ISSN: 2349-4654
Naad-Nartan Journal of Dance & music Volume : 9, Issue-1, October 2021

Tala tradition of Bharata

Sayak Mitra
Boral, Rishi Rajnarayan Pally, P.O.- Boral, South 24 parganas, Kolkata – 700154

Paper recieved on : September 05, Return on September 07, Accepted on September 10, 2021

Abstract

The topic of the research is Tāla tradition of Muni Bharata's system, which has prescribed by the Muni in his treatise 'nāṭyaśāstra'. This is the research on Time and space or 'Time unit' and 'Spatial unit' from the perspective of the tāla of 'nāṭyaśāstra'. The first attention was the 'Spatial' unit of tāla, which has derived from 'vāstuśāstra' and 'śilpaśāstra'. In case of 'sthānaka' (the basic stance) and for the dance movements and also in 'āhārya'(costume), 'nāṭyaśāstra' follows the spatial tāla concept of vāstu & śilpaśāstra. The endeavor was to find out the pedagogy of Bharata's tāla for dance and music. The reconstruction of two fundamental tala of Bharata-'cat cat pu tah' & 'cā ca pu tah' for the caturasra and tisra. Mainly the 'Cheironomical' pattern of the system was followed and executed practically. To execute the tālas, it would need a group of cheironomists, who can show the sounded and unsounded hand gestures accordingly Muni Bharata. As an instance it can be observe the sculptural evidence of 'Shailendra Dynasty' (778 – 850 CE). Bharata's system was actually the science of tāla. It is totally different from today's any tāla system. The process made for music, dance and theatre. It was a multi-disciplinary art.

Key Words : Natya Shashtra, Bharat, Time, Space, Rhythm

Research Paper

The 'tāla' word derived from the root 'tal', which means 'base'. With this root of the particular word by adding 'ghañi'(घञि) suffix, the 'tāla' word derives.

'तालस्तलप्रतिष्ठायामिति धातोर्घञि स्मृतः'।
[samgīta ratnākara, chapter 5, shlokam -2] [1]
'tālastalapratisthāyāmiti dhātorghañi smrtah'

So, the root of the word is suggesting that 'tāla' is such component which is the base of music and dance. In the perspective of Muni Bharata 'tāla' is not only an element of music and dance but also it is one of the basic elements of 'nātya' [theatre]. The concept of 'tāla' has two different aspects, one part is for the measurement of time another is for space. So, one root is connected to 'vāstu' and another is connected to the 'kāla' or time. That is why, the fundamental base of any audio-visual presentation is 'tāla'.

In all 'deśi' tradition of India they have their own tāla. All Indian dance and music form follow their own rhythmic process. In the system of Bharata's music, dance and theatre tāla has taken an important role as well. But the system of Bharata's tāla is completely different from today's any tāla process. Actually, Bharata's intention to teach the science and metaphysics of the tāla.

Time Space & Rhythm

Tāla is a conceptual and perceptual time unit along with space unit. Which means it is not only a rhythmic cycle but also creating a space through the vibration. In nātyaśāstra we are getting this both perspective of tāla. Accordingly vāstuśāstra,[2] 'any space is filled with countless particles of energy which vibrate.' So, the primordial space was also filled with these energy particles, from where the universe derived, and for that reason every animate thing follows rhythmic vibration or rhythm for its material growth, which is called spatial form.

The legend vāstukāra V.Ganapati Sthapati explained this concept in the comparison of vāstu and Force Field theory of modern physics, also he made a diagram to make understand this theory easily.

Time Units	Space Units Derived From The Grain
8 Ganam= 1 Lavam	8 Parmanu = 1Car Dust (000916mm)
8 Lavam = 1 Kashta	8 Car Dust = 1 Liksha (0.007328mm)
8 Kashta= Nimish	8 Liksha = 1 Yuka (0.058624mm)
4 Nimish = 1 Tudi	8 Yuka = 1 Tila (Seasame seed – 0.468992mm acceptable least dimension)
8 Tudi = 1 Kuru	8 Tila= 1 Yava (3.751936 mm, say 3.75mm unhusked paddy grain)
	8 Yava = 1 Angula (30mm measurement of body dimension)
	8 Angula = 1 Pada (24 cm)
8Taal=1VYAM	**8 Pada = 1VYAM (192 cm)**
	3 Angula = 1 Parva (9 cm)
	8 Parva = 1 Hasta (72 cm) = 24 Angula = 3 Pada
	12 Angula = 1 Vishti (36 cm)
	4 Hasta = 1 Danda (288 cm)
	8 Danda = 1 Rajju (2304 cm)[3]

Dr. Sthapati mentioned, “In Vaastu science, the building is laid out according to specific dimensions. These dimensions are a reflection of specific basic measures with which the designer begins his layout of the plan…. In the domain of the creative work of any art form or object of utility, we know that “movement” and “measure” always go hand in hand…. Every country has developed a system of measures for its creative endeavors. For instance, we find the metric system being used in European countries and the foot-inch system in the American continent. Surprisingly, in India, though we have adopted the metric system of measures, from very early times there has been a unique system of linear measures, the significance of which is not known to the contemporary technical world.

