the manifestation of *rasa*. Without this, relish of *rasa* would be in vain. *Sattva* is defined thus: the mind unaffected by *rajas* and *tamas* is called *sattva*.¹¹ Hence aesthetes acknowledge that without the manifestation of *sattva*, the relish of *rasa* could not happen as read in SDp (3.2-3), that as follows:

sattvodrekād akhaṇḍasvaparakāśānandacinmayah |
vedyāntarasparśasūnyo brahmāsvādasahodarah ||
lokottaracamatkāraprāṇaḥ kaiścitpramāṭṛbhiḥ |
svākāravad abhinnatvenāyam āsvādyate rasaḥ ||

as to [gestures and movements of] major and minor limbs (Bharata, trans. 1967, p. 120).”))

⁹See NS, 7.94

¹⁰See NS, chapt. 7, p. 349 (*parijanabhūtā vyabhicāriṇo bhāvāḥ | atra āha—ko dṛṣṭāntaḥ iti | yathā narendro bahujanaparivāro’pi sa eva nāma labhate nānyaḥ sumahān api puruṣaḥ, tathā vibhāvānubhāvavyabhicāriparivṛtaḥ sthāyī bhāvāḥ rasanāma labhate*)

¹¹See SDp, 1936 ed., p. 78; also see CS, 1.25.11_{ab} (*rajastamobhyāṃ tu manaḥ parītaṃ sattvasañjñakam*)

“This Flavour [arising] from the exaltation of [that leading element, of the three, held to constitute Nature, that is termed] ‘Purity,’ indivisible, self-manifested, made up of joy and thought [in their identity], free from the contact of aught else perceived, akin [as a uterine brother] to the [ecstatic contemplator’s] perception of God, the life whereof is hyper-physical wonder, is enjoyed, by those competent, in inseparableness [of the Flavour from the fruition thereof],—like the form of the Deity [which *is*—according to the Vedānta—itsself the joy with which it is recognised by the liberated soul (Viśvanātha, 1851, p. 40).]”

Therefore, the relish of *rasa* is very much sophisticated rather than usual. Also, this *sattva* is the crucial concept through which the therapeutic effect of music would be explained. Hence, the elaboration of it will be done in the next chapter (see section 5.4).

Henceforth, the process of *rasa* evocation in pure music is discussed. Earlier, in chapter 1, it is observed that philosophically musical sound is ${}_kS^m$, and there is no lyrics and percussion. It would have been an investigative sound $({}_kS^h + {}_kS^p + {}_kS^m =) {}_kS^{h+p+m}$ in case of percussion and lyrics. Nevertheless, the target of investigative music should be critically identified in the conventional Indian music which would be more helpful in explaining the application of *Rasa-sūtra* in Indian pure music.

4.2 Investigating Non-lyrical Non-Percussive Indian Traditional Music

In the present musical scenario, pure music (${}_kS^m$, i.e., non-lyrical and non-percussive), could be found in the *ālāpa* part of the rendition. This *ālāpa* part is grand in *dhrupada*. In *khyāl* style, it is very short and is sometimes mentioned as ‘*auchār*’ (*apabhraṃśa* of *uccāra* [lit. to utter]). In all instrumental music, *ālāpa* has its own part. In Carnatic

too, *ālāpa* is famously called as ‘*ālāpana*’.¹² Also, ‘*tānam*’ part of Carnatic should come under the $_kS^m$. The reason is the same as in the *tetarana ālāpa* of *dhrupada*, described in chapter 1 (see item 2). Needless to say, *joṛ* and *jhālā* parts will also be included in pure music as these are $_kS^m$ too. But, we are not focussing on traditional *rāgas*, which is outside the current focus. However, though *ālāpa* form is referred, we shall only focus upon instrumental music.

In the contemporary practice of music therapy, *rāgas* are predominantly accepted. Naturally, the therapeutic approach classified into North Indian Music (NIM) and South Indian Music (SIM). However, from the NIM and SIM viewpoint, there are further divisions of traditions. For example, in NIM, vocal school is primarily divided into two *khyāl* and *dhrupada*. Again, *khyāl* is divided into Gwalior, Kirana, Patiyala, Jaipur and other. *Dhrupada* is also divided into Dagar, Darbhanga and others. In instrumental, it is Senia, Senia Maihar, Itwa, Gwalior and others. In SIM, there are two significant traditions Dīkṣitar and Tyāgarāja school. However, in this section, problems of finding the exact *rasa* of a *rāga* and the solution is discussed.

4.2.1 The problem in Critical Investigation of *Rāgas*

Current research work do not talk about the *rāgas* for therapeutic purposes, the reasons are explained further.

There is no solid logical interpretation that could be a testimony to why researchers select some specific *rāgas* for some specific disorder.

There is no particular explanation for NIM and SIM for their attribution with specific set of *rāgas* and emotions. As it is a clear auditory-perception, people tend to correlate that this Hindustani *rāga* is equivalent to such and such Carnatic *rāgas* etc. It does not

¹²Change of a single suffix derives these two words (*ā* is prefix, *ā+√lap+ghañ= ālāpa* and *ā+√lap+lyuṭ= ālāpana*). Though there are differences regarding *ālāpa* and *ālāpana* in *śāstras* (see SR, 2.2.24, 3.189_{cd}-196), the details are not discussed here.

mean they are one and the same. For example, NIM *Bhairava* and SIM *Māyāmālavagaṇḍa* are identical regarding their *svaras*, but the treatment of *Bhairava* is undoubtedly different from *Māyāmālavagaṇḍa*. If one says that *Bhairava* of NIM is equal to *Māyāmālavagaṇḍa* of SIM, then it is all possible to compare with western double tonic harmony and *maqām* (مقام) *Hijāz Kār* (حجاز كار) and vice-versa. As a result, if one plays *Hijāz Kār*, one should translate that as *Bhairava* or *Māyāmālavagaṇḍa*. Alternatively, in another way, there will be no harm in professional performance if any performer will present *Bhairava* in the way *Hijāz Kār* is presented. However, it does never happen to be as said.

It has been observed in chapter 3, in ancient and mediaeval times, the *rasa* relation of a *rāga* was dependent on its dominant note. That tradition is evaporated in the present musical tradition. Hence, there is no strong evidence regarding the *rasa* evocative potential of *rāgas*. Moreover, eminent maestro like Pt. Vishwa Mohan Bhatt¹³ claims that every *rāga* could instigate every type of *rasa*. It clearly helps to state that: In spite of holding a relationship between *rasa* and *rāga*, still it remains as a doubt about the relation.

However, the observation of Pt. Bhatt is not merely superficial. Somanātha (1609/1945, p. 121) made this statement long ago in his *Rāgavibodha* (RV), 5.11.¹⁴ He says that from the perspective of sound (*nādātmaka*), possibilities of a *rāga* are numerous, as this is a permutation and combination of musical notes. But from the characteristic (*devamaya*) viewpoint, a *rāga* is attributed with a specific divine form.

The explanation of Somanātha's *nādātmaka* is tried to explain hereunder:

Though a *rāga* is not only a heptatonic, hexatonic or pentatonic scale [respectively in Indian terms — *sampūrṇa jātī* ($=J^7$, scale with seven notes), *ṣaḍḍava jātī* ($=J^6$, scale with six notes) and *audava jātī* ($=J^5$, scale with five notes); not to be confused with ancient *jātis*], the foundation or the *mela*¹⁵ of all *rāgas* are scales only, more specifically the

¹³Pt. Arvind Parikh - All Inclusive Talim - Baithak, 2017.

¹⁴*susvaravarṇaviśeṣaṃ rūpaṃ rāgasya bodhakaṃ dvedhā |*
nādātma ca devamayaṃ tatkrāmato 'nekamekaṃ tu ||

¹⁵*milanti rāgāḥ yasmin iti melah* ($=\sqrt{\text{mil}+\text{ghaṇ}}$) — in which *rāgas* are to be obtained is called *mela*. This

*J*⁷. For example, *Bhairava* of NIM and *Māyāmālavagauḷa* of SIM both are *mela* in their system. Based on *Māyāmālavagauḷa*—*Bhauḷi*, *Gauḷa* etc. are derived (*janya*) *rāgas*. Similarly, *Bibhāsa*, *Guṇakeli* and others are derived from *Bhairava*. When we say that *Bhairava* is not *Māyāmālavagauḷa*, the intention refers to the treatments on their rendition. For example, Ga Ma R Sa is an essential phase of *Bhairava* which is not required to render *Māyāmālavagauḷa*. On the other hand, both have unique oscillations on R and Dh, but they differ from each other. More interestingly, in NIM, *rāga Kalingarā* has the same scale as *Bhairava*. Nevertheless, the former expresses a different flavour in the rendering process regarding the latter. For instance, *Bhairava* goes in a steady rendition, unlike *Kalingarā*, the latter has a great emphasis on Ni, unlike the former.

Another interesting point on domination of *svaras* which distinguish a single scale into different *rāgas* is *Tripuṭa* (threefold) *rāga* of NIM. These three *rāgas* are *Puriyā*, *Māravā* and *Sohinī*. These *rāgas* have the same scale (*J*⁶)—Sa R Ga M Dha Ni. Though, emphasised Ni and M express *Puriyā*, emphasised R and Dha speak *Māravā* and emphasised Sa and R of upper septet create *Sohinī*. Fascinatingly, the *Māravā* itself is expressed by Pt. Mallikarjun Mansur and, whereas, in the hands of Ustad Amir Khan and Pt. Bhimsen Joshi *māravā* acquired two different characters. In the case of Mallikarjunji, there is *vīpralambha śṛṅgāra* (later *vīra/adbhuta*) in singing style, whereas in the case of Amir Khan Saheb and Bhimsenji, there is *śānta* and sometimes *vīra rasas*.

However, these differences are numerous within both northern and southern traditions and within the traditions of NIM. In SIM too, renditions of few *rāgas* differ between Dīkṣitar school and Tyāgarāja school.

Somanātha shaped the *nādātma* point of view clearly (5.12).¹⁶ He stated that this *nādātma* form of *rāga* is *lokavyavahāraviśruta*, i.e., understood by the traditional in-

 is the Sanskrit term of *thāṭa* as cleared by Somanātha (see RV, 3.1 commentary — *milanti vargībhavanti rāgāḥ yatra iti tadāśrayāḥ svarasamsthānaviśeṣāḥ melāḥ, thāṭa iti bhāṣāyām*). It is also called ‘parent scale’.

¹⁶*tatra vivicyata ādyaṃ lokavyavahāraviśrutam pūrvam |
 api yasya kasyacid yat paryāyairṇ svarasamūhasya ||*

terpretations. He again elaborated that phrase as “*idam asya rāgasya rūpaṃ sādhu, idam sādhutaram*”—“this form of this *rāga* is authentic, this is more authentic” [this kind of usages among traditions]. He also said that this is irregular (*aniyata*) among music traditions. Hence, there is an intense possibility that the expression of a single *rāga* itself is plenty in number.

The above discussion is from the *nāḍātmaka* point of view. Then there is this question about the *devamaya* viewpoint. Unfortunately, the present tradition can not answer this question. However, Somanātha described this further. According to his description, the *dhyāna* verses were the *devamaya* form of *rāgas*. For instance, the *devamaya* form of *Śaṅkarābharaṇa* was, as follows (RV, 5.139):

galarājīkamalarājīrbhāle bhasite rataḥ sadā nṛtye |
sundaragaurāḥ śoṇāmbaradharāṇaḥ śaṅkarābharaṇaḥ ||

If music could express the suggestive meaning, then what is the need for such poetic expression in the form of a *rāga*, as the musical sound does not have the *vācyārtha*? True indeed! The suggestive meaning of the above verse is the proper suggestive form of corresponding *rāga*. As it was observed that the real goal of a suggestion is *rasa*, the *rasa* out of this kind of poetic expression is the true meaning/ form/ character of a *rāga*. The present verse on *Śaṅkarābharaṇa* expresses mainly one component of RT—^FDF. The imaginative decoration of *Śaṅkarābharaṇa* is with red cloth, lotus garlands, holy ash on the forehead, and his appearance is with fair skin colour. ^GCC is also identified as he is always indulged in dance. These all suggest the characteristics of enthusiasm, accordingly *vīra rasa* is suggested. Hence, from the *devamaya* perspective, the sense of *Śaṅkarābharaṇa* was *vīra*. Is this *Śaṅkarābharaṇa* identical with modern *Śaṅkarābharaṇa*? Perhaps it may not be so. Somanātha’s *Śaṅkarābharaṇa* was a derived *rāga* of the then *Mallāri mela*. Nevertheless, today’s *Śaṅkarābharaṇa* of SIM is itself a *mela*.

On the other hand, *Bilāvala* of NIM, which is equivalent to *Śaṅkarābharaṇa*, is also a *mela*. Of course, the rendition technique of these two *rāgas* is different according to north-

ern and southern tradition. Hence, it is not an exaggeration that nowadays, all renditions are based on the *nādātmaka* point of view, and *devamaya* viewpoint is totally forgotten deprived of various characteristics like *vīra* etc.

The previous chapter observed that the *rasa* relation was related to the dominant *svara* (which is also the *vādin*). In the conventional system, the concept of *vādin* is there in NIM. Though this concept also differs from one to the other tradition. For instance, in *Yaman*, Ga is *vādin* in one tradition, whereas Ni is *vādin* in another. Therefore, now the standpoint of *vādin* is not fixed as it was in the past. In SIM, the *vādin* concept is flexible and not to be followed religiously. The logical outcomes of *vādins* are accepted, and possible consonances (*saṃvādas*) are accepted in a *rāga* there. Furthermore, in one *rāga vādin*, *aṃśa* and *nyāsa svaras*, usually are different. It is not our intention to say that the above are wrong.

4.2.2 Ground for Solution

One may ask that instead of connecting *rasa* with *rāga*, *melas* could be substituted in place of *rāga* as they are the base of all *rāgas*. From the viewpoint of NIM, ten *melas* could not justify all *rāgas*. For instance, *Naṭabhairava*, *Āhīrabhairava* and *Jogas* for these three *rāgas* it is difficult to place these three *rāgas* in northern ten *melas*. So, this could be resolved by accepting the 72 *mela* system.

Interestingly, Pt. Ravi Shankar also accepted the 72 *mela* system as the foundation of *rāga* music (Shankar, n.d.). However, there is also a serious problem to identify *rasas* because no direct evidence is seen that clarifies —“these and these *melas* are connected with these and these *rasas*”. Veṅkaṭamakhin, the father of the 72 *mela* system, is silent over this issue.

Here is an objection that could be raised: It was told that the *rasa* relation depends on the domination of *svara*. Now it is being tried to identify *rasa* with *mela* —what is the

purpose here? Hence, it demands further clarification.

When it was observed by explaining and listening to the excerpts of ancient *jāti*s that changes of domination note create a different melody and the *rasa* relation is basically based on that musical form. It suggests that the different melodic forms (as in *Ṣāḍjī* and *Ārṣabhī*) had a foundational seriatim formation of used notes. This could be justified with the concept of *mūrcchanās*. It is a matter of audio-perception that when one listens to one *jāti* and a *mūrcchanā* related with that *jāti*, one finds the similar cognition. What is the link between *jāti* and a *mūrcchanā*? It means the starting or *graha svara*. For example, in *Ṣāḍjī*, Sa⁴ is the *graha svara*, and this *jāti* is of *ṣaḍjagrāma*. In the same *grāma*, the first *mūrcchanā* which starts from Sa⁴ is called *Uttaramandrā*.¹⁷ By listening *Uttaramandrā*, it connects our cognition with today's *Kāphī* or *Kharaharapriyā* (obviously from the sense of scale, not from characteristics). Similarly, the relation of *mūrcchanā* with *Ārṣabhī* is *Abhirudgatā*.¹⁸ This is equivalent to *Bhairavī* of the north and *Hanumattoḍi* of the south.

Then, could there be an ancient *rasa* relation with today's equivalent *rāgas*? No, not at all! No aesthete could find *vīra*, *adbhuta* and *raudra* in *Bhairavī* in the present times. However, if there is any chance that we could relate the *rasa* relation with *mūrcchanās* and *rāgas* which are directly connected with them or derived from them, and are also connected with those *rasas*—that is also not possible. Since primary *rāgas* of the modern system like *Bhairava* (*Māyāmālavagauḷa*) and *Toḍi* (*Śivapantuvarāḷi*) could not be found from the *mūrcchanās*. These are not the outcomes of the ancient *mūrcchanā* system (more detailed discussion is in [chapter 6](#)).

In the ancient system, as there was no drone instrument for the constant supply of a tonic note, focusing only on the dominant note was primarily enough to state the *rasa* relation. On the contrary, in the present system, Sa always supports a *rāga* and, along with

¹⁷ *ādāvuttaramandrā syād rajanī cottarāyatā |*

caturthī śuddhaṣaḍjā tu pañcamī matsarīkṛtā || NS, 28.27

¹⁸ Listen to the *mūrcchanās* with this link: <https://drive.google.com/drive/folders/1pvuaL4n3GH-My-Bw-UdJmEYXAs8tdXSR?usp=sharing>, listen to the *jāti*s here: <https://drive.google.com/drive/folders/1Vsw6zP2QqfGpUFnV-LxEk0qk1J6nt4hg?usp=sharing>.

that domination of notes is there. For instance, threefold *rāgas*, as described previously. Therefore, the concept of domination and the *rasa* relation of a *svara* is not outdated. The identification of relation, however, is a vital task to do.

There is a need to find a general ground of both NIM and SIM that would undoubtedly state the *rasa* relation with *rāgas*. Moreover, finding the *rasa* of a melodic scale is an essential task for therapeutic purposes. This *rasa* centric approach to select a scale of rendition is the primary goal. Hence, *rāga* is not the ultimate goal, but creating a melody with the flavour of Indian traditional music is needed. So that the focus of this research is on *svaras*, and their effect regarding emotional cognition depends on the specific domination.

As a single herb alone cannot make a medicine so is applicable to music. Control over desirable emotions is essential to use music as medicine. However, this domination based possible *rasa* relation, which is a deductive process from the ancient system, will be in [subsection 4.4.2](#) while discussing the application of *Rasa-sūtra* in music.

4.3 A Review of *Rasa-Niṣpatti* in Pure Music

In the introductory part of this present chapter, it was mentioned that few modern scholars gave their observations regarding RT in contemporary Indian music, wherein Pt. V. N. Bhatkhande's instance was taken as the primary reference.

4.3.1 Pt. V. N. Bhatkhande

Pt. Bhatkhande hypothetically divided the *rasa* relation into three parameters, for which the base is ten *melas* (*thāṭa*). Based on his keen observations about the conventional *rāgas*, it was theorised that all *rāgas* could be placed under three categories— *rāgas* with (i) Ri, Ga, Dha, (ii) R, Ga, Ni, and (iii) G, N. From these three, ten *melas* are conceptualised (see [Figure 4.1](#)).

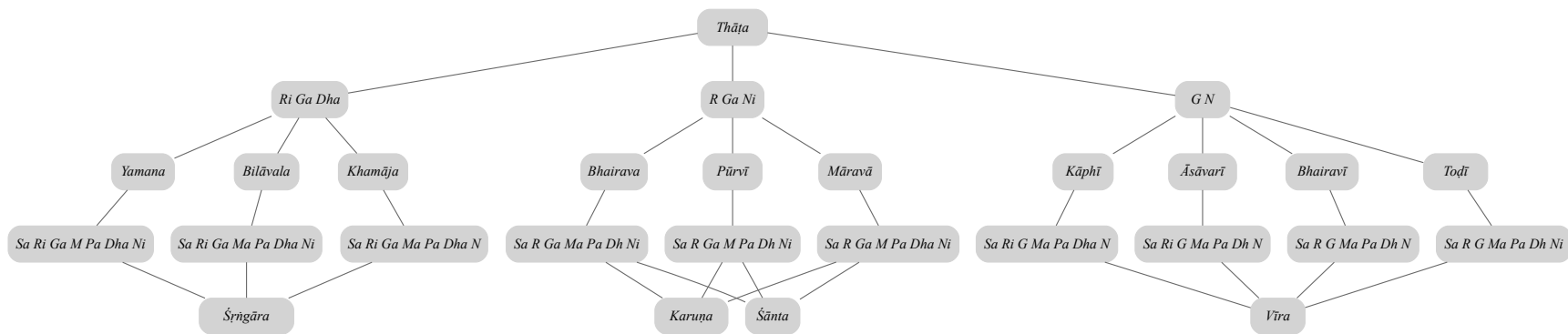


Figure 4.1: Concept of *mela* (*thāṭa*) and hypothetical *rasa* relations according to Pt. Bhatkhande

In the fourth volume of his celebrated book on NIM, Hindusthāni Saṅgīt Paddhati, he spelt very few words regarding the concept of rasa in music (Bhatkhande, 1957, pp. 25-26). By reading those lines, it could be understood that the discussion of rasa was not a primary interest of Pt. Bhatkhande. He just hypothetically expressed his views and left the discussion for further research. He writes (Bhatkhande, 1957):

यद्यपि ऊपरी दृष्टि से यह कल्पना स्वीकार नहीं की जा सकती, तथापि इस पर विचारपूर्वक प्रयोग करके अनुभव करना चाहिये (p.26)

yadyapi ūparī dr̥ṣṭi se yaha kalpanā svīkāra nahīm kī jā sakatī, tathāpi isa para vicārapūrvaka prayoga karake anubhava karanā cāhiye (p. 26)

Although this hypothesis cannot be accepted from the outer point of view, yet it should be experienced by using it thoughtfully

Unfortunately, when people reiterate his hypothesis without any further analysis, the whole discussions leads to further question only.

4.3.2 Prof. Prem Lata Sharma

Prof. Premlata Sharma (1970) tried to discuss current topic taken from *śāstras*. She tried to justify the *rāga-dhyāna* concept in past music tradition, lost for now, was an output after the separation of music from drama. However, it has been previously pointed out how *rāga-dhyāna* helped to suggest the particular *rasa* of *rāgas*.

Prof. Sharma did some observations regarding the application of *Rasa-sūtra* in pure music. Nevertheless, her observation was not very deep. She tried to apply the cause (*kāraṇa*) and effect (*kārya*) behaviour of DF and CC (Sharma, 1970). Her observation did not give a satisfactory solution. When she suggested that there is no physical suggestion that could relate to any particular situation of life, it does not brings the suggestiveness of musical sound (Sharma, 1970). It is accomplished among traditional critics that there is

no primary meaning (*vācyārtha*) of musical sound, so the expectation of any physical suggestion, especially in the form of character, is basically impossible. There is no evidence that there would not be any suggestive meaning without a primary meaning. If so, Ānandavardhana would never writes that the musical sound always expressess suggestions. It is the same in the case of Mahimabhaṭṭa. However, how DF and CC are expressed through music are explained in the next section. Surprisingly, Prof. Sharma did not give her views about TE regarding music. She impressively expressed that in conventional music system, only five emotions could be identified: *śānta*, *śṛṅgāra*, *karuṇa*, *vīra*, and *adbhuta* (Sharma, 1970). In this present research, these *rasas* are our only focus.

She recognised the qualites, which are accepted in the context of rhetoric expressions of linguistic sound, in the musical sound for *śānta*, *śṛṅgāra*, *karuṇa*, and *vīra*. In case of *adbhuta*, she considered that it should be related with all virtuosity. On the other hand, she described other four *rasas* based on two causes— *druti* (melting) and *dīpti* (incitement), as presented by Mammaṭa (Sharma, 1970).

There are three *guṇas* (Excellences) which are limbs of *rasa*— *mādhurya* (sweetness), *ojas* (floridity) and *prasāda* (lucidity). Among these, *druti* is the cause of *mādhurya* which is connected with *sambhoga śṛṅgāra*. When this *druti* is high, that *mādhurya* becomes able to express *karuṇa*, *vipralambha śṛṅgāra* and *śānta*. *Dīpti* is the cause of *ojas*, which is connected with *vīra*. It is apt to mention here that *dīpti* in its high, secure the place of the evocation of *bībhatsa*, *bhayānaka* and *raudra*. Mentioning these points regarding music is needless to say a great insight of Prof. Sharma.

4.3.3 Sri Govinda S. Tembe

Another insightful article is of Govinda Tembe. In his article, he mentioned his critical observation regarding *rāga-rasa* relationship. He impressively presented the characteristics of each and every *svara* from his own experience, and he also mentioned that his experience “concurs with that of a few other writes on the subject.” By going through his

<i>Svara</i>	Interpretation	Suggested <i>Rasa</i>
Sa	like realised yogin	S A
R	sleep, morose, sad	S K S ₂
Ri	wakefulness/not want to wake	S S ₁ A
G	pitiable mood	S ₂ K
Ga	alert, curious, cheerful, pleasant	S A V S ₁
Ma	noble, powerful, dominating	S V A
M	sensitive, mischievous, luxurious	S ₁ V A
Pa	self-composed, unaffected, jolly	S V A S ₁
Dh	grief, pathos	K S ₂
Dha	muscular, athlete, uncivilised	V S ₁
N	gentle, happy, affectionate, little pathetic	S A V K S ₂ S ₁
Ni	pathetic, uneasy	S ₂ K

Table 4.1: Tembe’s characteristic interpretations for each *svaras*

interpretations regarding the characteristics of each note, it is tried to identify the suggested *rasas* in Table 4.1.

He categorised all *rasas* into two— exhilarative and depressive. However, this is against the RT. If art can express *rasa* that never depresses one, like in the case of *karuṇa*, discussed in part earlier. For example, the sculpture of Bhagavān Narasiṃha at Cen-nakeśava temple express *bībhatsa* that could never be depressive as it is presented in an artistic manner that could express super-normal *rasa*.

Tembe cited Pt. Bhatkhande’s hypothesis regarding *rasa*, but the former did not come in a total consideration with the latter, and as a reason, Tembe shifted his focus of discussion towards the *vādin svara*. He (Tembe, 1970) mentioned the importance of *vādin svara* and gave a remark thus— “The only satisfactory way to determine the sentiment of a *raga* is, therefore, to base it on the leading (*vadi*) note of the *raga*.”

4.3.4 Prof. P. Sambamoorthy

In the fifth volume of his celebrated book *South Indian Music*, Prof. Sambamoorthy offered his observations on *rasas* regarding *rāgas*. At first, he (Sambamoorthy, 1951) accepted that “The subject of ‘Rasa in music’ has not received as much attention as Rasa in literature and drama (p. 106).”

Sambamoorthy somehow took the path of the traditional musicologist as he mentioned that *rasa* is basically dependent upon *jīva* and *nyāsa svara*. In Carnatic, *svara* of a *rāga* which gives the life to *rāga* is generally called *jīva svara*. However, there could be more than one or all *svaras* of a *rāga* which are *jīva svaras*. Therefore, these factors enhance the *rasa* possibilities of *rāgas*. Sambamoorthy (1951) properly grabbed the relation of *rasa* with *aṃśa* or *vādin* aspect of the traditional musicologists and mentioned that this “*jīva svara* is the index to the *rasa* of a *rāga*. The *rasa* of a *rāga* changes with the shift in emphasis on notes (p. 108).” In modern Carnatic tradition, there is a general rule for the identification of *vādin* and *saṃvādin*, i.e., there could be multiple possibilities of *vādin* and *saṃvādin* which are identified according to the *saṃvāda* identification rule. There is no specific *vādin* and *saṃvādin* concept there as it is in Hindustani. Hence, one should consider the behaviour of *jīva svaras* in Carnatic like in *vādin* and *saṃvādin* (mostly *vādin*) of Hindustani. This way, the common ground of *rasa* relation becomes clear in the conventional systems.¹⁹

Sambamoorthy, in his discussions, mentioned *bhakti* as *rasa*, but from an orthodox traditional aspect, *bhakti* is not independently *rasa* and comes under the *śānta rasa* only. Interestingly, Sambamoorthy charted out some *rāgas*, mentioning corresponding *rasas* in regard to some traditional *kṛtis*. It is an amalgam again, i.e., ${}_kS^{h+m+(p)}$. Besides this, if he could provide the list of possible *jīva svaras* of different *rāgas* that would have been more helpful to understand the dominant *rasa* relation of those *rāgas*.

¹⁹Also see SR, 3.165_{cd}-166_{ab}

At the end of his discussion, two verses of *Saṅgītamakaranda* are just mentioned which state the *svara-rasa* relations and he did not elaborate further. However, this point is discussed in [chapter 3](#).

4.4 *Rasa-Sūtra* and *Sthūla-Paśyantī*

From the above review regarding the insights of erudite scholars, there is more possibility to explain the psychological process of *rasa* evocation according to Bharata's aphorism. Till now, it is clear that the *rasa* relation with domination of *svaras* is not blindly followed in today's context. However, it was not so in ancient times since the tempo-related *rasa* relation was existing, which is always one of the unavoidable factors of rendition. Unlike the ancient times, Sa is now treated as an inevitably dominant and resting *svara*. Still, because of the illustration of threefold *rāgas*, the impact of dominant *svara* should be accepted. Although, *māravā* is a notable instance where Sa is not treated as resting one, and its characteristic creates an aesthetic restlessness which may lead its suggestion towards *vipralambha śṛṅgāra*.

Despite the immobility of Sa, there is a considerable possibility to explore the specific domination of *svaras*. For example, Sa Ri Ga Ma Pa Dha Ni is a scale (J^7) for rendition. Will it express different emotions by changing the dominant *svara*? This is a matter of further inquiry. In practical circumstances, domination could not be the only factor that would affect a rendition. Let us consider that Ri is dominant, and it should come frequently, but this characteristic could not manifest as an extended rendition. Moving from one *svara* to another is a very fundamental issue. This movement from *svara* to *svara* creates the tempo of rendition, the gesture of this movement creates *gamakas* (*mīmṇā* (मीढ)) is included as one kind of the *gamakas*). One more important factor which is *alaṅkāra*. References of Prof. Sharma about *guṇas* are also included under this movement only. Another vital factor is the instrument, basically its nothing but the timbre. The output of a *vīṇā* is never equal to a sarod. Even *rudra vīṇā* and *sarasvatī vīṇā* have their own identical timbre. This

is another fundamental factor here. The exact phrase of music played in violin and sitar never has the same listening effect. Needless to say, when music means emotions, the kind of music channelised through different instruments will generate distinct emotional impact.

Moreover, all the above observations are from the viewpoint of educated scholarly aesthetes. According to the traditional aesthetic principle, the *pramāṇa* of the *rasa* of any art is the experience of aesthetes; nevertheless, as far as the current research is concerned, music for therapeutic uses is meant for the masses. Therefore, understanding the responses of the masses are indeed essential to attain the goal of this research which would be elaborated on in [chapter 7](#).

4.4.1 *Vibhāva*

Every form of art intends to express emotions. To express them, an artist needs a medium—*ālambana*. This is ^FDF, the first of two DFs. In music, the instrument is ^FDF. Based on their timbres, instruments have different potentials to express some *rasas* predominantly. For instance, *vīṇā* tends to exert *śānta*, *vīra* and *adbhuta*; violin has a tendency, predominantly towards *karuṇa* and *vipralambha śṛṅgāra*. Like this, it is an important topic to explore further. In the present research work, *rudra vīṇā* is chosen for executing the developed theory, and other details related to this will be explored in [chapter 7](#). Actually, ^SDF is the atmosphere suitable to accelerate the desirable *rasa*.

4.4.2 *Anubhāva*

Medium is not enough to express emotions, since there should be a movement. These movements in poetic interpretation were ^WCC, ^GCC, and ^{PR}CC. This threefold-ness of CC is also perceptible in music. In literary expression, there are words, but in music, they become only *svaras*. Hence, instead of writing ^WCC, ^SCC (S=*svaras*) is suitable for music.

In this ^SCC context, the domination of *svara* has an important role. Besides domination, rendition qualities, the importance of musical intonations (discussed previously) and expressive way of sound are also included. More clearly, execution elements (related to the E₃ of the previous chapter) are connected with ^SCC.

In the [chapter 3](#) of the present thesis, intonations were discussed from the seventeenth chapter of NS. Amongst the assistants of rendition viz., *svara*, *sthāna*, and *alaṅkāra*, *svaras* are the most important and basis of all. Hence, they are considered primarily, and the domination-based hypothesis would be discussed. Besides this, *rasa* relations with KSs, for now would be accepted according to NS. Changes would be only with the position of *svaras* on SS-22 (see [Figure 4.2](#) & [Figure 4.4](#)).

