

From Deepam to Digital Light: The Evolution of Stage Lighting and Its Cultural, Ritual, and Aesthetic Significance in Theatre and Classical Dance

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Abstract: Lighting is an integral part of Bharatanatyam performance, but it is comparatively under-researched, used not only for visibility but also as a medium for ritual, spatial organization, aesthetic expression and as a medium for audience engagement. The present study explores how this has changed in Bharatanatyam from natural lighting, traditional lighting based on flame (Deepam and Vilakku) to modern stage lighting using electricity, LED lights and computers. The purpose of study is to examine the impact of such technological change on the ritual atmosphere, the performance space, the visual composition, the choreographic expression and emotional communication of Bharatanatyam along with retaining traditional cultural symbolic elements. Previous studies have shown that the evolution of electric stage lighting has changed lighting from a utilitarian necessity to an integral part of the art of performance in India. Research into Bharatanatyam also shows that the relationship between dance, ritual, embodiment, rasa and sacred performance contexts are ongoing. The study is qualitative and interpretive with a thematic analysis approach to the historical performance traditions, classical dance traditions, pertinent literature of performance, and the modern staging of Bharatanatyam. The analysis is based on the theories of performance, semiotics, phenomenology, dramaturgy and Indian aesthetics of rasa. The study suggests that advanced stage lighting has opened up new possibilities of visual and expressive expression in Bharatanatyam, but not that it has taken the place of the traditional symbolic practices. Rather, modern lighting can reimagine the concepts of light and its forms, making them relate to cultural continuity, ritual symbolism, aesthetic innovation and technological change.

IndexTerms - Stage Lighting; Deepam; Vilakku; Bharatanatyam; Theatre Studies; Performance Aesthetics; Ritual Performance; Indian Classical Dance; Scenography; Cultural Symbolism

1. INTRODUCTION

Bharatanatyam is one of the classical dance forms of India, and a complex interplay of movement, music, gesture, expression, narration, ritual and aesthetics [1]. The performance space is an important part of the communication, although the dancer's movement is the most important. In these environmental factors, lighting has an important role but it is relatively less studied [2]. Lighting defines visibility, orients focus, creates relationships between various spaces, helps to set a scene and enhances the overall visual performance. The research work suggested framework also sees lighting as a cultural and aesthetic element, rather than just a technical element of stage production [3].

Previously, performance spaces were lit by the natural resources available (sunlight, fire, oil lamp, and torch). Illumination did not always signify a ritual separation from illumination in Indian tradition of performance [4]. For instance, the Deepam and Vilakku could be used as cultural artefacts in ceremonial and performance settings. The introduction of flame brought two aspects to the scene: first, physical light, and second, the symbolism of sacredness, devotion, purity, and the passage from darkness to light [5]. The study of ritual activity in Tamil reveals the inter-correlations of the domestic, temple and cosmic as well as the human realm, and sheds light on the wider cultural significance of light in South Indian contexts [6].

It is important to note the connection of Bharatanatyam with the ritual performance in this history of illumination. Bharatanatyam has traditionally been linked with religious and temple settings and its modern version can be found in formal concert halls and formalised performance environments [7]. The study of Bharatanatyam as embodied ritual focuses on the links between darshan, rasa, dance and religious practice [8]. The practice of comparative perspective can also be achieved through the traditional performance traditions of Kerala, like Kathakali and Koodiyattam, where the usual performance space, ritual practices, expression of movements and traditional illumination offer cultural and aesthetic background for performances. Therefore, the research of lighting in Bharatanatyam must involve not only the visible aspect of the performance environment, but also the cultural and experiential aspects of the same.



Figure 1: Traditional Lamp illumination of Bharatanatyam, Kathakali and Koodiyattam [28, 30]

While the study focuses on Bharatanatyam, its link with traditional lighting of the lamp may be traced in other South Indian performing traditions as well. The traditional performance spaces, ritual practices, the expressions and the light in Kathakali and Koodiyattam are important comparative contexts in Kerala those lamp illuminations are illustrated in figure 1. Here Koodiyattam image is credited to artist Kalamandalam Sangeetha. As illustrated by these traditions, the replacement of traditional forms of lighting, such as flame lamps, with newer, electric lamps has not been a discrete event for Indian performance traditions. The ongoing association between these two then gives a comparative account of how light plays a vital role in Bharatanatyam with respect to the cultural, spatial and aesthetic dimensions.

The advent of electric light brought a great change in theatre and dance presentation. Artificial lighting allowed the performers and designers to manipulate intensity, direction, colour, focus, shadow and spatial emphases that would not have been possible using traditional flame-based lighting [9]. Thaper and Shashikumar discuss the evolution of stage lighting in India as an Indian transition from use of lighting as a necessity to an allied art form in the performing arts [10]. For Bharatanatyam, it meant fresh possibilities to highlight the facial expression, artist movement, costume, space and drama.

In addition, the new technologies of the stage, as seen in spotlights, Fresnel lights, LED lighting, programmable lighting and DMX lighting, have made more visual words available to modern performers [11]. These technologies enable the control of lighting to adapt to the musical structure, choreography, narrative development and emotional mood [12]. Hence light can be used as a visual communication along with abhinaya, music, gesture and movement. Studies of the communicative aspects of Bharatanatyam focus on the use of coordinated artist movements such as gestures, facial expressions, posture and rhythm to communicate the Bharatanatyam form [13].

However, traditional lighting symbolism continues to retain its relevance in today's technological era. The study of the evolving form of Bharatanatyam makes it clear that Bharatanatyam is still in the process of negotiating between old and new modes of art expression [14].



Figure 2: Overview Of the Study (Source Own Author)

The present study thus explores the evolution of lighting with Bharatanatyam from natural, flame lit, to modern electric and digital light, overview of the study is described in figure 2. It is especially concerned with how light and ritual symbolism is integrated with the performance space, the aesthetics, the choreography, the emotional expression and the perception of the audience. The study addresses the identified gap in the proposed framework of the client, which states that the discussions in the literature generally focus on stage lighting as a technical field of study, or explore the ritual lamps independently, with less attention being paid to the way these types of lamps relate to each other in the evolution of Indian performing practices.

The larger question to be explored on the basis of this study is how the evolution of stage lighting has affected the cultural, ritualistic, aesthetic and expressive aspects of Bharatanatyam and how traditional symbolic meanings have survived in the modern performance setting. The sub-research questions provided by the client also focus attention on the historical importance of sunlight and fire, the importance of Deepam and Vilakku, a transformation of the performance space, the use of electric lighting, audience engagement and the use of traditional symbolism alongside new technology.

1.1 Aim of the Study

To examine how stage lighting evolved from natural and traditional flame-based illumination to advanced electric lighting, and how this transformation reshaped performance aesthetics, ritual practices, spatial design, and audience perception.

1.2. Research Objectives

- 1.To examine the historical use of sunlight, fire, oil lamps, and torches in early performance traditions.
- 2.To analyse the ritual and symbolic significance of deepam and vilakku in temple and court performances.
- 3.To investigate how traditional lighting influenced performance space and stage composition.
- 4.To explore the impact of electric lighting on theatrical and classical dance aesthetics.
- 5.To evaluate how advanced lighting integrates traditional symbolism with modern stage technology.

1.3. Primary Research Question

How has the evolution of stage lighting transformed the cultural, ritualistic, aesthetic, and expressive dimensions of theatre and classical dance while preserving traditional symbolic meanings?

1.4. Secondary Research Questions

- 1.How did sunlight, fire, and traditional oil lamps create the earliest performance environments?
- 2.What symbolic and spiritual significance did the deepam, vilakku, and torches hold in temple and court performances?
- 3.How did the use of natural and flame-based lighting influence the spatial arrangement of early performance spaces?
- 4.How did traditional lamps and fire contribute to the ritualistic and aesthetic atmosphere of temple and classical dance performances?
- 5.What role did lighting play in distinguishing sacred, royal, and public performance spaces in earlier periods?

