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CORRELATION BETWEEN SCIENCE, HINDUISM AND CLASSICAL DANCE OF INDIA

ABSTRACT

Bharat is probably the only country in the world which has history dated back to Stone Age! With so many manuscripts which are highly developed for even today's science. One such treaty is Natya Sastra which provided constituents related to psychology, spirituality, art, entertainment and religion. There is no subject which seem to be untouched by our ancient civilization. They have left us with so many unsolved mysteries as well as so many answers, on topics from how to lead life, mathematics, science, astronomy, trigonometry, socio-politics, and stories for children and on mythology, Physiology, sculptures, arts to attaining Moksha. The topics are so varied that it is impossible to

read them in one's life time. Each is a subject by itself and in this paper we attempt to study a subject associated to arts from the huge Pandora of texts. The subject is Natya Sastra, in Natya Sastra which is itself a massive ocean, containing 36 chapters, we shall understand the science inter-related with Hinduism in classical dance of India.

If there is any difference, it is of time, place, language, mythology, images and cultural background of a country. Hence, this paper is an attempt to comprehend the abundant information in the art of Dance – a medium of communication and observe the close affinity in the views of Bharata, an Indian sage- poet.

KEY-WORDS

Science, Physics, Anatomy, Hinduism, Nataraja, Kinkini/Bells, Thalam.

RESEARCH PAPER

INTRODUCTION

Science and Hinduism were all part and parcel of Sanatana dharma of India. Science was integral to Hinduism and art is a constituent to our cultural. Our culture has many branches - sculptures, music, folk dance, folk music, classical dance, literature, drama, painting, martial arts so many more. We will see in this article, the various aspects given below:

- Nataraja – Cosmic Dancer
- Natya Sastra – Panchama Veda
- Significance of Kinkini (Bells/Gunguroo)
- Thalam – Rhythmic cycle
- Music and lyrics
- Psychology of Natya
- Abhinaya and Ananda

We shall see the science aspect of every subject mentioned above and how it is connected to Hinduism and congregating to the bliss concept – Ananda.

NATARAJA

The moment one mentions the term - dance, we remember the cosmic dancer, the dancing god, king of dance – Nataraja. Why do we call him cosmic dancer? Isn't this a very scientific name to ancient god? Is it because he the only god of dance? It is not just this, it is also because of the scientific aspect it holds along with the various other subjects that the Idol image of Sri Nataraja.

I have to take u to the physics class to explain this: in physics there are particle collisions or interactions are broadly termed under four categories:

- The strong interactions
- The electromagnetic interactions
- The weak interactions
- The gravitational interactions

Among these, the electromagnetic and gravitational interactions are most familiar because they can be experienced in general world. The other two are understood better in laboratories. When these particles collide, they create new particles. On earth, it's small. Outside its massive.

These cosmic rays when touches the earth's atmosphere, they produce secondary particles which either decay or undergo further collisions, thus creating more particles which decay or collide and the process continues. So there is a continual flow of energy with particles interacting and changing their patterns while getting created or destroyed.

Creation and destruction are terms which we are very much aware of!

In the book, world of elementary particles written by Kenneth Ford, he comments: ' the creation of a virtual neutron-antiproton pair diagram looks quite horrendous, but perfectly real. Every proton occasionally goes through exactly this dance of creation and destruction'. Why does he mention horrendous, because the diagram is so perfectly aligned and has a rhythm to it.

Ford is not the only physicist to have used this word "energy dance", "dance of creation and destruction"

The Hindu Mystic / Rishi have always been an artist. They created an image, of this particle - collision.

Once when, Fritjof Capra, a profound physicist, In his book, Tao of physics, he writes, 'Every sub atomic particle not only performs an energy dance but, is also an energy dance, a pulsating process of creation and destruction'.

So the whole cosmos is also involved in this dance! Thousands of years ago, Indian Rishis visualised this image of particle collision and gave it a form! A vertical line, an horizontal line at $\frac{3}{4}$ of the vertical line and a circumference around it. A diagonal line below which indicates a change of axis of the particle! What did you chalk out? Now, give this image a few hands, a fire, damaru, abhaya hasta, a demon at the bottom and other paraphernalia to merge with human body, space and spirituality. Now tell me, is this science or spirituality? Thus this cosmic dance, the metaphor unifies the ancient philosophy, religious art and modern physics!