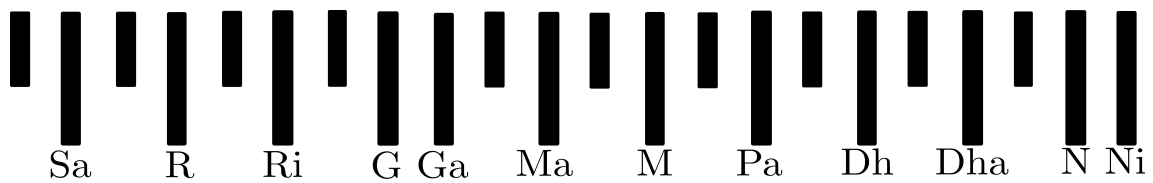
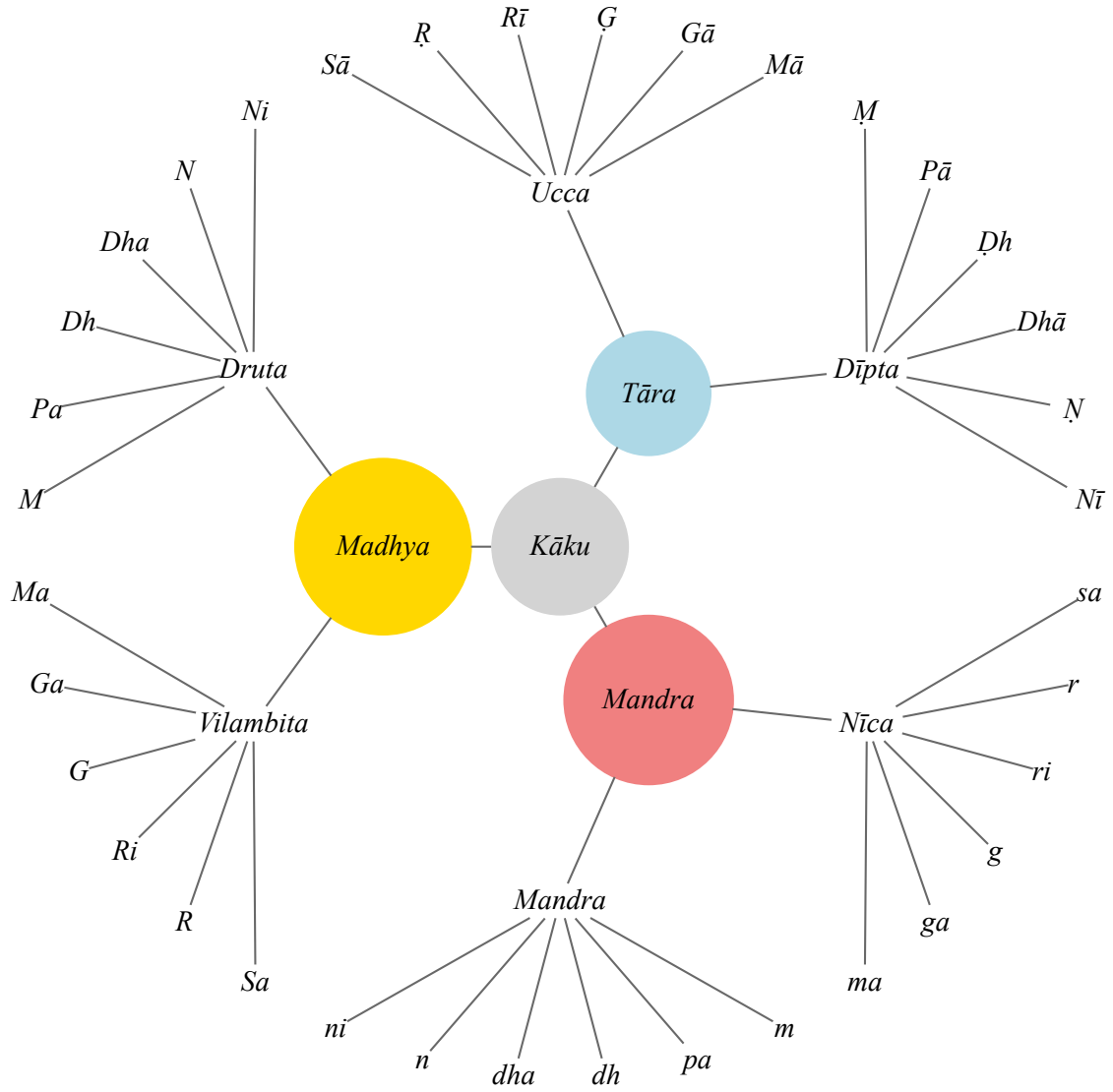


Figure 4.2: Conventional *svara* positions on SS-22

According to the conventional *svara* positions on SS-22, Sa to Ma and M to Ni are divided into two groups (6:6) regarding the KS *alaṅkāra*. Hence, unlike the previous figure of KSs in the fourth chapter, conventional *svara* relations with KSs should be changed (see [Figure 4.3](#)).

Conventional *Svara* and *Rasa*: A Hypothesis

As per the observations of *svara-rasa* relationships from *śāstras*, *rasa* relationship with S_j is more acceptable in this present study. From that viewpoint, current *svara* positions could be denoted well. Unlike the ancient Sa⁴, the conventional Sa is of two *śrutis*. However, as there is no alternative (*vinigamanā*) reason to select another S_j than *madhyā* S_j for Sa, the same is accepted. By fixing *madhyā* S_j for Sa, others will be placed accordingly (See [Table 4.2](#)).

Figure 4.3: *Kākusthānas* of conventional *svaras*

<i>Śruti No.</i>	<i>Svara</i>	<i>S_j</i>	<i>SP</i>	<i>BB</i>
1		<i>Mṛdu</i>		all
2	Sa	<i>Madhyā</i>		all
3		<i>Karuṇā</i>		K
4	R	<i>Madhyā</i>		all
5		<i>Mṛdu</i>		all
6	Ri	<i>Dīptā</i>	V A	Sr
7		<i>Āyatā</i>	na	V A
8	G	<i>Dīptā</i>	V A	Sr
9	Ga	<i>Āyatā</i>	na	V A
10		<i>Mṛdu</i>		all
11	Ma	<i>Madhyā</i>		all
12		<i>Mṛdu</i>		all
13	M	<i>Madhyā</i>		all
14		<i>Āyatā</i>	Sr	V A
15	Pa	<i>Karuṇā</i>		K
16		<i>Karuṇā</i>		K
17	Dh	<i>Āyatā</i>	na	V A
18		<i>Madhyā</i>		all
19	Dha	<i>Dīptā</i>	V A	Sr
20		<i>Madhyā</i>		all
21	N	<i>Dīptā</i>	V A	Sr
22	Ni	<i>Āyatā</i>	na	V A

Table 4.2: *Svara* and *rasa* in conventional system according to Nānya and Ahobala

To connect *svaras* with *rasas*, the account of SP and BB is considered. Wherever BB accepted all *rasas* with *S_j*, the opinion of SP is omitted as they are included in BB's view. However, regarding same opinions, BB's account is mentioned; otherwise, both opinions are placed, but *rasas* are restricted only to four (*śṛṅgāra*, *karuṇa*, *vīra* and *ad-*

huta) as other four (*bībhatsa*, *bhayānaka*, *raudra* and *hāsyā*) are not perceived (discussed previously). Further, in some cases, SP placed only *hāsyā*. Those places are marked as “na=Not Applicable” (see Table 4.2).

Some Unavoidable Facts of *Rasa*

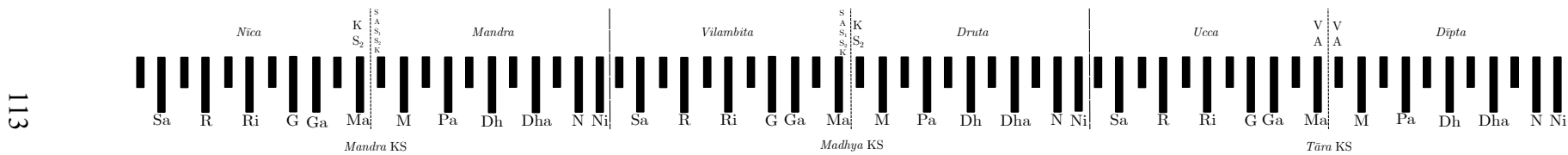
Though most of the texaul accounts mentioned *śṛṅgāra* singly, does it mean *sambhoga* and *vipralambha* both? If both, since *vipralambha* has a part of *karuṇa* along with *śṛṅgāra*, *karuṇa* should also be there. Likewise, wherever *karuṇa* exists, *vipralambha* has to be accepted there.

Now, where is *śānta*?—it is an obvious question to answer. In the conventional system, *śānta* rasa is widely felt by listeners. As it has been mentioned in the previous chapter while mentioning KSs (especially ^m*Mn*), aspects of *śānta* will be discussed in the present chapter. Therefore, that is being explored now.

Earlier, relations of *śānta* were described connected with some *svaras* from some scattered references. It was also observed that because of the relation of pleasantness and happiness with ^m*Mn* and ^v*M*, *śānta* would be connected with these KSs (see Figure 4.4). In Figure 4.4, *bībhatsa* and *bhayānaka* are replaced with *karuṇa* and subsequently *vipralambha śṛṅgāra* comes. Earlier, it has been observed that SP mentions *karuṇa* with *bībhatsa* and *bhayānaka*. Therefore, it is hinted that *karuṇa* has a correlation with those two.

Further, Abhinavagupta accepted *śānta* as stable nature (*prakṛti*) of all *rasas*.²⁰ Earlier, it is also observed that he mentioned the two fundamental energies or powers of music—bliss and sweetness, and because of them realised souls find themselves identical, and they indulge in music which suggests that *śānta* is the fundamental *rasa* which could be connected with all *svaras*.

²⁰*tatra sarvarasānām śāntaprāya eva āsvādaḥ viṣayebhyaḥ viparivṛtṭyā tanmukhyatālābhāt kevalam vāsāntaropahita ityasya sarvaparakṛtīvābhidhānāya pūrvamabhidhānam* (NS, Chapt. 6, p. 339)

Figure 4.4: *Svaras* and *rasas* in all *kākusthānas* on conventional SS-22

However, as *mādhurya* and other excellencies were accepted according to Prof. Sharma, *śānta* could be connected with *mādhurya* and *prasāda*. It is noted that by accepting two energies, bliss and sweetness of music, they get accepted by default.

Limbs of Consequents

Besides ^SCC, gesture or ^GCC is another essential component in the manifestation of *rasa*. The movement of *svaras* should be understood by mentioning gestures, as in literary and dramatic expressions, gestures of different body parts. Because of the abstractness of music, *svaras* are its limbs, and movement of those, i.e., *svaras* is ^GCC. This part is connected with *laya*, ornaments (*alankāra*, such as Sa Ri Ga, Ri Ga Ma and so on; or Sa Ga Ri, Ri Ma Ga and so on), different traditional styles,²¹ *gamakas*. Hence, this ^GCC is the way to express the elements of execution, i.e., ^SCC (related with the W₃ of the previous chapter). In addition, *śānta* could be safely connected with *madhya* and *vilambita layas*.

The previous chapter promised to discuss *varṇa*, one of the six assistants of *pāṭhya*, in this present context. *Varṇa* is fourfold (NS, 17.107)—*udātta* (acute), *anudātta* (grave), *svarita* (circumflex) and *kampita* (quivering). These terms are not the same as the Vedic terms. To express *śṛṅgāra*, *svarita* and *udātta* should be used. *Udātta* and *kampita* should be used to express *vīra* and *adbhuta*. To express *karuṇa*, *anudātta*, *svarita* and *kampita* should be employed (*bībhatsa* etc. are excluded). These are to execute poetic linguistic sounds in drama. Abhinavagupta explained that these are assistants for recitation only, but not in rendition. Nevertheless, these have places in rendition according to our interpretation. The acuteness of *svara* could be interpreted as a stress on *svaras*. Here is a relation of *dīpti* from Prof. Sharma's interpretation. In acute cases, *dīpti* becomes prominent, so the possible execution of *vīra* becomes logical. Circumflex has a mediant characteristic, and with a shade of acuteness, it could be able to express joyful (*sambhoga*) *śṛṅgāra*. Along with *karuṇa*, grave should be connected with *vipralambha* and *śānta*, though *śānta*

²¹ Vigilant listeners observe that a Sitar is in the hand of Pt. Ravi Shankar speaks in a way, while in the hand of Ustad Vilayat Khan, impact becomes different.

should be connected with circumflex too. Quivering is basically related to *gamakas*²² in the musical sense. This is a vast area of further research and we shall not explain this in detail here.

Sāttvikabhāva

There are eight ^{PR}CC (Bharata, trans. 1967, p. 146): (i) Perspiration (*sveda*), (ii) Paralysis (*stambha*), (iii) Trembling (*kampa/vepathu*), (iv) Weeping (*aśru*), (v) Change of Colour (*vaivarṇya*), (vi) Horripilation (*romāñca*), (vii) Change of Voice (*svara-bheda*), and (viii) Fainting (*pralaya*).²³

Of these eight, we can only assume four for $_kS^m$:

- i **Paralysis as Spellbound** (*stambha*) — Since the Sanskrit word ‘*stambha*’ has the sense of stillness in general, and in the state of spellbound, one reacts accordingly.
- ii **Trembling** (*kampa*) — We consider its synonym as ‘shivering’.
- iii **Weeping** (*aśru*) — As ‘tearful’. One can relate this word clearly with a music clip.
- iv **Horripilation** (*romāñca*) – We used this as ‘thrill’, suitable for a questionnaire for masses.

Based on the above, one could object that ^{PR}CCs are seen through the characters, but music as an abstract object can not have same characteristics. If these are only observable in the listeners, the theory does not serve that fact. Yes, it is correct, but the responses observed in the characters devolve into the spectators, e.g., they weep, they become spell-bound and so on so forth. Moreover, how could they feel if there is an understandable absence of tearfulsome situation? Therefore, it is perfect for detecting these responses in the

²²*svarasya kampo gamakaḥ śroṭrcittasukhāvahāḥ* (SR, 3.87_{ab})—“The shaking of tone that is delightful to the listener’s mind is (called) *gamaka* (Śārṅgadeva, trans. 1989, pp. 171-172).”

²³*stambhaḥ svedo’tha romāñcaḥ svarabheda’tha vepathuḥ | vaivarṇyamaśru pralaya ityaṣṭau sāttvikā matāḥ* || NS, 7.94

listeners to know the experienced *rasa*. However, practical outcomes through a standard questionnaire become needed from this point of view. Of course, the significant possibility of *rasa* relation with instruments, as ^FDF, needs a thorough inquiry. Notwithstanding the above, there is no choice to understand expressive ^{PR}CCs without asking listeners.

4.4.3 *Vyabhicāribhāva*

Thirty-three TEs are accepted broadly, though later additions and changes happened (Raghuvan, 1940). For instance, Bharata did not mention *sneha* in TEs. Bhoja, in his *Sarasvatīkaṇṭhābharaṇa* (5.16), acknowledged that as one of the TEs instead of *apasmāra* or *marāṇa*.

Out of those TEs, fifteen are found as most useful for $_kS^m$. In contrast, others are very much representational through characters. For instance, insanity (*unmāda*) is never be found in $_kS^m$. Though in some instances, it is found in Bengali *Kīrtana* (Bengali: কীর্তন, a form of indigenous songs related to Bhagavān Kṛṣṇa), but it can not satisfies the $_kS^m$ context. Among the fifteen transitory emotions as accepted for $_kS^m$, the first two need some explanation:

- i *Nirveda* — as ‘self-possession’. Though Manomohan Ghosh (1967) translated this emotion as ‘despondency’, a single word could not be sufficient to denote this transitory emotion. When Bharata says that *tattvajñāna* (ultimate knowledge) is one of the reasons for *nirveda*, it means despondency is not the only word that can denote the essence of *nirveda*. If we accept this, the richest wisdom of the Veda is in vain. *Īśopaniṣad* says, “When to the man of realisation all beings become the very Self, then what delusion and what sorrow can there be for that seer of oneness?” Moreover, Bharata mentions that one of the causes of *nirveda* is losing dear ones (*iṣṭajana-viprayoga*), which is connected with despondency and the state where Arjuna was before Kṛṣṇa started to evoke his steadfast valiance. In such a case, when Arjuna says at the end of the *Gītā*, “O Acyuta, (my) delusion has been destroyed

and memory has been regained by me through Your grace. I stand with my doubt removed; I shall follow Your instruction,”— which is *tattvajñāna*, the entire *Gītā* becomes irrelevant if we accept only one meaning of *nirveda*.

- ii **Glāni** — Ghosh (1967) took a general ground of glāni as he translated that as ‘weakness’. However, it could not satisfy the contextual meaning. We found two shades of *glāni* which would be helpful here: (i) ‘repentance’ (*manastāpa*) is one of them, and (ii) ‘peevisness’ (in Sanskrit *kheda* that is the synonym of *glāni*²⁴) which is a very shade of this transitory emotion and more related with present context.

Other accepted TEs for ${}_kS^m$ are: **Mada** – Euphoria, **Śrama** – Sapless, **Cintā** – Anxiety, **Smṛti** – Nostalgia, **Dhṛti** – Pleasure, **Harṣa** – Joy, **Jaḍatā** – Daze, **Viṣāda** – Melancholy, **Nidrā** – Drowsiness, **Supta** – Dozed, **Vibodha** – Sensitized, **Ugratā** – Harshness, and **Sneha** – Affection.

4.5 Summary

This chapter is a honest attempt to understand RT in the context of *sthūla-paśyantī*, i.e., ${}_kS^m$. The present researcher tried to identify all components of *Rasa-Sūtra* (*vibhāva*, *anubhāva* and *vyabhicāribhāva*) in ${}_kS^m$. By writing ${}_kS^m$, it is also identified that the target form of investigative music for this research is *ālāpa*. *Rasa* centric interpretation of *rāgas*, till now is not explicit. Therefore, based on dominant *svara*, the rendition method will be developed creatively (see the seventh chapter), as the purpose of the therapeutic use of music is to generate desirable emotions, and *rāgas* are not primary to that. Besides domination in the context of evocative *rasas*, the importance of *svaras* in their movements, intonation, septet positions, acuteness and others are also elaborated.

Moreover, it is stated that the present work is restricted only to instrumental music and interpretations are primarily in that regard. This is a first step to understand the *rasa* of

²⁴See the commentary of Medhātithi on the *Manusmṛti*, 2.98 where he interprets ‘glāni’ as ‘kheda’

music in such a way, and there are more to discover further. Hence, most of the discussed matters are related to the concluding part of the present research. This holistic view of RT in music has paved the right way to evaluate based on a survey to understand the evocative *rasa* of individuals pragmatically (eighth chapter). However, in the next chapter, the interpretation of the relation between music and somatic humours is going to be elaborated according to the Ayurvedic principles.

5

Interrelationship of *Svara-Rasa-Doṣa*

Basically, we can use music as therapy in two ways, either by involving ourselves to make music or to listen to it (Guétin et al., 2009). Same is the opinion of Aruṇadatta in AH, as observed in [chapter 2](#). However, in both cases, what is the common is the auditory perception.

This auditory perception generates audio-perceptual cognition in us. Such a cognition is emotional in type as per the suggestive aspect of ${}_kS^m$, discussed previously. *Svaras* themselves are the object of audio-perception (*artha*) and emotional cognition is the enjoyment of *rasa*.

Primarily, the said emotional cognition gives rise to impressions in the psyche. At this

juncture, it becomes imminent to understand the effect of emotional cognition or relishing of *rasa* through music from an Ayurvedic point of view. Initially understanding the concept of mind and psychological aspects of Ayurveda would establish the connection between music and somatic or psychic humours to derive the theoretical and analytical aspects of therapeutic potential of music.

In 1966, Dr. R. K. Sen tried to explore an interesting link between the theory of poetic *rasa* and Ayurvedic medical theory that certainly gives an impetus.

5.1 *Rasa*: Bharata's Debt to Caraka

“Bharata's greatest single debt was to Patanjala-Caraka (p. 234),” says Dr. Sen (1966) in his insightful thesis. He (Sen, 1966) suggested that Caraka's views regarding *kāyacikitsā* deeply influence the concept of of ‘Rasa-speculations’.

Sen's claim about this very debt of Bharata is rooted in two direct evidences from NS. In 1.17_d of NS, Bharata accepted that *rasa* of art is acquired from the Atharvaveda—*rasān ātharvaṇād api (jagrāha)*. On the other hand, Caraka (1.30.20-21)¹ and others clearly accepted that Ayurveda is associated with the Atharvaveda. Now, how this association could be established? The solution is provided by Abhinavagupta (1956 ed., p. 15). The intention of an artist (*naṭa*) to generate the *rasa*, and the intention of an Atharvavedic *ṛtvik*, by doing *śāntika* (ritual for peace), *māraṇa* (rite to kill enemy) etc., has the same purpose to derive peace/bliss and welfare/comfort. It is evident that *nāṭya* is primarily connected with pleasure. In the first chapter of NS, while describing the creation of *nāṭyaveda*, Bharata says that it was created by Brahman, the creator of the universe, as deities requested Him

¹*caturṇām ṛksāmayaajuratharvavedānām kaṃ vedam upadiśanti āyurvedavidāḥ ... tatra bhiṣajā prṣṭe-naivam caturṇām ṛksāmayaajuratharvavedānām ātmanaḥ atharvavede bhaktiḥ ādeśyā | vedo hi ātharvaṇo dānasvastyayanabalimaṅgalaḥomaniyamaprāyaścittopavāsamantrādiparigrahāt cikitsām prāha | cikitsā ca āyusaḥ hitāya upadiśyate ||*

to bestow them with something that could make them happy and relaxed.² Bliss is the ultimate result of any artistic creation as it is explained in the earlier chapter— “*na hi rasād rte kaścid arthaḥ pravartate*”.

However, Sen did not go with Abhinavagupta's explanations. He pointed out some specific contexts of CS (4.2.32)³ and tried to link them with the relish of *rasa*. According to his observations, *anuśaya*⁴ is the point that could be related to the concept of *vāsanā* in the RT context. The word ‘*anuśaya*’ senses attachment (*rāga*), aversion (*dveṣa*) and others as commented by Cakrapāṇidatta.⁵ Because of the presence of attachment and related others, *jīva* takes birth repeatedly. Sen picked up this point and tried to relate this *anuśaya* concept with *vāsanā* in RT.

He further related the term ‘*anuśaya*’ with two aphorisms of Yoga (2.7-8) – (i) *sukhānuśayī rāgaḥ* and (ii) *duḥkhānuśayī dveṣaḥ*. Swami Vivekananda translated these two aphorisms as – (i) “Attachment is that which dwells on pleasure”, and (ii) “Aversion is that which dwells on pain”. Hence, *anuśaya* is the inherent nature in this context. Sen explains that *vāsanās* which are expressed as stable emotions in RT, is that vital point without which none would indulge themselves in artistic objects. Sen (1966) writes:

“It appears that Bharata was deeply influenced by this Patanjala concept of *anusuya*. Bharata holds that there can be no *Rasa*-realisation without the presence of *sthayibhavas*. These *sthayi-bhavas* are the result of a long process of evolution in human life. These are present in man in a germinal form, and are

²See NS, 1.9-11 along with *Abhinavabhāratī*

³*sa sarvagaḥ sarvaśarīrabhṛcca sa viśvakarmā sa ca viśvarūpaḥ |*

sa cetanādhāturatīndriyaśca sa nityayuk sānuśayaḥ sa eva ||

⁴R. K. Sen again and again mentioned this very word as ‘*anusuya*’ which, unfortunately, does not make sense and misguide a reader. If we consider the mentioned word of Sen, i.e., ‘*anusuya*’ as ‘*anusūyā/anusūya*’, it does not have any connection with the present context in CS. Hence, from the citation of Sen ‘*Sarira. II.31*’, which is from the edition of CS with the *ṭīkā* of Mahāmahopādhyāya Kaviratna Gaṅgādhara Kavirāja (edited by Kavirāja Narendranātha Senagupta and Kavirāja Balāicandra Senagupta), the present researcher found the exact word, i.e., *anuśaya*, which was intended to mention.

⁵*sahānuśayena rāgādinā vartata iti sānuśayaḥ*

perhaps congenital. These are again being conditioned by local and temporal conditions. These sthayi-bhavas make a man naturally prone to one group of sentiments, and averse to certain others. These latent bhavas inherent in all men, are what Patanjala-Caraka would call, anusaya. These bhavas underlie all aesthetic enjoyment. They proceed out of Vasanas, with which a man is naturally endowed (p. 258).”

This *vāsanā* concept is more elaborated in Abhinavagupta’s commentary and later in *Rasagaṅgādhara* of Paṇḍitarāja Jagannātha (ca. last of 16th to the middle of 17th century AD.). The concept of *vāsanā* is crucial to explain the medical connection of *rasa*. It is further connected with the idea of *sattva*.

Another observation to prove the hypothesis of Sen (1966, p. 263) is regarding the similarities between eight limbs of NS and Ayurveda. In 1.57 of NS, there appears the word ‘*aṣṭāṅgapadasaṃyuktā*’, which nevertheless suggest that drama is enacted with eight essential limbs. The context of 1.57 is related to *nāṇḍī*.

5.2 *Puruṣa* in the Ayurvedic Philosophy

The whole discussion regarding the effect of music in the present context is entirely restricted to the human constitution. Therefore, the conclusion can be established with a basic understanding of ‘*Puruṣa*’, a general term referred to human beings. The philosophy of Ayurveda is found mainly on *Vaiśeṣika* and *Sāṃkhya* schools. However, they did not go indiscriminately with *sāṃkhyas* and followed the pure Upaniṣadic principles and conclusions.

5.2.1 *Piṇḍabrahmāṇḍavāda*: The Theory of Individual and Universe

“*Puruṣo ’yaṃ lokasammitaḥ* — an individual is an epitome of the universe”, says Ātreya Punarvasu, the preceptor of Ayurveda (CS, 4.5.3). “*yāvanto hi loke mūrtimantaḥ bhāvav-iśeṣāḥ tāvantaḥ puruṣe, yāvantaḥ puruṣe tāvantaḥ loke* — as all the material and spiritual phenomena of the universe are present in the individual and all those present in the individual are also contained in the universe (Caraka, trans. 2016b, p. 414).”

Agniveśa, his disciple and the primary author of CS, asked for a justification and more clarity on his guru’s statement. Guru explained (CS, 4.5.4) that specific parts (*viśeṣa*) of both the universe and individual are countless, but wise seer could explain this whole by extracting the common elements (*sāmānya*) of this universe which are the gross universal features. Punarvasu stated thus (CS, 4.5.4-5):

*ṣaḍdhātavaḥ samuditāḥ puruṣa iti śabdaṃ labhante | tadyathā — pṛthivī āpaḥ
tejaḥ vāyuh ākāśaṃ brahma ca avyaktam iti | ete eva ca ṣaḍdhātavaḥ samu-
ditāḥ puruṣa iti śabdaṃ labhante ||
tasya puruṣasya pṛthivī mūrtiḥ, āpaḥ kledaḥ, tejaḥ abhisantāpaḥ, vāyuh prāṇaḥ,
viyat suśirāṇi, brahma antarātmā |*

“*Puruṣa* is nothing but the combination of the six *dhātus*, viz. *pṛthvī*, *jala*, *tejas*, *vāyu*, *ākāśa* and *Brahman* the manifested⁶ one.”

“*Pṛthvī* constitutes the form of man, *jala*, moisture; *tejas*, heat; *vāyu*, elan vital; *ākāśa* all the porous parts; and *Puruṣa*, the inner soul (Caraka, trans. 2016b, pp. 414-415).”

Puruṣa is the conscious being with endowed with cognitive senses. But, this information is not enough to understand the *Puruṣa* concept. Therefore, it’s concept should be understood in a better way.

⁶ *avyakta* = unmanifested?

In the *Katidhāpuruṣīya* chapter (1) of *Śārīrasthāna* (verse 63), Caraka elaborated the elements of *Puruṣa*.⁷ Five subtle elements and three types of mind evolves the creation. These are called *bhūtaprakṛti* or the eight sources of creation (see Figure 5.1).

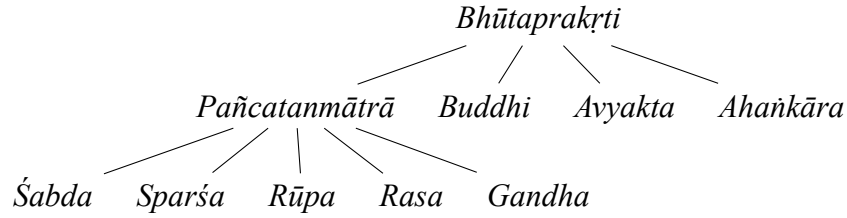


Figure 5.1: Eight Sources of Creation

From *avyakta*, *buddhi* or the intellect manifests. From intellect, *Puruṣa* finds its I-ness (see Figure 5.2). It means intellect generates the ego or I-principle or *ahankāra* principle. From this *ahankāra*, subtle elements (*ākāśa* and others—including mind, sensory and motor organs) manifest (see Figure 5.2). Besides these eight sources of creation, there are sixteen transformations (*vikāra*) which are not sources of anything (see Figure 5.2): five sense faculties, five motor faculties, the mind and five gross elements (CS, 4.1.64).⁸

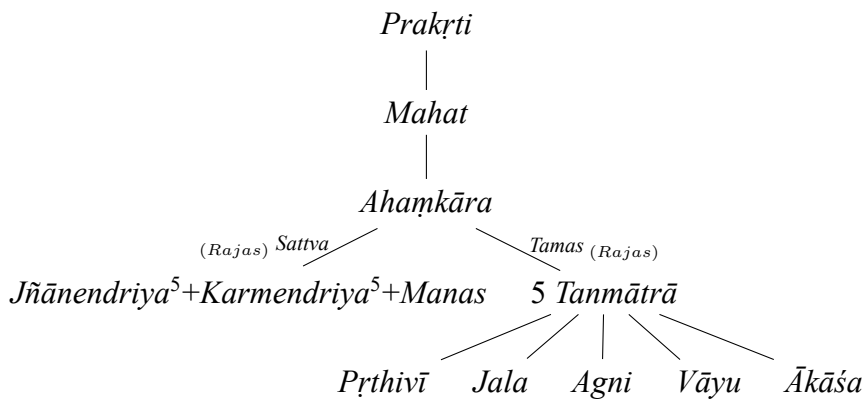


Figure 5.2: Creation According to *Sāṃkhya*

Three principal attributes (*guṇas*), viz., *sattva*, *rajas* and *tamas*, are again the root causes of the creation. Two types of *ahankāra* that generate senses and subtle elements

⁷ *khādīni buddhiravyaktamahankārastathāṣṭamaḥ* |

bhūtaprakṛtiruddiṣṭā vikārāścaiva ṣoḍaśa ||

⁸ *buddhīndriyāṇi pañcaiva pañca karmendriyāṇi ca* |

samanaskāśca pañcārthā vikārā iti saṃjñitāḥ ||

are governed by *sattva* and *tamas* respectively (see Figure 5.2). *Rajas* is the intermediary driving factor between *sattva* and *tamas* (see Figure 5.2). In the state of the equilibrium of *guṇas* no creation happens. Hence, these principles of creation is the non-equilibrium of *guṇas*. Cakrapāṇidatta cited Īśvarakṛṣṇa to elaborate on the connections of the three attributes with these principles.