6. How did the introduction of electric lighting change the visual language of theatre and classical dance?
7. How did electric lighting transform performers' visibility, movement, costumes, makeup, and stage composition?
8. In what ways did modern lighting technologies influence the relationship between the performer, stage, and audience?
9. How has the development of stage lighting contributed to changes in theatrical and choreographic expression?
10. In what ways does lighting influence the audience's emotional engagement and interpretation of a performance?
11. How do colour, intensity, direction, shadow, and movement of light contribute to the mood and meaning of a performance?
12. How does lighting help communicate narrative, character, emotion, time, space, and symbolism in theatre and classical dance?
13. Has modern lighting replaced the cultural value of traditional lamps, or does it reinterpret their symbolism?
14. How do advanced choreographers balance traditional lighting practices and symbolism with modern lighting aesthetics in classical dance?
15. How can traditional lighting elements such as deepam and vilakku be integrated with advanced stage technology without losing their cultural and spiritual significance?

In this study, the traditional cultural importance of the Deepam and Vilakku, along with the evolution of advanced stage lighting, have been synthesized for Bharatanatyam studies, performance studies and scenography. The study takes a holistic view of how light is used in a ritualistic, spatial, aesthetic and technological manner in the presentation and communication of Bharatanatyam. It also demonstrates the ability to carry over and reinterpret traditional lighting symbolism into the modern electric, LED and digital performance spaces.

2. LITERATURE REVIEW

2.1 Bharatanatyam, Embodiment and Spirituality

The last few years' scholarship has increasingly recognized Bharatanatyam as an art of cultural practice that manifests in the movement, the artist's expressions that are bound to spirituality and identity, aesthetics, and social meaning. Chakravorty (2023) [15] explores how yoga & dance, health, spirituality, and movements have come to intersect in post-colonial India. The study shows how the concepts of purity, spirituality, morality and transcendence have shaped the understanding and representation of Indian dance practices. This view is important for the current study since it argues that Bharatanatyam cannot be studied solely by its physical dance language; the cultural significance of the performing artist and its physical context play equally important role.

The embodied aspect of Bharatanatyam is also pertinent to how the performers inhabit and manoeuvre in space to perform. Hoskere (2026) [16] explores the learning of the 108 Karanas as an embodied practice and in terms of their contribution to pedagogical renewal in Bharatanatyam. This attention to embodied learning suggests that traditional knowledge of dance is not just a treatise of theoretical principles, but is learned through repetition, being embodied, being taught through space and transmission. This is especially applicable to the current research as light is directly affecting the artist's movement, posture, movement path, facial expression, and spatial position. Thus, lighting can be regarded as a feature of the environment that allows for the materialization of the embodied knowledge of Bharatanatyam for the viewer.

2.2 Bharatanatyam and Technological Representation

One of the major developments in recent Bharatanatyam scholarship has been the use of computer technologies in documenting and analysing dance. Bhuyan et al. (2022) [17] study on Bharatanatyam movement recognition using computational approaches has revealed that the movements and posture of the dance can be analysed using computational approaches. Their work situates digital technology as a possible medium to document and archive the complex structures of movement in Bharatanatyam.

Technological research on dance is more than just the study of what it is, it is also an aesthetic study. In their discussion of computable aesthetics for dance, Chakrabarty and Joshi (2023) [18] point to an increasing potential for the representation of aesthetic aspects of dance through computational means. This is particularly significant as it indicates that technological systems are increasingly being applied to documenting dance performances, but are also being applied to the study of aspects more usually considered to be related to artistic perception and aesthetic judgement.

All these studies indicate that there is a growing integration of technology in the study, preservation, and practice of Bharatanatyam. Their main concern, however, is with the dancer, the movement, the posture, the sequence, and the computational representation, not the technological context in which the dance is performed. This distinction opens up an important avenue to explore the role of stage lighting as another technological element affecting the presentation and perception of Bharatanatyam.

2.3 The Social Construction of the Bharatanatyam Movement

Social expectations also have a bearing on the cultural connotations of the Bharatanatyam movement. Balaji et al., (2023) [19] explore the expectations and stereotypical gender roles of classical dance. They have shown that Bharatanatyam is embedded in wider sociocultural frameworks that provide opportunities for the dancer's movement to be a site of negotiation of gender and cultural identity. This point of view goes beyond the movement technique aspect of performance to focus on the social implications of the performing expressions.

In this study, this is helpful as stage lighting can help frame and present the artist's movement in a different way. Lighting creates the highlighting of movements, and expressions within the performance space. The social significance of the form in movement and the visual circumstances in which the form is shown can be seen as being linked aspects of the performance.

2.4 Tradition, Embodied Knowledge and Innovation

The recent literature suggests that Bharatanatyam is an ongoing conversation between history and technological and/or social change. Existing work highlights the cultural and spiritual significance of embodied dance form, and embodied engagement with traditional movement knowledge. Meanwhile, prior works show how computational methods can be applied to the analysis of Bharatanatyam, and demonstrate how technology can be used to explore the aesthetics of dance.

The developments show that technology is not necessarily separate from conventional dance practice. Rather, technology tools can function as documents, analysers, teachers, savers and presenters of traditional forms. This is especially important for the work under study as

advanced stage lighting is another, though related, form of technological intervention. In contrast to computational movement-recognition systems, stage lighting is part of the live performance itself, affecting the light environment that is perceived by the dancer and the spectator.

2.5 Introduction to Study of Lighting in Bharatanatyam

The literature reviewed includes significant discussion of the embodied knowledge, spiritual aspects, social identity, movement structure, pedagogy, computational analysis, and aesthetics of Bharatanatyam. But an important aspect is comparatively little explored: how stage lighting is an integral part of Bharatanatyam performance.

The existing studies facilitate the understanding of the importance of the Bharatanatyam movement in a cultural context, traditional knowledge is embodied, technological tools can document and analyse dance and aesthetic experience can be approached increasingly through technological frameworks. But these talks are not enough to elucidate the impact of Deepam, Vilakku, natural illumination, flame-based illumination, electric illumination, LED systems, colour, intensity, direction, shadow and digitally controlled lighting on the Bharatanatyam art form.

This is especially important since lighting doesn't just help you see things; it also helps you see things differently. It can outline the artist movement, create spatial relationships, highlight movement and expression, set the scene and play a role in the communication of story and feeling. These dimensions are highlighted through the research questions of this work, which include the change in the visibility of the performers, the composition of the stage, the perception of the audience, the use of colour, intensity, direction, shadow, and the interaction between the traditional lamps and the modern technology.

2.6 Research Gap

The past few years, however, have witnessed three general lines of scholarly inquiry in the recent literature. Firstly, Bharatanatyam is learnt as an embodied art in relation to spirituality, identity and cultural significance. Secondly, computational approach has been increasingly used in technological research for Bharatanatyam movement and sequence and aesthetics. Thirdly, there is analysis of the social and cultural connotations attached to the artist form such as the concept of gender and representation.

Only little explored is the intersection of these aspects in terms of stage lighting. There is little research that directly links the traditional cultural uses of Deepam and Vilakku with the music technology of electric, LED and digital stage lights in the Bharatanatyam tradition today. The present study overcomes this by conceptualising light as an 'embodiment', a 'place', a 'symbolic element', as an 'aesthetic quality' and as a 'technology' of the Bharatanatyam performance.