Skanda Purana's Chidambara Mahatyam – mentions why chidambaram is significant. Because, in our homes, we cook in the kitchen, sleep in the bedroom and perform pooja in a pooja room, likewise, the Bhoo Mandal (earth) is divided into different spaces, and the land named India is considered the pooja room. The benefits are doubled and effortlessly obtained on this longitude and latitude. And Chidambaram is the heart of that pooja space. To understand this better, one might want to know the basics of Naadi science. While we believe the human body has three naadis, the earth also has three naadis. They start from the spine and extend to the head. Sushmna naadi runs through the seven chakras including the heart and hence is the most important place in the human body, a parallel to this is also drawn for earth, and Chidambaram happens to be the heart of the earth. Hence thillai vanam was chosen for the stage to perform.

There is another dimension to the significance of the place of the performance -Chidambaram, is an abbreviation to Chit-Ambaram , 'chit' meaning bliss 'Ambaram' meaning sky. But sadly it doesn't give any profound meaning when written in English, so I am compelled to use Samskrit here. Sky – Aakaasa – again, an abbreviation to Aa – sampoornam/full and Kasa – energy, so in short that which holds energy! Here we can comprehend couple of things:

- Words in Samskrit have not been used as a coincidence but with lot of scientific basis. Alas, hasn't it originated from His Damaru!
- So aakaasa/space/cosmos is not empty, rather full of energy. Hasn't mysticism proved that it is nothing but profound science.

Interestingly there is no mention of the dance in the Purana, it only mentions that the dance is undescrivable. To our rescue Patanjali Muni has described the dance of Nataraja in Chidambaram in the below Natesha Navakam sloka.

*“sadan-chita mudan-chita nikujn-chita padam jhalajhalajchalita manju katakam/
driganjana mananjana machanchalapadam janana bhanjana karam /
kadambaruchimambaravasam paramambuda kadamba kavidambaka kagalam /
chidambudhi manim budha hrudambuja ravim para chidambara natam hrudi bhaja ||”*

Like Fritjof Capra mentioned “being a physicist I know that every single atom is in movement/laya. This laya is a single entity and everything is part of this laya.”

Interestingly Nataraja image also describes the Panchakrutya. Panchakrutya is shrishti, sthithi, samhara, tirodhana and anugraha. If a person stands in the Nataraja pose, it is believed that it will regulate the blood circulation, improves concentrate and memory, balances the body and increase the oxygen in the blood.

There are places inside a human body where shiva performs Shiva Tandava. It is both spirituality and human Anatomy!

Few components which is used as a representation of this.

- The fire around shiva represents Maya - the experience one goes through in the cycle of birth and death.
- The tiger is the 'ahankara' – the imperious ego, from which Shiva removes everything that's inside the ego and wears the skin.
- The serpent - bad thoughts and fallacious deeds which are tied up.

- The Apasmara or Muyalaka - Ignorance, on which steps and proclaims that infantilism should be overpowered.
- The Damaru - creation and dharma
- Fire in hand - destruction and getting 'artham'/'prosperity – 'Agni mili puruhitham' from Rig Veda (also confirms this)
- Abhaya hasta - Tirodhana and Kama/boon
- Dola hasta - Anugraha and Moksha.
- Nataraja idol is a representation of many subjects, not just Physics but Literature, Tantra, Mantra, Yantra, Panchkrutya, Panchakshara, Chaturvida purusharthas, Sri Chakra swaroopa! Science could give us a proof of one entity out of these many.

