

Polymorphism of Classical Taalas: A Study on Its Evolution and Adaptations.

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Abstract

Polymorphism allows for the creation of a generic interface that includes several related tasks. The idea of 'Taala' has been presented in this article with a basic polymorphic technique. Taala is a unique characteristic that indicates the precise rhythm of the song. The various Marga and Desi taalas in Indian Classical music present their significance at different times. This paper is an attempt to study such classification and the challenges in the reconstruction of Taalas that lead to further adaptations. Through this approach, we explore the possible reasons for polymorphism and its adaptability in modern times.

Key words: Marga, Desi, Kaala, Taala, Laya, Taalangs, Evolution and Adaptations.

1. Introduction

Kaala pramanam is an essential component of music. This is measured through taalas. There are many taals mentioned in texts and in practice. Even though all musical traditions have certain traits in common, they can also be distinguished from one another by unique qualities that must be found and maintained. Western music traditions have always been the focus of information technologies used for music processing, and new research is highlighting this bias even more. But we must research and take use of the distinctive features of various musical cultures if we are to create technologies that can handle the diversity of music.

Taala is defined as the measurement of the time taken to present the song with rhythm. In order to measure this angulyadi (fingers)– limbs are used. Tala provides the temporal framework within which the music is to be composed. Various actions are executed with the hands, particularly with the palms and fingers. The actions of temporal sections form different durations. If it is divided into small equal segments, and if such segments are repeated one after the other without interruption, then it is rhythm, and if the total extent of the cycle is subdivided into different scales, then it is the anatomy of taala. This establishes the basic aspect of time in music. This is defined in many lakshashanagranthas. This article presents the arguments about taala definitions, derivation based on yatharthapaddhati and deviations.

2. Methodology

In order to understand the polymorphism of taalas it is important to study the lakshnana granthas – the texts those define the procedures in defining taalas. Distinctive texts provide the basis for the organizational structure associated with classical music and dance. The fact that dance and music have retained their classical music throughout the ages is proof enough of the importance and influence of the Lakshana texts on the practical aspects. There are many books on music and dance since Vedic times. The timeline of texts should be closely observed.

Table 1: An analysis of the resources that are available between Natyashastra(earliest reference) and Sangitaratnakara (A prominent lakshana grantha of definitions)													
	Marga	Gandharva & Gaana		Tamil Text	Establishment of Desi		Tamil Text	Influence of Natyashastra, Brihadeshi and transformations are observed in the texts after 11th century					
Time line	4th B.C (approx)	5th B.C (approx)	Void	6th C.E (approx)	6 th to 8 th C.E (approx)	Void	9th C.E (approx)	10th C.E	11th C.E	11th C.E	12th C.E	12th C.E	13th C.E
Texts	Natyashastra	Dattilam		Cilapadizaram	Brihaddeshi		Panchamarabu	Aumapatam	Abinavabhatati	Saravathiridavalankara	Saigittasamavasarasatgeraha	Sangitachudamani	Sangitaratnakara

The texts from the 4th century B.C. to the 13th century C.E. are shown in Table 1. There are references to Vedic texts prior to Natyashastra. Natyashastra enumerates the Marga taalas of those eras and describes how they should be presented in daily life. Gandharva and Gaana are clearly defined by Dattilam. We discover voids between 5th Century B.C to 6th Century C.E and between 8th Century C.E to 9th Century C.E. Probably the texts were not significant or few may be lost. The text Brihaddeshi was also reconstructed later. 13th Century onwards there are texts at regular intervals till the recent times. These texts suggest the formulae behind measurement of taalas or kaala pramana. The formulae defined in this is studied and also applied in the modern times to study its originality and deviations.

Measurement of Kaala Pramana

The 31st chapter of Naatyashastra defines taala as follows:

तालः – लयान्वितः – taala is rhythmic.
निमेषाः पञ्चमात्रास्यात् मात्रयोगात् कलाः स्मृताः
निमेषाःपञ्चविज्ञेयाः गीतकाले कलान्तरम् ।
ततः कलाकालकृतो लय इत्यभिधीयते।

The time taken to utter a letter (vowel) is considered as one maatra kaala. nimEsha is considered to be of pancha-maatrakaala. Based on the time taken to utter the swaras during the presentation of music – geeta kaala taala can be defined in multiple ways. Such a classification is called *laya*.

Naatyashastra defines 5 major taalaa of those times namely – chachatputa, chaachaputa, shatpitaa putraka, samkarkeshtAaka and utghata. These taalaa are called maraga taalaa.