3. THEORETICAL FRAMEWORK

The paper explores an interdisciplinary perspective to light with the purpose of not only seeing it as a technical tool for the illumination but also as a means to understand it [20]. These viewpoints provide opportunities to approach lighting as it relates to ritual, performance space, the artist expression, visual communication, aesthetic experience, and audience perception. These are suitable to be combined, as Bharatanatyam is an embodied dance, gesture, expression, narration, cultural symbolism and aesthetic communication. The issue of relationship between performance, ritual, embodiment and cultural meaning has also been explored in its research of Bharatanatyam.

3.1 Performance Theory

Performance Theory offers a frame of reference for the study of Bharatanatyam as a culturally oriented and embodied performance practice. It takes performance as more than an art presentation but as an act where cultural, social, ritual, and expressive meaning is created. This is especially significant in the context of the present study, as traditional Bharatanatyam has links with ritual and sacred contexts of performance, while advanced versions of the dance are performed in the theatres and formal concert spaces. The lighting thus becomes an integral part of the performance space in which the dancer, the audience, space, ritual references and visual elements communicate. David's exploration of the field of Bharatanatyam and embodied ritual shows how dance performance can work in relation to embodiment, ritual, rasa and religious practice.

In this study Performance Theory assists in exploring the way in which performance environments have changed from the traditional to the modern theatre as natural light, fire and lamps are combined with the surrounding environment to the point where light is deliberately designed and controlled. It thus serves as a lens to analyse the process of transformation in Bharatanatyam performance through changes in light.

3.2 Dramaturgical Perspective

The dramaturgical approach focuses on the visual organization, narrative development, atmosphere and communications of a performance. In Bharatanatyam, movement, music, rhythm, gesture, facial expression, costume, space and lighting are all intertwined in creating the experience of performing. In enhancing this organization, light can be used to direct the attention, to define performance areas, to highlight certain movements and to provide transitions between sections of a performance.

This view of lighting is seen as a part of the visual structure of the choreography as opposed to a separate technical facility. Changes in intensity, direction, colour, focus and timing can be coordinated with movement, rhythm, narrative and expression sequences with electric and digital systems. This is also in line with the research that establishes Bharatanatyam as a communication using gestures, facial expressions, movement posture and rhythmic movement.

3.3 Semiotic Perspective

The semiotic perspective enables lighting to be seen as a system of visual signs. The meaning in Bharatanatyam is conveyed by the codified gestures, facial expressions, movements, costumes, objects, music and space arrangement. Lighting can be a component of this system, lending visual weight to specific elements, and with cultural or symbolic meaning.

From a semiotic standpoint, Deepam and Vilakku are especially significant since the lamp may be used as both a physical source of light and as a cultural symbol of sacredness, devotion, ritual and the transition from darkness to light. Colour, shadow, intensity, focus and direction of modern stage lighting can also be used to establish symbolic connections. Theatre semiotics has been used to explain and prove the relevance of classical Indian dance to the concept of nāṭya, rasa and abhinaya to understand communication.

3.4 Phenomenological Perspective

The phenomenological approach describes the phenomenological experience of the movement, space, movement and perception. As it pertains to lighting, phenomenology leads to the examination of the experience of the performance space in relation to a change of light. The changing relationship of light and shadow can be created by a flame, for instance, and controlled electric light can isolate a performer, reshape the visible stage, and focus audience attention on certain movements. This lighting environment thus impacts not only on what can be seen technically but how the performer and performance space can be experienced.

This view also resonates with research that views Bharatanatyam as an embodied practice in which traditional knowledge is learnt and manifested in the movements. In this study, lighting is therefore looked at as part of the environment that the audience sees the embodied movement.

3.5 Indian Aesthetic Theory and Rasa

The Indian Aesthetic Theory, especially the Rasa principle, offers an essential cultural context for the understanding of the aesthetics of Bharatanatyam. Rasa refers to the aesthetic effect created by the performance and conveying emotion through art. Abhinaya (gesture), facial expression, movement, music, rhythm, narration are all elements of Bharatanatyam that communicate and stimulate the aesthetic appreciation.

Lighting can play a role in this experience by helping to define the visual environment for which those expressive elements are being presented. Changes in the ambient light, its intensity, shadows, colour variations, and focal lighting can modify the way one experiences the expressiveness and movement. The present study is not meant to imply that a specific lighting colour always evokes a specific rasa, but rather to explore the lighting as a part of a broader aesthetic context in which expression and emotional communication is felt. Studies of classical Indian dance have confirmed the pertinence of the principles of nāṭya, rasa, and abhinaya for the theatre and aesthetics.

4. CONCEPTUAL FRAMEWORK

The study of literature reveals that the dance form Bharatanatyam has been explored from multiple interwoven aspects such as embodiment, spirituality, gender, pedagogy, technology and aesthetics [21]. Previous research indicates that Bharatanatyam is not simply a form of physical movement, but a means by which cultural knowledge, bodily practice, symbolic meaning and aesthetic experiences are transmitted. In recent years, there has also been some research into the ways that technology can capture, analyze, and convey movement in dance. In combination these areas make Bharatanatyam a living performance art that is constantly engaged with the expressions, the cultural identity, the art of the dance but also with technology.

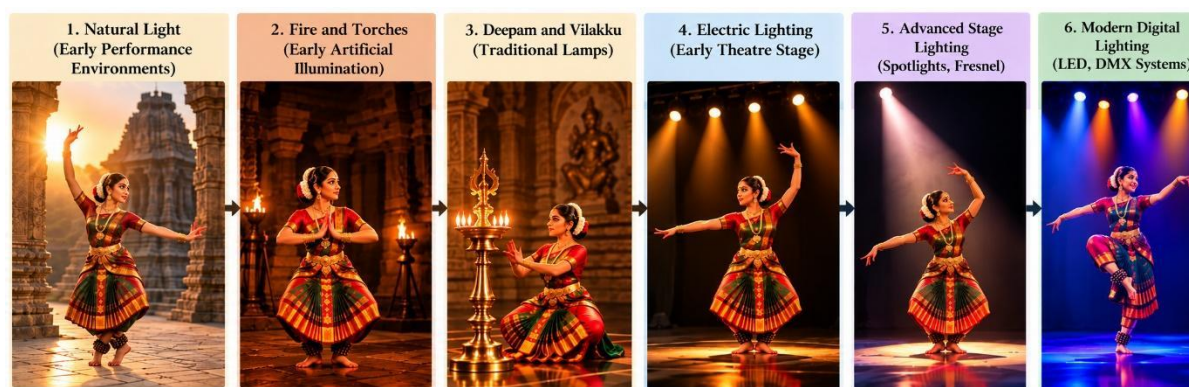


Figure 3: Conceptual Mapping of Current Research on Bharatanatyam (Source: Own Author)

Figure 3 illustrates a conceptual view of these key research directions. Thus encompasses five general themes: embodiment and spirituality, social identity and gender, movement and pedagogy, computational technology, and aesthetics, reflecting the multidimensionality of the current research in Bharatanatyam. These are brought together under the greater theme of Bharatanatyam, and also introduce an aspect that needs to be explored more: stage lighting as a cultural, ritual, spatial, aesthetic and technological aspect of performance. In this regard, thus offers a visual linkage between the prior research and this current research, allowing us to see how the dancer, movement and tradition, and the technology can be further explored with a discussion on lighting and the evolving role of lighting in the Bharatanatyam performance.

5. EVOLUTION OF 'LIGHTING' IN BHARATANATYAM PERFORMANCE.

The evolution of lighting in Bharatanatyam may be viewed as the evolution from natural sources of light to the controlled theatrical and digital lights described in figure 4. In a previous performance context, light was strongly associated with the physical setting, ritual practice, architecture, and time of performance.