NATYA SASTRA

बृहस्पतिर्वै शुक्रो भूत्वेन्द्रस्याभयायासुरेभ्यः क्षयायेमामविद्यामसृजत्

तया शिवमशिवमित्युद्दिशन्त्यशिवं शिवमिति वेदादिशास्त्रहिंसकधर्माभिध्यानमस्त्विति

-Maitri Upanishad 7.9

A sastra has to be that which gives precise formulas, which admit only one interpretation. It gives innumerable technical terms, the etymological derivations of which lead us to ideas of astounding precision. -- Dr. Padma Subramanyam in her book of Karnas

Where did classical dance originate from or the place it was actually coded? Our scientists and scholars have discovered that Abhinavagupta, the rhetorician, hails from Kashmir. And so did his predecessors, Bhatta Lollata, Bhatta Touta, Sri Sankuka, Bhatta Nayaka. The father of these rhetoricians can be called Bharata Muni, who is also traced from the land Saraswathi, Kashmir in India. It is discovered that this was written 2 million years ago. Internet might say that it is written during 500 BC – 500 AD, but recent research and findings reveal that it is pre epic period. The evidences to prove the dating are:

- Bharata is the first chapter mentions that Natya Veda was given to him By Brahma in the commencement of Treta Yuga in the reign of Vaivasvata Manu. So it is definitely before Dwapara Yuga.
- The last chapter Bharata gives the names of the Rishis who were listening to the Bharata's preaching of Natya Sastra and in the list he mentions 'Valmiki'. Valmiki also mentions two technical dance terms used in Natya Sastra – they are – Nritta and Angahara.
- We know that Lava and Kusa sing Ramayana first. It is mentioned that they sang in Jati format and not Raga format. Raga evolution happened later. During this period, as written in Natya Sastra, 'Gramma-Murchana-jathi' format of singing was existent.
- Bharata in his Natya Sastra mentions only about Nahusa, a king who was the grandson of Pururavas. None of the other mortal kings finds mention in Natya Sastra.
- Manmohan Ghosh mentions in his translation of Natya Sastra that Bharata mentions thrice about Artha Sastra being written by Brhaspati. He does not mention Kautilya.
- Natya Sastra has been written similar to Vedic metres and this is an evidence to us for linking Natya Sastra to the same period. And this is one of the many reasons why Natya Sastra is also termed as Natya Veda.

Definitely, we need to rewrite its chronology from the outdated western dating system. The very embodiment of Hinduism and science together is Natya Sastra. I am mentioning about date and time to expose the fact that Hinduism as Sanatana Dharma was existent millions of years ago.

Contents of Natya Sastra:

रसाभावाह्यभिनया धर्मिवृत्तिप्रवृत्तयः । सिद्धि स्वरास्तथातोद्यं गानं रंगश्च संग्रहः ।

Rasa bhavah abhinaya dharmivṛtti pravṛttayah siddhi svarā tatha atodyam ganam rangasca samgrahaḥ || - (NS 6.10)

The Natyasastra of Bharata consists of thirty-six chapters.

- The first 3 chapters - with the **origin of drama, the erection of theatre and the worship of the stage**
- Chapter 4 - **Varieties of dance**
- Chapter 5 - conduct of **Purvaranga** or preliminary rites
- Chapters 6 and 7 - **Rasas** (sentiments) and **Bhavas** (emotions)
- Chapters 8 to 14 - **Angikabhinaya**
- Chapter 15 to 22 - **Vacikabhinaya** and related topics.
- Chapter 23 - **Aharyabhinaya**
- Chapter 28 to 33 - **Instruments and Music**
- Chapter 34 to 36 – **Characters and popularization of the art of histrionics**

This, in short, is the summary of the contents of the Natyasastra.

Rasa, is an aesthetic experience of both the creator and audience. Some rhetoricians says that rasa is an experience only of the spectator, there are others who propounded that both the actor and spectator can experience the pleasure.

Anyway, Rasa literally means taste, flavour, relish. It has been translated as sentiments, aesthetic emotion etc. Even more simply rasa can be described as the response to art. Rasa is so called because it is capable of being relished. It is an inward experience of the Sahrdayas. Rasa system, is a huge banyan tree under which everybody feels the same comfort, same emotion.

It is significant to get involved while creating a work of art so it reaches the Rasika impeccably in depth. If a Sahrdaya is able to take pleasure out of the artistic work and feel elated by that, then the artist has achieved the aesthetic understanding. This means, the work of art should reach the person for the purpose of relishing it. And during this process the sahrdaya loses himself to the experience of aesthetic pleasure.