Yathakshara paddati was used to measure the kaala pramana initially, that is laghu, guru and plutha terms were defined based on the time used to spell the letters. This follows the formulae defined in Asthadhyayi. In Asthaadhyayi of Panini the terms laghu, guru and plutha are defined as follows;

- ऊ कालः अच् ह्रस्व-दीर्घ-प्लुतः। १.२.२७
- ह्रस्वं लघु । १.४.१०
- संयोगे गुरु । १.४.११, दीर्घ च । १.४.१२

The time taken to spell a vowel (maatraa kaala) is (hrasva akshara) is called lagu, double that is guru, one more kala pramana added to that is pluta. Also pluta is understood as the time taken to call a person at a distance place. This maatra kaala is further considered to define the taala lakshanaas. Marga or Manava means measure, it says the measure of the Laghu Guru Puthama of the tala.

The above rule is applied to the Marga taalaa mentioned in Natyashastra in order to explore the application of it.

चच्चत्पुटश्चाचपुट इति नाम्नी तयोः क्रमात् ।
यथाक्षरश्च द्विकलश्चतुष्कल इति विधा ॥ १८ ॥
प्रत्येकं तौ नामगतैर्गलस्तव यथाक्षरः ।

In the term chachatputa – letter cha is alpaprana akshara and of hrasva, however it is followed by samyuktaakshara that is combination of consonants without vowel in between. Thus, as per Panini's rule it is (samyoge guru) guru, similarly the next letter (chat) is also guru. The following letter is pu – alpaprana, hrasva akshara and next letter is taha and it is not samyukta akshara. Thus it is laghu. The last letter is taha. चच्चत्पुटे त्वन्त्यप्लुतं विदुः, this statement says that the last letter should be considered as pluta.

If the symbol of guru is S and laghu is I, Ś is pluta then;

Cha-chat-pu-taha with anga can be represented as S-S-I-Ś

If we consider the number of letters as in accordance to formula 2 then the total number of letters should be S (guru) = 2x I (laghu - 5) = 10, I = 5, Ś (pluta) = 3x I (laghu - 5) = 15
S-S-I-Ś = 10+10+5+15 = 40

In terms of maatra kaala two gurus thus 2X2=4, one laghu, one plutha = 1x3=3, thus it is 4+1+3 = 8 maatraas.

It is important to observe the application of same formula and the definition of Maatra Kaalas in later texts. In order to explore this data from synopses compilation project was considered. Dr. Robert E. Brown, Professor of Music, Sandiego State University, United States of America had come to India in 1985 on a Smithsonian Institution Grant to conduct a project on Dēśītāla-s. An academic committee consisting of Dr. Brown, Dr.S.Seetha, Professor and Head, Department of Indian Music, University of Madras, Dr.S.S. Janaki, Director Kuppuswami Sastri Research Institute and Dr. Pappu Venugopal Rao, Regional Director, American Institute of Indian Studies. Microfilms of manuscripts were collected from various libraries and individuals are considered in this project. Table2 presents different texts included in the compilation project along with other details.