In the 25th verse of *Sāṃkhyakārikā*, it is mentioned that five senses and five motor organs along with mind manifest out of the *sāttvika* attribute of the transformed (*vaikṛta*) *ahañkāra* with the help of *rajas*. The five *tanmātrās* manifest out of the *tāmasika* attribute of the *vaikṛta* *ahañkāra* with the help of *rajas*.⁹

Suśruta (3.1.20) mentions that among the gross elements, the ether element has the predominance of *sattva*, *rajas* is predominant in the air element, fire element is predominantly *sattva* and *rajas*, the water element has the predominance of *sattva* and *tamas*, and *tamas* is predominant in the earth element.¹⁰

Punarvasu stated an individual to be made up of six *dhātus*. Caraka (4.1.17) described that an individual consists of twenty-four *dhātus*, i.e., “mind, ten *indriyas* (sensory and motor organs), five objects of sense organs and *Prakṛti* (consisting eight *dhātus*, viz. five *mahābhūtas* in their subtle form, *ahañkāra* - ego, *mahat* - intellect and *avyakta* - primordial element) (Caraka, trans. 2016b, p. 314)”:

punaśca dhātubhedena caturviṃśatikāḥ smṛtaḥ |
mano daśendriyāṇyarthāḥ prakṛtiścāṣṭadhātukī ||

This twenty-fourfold individual is called ‘*rāśi-puruṣa*’. This *rāśi-puruṣa* is the term used for the individual who takes birth according to their *anuśaya* or attachment, aversion etc. Caraka said thus (CS, 4.1.53_{cd}):

⁹*sāttvika ekādaśakāḥ pravartate vaikṛtād ahañkārat |*
bhūtādestanmātraḥ sa tāmasastaijasād ubhayaṃ ||

¹⁰*tatra sattvabahulam ākāśam, rajabahulo vāyuh, sattvarajabahulā agniḥ, sattvatamahulā āpaḥ, tamabahulā pṛthivī iti*

puruṣo rāśisaṃjñastu mohecchādveṣakarmajaḥ ||

“... the Empirical Soul who represents the combination of 24 elements is born out of action prompted by likes and dislikes originated from ignorance (Caraka, trans. 2016b, p. 325).”

It is contextual to say that in BG (14.5), Bhagavān clearly gives the testimony that three primary attributes are the causes that bind the soul to this world and cause its birth.¹¹ Further, attachment and similar qualities come under the purview of three attributes which will be elaborated to establish the connection of bodily humours with *rasas*.

5.2.2 How Does the Constitution Matter?

What is the necessity to understand the human body? Caraka (4.6.3-4) beautifully answered this question and expressed the Ayurvedic view regarding the concordance and discordance of the human constitution, as follows:

*śarīravicayaḥ śarīropakārārtham iṣyate | jñātvā hi śarīratattvaṃ śarīropakārakeṣu
bhāveṣu jñānam utpadyate |
tatra śarīraṃ nāma cetanādhiṣṭhānabhūtaṃ pañcamahābhūtavikārasamudāyāt-
makaṃ samayogavāhi | yadā hi asmin śarīre dhātavo vaiṣamyam āpadyante
tadā kleśaṃ vināśaṃ vā prāpnoti | vaiṣamyagamaṇaṃ hi punardhātūnāṃ
vṛddhihrāsagamanamakārtsnyena prakṛtyā ca ||*

“Detailed knowledge of the human body is conducive to the well-being of the individual. Understanding of the factors that constitute the body provides knowledge regarding the factors which are responsible for its wellbeing.”

¹¹*sattvaṃ rajastama iti guṇāḥ prakṛtisambhavāḥ | nibadhnanti mahābāho dehe dehinamavyayam ||* (O mighty-armed one, the qualities, viz *sattva*, *rajas* and *t*, born of Nature, being the immutable embodies being to the body.)

“The body which is maintained in a state of equilibrium represents the conglomeration of factors derived from five mahābhūtas and this is the site of manifestation of consciousness. When dhātus in this body becomes discordant then there is disease or destruction (of the body). Aggravation or diminution of dhātus either partially or in their entirety constitutes this discordance (Caraka, trans. 2016b, pp. 426-427).”

Therefore, in general, protecting one’s constitution in equilibrium is the very goal of Ayurveda as a medical science, and it is needless to say that protection is needed to stay in happiness, which means to exclude the miseries that appear as diseases.

5.2.3 Who is Called Healthy?

In addition to the above aspect of CS,¹² SS (1.15.41) has an interesting definition that holistically addresses the actual definition of health:

samadoṣaḥ samāgniśca samadhātumalakriyaḥ |
prasannātmendriyamanāḥ svastha ityabhidhīyate ||

“One whose doṣas, agni and functions of dhātu and malas are in the state of equilibrium and who has cheerful mind, intellect and sense organs is termed as ‘*svastha*’ (healthy) (Suśruta, trans. 2004, p. 173).”

Among above parameters, it is the empirical individual (*rāśi-puruṣa*) who is the subject of the effect of music therapy. SS (3.1.16) stated that in the science of Ayurveda, individual who carries his past deeds called *karman* is set to be the ground for the treatment —

¹²Though Caraka (1.1.53_{cd}) said, “*dhātusāmyakriyā caktā tantrasyāśya prayojanam*”, Suśruta’s definition is more comprehensive.

yato 'bhihitam- 'pañcamahābhūtaśarīrisamavāyaḥ puruṣaḥ' iti; sa eṣa karma-puruṣaḥ cikitsādhikṛtaḥ

“... as said—person is combination of five mahābhūtas and soul (consciousness); the same is known as ‘karmapuruṣa’ (person acting and subjected to actions) who is qualified for treatment (Suśruta, trans. 2005, p. 123).”

5.3 Understanding the Ayurvedic Humours

Both the body and mind are the seats of diseases as said by Caraka (CS, 1.1.55):

*śarīram sattvasaṅjñam ca vyādhīnāmāśrayo mataḥ |
tathā sukhānām, yogastu sukhānām kāraṇam samam ||*

“The body and mind constitute the substrata of diseases and happiness (i.e. positive health). Balanced utilisation (of time, mental faculties and object of sense organs) is the cause of happiness (Caraka, trans. 2016a, p. 40).”

Music, which is the subject of cognition in the present context, is very much related to the mind and therefore, the primary focus is given to the psychic factors in this chapter. Unequivocally, there is an intimate connection between body and mind leading to psychosomatic and somato-psychic factors.

5.3.1 *Tridoṣasiddhānta*: Somatic Humours

Tridoṣa theory is the foundation of the Ayurvedic medical science. Two categories of humours are accepted in Ayurveda — psychic and somatic. CS (1.1.57) accounts them as follows:

vāyuh pittaṃ kaphaścoktaḥ śārīro doṣasaṅgrahaḥ |
mānasaḥ punaruddiṣṭo rajaśca tama eva ca ||

“Pathogenic factors in the body are *vāyu*, *pitta* and *kapha* while those in the mind are *rajas* and *tamas* (Caraka, trans. 2016a, p. 41).”

Vāyu, *pitta* and *kapha*, are the three somatic humours known as *tridoṣa* famously. According to the Ayurvedic principles, all substances consist of five gross elements.¹³ Definition of the five elements was nicely put by Sastri (2009), “in their absolute state are not found in nature, *panchabhautika* matter only is available (p. 36).” The three somatic humours are combination of some specific set of gross elements.

Vāyu (popularly called as *Vāta*) is formed with ether and air elements. *Pitta* is a manifestation of the fire element. The water and earth elements are the outcome of *kapha*.

These three humours determine the physiological nature of a human being. During copulation, this physiological nature is determined by the mix of *śukra* (semen) and *śoṇita* (ovum) to in the process of manifestation as an embryo. The domination of a specific humour in constitution is also *anuśaya* as ascribed by Caraka (CS, 1.7.39-40):

samapittānilakaphāḥ kecid garbhādi mānavāḥ |
drśyante vātalāḥ kecit pittalāḥ śleṣmalāstathā ||
teṣāṃ anāturāḥ pūrve vātalādyāḥ sadāturāḥ |
doṣānuśayitā hyeṣāṃ dehaprakṛtirucyate ||

“Some persons maintain the equilibrium of *vāta*, *pitta* and *kapha* from the very time of conception; some are dominated by *vāta*, some by *pitta* and some by *kapha*.”

“Those of the first category are not susceptible to diseases and the rest of them are always likely to suffer. The body constitution (*Deha Prakṛti*) of persons

¹³ *sarvaṃ dravyaṃ pāñcabhautikamasminnarthe* (CS, 1.26.10)

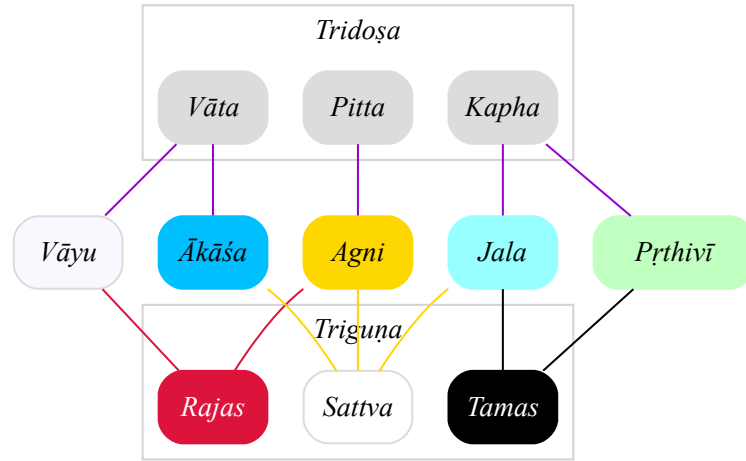
is named according to the predominance of *Doṣas* (Caraka, trans. 2016a, p. 154).”

Attributive Connections of Somatic Humours

According to Sastri (2009), these somatic humours are connected again with three primary attributes according to SS, 3.1.20 (*tatra sattvabahulam* etc.) — *rajas* is connected with *vāta*, *pitta* is connected with *sattva* and *rajas*, and *tamas* is connected with *kapha*. He specifically mentioned that a person of *kapha prakṛti* manifests more of *sattva* properties. Therefore, there is a logical connection between *guṇa* and *doṣa* as referred by Sastri.

The connection of gross elements with somatic humours is evident from the references of Caraka and other celebrated Ayurvedic experts. If the ether element is predominantly *sattva* and the air element is predominantly *rajas*, then it is inferred that *vāta* is connected with those two attributes (see Figure 5.3). Since the humour itself is termed as *vāta*, *vāta* predominant personalities in majority are *rājasikas* apparently, but the possibility of manifestation of *sattva* cannot be rejected if the ether element is predominant.¹⁴ Likewise, the fire element. *Kapha* generated from the combination of water and earth elements could be connected with *sattva* and *tamas*., Etymologically, *kapha* is a watery product (*kena phalati*), indicating that the water dominates over the other element. Therefore, the preference of *sattva*, as described by Sastri (2009, p. 36), demands further observation in context of *tamas* (see Figure 5.3). The *tamas* predominance in an individual should be understood as the dominance of the earth element.

¹⁴It is interesting to note that in SS (3.4.80_d), an alternate opinion regarding the dominance of the ether element is mentioned: *śuciratha cira-jīvē nābhasaḥ khairmahadbhiḥ* [That of *nābhasa* (pertaining to *ākāśa*) constitution is pure, long-lived and having large passages (Suśruta, trans. 2005, p. 165).]

Figure 5.3: Connection Between *Doṣa*, *Bhūta* and *Guṇas*

5.3.2 *Dvidoṣasiddhānta*: Psychic *Doṣas*

According to the cited verse of CS 1.1.57, *rajas* and *tamas* are related to psychic *doṣas*. These two are the causes of psychological distresses. Cakrapāṇidatta commented regarding this as follows:

eva śabdena sattvākhyaguṇasya adoṣatvam avadhārayati, sattvaṃ hi avikāri

From the above, the actual state of mind in Ayurveda is called *sattva*. In earlier discussions, it has been seen that the mind is an outcome of *sattva* in the process of creation making the term more logical. Therefore, in this science, the natural state of mind, not dominated by *rajas* and *tamas*, is *sattva*.

Concept of the Mind in Ayurveda

In the eighth chapter of the *Sūtrasthāna* of CS (1.8.4), a general definition of the mind is given:

*atīndriyaṃ punaḥ manaḥ sattvasaṅgiṇakaṃ, cetaḥ iti āhuḥ eke, tadarthātmāsam-
padāyattaceṣṭaṃ ceṣṭāpratyayabhūtaṃ indriyāṇām*

“Mind, on the other hand, transcends all sense perception. It is known as ‘sattva’; some call it ‘cetas’. Its action is determined by its contact with its objects (like happiness, misery etc;) and the soul; this acts as a driving force for all the sense faculties (Caraka, trans. 2016a, p. 164).”

Caraka asserted the proof of the existence of the mind, going a level further. He said as follows (CS, 4.1.18-19):

*lakṣaṇaṃ manaso jñānasyābhāvo bhāva eva ca |
sati hyātmendriyārthānām sannikarṣe na vartate ||
vaivṛttyānmanaso jñānaṃ sānnidhyāt tacca vartate |
aṇutvaṃ atha caikatvaṃ dvau guṇau manasaḥ smṛtau ||*

“Sometimes, one understands a thing and sometimes one does not. This proves the existence of the mind as a separate – sense organ. That is why, when there is no contact of the mind with the sense organs and their objects, no understanding of things can occur. It is only when the required mental contact is there, that one can understand things. Atomicity and oneness are considered to be the two characteristic features of the mind (Caraka, trans. 2016b, p. 315).”

It is observed that the mind is prioritized among the twenty-four elements of *rāśi-puruṣa*. Through mind only objective knowledge is acquired. Without the connection between the mind and the sensory organs, no cognition could happen. Swami Vivekananda, in his commentary on *Pātañjalayogasūtra* 2, says:

“Sometimes a man is asleep with his eyes open. The light is there and the picture is there, but a third thing is necessary — the mind must be joined to

the organ. The eye is the external instrument; we need also the brain centre and the agency of the mind. Carriages roll down a street, and you do not hear them. Why? Because your mind has not attached itself to the organ of hearing.”

Caraka (CS, 4.1.20-21) clearly has explained the objects of the mind:

*cintyaṃ vicāryaṃ ūhyaṃ ca dhyeyaṃ saṅkalpyaṃ eva ca |
yatkiñcinmanaso jñeyaṃ tat sarvaṃ hyarthasaṃjñakam ||
indriyābhigrahaḥ karma manasaḥ svasya nigrahaḥ |
ūho vicāraśca, tataḥ paraṃ buddhiḥ pravartate ||*

“Things requiring thought, consideration, hypothesis, attention, determination or whatever can be known by means of the mind, are regarded as its objects. Control of sense organs, self-restraint, hypothesis and consideration represent the action of the mind. Beyond that flourishes the domain of intellect (Caraka, trans. 2016b, p. 315-316).”

So, mind is that instrument by which one gets the cognition of objects perceived by the external senses. Impression of perceived objects could give a good or bad impression on one’s psyche, and according to the nature of individuals, goodness or badness of impressions differ from person to person. In the above verse, controlling of sense organs is suggested as the first action of the mind. Though there is highest possibility of controlling the mind as described in the yoga texts, controlling the mind that could perceive only the good objects is contextual here.

Contextually, sound, more specifically musical sound, is the object of the mind to be discussed. It is said that *rajas* and *tamas* are the two factors that affect the mind towards distresses, and on the other hand, *sattva* is opposite, as it controls the homeostasis of the mind. Therefore, the stabilization of *sattva* itself is the medicine for mental distresses. The

following section will discuss how *rasa*, which dominantly consists of *sattva* expressed through music, could influence the fundamental concept of the therapeutic perspective of the music.

5.3.3 Correlation between Psyche and Body

The correlation has been partially observed while explaining the connection between the somatic humours and *guṇas* (see [Figure 5.3](#)). When somatic humours are not aggravated, they maintain a perfect health. When aggravated, they develop diseases. Hence, Caraka (CS, 1.9.4) stated it thus:

vikāro dhātuvaiṣamyam, sāmīyam prakṛtirucyate |
sukhasañjñakamārogyam, vikāro duḥkhameva ca ||

“Any disturbance in the equilibrium of dhātus is known as disease and on the other hand the state of their equilibrium is health. Health and disease are also defined as pleasure and pain respectively (Caraka, trans. [2016a](#), p. 184).”

In the commentary of the above verse, Cakrapāṇidatta observed that air etc., are *dhātus* (that which hold or help to sustain the human constitution) in themselves — *dhātavo vātādayo rasādayaśca tathā rajahprabhṛtayaśca*.

For example, the complete non-existence of *rajas* is not possible. If so, no movement could have happened in human body. Likewise, without *tamas* no sleep is possible. So are the somatic humours. Various functions of *doṣas* have been mentioned by Caraka (1.18.48-51) as follows:

nityāḥ prāṇabhṛtām dehe vātapittakaphāstrayaḥ |
vikṛtāḥ prakṛtisthā vā tān bubhutseta paṇḍitah ||
utsāhocchvāsaniḥśvāsaceṣṭā dhātugatiḥ samā |

samo mokṣo gatimatām vāyoḥ karmāvikārajam ||
darśanam paktirūṣmā ca kṣuttrṣṇā dehamārdavam |
prabhā prasādo medhā ca pittakarmāvikārajam ||
sneho bandhaḥ sthiratvaṃ ca gauravaṃ vṛṣatā balam |
kṣamā dhṛtiralobhaśca kaphakarmāvikārajam ||

“The three doṣas viz. vāta, pitta and kapha are already present in the body of all creatures. A physician should try to know whether they are in normal or morbid condition.”

“When vāta is in its normal state, it reflects itself in the form of enthusiasm, inspiration, expiration, movements, normal metabolic transformation of tissues and proper elimination of excreta.”

“The actions of pitta in its normal state are good vision, good digestion, normal temperature, normal hunger, thirst, bodily softness, lustre, happiness and intelligence.”

“Effects of kapha in its normal state are unctuousness, cohesion, steadiness, heaviness, virility, strength, forbearance, patience and greedlessness (Caraka, trans. 2016a, p. 346).”

From the above elaborations of Caraka, it is observable that some of the factors are completely psychic (see Table 5.1). These functions of somatic humours further prove that the connection of body and mind regarding the wellbeing of an individual is a matter of critical understanding. Alongside, *sneha* (unctuousness) and *bandha* (cohesion), should also be considered as they are part of physical and psychological functioning of *doṣas*.

5.4 *Sattva* and Music: The SRD Theory

SRD is an acronym for *svara*, *rasa* and *doṣa*. This theory conveys the interrelationship between the said three. This section describes how the SRD relation is established and

<i>Doṣa</i>	Psychic Factor	
	Sanskrit	English
<i>Vāta</i>	<i>Utsāha</i>	Enthusiasm
<i>Pitta</i>	<i>Prasāda</i>	Serenity
	<i>Medhā</i>	Intelligence
<i>Kapha</i>	<i>Sthiratva</i>	Stability
	<i>Kṣamā</i>	Forbearance
	<i>Dhṛti</i>	Restraint

Table 5.1: Some psychic factors related with somatic humours

how the SRD theory can be constructed.

Sattva concept is the key factor that helps to establish the therapeutic explanation of *rasa* centric pure music. *Rasa* is that which could not be relished without the existence of *sattva*. It is impossible to say that an individual exists bereft of *sattva*. Since the actual nature of mind itself is *sattva*.

In this audio-perceptual emotional-cognitive process, emotions could harm psychologically an individual. True, but in *rasa* cognitive process, *sattva* is predominant which does not negatively affect at all. However, this depends on context. For example, music which conveys *vīra rasa* cannot help a subject with depression as the subject has already lost its enthusiasm and may react opposite. It requires to bring down its grief by making it to listen *karuṇa rasa* and further make the subject calm with *śānta rasa* music. *Vīra* type of music could help further to make the subject energetic to better the health aspect.

Dr. R. K. Sen's observation that *vāsanās*, which are the inborn traits of individuals, are said to be the stable emotions in the terminology of NS. Madhusūdāna Sarasvatī stated in his *Bhagavad-bhaktirasāyana* that *saṃskāra*, *vāsanā*, *bhāva*, and *bhāvanā* these are synonymous in the context of the RT, which appear when the mind indulged into the objects like *kāma*, *śama*, *utsāha* etc. He again clarifies that these are termed as *sthāyibhāvas* in

poetics and expressed by artistic expressions that could be relished as *rasas*.¹⁵

Interestingly, in SS (1.1.25), mental diseases are broadly classified as *icchā* – same as *rāga* and *dveṣa* – attachment and aversion.¹⁶ Lust, fear, anger, greed, excessive joy, grief, etc., comes under the purview of these two classifications. Lust, fear, grief etc., are accepted as stable emotions among them. Then, how could they help an individual to gain homeostasis? *Sattva* is the answer here. It was elaborately explained in the “*Rasa* Relishment” section (see subsection 4.1.2) in chapter 4 that when *rasa* is experienced, *rāga* and *dveṣa* disappear because of the generalisation (*sādhāraṇīkaraṇa*). Therefore, due to the absence of these two, *rajas* and *tamas* cannot interfere. In this condition, *sattva*, the natural state of the mind, only exists. Though it might be for a moment, pure music certainly gives bliss to an individual.

Sen clarifies that as the constitutional nature is determined from the genesis of a foetus, *vāsanās* become dominant accordingly. This is why Abhinavagupta says in his commentary that, due to the varying personality traits, one may find *śānta* from an artistic object, and the other may find *śṛṅgāra*. This perspective would be explained in chapter 7.

The contextual music, which is pure in nature (${}_kS^m$), has predominance of *sattva*. Nevertheless, because of the therapeutic practicality, there are possible coexistence of other attributes too. The evocative factor of *sattva* as an action, relishing *rasa* may be uninterrupted for long. But, when the target audience are individuals with distress, the thought pattern changes a little.

There is a possibility to evoke the SEs of each *rasa*, which are being used in ${}_kS^m$, with the primary attributes. Īśvarakṛṣṇa (13rd *kārikā*) mentioned the nature of attributes

¹⁵*drute citte vinikṣiptasvākāro yastu vastunā |*
saṃskāra-vāsanā-bhāva-bhāvanā-śabdabhāg asau ||
sthāyibhāvagirā 'to 'sau vastvākāro 'bhidhīyate |

vyaktaśca rasatām eti parānandatayā punaḥ || (BBR, 1.6,9)

¹⁶*mānasāstu* *krodha-śoka-bhaya-harṣa-viṣāderṣyā-bhyasūyā-dainya-mātsarya-kāma-lobha-prabhṛtaya icchā-dveṣa-bhedair bhavanti |*

as follows:

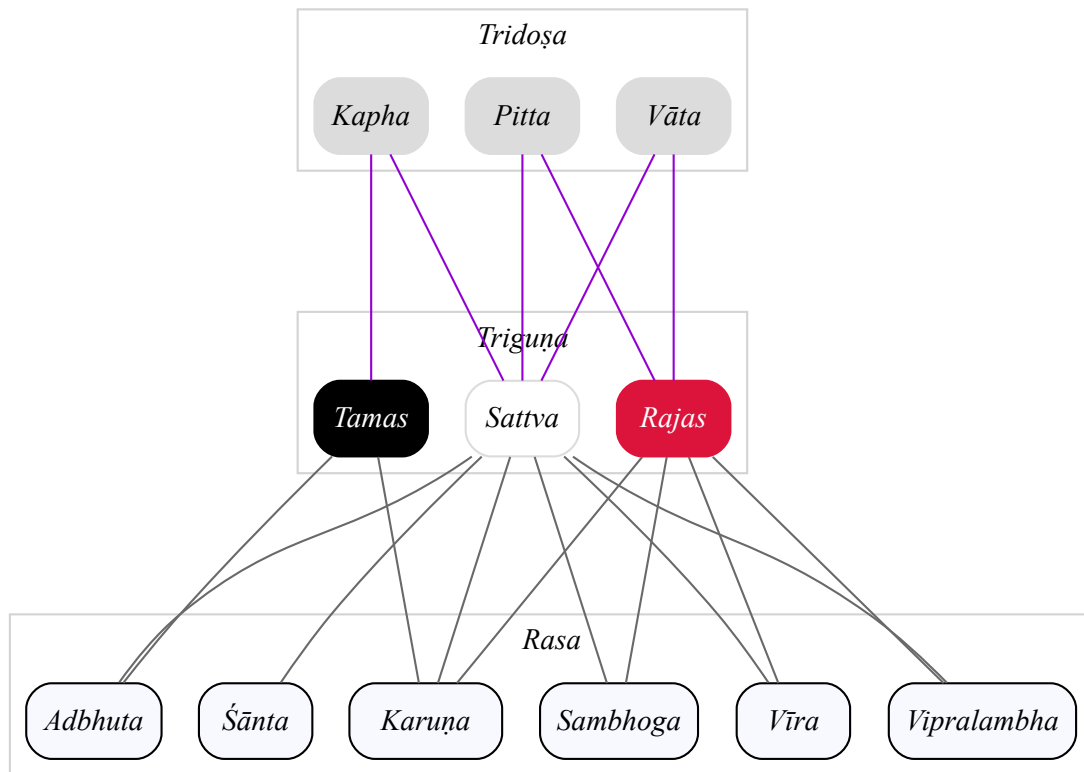
sattvaṃ laghu prakāśakam iṣṭam upaṣṭambhakam calaṃ ca rajah |
guru varaṇakam eva tamaḥ pradīpavaccārthato vṛttiḥ ||

“The *Sattva* attribute is buoyant and illuminating; the *Rajas* attribute is exciting and mobile; and the *Tamas* attribute is sluggish and obscuring; Their functioning is for a single purpose, like that of a lamp (Īśvarakṛṣṇa, trans. 1995, p. 45).”

Accordingly, *rati*, which is the SE of *śṛṅgāra rasa* and considered to be *rājasika*, so, Bhagavān Kṛṣṇa says (BG, 14.7), “Know *rajas* to be of the nature of passion — *rajo rāgātmakam viddhi*.” However, *śṛṅgāra* has a part of *karuṇa rasa* in its *vipralambha* nature, hence, it could be connected with *tamas* too. In the situations of grief, the water element expresses tears which means that *kapha* is got increased. However, while referring the psychological constitutions, grief is placed in ‘*praita kāya*’ which is under the *rājasika* personality type. Hence, grief has its connection with *rajas* too. *Utsāha*, which is the SE of *vīra*, is normally connected with *rajas*, but it has a connection with *sattva* too. For instance, *vīra rasa* which is connected with a *dhīroddhata* protagonist (viz. Bhīma) could never be same as that of *dhīrodātta* (viz. Rāma). In *adbhuta*, *vismaya* is the SE. Spellbound is a very common ^{PE}CC of this *rasa*, hence, it has a little connection with *tamas* because of the immobile quality of *tamas*. Nevertheless, it is negligible as joy, pleasure and other TEs emanate from *śānta* and *adbhuta*. Hence, *adbhuta rasa* is predominantly *sattva*.

By establishing the connection with primary attributes, an hypothetical connection between somatic humours and *rasas* becomes easy (see Figure 5.4). Needless to say, the connection of *rasas* with somatic humours cannot be found directly, but with the help of the *triṅṇas*.

As far as the possible relation of somatic humours with *rasas* are concerned, the connection between *svara*, *rasa* and *doṣa* becomes crystal clear (*svara* connection with *rasa* are detailed in chapter 4). Thus, the theory of *Svara-Rasa-Doṣa* or SRD theory occurs.

Figure 5.4: Relation Between *Rasa*, *Guṇa* and *Doṣas*

5.5 Music Therapy and Ayurvedic Science

Previously, evidences of using music as therapy was explicitly mentioned and those evidences could help to find out the outlines of present section.

It was observed earlier (see [section 2.4](#)) that to break unconsciousness or to sensitize an individual who just come back to senses from un-consciousness is the instances wherein vaidyas used to apply music therapy. Music is prescribed particularly in the case of *pitta* aggravation. The mental state of an individual is quite disturbed by *tamas* pre/post-unconsciousness. As the stable condition of the mind is *sattva*, vaidyas applied music to subdue the *tamas* by increasing the *sattva*. Also, in the case of *pitta* aggravation, aggravated *pitta* generally increases the *rajas*. It is again the music which helps to decrease the *rajas* by increasing the *sattva* attribute.

It is an exaggeration to say that music has a direct somatic impact. The therapeutic application of music is an audio-perceptual object, completely belongs to a psychological phenomenon.¹⁷

Caraka (1.11.45) considered that diseases could be classified into three: 1. *nija* (innate) 2. *āgantū* (exogenous) and 3. *mānasa* (psychic). Innate diseases are related to the aggravation of somatic humours. Exogenous diseases are due to virus and related others. Psychic diseases occur due to two factors further— non-fulfilment of desired things and fulfilment of undesired things. The diseases which are connected to the psyche are mostly the application area of music therapy.

Caraka mentioned *sattvāvajaya* while elaborating the threefold treatments. *Avajaya* means to overcome or to conquer. Hence, the treatment modality that helps to subdue the distress of *sattva* and to bring back the homeostasis of the mind is known as ‘*sattvāvajaya*’. Caraka (1.11.54) suggested it as “*ahitebhyaḥ arthebhyaḥ manonigrahaḥ* — restraining of the mind from the harmful [psychological] objects.” In the previous section, it is clarified that *rasa* centric music, cannot have a negative effect as it has the high domination of *sattva*. However, as there are some association of other attributes, it is matter of further investigation whether they lack any logical explanation.

A general picture of using *rasa* centric music to subdue aggravated somatic humours is explained using FVMT model in the next chapter.

5.6 Summary

The SRD theory is explored in this chapter which is the heart of the application of music as a therapy. The previous research by Dr. Sen helped the present work undoubtedly regarding *vāsanā* and *anuśaya* concepts related to the proposed SRD theory. Still, this discussion

¹⁷Caraka says (4.1.31_{cd}), “The objects of sense organs are *śabda* etc., which constitute the attributes of gross *mahābhūtas* (Caraka, trans. 2016b, p. 319).” (*arthāḥ śabdādayo jñeyā gocarā viṣayā guṇāḥ*)

is in a state of hypothesis, which should be verified with several practical investigations and observations.

6

Fourfold Vedic Music Therapy Model: A Prototype

Any therapeutic model considering music must be proposed in logical lines, representing the whole tradition of music and Ayurveda. The proposed Fourfold Vedic Music Therapy (FVMT) model could be a channel through which the knowledge tradition would flow in its accepted conventional form.

Before we elaborate on the proposed model, a few things have to be clarified. Using the word ‘Fourfold’, it is suggested that this model has a practical implication through four primary steps, which is discussed in the second section.

It is possible to ask: Are there any references to music therapy in the Vedas since the word used is ‘Vedic’?

It is not the case here. Earlier, in the third chapter it was discussed that the term ‘Music Therapy’ has become popular since the 20th century only and was unknown to us. However, conceptually such idea was there as physicians used to apply this in treatments though sporadically across the globe. India was not an exception to this and indeed, and it possesses the most ancient textual references.

However, by the word ‘Vedic’, it is not intended to say that whatever textual evidences found in Ayurvedic text are equally found in the Vedas. There is a single instance in the Yajurvedic *Brāhmaṇas* that gave us a lead to interpret such context for a therapeutic connection.

6.1 Inspiration from *Aśvamedhic Uttraramandrā-gāthā*

6.1.1 Sources

The inspiration for developing this proposed FVMT model is ‘*Uttraramandrā-gāthā*’—*gāthās* related to *Uttaramandrā* (also ‘*Gāthāgāna*’/‘*Uttaramandrā-gāna*’), which is an integral part in performing the *Aśvamedhic* rite called the horse-sacrifice. *Aśvamedha* sacrifice could be traced in *Brāhmaṇa* texts related to both *śukla* and *kṛṣṇa* versions of the YV. In the *Kāṇva* and *Mādhyandina* recensions of SB of *śukla* YV, and TB of the *kṛṣṇa* YV, the references to *Aśvamedha* are found.

The *gāthāgāna* context appears in 13.1.5 of *Mādhyandina* and 15.1.5 of *Kāṇva* SB. Interestingly, the name of 13.1.5 of SB¹ is itself “*Gāthāgāna*”. The accounts of *Mādhyandina* and *Kāṇva* are mostly similar in spite of having some differences. 3.9.14 of TB² is

¹See in *Śatapatha Brāhmaṇam*, 1970

²See in *kṛṣṇayajurvedīyaṃ taittirīyabrāhmaṇam Sāyaṇācāryaviracitabhāṣyasametam*, 1898

related to the *gāthāgāna* ritual with a different rendering.

6.1.2 The Context

Aśvamedha, the king of sacrifices, could only be accomplished by a king who indeed is great and majestic who would sustain his position as the dominant authority over other states. A king willing to perform the rite has to take a vow for a maximum of one year when the sacrificial horse is unleashed to roam freely.