The unit of measure that India used before the advent of the British system implied a unique concept of time and space. This time-measure has come to de designated in the scientific field by a peculiar term called ‘kāla mānam’ and in the technological domain as ‘tāla mānam’, each of which means ‘time-measure’. The “Time” that is known to the Vaastu science is independent or absolute, not solar time, which is physical or relative.

There is a Tamil expression for signifying death: ‘kāla mānan’. This literally means that one merged with ‘Time’ or ‘dissolved in time’. This is very much expressive of the scientific concept of time as held in the Indian tradition of vāstu. ‘Time’ signifies growth of the physical body and the end of that body. Time creates, sustains and erases life. This concept is not only applicable to objects in the universe, but also the universe itself. The universe itself is a product of time.”[4]

‘Tāla’ in nātyaśāstra:

That is why ‘tāla’ is a universal pervasive concept which has time and space both. The root ‘tal’ means not only base or surface, but also palm, roof of a building we can get as a gross meaning of that particular root. In nātyaśāstra we are getting the concept of ‘tāla’ in spatial and also as time unit. One is for the measurements of the static postures [sthānaka] and other one is for the music & dance. In Natyashastra chapter 10, Bharata Muni prescribed the basic stance for the male. There he mentioned the measurements between two feet in the term of ‘tāla’.

“द्वौ तालावर्धतालश्च पादयोरन्तरं भवेत्।
योस्समुत्थितस्त्वेकस्त्रश्रः पक्षस्थितोऽपरः॥ [NS-10/52] [5]
किंचिदञ्चितजङ्घं च सौष्ठवाङ्गपुरस्कृतम्।
वैष्णवं स्थानमेतद्धि विष्णुरत्राधिदैवतम्॥ [NS-10/53]” [6]

dvau tālāvardhatālaśca pādayorantaram bhavet |
tayossamutthitastvekastraśrah paksasthito'parah ||
[NS-10/52]

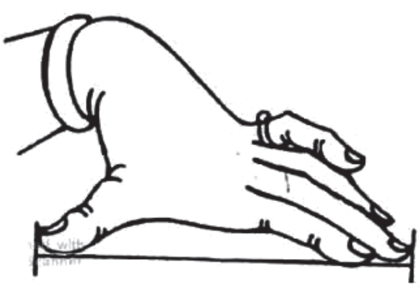
**kimcidañcitajangham ca sausthavāngapuraskntam |
vaisnavam sthānametaddhi visnuratrādhidaivatam ||
[NS-10/53]”**

In the detailing of ‘vaisnava sthānaka’ he mentioned, ‘द्वौ तालावर्धतालश्च’ means two and half ‘tāla’ is the measurement for vaisnava sthānaka. Now how as a dancer we can measure this? What is ‘tāla’ here? In Sangita Ratnakara Sharangdev mentioned,

**‘अङ्गुष्ठमध्यमाङ्गुल्यो ये हस्तस्य प्रसारिते ।
तदग्रयोरन्तरालं तालमाहुर्मनीषिणः’ ॥ [SR VII, 1036][7]**

**“angusthamadhyamāngulyo ye hastasya prasārite |
tadagrayorantarālam tālamāhurmanīsinah ||”
[SR VII, 1036]**

The distance between thumb and the top of the middle finger of a stretched palm is called ‘tāla’ by the wise ones.



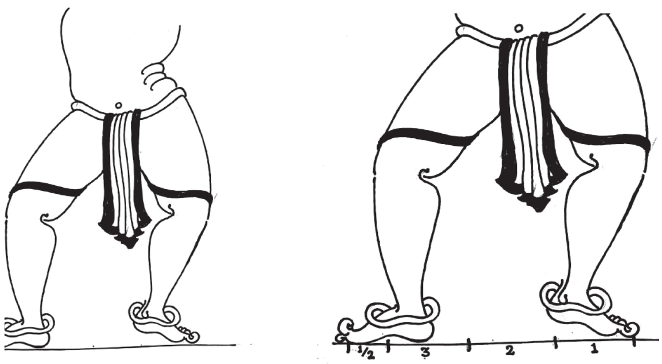
[Figure 1 – span]

As a Nata [theatre actor] when we have to measure a sthānaka [basic stance] we have to follow this ‘tāla’ measurement. But always measuring by hands is not possible, because bending down and measuring by the hands actually impossible in the time of performance. That’s why the measurement we have to maintain by our feet. And the distance between heel to the root of the toe is also one ‘tāla’.