Table 2: Comparison of taalas based on the above mentioned project

Sl. No.	Combination of Guru laghu and pluta	Name of the Author/ Reviewer – R and other details	Text	Chachatputa	Chaachaputa	Shatpitaaputraka	Sampakveshtaaka	Udghatta
1	Chaccatputa S S I S' Cāpaputa S I I S Ṣatpitāputraka S' I S S I S' Sampatvēṣṭaka S' S S S S' Udghaṭṭa S S S	Bharatamuni	Natyashastra	8	6	12	12	6
2	Chaccatputa S S I S' Cāpaputa S I I S Ṣatpitāputraka S' I S S I S' Sampatvēṣṭaka S' S S S S' Udghaṭṭa S S S	Mrs. Hema Ramanathan - R	Ashtottara taalaanam prabandham	8	6	12	12	6
3	Chaccatputa - S S I S' Cācaputa - S I I S' S Ṣatpitāputraka - S I S S S' Sampadvēṣṭaka - S' S S I S' Udghaṭṭa - S S S	Mrs. Parvati Krishnamurthi – R Madras Government Oriental Series – Editor - K. Vasudeva Sastri - B.A.B.L.	Aumaapatam	11	9	13	11	6
4	Chaccatputa : S S I S' Cācaputa : Cācaputa has one guru, one laghu and one guru, in all six Mātra-s. Ṣatpitāputraka : Ṣatpitāputraka has one pluta, two guru-s, one laghu, two guru-s, one laghu, one pluta in all twelve Mātra-s. Sampakvēṣṭaka : Sampakvēṣṭaka has one pluta, three guru-s and one pluta, in all twelve Mātra-s. Udghaṭṭa : Udghaṭṭa has three guru-s - in all six Mātra-s.	Hema Ramanathan - R	Bharatacātiram (Tamil)	8	6	12	12	6
5	Chaccatputa S S I S' Cāpaputa S I I S Ṣatpitāputraka S' I S S I S' Sampatvēṣṭaka S' S S S S' Udghaṭṭa S S S	Nandikēśvara Edited by Saṅgīta Kalā Śikhāmaṇi Śrī k. Vasudeva Sastry – B.A. Mrs. Parvati Krishnamurthi - R	Bharatāmava	8	6	12	12	6
6	Caccatputa - g g l p Cāpaputa - g l l g Ṣatpitāputraka - p l g l p Sampakvēṣṭā - Magaṇa - p Udghaṭṭa - Magaṇa	Pārśvadēva, Dr. R. Satyanarayana - R	saṅgītasamay asārasaṅgraha 12th C.E	8	6	12	9	6
7	Caccatputa - S S S' Cāpaputa - S S S' ? Ṣatpitāputraka - S' S S S' Sampakvēṣṭaka - S' S S S S' Udghaṭṭa - S S S	Jagadēkamalla, Personal Library of Dr. R. Satyanarayana,	Sangitachudamani -12th C.E	8	-	12	12	6
8	Caccatputa : Tagana (antyalaghu) with pluta S S I S [S']Cācaputa : guru, 2laghu-s and vakra (guru) - S I I SṢatpitāputraka : pluta followed by Magaṇa and 2 pluta-s S' S S S S' Udghaṭṭa : 3 guru-s form Udghaṭṭa S S S	Vacanācārya Sudhākalaśa, R. Kamala - R	Saṅgītōpaniṣad Sārōddhāra-14th C.E	10	6	12	-	6
9	Chaccatputa S S I S' Cāpaputa S I I S Ṣatpitāputraka S' I S S I S' Sampatvēṣṭaka S' S S S S' Udghaṭṭa S S S Caccatputa - 2 guru-s, laghu, pluta	Śrīkaṇṭha Mrs. Parvati Krishnamurthi - R	Rasakaumudi , 16th Century; Saurashtra	8	6	12	12	6
10	Cāpaputa - guru, laghu, pluta Ṣatpitāputraka - guru, laghu, guru, guru, laghu, guru Udghaṭṭa - Magaṇa caccatputa - S S S' S' cācaputa - S S S	Haribatta (Catura Dāmōdara)	Sangitadarpanam 1620 A.D	8	6	10	-	6
11	Ṣatpitāputraka - S' S S S' sampadvēṣṭaka S S' S S S' udghaṭṭa - magaṇa S S S	Basava Mrs. Parvati Krishnamurthi - R	Sivatattvaratnākara, 1684 t0 1710 A.D	11	5	12	13	6

12	Caccatputa 2 guru-s, a laghu and a pluta S S I S' Cāpaputa S I S Ṣatpitāputraka S' I S S I S' Sampatvēṣṭi. a Magaṇa S S S' S' S S S S' Udghaṭṭa Magaṇa S S S	Nārada	Saṅgītamakaranda	8	5	12	12	6
13	Caccatputa - 2 pluta-s Cāpaputa - Tagaṇa, Pluta Ṣatpitāputraka - pluta, laghu, guru, guru, laghu, pluta Sampatvēṣṭaka -3 guru-s , pluta Udghaṭṭa - 3 guru-s	Gajapati Śrīnārāyaṇadēva, Dr. Jayashree - R	Saṅgītanārāyaṇa A.D. 1718 - 1767	4	5	12	9	6
14	Caccatputa S S I S' Cāpaputa (Cārapaṭa) S I S Ṣatpitāputraka S' I S S I S' Sampakvēṣṭa ? Udghaṭṭa S S S caccalpuṭē j S S S' ccācapuṭābhidhē S S ṣaḍppitāputrakastathā. S' S S S' sampakvēṣṭika saṅjñakē S' S S S S' ulghaṭṭē magaṇa svēka - S S S	Śrīraṅganādha Akella Mallikarjuna Sarma - R	Saṅgītasārōdhāra	8	5	12	-	6
15	Cañcatputam - S S I S Cāpapuṭam - S I I S Ṣatpitāputrakam - S I S S S Sampadvēṣṭakam - S S S S S	S. Rajalakshmi - R	Saṅgītaavidhikalā - Kerala	8	6	12	12	6
16	Udbhaṭatālam - S S S Cañcatputa S S I S' - 8 G G L P Cāpaputa S I S - 5 - G L G	A.M.Sarma- R	Tāladhārilakṣaṇam	7	6	9	10	6
17	Ṣatpitāputraka S' I S S I S - 11 P L G G L G Sampadvēṣṭa S' S S S S' - 12 - P G G G P Udghaṭṭa S S S - 6 G G G Caccatputa consists of two vakra-s (guru-s), one Śīla (laghu) and one pluta. S S I S' = (8) Cācapuṭa Śīlai (guru) S I I S = (6) Śarpitā - (Ṣatpitāputrakam) S' I S S I S' = (12) Sampakkeṭṭam S' S S S S' = (12) Urghaṭṭitam (Udghaṭṭitam) three Śīlai-s (guru-s) S S S = (6)	A.M.Sarma- R	Tālalākṣaṇam & Tālaprastāra	8	5	11	12	6
18		Hema Ramanathan - R	Tālasamudra	8	6	12	12	6