Throughout the year, five daily rituals have to be performed – (i) Lying down on the lap of *Vāvātā* (favourite spouse), (ii) Performing *sāvitṛī* iṣṭis for three times a day, (iii) Singing in *Uttaramandrā*, (iv) *Pāriplava* or the revolving or repeating ritual, and (v) *Dhṛti* ritual, performed in evenings. It is said in *Śrautasūtra*³ (20.3.5) of Kātyāyana as follows:

vāvātāsaṃveśana-sāvitṛy-uttaramandrāgāna-pāriplavadhṛtīḥ saṃvatsaram

The Veda says that a *brāhmaṇa* (knowledgeable in the Vedas, not essentially by birth) singer in the mornings and one *rājanya* (royal personage) singer in the evenings sing a total of self-composed six *gāthās*, three *gāthās* by each singer. They are instructed to sing *gāthās* on self-accompanied *vīṇā* (probably seven-stringed Indian arched harp called *Saptatantrī/Citrā*).⁴ A *brāhmaṇa* sings in mornings, before the *sviṣṭakṛit* sacrifice, which is a part of the morning *sāvitṛī* iṣṭi. The royal personage renders while the *dhṛti* sacrifice is performed in the evenings.⁵ Furthermore, there is an explicit mention in *Śatapatha* that *gāthās* should be sung in *Uttaramandrā*⁶ only.

³See in Kātyāyana, 2015

⁴See TB, 3.9.14.2

⁵See TB, 3.9.14.3 [*divā brāhmaṇo gāyet | naktam rājanyaḥ | brāhmaṇo vai rūpaṃ ahaḥ | kṣatrasya rātriḥ*] (Brāhmaṇa should sing in day time and royal personage at night. Brāhmaṇa is an embodiment of day. The night is of kṣatra (another synonym for royal personage).); Also see the commentary of Sāyaṇa on TB, 3.9.14.3 in ed. *kṛṣṇayajurvedīyaṃ taittirīyabrāhmaṇam Sāyaṇācāryaviracitabhāṣyasametam*, 1898, p. 1287]

⁶See SB, 13.4.2.8

A brāhmaṇa supposed to compose the lyrics of *gāthās* on *iṣṭāpūrta*, the performance of pious or charitable deeds, which the king performed before. The royal personage exclusively composes *gāthās* on the backdrop of victorious wars that the king had won.⁷

6.1.3 Ritualistic Significance of *Gāthāgāna*

Regarding the ceremonial relevance, the TB says that one who takes a vow to perform horse sacrifice loses his prosperity, realm and kingship until it is completed. Reference is as follows (3.9.14.1):

apa vā etasmācchrī rāṣṭram krāmati | yo 'śvamedhena yajate |

In the commentary of above Vedic passage, Sāyaṇācārya writes:

niyamam svīkṛtavataḥ rājāḥ cirakālam rājopacārābhāvena śrīḥ asmād apagacchati | kratusamāptiparyantam adhvaryoḥ eva rājatvāt | rāṣṭram api asmād apagacchati | tadubhayaparihārārtham vīṇayā (...) gāyetām |

A king who has taken a vow is bereft of the kingship for many months, is temporarily suspended from his prosperity. Until the end of the sacrifice, adhvaryu [one of the priests] takes over the kingship. [Therefore,] the realm is also gone away from the king. To facilitate the king [from such a traumatic state] bereft of these two [*śrī*⁸ and *rāṣṭra*], two singers should sing with *vīṇā*.

A king can be called 'initiated' for the three day sacrifice only if the sacrificial horse returns back after a maximum of one year. Untill then, he is a mere votary of that sacrifice. In such a state, for a maximum of one year, he could not be treated as a king, since his kingship has to be transferred to the adhvaryu as per the rules of the sacrifice. Hence, the

⁷See TB, 3.9.14.4; also see SB, 13.1.5.6 (*ayajatyadādāditī brāhmaṇo gāyati* etc.)

⁸'*Śrī*' word itself is referred as kingship here.

king may recover his realm and kingship, by listening to self-composed *gāthās* in every morning and evening by a brāhmaṇa and a royal personage on *vīṇā* respectively is the prescribed solution.

6.1.4 A Therapeutic Interpretation

The whole process of *Uttaramandrā-gāthā* could be interpreted from a therapeutic perspective based on three Indian traditional knowledge sources — (i) Sanskrit musicological texts, (ii) aesthetics or texts related to rasa theory, and (iii) Ayurvedic texts. In other words, *Uttaramandrā-gāthā* could be explained with the SRD theory, which could establish the traditional relevance of the same.

Uttaramandrā is the name of the first *mūrcchanā* of *ṣaḍjagrāma* in the ancient system (discussed in [chapter 3](#) and [chapter 4](#)). The first note, from which the *mūrcchanā* starts, is *Sa*⁴. Therefore, according to the ancient logic of rendition, the role of a musical note that is starting note has its other characteristics as resting and dominant note.

According to the NS, it is observed previously in the fourth chapter that a *Sa*⁴ dominant rendition has to be applied in *vīra*, *adbhuta* and *raudra* rasas. Interestingly, thorough applied *gāthās utsāha* (energy) of a king is expressed. According to the RT, when *utsāha*, which is a SE, described through an art form becomes *vīra rasa*. Therefore, singing in *Uttaramandrā* becomes more relevant now. This particular *mūrcchanā* was used to make the rendition more effective to achieve the goal along with a suitable poetic composition.

According to the SRD theory, *vīra rasa* is related to *pitta* and *vāta*. The predominance of *kapha*, is not suggested that usually makes a person bulky with soft bones. This could never be preferable for a king. It is interesting to note that the timing of *Uttaramandrā-gāthās* was prescribed in mornings and evenings. During these two times, *kapha* is predominant in nature. Therefore, the relevance of the timing of the renditions again makes much sense. These renditions are used to help a king, who has no official rights on his

kingship and realm, to stabilise his mind to be energetic, which would further help him to achieve the goal.

From the above discussion, the purport of the Vedic poetic expression could be contemplated. When it is said that music is the remedy for lost kingship and realm, it means the poetic and musical rendition always help a king to stabilise his psychological health in order to sustain his confidence to achieve his two goals.

Therefore, the term ‘Vedic’ in the prototypical model is justified from the above discussion. Unveiling of this fundamental concept in the Veda supports hugely the traditional conceptual approach and contextual relevance.

6.2 FVMT: A Prototypical Model

In the theoretical part, we formulated the SRD theory starting from the svaras, but, here, it becomes just inverse to make it a pragmatic model. Hence, the DRS (*Doṣa-Rasa-Svara*) is the sequence that has to be followed in the model to apply music as a therapy.

The heart of music therapy is the music itself, without which no therapy is possible. Hence, melody selection is the most vital area after proper identification of a subject and related data. After the selection of scale, the basis of a rendition and execution is the next important phase. Music, rendered in an unaesthetic and unpalatable way, could never generate any positive psychological impression.

There are four steps in this model that will help a researcher/therapist for practical application:

- i Identification
- ii Composition
- iii Execution

iv Effect

6.2.1 Identification

The identification could be in two ways: (i) traditional and (ii) modern. In whichever case, the goal of therapy could be divided into two:

i To care

ii To cure

In the first criteria, one must identify the subject's personality to take care of a subject. As it was discussed in the previous section, music helps a king protect his personality, though he is not a patient currently. Hence, it cannot be said that one would be afflicted with a psychosomatic illness. One has a right to protect one's psychosomatic constitution (Ghebreyesus, 2017). The fundamental approach of Ayurveda itself is to care and cure; CS 1.30.26 says – “*prayojanaṃ cāśya svasthasya svāsthyarakṣaṇam āturya vikārapraśamaṃ ca*—The purpose of this science is to preserve the health of the healthy and cure the disease of the unhealthy.”

In the case of the second condition, this current model will help a therapist select a musical piece to cure a person with psychological issues. It will also help to choose a melody from a general medical aspect. Though we tagged somatic humours with sentiments, it will help find and suggest a tune for any disorder from other fields. For instance, insomnia (*anidrā*) is a health problem related to *vāta*. Hence, one should choose a melody that could express a suitable *rasa*, in order to increase *kapha*. This must be the envisaged process. One should identify the somatic humour and follow the given below order.

Process of Care

In this procedure, personality-related emotions or *rasas* should be chosen to select the melody scale for execution. To take care of the psychological wellbeing of a king, heroic emotion which is related to the personality is applied as explained in the previous section. According to the subject's constitution, respective *rasa* must be selected initially.

Process of Cure

The previous procedure is heavily dependent on the personality evaluation. But, the approach to cure is not entirely dependent on personality. Without evaluating the same, one could select melody according to a psychological disorder. It was observed in the third chapter that in most cases ancient vaidyas used to apply music that is soothing for the auditory organ with full of sweetness.

6.2.2 Composition

Defining a scale (J^7 or J^6 or J^5) is the primary step to execute composition. These consist of svaras in their natural order. Sa Ri Ga Ma Pa Dha Ni and Sa R Ga Ma Pa Dha Ni are two of many instances of J^7 , and the same is in J^6 (Sa Ga Ma Pa Dha Ni, Sa Ri Ma Pa Dha Ni etc.) and J^5 (Sa R Ga Pa Dh, Sa Ri Ga Pa Dha etc.). There are combined forms for rendition, too, like $J^7 + J^6$ or $J^6 + J^5$ or $J^7 + J^5$ or others. However, these kinds of amalgam are not included in the present study and it is a matter of further study.⁹

After choosing a scale, the focus should be shifted to the nature of *svaras*. The essential clarification of *svaras* (*vādin*, *saṃvādin*, *anuvādin* and *vivādin*) is as explained in the fourth chapter. Needless to say, *vādin*, by default, becomes dominant, and all these come

⁹Also, crooked or curved (*vakra*) kind of rendition is prevalent in the tradition, which is excluded from the present study.

under the purview of ^SCC of RT (^GCC is related to the ‘Execution’ part)

Domination and *Rasa* procedure

An Hypothetical and conventional *svara-rasa* relation, might offer a ground for experiment to investigate the dominance of each *svara*. If we marge the opinions of SP and BB (as SPBB) and correlate them with Tembe’s observation, a significant difference is observed (Table 6.1). However, it is wise to go with Tembe’s suggestions. As an aesthete and eminent musician, he presented detailed explanations for every *svara* from their general tendency towards emotions., Based on these suggestions, I consider the experimental *svara-rasa* connection to be *vīra* or *adbhuta* individually and it should be assumed that they have mutual coexistence and could stay together as Tembe suggested. This coexistence tendency has been explained in the fourth chapter itself. Moreover, as it has been observed in the fifth chapter that *śānta rasa* has a tendency to have a natural connection with music (also consider the two powers of music), *śānta* is connected with all *svaras* (see Table 6.1). In Table 6.1, the present interpretations are placed under HYCO (=hypothetical connections).

After *vādin*, *saṁvādin* is a vital *svara* that directly influences emotions, because the importance of *saṁvādin* is just after the *vādin*. Without identifying *saṁvādin*, a rendition could not proceed.

***Saṁvāda*: A Strong *Rasa* factor**

The logic of identifying *saṁvādin*, as described from NS earlier (chapter 3), is the same in the conventional system. However, in the conventional system, we could find some *saṁvādas* (consonances) which do not satisfy the 9 and 13 *śruti* distances. For instance, Ga and Dha could not make any *saṁvāda* because of their ten *śruti* distance. Nevertheless, this is an essential *saṁvāda* in the present scenario.

<i>Svara</i>	<i>Sj</i>	SPBB	Tembe	HYCO
Sa	<i>Madhyā</i>	all	S A	S A V
R	<i>Madhyā</i>	all	S K S ₂	S K S ₂
Ri	<i>Dīptā</i>	Sr V A	S S ₁ A	S A V S ₁
G	<i>Dīptā</i>	Sr V A	S ₂ K	S K S ₂
Ga	<i>Āyatā</i>	V A	S A V S ₁	S A V S ₁
Ma	<i>Madhyā</i>	all	S V A	S A V
M	<i>Madhyā</i>	all	S ₁ V A	S A V S ₁
Pa	<i>Karuṇā</i>	K	S V A S ₁	S A V S ₁
Dh	<i>Āyatā</i>	V A	K S ₂	S K S ₂
Dha	<i>Dīptā</i>	Sr V A	V S ₁	S A V S ₁
N	<i>Dīptā</i>	Sr V A	S A V K S ₁ S ₂	S A V S ₁ K S ₂
Ni	<i>Āyatā</i>	V A	S ₂ K	S K S ₂

Table 6.1: First Stage Experimental *Svara-Rasa* Connections

Here could be a valid question: if Bharata's rule of fixing *saṃvādins* is not always applicable, does that mean there is a lacuna in that theory? This can be answered with the help of *mūrchanās* on the conventional system.

Let us consider that *Bilāvala* or *Śaṅkarābharaṇa mela* is the standard *mela*, and based on that seven *mūrchanās* from each *svaras* has to be done. As a result, from Ri (*mūrchanās* on Sa is already taken as *Bilāvala*) *Kāphī* (*Kharaharapriyā*) *mela*,¹⁰ from Ga *Bhairavī* (*Hanumattoḍī*) *mela*, from Ma *Kalyāṇa* (*Mechakalyāṇī*) *mela*, from Pa *Khamāja* (*Harikāmbhojī*) *mela*, from Dha *Āsāvārī* (*Naṭabhairavī*) *mela* are found. Interestingly, from Ni the scale of a *rāga*, called *Lalita-Bilāsa*¹¹ is revealed (not any present *mela*) (see Table 6.2).

An exciting picture emerges out from this process if we represent all seven received

¹⁰By saying “from Ri *Kāphī*”—means Ri is considered as the tonic of that received *mūrchanā* and same is with others.

¹¹Information taken from [Ocean of Ragas](https://oceanofragas.com/). <https://oceanofragas.com/>

Śruti No.	Svara Positions	Based on <i>Bilāvala Mūrccchanā</i>						
		<i>Bilāvala</i>	<i>Kāphī</i>	<i>Bhairavī</i>	<i>Kalyāṇa</i>	<i>Khamāja</i>	<i>Āsāvartī</i>	<i>Lalita-Bilāsa</i>
1								
2	Sa	Sa	N	Dh	Pa	Ma	G	R
3								
4	R							
5								
6	Ri	Ri	Sa	N	Dha	Pa	Ma	G
7								
8	G							
9	Ga	Ga	Ri	Sa	Ni	Dha	Pa	Ma
10								
11	Ma	Ma	G	R	Sa	N	Dh	M
12								
13	M							
14								
15	Pa	Pa	Ma	G	Ri	Sa	N	Dh
16								
17	Dh							
18								
19	Dha	Dha	Pa	Ma	Ga	Ri	Sa	N
20								
21	N							
22	Ni	Ni	Dha	Pa	M	Ga	Ri	Sa

Table 6.2: Seven *Bilāvala Mūrccchanās* and *Melas*

mūrccchanās based on Sa (of two *śrutis*) as their tonic note (see Table 6.3). Except for the third and the first *śrutis*, all *śrutis* become revealed. *Svaras* with ‘!’ marks in Table 6.3 are revealed *śrutis* based on the standard positions of *svaras* on SS-22. As the *śruti* positions become changed, the usual information of *saṃvādas* on the standard scale is, undoubtedly, changed—for example, the previous instance of Ga-Dha *saṃvāda*, which was supposed to be understood as an irregular, becomes valid in the fourth *mūrccchanā* or *Kalyāṇa mela*. Here Ga is displaced with an extra *śruti*, and thus the distance between Ga and Dha becomes of 9 *śrutis*, and obviously, they become mutually *saṃvādins* (see Table 6.3). Likewise, there come other new possible *saṃvādas* too. However, though the first and third *śrutis* are not found within these *mūrccchanās*, but could be inferred respectively as (*atitīvra*) Ni and (*atikomala/ekaśruti*)¹² R, as Sa has become fixed now.

¹²These could be identified with the help of SP etc.

Śruti No.	Bilāvala	Kāphī	Bhairavī	Kalyāṇa	Khamāja	Āsāvarī	Lalita-Bilāsa
1							
2	Sa	Sa	Sa	Sa	Sa	Sa	Sa
3							
4			R				R
5		Ri!				Ri!	
6	Ri			Ri	Ri		
7		G!				G!	
8			G				G
9	Ga				Ga		
10				Ga!			
11	Ma	Ma			Ma	Ma	Ma
12			Ma!				
13				M			M
14						Pa!	
15	Pa	Pa	Pa	Pa	Pa		
16						Dh!	
17			Dh				Dh
18		Dha!			Dha!		
19	Dha			Dha			
20		N!			N!	N!	
21			N				N
22	Ni			Ni			

Table 6.3: Śruti values of Melas on Bilāvala Mūrcchanā

In such way, though we could get more possible saṃvādas based on melas, this process can not help totally (discussed in [chapter 4](#)), since *Bhairava* and *Toḍī*, two of the vital melas could not be found in this *mūrcchanā* system. Hence available information of *vādin* and *saṃvādins* are used based on the standard *svara* positions (*Śaṅkarābharaṇa mela*¹³) on

¹³hindusthānīyapaddhatyāṃ śrutikramaviparyayāt |

śaṅkarābharaṇākhyāto melaḥ śuddhaḥ suniścitaḥ ||

... śuddhamelo hi sarvatra ṣaḍjagrāma itīritaḥ |

śaṅkarābharaṇastasmāt ṣaḍjagrāmatvam arhati ||

Bhatkhande, 1910: LS, 6, 9, p. 11

conventional SS-22.

To identify possible *saṃvādin*s of *vādin svaras* and to generate possible scales with *saṃvādas* a computational interface is created. This is termed as ‘*Samvāda-Jāti Generator*’ or SAJĀG.¹⁴ Mr. Sanal Vikram, a research scholar in the Department of Sanskrit Studies, University of Hyderabad, rendered a great help to create the algorithm and design of this interface.

In the next section, descriptions about *saṃvādas* are elaborated while illustrating the SAJĀG.

The *Samvāda-Jāti* Generator [SAJĀG]

On the standard *svara* position on the SS-2, i.e., 9 and 13 *śruti* distances as standard to identify the possible *saṃvādas*, there is a total number of 20 *saṃvādas*. Besides that, in the tradition, there are Ga-Dha-like *saṃvādas* which are also included to get a much bigger picture of *saṃvādas*. Though it has been identified that those *saṃvādas* are based on a different aspect and do not violate the basic rule (in some cases), they could be tagged as exceptions or *apavādas*.

In [Appendix A](#), the algorithm of SAJĀG is placed.¹⁵ It fundamentally generates *saṃvādajātis* along with suggests *rāgas* which also have the same *saṃvāda*. This information is available in the Hindusthani context.

In the algorithm, at first, *svara* values (sv_map) based on *śrutisthānas* are mentioned (lines 7-19). From a *vādin*, *svaras* situated on 9 and 13 *śruti* distances become *saṃvādin*s— is the general rule (defined in line 48). On the contrary, other distances found in the present scenario are also included (lines 21-31). The *apavādas* in *śruti* distances are 7, 8, 10, 11, 12, 14 and 15. Some exclusive *saṃvādas*, for example, are — Ma-N, Dha-G, Dha-Ga,

¹⁴*Samvāda-Jāti* is a compound word means *saṃvādaḥ yasyāṃ jātau sā jātiḥ* — the scale where a consonance exists=consonance scale.

¹⁵See the interface with this link: <https://sanskrit.uohyd.ac.in/research/sajag.html>

Ga-N, P-R, Dha-R etc. They are a total of 18 in number. Except Sa and M, all others have their *apavāda saṁvādins*. This *apavāda* calculation, along with the general rule, is mentioned in the algorithm (lines 50-51).

With the information of possible *saṁvādas* of a *vādin*, SAJĀG generates a *svara* cluster of J^7 at first. Permutation policy is applied To generate such cluster (combination will destroy the *svara* sequence).

In the algorithm, before generating J^7 , some instruction is given. It is mentioned (lines 69-70) that Sa, *vādin* (vad), and *saṁvādin* (samvad) are fixed (fixed_svaras). Along with those three, in the algorithm, Pa (though it has no alternative) is also taken because of the lucidity to make the machine understand. In lines 72-75, the permutation instructions are given. In permutation, the alternative of possible *svaras* are mentioned (line 73). According to that, the machine will drop the last alphabets from the given *svaras* (svara) (line 72). This way, it will generate possible J^7 clusters (lines 105-112).

By getting all possible J^7 clusters, J^6 and J^5 possibilities have to be generated. Sa, *vādin*, and *saṁvādin* are permanently fixed in both cases (line 114). To generate J^6 , continuous exclusion of one by one *svara* from a J^7 cluster will form possible J^6 clusters (lines 116-125). In the case of J^5 , two *svaras* will be excluded, and others are the same (lines 127-138).

Till now, the process to generate possible *saṁvādayātis* of a *vādin* (x) has been mentioned. In addition to these, matches of traditional *rāgas* are also included.

Mentioned ‘hdata’ and ‘cdata’ are those CSV files from which the algorithm extracts the *rāga* information. Hindusthani *rāgas* are collected with the *vādi-saṁvadi*-information from Mr. Sudhir Gadre, the author of the celebrated website of Hindusthani music—‘Ocean of Ragas’. Unfortunately, the present researcher could not collect the same information of Carnatic music, which is a limitation. However, only suggestions of Carnatic *rāgas*, which have the same scales as *saṁvādayātis* have, are mentioned (lines 155-166).

In the case of Hindusthani *rāgas*, the match of scales *saṁvāda* match also happened (lines 143-152). For example, there is a *saṁvādajāti* — ‘Sa R Ga Ma Pa Dh N’ where R and Dh are *vādin* and *saṁvādin*, respectively. The algorithm will search the same *svara* cluster in ‘hdata’, which also bears the exact information of *vādin* and *saṁvādin* (here, R & Dh). If a match is found, it will be printed. In this case, there is a match with *rāga Kauśika Kalingarā*.

This matching option is presented to find similar *rāga* information in the tradition, which will help this research in future regarding *rasa* identifications of *rāgas*.

It is apt to mention in this context that there are strong *rasasaṁvādas* in various *saṁvādas*. Here, *rasasaṁvāda* means correlation of *rasa* connections of *vādin* and *saṁvādin* (see Figure 6.1). In number, *rasasaṁvādas* are as equal to *svarasaṁvādas*, but strong *rasasaṁvādas* are few, e.g., Sa:Ma::SAV:SAV. Sa and Ma both are related to *śānta*, *adbhuta* and *vīra*, and so this Sa-Ma *saṁvāda* further makes a strong *rasasaṁvāda*. It is a hypothesis that *rasasaṁvāda* could evoke more specific *rasas* than others. There is a total of 14 *rasasaṁvādas* (see Figure 6.1). It is also interesting to identify that except Ga-Dha (also Dha-Ga) and Ga-N (N-Ga) all other strong *rasasaṁvādas* are with traditional *svarasaṁvādas*, not with *apavādas* (see Figure 6.1).

6.2.3 Execution

This third step is dependent on a well-versed sensible musician. The researcher or therapist’s responsibility is to explain the rendering method explicitly to a musician since it is the basis of rendition. If there is a communication gap, one should not blame the musician for an unexpected result. As the tool of this very therapy is very much dependent on the executed music, all effort should be taken to achieve the best results. It should be noted that choosing an instrument of execution comes under ^FDF.

	$v : \xi$	$r : r$	
1 1	Sa : Ma	SAV : SAV	1
2 2	Sa : Pa	SAV : SAVS ₁	
3 1	R : M	SKS ₂ : SS ₁ AV	
4 2	R : Pa	SKS ₂ : SAVS ₁	
5 3	R : Dh	SKS ₂ : SKS ₂	2
6 4	R : Dha	SKS ₂ : SAVS ₁	
7 1	Ri : Pa	SAVS ₁ : SAVS ₁	3
8 2	Ri : Dh	SAVS ₁ : SKS ₂	
9 3	Ri : Dha	SAVS ₁ : SAVS ₁	4
10 1	G : Dh	SKS ₂ : SKS ₂	5
11 2	G : Dha	SKS ₂ : SAVS ₁	
12 3	G : N	SKS ₂ : SAVS ₁ KS ₂	
13 4	G : Ni	SKS ₂ : SKS ₂	6
14 1	Ga : Dh	SAVS ₁ : SKS ₂	
15 2	Ga : Dha	SAVS ₁ : SAVS ₁	7
16 3	Ga : N	SAVS ₁ : SAVS ₁ KS ₂	
17 4	Ga : Ni	SAVS ₁ : SKS ₂	
18 1	Ma : N	SAV : SAVS ₁ KS ₂	
19 2	Ma : Sa	SAV : SAV	8
20 1	M : Ni	SAVS ₁ : SKS ₂	
21 2	M : R	SAVS ₁ : SKS ₂	
22 1	Pa : Sa	SAVS ₁ : SAV	
23 2	Pa : R	SAVS ₁ : SKS ₂	
24 3	Pa : Ri	SAVS ₁ : SAVS ₁	9
25 1	Dh : R	SKS ₂ : SKS ₂	10
26 2	Dh : Ri	SKS ₂ : SAVS ₁	
27 3	Dh : G	SKS ₂ : SKS ₂	11
28 4	Dh : Ga	SKS ₂ : SAVS ₁	
29 1	Dha : R	SAVS ₁ : SKS ₂	
30 2	Dha : Ri	SAVS ₁ : SAVS ₁	12
31 3	Dha : G	SAVS ₁ : SKS ₂	
32 4	Dha : Ga	SAVS ₁ : SAVS ₁	13
33 1	N : G	SAVS ₁ KS ₂ : SKS ₂	
34 2	N : Ga	SAVS ₁ KS ₂ : SAVS ₁	
35 3	N : Ma	SAVS ₁ KS ₂ : SAV	
36 1	Ni : G	SKS ₂ : SKS ₂	14
37 2	Ni : Ga	SKS ₂ : SAVS ₁	
38 3	Ni : M	SKS ₂ : SAVS ₁	

Figure 6.1: All *saṃvādas*, *rasa-saṃvādas*, and strong *rasa-saṃvādas*

Method of Rendition

The rendition method is to put the ^SCC into ^GCC, means how a musician should handle all elements of execution. That is the exact method or the way of execution.

An overview of the method of ancient *Jātis* was discussed in the fourth chapter, which is fundamentally adopted to execute the *saṁvādayātis*. According to the ancient *Jāti* rendition method, the *vādin svara* is accepted as the resting and starting *svara*. Further, importance should be given to the *saṁvādin svara* of that particular *saṁvādayāti*. An illustration would clarify this aspect in a better way.

Let us consider Sa Ri Ga Ma Pa Dha Ni is the *saṁvādayāti* for execution with Sa as *vādin* and Ma as *saṁvādin*. According to the ancient method of *Jāti* rendering, Sa should be the starting and resting *svara*, and thus it becomes the most dominant note of a *saṁvādayāti* rendition. Ma as *saṁvādin*, its frequency of appearance should be next after Sa. According to the convention SS-22, Ga-Ma and Sa-Ni are mutually *vivādins*. Since Ma and Sa are the most vital *svaras* here, they can not be suppressed. Therefore, in the absence of any alternative, when Ga and Ni try to appear with Ma and Sa, they should appear in a very minute way. Other *svaras*, Ri, Pa and Dha, should always help Sa and Ma throughout a rendition.

From the *rasa-saṁvāda* perspective, this *saṁvādayāti* has a very strong *rasa-saṁvāda* with *śānta*, *adbhuta* and *vīra* (see Figure 6.1). Sa, the dominant *svara* located in the ^vM KS, can express especially *śānta* and *adbhuta rasas*. Ma, having its location in the ^dM part, should be carefully manifested.

From the *laya* perspective, *vilambita* or *madhya* could be suitable for *rasa-saṁvāda*. However, as the form is *ālāpa*, *laya* is assumed by default.

However, movements with *gamakas* and others are vital parts in rendition, but in this present research, they could not be explored more. Therefore, these parts of ^GCC are suggested for the next level of research.

6.2.4 Effect

The effect of designed rendition comes under ^sDF. This effect should be dependent on psychosomatic humours and respective disorders. Figure 6.2 is created from the description of the AH,¹⁶ would help better to understand the same.

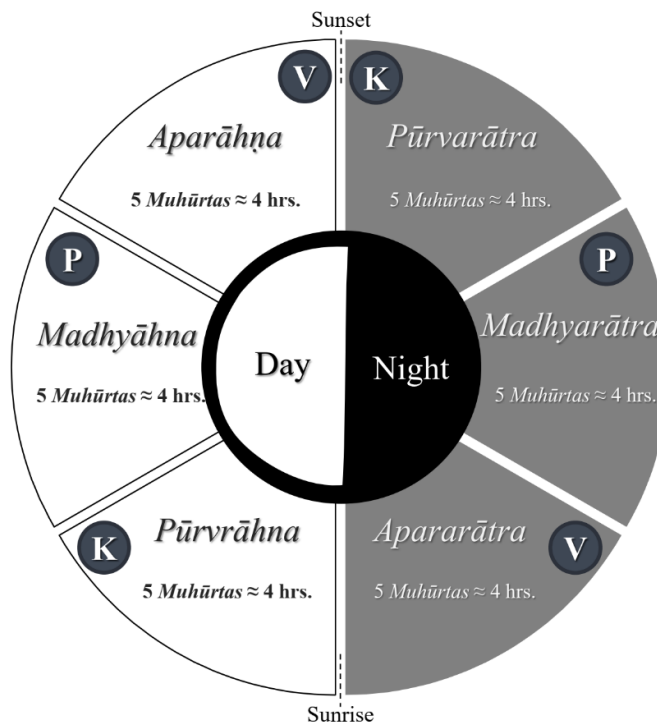


Figure 6.2: Time of Predominant Humour in Nature

In Care

This effect part is connected with care and cure protocol. Effect of music should be considered at the time when a particular humour is predominant in the subject of care. However, this could be risked sometimes because this may transfer that humour of the subject into *doṣa*. Therefore, according to *Uttaramandrā-gāthā*, application of music is conducted at the time, which has the predominance of the contradictory humour of the subject. It

¹⁶See AH, 1.1.8_{ab} and its *Āyurveda-rasāyana* commentary of Hemādri

suggests that prevention is a crucial key in the care procedure.

In Cure

In the cure procedure, the opposite *doṣa* should be increased to subdue the aggravated one. Therefore, the effect of music brings a satisfactory result at the predominant time of suppressed humour.

6.3 Summary

Though instead of ${}_kS^m$ Aśvamedhic *Uttaramandā-gāthā* was ${}_kS^{m+h}$, that did not harm the concept of the FVMT model. The only purpose of considering ${}_kS^m$ is to investigate without amalgam. ${}_kS^{m+h}$ type of sound could well form topic of research if the idea of ${}_kS^m$ reaches a satisfactory level.

By now, it is clear that the *svara-rasa* connection discussed in this chapter explained the ‘composition’ part of the creative model, which is totally experimental in nature. There is a scope of further research to validate the proposed connection.

This chapter explained how a holistic therapeutic model based on music traditional knowledge could be designed. The Vedic context from YV *Brāhmaṇas* gave an impetus to the designed FVMT model. Entire references are considered from Aśvamedhic *Uttaramandā-gāthā* with suitable modification that satisfies the present context.

Practical significance of the explanation of RT regarding music, which would further help the composition and execution part of the FVMT model is discussed in the next chapter.

7

Understanding *Rasa*: A Pilot Survey

In the previous chapters, a theoretical background has been created to understand the concept of *rasa* that helps to regulate a rendition based on desirable *rasa*. The propriety of *Rasa-sūtra* is inquired here. Adequately, one cannot state that such and such *svara* will express such and such *rasa* as *rasa* relation is not in one (*svara*) to one (*rasa*) manner. Furthermore, some *rasas* like *adbhuta* and *vīra* are also interdependent.

Among the components of *Rasa-Sūtra*, which is more substantial than others in *rasa* evocation, is another vital research question.