[Figure 2 – measurement of one span is equivalent to one foot.]

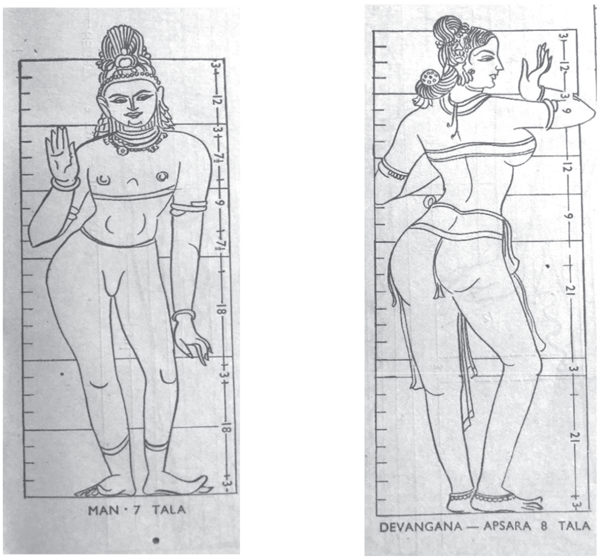
Accordingly, this when we have to measure a basic stance like ‘vaisnava’ or ‘vaiśākha’ we should measure those by our feet. The distance between both feet in ‘vaisnava sthānaka’ is two and half span. Likewise, in ‘vaiśākha sthānaka’ the measurement is three and half span.

Here ‘tāla’ is such component by which we can measure the distance between two feet. The measurement we can get only measuring by the feet. The four feet we have to measure first then we have to drag little the feet to make it three and half. But this measurement a performer has to understand through practice only, and this ‘tāla’ measurement creates a physical space of a particular character on stage. The changes of the measurements portray different shapes of different characters, automatically the natural pulse or natural way of expression of an actor easily dissolve and the pulse of the characters come out. The distance between the feet portrays the ‘bhāva’ of a character. Accordingly, the character not only ‘tāla’ changes but also the measurement of posture also changes. This is also a part of ‘tāla’.



[Figure 3 - vaiśākha sthānaka three and half span]

Simultaneously, in ‘śilpaśāstra’[8] we can get the measurements of human, deva, apsarā, dānava etc. Accordingly, the ‘śilpaśāstra’, a normal human body usually preserves 7 ‘tāla’. But an ‘apsarā’ preserves 8 ‘tāla’. We all are human, from that perspective we all are generally in 7 ‘tāla’ [7]. Now the question is how in a performance we can turn ourselves from a human body to a ‘Apsara’s body? In that case ‘āhārya’ or costume can elevate a human structure to ‘apsarā’s structure. ‘āhārya’ or costume, hairstyle, ornaments etc. in Indian arts we can see usually in elaborative manner. There is not a single art from in India which hasn’t an articulated, elaborated costume design. In theatre and dance both. Even, in ‘Verhut’[200 – 300 BC] sculpture we can see, musicians were used to sit in the orchestra with properly designed dress and hair design.



[figure 4 – the measurements of a human and apsarā]

[figure 5, Bharhut sculpture, 200 – 300 BC]

But what is the purpose of doing this? The main intension is to elevate a human structure towards transcendence. Automatically the presentation elevates in that space. This treatment with art is a very ancient technique. Not only in India but also in whole Asian arts follow this rule. In Japan Noh theatre also has such stylization. In India Kutiyattam, Yakshagana, Shatriya etc. art forms are also following this. So, by changing the 'tāla' of a performer in posture and also in costume [āhārya] creates the essence of different characters. Likewise, the spatial tala concept creates an impact in a 'nātya'.

'Tāla' in Bharata's music:

In the 31st chapter of Natyashastra Bharata Muni mentioned -

'वाद्यं तु यद्घनं प्रोक्तं कलापातलयान्वितम ।
कालस्तस्य प्रमाणं हि विज्ञेयं तालयोगतः'॥१॥[NS-31/1][9]

'vādyam tu yadghanam proktam kalāpātalayānvitama |
kālastasya pramānam hi vijñeyam tālayogatah'||1||

Just like the word tāla in this verse, the words kalā and pāta are also ambiguous and therefore left untranslated. For the time being we may take kalā (unit of time), pāta (beats), and laya (pause/tempo) as a practical enumeration of related and fundamental concepts from the realm of the ancient rhythmic system, which are duly treated in succeeding verse. The interpretation of this verse is not easy as it is impeded the barrage of key terms (viz tala, ghana, kala, pata, laya, kaala and pramana), most of which have multiple layers of technical meaning and connotations. It should however be noted that in the context of the matrical or rhythmical organization of music, these terms relate to the fundamental notions of time and action.