Figure 4: Performance Evolution of Lighting in Bharatanatyam [26]

Light was used through sunlight, fire, oil lamps and torches to illuminate as well as to enhance the ambience and symbolism of the performance [22]. As artificial light and electric light became more common, the purpose of light became more purposeful and artistic, becoming more of an integral part of the stage performance.

5.1 Natural Light and Early Performance Environments

Before the introduction of electric lighting, the natural light was the primary source of lighting for performances. The main source of visibility for performances in the open spaces, courtyards, temple precincts, and other public places was sunlight. The varying strength and direction of the sun's light determined the timing and placement of performances and the placement of performers and audience members.

Natural light also created a certain connection between the performer and the surrounding. The lighting of early performance spaces was not as well controlled as in modern theatre, and depended on the sun's movement, architectural shadows, and daylight/night changes. The physical attributes of the performance site, therefore, directly influenced the visibility.

Here, the space of performance was not always clearly demarcated from the space of everyday or sacred places. The overall setting, audience and lighting all played a part in the performance experience.

5.2 Fire as an Early Source of Performance Illumination

Fire was used as a source of light, giving rise to a more controllable form of lighting. Flame based light sources (fire, torches etc.) may provide a greater visual effect out of daylight hours and provide a focus of visibility. Meanwhile, fire brought with it its own aesthetic elements and visual characteristics, which were very different from those of sunlight.

Flame produces a moving and variable illumination. Its light continuously varies in intensity, forming patterns of light and shadow over the performer and the space around him. This could help to create intimacy, ceremony, mystery and sacredness.

Fire should not, therefore, only be viewed in traditional performance spaces as a functional light source. It might also enter into the visual and ritual context where the performance took place.

5.3 Deepam and Vilakku in the Performance Environment

The Deepam and Vilakku hold significant importance in the culture of light in the South Indian tradition. The traditional lamp can serve multiple purposes within performance contexts: it can be the thing that illuminates, as well as the element of ceremony, and the symbol of vision.

The lamp can create a focal point in the performance area. Placed in front or in the middle of a performance space, it may impact the relationship between performer, sacred space and audience. It can also produce contrasts of light and dark, and the light from its flame can help to create a sense of contrast between the different elements of the performance space.

The traditional lamp can be used to enhance the relationship between performance and ritual in Bharatanatyam. It can create a transition from normal space to performance space and can denote the start of a ceremonial event. The lamp therefore has meanings which go beyond its use.

5.4 Traditional Lighting and Performance Space

The organization of performance space was also shaped by the traditional ways of lighting up. The positioning of lamps and places of fire sources influenced visibility of performers and the seating position of the audience. In the temple and other traditional settings, the influence of available light was felt by the architecture of the hall, pillars, entrances and elevated platforms.

Because of the traditional limited and local light sources, performers were usually placed with respect to the available lighting. Shadows and areas of darkness became natural components of the environment. Traditional performance spaces had a relationship between lighting, architecture, performer and audience - almost every element of the lighting could not be intentionally controlled, as it was in modern stages.

The spatial relationship is significant as a precursor to the development of stage lighting in the future. The modern light technology did not only offer a brighter light but also altered the capacity to organise and manipulate the light space for performance.

5.5 Transition to Electric Lighting

Electric lighting was a great change in the presentation of the theater. Artificial lighting enabled performances to be held outside of daylight hours and gave more control over performer and performance visibility.

Electric lighting also created new ways to focus the viewers' eyes. Lighting can be directed towards specific performers, sections of the stage, or specific portions of a performance. This process came to develop gradually, moving lighting from the simple function of making the dancer visible to that of an essential element of the stage. Spatial patterns, costume, jewellery, and the dancer's bodily movements and expressions might be highlighted by the use of controlled illumination.

5.6 Development of Advanced Stage Lighting

The use of stage lighting has grown much beyond the mere use of light as a source of electric illumination. Designers have a wide range of control over the visual environment with spotlights, Fresnel fixtures, LED systems, colour changing equipment, programmable lighting controls and DMX based systems.

These technologies offer Bharatanatyam artists chances to synchronize lighting with movement, music, rhymes, storyline, and expressions. Individual parts of the stage may be lit separately and the intensity and colour of the light can change during the show.

The modern stage, then, offers a lighting context which is very different from that of the traditional temple or open performance area. However, the old lamp is not necessarily gone. Rather, it may be used along with modern lighting fixtures as a symbolic and visual component.

5.7 Illumination to Visual Expression

The evolution of lighting shows progress from a functional to an expressive light source. The visibility was set by natural light, the ritual was enhanced with flame-based lighting, electric lighting increased the control, and digital lighting opened a variety of new possibilities for visual composition and interaction with the choreography.

5.8 Continuity Between Traditional and Advanced Lighting

A shift towards technologically sophisticated lighting can also signify a lack of traditional performance practice. In modern day, Bharatanatyam can be integrated into highly stimulating stage settings with the use of traditional lamps. A ceremonial lamp can be in the room but the rest of the performance area is lit by modern systems. The coexistence, therefore, provides an important zone of analysis. The traditional lamp can be used to maintain its cultural and symbolic value and advanced lighting can serve aesthetic and dramatic purposes. So, the performance environment is a mixture of inherited cultural aspects and modern technological procedures.

The evolution of the nature of the light in Bharatanatyam can then be seen as a process of transposition or transformation rather than the total replacement of the light. Light has developed a lot of technology, but the light tradition can continue to impact modern performance.

The development of the lighting in Bharatanatyam shows how the light was used to be natural and flame based and how the lighting gradually has become more sophisticated and artificial and more of a digital control system. As part of this evolution, lighting has shaped the visibility, the space for performance, the ritual ambiance, the image composition, the movement and the reception of the audience. The shift from Deepam and Vilakku to today's digital lighting thus offers a valuable lens through which to explore the negotiation of tradition, technology, cultural symbolism and aesthetic innovation in Bharatanatyam.

5.9 Comparative Perspective Kathakali and Koodiyattam

While the main interest of this study is Bharatanatyam, other South Indian performance traditions show how the relationship between lamp illumination and performance can be seen. The Kerala traditions of Kathakali and Koodiyattam offer valuable comparative contexts, in which the physical, the ritual and the light are tightly linked to the traditional performance spaces. These traditions illustrate that the shift from the traditional use of flame to electric light in the performance traditions of India has not been an even one.

The relevance of Kathakali to the present discussion is based on the fact that the facial expression, eye movement, gesture, costume, makeup and expressive movement are important aspects of the language of performance. The expressive movement of the Kathakali dancer plays a vital role in conveying the character and emotion to the audience. In this context traditional lighting is important as the face, eyes, costume, gestures and movements help to communicate the visual performance.