It has been informed that evidence of *rasa* evocation out of suitable music is enough in case of aesthetes' perception, but as the goal of this *rasa* centric approach is for better

<i>Samvādayāti</i>	<i>Jāti</i>	<i>Vādin</i>	<i>Samvādin</i>	<i>Vivādin(s)</i>	<i>Rasa-samvāda</i>
Sa Ri Ga Ma Pa Dha Ni	J^7	Sa	Ma	Ga, Ni	SAV : SAV
Sa R Ga Ma Pa Dh Ni	J^7	R	Dh	Pa	SKS2 : SKS2
Sa Ri Ma Pa Dha Ni	J^6	Pa	Ri	Ni	SAVS1 : SAVS1
Sa Ri G Pa Dha N	J^6	G	N	Ri, Dha	SKS2 : SAVS1KS2
Sa R M Dha Ni	J^5	M	R	Sa	SAVS1 : SKS2

Table 7.1: Selected *Samvādayātis* for Execution

therapeutic usage, mass responses are sought. Therefore, a survey method is adopted on how masses would respond to the music, executed based on the previously proposed theories. An online survey is conducted during the intermittent COVID-19 pandemic. Due to the paucity of time and limitations, practical part to collate responses from the *samvādayātigīta* or consonance scale music (COSMIC) could not be done in a large volume. Though it was pilot-type survey, the results found are significant from various aspects. This helped us to install confidence in the theoretical explanations about musical RT and paved way for further exploration of the *samvādayātis* creatively.

7.1 Materials of Survey

7.1.1 Five Stimuli

Musical stimulus has to be evaluated considering the experienced emotions as part of the survey. Five *samvādayātis* were selected for rendition (see Table 7.1) in this survey. Among them, the first three *samvādayātis* have their own strong *rasasamvāda*. The last two could express all most all of *rasas*.

In chapter 3, it was explained that *śānta* is the *prakṛti* of all *rasas*. Therefore, our primary focus is on *śānta rasa*. Also, *śānta* is generally an ideal *rasa* for therapeutic purpose to calm down and make a subject pleasant. Earlier, it was also observed that

almost all instances from major Ayurvedic texts spoke about music that is soothing for the auditory organ and brings peace to the soul. Therefore, *śānta* has enough reasons to be the primary focus of the investigation.

Rudra Vīṇā is a profound and pleasant instrument. Hence, to regulate ^FDF regarding *śānta rasa*, *Rudra Vīṇā* is chosen.

Considering the five *saṃvādayātis*, present researcher approached Sri Sayak Mitra, a young *Rudra Vīṇā* player from Kolkata, to execute the same as *saṃvādayātigītas* or COSMICs. The researcher explained the basics of the rendition (^SCC) method to Sri Mitra. As of now, *rasa* relation with *gamaka* and other ^GCC are not fixed. Sri Mitra has been asked to explore *saṃvādayātis* from his traditional knowledge background for execution that helps for *rasasaṃvādas*. However, *Rudra Vīṇā* does not reach much to the upper septet, which helps to render in the *madhya* and *mandra* septet. This fulfils the ^GCC condition related to KSs regarding *śānta*. Needless to say, the form of rendition is in *ālāpa* mode and satisfies the *laya* ^GCC related to *śānta*. Contrary to the former, only the latter part of third COSMIC has a *joṛ* to understand if that has a special impression. However, it did not disturb the purpose of investigation as the *joṛ* is in *madhya laya*.

Noticeably, the *Rudra Vīṇā* and *Tānpurā* used for execution are unique in their form (see Figure 7.1). The *Tānpurā* is made only to accompany *Rudra Vīṇā*. The *Rudra Vīṇā* is made of bamboo material. This kind of *Rudra Vīṇā* is not available now and perhaps refers to a historical one and a few eminent craftsmen in India could create such *Vīṇā*, being an excellent artefact.

7.1.2 The Questionnaire

Earlier (chapter 4), it was discussed that ^{PR}CC and TE components of *rasa* have to be received from listeners. Hence, four musical ^{PR}CCs and sixteen (as the second TE, i.e., *glāni* was divided into two) TEs were selected as the basis of the questionnaire, wherein

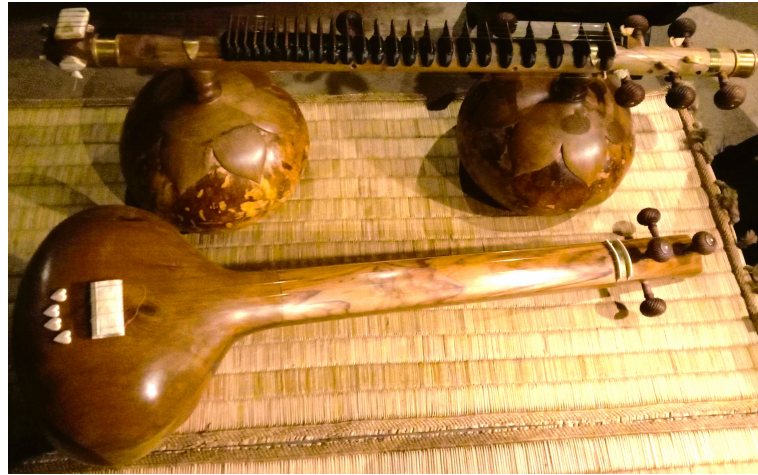


Figure 7.1: *Tānpurā* and *Rudra Vīṇa* used for Execution

a total of twenty questions were framed (see [Appendix B](#)).

7.2 Survey Procedure

This study has been conducted online by taking a paid subscription to the ‘[Testable](#)’ (<https://www.testable.org/>). To create a project, one must follow the procedure logically according to their manual in a CSV file. We conducted the survey over the internet based on that file uploaded to the Testable interface. A survey link (<http://tstbl.co/789-514>)¹ was created for wide circulation. Since the survey was conducted during the pandemic, ^SDF could not be regulated. However, proper instructions were given to the participants:

- Use good headphones/earphones.
- We request you to take care to see that you are in privacy where no disturbances intervene while you listen the clips with a composed and focused mind.

Duration of five music clips is five minutes on an average. One has to listen to full music clip, based on that experience, one should fill in the questionnaire. Later, one can

¹Link is offline as survey is over.

Note: 0 = No; 1 = Poor; 2 = Average; 3 = Good; 4 = Better; 5 = Excellent. You may choose any given option according to the nuance of your experience/emotion. E.g., 1.5 out of 5 point scale means the emotion has a flow toward the average mark i.e., 2.

Figure 7.2: Scale of Emotional Response and Meaning from a Testable Screen

go to the next music clip and so on.² Every participant should listen to each music clip one by one and respond to the questionnaire mentioning experience consecutively. 45 minutes was the estimated time to complete whole survey. It was also instructed that after listening to one music and answering questions, one take a a little break before going to other sets.

A ten-level scale ranging 0-5 (0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5; see Figure 7.2) has been set to get individual responses out of each emotion (^{PE}CC and TE). Here, 0 stands for ‘No’, it means that an individual did not strike a particular emotion. ‘Poor’, ‘Average’, ‘Good’, ‘Better’ and ‘Excellent’ are attributed for 1, 2, 3, 4 and 5, respectively. For instance, if one marks 2.5 for a particular emotion, it means the flow of that emotion experienced is leaning towards ‘Good.’

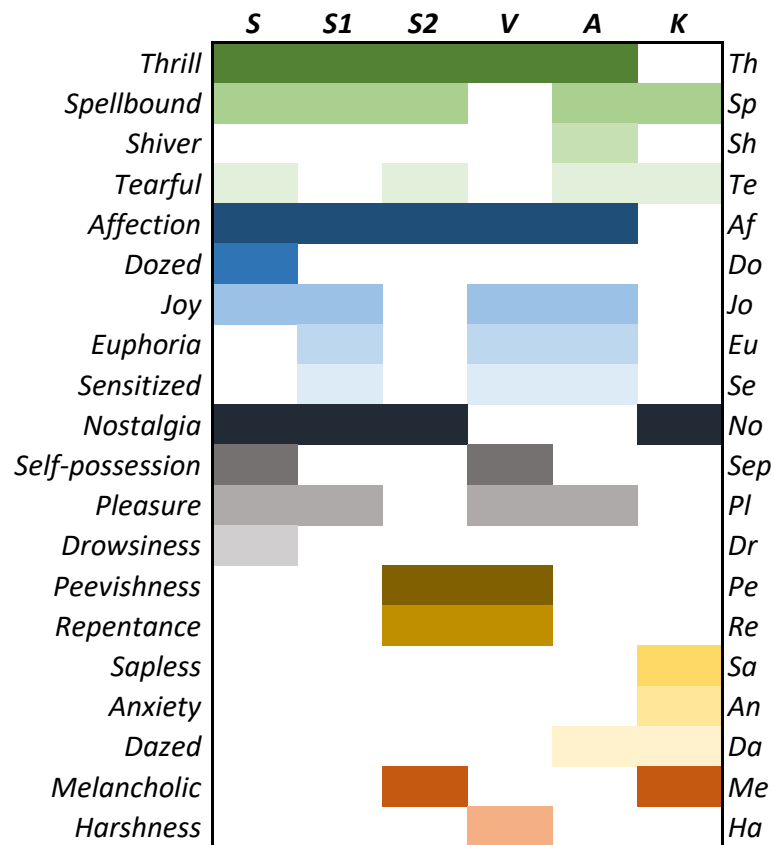
7.3 The Logic of Understanding *Rasa*

It was a challenge to identify which *rasa* is experienced by an individual. This problem is handled with the *rasa* relation of ^{PE}CC and TE.

7.3.1 A *Rasa*-Matrix

^{PE}CCs and TEs are quite helpful in identifying particular *rasas*, as *rasas* depend on them. It means a *rasa* cannot be an independent variable that could relate more than one *rasa* with a single *svara*. Considering RT, each ^{PE}CC and TE is related with a particular *rasa* that helped to formulate a *Rasa*-Matrix (=RM) to understand the relationship between *rasa*

²Link of all five COSMICs: https://drive.google.com/drive/folders/19KYb_gkB9PwbISe6OD-GPpOsTH5EdRJW?usp=sharing

Figure 7.3: Basic *Rasa*-Matrix

and emotions (see Figure 7.3). Emotions like ‘Discontent’ (*ālasya*) and ‘Panicky’ (*trāsa*) were excluded as they have no contextual *rasa* relation.

On the right column of Figure 7.3, Th, Sp etc., correspond with emotions placed on the left column. For example, ${}^{\text{PE}}\text{CC}_{\text{Th}}$ will sense thrill, which is one of ${}^{\text{PE}}\text{CC}$, and so with TE_{Sep} and others.

7.3.2 The *Rasa*-Equation

The basic RM is transformed into a value-based RM to understand which *rasa* is experienced by an individual (see Figure 7.4).

In Figure 7.4, X stands for the values given by a participant. In X_{ab} , a =row, means

	S	S₁	S₂	V	A	K	
<i>Thrill</i>	X ₁₁	X ₁₂	X ₁₃	X ₁₄	X ₁₅	0	<i>Th</i>
<i>Spellbound</i>	X ₂₁	X ₂₂	X ₂₃	0	X ₂₅	X ₂₆	<i>Sp</i>
<i>Shiver</i>	0	0	0	0	X ₃₅	0	<i>Sh</i>
<i>Tearful</i>	X ₄₁	0	X ₄₃	0	X ₄₅	X ₄₆	<i>Te</i>
<i>Affection</i>	X ₅₁	X ₅₂	X ₅₃	X ₅₄	X ₅₅	0	<i>Af</i>
<i>Dozed</i>	X ₆₁	0	0	0	0	0	<i>Do</i>
<i>Joy</i>	X ₇₁	X ₇₂	0	X ₇₄	X ₇₅	0	<i>Jo</i>
<i>Euphoria</i>	0	X ₈₂	0	X ₈₄	X ₈₅	0	<i>Eu</i>
<i>Sensitized</i>	0	X ₉₂	0	X ₉₄	X ₉₅	0	<i>Se</i>
<i>Nostalgia</i>	X ₁₀₁	X ₁₀₂	X ₁₀₃	0	0	X ₁₀₆	<i>No</i>
<i>Self-possession</i>	X ₁₁₁	0	0	X ₁₁₄	0	0	<i>Sep</i>
<i>Pleasure</i>	X ₁₂₁	X ₁₂₂	0	X ₁₂₄	X ₁₂₅	0	<i>Pl</i>
<i>Drowsiness</i>	X ₁₃₁	0	0	0	0	0	<i>Dr</i>
<i>Peevishness</i>	0	0	X ₁₄₃	X ₁₄₄	0	0	<i>Pe</i>
<i>Repentance</i>	0	0	X ₁₅₃	X ₁₅₄	0	0	<i>Re</i>
<i>Sapless</i>	0	0	0	0	0	X ₁₆₆	<i>Sa</i>
<i>Anxiety</i>	0	0	0	0	0	X ₁₇₆	<i>An</i>
<i>Dazed</i>	0	0	0	0	X ₁₈₅	X ₁₈₆	<i>Da</i>
<i>Melancholic</i>	0	0	X ₁₉₃	0	0	X ₁₉₆	<i>Me</i>
<i>Harshness</i>	0	0	0	X ₂₀₄	0	0	<i>Ha</i>

Figure 7.4: Value-Based *Rasa*-Matrix

emotions, and b =column means *rasas*. Here the maximum value of a and b has to be 20 and 6, respectively. Therefore, X_{114} means the value of the eleventh row of the fourth column, which further means that the value of $TE_{sep}=X$ denoting $vīra$. For instance, when one marks 5 to TE_{pi} , 5 is registered as 5_{121} , 5_{122} , 5_{124} and 5_{125} . It means 5 is marked to *śānta*, *sambhoga śṛṅgāra*, *adbhuta* and *vīra*.

One has to mark according to the scale which will be registered in this RM, and an equation formula is drawn to denote the *Rasa*-Values (=RV):

$$R = \sum_{r=j}^e X_{ej} \quad (7.1)$$

In this *Rasa*-Equation (=RE), R stands for anticipated *rasa* or the RV that is going to be known, e is equal to the row number, which is 20, it would differ in other cases if other emotions and *rasas* are to be evaluated. The j is equal to a whole column with a particular *rasa*, and r =expected *rasa* to know the RV.

For example:

$$r = śānta \ \& \ r = j \\ \therefore j = 1 \ \& \ R = S$$

$$\therefore S = \sum_{j=1}^{e=20} X_{ej} \quad (7.2)$$

So is with other *rasas*, for instance if *adbhuta* RV is needed, the equation should be written like:

$$A = \sum_{j=5}^{e=20} X_{ej} \quad (7.3)$$

For example, a participant marked all emotions like this:

$${}^{\text{PE}}\text{CC}_{\text{Th}}=5, {}^{\text{PE}}\text{CC}_{\text{Sp}}=5, {}^{\text{PE}}\text{CC}_{\text{Sh}}=3, {}^{\text{PE}}\text{CC}_{\text{Te}}=3, \text{TE}_{\text{Af}}=4, \text{TE}_{\text{Do}}=4, \text{TE}_{\text{Jo}}=4.5, \text{TE}_{\text{Eu}}=4, \\ \text{TE}_{\text{Se}}=4.5, \text{TE}_{\text{No}}=4.5, \text{TE}_{\text{Sep}}=5, \text{TE}_{\text{Pl}}=5, \text{TE}_{\text{Dr}}=3, \text{TE}_{\text{Pe}}=0, \text{TE}_{\text{Re}}=0, \text{TE}_{\text{Sa}}=0, \text{TE}_{\text{An}}=1, \\ \text{TE}_{\text{Da}}=2, \text{TE}_{\text{Me}}=3.5, \text{TE}_{\text{Ha}}=0$$

The above information has to be registered into the RM. Applying the RE with these values, the RV of six *rasas* must be— $S=43$, $S_1=36.5$, $S_2=25$, $V=32$, $A=40$ and $K=19$. Among these, the maximum point is given for *śānta*, which means the individual's experienced *rasa* is *śānta*.

7.4 Survey Results

People ($n=50$, 70% male, 28% female, 2% did not want to reveal their gender) of different age groups (18 to 60 above) from several places of India participated in this international survey. Among them, two were from Bangladesh. Most of the participants were doing their master's or doctorate (52%) and others were with a bachelor's degree (32%), college or technical school (10%), high school or equivalent stages (6%). Based on the age groups, it is observed that people between 18-34 (64%) were mostly participated in this survey (4% in 35-44, 22% in 45-54, 4% in 55-64, and 6% in 64 above).

7.4.1 Reliability of the Questionnaire and Scale

Applying Cronbach's alpha formula, it is evident that the questionnaire is highly reliable for all COSMICs. Given below is Cronbach's alpha formula:

$$\alpha = \frac{K}{K-1} \left(1 - \frac{\sum_{i=1}^K \sigma_{Y_i}^2}{\sigma_x^2} \right) \quad (7.4)$$

Here,

$$K = \text{items}^{\text{no.of questions}} = 20 \text{ (in all cases)}$$

$\sum_{i=1}^K \sigma_{Y_i}^2$ is the sum of all item (question against emotions) variances

σ_x^2 = variance of the sum of subjects' responses

Therefore, in the first music,

$$\sum_{i=1}^K \sigma_{Y_i}^2 = 44.5916$$

$$\sigma_x^2 = 291.798$$

$$\therefore \alpha = \frac{20}{20-1} \left(1 - \frac{44.5916}{291.798} \right) = 0.89177 = 0.89 \quad (7.5)$$

In the second music,

$$\sum_{i=1}^K \sigma_{Y_i}^2 = 51.6982$$

$$\sigma_x^2 = 292.9076$$

$$\therefore \alpha = \frac{20}{20-1} \left(1 - \frac{51.6982}{292.9076} \right) = 0.866842 = 0.86 \quad (7.6)$$

In the third music,

$$\sum_{i=1}^K \sigma_{Y_i}^2 = 40.0683$$

$$\sigma_x^2 = 244.242$$

$$\therefore \alpha = \frac{20}{20-1} \left(1 - \frac{40.0683}{244.242} \right) = 0.87995 = 0.88 \quad (7.7)$$

In the fourth music,

$$\sum_{i=1}^K \sigma_{Y_i}^2 = 45.8233$$

$$\sigma_x^2 = 294.5761$$

$$\therefore \alpha = \frac{20}{20-1} \left(1 - \frac{45.8233}{294.5761} \right) = 0.888888 = 0.89 \quad (7.8)$$

And in the fifth music,

$$\sum_{i=1}^K \sigma_{Y_i}^2 = 51.5393$$

$$\sigma_x^2 = 337.7509$$

$$\therefore \alpha = \frac{20}{20-1} \left(1 - \frac{51.5393}{337.7509} \right) = 0.892005 = 0.89 \quad (7.9)$$

All alpha values are between 0.86-0.89, which means that the questionnaire against the measurement scale is significantly reliable and could be used for further data collection regarding emotional responses out of $_k S^m$.

7.4.2 Significance of Data

By applying one-factor ANOVA for each COSMIC, data of responses are highly significant in all five ($p < .001$) (see [Table 7.2](#)). Notably, the ‘Analysis ToolPak’ add-in of excel is used to generate ANOVA and other statistical analyses. Also the effect size (η^2) is large (0.164-0.251) in all cases (see [Table 7.2](#)).

According to RE, the relish of *śānta rasa* is always predominant than any other (see [Table 7.3](#)) *rasa*. In [Table 7.3](#), the null responses are recorded and more than one *rasa* is observed according to RE. Though there is a possibility of relishing more than one *rasa*, there should be a predominant *rasa* in principle. For instance, there is a possibility of many *rasas* in *Rāmāyaṇa*, but the predominant *rasa* is *karuṇa*, similarly in *Mahābhārata* etc. In the present context, one cannot say that the music cannot rest in a single *rasa* as the results show the significance of *rasa* evocation. In the null *rasa* contexts, there must be a reason based on ^SCC etc., hence, the experiences became null. Out of 250 responses (50 responses for each of five COSMIC), 210 are *rasa* evocative responses and 40 are null.

Rasa appearances (including null) are found highly significant ($p < .001$) by applying single factor ANOVA (see [Table 7.4](#)).

COSMIC	Source of Variation	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>-value	η^2
1st	Between Groups	49	14.888	5.384	<.001**	0.177
	Within Groups	950	2.765			
	Total	999				
2nd	Between Groups	49	14.944	6.187	<.001**	0.203
	Within Groups	950	2.415			
	Total	999				
3rd	Between Groups	49	12.461	5.013	<.001**	0.164
	Within Groups	950	2.486			
	Total	999				
4th	Between Groups	49	15.029	7.257	<.001**	0.235
	Within Groups	950	2.071			
	Total	999				
5th	Between Groups	49	17.232	7.849	<.001**	0.251
	Within Groups	950	2.195			
	Total	999				

Table 7.2: Single factor ANOVA tables of responses to five COSMICs

	S (%)	S ₁ (%)	S ₂ (%)	V (%)	A (%)	K (%)	Null (%)
1 st	24 (48)	0	0	8 (16)	9 (18)	2 (4)	7 (14)
2 nd	25 (50)	2 (4)	4 (8)	3 (6)	6 (12)	3 (6)	7 (14)
3 rd	18 (36)	6 (12)	1 (2)	10 (20)	8 (16)	0	7 (14)
4 th	25 (50)	2 (4)	1 (2)	5 (10)	3 (6)	3 (6)	11 (22)
5 th	25 (50)	1 (2)	2 (4)	9 (18)	3 (6)	2 (4)	8 (16)
Mean	23.4	2.2	1.6	7	5.8	2	8

Table 7.3: Number of *rasa* experiences out of each tune

Source of Variation	df	MS	F	p-value	Effect size
Between Groups	6	290.381	54.204	< .001**	0.901
Within Groups	28	5.357			
Total	34				

Table 7.4: Single factor ANOVA result of *rasa* experiences

7.4.3 *Śānta* as the Predominant *Rasa*

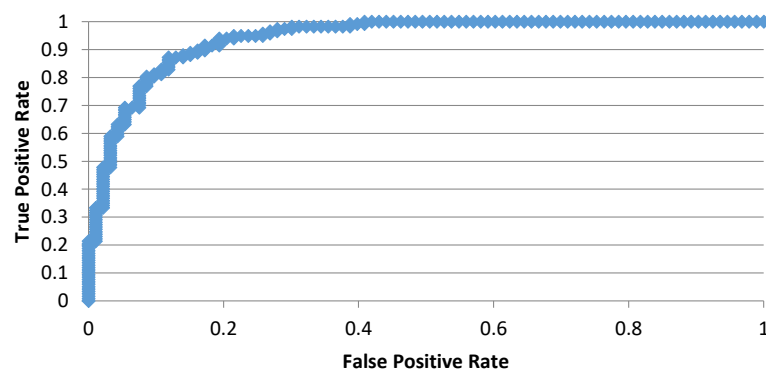
From Table 7.3, it can be noticed that in all cases, *śānta* was the predominant *rasa*. Therefore, the statistical significance of *śānta*'s manifestation is indeed a matter of interest which could be accomplished with the help of the logistic regression against *śānta*. It is found that the result is promisingly significant, and the accuracy of the evocation of *śānta* is high ($p < .001$, AUC=0.94 see Appendix D) (see Table 7.5 & Table 7.6; Figure 7.5).

Chi-Sq	157.0592
df	6
p-value	< .001**
alpha	0.05
sig	yes

Table 7.5: Significance of *Śānta*

	Suc-Obs	Fail-Obs	
Suc-Pred	103	13	116
Fail-Pred	14	80	94
	117	93	210
Accuracy	0.880342	0.860215	0.871429
Cutoff	0.5		

Table 7.6: Classification Table of Logistic Regression

Figure 7.5: ROC curve against *śānta*

	<i>coeff b</i>	<i>p-value</i>	<i>exp(b)</i>	<i>lower</i>	<i>upper</i>
Intercept	-1.115	0.038*	0.328		
S	0.985	< .001**	2.679	1.986	3.614
S ₁	-0.245	> 0.079	0.782	0.595	1.029
S ₂	0.135	> 0.262	1.144	0.904	1.447
V	-0.326	0.001*	0.722	0.593	0.879
A	-0.409	0.004*	0.664	0.503	0.876
K	-0.265	0.011*	0.767	0.625	0.942

Table 7.7: Significance of each *rasa*

However, other *rasas* also have their significance (*śṛṅgāras*) in appearance (see [Table 7.7](#)) which will be discussed in the next section in detail.

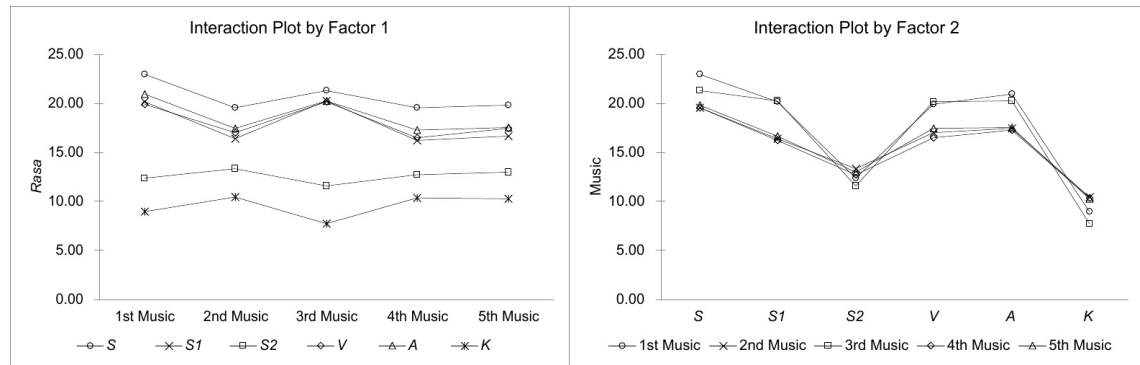
7.5 Critical Observations

From all the above critically important data, unequivocally *śānta* is the predominant *rasa* among the tunes. Theoretically, the five *saṁvādayātis* have some specific *rasasaṁvāda* as it is presented in [Table 7.1](#). Accordingly, the first COSMIC expressed *śānta*, *vīra* and *adbhuta* *rasas* which is evident from the result of the survey. However, there are responses towards *karuṇa* that has bears significantly less significance ([Table 7.3](#)).

Rendition of second *saṁvādayāti* can express *śānta*, *vipralambha śṛṅgāra* and *karuṇa* (see [Table 7.1](#)). Though maximum responses to *vipralambha śṛṅgāra* are seen than any other music, *adbhuta* responses are beyond those responses (see [Table 7.3](#)). There were also responses to *karuṇa* due to its deep rooted connection with *vipralambha śṛṅgāra*.

The third *saṁvādayāti* has *rasasaṁvāda* of *śānta*, *vīra*, *adbhuta* and *sambhoga śṛṅgāra*. Interestingly, compare to the other COSMICs in this third COSMIC *sambhoga śṛṅgāra* has its maximum. Also, *vīra* and *adbhuta* appeared fairly (see [Table 7.3](#)). It is a mat-

Source of Variation	df	MS	F	p-value	Effect size
COSMIC	4	253.688	2.504	0.041*	0.006
<i>Rasa</i>	5	4505.707	44.469	< .001**	0.129
Interaction	20	93.416	0.922	0.559	0.011
Within	1470	101.322			0.854
Total	1499				

Table 7.8: Two factor ANOVA table with *rasa* responses and five COSMICsFigure 7.6: Average *rasa* outcomes

ter of satisfaction that *vipralambha śṛṅgāra* and *karuṇa* have no significance in this tune (Table 7.3).

The above discussed three *saṃvādayātis* have bold *rasasaṃvādas*, whereas the last two *saṃvādayātis* could express almost all *rasas*. Nevertheless, the maximum manifestation of *vīra* and *adbhuta* than *karuṇa* and *śṛṅgāra* is a matter of fact. From Table 7.7, it is evident that *rasa* manifestation regarding *śṛṅgāra* is not significant as they got the greater *p*-values, but *karuṇa* has a significant value which speaks about its minor manifestation. *Vīra* and *adbhuta* are significant only next to *śānta* (see Table 7.7).

However, these explanations could have a significant visible presentation with two factors ANOVA. To generate a two factor ANOVA out of the available data, RVs are placed as the second factor ($p < 0.001$) and each response against all five tunes ($p < 0.04$) are set as the first factor (see Table 7.8 & Figure 7.6).

From the graphs of [Figure 7.6](#), it is apparent that *karuṇa* and *vipralambha śṛṅgāra* have a microscopic appearance, so it is hinted that there is relishment of these two *rasas*.

Śānta is always been significantly higher than all other *rasas*. *Vīra*, *adbhuta* and *sambhoga śṛṅgāra* are highly coexistent, whereas in the third music, they do not appear prominently.

It was observed in [chapter 3](#) and [chapter 4](#) that *vīra* and *adbhuta rasas* coexist possibly. Their manifestation after *śānta* strengthens the theory itself.

Above all, the highest manifestation of *śānta* proves that the ^FDF of RT is most dominant than ^SCC (also ^GCC?). ^FDF is the primary cause that fundamentally regulates the relish of *rasa*. Though, in further studies, cross-checking with the same tune with two different instruments can establish this point in a much better way. ROC curve and logistic regression (see [Figure 7.5](#) and [Table 7.5](#) & [Table 7.6](#)) offer evidences to that effect.

So far, it is observed that *śānta* is predominant over other *rasas*. Does that mean prospective *rasa* of these tunes is *śānta*, if so howcome do other *rasas* manifest?

Abhinavagupta offers an answer to this question. According to him, in the context of *śānta* there there a notion of *vīra*, *śṛṅgāra* or even others. It is because of the subjectivity which becomes the cause in such experiences (NS, Chap. 6, p. 339):

*yatrāyaṃ nibadhyate tatra avaśyaṃ puruṣārthopayogiśṛṅgāravīrādyananyatamam
asti eva | tanniṣṭhaḥ teṣāṃ āsvādaḥ |*

Therefore, *śānta* is the *rasa* in these tunes, and the most efficient cause behind that is ^FDF, which is here *Rudra Vīṇā*, is proved with this.

7.6 Summary

Getting emotional responses according to the RT and evaluating them to identify a particular *rasa* experience is absolutely a new approach in this genre. This process can help to develop the FVMT model more efficiently further. The presented approach gave us a new hope that the *rasa* centric approach with *saṁvādjāti* and related theories will yield significant and promising chances of further research.

Regarding the musical explanation of *Rasa-sūtra*, the interpretation is found significant with this practical study and related to this, ^FDF drawn immediate attention than ^SCC regarding the *rasa* evocation. However, the ^SCC perspective requires needs a deeper critical study otherwise.

There is an immense need to create more COSMICs with *saṁvādjātis*, and according to the music RT, that will help to create desired *rasa* centric music for therapeutic applications along with the exact explanation of *rāgas* and related *rasas*.



Effect of COSMIC: An Observational Pilot Study

In the previous chapter, the *rasa* understanding from *saṁvāda-jātīgīta* or consonance scale music (COSMIC) was detailed. In the present chapter, the practical application of COSMIC is elaborated.

Till now, the parameters of music were identified which are responsible to the *rasa* evocation. With that knowledge, special rendition technique is also applied that would help to create a desirable *rasa* out of a rendering. Since, the whole exercise is to create expected music for therapeutic use, COSMIC need to be applied in a practical field. It is

decided that if a small group of people could be benefited with this kind of experimental music which is created for only therapeutic purposes, there will be a great scope to do experiments with COSMICs and its efficacy in therapeutic aspects.

The present researcher has got an IEC (Institutional Ethical Committee) approval (see [Appendix F](#)) to conduct experiment on subjects. The experiment was decided to be a pilot one to observe if this kind of music, which is developed with the help of the previous theories, is beneficial for therapeutic use or not. As pilot studies are basically conducted to learn if the therapeutic agent would be efficient for use and processes associated with its application, and not to confirm and test the hypothesis in a formal way (Lee et al., 2014). In other words, pilot study lays a stepping stone that helps to go further to proof the hypothesis that could confirm the benefit of a therapeutic agent (Harvey, 2018; Kannan & Gowri, 2015). Likewise, this present study will explore and provide evidence to create more COSMICs with which large experiment could be conduct to claim the usefulness of therapeutic Indian pure music vis-à-vis COSMICs in future.

Supervisors of the present researcher requested Dr. M. V. R. Sharma, DPM, an eminent senior psychiatrist from Hyderabad, if he would kindly help the research scholar to conduct music therapy sessions in his rehabilitation centre (Dr. Sharma's Rehab, Thumkunta village) and collect the data for research purposes. Dr. Sharma kindly agreed with the proposal and gave his enthusiastic help to carry on the practical work with COSMIC.