However, the main problem here is that the word tala allows for more than one interpretation. In the translations tala has been interpreted in the sense of percussion instrument, more specifically as cymbals.

But, here the meaning of the word 'ghana' is multi-layered. It is suggesting in dance, music, and theatre the solid base is 'tāla'. Without 'tāla' any performing art is impossible. Might be the form is visual or audio or audio-visual. That is why "ghana" is not suggesting the cymbals only, but also identifying as the main base of Art.

In Bharata's system the 'tāla' was cheironomical. And cymbals are actually used for maintaining that cheironomy. Not only that, Bharata mentioned different hand gestures to identify this cheironomy. In this system there were three sounded hand actions and four unsounded hand actions.

saśabda kriyā / sounded actions

'शम्या तालो ध्रुवश्चैव सन्निपातस्तथा परः।
इति शब्देन संयुक्तो विज्ञेयोऽपि चतुर्विधः' ॥ [NS – 31/ 31][10]

śamyā tālo dhruvaścaiva sannipātastathā parah|
iti śabdena samyukto vijñeyo'pi caturvidhah ||

dhruva – Snapping with the middle finger and thumb; this is one not an independent action, but it precedes sounded action.

Ta.– tāla– the left hand striking the right hand
Sa. – samyā – the right hand striking the left hand
Sam.– samnipāta – both hands striking each other.

'सव्यहस्तनिपातः स्याच्छम्या तालस्य वामतः ।
हस्तयोस्तु समः पातः सन्निपातः इति स्मृतः' ॥ [NS – 31/ 37] [11]
savyahastanipātah syācchamyā tālasya vāmatah |
hastayostu samah pātah sannipātah iti smrtah ||

ni:śabda kriyā /unsounded action

'तत्रावापोऽथ निष्क्रामो विक्षेपोऽथ प्रवेशनम्।
चतुर्विकल्प इत्येव निःशब्दः परिकीर्तितः' ॥ [NS – 31/30] [12]
tatrāvāpo'tha niskrāmo viksepo'tha praveśanam|
caturvikalpa ityeva nihśabdah parikīrtitah ||

āvāpa – a – closing of fingers on the upward palm.

'उत्तानाङ्गुलिसङ्कोच आवाप इति संज्ञितः' ॥ [NS – 31/32 [13]
uttānāngulisankoca āvāpa iti samjñitah ||

niskrāma – ni - opening of fingers with the downward palm.

'निष्क्रामोऽधोगतस्य स्याद्ङ्गुलीना प्रसारणात्'। [NS–31/33] [14]
niskrāmo'dhogatasya syādngulīnā prasāranāt |

viksepa – vi – throwing out, wave to the hand towards the right.

'तस्य दक्षिणतः क्षेपो विक्षेप इति संज्ञितः'॥ [NS – 31/33] [15]
tasya daksinatah ksepo viksepa iti samjñitah||

praveśa – pra – entry, closing of the fingers with the downward palm.

'निवर्तनं च हस्तस्य प्रवेशोऽधोमुखस्य तु' । [NS – 31/34] [16]
nivartanam ca hastasya praveśo'dhomukhasya tu |

These actions actually maintain the circular pattern of the 'tāla'. In four sounded actions mainly three are highly applied in Bharata's system, which are tāla, samyā & samnipāta. In three sounded actions anyone could be the first one, accordingly that the name of the 'tāla' differs. Like, Bharta's basic fundamental 'tāla's are 'cat cat pu tah' which is 'caturasra', means circulate in 4 count, and 'cā ca pu tah', which is 'tisra', means circulate in 3 count.

'चञ्चपुटश्च विज्ञेयस्तथा चाचपुटो बुधैः ।
चतुरश्रस्तु विज्ञेयस्तालश्चञ्चत्पुटो बुधै : ॥ [NS – 31/8] [17]
त्रयश्रश्चाचपुटः प्रोक्तो गुरुलघ्वक्षरान्वितः' । [NS – 31/9] [18]
cañcaputaśca vijñeyastathā cācaputo budhaih|
caturaśrastu vijñeyastālaścañcatputo budhai : ||
trayaśraścācaputah prokto gurulaghvaksarānvitah |

Now, in case of 'cat cat pu tah', if the sounded action is going to start with 'tāla' then the name should be 'tāladi cat cat pu tah', likewise, if it starts with 'samyā' then the name of the particular tāla should be 'samyādi cat cat pu tah' and in the case of 'samnipāta' it should be 'samnipātadi cat cat pu tah'. The same process is applicable in 'Cha Ch Pu Taha'. Means, 'tāladi cā ca pu tah', 'samyādi cā ca pu tah', 'samnipātadi cā ca pu tah'.