Kathakali and Koodiyattam A Comparative Illustration of Performance, Aesthetics, Performance Space and Traditional Illumination		
Kathakali	Aspect	Koodiyattam
Kerala's classical dance-drama tradition	Origin / Tradition	Ancient Sanskrit theatre tradition of Kerala
Dance-drama form	Nature of the Art	Sanskrit theatre tradition
Epics (Mahabharata, Ramayana) and heroic narratives	Themes	Classical Sanskrit plays (e.g., works of Bhasa), philosophical and dramatic themes
Dynamic, vigorous and energetic	Performance Style	Slow, detailed and highly expressive with emphasis on abhinaya
Elaborate facial expressions with distinctive makeup (pacha, kathi, etc.)	Facial Expression / Abhinaya	Subtle, intricate and detailed facial and eye expressions (navarasa)
Elaborate, colourful costume and large headgear	Costume and Makeup	Distinctive traditional costume and makeup with modest headgear specific to Koodiyattam
Chenda, Maddalam and vocal music	Musical Accompaniment	Mizhavu percussion with supporting vocal and other musical elements
Open-air stages and temple grounds (kalari-like space)	Performance Space	Koothambalam (temple theatre) with specific architectural design
Large Kerala oil lamps (Kali Vilakku) used in performance spaces	Traditional Lamp Illumination	Kali Vilakku (large Kerala oil lamp) used in performance spaces
Highlights facial makeup, costume and dramatic movements	Role of Light	Enhances facial expression, gestures and the meditative theatrical atmosphere

Figure 5: Comparative Performance of Kathakali and Koodiyattam [29, 30]

Another significant comparative context was the close relationship between Koodiyattam and traditional performance spaces in Kerala as was evident in Koodiyattam those photos are credited to Saneesh Chengamanad. It is a Sanskrit theatre tradition which is traditionally linked to temple theatres called Koothambalams. It is a performance language with a high emphasis on the use of facial expression, eye movement, hand gestures and detailed abhinaya. The traditional performance space context therefore becomes an important area to consider the relation between

illumination, performer, performance space and the audience. In Koodiyattam, the mizhavu is another essential percussion instrument and accompaniment to the art form, together with other ancillary music. <https://kriyanatyasala.com/koodiyattam/>

Comparisons with Kathakali and Koodiyattam do not imply that the use of lighting is the same in these traditions as in Bharatanatyam. Instead, they offer the overarching South Indian milieu in which the traditional illumination could be used to create a field of visibility, a spatial dimension, a ritual reference and an aesthetic element that is illustrative in figure 5. The comparison thus provides support for the argument that the development of modern stage lighting should not be regarded as a straightforward process of the replacement of traditional lighting, but as a process during which traditional meanings can persist, alter, or be reinterpreted in other performance settings. The context of koodiyattam is important as it is closely related to traditional performance spaces in Kerala. It is a Sanskrit theatre tradition that traditionally is linked to the temple theatres called Koothambalams. The language of its performance is very expressive in terms of facial expression, eye movement, hand gestures and detailed abhinaya. The traditional performance environment makes it an important context for the examination of relationship between illumination, performer, performance space and audience.

6. DEEPAM AND VILAKKU RITUAL, SYMBOLIC AND AESTHETIC SIGNIFICANCE IN BHARATANATYAM

The Deepam and Vilakku play an important role in the cultural and religious context of Indian performance practice. For Bharatanatyam the traditional lamp is more than just a source of light [23]. The presence of such a thing can create a sense of sacredness, start the performance and visually integrate the space of the performance and ideas of devotion and spiritual presence. The lamp thus operates on a functional, symbolic and aesthetic level. The flame makes a unique visual setting that unites the dancer, the performance space and the audience.

6.1 Deepam and Vilakku as Symbols of Sacredness

The traditional lamp is a symbol of dispelling darkness and is linked with purity, knowledge, devotion and auspiciousness. The lamp can create a sacred centre when placed in a performance context and affect the perception of the space. The flame also offers a point of focus that gives a more theatrical atmosphere than just a normal theatre setting. This way, light is not just a functional need, it is a part of the performance's cultural context as well.

6.2 The Lamp and the Beginning of Performance

Another role a lamp can serve is a transition between the space of everyday and performance space. The lighting of the Deepam or Vilakku could be to mark the start of a ceremony or an artistic performance. This is more noticeable when Bharatanatyam is enacted in a temple, cultural or devotional setting. The lamp creates a symbolic and visual transition point in the performance which gives it a unique cultural ambience.

6.3 Deepam, Performer and Performance Space

The location of a "traditional" lamp may affect the visual organization of the performance environment. A light can be located towards the middle, entrance, or front of a performing space and can serve as a visual landmark for the performer and the audience. The dark and low light levels created in the surrounding space, and by a flame, can also highlight the performer's gestures and movements. Therefore, traditional lighting plays a role in the relationship of the dancer, the performance space and the audience.

6.4 Flame, Shadow and Bharatanatyam Aesthetics

Light created with the help of a flame creates a situation of motion, change and shadow. The flame is not fixed electric illumination, but constantly fluctuates in intensity, and also varies slightly in different parts of the performer's expressions, costume, and space of the setting. These attributes can work well with Bharatanatyam, especially when where gesture, expression, movement and stillness are key components. The light and shadow can thus be included in the visual rhythm of the performance.

6.5 Ritual Lighting and Aesthetic Experience

Deepam and Vilakku are not only performing a ritual role, but also enhancing the aesthetic experience of the performance. Warm light can provide intimacy and depth to a stage setting, and the stark difference between light and dark can emphasize certain aspects of a show. In this sense, there's no distinction between ritual practice and artistic presentation. The same source of light can convey cultural messages and also contribute to the visual experience of the audience.

6.6 Continuity in the Advanced Bharatanatyam

The traditional lamps might still be present in the performance space, but modern electric lighting is often used in the advanced Bharatanatyam performances. It results in an intriguing juxtaposition of continuity and change. Modern stage technology can help to ensure accurate colour, intensity, direction and timing, whilst the Deepam/Vilakku can retain their symbolic and ritualistic significance. Traditional lighting and modern lighting are not necessarily at odds; they can be considered different levels of the same performance space.

6.7 From Sacred Flame to Visual Symbol

The conversion of flame-based illumination to electric and digital lights has altered the utilitarian purpose of light, but does not necessarily extinguish the cultural dimension attached to light. The image of the lamp can be created in modern-day Bharatanatyam using stage composition, a spotlight, colour, shadow or digitally controlled effects. The flame can then be "real," "visible," or "modernized" via technology with the stage. The flame can thus be "real," or depicted visually, or conceptually reinterpreted using modern stage technology.

Deepam and Vilakku show that in the past, lighting in Bharatanatyam has been a multi-layer experience. The lamp illuminates, creates ritual ambience, directs focus, creates performance space and adds to the aesthetic experience. It also continues to be seen in the present day, as a witness to the fact that traditional meanings can be relevant in technologically advanced environments. The connection between ritual symbolism

and the present-day visual technology offers a valuable basis for the analysis of the expressive potential of electric and electronic illumination as explored in the subsequent sections.

7. LIGHTING, PERFORMANCE SPACE AND STAGE COMPOSITION

The evolution of the lighting in Bharatanatyam is intertwined with the evolution of the organization of performance space, which is illustrated in figure 6.

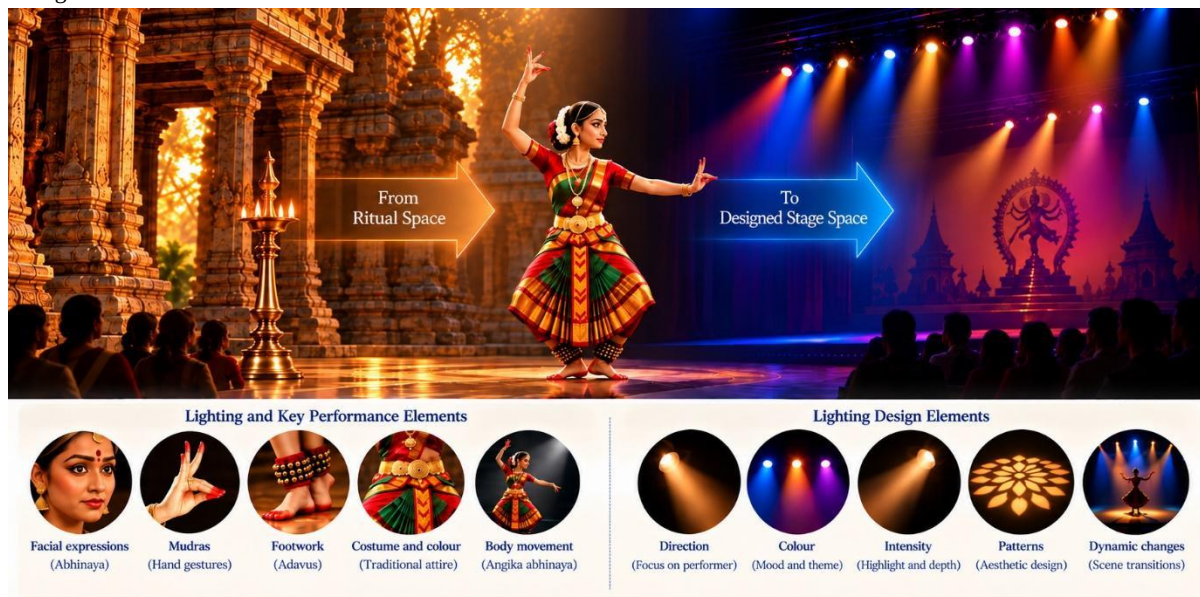


Figure 6: Lighting, Performance Space and Stage Composition in Bharata Natyam [27]