8.1 Materials and Subjects

Among five COSMICs, two were selected as stimuli for the experiment. One used to be played in the morning session, and another was kept for the evening.

There was a total of six participants. Initially, the target subjects were decided to be of stress as a result of anxiety and depression. By choosing stress, the target participants' criteria got an enormous scope to be selected, and as a result, subjects with depression,

anxiety, stress, blood pressure, and addiction were found to apply receptive music therapy with COSMIC.

There was a total of six participants. Initially, the target subjects were decided to be of stress as a result of anxiety and depression decided by the treating physician under whose care they were assembled. By choosing stress, the target participants' criteria got an enormous scope to be selected, and as a result, subjects with depression, anxiety, stress, blood pressure, and addiction were found to apply receptive music therapy with COSMIC.

All subjects were informed about the experiment (see [Appendix G](#)), and they duly signed the consent form willingly (see [Appendix H](#)).

8.2 Method of the Therapy

After a discussion with the rehab authorities, it was decided that two sessions would be conducted every morning and evening.

Music was played with a good Bluetooth speaker in a small room. Subjects used to come there and sit in their respective chairs. The duration of COSMICs of morning and evening sessions are around a minimum of five and maximum of seven minutes, respectively.

The blood pressures of patients were measured with a sphygmomanometer with the help of nurses before and after every session. Along with BP documentation, subjects' heart rates before and after the session were also noted with a Cardiac Monitor.

After the subjects reached the room [where receptive music therapy (henceforth RMT)], they were asked to relax and then instructed to listen to the music in a very comfortable way. It was also instructed that if any of them did not feel good while listening and did not appreciate the music, they were welcome to leave the RMT quietly. At all times it was ensured that a silent environment personalised to this experiment was maintained.

There was no interference in the daily medication of the subjects due to RMT.

8.3 RMT Results

Blood pressure (BP) and heart rate (HR) data were evaluated for evaluation. It was expected that any interpretation could be found between BP and HR. However, the collected data (see [Appendix I](#)) makes it difficult to state any comment regarding the BP and HR correlation. Hence, the BP data were independently taken for evaluation to know if there was any significance.

Morning				Evening			
BP (Mean Value)				BP (Mean Value)			
Sub	Before	After	<i>p</i> -value	Sub	Before	After	<i>p</i> -value
P01	108/72	104/78	< .001*	P01	112.50/82.50	102.50/77.50	0.003
P02	117.50/80	112.50/72.50	0.022	P02	115/77.50	120/82.50	0.022
P03	106/68	112/80	< .001**	P03	117.50/85	107.50/82.50	0.003*
P04	NA	NA	NA	P04	122.50/80	115/82.50	0.001*
P05	NA	NA	NA	P05	115/80	115/80	0.09
P06	110/63.33	113.33/80	0.01*	P06	116.67/86.67	110/83.33	0.015*

**p*-values (BP after RMT) are significant against the *p*-values of BP data before RMT

Table 8.1: Morning and Evening Sessions' BP data evaluation results and their significance

A paired t-test was conducted in IBM SPSS software to test the statistical significance of BP data. As BP data consists of systolic and diastolic variables, a multiple variable paired t-test was conducted. So that in one pair, the BP data of before RMT, and in the other (pair 2), the BP data of after RMT was placed.

Paired t-test results were generated for each subject which can state that RMT was effective or otherwise for this subject.

In the case of P01, the morning sessions were more effective than the evening session. P01's data is highly significant regarding the therapy. Data of P02 did not find any significance. However, there is a visible reduction in BP after RMT.

Data of P03 got high significance in both sessions, and this statement is also applicable for P06 too. In the case of P03, the data significances of BP before RMT were .024 (morning) and .007 (evening). In the case of P06, the data significances of BP before RMT were .107 (morning) and .035 (evening). Hence, RMT had a good effect on P03, and P06 is, as a result, understood by observing the p-values after RMT (see [Table 8.1](#)).

P04 was an old lady who could not attend morning sessions regularly, so it became difficult to trace her morning BP after RMT. However, the evening data is significant and shows that RMT positively affected P04.

P05 was an exceptional subject who was scared to interact with people and quite stubborn. This subject did not cooperate after the first day, so the data is not satisfactory. It was decided to omit the values for analysis.

8.4 Responses of Each Subject: Every Day Incidents

Observations:

- P01 found the nature of music as very soothing and healing kind. He was fascinated to hear such kind of music every day. As the recorded music was rendered in *Rudra Vīṇā*, the researcher suggested and sent him some of the *Rudra Vīṇā* recitals of maestros. However, those did not appear to him as the project music clips appeared. Unfortunately, the researcher did not have such kind of music of long duration and could not help him. Nevertheless, he always curiously came to the sessions and believed it could help him. It is obvious to confess that P01 greatly assisted the present researcher, without whom most of this practical work would be in vain.

- P02 used to come religiously to listen to music.
- P03 found the sound of the music exciting and soothing to his auditory organ. From 19-3-22, P03 continuously slept in every session within one minute while the music started. Once, he excitedly expressed his experience to the researcher that the five-minute sleep felt like a three-hour sleep.
- P04 was an old lady who sometimes would not come to the session. However, one day she slept during the music was played. Nevertheless, the researcher did not get satisfactory data because of the interference of some people (who woke her up forcefully), probably her family members.
- P05 came significantly less in the sessions. She cried during the first session (morning) of the first day. P05 was a patient with depression who never liked to talk to anybody. No facial responses were ever seen from her admission. From the third day, however, she discontinued coming. The researcher found that the morning music used to make her cry, and probably she did not like to express such expressions in front of others. Interestingly, the researcher informed this incident to Dr. Sharma, who appreciated it and asked to conduct a remote session for her if that could help to bring her grief out. However, because of unavoidable issues, this did not happen.
- P06 was admitted on 18-3-22. Hence, he joined on the second day. He used to come to all sessions. As he left the hospital on 21-3-22, he attended six sessions.

Except for P06, most of the subjects had their data from 10-3-22. P04 was admitted to the rehab on 12-3-22, and P05 was admitted to the rehab on 16-3-22.

8.5 Discussion on Observations

Among six subjects, P05 and P04 had unstable participation. Again, P05 did not attain any session except the first. Its cry was a remarkable incident that confirms more firmly that this research approach is on the right path in the name of receptive Indian music therapy. P04 did a great job too. Though she got interfered from her family members, she never became angry. Her appreciation of music was relatively neutral. Sometimes she was not attentive in listening, and sometimes, she became drowsy. It hinted that if it could be possible to create such music by understanding her, it could match her very tendency and do a noticeable effect.

Case Study 1: COSMIC can make one cry

There was a subject who, according to doctors, could not be cooperative regarding music therapy. However, because of the interests of other participants, and with the doctors' permission, I took the patient for the sessions. She was admitted a week ago. According to the doctors, she never wanted to respond or talk to anyone. The subject entered the therapy room during the first-morning session with her guardian. The recording started and reached a maximum of one minute, and she started whimpering and tried to control her tears. That experience was indeed unusual. That cry seemed to tell that there was so much grief, and the music soothingly pulls that out. I got warm feedback from her co-patients, doctors, and nurses that she responded emotionally to something the first time after the admission. Unfortunately, that patient never came after that. I supposed, and the doctor also supported my statement that she never wanted to show her tears to anyone. It was an accidental occurrence, and she alerted herself. She felt embarrassed as she could not comprehend why she cast tears. Though the doctor appreciated my observation and encouraged me to conduct a separate session for her, I required professional support.

Case Study 2: COSMIC can make one sleep

A subject in the 25-34 age group who was affected by addiction used to come to participate in the music therapy sessions. From the day first, he has been interested in being a participant in my music therapy sessions. Even he encouraged other patients in that rehab to become so. I suggested him to be quiet, listen to the music only, do not to get distracted and relax, and, if possible, to close his eyes. Luckily, after some seconds while playing the music track, he started listening with closed eyes. After that, he gradually opened his eyes and smiled with his dull little face—he was happy. After that, he appreciated Rudra Vina heartfully and mentioned that that instrument was something else — meant he was enchanted. I should thank Sayak da for those dedicated creations. In the evening, too, he came willingly and pushed others to go for the session. He used to ask me when I would start the next session. The next day morning, an exciting thing happened. This subject slept during the music. Once he woke up, but eventually, he slept again. He had no inkling when the track ended. He got up when I started collecting other subjects' BP and HR data. He began to say excitedly about how he was spellbound and that he even did not understand the ending. He wished to take the music tracks because he believed that they were like medicine and would help him get sound sleep, in his words, 'trance'. And he continued his sleeping during sessions after that. He used to tell me that he was enjoying that sleep. Sometimes he said that five minutes of sleep felt like five hours. However, there was a lot more surprise waiting for me because when I evaluated the data of his BP, it came highly significant in both sessions, which is, exceptional, not the case with others. Therefore, receptive music therapy with *sthūla-pāśyantī* (pure music, here Indian) did leave a highly significant effect on that subject.

P02's case is quite unfortunate. The present researcher got good responses from that subject and found P02's interest in attending the sessions. Still, the evaluated result does

not give a significant outcome and seems RMT does not worked for this subject that much. It is observed that some people have a notion that music means there should be some lyrics. Though, P02 used to come religiously, but sometimes the subject used to say that this kind of music should be played here, and other like ‘*Hanumān Cālīsā*’ and that kind of devotional songs. It means that subject had some notion with lyrical music. But unfortunately, that kind of music could not fulfil the objectives of this present research.

P06 did well in the experiment. On the first day of P06 in rehab, the subject’s BP was so high. After attending RMT and medication, a gradual development was observed, and the evaluated data also claims the fact (see [Table 8.1](#)).

P01 always said that this music was something out of the box and that he had never found such kind of music on any online platform. It is already mentioned that he liked COSMICs’ renditions in *Rudra vīṇā* more than any other *Rudra vīṇā* recital available on the internet. P01 asked the present researcher to keep making this kind of therapeutic music which will be helpful for patients like them. It is observed that the evaluated data says a significance regarding the morning sessions for P01, but somehow not in the evening sessions. The present researcher can remember that P01 often said that morning music appealed more to P01 than evening music. The subject asked if this kind of music could be found in an extended rendition, i.e., around half an hour. However, unfortunately, the present researcher could not make such music within this doctoral research period.

An exception among all, P03 was really a satisfactory subject, and according to the present researcher’s evaluation result and practical experience, somehow COSMICs did their maximum effects on this subject.

Interestingly, nobody among the subjects before RMT introduced themselves to classical music. Though the present music is not classical in the sense that classical is understood in general, the ground of the style to execute these COSMICs is undoubtedly classical or traditional. It is also proved that it does not matter if a person can understand a music form or not; it is the inherent power of music, especially the energy of bliss (*ānandaśakti*), that

works into the psyche of a listener. Of course, applying music that could make an effect is a matter of critical analysis discussed in [chapter 3](#) & [chapter 4](#).

Though the present researcher got the HR data of every subject before and after RMT, that data did not help. It is because of no correlation between HR and BP, which is again a result of the small volume of data. However, the data is placed in the appendix of this thesis.

Dr. Sharma asked the present researcher to make long clips for therapeutic use. He doubted at first how music clips of five or seven minutes could be able to give a result. He was right in this manner that five or seven minutes is a short time. However, it is also a fact that it is challenging to hold listeners with music without excitement. Hence, when doctors ask to make half an hour music, this is again a problem. Where it is difficult to hold ordinary people to listen to half an hour of classical music, it is unimaginable to hold some patients with anxiety, depression etc., for the classical-like COSMIC.

Therefore, the present researcher realises that music clips, of which *rasa* predominance is being understood, should not be the same for therapeutic use. However, this thought should be developed in future to achieve the best effect of COSMIC.

8.6 Summary

COSMIC, which is intentionally created that can has the potential to heal seemed to have worked from the limited data and observations.

In this short pilot study, the present researcher felt that subjects usually benefit from the pilot experimental intervention. They positively cooperate in the activity. However, there are certain barriers and limitations. These included problems are with medical helpers and test conditions to be maintained in the environment where this intervention is to be applied . For instance, sometimes, the present researcher felt disturbance because some

medical staff carelessly interfere with the musical atmosphere with their shoe sounds and talking at the time of the session. Sometimes they did not come in at the right time to get the BP and HR of the subjects immediately after the sessions, which is a cause for not getting exact data. Once, the present researcher waited for 3 to 5 minutes along with subjects to get their BP and HR data because a nurse did not come to check them in time. She was busy with other work, despite the researcher's request that the session is only five minutes. During that time, naturally, subjects talked to each other. Some old ones did not have the patience to be seated there. Hence, it is inevitable that from some sessions, the present researcher did not get the exact data of BP or HR that could be able to show the exact truth. However, it is a lesson that a personal team and equipment should be used to get data from such studies next time.

In conclusion this pilot experiment using certain music interventions has the potential to modify the BP and possibly HR of those participants who may be stressed, anxious or depressed. The current experiment provides scope to scale this to a larger sample of subjects before it can be considered to be included in routine care management for such participants.

Conclusions

Rasa-sutra, with all its profound insights, has been applied to evaluate pure music to understand and identify the relishable *rasa*. Revised hypothetical relations between *svaras* and *rasas* have been suggested in this thesis. As a byproduct to the *svara-rasa* relation, psychological and somatic connections with *rasas* is logically established. Thus, the aim of this study to establish the relationship between *svara*, *rasa*, and *doṣa* is achieved hypothetically.

The ancient *jāti* rendering format is partially applied as a rendering method to produce *rasa*-centric music (named as COSMIC=Consonance Scale Music=*Samvādajātigīta*). Further, COSMICs have been produced to elicit responses from an online survey. This has again proved the hypothesis that if one produces some music according to the *Rasa* Theory as applicable in music, *rasa*-centric rendition could be achieved.

It was observed that in the perception of *rasa*, *ālambana vibhāva* has a significant impact. After *ālambana vibhāva*, dominant *svaras* are essential followed by the rendition technique. *Svaras* and rendering techniques come under the *vāk* (in music *svara*) and *anga* parts of *anubhāvas*. Other components like *sāttvikabhāva* (final *anubhāva*) and *vyabhicāribhāvas*, have to be postulated out of the responses from listeners in *rasa* relishment.

In this thesis, a complete *rasa* analysis of pure music has been done concerning the therapeutic use of music. Implications of COSMICs in a realistic environment proved that

this type of music could be used as a tool of music therapy.

In addition to the above, while exploring the history of music therapy in Indian contexts (especially in Ayurvedic contexts), several interesting observations emerged which prove the profound approach of Caraka, Suśruta and other eminent scholars regarding music and its potential as a medicine in the stressed individuals.

Historically, the Asvamedhic Uttaramandra context from the Veda inspired the present researcher to design a therapeutic model – FVMT, related to the Indian culture, tradition and heritage.

Important Findings and Contributions

- It is for the first time that therapeutic effect of music is analysed and interpreted using *Rasa* Theory covering all textual references. *Ālambana vibhāva* in music is considered musical instruments themselves, *vāk* as *anubhāva* is *svara* in the context of music, *aṅga* as *anubhāva* is the rendering method.
- It is observed that all *sāttvikabhāvas* and *vyabhicāribhāvas* are not applicable in pure music. Four possible *sāttvikabhāvas* and fifteen *vyabhicāribhāvas* are found from the musical experiences.
- It is pointed out that music is called ‘*sthūlapaśyantī*’ in the Indian philosophical context.
- It is observed that Caraka was the first physician who recommended music for specific ailments. He is also the first physician to suggest musicians as part of the hospital supporting staff.
- Suśruta was the first physician who recommended music to break the unconsciousness of coma patients. It was identified that traditionally music had been employed in ancient India as latter vaidyas mentioned this fact.

- An evaluation procedure to understand the relished *rasa* by an individual is designed and presented with statistical results. A model questionnaire is contributed that will help further to collect individuals' *rasa* experiences from pure form of music (now restricted to the Indian context).
- It is also observed that *rasa*-centric music vis-à-vis COSMICs significantly impact patients with stress and related sickness.

Limitations

In the thesis, theoretical aspects are discussed more compared to practical aspects of music as a therapeutic technique. *Gamaka*, as one of the ^GCC, is not investigated in detail. Less focus is given on dominant note criteria of Carnatic music as they are not found in a sufficient volume. It is felt as a practical issue to use survey-related COSMICs in the therapeutic context. I observed that it is not that easy to introduce music therapy in a realistic environment, single-handedly. Though most of the subjects were cooperative, the problem faced was with the medical staff. They did not recognize music therapy to be an important exercise as part of treatment protocol. I feel that make medical staff must be educated on importance and impact music as a therapy in Indian society. I could not collect desirable data due to the indifferent attitude of hospital staff. I could not use a high quality audio system while conducting the study with participants, due to insufficient funds.

General Recommendations

Since the present study considered more of theoretical part, focusing further on the practical aspects is recommended, which will definitely lead to find new dimensions related to emotion, music, and therapy. As thihs is the first attempt to produce the five COSMICs

applying the RT and *Jāti* rendering method, there are considerable possibilities to improve the rendition method. Historical study conducted about music therapy in India is restricted to *Brhatrayī* only. Further research can be done extending study to other texts.

Specific Recommendations

Here are some specific recommendations which would help one to carry forward the present research:

1. Exploring the relation of the dominant *rasa* of specific Indian instruments, which are *ālabana vibhāvas* in music.
2. Producing more COSMICs to collect a large volume of data that would extend the research.
3. It has been observed from the survey results that there exist other *rasa* manifestations in a small volume. Therefore, it is advised to try to reduce undesirable *rasa* appearances by applying the music-oriented interpretation of RT.
4. The importance of *gamakas* in specific *rasa* contexts should be investigated because *gamakas* are one of the *anga anubhavas* and significantly impact the rendition.
5. Collection of data belonging to Carnatic *rāgas* to find out the possible dominant *rasa* relations is suggested since Hindusthani data is almost collected.

Appendix A

Algorithm of SAJĀG

```
1 #!/usr/bin/env python3
2
3 import sys
4 import csv
5 import itertools
6
7 sv_map = {
8     'Sa': 2,
9     'R': 4,
10    'Ri': 6,
11    'G': 8,
12    'Ga': 9,
13    'Ma': 11,
14    'M': 13,
15    'Pa': 15,
16    'Dh': 17,
17    'Dha': 19,
18    'N': 21,
19    'Ni': 22}
20
21 apavada_map = {
22    'R': [11, 15],
23    'Ri': [11],
24    'G': [11, 14],
```

```

25     'Ga': [8, 10, 12],
26     'Ma': [10],
27     'Pa': [11],
28     'Dh': [11, 14],
29     'Dha': [7, 11, 12],
30     'N': [10, 12],
31     'Ni': [8]}
32
33
34 def svara_sort(cluster):
35     '''Sorts svara cluster sequences according to their svara values'''
36     cluster.sort(key=lambda x: sv_map[x])
37     return cluster
38
39
40 def restrict_val(val):
41     '''Restricts svara values within one octave'''
42     return val - 22 if val > 22 else val
43
44
45 def calc_samvads(vad):
46     '''Calculates samvadi svaras of given vadin'''
47     vs_map = {y: x for x, y in sv_map.items()}
48     sam_dif = [9, 13]
49
50     if vad in apavada_map:
51         sam_dif.extend(apavada_map[vad])
52
53     sam_dif.sort()
54     sam_val = [restrict_val(sv_map[vad] + x) for x in sam_dif]
55
56     return [vs_map[x] for x in sam_val if x in vs_map]
57
58
59 def calc_cluster(vad):

```

```

60     '''Calculates all possible cluster combinations of sampurna,
61     sadava and audava jatis. Sa, Pa, vadin and samvadin are fixed.
62     Pa, if not serving as vadin or samvadin, may be dropped in
63     sadava and audava sequences.'''
64
65     samvads = calc_samvads(vad)
66     clusters = []
67
68     for samvad in samvads:
69         fixed_svaras = {'Sa', 'Pa', vad, samvad}
70         cluster = [vad, samvad]
71
72         for svara in ['Sa', 'Ri', 'Ga', 'Ma', 'Pa', 'Dha', 'Ni']:
73             if svara in cluster or svara[:-1] in cluster:
74                 continue
75             cluster.append(svara)
76
77         cluster = svara_sort(cluster)
78         for svara in fixed_svaras:
79             cluster.remove(svara)
80
81         len_cluster = len(cluster)
82         new_cluster = []
83
84         for i in range(len_cluster):
85             if cluster[i][-1] in 'ai':
86                 new_cluster.append(cluster[i][:-1])
87             elif cluster[i] in 'RN':
88                 new_cluster.append(cluster[i] + 'i')
89             else:
90                 new_cluster.append(cluster[i] + 'a')
91         cluster.extend(new_cluster)
92         cluster = svara_sort(cluster)
93
94     combs = itertools.combinations(cluster, len_cluster)

```



```

95     for comb in combs:
96         is_valid = True
97
98         for svara in comb:
99             new_comb = list(comb)
100             new_comb.remove(svara)
101             for new_svara in new_comb:
102                 if svara[0] == new_svara[0]:
103                     is_valid = False
104
105         if is_valid:
106             cluster7 = list(set(comb) | fixed_svaras)
107             cluster7 = svara_sort(cluster7)
108             cluster_info = [samvad, 7] + svara_sort(cluster7)
109             if cluster_info in clusters:
110                 continue
111             else:
112                 clusters.append(cluster_info)
113
114         no_drop_svaras = {'Sa', vad, samvad}
115
116         for svara in cluster7:
117             if svara in no_drop_svaras:
118                 continue
119             cluster6 = cluster7.copy()
120             cluster6.remove(svara)
121             cluster_info = [samvad, 6] + svara_sort(cluster6)
122             if cluster_info in clusters:
123                 continue
124             else:
125                 clusters.append(cluster_info)
126
127         drop_svaras = set(cluster7) - no_drop_svaras
128         drop_combs = itertools.combinations(drop_svaras, 2)
129

```

```

130         for drop_comb in drop_combs:
131             cluster5 = cluster7.copy()
132             cluster5.remove(drop_comb[0])
133             cluster5.remove(drop_comb[1])
134             cluster_info = [samvad, 5] + svara_sort(cluster5)
135             if cluster_info in clusters:
136                 continue
137             else:
138                 clusters.append(cluster_info)
139
140     return clusters
141
142
143 def match_hraga(vad, samvad, cluster, hdata):
144     '''Returns Hindustani ragas if vadin, samvadin
145     and the cluster match.'''
146
147     matched = []
148     for row in hdata:
149         seq = [x.strip() for x in row[2:14] if x]
150         if vad == row[19] and samvad == row[20] and cluster == seq:
151             matched.append(row[0])
152     return matched
153
154
155 def suggest_craga(cluster, jati, cdata):
156     '''Returns Carnatic raga suggestions matching the cluster and
157     jati only if the raga doesn't have a vakra gati.
158     Carnatic raga database doesn't presently have
159     vadin-samvadin info.'''
160
161     suggest = []
162     for row in cdata:
163         seq = [x.strip() for x in row[5:17] if x]
164         if not row[4] and row[3] == str(jati) and cluster == seq:

```

```

165         suggest.append(f'{{row[1]}}({{row[0]}})')
166     return suggest
167
168
169 def add_ragas(vad, clusters, hdata, cdata):
170     '''Prints plain text output. Use it for debugging.'''
171
172     this_info = []
173
174     for samvad, jati, *cluster in clusters:
175         matched = match_hraga(vad, samvad, cluster, hdata)
176         suggest = suggest_craga(cluster, jati, cdata)
177         this_info.append({
178             'samvad': samvad,
179             'jati': jati,
180             'cluster': cluster,
181             'hraga_match': matched,
182             'craga_suggest': suggest})
183
184     return this_info
185
186
187 if __name__ == "__main__":
188
189     with open('hdata.csv') as hfile:
190         hdata = tuple(csv.reader(hfile))
191
192     with open('cdata.csv') as cfile:
193         cdata = tuple(csv.reader(cfile))
194
195     vadin = sys.argv[1].strip()
196
197     clusters = calc_cluster(vadin)
198     match_ragas = add_ragas(vadin, clusters, hdata, cdata)
199

```

```
200     for match in match_ragas:
201         print(f'Samvadin: {match["samvad"]}')
202         print(f'Jati: {match["jati"]}')
203         print(f'Svaras: {" ".join(match["cluster"])}')
204         print(f'Hindustani Raga(s): {" ".join(match["hraga_match"])}')
205         print(f'Carnatic Ragas(s): {" ".join(match["craga_suggest"])}')
206         print()
```

Appendix B

The *Rasa* Questionnaire

Psychophysical Response	Transitory Emotion	Sanskrit Name	Question
Thrill		<i>romāṇca</i>	Have you thrilled?
Spellbound		<i>stambha</i>	Do you think this music made you spellbound?
Shiver		<i>kampa</i>	Have you shivered?
Tearful		<i>aśru</i>	Have you had tears in your eyes?
	Affection	<i>sneha</i>	Have you felt affection during the music?
	Dozed	<i>supta</i>	Have you felt dozed and gone to semi-dreaming during the music?
	Joy	<i>harṣa</i>	Have you felt joy during the music?
	Euphoria	<i>mada</i>	Have you suddenly become overwhelmed?
			Have you felt you are in harmony with the music?
	Sensitised	<i>vibodha</i>	Have you suddenly become very active at any moment?
	Nostalgia	<i>smṛti</i>	Has the music made you nostalgic?
	Self-possession	<i>nirveda</i> (also with <i>dhṛti</i>)	Has the music been able to calm your mind?
			Did you feel peace?
	Pleasure	<i>dhṛti</i>	Have you ever felt pleasant?
	Drowsiness	<i>nidrā</i>	Have you felt drowsy?
	Peevishness	<i>glāni</i>	Has this music ever made you irritant?
	Repentance	<i>glāni</i> (as <i>manastāpa</i>)	Have you regretted sometime?
	Sapless	<i>śrama</i>	Has this music made you feel tired?
	Anxiety	<i>cintā</i>	Have you suddenly become anxious?
	Dazed	<i>jaḍatā</i>	Have you been left dazed for any moment?
	Melancholic	<i>viṣāda</i>	Have you found melancholy in this music?
	Harshness	<i>ugratā</i>	Have you felt any harshness in the music?

Appendix C

Collected Participant Information from Survey

ID	Age	Age Group	Gender	Education	Nationality	Participation Time
01M	31	25-34	Male	Master/Doctorate	India	12 to 15
02M	27	25-34	Male	Master/Doctorate	India	15 to 18
03M	23	18-24	Male	Bachelor Degree	India	18 to 21
04M	27	25-34	Male	Master/Doctorate	India	00 to 03
05M	29	25-34	Male	Master/Doctorate	India	00 to 03
06M	25	25-34	Male	Bachelor Degree	India	15 to 18
07M	26	25-34	Female	Master/Doctorate	India	21 to 00
08M	51	45-54	Male	Master/Doctorate	India	06 to 09
09M	26	25-34	Male	Master/Doctorate	India	18 to 21
10M	24	18-24	Male	Bachelor Degree	India	21 to 00
11M	30	25-34	Male	Bachelor Degree	India	18 to 21
12M	28	25-34	Female	Bachelor Degree	India	21 to 00
13M	26	25-34	Male	Master/Doctorate	India	12 to 15
14M	23	18-24	Male	Master/Doctorate	India	15 to 18
15M	60	55-64	Male	Master/Doctorate	India	09 to 12
16M	21	18-24	Female	Master/Doctorate	India	15 to 18
17M	66	Above 64	Male	College or Technical School	India	18 to 21
18M	22	18-24	Male	Bachelor Degree	India	21 to 00
19M	21	18-24	Male	College or Technical School	Bangladesh	21 to 00

ID	Age	Age Group	Gender	Education	Nationality	Participation Time
20M	28	25-34	Female	Master/Doctorate	India	18 to 21
21M	55	55-64	Male	College or Technical School	India	09 to 12
22M	69	Above 64	Male	Bachelor Degree	India	15 to 18
23M	38	35-44	Male	Bachelor Degree	India	18 to 21
24M	53	45-54	Female	Master/Doctorate	India	09 to 12
25M	49	45-54	Male	Bachelor Degree	India	12 to 15
26M	28	25-34	Female	Master/Doctorate	India	09 to 12
27M	22	18-24	Male	Bachelor Degree	Bangladesh	12 to 15
28M	30	25-34	Male	Master/Doctorate	India	06 to 09
29M	28	25-34	Male	Master/Doctorate	India	06 to 09
30M	34	25-34	Male	Master/Doctorate	India	21 to 00
31M	22	18-24	Female	Master/Doctorate	India	09 to 12
32M	26	25-34	Female	Master/Doctorate	India	12 to 15
33M	21	18-24	Female	Bachelor Degree	India	06 to 09
34M	20	18-24	Other	College or Technical School	India	09 to 12
35M	23	18-24	Female	Master/Doctorate	India	09 to 12
36M	18	18-24	Female	High school or equivalent	India	09 to 12
37M	19	18-24	Male	High school or equivalent	India	12 to 15
38M	53	45-54	Female	Master/Doctorate	India	21 to 00
39M	43	35-44	Male	Bachelor Degree	India	09 to 12
40M	18	18-24	Female	High school or equivalent	India	15 to 18
41M	53	45-54	Male	Bachelor Degree	India	09 to 12
42M	54	45-54	Male	Bachelor Degree	India	09 to 12
43M	53	45-54	Male	Master/Doctorate	India	15 to 18
44M	21	18-24	Female	Bachelor Degree	India	12 to 15
45M	47	45-54	Male	Master/Doctorate	India	18 to 21
46M	54	45-54	Male	College or Technical School	India	21 to 00
47M	32	25-34	Male	Master/Doctorate	India	18 to 21

ID	Age	Age Group	Gender	Education	Nationality	Participation Time
48M	45	45-54	Male	Bachelor Degree	India	15 to 18
49M	77	Above 64	Male	Master/Doctorate	India	06 to 09
50M	53	45-54	Male	Master/Doctorate	India	12 to 15