Now the structure of both 'tālas' we have to understand. Basically, the pattern of Bharat's 'tāla' is depends on 'aksara' & 'mātrā'. The textual record of 'aksara' & 'mātrā' is a conceptual and perceptual time unit which respectively appears in the term of Vedic chandas. The gist of these references is that mātrā is a conceptual time-unit that is concretized or manifested in aksara (syllable). Like –

1. mātrā = 1 hrasva (short)

2. mātrā = 1 dīrgha (long)

3. mātrā = 1 pluta (prolonged)

The unit time for reckoning Kaala is mātrā. The mātrā is taken as the total duration of uttering the five short syllables 'Ka, Ca, Ta, ta, Pa'.

'पञ्चलघ्वक्षरोच्चारमिता मात्रेह कथ्यते ॥१६॥
अनया मात्रयात्र स्याल्लघुगुर्वादिकल्पना'। [NS-31/16] [19]
pañcalaghvaksaroccāramitā mātreha kathyate ||16||
anayā mātrayātra syāllaghugurvādikalpanā'|
[NS-31/16]

So, one 'mātrā' is actually is a time span of uttering five short syllables 'Ka, Ca, Ta, ta, Pa'. So, one 'mātrā' is equivalent to one 'Laghu'. When two 'Laghus' are amalgaming, it is becoming one 'Guru', and when three 'Laghus' are amalgaming the 'Pluta' is deriving. In any 'deśī tāla' system we can't get the presence of 'Pluta'. The concept of 'Pluta' directly coming from the Vedic Chandas. But the treatment in Veda and treatment in nātya is totally different. In Veda the time span has not bounded in five short syllables. Only in Bharata's 'tāla' system this special treatment with 'pluta' we can get, and only for this characteristic Bharata's 'tāla' tradition is nowhere parallel with any 'deśī' tradition, and also from any preconceive notion we cannot judge or understand Bharata's 'tāla' system.

To understand the structure of the 'tāla', we require a proper analysis. This tradition not only depends on Chaironomy, but also the nomenclature indicates the structure of the 'tāla'. Here the 'guru' and 'laghu' of 'Chanda śāstra' is applicable.

'सानुस्वारश्च दीर्घश्च विसर्गी च गुरुर्भवत्।
वर्णः संयोगपूर्वश्च तथा पादान्तगोऽपि वा' ॥
- [छन्दोमञ्जरी । प्रथम स्तवक । ११][20]

sānusvāraśca dīrghaśca visargī ca gururbhavat|
varnah samyogapūrvaśca tathā pādāntago'pi vā ||
- [chandomañjarī | prathama stavaka |11]

In 'cat cat pu tah', accordingly 'Chanda śāstra' 'Cat' is a combination of two letters [Ca + t (च + त)], that's why 'Cat' word is 'guru'. In case of 'pu'(पु) it is a 'laghu'. 'tah' is also a combination of two letters like 'Cat' [ta + h (ट +ः)], that means this is also a 'guru'. So accordingly that in 'cat cat pu tah' we are getting 'guru(S) + guru(S) + laghu(I) + guru(S)'. But here is a problem with the last 'guru', because, by the repetition of the word 'Chat' is suggesting that the particular 'tāla' is actually 'caturasra', the double utterance of 'cat' is an indication of that. In case of 'cā ca pu tah' is exactly opposite. The word 'cā' has not repeated, by which we can get that the 'cā ca pu tah' is not a 'caturasra' 'tāla'.

Now, in 'cat cat pu tah' we are getting S+S+I+S. In this format one 'laghu' means on 'mātrā', which is holding the five syllables utterance time, therefore one 'guru' is two 'mātrā' [a combination unit of two laghus]. From that perspective if we analysis the given structure, we will get follows –

S+S+I+S = (I+I) + (I+I) + I + (I+I) = total 7 laghus.

If the counting of the 'laghus' are coming 7 in numbers all total, then the 'caturasra' structure we are not getting. In case of 'caturasra' we require at least 8 'laghus'. In this case, Bharata Muni himself solved this confusion. He mentioned as a rule [vidhi], we have to take the last 'tah' as 'pluta' only in 'cat cat pu tah'. In rest 'tāla's we can take this 'tah' as 'guru'.

'आदौ द्वे गुरुणी यत्र लघु च प्लुतमेव च ।
स विज्ञेयः प्रयोगज्ञैस्तालश्चञ्चत्पुटाश्रयः' ॥ [NS – 31/9][21]

ādau dve gurunī yatra laghu ca plutameva ca |
sa vijñeyah prayogajñaistālaścañcatputāśrayah ||

So, accordingly the Muni, 'cat cat pu tah' 'tāla' should be –

cat cat pu tah / [guru + guru + laghu + pluta]

S S I S'

I I I I I I I I = 8 laghu = 8 mātrā

The first structure of the 'tāla' which we are getting by uttering the name is called 'yathāksara'. So, S + S + I + S' this structure is called 'yathāksara'. From 'yathāksara' we are getting 8 laghus. The time span of uttering this 8 laghus is – 8 x 5 = 40. So, the 8 times utterance of five short syllable 'Ka, Cha, Ta, ta, Pa' is the total time span of 'cat cat pu tah' tala's fastest tempo.