Rasānubhava is getting disconnected with the worldly pleasures and enjoying the beauty of the act. But, I feel, only if we are very much connected to the worldly matter can one enjoy the Rasa. If there is detachment and moksha is aimed to be attained then Rasa is relished at different level.

The Rasa, in a play for example, is realized in detached contemplative mood. The Spectator's egoistic self gets submerged and his emotions become universalized. This universalization explains the paradox of participation and detachment. Though the spectators take part in the pains or pleasures of the hero, they do not undergo the emotions to the extent that they would have done in real life.

For example : *There is a war, and many people die in the war. Let us assume there are people with close affinity also die in the war. In this situation there is a lot of tragedy and the affected goes*

through a lot of grief and can never come out of this sorrow. But the same situation when viewed on stage or read in literary work, during the situation, the person goes through the same emotion of the sorrow but after the situation, the person is elated. That person is happier and exclaims the situation as best portrayed. That moment is called *Rasa Nishpattih*.

Many scholars believe that the reason for *Natya Sastra* to be written is for the manifestation of *Rasa* – the aesthetic experience.

In Chapter 36 of *Natya Sastra*, it mentions that glorifying a negative character or showing negative attitude which will spoil the culture is unprincipled and abominable and must be avoided. Because that doesn't elevate to higher platform, although might show how the world might be in absence of this elevation.

KINKINI – BELLS/ GUNGUROO

*Suswarascha Suroopascha Sookshma Nakshatra Devathaha
Kinkinya Kaamsyarachitha Ekaikaangulikaantharam
Bhandiyaaneelasoothrena Granthibischa Dridampunaha
Shathadwayam Shathamvaapi Paadayornaatyachaarini
-- Abhinaya Darpana*

The sloka explains that the bells worn by the dancer should be sounding pleasant, looking pleasant and that is like the moon in the sky. Bronze metal has been suggested to make the bells. We shall see why bronze has been prescribed and its scientific reasons.

India has been a leader in developing various types of alloys by combining different metals in various proportions. This type of making bells using the melting and casting methods as well as complex metallurgical compositions of copper, Zinc, Lead, tin make wonderful musical instruments. The metal gives us an echoing and lasting sound for several seconds after the bell is rung.

The bells has to be tied with a thread, as prescribed by the sloka above. This thread is tied at the ankle while dancing, let us see its significance of this.

Biologically if one notices the ECG electrodes, it is placed on the arms and legs and connected to the heart. The inferior wall of the left ventricle collects the information of the heart beats and send us the signals.

Now comes the acupressure, when we place the thread on the ankle this stimulates the blood and give more supply of blood and oxygen for the dancer who is doing a lot of cardio activity. So this shows the vein from the ankle supplies energy and aids the dancer to do her intense cardio activity.

The spiritual aspect:

आगमार्थं तु देवानां गमनार्थं तु रक्षसाम् ।

घण्टारवं करोम्यादौ देवताह्वानं लाञ्छनम् ॥

“For the arrival of the gods and the departure of the evil entities, I ring the bell, as a sign of invocation of the deity”

This sloka is found in the **Agama sastra** -- **Shivagama Prayoga Chandrika**.

This sloka depicts that it:

- clears the air in the vicinity and brings positivity
- announces the beginning of the recital or Pooja

- welcomes Vighneshavra and all the other deities
- drives away negative energies

This elucidates that the sound of bronze bell leads one to the highest level of spirituality and to attain that which known as Ananda.

THALAM

Indian thala system is the most complex thala system in the world. The high content of mathematics is found in our thala system.

- 7 thalas and 5 gathis make 35 thalas in total. $7 * 5 = 35$
- On this, additions and subtractions bring new korvai – steps in dance
- Example of Formula for calculating the gaps in Nadai : $(x/3) + x = CT$
- Ex : When X = 15, CT = 20, Nomenclature is “Tisra Nadai”
- This requires synchronisation of mind and limbs.