3. Observations

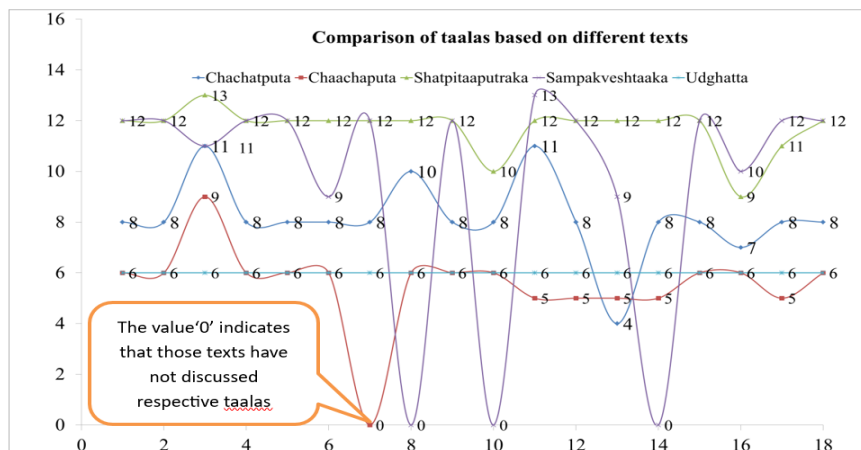


Figure: 1

Marga taalās and its maatra kaalas are mentioned in the above project. If we consider the maatra kaalas, laghu –guru and pluta prescribed in the Natyashastra as the norm, we can find deviations in the later texts. We can infer from figure 1 that Udghatta has remained constant with 6 maatra kaalas – three gurus. Probably the chachatputa and chaachaputa were used more than the other taalās and thus the deviation with lowest 4 to highest 11 for chachatputa is observed and Chaachaputa. Few texts have not discussed the matrakala of Chachatputa and Chaachaputa. Another significant observation is that except Udghatta other taalās differ in maatra kaalas.

4. Discussions

In order to explore the reasons for variations (in figure1) the preliminary text Natyashastra was referred. Natyashastra has mentioned the presentation w.r.t dvikala, chatushkala as discussed earlier. Chachatputa and Chaachaputa varied more than other taalās. Adding to this Sangitaratnakara the prominent text in defining taalās was referred. This text defines the concept of Sankirna Taala. The opinion of Bharatamuni and its deviation is discussed in the text Sudhakra to define Sankirnatālaas. About taala –pramaana Natyashastra says;

तालः घन इति प्रोक्तः कलापातलयान्वितः
कालस्तस्य प्रमाणं हि विज्ञेयं तालयोक्तृभिः (३१. १)

The combination of Kalaa and Kriya are presented in taala. Naayashastra says the pramaana or the time taken is the perception and depends on the presenters. The combination of kriya and kaala or the time taken shall lead to many ways of presentation.