Tempo in Bharata's 'Tāla':

Like all other tāla system of India, in Bharata's tradition the tempo takes a vital role. But, the 3 tempos were treated differently in that system. It was not at all like today's 'tāla' traditions. Now a days, we usually start the tempo from slowest one, which is called 'vilamvita', but in Bharata's tradition firstly we are getting the fastest one by breaking the 'yathāksara' pattern. Accordingly Bharata, this is called 'Eka-Kal'. Means, 8 mātrā which has held by 40 'laghu aksara kāla' [utterance time of 5 short syllables] is the fastest tempo of 'cat cat pu tah tāla', the tempo named as 'Eka Kala'. Now, the next step is construction of the 'madhya laya' or moderate tempo. Bharata Muni mentioned this tempo as 'Dvi Kal'.

Now, how we will get the 'Dvi-Kal' structure of 'cat cat pu tah tāla'? The process of increasing 'mātrā' along with 'aksara kāla' is the process to construct the second tempo and then the third. In Bharata's system of 'tāla' tempo actually decrease step by step.

So, the 'Eka Kal' structure is –

S S I S' = I I + I I + I + I I I

Here one guru is holding two laghus, in this space if one guru holds 4 laghus, and one laghu could be the equivalent of two laghu, then the 'aksara kāla' would be increased. Like –

S S I S' = I I I I + I I I I + I I + I I I I I I

Here the numbers of the laghus are increasing, therefore utterance time of 5 short syllables are increasing, and tempo is decreasing double. In the space of 8 laghus we are getting 16 laghus here, and this is the structure of 'Dvi Kal' accordingly Bharata. Likewise, when one guru will hold 8 laghus, and one laghu will hold 4 mātrā, automatically the structure would be 32 laghus and we will get 'catuskal' or the slowest tempo of this particular 'tāla'.

So, for the three different tempo Bharata mentioned three different names –

'Eka Kal' - Fastest

'Dvi Kal' – Moderate

'Catuskal' – Slowest

When with a complete orchestra these tempos were going to play then it became 'mārga'. 'mārga' is such thing which holds the tempo with all the percussion and string instruments along with cymbals. 'mārga' is a complete presentation of 'tāla'. For different tempos Bharata named different 'mārga'. Like –

For 'Eka Kal' – 'citra mārga'

For 'Dvi Kal' – 'vārtika mārga'

For 'Catuskal' – 'daksina mārga'

त्रिविधा सा च विज्ञेया त्रिमार्गनियताद्भुतैः ।
चित्रे द्विमात्रा कर्तव्या वृत्तौ सा द्विगुणा स्मृता ॥३
चतुर्गुणा दक्षिणे स्यादित्येवं त्रिविधा कला ।४
ततः कलाकालकृतो लय इत्यभिसंज्ञितः ।
त्रयो लयास्तु विज्ञेया द्रुतमध्यविलम्बिता ॥५ [22]

trividhā sā ca vijñeyā trimārganiyatādbhutaih |
citre dvimātrā kartavyā vrttau sā dvigunā smrtā ||3
caturgunā daksine syādityevam trividhā kalā |4
tatah kalākālakrto laya ityabhisamjñitah |
trayo layāstu vijñeyā drutamadhyavilambitā ||5

The difference between 'kal' and 'mārga' is actually, 'Kal' is the tempo, accordingly tempo or 'laya' the three categories we are getting, in these tempos when the full orchestration happens, included the percussions, string instruments, cymbals etc. the 'mārga' derives. So, 'mārga' is a complete presentation in particular 'laya' or tempo.

The cheironomy of 'cat cat pu tah':

The three beat-combinations as applied in the two principle 'tāla'mnemonic –

	cat	**cat**	**pu**	**tah**				
Syllabic instant –	S	S	I	S'				
1. samnipātadi -	Sam.	Sa.	Ta.	Sa.				
2. samyādi -	Sa.	Ta.	Sa.	Ta				
3. tāladi -	Ta.	Sa.	Ta.	Sa [23]				
	cat	**cat**	**pu**	**tah**	**(2 : 2 : 1 : 3)**			
kalā -	1	2	3	4	5	6	7	8
Gestures -	ni	sa	ni	ta	sa	pra	ni	sam.