Philosophy of thalam

It is said that the from the damaru of shiva orginated the bols or Jathis. Of which we find that the Sanskrit is also derived from the Maheswara Sutra. It is believed that the konnakol words are also derived from the damaru of the cosmic dancer. For eg:

- Tha
- Dhi
- Thom
- Nam

Recitation brings positive wave length and wards off evil thoughts. It is for this reason oral tradition has been very efficient in transmitting the Vedic chanting from master to disciple.

‘Shrushta cured many ailments using konnakol and yogis used it for attaining salvation through music. It was Bharata Muni who gave the first technical definition to konnakol in his ‘Natya Shastra’. Later, Arunagirinathar of 14th Century, who wrote ‘Thiruppugazh’ took konnakol to the highest pedestal ever. While composing he used konnakol jathis in such a way no human could attempt it.’ – Article from Hindu Newspaper.

The speech production according to Vedic view can be described through four stages. These four stages are called as Para, Pashyanti, Madhyama and Vaikhari. Vikhari is the last stage where the actual voice is heard from the speaker to the listener.

Eg: Thaaku jeku thaka janaka kinaku thaka tha kita jam tha kita jam jam tha (2)

Thaku janaku jam janaku kinaku jam

Thath tha jam thaku dhiku kita thaka thari kita thom

DANCE IS PSYCHOLOGY

The Abhinaya in dance is considered one of the best mode of communication to mass public and it clearly marks the psychological aspect and the social behaviour of man. Man finds a reason, for which an equivalent reaction is depicted, and the passing or transitory feelings are expressed and the ultimately the Rasa is felt or the bliss is experienced.

The Ultimate Reality has been described by the Upanisads in the form of *Rasa*, the attainment of which makes bliss. *Taittiriyanopanishad* enumerates *Rasa* as the essence par excellence and as the Highest Taste or Experience accompanied by the perennial bliss.

1. The same is found in *Maitriyopanisad* also. Here *Rasa* stands for the one Supreme Reality of the Universe, viz., the ‘self-luminous consciousness,’ the attainment of which gives unending bliss. *Taittiriyopanisad* enumerates the establishment of ‘*Brahman*’ on Bliss only.
2. *Tejobindu Upanisad* states that the realization of the Ultimate Reality is in the form of Bliss only.
3. Defines the *jivanamukta* as Bliss itself
4. It goes to the extent of denying any existence to the ‘non-rasa’.
5. *Devuyopanisad* describes the Ultimate Reality as the Rasa of all Rasas (essence par excellence), which is the Ultimate Taste.

Thus Dance is a synonym for the ‘Ultimate Reality’.

According to K C Bhattacharya – ‘Abhinavagupta says - The aesthetic experience is not the experience of the personal emotion; it is the experience of a universalised or liberated emotion which is free from time, place and personality restraints.’

तत्र सर्वे अमी सुखप्रधानाः स्वसंविच्चवर्णरूपस्यैकधनस्य प्रकाशस्य ।

आनन्द सारत्वात्... इत्यानन्दरूपता सर्वरसानाम् ॥

- It does not mean that Dance is constituted of **ananda**. It means that ananda is reflecting through, it is flowing through the dance; it is ananda for which rasas are used.
- Dance originates from **Sattva**. Sattva is nothing but purity and rasa becomes a part of Sattva.
- We find this in Agni Purana “sattvadigunasantanajante paramatmanah”, meaning rasa is one with Brahman. The qualities of **Sat-Chit-Ananda** are found in Dance, hence Dance is ‘Brahmananda Sahodara’.
- Rasa is **Aloukika**. Loukika is worldly and known sphere. Aloukika is unknown and untouched. It can be reached only through divine intervention.

CONCLUSION

The process is a natural feeling of a man and how it proceeds to the ultimate reality of life. The goal, objective, intention is to achieve that element, which is Ananda. The very reason of birth is to achieve this bliss according to Hindu culture to attain moksha, the eternal bliss. We can definitely say that science is integral to Hinduism and art is just a part of that culture called as sanatana dharma. Dance is part of all this and more expansive.

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