Appendix D

Logistic Regression Primary Table

<i>S</i>	<i>S_I</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
7.5	6	3	6	5	2	1	0	1	1	0.662669	0.662669	0.337331	-0.41148	100
22.5	21.5	8.5	23	21.5	3.5	0	1	1	0	0.426031	0.426031	0.573969	-0.55518	100
24	23	8	27	23.5	1.5	0	1	1	0	0.299955	0.299955	0.700045	-0.35661	100
8.5	6	7	4	5.5	7	1	0	1	1	0.78939	0.78939	0.21061	-0.23649	100
28	23	12	22.5	24	7	1	0	1	1	0.96884	0.96884	0.03116	-0.03166	100
6.5	4	2	6	4	0	1	0	1	1	0.728152	0.728152	0.271848	-0.31725	100
25	28.5	16.5	30.5	23.5	8	0	1	1	0	0.050649	0.050649	0.949351	-0.05198	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
26.5	27	11	27.5	26.5	5	0	1	1	0	0.217524	0.217524	0.782476	-0.24529	100
22.5	21	16	22	21	12	1	0	1	1	0.291614	0.291614	0.708386	-1.23233	0
16	15	4	17	15	2	0	1	1	0	0.331715	0.331715	0.668285	-0.40304	100
40	39	20	34	38.5	10	1	0	1	1	0.87373	0.87373	0.12627	-0.13498	100
37	30.5	17	26.5	26.5	9	1	0	1	1	0.999747	0.999747	0.000253	-0.00025	100
7	7.5	2.5	6.5	11	6	0	1	1	0	0.01924	0.01924	0.98076	-0.01943	100
48	40	28.5	39.5	43.5	19	1	0	1	1	0.988937	0.988937	0.011063	-0.01112	100
38.5	32	23	28	37.5	22	1	0	1	1	0.853638	0.853638	0.146362	-0.15825	100
17.5	17.5	10	20.5	24.5	8	0	1	1	0	0.003516	0.003516	0.996484	-0.00352	100
40	33	22	29.5	35.5	13.5	1	0	1	1	0.995693	0.995693	0.004307	-0.00432	100
27	25.5	12.5	26.5	29	5.5	0	1	1	0	0.259734	0.259734	0.740266	-0.30075	100
21	16	5	18	18	4	1	0	1	1	0.884138	0.884138	0.115862	-0.12314	100
10	8	3.5	11	8	3.5	0	1	1	0	0.368348	0.368348	0.631652	-0.45942	100
23	23	12	23	24.5	4.5	0	1	1	0	0.232278	0.232278	0.767722	-0.26433	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
31	21.5	12.5	20	19	8	1	0	1	1	0.999919	0.999919	8.07E-05	-8.1E-05	100
28	32.5	18.5	32	35.5	10.5	0	1	1	0	0.00117	0.00117	0.99883	-0.00117	100
10	9.5	5.5	9.5	7.5	6.5	1	0	1	1	0.323063	0.323063	0.676937	-1.12991	0
21	23	10	21.5	25	9.5	0	1	1	0	0.011253	0.011253	0.988747	-0.01132	100
26.5	27	11	27.5	26.5	5	0	1	1	0	0.217524	0.217524	0.782476	-0.24529	100
31.5	33.5	17	30	34	9.5	0	1	1	0	0.098171	0.098171	0.901829	-0.10333	100
16	19	6	17	20	9.5	0	1	1	0	0.004293	0.004293	0.995707	-0.0043	100
15	7	5.5	6.5	6	6	1	0	1	1	0.998536	0.998536	0.001464	-0.00147	100
38	34.5	24.5	33.5	41	20	0	1	1	0	0.137527	0.137527	0.862473	-0.14795	100
30.5	16	17	13.5	20.5	18	1	0	1	1	0.999941	0.999941	5.87E-05	-5.9E-05	100
18.5	15	13.5	18	16.5	11.5	1	0	1	1	0.397661	0.397661	0.602339	-0.92215	0
19	13	13	13	8	10	1	0	1	1	0.997544	0.997544	0.002456	-0.00246	100
37	30	24	27	25.5	14	1	0	1	1	0.999743	0.999743	0.000257	-0.00026	100
2	0.5	0.5	1	2.5	3.5	0	1	1	0	0.186048	0.186048	0.813952	-0.20585	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
3	1.5	1.5	1.5	1	1.5	1	0	1	1	0.593742	0.593742	0.406258	-0.52131	100
31	20	26	20.5	27	32.5	0	1	1	0	0.84313	0.84313	0.15687	-1.85234	0
25	24	17.5	22	20.5	13	1	0	1	1	0.727347	0.727347	0.272653	-0.31835	100
33	25	20	28	29.5	13.5	1	0	1	1	0.960238	0.960238	0.039762	-0.04057	100
29.5	21.5	17.5	20.5	24	13.5	1	0	1	1	0.992987	0.992987	0.007013	-0.00704	100
18.5	11	13.5	11.5	10	9.5	1	0	1	1	0.997199	0.997199	0.002801	-0.00281	100
15	14.5	8	13.5	13.5	4	1	0	1	1	0.549724	0.549724	0.450276	-0.59834	100
14.5	13.5	2.5	18.5	13.5	2	0	1	1	0	0.131588	0.131588	0.868412	-0.14109	100
4.5	3.5	6.5	3	3	5.5	0	1	1	0	0.418816	0.418816	0.581184	-0.54269	100
11.5	12	11.5	15	12	9.5	0	1	1	0	0.029406	0.029406	0.970594	-0.02985	100
12	12.5	14	16	17.5	13	0	1	1	0	0.001843	0.001843	0.998157	-0.00184	100
10.5	6.5	7	3	5	7	1	0	1	1	0.97587	0.97587	0.02413	-0.02443	100
31.5	24	9.5	27	28.5	10	1	0	1	1	0.900368	0.900368	0.099632	-0.10495	100
8.5	6	4	6.5	5	3	1	0	1	1	0.796951	0.796951	0.203049	-0.22696	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
13	9.5	15	12	11.5	11	0	1	1	0	0.462744	0.462744	0.537256	-0.62128	100
27.5	27.5	19	28	26	16	0	1	1	0	0.098552	0.098552	0.901448	-0.10375	100
18.5	13.5	9	11	10.5	9	1	0	1	1	0.991393	0.991393	0.008607	-0.00864	100
31.5	36	17.5	32.5	35.5	8.5	0	1	1	0	0.019308	0.019308	0.980692	-0.0195	100
10	6.5	2.5	8.5	7.5	2	1	0	1	1	0.752303	0.752303	0.247697	-0.28462	100
47	39	28	38	43	17.5	1	0	1	1	0.991646	0.991646	0.008354	-0.00839	100
38.5	29	23.5	25	35	21.5	1	0	1	1	0.990989	0.990989	0.009011	-0.00905	100
2	0.5	5	3.5	1	4.5	0	1	1	0	0.20816	0.20816	0.79184	-0.2334	100
34	31	21	30	35	11.5	0	1	1	0	0.612653	0.612653	0.387347	-0.94843	0
26.5	24.5	13.5	21	25	7.5	1	0	1	1	0.850614	0.850614	0.149386	-0.1618	100
14	6	12.5	6.5	10	14.5	0	1	1	0	0.944683	0.944683	0.055317	-2.89467	0
14	10	6	13	12.5	6.5	1	0	1	1	0.489891	0.489891	0.510109	-0.71357	0
15	3	7.5	7	2.5	6.5	1	0	1	1	0.999865	0.999865	0.000135	-0.00013	100
8.5	9	11.5	9	9	8	0	1	1	0	0.105612	0.105612	0.894388	-0.11162	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
27.5	17	20.5	16	16.5	15.5	1	0	1	1	0.999796	0.999796	0.000204	-0.0002	100
29.5	33.5	19.5	34	35.5	8	0	1	1	0	0.004622	0.004622	0.995378	-0.00463	100
23.5	21	17	22	17.5	8	1	0	1	1	0.938462	0.938462	0.061538	-0.06351	100
19.5	17	8	17.5	16.5	3.5	1	0	1	1	0.835008	0.835008	0.164992	-0.18031	100
35	31	24	32	34	21.5	1	0	1	1	0.260397	0.260397	0.739603	-1.34555	0
16.5	15.5	17.5	22.5	23	17.5	0	1	1	0	0.000459	0.000459	0.999541	-0.00046	100
32.5	25	29	21	29.5	20.5	1	0	1	1	0.986989	0.986989	0.013011	-0.0131	100
15.5	17.5	5	16.5	18.5	9	0	1	1	0	0.008193	0.008193	0.991807	-0.00823	100
20	6	17	8.5	12	18.5	1	0	1	1	0.998916	0.998916	0.001084	-0.00108	100
36	32.5	31.5	31.5	40.5	27	0	1	1	0	0.033175	0.033175	0.966825	-0.03374	100
17	13	14.5	15.5	15	14	1	0	1	1	0.377155	0.377155	0.622845	-0.9751	0
16.5	12	9	13.5	12.5	9	1	0	1	1	0.819156	0.819156	0.180844	-0.19948	100
22.5	16	15	16	11	10	1	0	1	1	0.998868	0.998868	0.001132	-0.00113	100
31	33.5	22.5	32.5	29	15	0	1	1	0	0.100151	0.100151	0.899849	-0.10553	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
1	0	0.5	0.5	1	2	0	1	1	0	0.237874	0.237874	0.762126	-0.27164	100
31.5	23.5	13	19	23.5	13.5	1	0	1	1	0.99853	0.99853	0.00147	-0.00147	100
19	18	19	21	17.5	21.5	0	1	1	0	0.018802	0.018802	0.981198	-0.01898	100
22.5	20	13.5	19	17	9	1	0	1	1	0.919162	0.919162	0.080838	-0.08429	100
22.5	13.5	14	18	18	12	1	0	1	1	0.961414	0.961414	0.038586	-0.03935	100
25.5	19	15	18.5	21	11.5	1	0	1	1	0.975825	0.975825	0.024175	-0.02447	100
15	13.5	10.5	12	12.5	7.5	1	0	1	1	0.679664	0.679664	0.320336	-0.38616	100
16	15	7.5	14	15.5	4	1	0	1	1	0.503366	0.503366	0.496634	-0.68644	100
7	11	5	17.5	11	0	0	1	1	0	0.00158	0.00158	0.99842	-0.00158	100
9	6.5	4.5	6	6	3	1	0	1	1	0.826096	0.826096	0.173904	-0.19104	100
28	27.5	13	29	25.5	3.5	0	1	1	0	0.659761	0.659761	0.340239	-1.07811	0
13	12	7.5	18	12.5	7.5	0	1	1	0	0.038826	0.038826	0.961174	-0.0396	100
7.5	8.5	3.5	6	6	3.5	0	1	1	0	0.33675	0.33675	0.66325	-0.4106	100
31.5	25	9.5	27.5	25.5	4.5	1	0	1	1	0.98877	0.98877	0.01123	-0.01129	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
8.5	9	3	10	11	2.5	0	1	1	0	0.048923	0.048923	0.951077	-0.05016	100
12	10.5	11.5	17.5	12.5	8	0	1	1	0	0.03705	0.03705	0.96295	-0.03775	100
17.5	23.5	8.5	24	25.5	6	0	1	1	0	0.000238	0.000238	0.999762	-0.00024	100
19	21	11	20.5	17	4	0	1	1	0	0.31778	0.31778	0.68222	-0.3824	100
32	30	16	26	26	9	1	0	1	1	0.976102	0.976102	0.023898	-0.02419	100
35.5	36	17.5	32	35.5	8.5	0	1	1	0	0.54411	0.54411	0.45589	-0.7855	0
37.5	37	17.5	32	32	10	1	0	1	1	0.94967	0.94967	0.05033	-0.05164	100
6.5	7	1	6	7	1	0	1	1	0	0.20126	0.20126	0.79874	-0.22472	100
46	37	26	36.5	41.5	17	1	0	1	1	0.99477	0.99477	0.00523	-0.00524	100
40	32	22.5	28	31.5	13.5	1	0	1	1	0.999623	0.999623	0.000377	-0.00038	100
14	12.5	11.5	12.5	12.5	8	1	0	1	1	0.462921	0.462921	0.537079	-0.7702	0
27.5	27	13	23	29	8.5	0	1	1	0	0.375232	0.375232	0.624768	-0.47038	100
34	30.5	17	26.5	29.5	8.5	1	0	1	1	0.985648	0.985648	0.014352	-0.01446	100
23.5	24.5	10	25	23	4.5	0	1	1	0	0.201374	0.201374	0.798626	-0.22486	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
18.5	12	4.5	15	14.5	7.5	1	0	1	1	0.877191	0.877191	0.122809	-0.13103	100
21.5	22	11	21	23	5	0	1	1	0	0.193171	0.193171	0.806829	-0.21464	100
15.5	8.5	1.5	11	8.5	1.5	1	0	1	1	0.991949	0.991949	0.008051	-0.00808	100
27	31.5	18	32	32.5	7	0	1	1	0	0.004487	0.004487	0.995513	-0.0045	100
15	16	7.5	19.5	13.5	7	0	1	1	0	0.04808	0.04808	0.95192	-0.04927	100
16	17.5	8.5	14.5	16.5	7	0	1	1	0	0.137933	0.137933	0.862067	-0.14842	100
33	27.5	23.5	31	32.5	22	1	0	1	1	0.195351	0.195351	0.804649	-1.63296	0
34	29.5	21	28	33.5	15.5	1	0	1	1	0.737433	0.737433	0.262567	-0.30458	100
26	27	17	29	26.5	11.5	0	1	1	0	0.040067	0.040067	0.959933	-0.04089	100
28.5	24.5	20	29.5	24	11	0	1	1	0	0.785374	0.785374	0.214626	-1.53886	0
18.5	14.5	12.5	12	14.5	12	1	0	1	1	0.901513	0.901513	0.098487	-0.10368	100
29	31.5	15.5	28.5	34.5	12	0	1	1	0	0.008406	0.008406	0.991594	-0.00844	100
12	16.5	7	21	17.5	3.5	0	1	1	0	0.000655	0.000655	0.999345	-0.00065	100
17.5	15.5	10.5	19	16	6	0	1	1	0	0.356366	0.356366	0.643634	-0.44063	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
21	13	14	14	8	9	1	0	1	1	0.999681	0.999681	0.000319	-0.00032	100
36	36.5	28	34.5	33	19	0	1	1	0	0.351293	0.351293	0.648707	-0.43277	100
3.5	0	5.5	2.5	1	5	0	1	1	0	0.628424	0.628424	0.371576	-0.99	0
32	35	18	30.5	35.5	13.5	0	1	1	0	0.021986	0.021986	0.978014	-0.02223	100
25.5	25.5	10	26.5	22	6	0	1	1	0	0.467764	0.467764	0.532236	-0.63067	100
24.5	23.5	15	22.5	22	12	1	0	1	1	0.441005	0.441005	0.558995	-0.8187	0
32.5	28	21.5	28.5	31.5	15.5	1	0	1	1	0.656032	0.656032	0.343968	-0.42155	100
22.5	16.5	14.5	15.5	16	10.5	1	0	1	1	0.989819	0.989819	0.010181	-0.01023	100
15	15.5	9	15	16.5	7	0	1	1	0	0.081455	0.081455	0.918545	-0.08496	100
25	21.5	8	23	23	5.5	1	0	1	1	0.722014	0.722014	0.277986	-0.32571	100
11.5	9	8	8.5	8	5	1	0	1	1	0.847612	0.847612	0.152388	-0.16533	100
8	4.5	8.5	1	2	14	0	1	1	0	0.875911	0.875911	0.124089	-2.08675	0
16.5	6.5	14.5	10	6	18	0	1	1	0	0.993421	0.993421	0.006579	-5.02391	0
13.5	7	12.5	7	10.5	17.5	0	1	1	0	0.718559	0.718559	0.281441	-1.26783	0

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
9.5	7	3.5	7	7	3	1	0	1	1	0.742409	0.742409	0.257591	-0.29786	100
13	11.5	14	18	15	16	0	1	1	0	0.004124	0.004124	0.995876	-0.00413	100
12	12.5	18	13.5	15	15.5	0	1	1	0	0.010142	0.010142	0.989858	-0.01019	100
13	14	3.5	16.5	13.5	2.5	0	1	1	0	0.055509	0.055509	0.944491	-0.05711	100
31	17.5	16	17	22	16.5	1	0	1	1	0.99977	0.99977	0.00023	-0.00023	100
32.5	32	15.5	29.5	33.5	7	0	1	1	0	0.490981	0.490981	0.509019	-0.67527	100
44.5	37.5	25	36.5	39	16	1	0	1	1	0.991845	0.991845	0.008155	-0.00819	100
40.5	33	25.5	29.5	40	19.5	1	0	1	1	0.95145	0.95145	0.04855	-0.04977	100
7	7.5	7	7	6	4.5	0	1	1	0	0.260194	0.260194	0.739806	-0.30137	100
22.5	22	12	17.5	21	6.5	1	0	1	1	0.777664	0.777664	0.222336	-0.25146	100
32.5	30.5	16	26.5	31	8	1	0	1	1	0.89428	0.89428	0.10572	-0.11174	100
6	3.5	3.5	7	5	5	0	1	1	0	0.223986	0.223986	0.776014	-0.25358	100
20	13	5.5	15.5	14	7.5	1	0	1	1	0.966916	0.966916	0.033084	-0.03364	100
10	5	9	7	2	8	1	0	1	1	0.970803	0.970803	0.029197	-0.02963	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
5.5	8.5	1	10	10.5	3	0	1	1	0	0.002478	0.002478	0.997522	-0.00248	100
23	15	8	15.5	15.5	6.5	1	0	1	1	0.997064	0.997064	0.002936	-0.00294	100
32	35	20.5	36	36.5	8.5	0	1	1	0	0.012923	0.012923	0.987077	-0.01301	100
27.5	25.5	22	30	27.5	13	0	1	1	0	0.143091	0.143091	0.856909	-0.15442	100
17	14.5	8.5	12	12.5	7.5	1	0	1	1	0.901017	0.901017	0.098983	-0.10423	100
37	28.5	28	35	34.5	24	1	0	1	1	0.558301	0.558301	0.441699	-0.58286	100
23.5	20.5	14	22	22	8.5	1	0	1	1	0.615239	0.615239	0.384761	-0.48574	100
30.5	20.5	18	21.5	25.5	14.5	1	0	1	1	0.993609	0.993609	0.006391	-0.00641	100
45	40	30	40	45	15	1	0	1	1	0.883016	0.883016	0.116984	-0.12441	100
29	18	16	17	18.5	12.5	1	0	1	1	0.999845	0.999845	0.000155	-0.00015	100
19.5	12	15	13	7	10	1	0	1	1	0.999403	0.999403	0.000597	-0.0006	100
21.5	17.5	15	18.5	18.5	21	1	0	1	1	0.2028	0.2028	0.7972	-1.59553	0
5	1.5	0	3.5	1.5	2.5	1	0	1	1	0.73639	0.73639	0.26361	-0.306	100
2.5	0.5	1.5	1	0.5	1.5	1	0	1	1	0.622404	0.622404	0.377596	-0.47417	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
30.5	35	17.5	29.5	34.5	12.5	0	1	1	0	0.012862	0.012862	0.987138	-0.01295	100
14	12	12.5	12.5	11.5	13	1	0	1	1	0.308627	0.308627	0.691373	-1.17562	0
30	24.5	19	23	26	12.5	1	0	1	1	0.971882	0.971882	0.028118	-0.02852	100
22.5	17.5	15.5	17.5	19	11.5	1	0	1	1	0.910648	0.910648	0.089352	-0.0936	100
18	14.5	11.5	14.5	14.5	9	1	0	1	1	0.82736	0.82736	0.17264	-0.18952	100
13	13	6.5	14	12.5	2.5	0	1	1	0	0.276643	0.276643	0.723357	-0.32385	100
16	12.5	9.5	15.5	12.5	5.5	1	0	1	1	0.775208	0.775208	0.224792	-0.25462	100
7.5	7.5	8	7.5	7.5	6	0	1	1	0	0.16911	0.16911	0.83089	-0.18526	100
16	7.5	10	6	7.5	19.5	0	1	1	0	0.981399	0.981399	0.018601	-3.98457	0
7.5	7	11.5	17	10	11.5	0	1	1	0	0.001394	0.001394	0.998606	-0.0014	100
7.5	4.5	4.5	2	2	4.5	1	0	1	1	0.957474	0.957474	0.042526	-0.04346	100
28	15.5	9.5	15	19.5	14.5	1	0	1	1	0.999283	0.999283	0.000717	-0.00072	100
13	10	5.5	9	8.5	4.5	1	0	1	1	0.915075	0.915075	0.084925	-0.08875	100
12.5	15.5	14	21.5	14.5	8	0	1	1	0	0.003086	0.003086	0.996914	-0.00309	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
20.5	20	9.5	23	24.5	9	0	1	1	0	0.011531	0.011531	0.988469	-0.0116	100
25.5	12.5	20.5	12.5	16	16.5	1	0	1	1	0.999835	0.999835	0.000165	-0.00016	100
2	0	0	2.5	0	0	0	1	1	0	0.510307	0.510307	0.489693	-0.71398	0
44.5	37	25	37.5	40.5	15.5	1	0	1	1	0.983957	0.983957	0.016043	-0.01617	100
43	36.5	25	32	40	19	1	0	1	1	0.978762	0.978762	0.021238	-0.02147	100
0	0	10	14	0	5	0	1	1	0	0.003484	0.003484	0.996516	-0.00349	100
34	31.5	18.5	27	34.5	11	0	1	1	0	0.788188	0.788188	0.211812	-1.55206	0
26	22.5	13	19.5	22	8.5	1	0	1	1	0.957796	0.957796	0.042204	-0.04312	100
4	4	4	10.5	7	9	0	1	1	0	0.001856	0.001856	0.998144	-0.00186	100
10.5	6	4.5	9	6.5	5	1	0	1	1	0.809553	0.809553	0.190447	-0.21127	100
9	2	6.5	6	2	5.5	1	0	1	1	0.980291	0.980291	0.019709	-0.01991	100
11.5	11	6	10	10.5	4	1	0	1	1	0.42774	0.42774	0.57226	-0.84924	0
0	0	1.5	3.5	0	0	0	1	1	0	0.113683	0.113683	0.886317	-0.12068	100
26.5	19.5	10.5	19	18.5	7	1	0	1	1	0.997546	0.997546	0.002454	-0.00246	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
29.5	33	19.5	32	32.5	9	0	1	1	0	0.025711	0.025711	0.974289	-0.02605	100
31.5	25.5	22	30	25	10	1	0	1	1	0.981473	0.981473	0.018527	-0.0187	100
17	15	9	13.5	15	7	1	0	1	1	0.684287	0.684287	0.315713	-0.37938	100
36	29	28	37.5	34	25	0	1	1	0	0.148208	0.148208	0.851792	-0.16041	100
30.5	25.5	17	25	26	13	1	0	1	1	0.93917	0.93917	0.06083	-0.06276	100
27.5	22	15.5	21.5	23.5	14	1	0	1	1	0.911872	0.911872	0.088128	-0.09226	100
45	35	30	40	40	20	1	0	1	1	0.981486	0.981486	0.018514	-0.01869	100
10.5	7.5	11	10	10	13.5	0	1	1	0	0.113376	0.113376	0.886624	-0.12033	100
29.5	24	32	28	31	27	0	1	1	0	0.069456	0.069456	0.930544	-0.07199	100
16.5	14.5	13	18	16.5	13.5	0	1	1	0	0.054145	0.054145	0.945855	-0.05567	100
30	18.5	17	19	19.5	14.5	1	0	1	1	0.99972	0.99972	0.00028	-0.00028	100
14	13.5	13	13.5	10.5	8	1	0	1	1	0.574572	0.574572	0.425428	-0.55413	100
36	39.5	28	37	40.5	19.5	0	1	1	0	0.004649	0.004649	0.995351	-0.00466	100
3	0.5	2	1	0.5	2	1	0	1	1	0.716525	0.716525	0.283475	-0.33334	100

<i>S</i>	<i>S₁</i>	<i>S₂</i>	<i>V</i>	<i>A</i>	<i>K</i>	<i>Success</i>	<i>Failure</i>	<i>Total</i>	<i>p-Obs</i>	<i>p-Pred</i>	<i>Suc-Pred</i>	<i>Fail-Pred</i>	<i>LL</i>	<i>% Correct</i>
34.5	30	27.5	23	33.5	23.5	1	0	1	1	0.856565	0.856565	0.143435	-0.15483	100
17	16	14.5	13.5	15	14	1	0	1	1	0.35748	0.35748	0.64252	-1.02868	0
23.5	18.5	12.5	15.5	18.5	11	1	0	1	1	0.974587	0.974587	0.025413	-0.02574	100
24.5	19	18.5	23	23.5	16	1	0	1	1	0.377964	0.377964	0.622036	-0.97296	0
26.5	20	16	20.5	21	12	1	0	1	1	0.977868	0.977868	0.022132	-0.02238	100
12	10.5	7.5	12.5	10.5	6.5	0	1	1	0	0.278745	0.278745	0.721255	-0.32676	100
9.5	9	4	8	7.5	2.5	1	0	1	1	0.558938	0.558938	0.441062	-0.58172	100
						117	93	210			117	93	-65.6569	87.14286

Appendix E

ROC Table

<i>p-Pred</i>	<i>Failure</i>	<i>Success</i>	<i>Fail-Cum</i>	<i>Suc-Cum</i>	<i>FPR</i>	<i>TPR</i>	<i>AUC</i>
			0	0	1	1	0.010753
0.000238	1	0	1	0	0.989247	1	0.010753
0.000459	1	0	2	0	0.978495	1	0.010753
0.000655	1	0	3	0	0.967742	1	0.010753
0.00117	1	0	4	0	0.956989	1	0.010753
0.001394	1	0	5	0	0.946237	1	0.010753
0.00158	1	0	6	0	0.935484	1	0.010753
0.001843	1	0	7	0	0.924731	1	0.010753
0.001856	1	0	8	0	0.913978	1	0.010753
0.002478	1	0	9	0	0.903226	1	0.010753
0.003086	1	0	10	0	0.892473	1	0.010753
0.003484	1	0	11	0	0.88172	1	0.010753
0.003516	1	0	12	0	0.870968	1	0.010753
0.004124	1	0	13	0	0.860215	1	0.010753

<i>p-Pred</i>	<i>Failure</i>	<i>Success</i>	<i>Fail-Cum</i>	<i>Suc-Cum</i>	<i>FPR</i>	<i>TPR</i>	<i>AUC</i>
0.004293	1	0	14	0	0.849462	1	0.010753
0.004487	1	0	15	0	0.83871	1	0.010753
0.004622	1	0	16	0	0.827957	1	0.010753
0.004649	1	0	17	0	0.817204	1	0.010753
0.008193	1	0	18	0	0.806452	1	0.010753
0.008406	1	0	19	0	0.795699	1	0.010753
0.010142	1	0	20	0	0.784946	1	0.010753
0.011253	1	0	21	0	0.774194	1	0.010753
0.011531	1	0	22	0	0.763441	1	0.010753
0.012862	1	0	23	0	0.752688	1	0.010753
0.012923	1	0	24	0	0.741935	1	0.010753
0.018802	1	0	25	0	0.731183	1	0.010753
0.01924	1	0	26	0	0.72043	1	0.010753
0.019308	1	0	27	0	0.709677	1	0.010753
0.021986	1	0	28	0	0.698925	1	0.010753
0.025711	1	0	29	0	0.688172	1	0.010753
0.029406	1	0	30	0	0.677419	1	0.010753
0.033175	1	0	31	0	0.666667	1	0.010753
0.03705	1	0	32	0	0.655914	1	0.010753
0.038826	1	0	33	0	0.645161	1	0.010753
0.040067	1	0	34	0	0.634409	1	0.010753
0.04808	1	0	35	0	0.623656	1	0.010753

<i>p-Pred</i>	<i>Failure</i>	<i>Success</i>	<i>Fail-Cum</i>	<i>Suc-Cum</i>	<i>FPR</i>	<i>TPR</i>	<i>AUC</i>
0.048923	1	0	36	0	0.612903	1	0.010753
0.050649	1	0	37	0	0.602151	1	0.010753
0.054145	1	0	38	0	0.591398	1	0.010753
0.055509	1	0	39	0	0.580645	1	0.010753
0.069456	1	0	40	0	0.569892	1	0.010753
0.081455	1	0	41	0	0.55914	1	0.010753
0.098171	1	0	42	0	0.548387	1	0.010753
0.098552	1	0	43	0	0.537634	1	0.010753
0.100151	1	0	44	0	0.526882	1	0.010753
0.105612	1	0	45	0	0.516129	1	0.010753
0.113376	1	0	46	0	0.505376	1	0.010753
0.113683	1	0	47	0	0.494624	1	0.010753
0.131588	1	0	48	0	0.483871	1	0.010753
0.137527	1	0	49	0	0.473118	1	0.010753
0.137933	1	0	50	0	0.462366	1	0.010753
0.143091	1	0	51	0	0.451613	1	0.010753
0.148208	1	0	52	0	0.44086	1	0.010753
0.16911	1	0	53	0	0.430108	1	0.010753
0.186048	1	0	54	0	0.419355	1	0.010753
0.193171	1	0	55	0	0.408602	1	0
0.195351	0	1	55	1	0.408602	0.991453	0.010661
0.20126	1	0	56	1	0.397849	0.991453	0.010661

<i>p-Pred</i>	<i>Failure</i>	<i>Success</i>	<i>Fail-Cum</i>	<i>Suc-Cum</i>	<i>FPR</i>	<i>TPR</i>	<i>AUC</i>
0.201374	1	0	57	1	0.387097	0.991453	0
0.2028	0	1	57	2	0.387097	0.982906	0.010569
0.20816	1	0	58	2	0.376344	0.982906	0.010569
0.217524	1	0	59	2	0.365591	0.982906	0.010569
0.217524	1	0	60	2	0.354839	0.982906	0.010569
0.223986	1	0	61	2	0.344086	0.982906	0.010569
0.232278	1	0	62	2	0.333333	0.982906	0.010569
0.237874	1	0	63	2	0.322581	0.982906	0.010569
0.259734	1	0	64	2	0.311828	0.982906	0.010569
0.260194	1	0	65	2	0.301075	0.982906	0
0.260397	0	1	65	3	0.301075	0.974359	0.010477
0.276643	1	0	66	3	0.290323	0.974359	0.010477
0.278745	1	0	67	3	0.27957	0.974359	0
0.291614	0	1	67	4	0.27957	0.965812	0.010385
0.299955	1	0	68	4	0.268817	0.965812	0
0.308627	0	1	68	5	0.268817	0.957265	0.010293
0.31778	1	0	69	5	0.258065	0.957265	0
0.323063	0	1	69	6	0.258065	0.948718	0.010201
0.331715	1	0	70	6	0.247312	0.948718	0.010201
0.33675	1	0	71	6	0.236559	0.948718	0.010201
0.351293	1	0	72	6	0.225806	0.948718	0.010201
0.356366	1	0	73	6	0.215054	0.948718	0

<i>p-Pred</i>	<i>Failure</i>	<i>Success</i>	<i>Fail-Cum</i>	<i>Suc-Cum</i>	<i>FPR</i>	<i>TPR</i>	<i>AUC</i>
0.35748	0	1	73	7	0.215054	0.940171	0.010109
0.368348	1	0	74	7	0.204301	0.940171	0.010109
0.375232	1	0	75	7	0.193548	0.940171	0
0.377155	0	1	75	8	0.193548	0.931624	0
0.377964	0	1	75	9	0.193548	0.923077	0
0.397661	0	1	75	10	0.193548	0.91453	0.009834
0.418816	1	0	76	10	0.182796	0.91453	0.009834
0.426031	1	0	77	10	0.172043	0.91453	0
0.42774	0	1	77	11	0.172043	0.905983	0
0.441005	0	1	77	12	0.172043	0.897436	0.00965
0.462744	1	0	78	12	0.16129	0.897436	0
0.462921	0	1	78	13	0.16129	0.888889	0.009558
0.467764	1	0	79	13	0.150538	0.888889	0
0.489891	0	1	79	14	0.150538	0.880342	0.009466
0.490981	1	0	80	14	0.139785	0.880342	0
0.503366	0	1	80	15	0.139785	0.871795	0.009374
0.510307	1	0	81	15	0.129032	0.871795	0.009374
0.54411	1	0	82	15	0.11828	0.871795	0
0.549724	0	1	82	16	0.11828	0.863248	0
0.558301	0	1	82	17	0.11828	0.854701	0
0.558938	0	1	82	18	0.11828	0.846154	0
0.574572	0	1	82	19	0.11828	0.837607	0

<i>p-Pred</i>	<i>Failure</i>	<i>Success</i>	<i>Fail-Cum</i>	<i>Suc-Cum</i>	<i>FPR</i>	<i>TPR</i>	<i>AUC</i>
0.593742	0	1	82	20	0.11828	0.82906	0.008915
0.612653	1	0	83	20	0.107527	0.82906	0
0.615239	0	1	83	21	0.107527	0.820513	0
0.622404	0	1	83	22	0.107527	0.811966	0.008731
0.628424	1	0	84	22	0.096774	0.811966	0
0.656032	0	1	84	23	0.096774	0.803419	0.008639
0.659761	1	0	85	23	0.086022	0.803419	0
0.662669	0	1	85	24	0.086022	0.794872	0
0.679664	0	1	85	25	0.086022	0.786325	0
0.684287	0	1	85	26	0.086022	0.777778	0
0.716525	0	1	85	27	0.086022	0.769231	0.008271
0.718559	1	0	86	27	0.075269	0.769231	0
0.722014	0	1	86	28	0.075269	0.760684	0
0.727347	0	1	86	29	0.075269	0.752137	0
0.728152	0	1	86	30	0.075269	0.74359	0
0.73639	0	1	86	31	0.075269	0.735043	0
0.737433	0	1	86	32	0.075269	0.726496	0
0.742409	0	1	86	33	0.075269	0.717949	0
0.752303	0	1	86	34	0.075269	0.709402	0
0.775208	0	1	86	35	0.075269	0.700855	0
0.777664	0	1	86	36	0.075269	0.692308	0.007444
0.785374	1	0	87	36	0.064516	0.692308	0.007444