This is the beating or sounded action of cat cat pu tah, Eka kal. The bold letters given up that are the sounded gestures, and the rests are unsounded gesture. This format is starting with an unsounded action, and the first sounded action is 'Sa' or 'samyā', and for that only this is the 'samyādi cat cat pu tah'tāla.

When a playing system starts with an unsounded action, there perform a dance or music or theatre is little difficult. When a dancer is listening the first sounded gesture that is coming after one unsounded gesture, very naturally a dancer can miss his or her first beat. For practical reason we have to start from the 'samnipāta' which has mentioned as the last beat of this 'tāla'. By uttering that one dancer can easily understand this is the last beat and after that the 'niskrāma' is coming which is the first beat. And only for this reason following the cheironomists is very important being a performer. As an instance we can see sculptural evidence of 'Shailendra dynasty' where behind one dancer at least ten cheironomists are holding the 'tāla'.

[figure-6, Shailrndra dynasty, 778 – 850 CE.]

So, showing the hand gestures and playing the cymbals, both are the basic process of holding 'tāla', that is why the 'tāla' system of Bharata is actually cherionomical. Being a dancer or musician whenever we have to perform this traditional music or dance, we have to notice the cheironomists for the indications of 'tāla' through sounded and unsounded actions.

In case of 'Dvi-kal' of this particular 'tāla', the unsounded actions would be increased, the main four sounded actions would not be increased, in fact, in 'Eka-kal' also the pattern of beating indicating the 'yathāksara' or the 'laghu' 'guru' structure of the 'tāla'. In the given structure we can see 1 & 2 is holding one 'guru', 3 & 4 is holding another 'guru', for both 'cat cat'. Now for 'Pu' we are getting number 5. And 6,7 & 8 these three numbers are for 'pluta', which is suggesting 'tah'. So, the 'laghu' always be a sounded action. In case of 'guru' the first beat should be unsounded, the exact later one should be the sounded where the 'guru' is completing. In case of 'pluta' we are getting three beats, there we should apply the last beat as sounded action and the rest two as unsounded. Like this way, the structure of the 'tāla' we are able to maintain and the actions defined by Bharata Muni in a very scientific manner.

cat cat pu tah (2 : 2 : 1 : 3)

kalā -s	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Gestures	a	ni	vi	sa	a	ni	vi	ta	a	sa	vi	pra	a	ni	vi	sam.

In this chart we can see the four sounded actions are fixed, in the place of one unsounded action three unsounded actions are coming in the first 3 beats, because the 'laghus' are increasing to change the 'tāla' from fast to the moderate tempo. Here four 'laghus' are holding one 'guru', and one laghu is also holding two 'matra'/'laghu', one 'pluta' is here six beats. So, the numerical structure is increasing from 8 to 16. And the tempo of the 'tāla' is decreasing gradually. Likewise, the 'Catuskal' would be more elaborative and prolonged. When unsounded actions are increasing, for the dancers and the musicians is quite difficult to follow the circle of the 'tāla' by following the sounded actions only, and for that reason as a performer or as an artist people should follow the cherionomist in the performance, this is the suggestion of Muni Bharata, and the sculptural evidence is indicating that reality also.

In the same way we can construct the 'cā ca pu tah tāla'. The 'yathāksara' of cā ca pu tah tāla is –

'cā ca pu tah'

S	I	I	S	['guru'+ 'laghu' + 'laghu' + 'guru']
I I	I	I	I I	[the total number of laghus are 6, therefore this 'tāla'has 6 'matra'.]

The cheironomical pattern of cā ca pu tah is -

cā ca pu tah (2 : 1 : 1 : 2)

Kala-s -	1	2	3	4	5	6
Gestures -	ni	sa	ta	sa	ni	sam.

The given pattern of 'Cha Ch Pu Taha' 'tāla' is 'samyādi', because 'samyā' is the first sounded action. But, for the same reason which I elaborated in 'cā ca pu tah', that, for the vocalist, for the dancers and also for the whole orchestra we have to do the 'samnipāta' first, to make understand the first beat, which is an unsounded action.

The 'vānī' or the utterance of the 'tāla':

In case of the 'bola' or the 'vānī' of the 'tāla', we have to follow the 'guru' 'laghu' 'vānī' or words here. In Bharatas system of performance there were no tradition of uttering 'bola' or 'vānī' in a 'nātya' presentation. For the dancers and the musicians sounded and unsounded hand actions were the indication of 'tāla'. But for the percussion instruments we need 'vānī'. For this Bharata Muni mentioned 'śabda alamkāra' we have to include accordingly the presentation. For the perception of utterance of 'tāla' first we have to take the 'gurus' only.