Lighting does not just make the dancer visible; it also defines the space for the performance, the position of the dancer and the focus of the audience. In the traditional space, the interaction between the dancer, the lamp, the architectural space and the audience made up a relatively seamless performance space [24]. This relationship became more managed and structured, thanks to the development of modern theatre spaces and electric lighting.

7.1 Performer and Audience Relationship

Lighting has a profound impact on the visual relationship between the performer and the audience. The audience was subjected to the performance in a collaborative space in which the dancer, the lamp, the architecture and the darkness were visually integrated under a limited light source, the traditional light. The audience had no reason to be looking at an individual in a brightly lit stage. Rather, the whole show setting enhanced the performance.

7.2 Transformation Through Modern Stage Design

The advent of electric lighting allowed for more control of performance space separation and organization. The stage can be divided in two sections, one lit, one dark, so that the performer can be highlighted in a darker part of the stage. Spotlights, focused beams and controlled lighting enabled the audience's eyes to be drawn to highlight certain movements, entrances, gestures, or parts of the performance.

This transformation also altered the appearance of the performing area to the stage. The performance could be built starting from the lighting and not relying mainly on the architecture and the source of light.

7.3 Lighting and Performer Movement

Movement, posture, gesture, facial expression and spatial patterns are the key elements of Bharatanatyam. The elements can be enhanced by lighting, which can highlight a movement or make it more or less visible. Illuminating the artist expression and movement in a concentrated light and then varying the intensity or direction of the light can produce a contrast between various parts of a choreography.

Lighting can therefore be used to complement the choreography and not just to follow it. When light changes, so can movement, mood, or dramatic emphasis and a relationship can be established between light and form expression.

7.4 Lighting and Stage Composition

With modern lighting, the stage can be broken up into various zones. The area of the stage can be lit up to highlight a central area, or sections of the stage can be lit at different levels. This provides opportunities to gain control of depth, focus, symmetry and spatial hierarchy.

This may be especially critical in Bharatanatyam, as the movements are often performed in various regions of the performance space. These spatial patterns can be further reinforced with lighting, and it can give the audience an idea about how the dancer's movement is connected to the stage setting.

7.5 Light, Shadow and Spatial Depth

Shadow is another significant part of the composition of a stage. There can be no shadows if the stage is completely lit; it may lessen depth and visual contrast. With controlled shadows, the foreground and background can be separated from each other and certain poses and

movements can be emphasized. Shadow can also be used to create a sense of mystery or spirituality or historical continuity in performances that use traditional imagery.

7.6 Sacred Space to Designed Performance Space

The shift from “old” performance spaces to “new” theatre stages is no mere substitute for technology. It is also a shift from the traditional approach to the construction and perception of performance spaces. Lighting that was traditional was well integrated with the existing architectural and ritual setting, while modern stage lighting could actively shape the visual setting for each performance.

This is significant to the understanding of the development of Bharatanatyam lighting. Modern lighting is not just an alternative to traditional lighting, it offers new ways to organize space, focus people's attention and develop visual meaning.

7.7 Integration of Traditional and Modern Space

These two styles can be integrated in Bharatanatyam. A traditional lamp can still be on the stage, but be controlled by electric or digital lighting controls during the rest of the performance area. Under these conditions, the lamp can be a focal point that is being symbolised, and modern lighting extends the surrounding space. These two elements enable the visibility of traditional cultural elements and make them suitable to the current theatrical circumstances.

The changes in light technology have changed the way the Bharatanatyam stage and the roles of performer, audience, stage, architecture and focus are interrelated. Traditional lighting was able to incorporate the cultural and architectural context in its performance, whereas electric and digital lighting systems added more control in spatial arrangement and visual focus. Lighting has now thus become a significant element of the stage composition and has helped to influence the way the Bharatanatyam movement, expression and cultural symbolism is perceived by the modern viewers.

8. SWITCHING FROM TRADITIONAL TO ELECTRIC & DIGITAL LIGHTING

The advent of electric lighting changed the face of Bharatanatyam. Instead of the traditional lamps which cast only spotty light and a limited amount of light, electric lighting enabled the lighting of the performance area where necessary based on the requirements of the choreography [25]. This shift made the dancer easier to see and more opportunities to manage what would happen on this stage. From the need to see the performance, lighting became an integral part of the presentation of the performance.

8.1 Introduction of Electric Lighting

Electric lighting enabled the larger performance spaces to be lit more evenly. Electric fixtures could be placed at various locations around the stage, as opposed to a single lamp or group of lamps. This enabled the dancer to be visible as they were dancing across a bigger space.

The change was significant especially after Bharatanatyam began performing in modern auditoriums and theatres. The stage now could be isolated from the surrounding space, thus bringing a distinction between performer and audience.

8.2 Spotlights and Performer Visibility

Spotlights added more focus on the performance's visuals. A focused beam may focus the perspective on the dancer, especially when he or she is performing key movements or solo passages, entering, and/or during expressive sequences.

This is helpful for Bharatanatyam as facial expression, hand gestures, form positions and footwork are all key to communication. With focused lighting, therefore, it's possible to make it easier for the audience to see a particular part of the dancer's performance.

8.3 Colour as a Stage Element

The advent of modern electric and LED lighting brought into the scheme a multitude of colours. Colours may be used to highlight a part of a performance or to change the visual setting.

For instance, a warm colour can keep a visual link to the traditional flame light, or a cooler colour can give a really modern stage look. Colour can then be another visual element to costume, movement, music and expression.

8.4 Intensity and Direction

Electric lighting also provides greater control over the intensity and direction of illumination. The brightness of the stage can be increased or reduced according to the requirements of a particular sequence. The light can also be cast from the front, side, upper or lower side; the effects that it has on the dancer changes depending on the direction of light.

This is especially true for Bharatanatyam as the same movement can look different when lit from different angles and at different intensities. For example, side lighting can illuminate the lines of the form and the movement of the actor, whereas frontal lighting gives an excellent understanding of the actor's facial expression and gestures.

8.5 Lighting and Choreographic Structure

Light can be used in conjunction with the structure of choreography in an advanced theme. Changes in rhythm, movement, story or mood may be accompanied by changes in lighting. The change of one lighting state to another may delineate a new part of the performance without changing the physical stage setting.

The lighting can then function as a visual cue for transitions along with the choreography. Applying the dancer's movement in conjunction with the shifting stage light can create a more coherent dance experience.

8.6 LED and Digital Lighting

LED systems can offer varied colour selections and brightness, and can offer lighting state changes during a performance that are rapid and easy to achieve. Digital control also allows the setting up of lighting sequences ahead of time, and their synchronization with certain sections of the choreography or music.

This has given lighting a greater flexibility and responsiveness to Bharatanatyam presentations. The stage may undergo changes in its visual appearance that do not involve actual changes to the space of the performance.