<i>p-Pred</i>	<i>Failure</i>	<i>Success</i>	<i>Fail-Cum</i>	<i>Suc-Cum</i>	<i>FPR</i>	<i>TPR</i>	<i>AUC</i>
0.788188	1	0	88	36	0.053763	0.692308	0
0.78939	0	1	88	37	0.053763	0.683761	0
0.796951	0	1	88	38	0.053763	0.675214	0
0.809553	0	1	88	39	0.053763	0.666667	0
0.819156	0	1	88	40	0.053763	0.65812	0
0.826096	0	1	88	41	0.053763	0.649573	0
0.82736	0	1	88	42	0.053763	0.641026	0
0.835008	0	1	88	43	0.053763	0.632479	0.006801
0.84313	1	0	89	43	0.043011	0.632479	0
0.847612	0	1	89	44	0.043011	0.623932	0
0.850614	0	1	89	45	0.043011	0.615385	0
0.853638	0	1	89	46	0.043011	0.606838	0
0.856565	0	1	89	47	0.043011	0.598291	0
0.87373	0	1	89	48	0.043011	0.589744	0.006341
0.875911	1	0	90	48	0.032258	0.589744	0
0.877191	0	1	90	49	0.032258	0.581197	0
0.883016	0	1	90	50	0.032258	0.57265	0
0.884138	0	1	90	51	0.032258	0.564103	0
0.89428	0	1	90	52	0.032258	0.555556	0
0.900368	0	1	90	53	0.032258	0.547009	0
0.901017	0	1	90	54	0.032258	0.538462	0
0.901513	0	1	90	55	0.032258	0.529915	0

<i>p-Pred</i>	<i>Failure</i>	<i>Success</i>	<i>Fail-Cum</i>	<i>Suc-Cum</i>	<i>FPR</i>	<i>TPR</i>	<i>AUC</i>
0.910648	0	1	90	56	0.032258	0.521368	0
0.911872	0	1	90	57	0.032258	0.512821	0
0.915075	0	1	90	58	0.032258	0.504274	0
0.919162	0	1	90	59	0.032258	0.495726	0
0.938462	0	1	90	60	0.032258	0.487179	0
0.93917	0	1	90	61	0.032258	0.478632	0.005147
0.944683	1	0	91	61	0.021505	0.478632	0
0.94967	0	1	91	62	0.021505	0.470085	0
0.95145	0	1	91	63	0.021505	0.461538	0
0.957474	0	1	91	64	0.021505	0.452991	0
0.957796	0	1	91	65	0.021505	0.444444	0
0.960238	0	1	91	66	0.021505	0.435897	0
0.961414	0	1	91	67	0.021505	0.42735	0
0.966916	0	1	91	68	0.021505	0.418803	0
0.96884	0	1	91	69	0.021505	0.410256	0
0.970803	0	1	91	70	0.021505	0.401709	0
0.971882	0	1	91	71	0.021505	0.393162	0
0.974587	0	1	91	72	0.021505	0.384615	0
0.975825	0	1	91	73	0.021505	0.376068	0
0.97587	0	1	91	74	0.021505	0.367521	0
0.976102	0	1	91	75	0.021505	0.358974	0
0.977868	0	1	91	76	0.021505	0.350427	0

<i>p-Pred</i>	<i>Failure</i>	<i>Success</i>	<i>Fail-Cum</i>	<i>Suc-Cum</i>	<i>FPR</i>	<i>TPR</i>	<i>AUC</i>
0.978762	0	1	91	77	0.021505	0.34188	0
0.980291	0	1	91	78	0.021505	0.333333	0.003584
0.981399	1	0	92	78	0.010753	0.333333	0
0.981473	0	1	92	79	0.010753	0.324786	0
0.981486	0	1	92	80	0.010753	0.316239	0
0.983957	0	1	92	81	0.010753	0.307692	0
0.985648	0	1	92	82	0.010753	0.299145	0
0.986989	0	1	92	83	0.010753	0.290598	0
0.98877	0	1	92	84	0.010753	0.282051	0
0.988937	0	1	92	85	0.010753	0.273504	0
0.989819	0	1	92	86	0.010753	0.264957	0
0.990989	0	1	92	87	0.010753	0.25641	0
0.991393	0	1	92	88	0.010753	0.247863	0
0.991646	0	1	92	89	0.010753	0.239316	0
0.991845	0	1	92	90	0.010753	0.230769	0
0.991949	0	1	92	91	0.010753	0.222222	0
0.992987	0	1	92	92	0.010753	0.213675	0.002298
0.993421	1	0	93	92	0	0.213675	0
0.993609	0	1	93	93	0	0.205128	0
0.99477	0	1	93	94	0	0.196581	0
0.995693	0	1	93	95	0	0.188034	0
0.997064	0	1	93	96	0	0.179487	0

<i>p-Pred</i>	<i>Failure</i>	<i>Success</i>	<i>Fail-Cum</i>	<i>Suc-Cum</i>	<i>FPR</i>	<i>TPR</i>	<i>AUC</i>
0.997199	0	1	93	97	0	0.17094	0
0.997544	0	1	93	98	0	0.162393	0
0.997546	0	1	93	99	0	0.153846	0
0.99853	0	1	93	100	0	0.145299	0
0.998536	0	1	93	101	0	0.136752	0
0.998868	0	1	93	102	0	0.128205	0
0.998916	0	1	93	103	0	0.119658	0
0.999283	0	1	93	104	0	0.111111	0
0.999403	0	1	93	105	0	0.102564	0
0.999623	0	1	93	106	0	0.094017	0
0.999681	0	1	93	107	0	0.08547	0
0.99972	0	1	93	108	0	0.076923	0
0.999743	0	1	93	109	0	0.068376	0
0.999747	0	1	93	110	0	0.059829	0
0.99977	0	1	93	111	0	0.051282	0
0.999796	0	1	93	112	0	0.042735	0
0.999835	0	1	93	113	0	0.034188	0
0.999845	0	1	93	114	0	0.025641	0
0.999865	0	1	93	115	0	0.017094	0
0.999919	0	1	93	116	0	0.008547	0
0.999941	0	1	93	117	0	0	0
							0.94063

Appendix F

IEC Approval



UNIVERSITY OF HYDERABAD INSTITUTIONAL ETHICS COMMITTEE DECISION LETTER



IEC No.	UH/IEC/2021/171	Date of review	21-12-2021
Application No:			
Project Title:	Effect of Indian Classical Music: A Svara Based Approach to Stressed Individuals- A Pilot Study		
Principal Investigator/ Co-PI:	PI: Mr. Abirral Gangopadhyay CI: Prof. J.S.R. Prasad & Prof. B.R. Shamanna		
Participating Institutes if any	----	Approval from Participating Institute	----
Documents received and reviewed	Protocol & ICP		
In case of renewal submission of update	----		
Decision of the IEC:	Approved Duration: One year from date of approval		
Any other Comments Requirements for conditional Approval	----		
Members Present	Dr. A.S. Sreedhar, Dr. M. Srinivas, Prof. B. R. Shamanna, Dr. M. Varalakshmi, Sri. A. Madhava Rao, Dr. Stalin Choudary, Prof. Pingali Sailaja, Dr. M. K. Aruansree and Dr. Deepa Srinivas		

Please note:

- Any amendments in the protocol must be informed to the Ethics committee and fresh approval taken.
- Any serious adverse event must be reported to the Ethics Committee within 48 hours in writing (mentioning the protocol No. or the study ID)
- Any advertisement placed in the newspapers, magazines must be submitted for approval.
- If the conduct of the study is to be continued beyond the approved period, an application for the same must be forwarded to the Ethics Committee.
- It is hereby confirmed that neither you nor any of the members of the study team participated in the decision making/voting procedures and declared conflict of interest.

A S Sreedhar
21/12/21

Chairman

(Dr. A S Sreedhar)

Prof. B. R. Shamanna
21/12/2021

Member Secretary

(Prof. B. R. Shamanna)

Dr. M. Varalakshmi

Convenor

(Dr. M. Varalakshmi)

Address: School of Medical Sciences, University of Hyderabad, C. R. Rao Road, Gachibowli, Hyderabad-5000046
Tel (O): +91-040-23135470/23135471 Email: iec_uoh@uohyd.ernet.in, deanmd@uohyd.ernet.in

Appendix G

Participant Information Sheets (English & Telugu)

Information to Participant

Study Title
Therapeutic Effect of Indian Classical Music: A <i>Santa</i> Based Approach to Stressed Individuals – A Pilot Study
We would be pleased to have you as a participant in this study which is a pragmatic part of the doctoral research of Mr. Abirral Gangopadhyay (18HISPH01). This research is jointly supervised by Prof. J. S. R. Prasad and Prof. B. R. Shamanna.
Our Affiliations
This research takes place under the University of Hyderabad, Gachibowli, Hyderabad, Telangana, where the researcher is a doctoral student of the Department of Sanskrit Studies. Prof. J. S. R. Prasad is head of the same department. Prof. B. R. Shamanna is in the School of Medical Sciences. This research is financially supported with an award of Doctoral Research Fellowship by the Indian Council of Social Science Research (ICSSR), New Delhi, India.
Why this Study?
This present study observes the effect of music with <i>Santa Rasa</i> (aesthetic emotion related to calmness, pleasantness, self-possession, etc.) on stressed people. It will help follow the potential of the research outcome practically and see the better effect on mental health with emotion-centred music.
What kind of music is being experimented?
The musical piece for listening to is not a Raga and does not belong to any class of present Indian classical music forms. The rendition method is based on some Sanskrit traditional musicology texts, which is exclusively taken for this study to evoke specific emotions. The music is played in Rudra Veena by Sri Sayak Mitra, a well-versed Kolkata based Rudra Veena player. The researcher directed the artist about the rendition method to execute the music.
Who is going to be involved?
People with stress as a result of anxiety, depression consulting the Dr. Sharma's REHAB (House No 1-124/94, Shama Rehab, Thoomkunta Village Shameerpet, Secunderabad, Telangana 500078) will be taken. We are looking at ages between 18-60 years for this experiment.
What will be the benefit to be a part of this study?
If you are under stress and medication, participating in this study could relax you mentally and make you feel comfortable.
Is there any possible risk?
No. Still, if you feel uncomfortable with the music to which you have to listen, you may step aside from this study at any time.
What will happen with the study results?
Results will be helpful in the thesis and publishing of scientific papers. Moreover, if you want to know your result, we will let you know about the same.

Thank you!

**In case of any query, please feel free to call the researcher, 8910849202*

ఈ అధ్యయనంలో పాల్గొనేవారికి సూచన

అధ్యయన శీర్షిక

భారతీయ శాస్త్రీయ సంగీతం యొక్క చికిత్సా ప్రభావం: ఒత్తిడికి గురైన వ్యక్తులకు స్వర ఆధారిత విధానం - ఫైలబ్ అధ్యయనం

శ్రీ అబ్దుల్ గంగ్‌పాద్యాయ (18HSPH01) యొక్క డాక్టరల్ పరిశోధనలో ఆచరణాత్మక భాగమైన ఈ అధ్యయనంలో మీరు భాగస్వామి అవుతున్నందుకు మేము సంతోషిస్తున్నాము. ఈ పరిశోధనను ప్రొఫెసర్ జె.ఎస్.ఆర్.ప్రసాద్ మరియు ప్రొఫెసర్ బి.ఆర్. శ్యామ్ సంయుక్తంగా పర్యవేక్షిస్తున్నారు.

మా గురించి వివరణ

ఈ పరిశోధన యూనివర్సిటీ ఆఫ్ హైదరాబాద్, గచ్చిబౌలి, హైదరాబాద్, తెలంగాణ పరిధిలో జరుగుతోంది. ఈ విశ్వవిద్యాలయంలో పరిశోధకుడు సంస్కృత అధ్యయన విభాగంలో పి.హెచ్.డి. విద్యార్థి, ప్రొఫెసర్ జె.ఎస్.ఆర్.ప్రసాద్ ఇదే విభాగానికి అధిపతి. ప్రొఫెసర్ B. R. శ్యామ్ స్కూల్ ఆఫ్ మెడికల్ సైన్సెస్లో ఆచార్యులుగా ఉన్నారు. ఈ పరిశోధనకు న్యూఢిల్లీలోని ఇండియన్ కౌన్సిల్ ఆఫ్ సైన్సెస్ సెన్సెస్ రిసెర్చ్ (ICSSR) డాక్టరల్ రిసెర్చ్ ఫెలోషిప్ తో ఆర్థిక సహాయాన్ని కల్పిస్తోంది.

ఈ అధ్యయనం ఎందుకు?

ఒత్తిడికి గురైన వ్యక్తులపై శాంత రస (ఆహ్లాదం, స్వీయ స్వాధీనత మొదలైన వాటికి సంబంధించిన భావోద్వేగం)తో కూడిన సంగీతం ఎటువంటి ప్రభావాన్ని చూపగలదని అని ప్రస్తుత అధ్యయనం ద్వారా మేము గమనిస్తున్నాము. భావోద్వేగ కేంద్రీకృత సంగీతం మానసిక ఆరోగ్యంపై మెరుగైన ప్రభావాన్ని చూపటానికి సహాయపడినట్లయితే తద్వారా ఈ పరిశోధన ఫలితాలతో భారతీయ సంగీత చికిత్సా అనే శాస్త్రీయవిషయంపై మరింత లోతుగా అధ్యయనం చేసి సమాజానికి మేలు కలిగించే అవకాశం లభిస్తుంది.

ప్రస్తుతం మీకు వినిపించబోయే సంగీత భాగం ఒక రాగాన్ని ఆశ్రయించి ఉండకపోగా భారతీయ శాస్త్రీయ సంగీత రూపాలలో ఏ తరగతికి చెందినది కాదు. ఇప్పుడు మేము ఆశ్రయించిన పద్ధతి కొన్ని ప్రధానమైన సంస్కృత సాంప్రదాయ సంగీత శాస్త్ర పరమైన గ్రంథాలపై ఆధారపడినది. నిర్దిష్ట భావోద్వేగాలను ప్రేరేపించడానికి ఈ అధ్యయనం కోసం ప్రత్యేకంగా ఈ పద్ధతి డిజైన్ చేయబడింది. ఈ సంగీతాన్ని రుద్ర వీణలో బాగా ప్రావీణ్యం పొందిన కోల్ కతాకు చెందిన వాద్యకారుడు శ్రీ సాయక్ మిత్రా గారు అందించారు. వాద్యకారునితో కలిసి రెండిషన్ పద్ధతిలో సంగీతాన్ని పరిశోధక విద్యార్థి ట్యూన్ చేసారు.

ఈ అధ్యయనంలో ఎవరు భాగస్థులు?

ఆందోళన, డిప్రెషన్ కారణంగా ఒత్తిడితో బాధపడుతున్న Dr. Sharma's REHAB (House No 1-124/94, Sharma Rehab, Thoomkunta Village Shameerpet, Secunderabad, Telangana 500078) ఓపీడి విభాగానికి వచ్చేవారిని సంప్రదించడం జరుగుతుంది. ఈ ప్రయోగం కోసం మేము 18-60 సంవత్సరాల మధ్య వయస్సు గలవారిని ఎన్నుకున్నాము.

ఈ అధ్యయనంలో భాగం కావడం వల్ల ప్రయోజనం ఏమిటి?

మీరు ఒత్తిడితో బాధపడుతున్నట్లయితే, ఈ అధ్యయనంలో పాల్గొనడం వలన మీరు మానసికంగా విశ్రాంతిని, సంతోషాన్ని పొందవచ్చు.

ఏదైనా ప్రమాదం ఉందా?

లేదు. అయినా, మీరు వింటున్న సంగీతం చేత మీకు అసౌకర్యంగా అనిపిస్తే, మీరు ఎప్పుడైనా ఈ అధ్యయనానికి దూరంగా ఉండవచ్చు.

అధ్యయన ఫలితాలతో ఏమి జరుగుతుంది?

సైంటిఫిక్ పేపర్లు మరియు థీసిస్ పబ్లిషింగ్లో ఈ ఫలితాలు సహాయపడతాయి. అంతేకాకుండా, మీరు ఈ ప్రయోగ ఫలితాలను తిలుసుకోవాలనుకుంటే, మీకు తిలియజేయడానికి మేము సంతోషంగా తిలియచేయగలము.

Appendix H

Consent Form (English & Telugu)

Participant Consent Form

No.: PG/C/E/ ____

Date: ____/____/2022

Study Title

Therapeutic Effect of Indian Classical Music: A *Svara* Based Approach to Stressed Individuals – A Pilot Study

Study Process

Two pilot groups containing 5 participants in each are our target respondents. Both groups will continue with standard of care prescribed by their treating doctor for the health issue. This is an experiment under the receptive method of music therapy which means participants of experimental group will be provided with a music clip (here the clip is around of 7 minutes) to listen. The music, here, is rendered in Rudra Veena. It is a pure music, which means no percussion instrument as an accompaniment is there. It is our hypothesis that this music will help to the participants to become calm, pleasant, joyful, self-possessed, which will help them to bring their mental health and stability (homeostasis). We consider that at the end of this experiment people with emotion centric receptive music therapy along with their usual prescribed medication will be more benefited than the participants with usual medication.

It is declarable and request for the participants that they should listen to the music itself and not try to relate with any kind of viz. rāga, Hindustani classical, Carnatic classical, semi classical or anything like this. **Also, we are ensuring that any kind of confidential data of this study shall not be disclosed with our knowledge. If you do not want to participate or leave the study anytime, you are welcome to do so.**

There will not be any incentive or financial consideration for participation. We will do this study under the guidance of your treating doctor.

Name of Researcher: Mr. Abirlal Gangopadhyay, Dept. of Sanskrit Studies, UoH (Principal Investigator)

Name of Supervisor: Prof. J. S. R. Prasad, Dept. of Sanskrit Studies, UoH (Co-Investigator 1)

Name of Co-supervisor: Prof. B. R. Shamanna, School of Medical Sciences, UoH (Co-Investigator 2)

Participant's Name	
Age	
Gender	
Health Issue	

I hereby declare that I participate in this study freely and voluntarily. I am informed and aware of the study process and have no objection regarding the same.

Time: ____: ____ a.m./p.m.

Signature of Participant

Signature of Primary Investigator

Signature of Co-Investigator 1

Signature of Co-Investigator 2

Participant ID: ____

పాల్గొనేవారి సమ్మతి ఫారమ్

No.: PG/C/E/ _____

తేది _____

అధ్యయన శీర్షిక

భారతీయ శాస్త్రీయ సంగీతం యొక్క చికిత్సా ప్రభావం: ఒత్తిడికి గురైన వ్యక్తులకు స్వర ఆధారిత విధానం - ఫైలట్ అధ్యయనం

అధ్యయన ప్రక్రియ

ప్రతిబృందంలో 5 మంది పాల్గొనే రెండు ఫైలట్ గ్రూపులు మా లక్ష్యము. ఈ రెండు బృందాలు ఆరోగ్య సమస్యల నివారణ కోసం వారి వైద్యులు సూచించిన ప్రామాణికమైన సంరక్షణలో కొనసాగుతాయి. మ్యూజిక్ థెరపీ యొక్క గ్రహణ పద్ధతిలో ఇది ఒక ప్రయోగం. అంటే ప్రయోగాత్మక సమాహారంలో పాల్గొనేవారు వినడానికి సంగీత క్లిప్ (సుమారు 7 నిమిషాల నిడివి గల క్లిప్) అందించబడుతుంది. ఈ సంగీతం రుద్ర విణలో ట్యూన్ చేయబడింది. ఇది శుద్ధమైన సంగీతం, అంటే 'పెర్కషన్' వాయిద్యం లోడుగా ఉండదు. అధ్యయనంలో పాల్గొనేవారికి ఈ సంగీతం ప్రశాంతంగా, ఆహ్లాదకరంగా, ఉల్లాసంగా, ఆత్మాభిమానంగా మారేందుకు సహాయపడుతుందని, ఇది వారి మానసిక ఆరోగ్యం మరియు స్థిరత్వాన్ని (హోమియోస్టాసిస్) తీసుకురావడానికి సహాయపడుతుందని మా అంచనా. ఈ ప్రయోగం ముగింపులో ఎమోషన్ సెంట్రీక్ రిసెప్టివ్ మ్యూజిక్ థెరపీలో భాగస్థులైన వ్యక్తులు సాధారణ మందులు వాడుతూ అధ్యయనంలో పాల్గొనేవారి కంటే ఎక్కువ ప్రయోజనం పొందుతారని మేము భావిస్తున్నాము.

ఈ అధ్యయనంలో పాల్గొనేవారు వినబోయే ఈ సంగీతాన్ని హిందుస్థానీ క్లాసికల్, కర్నాటిక్ క్లాసికల్, సెమ్మి క్లాసికల్ లకు సంబంధించిన ఏ రాగంలో కూడా లింక్ చేయరాదని అభ్యర్థన. అలాగే, ఈ అధ్యయనానికి సంబంధించిన గోప్యమైన డేటాను మేము బహిర్గతం చేయమని మీకు మాట ఇస్తున్నాము. మీరు ఎప్పుడైనా అధ్యయనంలో పాల్గొనకూడదనుకుంటే లేదా నిష్క్రమించాలనుకుంటే, మీకు అందుకు పూర్తి స్వాతంత్ర్యం ఉన్నది.

ఈ అధ్యయనంలో భాగస్వామ్యానికి ఎలాంటి ప్రోత్సాహకం లేదా ఆర్థికపరమైన సహాయం ఉండదు. మేము మీ వైద్యుల మార్గదర్శకత్వంలో ఈ అధ్యయనాన్ని చేస్తున్నాము.

పరిశోధకుడు: Mr. అబిర్లాల్ గంగోపాధ్యాయ, సంస్కృత అధ్యయన విభాగం, UoH (ప్రిన్సిపల్ ఇన్వెస్టిగేటర్)

పర్యవేక్షకుడు: ప్రొఫెసర్. J. S. R. ప్రసాద్, సంస్కృత అధ్యయన విభాగం, UoH (సహ-పరిశోధకుడు 1)

సహ-పర్యవేక్షకుడు: ప్రొఫెసర్. B. R. శ్యామన్న, స్కూల్ ఆఫ్ మెడికల్ సైన్సెస్, UoH (కో-ఇన్వెస్టిగేటర్ 2)

అధ్యయనంలో భాగస్వామి పేరు	
వయస్సు	
పురుషుడు/స్త్రీ	
ఆరోగ్య సమస్య	

నేను ఈ అధ్యయనంలో స్వేచ్ఛగా మరియు స్వచ్ఛందంగా పాల్గొంటున్నానని ఇందుమూలంగా ప్రకటిస్తున్నాను. అధ్యయన ప్రక్రియ గురించి నాకు సమాచారం మరియు అవగాహన కలిగినది మరియు దానికి సంబంధించి ఎటువంటి అభ్యంతరం కూడా లేదు.

సమయం: ____:____ a.m./p.m.

భాగస్వామి సంతకము

పరిశోధకుని సంతకము

పర్యవేక్షకుని సంతకము

సహ-పర్యవేక్షకుని సంతకము

Participant ID: _____

Appendix I

Subjects' Data: BP & HR

Subject ID	Day	Session	B/A	Systolic	Diastolic	Heart Rate
P01	1st	1st session	Before	110	70	91
		1st session	After	100	80	93
		2nd session	Before	100	70	103
		2nd session	After	100	80	96
	2nd	1st session	Before	120	80	98
		1st session	After	100	80	92
		2nd session	Before	110	80	98
		2nd session	After	100	70	94
	3rd	1st session	Before	100	70	83
		1st session	After	120	90	90
		2nd session	Before	120	90	94
		2nd session	After	110	90	89

Subject ID	Day	Session	B/A	Systolic	Diastolic	Heart Rate
	4th	1st session	Before	100	70	95
		1st session	After	100	70	96
		2nd session	Before	120	90	108
		2nd session	After	100	70	108
	5th	1st session	Before	110	70	84
		1st session	After	100	70	97
P02	1st	1st session	Before	120	80	76
		1st session	After	110	60	79
		2nd session	Before	120	70	75
		2nd session	After	120	60	72
	2nd	1st session	Before	120	80	84
		1st session	After	120	60	80
		2nd session	Before	120	80	86
		2nd session	After	130	90	68
	3rd	1st session	Before	120	80	64
		1st session	After	100	80	70
		2nd session	Before	120	90	94
		2nd session	After	110	90	89

Subject ID	Day	Session	B/A	Systolic	Diastolic	Heart Rate
	4th	1st session	Before	110	80	82
		1st session	After	120	90	75
		2nd session	Before	100	70	84
		2nd session	After	120	90	64
P03	1st	1st session	Before	100	70	84
		1st session	After	110	70	85
		2nd session	Before	110	90	94
		2nd session	After	110	90	86
	2nd	1st session	Before	120	40	95
		1st session	After	120	90	80
		2nd session	Before	120	80	93
		2nd session	After	100	70	85
	3rd	1st session	Before	110	80	85
		1st session	After	110	80	89
		2nd session	Before	120	90	98
		2nd session	After	120	90	87
	4th	1st session	Before	100	70	98
		1st session	After	100	70	82

Subject ID	Day	Session	B/A	Systolic	Diastolic	Heart Rate
P04		2nd session	Before	120	80	84
		2nd session	After	100	80	93
		5th 1st session	Before	100	80	93
		1st session	After	120	90	89
	1st	1st session	Before	130	90	108
		1st session	After	110	60	97
		2nd session	Before	110	60	107
		2nd session	After	90	60	107
P04	2nd	1st session	Before	130	90	100
		1st session	After	NA	NA	NA
		2nd session	Before	120	70	106
		2nd session	After	120	90	110
	3rd	1st session	Before	130	90	98
		1st session	After	NA	NA	NA
		2nd session	Before	130	100	108
		2nd session	After	130	90	108
	4th	1st session	Before	130	90	97
		1st session	After	NA	NA	NA

Subject ID	Day	Session	B/A	Systolic	Diastolic	Heart Rate
		2nd session	Before	130	90	112
		2nd session	After	120	90	100
	5th	1st session	Before	130	90	100
		1st session	After	NA	NA	NA
P05	1st	1st session	Before	130	90	107
		1st session	After	110	80	110
		2nd session	Before	100	90	99
		2nd session	After	NA	NA	NA
	2nd	1st session	Before	100	70	96
		1st session	After	120	80	96
		2nd session	Before	110	90	110
		2nd session	After	NA	NA	NA
P06	1st	1st session	Before	110	80	95
		1st session	After	140	80	95
		2nd session	Before	130	70	94
		2nd session	After	100	70	91
	2nd	1st session	Before	130	90	97
		1st session	After	130	90	80

Subject ID	Day	Session	B/A	Systolic	Diastolic	Heart Rate
		2nd session	Before	130	100	108
		2nd session	After	120	90	88
3rd	1st session	Before	120	60	97	
		After	120	90	92	
	2nd session	Before	120	90	94	
		After	120	90	95	

1st session=morning; 2nd session=evening

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SK830	DISSERTATION RELATED READINGS	4	PASS

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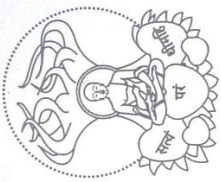
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अधिगीतं मोक्षस्वरूपविचारः

आवीरलाल गङ्गोपाध्यायः*

डा. जे.एस्.आर्. प्रसादः*

लोके सङ्गीतशब्देन गीतस्यैव ग्रहणं भवति,¹ न तु तच्छास्त्रे। तत्किल गीतस्य वाद्यस्य नृत्यस्य च।² तस्मात् सङ्गीतपदं पारिभाषिकम्। अतोऽत्र निबन्धे गीतपरकतया विचारे प्रवर्तमाने शीर्षकेऽपि गीतपदस्य ग्रहणम्। न तु सङ्गीतपदस्य।

मोक्षः खलु चतुर्विधपुरुषार्थेषु चरमः। गीतेन चतुर्वर्गफलप्राप्तिर्बहुधा श्रूयते। तत्र पुनः त्रिवर्गाणां सिद्धिस्तु लोके भूयशो दृश्यते। कल्लिनाथेनैव सङ्गीतरत्नाकरटीकायां श्रुतिप्रमाणेन तत्सर्वं साध्यते।³ तद्यथा धर्मावाप्तिः ब्राह्मणौ वीणागाथिनौ गायतो ब्राह्मणोऽन्यो गायेत् इति श्रुतेः। देवतावन्दनादिष्वपि गीतप्रयोगो लोकतो दृश्यते इति अर्थसिद्धिः। सम्पत्तिपरकत्वेन तु लोके बहुधा दृश्यते एव अर्थसिद्धिः। कामप्राप्तिस्तु तस्माद्वायन्तं स्त्रियः कामयन्ते इति श्रुतेः। मोक्षसिद्धिश्च –

वीणावादनतत्त्वज्ञः श्रुतिजातिविशारदः।

तालज्ञश्चाप्रयासेन मोक्षमार्गं नियच्छति ॥⁴इति।

*शोधच्छात्रः, संस्कृताध्ययनविभागः, हैदराबादविश्वविद्यालयः।

*प्राध्यापकः, संस्कृताध्ययनविभागः, हैदराबादविश्वविद्यालयः।

¹समित्युपसर्गस्तु गीतशब्देन सह प्रयुज्यमानो गीते स्वेन आधेयातिशयाभावाद् गीतस्य अन्ययोगं द्योतयन् शब्दत्वसामान्येन वाच्यस्य तदुभयाभिव्यञ्जकत्वेन नृत्यस्य च गीतेन सम्बन्धं विशिनष्टि इति कलानिधौ कल्लिनाथः। पृ.६

²गीतं वाद्यं तथा नृत्यं त्रयं सङ्गीतमुच्यते इति सङ्गीतरत्नाकरे शार्ङ्गदेवः (१.१.२१)

³कलानिधिटीकायां कल्लिनाथः। पृ.८

⁴याज्ञवल्क्यस्मृतिः ३.११५



ARTICLE



Therapeutic elements of music in ancient India: a brief review in *Bṛhatrayī*

Abirlal Gangopadhyay¹ · J. S. R. Prasad²

Received: 2 December 2021 / Accepted: 31 March 2022
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Abstract

The non-medical Sanskrit texts have indirect references to music as a therapy in ancient India. The vaidyas used it as an alternative therapeutic technique in addition to conventional treatment methods for coma and post-coma complications, tuberculosis, *pitta* aggravation, protective measures for newborns and in cases of mental distress to regain homeostasis. They also used soothing, pleasant music and employed efficient musicians to execute it. Caraka was the first physician who suggested employing musicians as supporting staff in public hospitals. In spite of such valuable references, music therapy did not become a separate branch of research in ancient India. Strikingly, there are similarities and differences in modern music therapy vis-à-vis therapeutic elements of music mentioned in *Bṛhatrayī* and some other important texts. This paper tries to review all such issues to demonstrate the contemporary relevance of the therapeutic effects of music in ancient India.

Keywords Ayurveda · *Gīta* · *Vādītra* · *Vīṇā* · Music therapy · *Saṅgīta-Cikitsā*

1 Introduction

Both in civilized and uncivilized societies, a few cultural underpinnings are inherently common to each other and the music is one among them, unhesitatingly. It is inherent in nature and is reflected in various forms. The ancient sages of India found the seven musical notes in nature by observing inspirational similarities from various animal sounds and singing of birds. Music has strongly influenced Indian civilization over ages. Sages delved deep into the nuances of musical notes and developed a more sophisticated *śruti* system, as seen from some of the important Sanskrit works. They meticulously studied the psychological impact that musical notes could generate in one's mind. Any genre of music has an inherent capacity to evoke emotions, not only in the human minds but in animals too. The following verse affirms this statement:

वनेचरस्तृणाहारश्चित्रं मृगशिशुः पशुः।
लुब्धो लुब्धकसंगीते गीते यच्छति जीवितम्॥

vanecaras-trṇāhāraś-citraṃ mṛga-śiśuḥ paśuḥ |
*lubdho lubdhakasamgīte gīte yacchati jīvitam ||*¹

Even a fawn, an animal feeding on grass and moving in the forest, attracted by the song of a hunter, is ready to sacrifice its life.

(Śārṅgadeva trans. 1978).

This is an excellent example of how music attracts even the animals, only to be trapped later by the hunter. Peacock beautifully dances to the natural rain music. Recent research showed that cows yield more milk listening to good music (Lemcke et al., 2021; Sweet Music for Milking, 2001; Uetake et al., 1997). Undoubtedly, these instances establish the influence of music on animals and birds. Evoking emotion is not necessarily dependent on the literary part of a song. An infant

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¹ See 1.1.39 of *Saṅgītaratnākara*.

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