Like in 'cat cat pu tah' 'Eka-Kal' we are getting 8 'laghus', therefore it is 8 matra 'tāla'. If we have to count 8 'laghus' in 'guru' then we will get 4 'gurus'.

cat	cat	pu	tah
S	S	I	S'
II	II	I	III
I I	I I	I I	I I = S S S S

Now, for each and every 'guru' we have to put 'guru vānī'.

cat cat pu tah (2 : 2 : 1 : 3)

kalā -	1	2	3	4	5	6	7	8
Gestures -	ni	sa	ni	ta	sa	pra	ni	sam.
vānī -	ghrey		drang		ghrey			ghrey

cā ca pu tah (2 : 1 : 1 : 2)

kalā -s -	1	2	3	4	5	6
Gestures -	ni	sa	ta	sa	ni	sam.
vānī -	ghrey		drang			ghrey

This is the process of uttering 'tāla'. The blank spaces after the 'guru vānī's , should be filled with 'laghu vānī's. And here also we have to apply the 'śabda alamkāra's. The whole process of playing this tāla system, depends on the sounded and unsounded hand gestures, the vānī is the part of the percussion instruments. Like this way a tāla presentation used to happened in ancient Indian nātya tradition.

Conclusion:

Bharata's system of 'tāla' is not a mere technique, but also a science is lying behind it. In fact, the utterance time of 'pañca laghu aksara kāla', or utterance time of five short syllables is also a suggestive of an inward journey. Generally, by the practice of any art a practitioner can get a concentrated mind and a pure soul. In the period of Bharata also the purpose was same, and more inward. In our human body heart pumps blood generally in the count of 'pañca laghu aksara kāla'. Science proved that, in a normal heart rate of 72 pulse, heart beats in this time span. So, by meditation or by highly conscious concentration we can realize this tempo, therefore the 'laya' actually coming from a concentrated calm and quite mind, the journey starts with an inward process. So, the cheironomist actually the leader for the whole orchestra. The complete music and dance performance depends on them. And always maintaining this tempo in the practice and also in the performance, both is 'yoga'. So, the process of Muni Bharata is a journey of realization.

References

1. 'Samgītaratnākara', The Adyar Library and Research Centre, madras, Volume – III, chapter 5, shlokam -2 / Edited by – Pt. S. Subramanya Sastri, Revised by Smt. S. Sarada, p. 4
2. 'Vastushastra System - Measurements and Proportions' / Prof. S. K. Gupta 1Dean & Director, Amity University Haryana, Panchgaon, Manesar, Gurgaon / International Journal for Research in Applied Science & Engineering Technology (IJRASET) ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor:6.887 Volume 5 Issue X1, November 2017- Available at www.ijraset.com, p. 1
3. 'Vastu Design/Vastuved/Vastu Consulting/Vastu Design', U.S. 641.472.2157 / Lession 9 – Spatial Measures, copyright 2003-2009, Michael Borden, p.1
4. Ibid
5. "Natyashastra of Bharata Muni, with the commentary 'Abhinavabhāratī' by Abhinava Gupta" / Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, Gaekwad's Oriental Series – 145, Volume IV, Chapter-10, shloka 52, Oriental Institute, Vadodara (India), 2006
6. Ibid
7. Opcit, 'Samgītaratnākara', Edited by Pt. S. Subramanya Sastri, p. 108
8. 'Baratiya Shilpa Samhita', Padmashree Prabhashankar O. Sompura, Soumyeya Publications, Chapter – 2, 'Iconometry or Measurement of Idol : Talman', p. 7
9. Loccit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 108
10. Opcit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 167
11. Ibid
12. Opcit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 166
13. Opcit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 167
14. Opcit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 169
15. Loccit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 169
16. Opcit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 164
17. Opcit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 155
18. Opcit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 156
19. Opcit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 158
20. 'Chandomañjarī' (Prof. Gurunath Vidyanidhi Bhattacharya edited, Published by Samskrit Pustak Bhandar) Chapter-1, shloka 11, p. 6
21. Opcit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 156
22. Opcit, Natyashastra of Bharata Muni, Edited by Late M. Ramakrishna Kavi and Late J. S. Pade, p. 153
23. 'A Study of Rhythmic Organisation in Ancient Indian music', The Tala System as described in Bharata's Natyashastra, Narindersing Mokhamsing, Leiden, The Netherlands, page - 53

Illustrations:

1. (Figure 1) span or vitasti – 'Kalātattvakośa', Vol – II, Space & Time, IGNCA
2. (Figure 2) & Figure 3) self portrait
3. (Figure 4) 'Baratiya Shilpa Samhita', Padmashree Prabhashankar O. Sompura, Soumyeya Publications, Chapter – 2, 'Iconometry or Measurement of Idol : Talman', page 7
4. (Figure 5) Relief from Bharhut, Indian Museum, Kolkata
5. (Figure 6) Relief from Barobudur, detail of panel O 39