8.7 Lighting Traditional Symbolism

Traditional visual references are not obliterated by the use of modern technology. Modern productions could still employ an actual Deepam or Vilakku, but use electric lighting for the rest of the stage. In other cases, modern lighting might mimic certain characteristics of the natural light with warm colors, concentrated lights or controlled lighting shadows.

This is a mixture of traditional symbolism and stage practice. The symbolic role of the physical lamp can be kept whilst the technological light can offer the broader visual context needed for the modern performance.

8.8 From Illumination to Visual Expression

Change of oil lamps to electric lamps is thus not the major factor. It's the evolution of the possibilities of lighting in a show. With modern systems, one can determine where the audience is looking, identify various portions of the performance, highlight areas of movement, modify the look of the stage and make transitions without changing the physical space.

In the case of Bharatanatyam, it opens up a bigger visual lexicon while adding a potential option of traditional cultural references. Lighting is increasingly a part of the present performance presentation, rather than just a way to provide visibility.

The uses of electric and digital lighting have broadened the scope of Bharatanatyam performance, both practically and aesthetically. The use of more control over intensity, colour, direction, focus, timing and direction of light source has helped the performer and the lighting designer create more diverse stage environments. However, the ongoing use or re-imagining of Deepam and Vilakku is testimony to the fact that traditional symbolism does not need to end with technological advancements. The connection of these both the light sources becomes significant in the light of the present-day Bharatanatyam.

8.9 Necessity for Trained Technicians in Stage Lighting

Modern stage lighting is increasingly complex, and requires trained technicians to operate the lighting equipment and control systems safely and effectively. A lighting technician will interpret the designer's ideas and requirements and set up and focus lights, program the lights, adjust the light intensity and colour, and synchronize lighting changes with the performance. They are especially vital in the case of LED, DMX, computerised, and other digitally-controlled systems, where a high level of technical coordination and timing is essential. The trained technicians in Bharatanatyam can help ensure that the lighting is adequate to help with facial expression, mudras, footwork, costume, movement and the space of the performance, while also keeping the artistic intent of the production in mind.

9. RESEARCH METHODOLOGY

The conceptual framework is the presentation of the relationship of the major elements studied in this research shown in figure 7. It starts with the classic light sources such as natural light, followed by cultural and ritual use of Deepam/Vilakku, the use of space for performance and finally the development of electric, LED and digital light sources. These changes are then related to the visual and aesthetic roles of lighting in Bharatanatyam, such as presence of the performer, composition of the stage, movement, expression and the perception of the audience. This is in tune with the studies which have highlighted the significance of the movement design and visual organisation in Bharatanatyam.

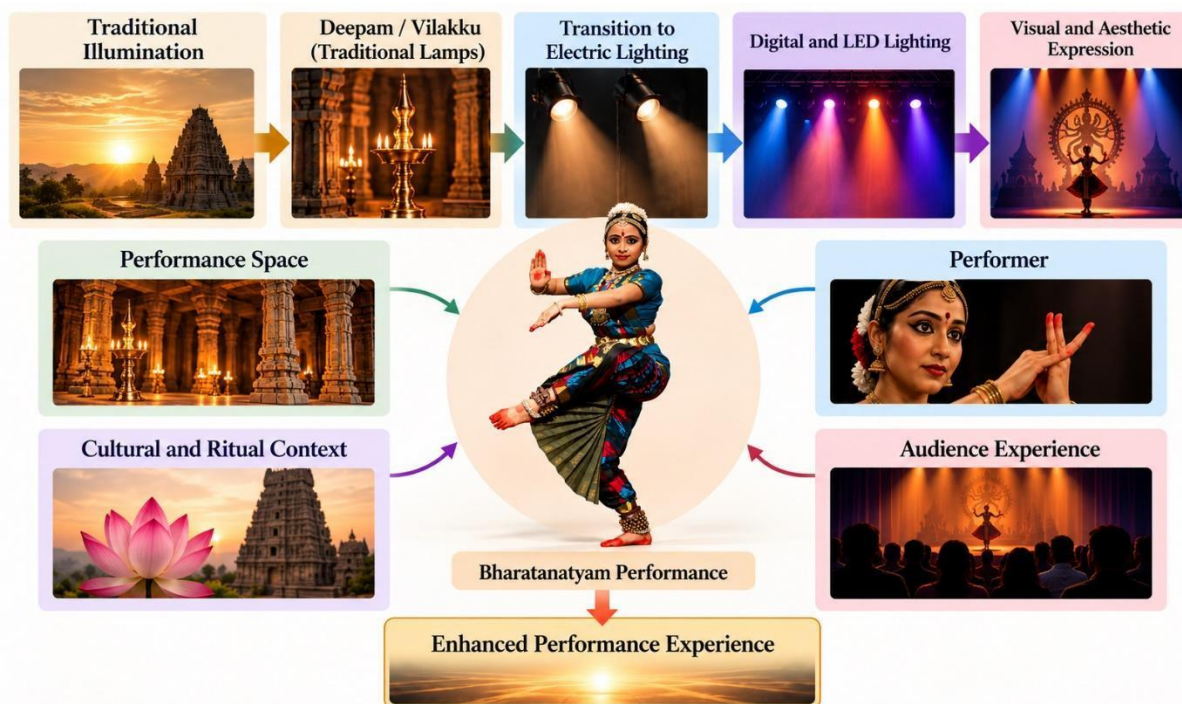


Figure 7: Conceptual Framework [Source: Own Author]

The framework thus considers lighting as more than just a technical need; it is considered as an element that plays a role in the interaction between the performance space, the performer, the cultural environment and the experience of the audience. This progression is not a linear, chronological one, but one that is used to look at the changes in light usage that can enable the presentation and aesthetic communication of Bharatanatyam. Traditional cultural components can also be re-interpreted in new forms and technologies, which can also be studied in terms of continuity and change in performance practice.

9.1 Research Design

The type of research used in this study is qualitative and interpretative, which was used to analyze the development and meaning of lighting in Bharatanatyam performance. The study emphasizes the role of lighting as a means of visibility but also as a cultural, ritual, spatial, aesthetic and expressive element in performance. It explores the shift to natural and flame lighting sources, to electric, LED and digitally controlled lighting, and the relevance of the traditional meanings today in the context of advanced performance spaces.

9.2 Research Approach

The interpretive method is employed to develop an understanding of how lighting helps to shape the meaning and experience of Bharatanatyam. The study incorporates issues of relationship between the dancer, the light, the performance area, the audience and the cultural symbolism. Special focus is placed on the traditional sources of light (Deepam and Vilakku) and how their meaning and symbolism have been retained, transformed and visually represented in advanced stage lighting.

9.3 Sources of Data

Secondary qualitative sources are the main sources of the study. These involve academic publications relating to Bharatanatyam, Indian classical dance, performance studies, theatre lighting, Indian aesthetics, ritual practices and advanced stage technology. Historical and cultural elements related to the performance spaces of the temples and traditional lighting methods are also taken into account. The performance materials of the advanced era are analysed to grasp how lighting is utilised for modern-day Bharatanatyam performance.

9.4 Areas of Analysis

The study explores the topic of lighting under five main headings:

- The evolution of historical lighting from sun and fire to oil lamps, electric lighting, and digital systems.
- Ritual and cultural significance – Deepam and Vilakku as establishing sacred and ceremonial meaning.
- The relationship of the lighting, the stage set-up, the position of the performer and the audience.
- Aesthetic and expressive function – use of colour, intensity, direction, shadow, focus, movement of light.
- A combination of tradition and technology, the traditional symbolism and the modern lighting technologies.

9.5 Thematic Analysis

Material collected is analysed by thematic analysis. The information relevant to lighting and Bharatanatyam is presented in similar themes. The analysis takes a step-by-step approach from traditional lighting to modern stage lighting and explores the transformation of light's role in various performance contexts.