अस्यापि मिश्रभावाच्च मिश्र तालः प्रकीर्तितः (३१.१७)

The above statement of Natyashastra says that the mishrabhava leads to Mishra taala (combinations or Variations). The five taalās Chachattu, Chachaputa, Sampaksheshtaka, Shatataputra and Udghatta are believed to have come from the five faces of Shiva that is Sadyojata, Vamadeva, Aghora, Tatpurusha, and Ishana. The practitioners and lakshnakaaras of later period perhaps eliminated the latter three of Marga taalās and have considered only Chachatputa and Chaachaputa. These two taalās also differed from the Yathakshara definition later. This is probably the reason for the origin of Desi taalās. Brihaddeshi(of Matangamuni) the significant text has given special importance to the subject -‘desi’ and thus one can understand the scope of ‘desi’ in music. Also in the literature the desi concept is observed more. Mahamahopadhyaya Dr. R. Satyanarayana mentions about this phase change in his work Karnataka Sangita Vahini. In Marga taalās, only the following three namely Laghu, Guru and Plutha were considered. Later in the Margtalās, the five angas Druta, Laghu, Guru, Pluta, Kakapada (Hamsapada) are observed. Also Nihsabda were also used with another rhythm called Virama. Among these, Druta and Laghu were taken from Chandahshastra and adapted to benefit the dances of Geethavadya in accordance with the ratio of chandas shastra. The number of letters was determined to count talaanga. The kaala prama considered for Laghu as one, Dhruva as two and pluta as three times laghu, Kakapada four times of laghu etc. The proportions of the rest of were considered as multiples of laghu.

This is an important milestone in the history of this music. It is clear from the musical studies of the time that before this there was a uniform melody in all Indian music. In that transition, Hindustani music reacted by adopting Persian and other cultural influences, while Carnatic music responded by making necessary changes within the boundaries of the ancient tradition and maintaining its originality. Thus the taalās also were subjected to these changes.

5. Conclusion

The combinations of laghu – guru-pluta and its prastaara are part of taalanga. Sangita ratnakara describes the ancient taalās with such taalanga and has structured its presentation. In the thirteenth century, perhaps the North Indian or Hindustani music was influenced by Persian and Afghan music, while, South Indian music has developed its own tradition and individuality (Bhagyalekshmi 2004,2). The practice of South Indian tala systems varies according to sacred or profane traditions. The incorporation of Western notation into sheet music became popular in the late 1990s. Marga taalās presentation perhaps is challenging in recent times. However, measuring four or five syllables, so the scale of dhruva was extensive. Marga also deviates from the norm, the five-character time scale for their luminance also slowly faded. In the taalās differences in appearance were slowly reduced and only differences in norms remained.

In the 15th and 16th centuries, there were three variations in abbreviations: Manushi with four syllables, Desi with five syllables, and Divya with six syllables. The combinations lead to Desi taalās. The paadas are divided into three, four or

five equal parts and divided into trishra, chaturashra and so on. To create and extend the liberty rested with singer, dancer's performer's discretion. However for the limitations kaala-kalaa and margas were defined. The combination with equal time scales, lead a way of presentation. Such presentation ways have been derived from scientific systematic methods and are called prastaaras. This is taala praana. If the syllables are considered as called ka-cha-ta-tha-pa, the time taken to spell these letters (hrasva akshara) shall be considered in laghu. Two times laghu will be guru and three times laghu will be pluta.

These developments led to a new system called Sulaadi taalas.

**ध्रुव-मठ्यं रूपकंच झंपा त्रिपुट एवच ।
अट तालैक तालश्च सप्त तालाः प्रकीर्तिताः ॥**

Dhruva-Mathya-Rupaka-Jhampa-Triputa-Ata-Eka –taala; these are seven Sulaadi taalas. This order is suggested by Krishnacharya in the text Karnataka Sangita Daasakuta – Hulaguru 1951, Pg 99,100.

The letters were reduced from six syllable size to half that and turned into lowercase in Suladitala. Haridas expanded the small and large motive by creating four, five, seven, seven, nine sub-varieties in Sula and other talas inspired by the strong continental mix of Deshitalas. But originally Shadjatilaghu was entered only in Trishra tala, Chaturashrajatilaghu only in Dhruva, Mathya, Rupaka and Ektatalas, Khandajatilaghu only in Attatalas, Misrajatilaghu only in Jampetla, and the use of the equivalent jaati was not mentioned. This continued till the eighteenth century. This is because the Haridasas of Karnataka adopted and preserved this chain only in this particular light casting and in the size of all the talavarta of Suladis and they worked on it and their other buildings. Jampatala the triputatata of the trisarajati are observed to be widely used later.

Thus the polymorphism of taalas is quite evident in theory and practice. Along with the lakshanagranthas parallel literature study shall add to the clear understanding of the popular taalas in practice and the reasons for further evolution.

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