9.6 Analytical Framework

The results are interpreted in the light of the theory developed earlier in the study. Performance Theory is employed to gain insight into the relationship between ritual and theatrical performance. Lighting can be studied in relation to visual performance construction through Dramaturgy and light can be studied in relation to the symbolic meanings that are communicated through it, through the lens of Semiotics. Phenomenology offers insights into the experience of light, space, performer and audience. Indian Aesthetic Theory and Rasa are considered to discuss the connection between visual presentation and aesthetic experience.

9.7 Scope and Limitations

This study aims not to give a technical history of the various types of lighting equipment used in theatres, but to look at the light as related to Bharatanatyam dancing. Cultural meaning, continuity of ritual, spatial organization, aesthetic expression and advanced technological development are emphasized.

The study is mostly qualitative and interpretive, and the results are meant to be used to establish patterns and connections, not statistically generalizable conclusions. The interpretation is also based on the availability and quality of historical and advanced documentation of performance materials.

The methodology, therefore, is an amalgamation of qualitative interpretation, thematic analysis, and comparisons to trace the evolution of lighting in Bharatanatyam. It brings together all these aspects of illumination (historical, Deepam and Vilakku), performance space, electric lighting and digital systems of the present day in one analytical scope. This is followed by a section presenting results and findings from the study, a section which will draw upon this approach.

10. RESULTS AND FINDINGS

In the context of the qualitative and interpretive approach this study takes, the findings are not presented in terms of statistical measures, but rather thematically. The analysis pinpoints the shift in the role of lighting as it was used in theatrical performance setups to the modern Bharatanatyam stages. The results also show that technological development has allowed for the visual possibilities of performance to be extended, but not at the cost of the cultural value of traditional illumination.

10.1 Examine the role of art in society

The analysis shows a distinct shift in the role of lighting from merely serving a functional role (to see) to a more design-driven role (to perform). Lighting was originally very related to natural light, fire, and oil lamps; however, in the modern stage, lighting has greater control over light intensity, direction, colour and time. Historical studies of the lighting of the Indian stage also portray the journey from necessity to lighting as an allied artistic element.

10.2 Ritual and Cultural Continuity

The second finding concerns the cultural relevance of light as a feature in the performance context, which is ongoing. Deepam and Vilakku are not merely understood as a physical source of light, but associations of sacredness, devotion and ceremonial practice can be created. The study of the Tamil lamp traditions also singles out the role of the light as a link between ritual activity and sacred space and larger cosmological meanings.

10.3 Transformation of Performance Space

The results reveal the transition from a relatively integrated environment with performance to a more deliberately designed stage environment. Traditional performance might involve the dancer, the architecture, the lamps and the audience all in the same space, but advanced theatre could involve the separation, concentration and restructuring of these elements by means of the light. The study of Bharatanatyam in the temple context also shows a close connection between the dance, ritual and performance space.

10.4 Lighting and Performer Visibility

The analysis suggests that the modern lighting facilitates greater control over the visibility of key Bharatanatyam components, namely the facial expression, mudras, footwork, costume and movements of the form. This is important since these are some of the communicative elements of classical dance. Studies on Indian classical dance also list gestures, facial expressions, postures of the form and movement of rhythm as significant modes of communication without the use of speech.

10.5 Visual Expression – expansion

The modern lighting enriches the 'lexicon' of Bharatanatyam performers and designers. Colour, intensity, direction, shadow, focus and lighting variations can differentiate between parts of a performance and help to transform the representation of movement and space. Change to electric and special lighting, therefore, has influenced not only visibility, but the construction of the aesthetics of performance as well.

10.6 Relationship Between Tradition and Technology

Among the main conclusions is that traditional and advanced lighting is not necessarily contradictory. Electric or Digital systems can be used for the larger stage space while retaining a physical Deepam or Vilakku for a advanced production. This provides a multi-layered visual order, in which traditional symbolism can be combined with technological control.

The larger form of literature on Bharatanatyam also speaks of the nature of the form as one that works within the shifting cultural and performance landscape yet also has roots in its traditional and religious origins.

10.7 Overall Finding

The overall result is that the development in the practice of lighting in Bharatanatyam has not been merely a shift from traditional to modern lighting. It illustrates a wider shift in which lighting is shifting from mere illumination to spatial organization, to visibility of the performer, to aesthetic expression and the communication of visual messages, with traditional symbols like Deepam and Vilakku having the potential to sustain cultural and ritual continuity.

11. DISCUSSION

The results of this study demonstrate how light has evolved from its original role, which was merely to illuminate, and has become an integral part of visual, aesthetic and expressive communication in Bharatanatyam. Traditional means of light like natural, fire, Deepam, Vilakku were closely associated to a ritual atmosphere, sacredness and the organization of light space, whereas the modern electric, LED and digital means of light give a greater control of visibility, colour, intensity, direction and stage composition. This transformation has altered the relationship between performer, space of performance and audience, so that lighting can now serve the expressions on the performer's face, mudras, movements of the form, costume, story and choreography. The results indicate, on the other hand, that traditional cultural meanings are not necessarily lost as the result of technological advancement, but that elements linked to Deepam and Vilakku can be preserved, reinterpreted, or performed according to the current fashion. This is a reflection of the transformation of Bharatanatyam as the traditional religious and aesthetic elements continue to engage in evolving performance contexts and new aesthetic practice.

12. CONCLUSION

The purpose of this research was to analyze the changes that took place in the lighting of Bharatanatyam from natural and flame light to the modern stage lighting, which uses electric, LED and digital lights, and focus on the cultural, ritual, spatial, aesthetic and expressive aspects. The results reveal that the meaning of lighting has slowly shifted from the essential role of illumination to that of a significant element of stage composition and means of communicating to the audience. The traditional uses of Deepam and Vilakku were closely linked with the ritual atmosphere, the sacredness, the performance space, the cultural symbolism; and modern lighting technologies have given more control over the intensity, colour, direction, focus, shadow and timing.

The study also reveals that the shift from traditional to advanced lighting can't be interpreted as an alternative of one type for another. Traditional lighting practices and symbolic meanings can continue to exist within technologically advanced performance environments. A Deepam or Vilakku can be used for a ritualistic purpose and electric and digital lighting can create the overall visual setting needed for modern stage presentations. In this way, the light which is used in Bharatanatyam is a dialogue between tradition and technology, between ritual and the theatre, between cultural symbol and aesthetic innovation.

A comparative analysis of Kathakali and Koodiyattam also shows the relevance of the tradition of lighting in the South Indian stage. In particular, Koodiyattam offers insight into the connection between the traditional performance space, the expressive nature of the acting, the nature of the ritual itself, and the lamp. The traditions demonstrate that the development of stage lighting is not a straightforward process, nor is it a linear one, and also suggest that the traditional ways of illuminating may have a cultural and aesthetic value in new performance spaces. The study makes a contribution to Bharatanatyam and performance studies by introducing the concept of stage lighting with the concept of embodiment, ritual, stage-space, visual communication and Indian aesthetic experience. It also emphasizes the importance of including lighting as an integral component of the artistic and cultural framework of Bharatanatyam and not as merely a technical facet of stage production. The qualitative and interpretive approach adopted in this study can help to understand these relationships, but due to the specific nature of the relationship between the documentary sources and the study, only those that existed and were accessible are considered.

Interviews with Bharatanatyam dancers, choreographers, lighting designers, the observation of live performances, and audience response studies and comparative analysis of various advanced productions can further be incorporated in future research. This study might offer additional empirical knowledge of the perception and explication of traditional lighting symbolism and advanced stage technology in advanced Bharatanatyam.

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