

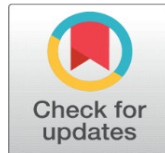
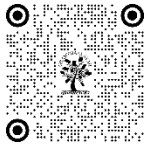
# EVOLUTION OF PERFORMING ARTS CENTERS: A HISTORICAL AND CONTEMPORARY ANALYSIS

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## DOI

[10.29121/shodhkosh.v5.i1.2024.1491](https://doi.org/10.29121/shodhkosh.v5.i1.2024.1491)

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**Funding:** This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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## ABSTRACT

This research paper delves into the rich history and transformative journey of performing arts centres from ancient times to the present day and showcases a study of modern design of performing arts centre. Beginning with open-air amphitheatres and ritualistic performances in ancient civilizations, the study traces the development of these centres through medieval courtly settings, the Renaissance period's architectural innovations, and the emergence of dedicated opera houses and concert halls in the 19th century. Examining the 20th-century shift towards modernist architecture and multipurpose venues, the research highlights the profound impact of technology on the performing arts experience. From gas lighting and improved rigging systems in the 19th century to the integration of cutting-edge audio-visual technologies in the 21st century, the paper explores how these advancements have shaped the design and functionality of performance spaces. Furthermore, the study addresses the societal shifts reflected in the design of performing arts centres, including the emphasis on inclusivity and accessibility in the 21st century. It investigates the contemporary trends of sustainability, flexibility, and the integration of virtual platforms, showcasing how performing arts centres have evolved into dynamic hubs for cultural expression, community engagement, and global connectivity. Through an interdisciplinary lens that considers architectural, technological, and socio-cultural dimensions, this research paper provides a comprehensive overview of the history and present-day transformation of performing arts centres. The findings contribute to a deeper understanding of the dynamic interplay between architecture, technology, and societal values in shaping the landscape of performing arts venues.

**Keywords:** Performing Arts Centre, Modern Design, Sustainability



## 1. INTRODUCTION

Performing arts centres, throughout human history, have stood as crucibles of cultural expression, reflecting the dynamic interplay between artistic innovation, societal values, and architectural advancements (Grodach, 2011). From the open-air amphitheatres of ancient civilizations to the cutting-edge, technology-infused venues of the 21st century, the evolution of these spaces mirrors the evolution and flow of human creativity and the ever-changing landscape of artistic pursuits (Gillian. M, 2010). The genesis of our investigation lies in the examination of the foundational question: how have performing arts centres transformed over time? This inquiry propels us on a journey through epochs, each marked by distinct architectural paradigms, cultural nuances, and technological breakthroughs (Eleni, 2021). We embark on a quest to unravel the intricate tapestry of history, peering

into the rituals and performances of ancient civilizations where amphitheatres and temples served as the stage for communal artistic expressions. As we traverse through the medieval and renaissance periods, we encounter the shift towards courtly settings, where royal patronage cultivated the flourishing of theatrical performances and elaborate spectacles. The proscenium arch, a hallmark of renaissance theatre design, emerges as a harbinger of a more structured and visually captivating stage (Fanelli, 2016). The 19<sup>th</sup> century sees the rise of dedicated opera houses and concert halls, embodying architectural grandeur and acoustic precision to accommodate the burgeoning interest in large-scale productions (Robin, 1991). The 20<sup>th</sup> century introduces a modernist aesthetic, where functionalism and simplicity challenge ornate styles. Multipurpose performing arts centres become the norm, embracing a diverse array of events.

Simultaneously, technological innovations — from gas lighting to advanced rigging systems — reshape the theatrical experience, paving the way for the immersive audio-visual landscapes of the present day (Strong, 2010). As we step into the 21<sup>st</sup> century, our exploration extends beyond bricks and mortar. The digital age has ushered in an era where performing arts centres are not confined to physical boundaries; rather, they transcend geographical constraints through virtual platforms (Metzidakos, 2024). This transformation has profound implications for accessibility, inclusivity, and global connectivity, reshaping the very essence of the audience- performer relationship. Our research aims to unravel the multifaceted dimensions of this evolutionary journey. From the architectural marvels of antiquity to the state-of-the-art, technology-driven spaces of today, we scrutinize the influences that have shaped performing arts centres. In doing so, we dissect the societal values embedded in their designs, the technological innovations that have enhanced their functionality, and the cultural tapestry they continue to weave (Jingting Han, 2023). However, a notable research gap exists in the lack of comparative analysis papers on different performing centres based on architectural innovations or aspects. This absence hinders a comprehensive understanding of how various architectural choices impact the functionality, aesthetics, and cultural resonance of these centres across different historical periods and geographical locations. By comprehensively exploring the historical roots and contemporary manifestations of performing arts centres, this research endeavours to contribute to a nuanced understanding of their pivotal role in the cultural landscape. The subsequent sections will delve into specific periods, examining the architectural, technological, and socio-cultural factors that have sculpted these centres over time.

**Aim:** This research aims to analyse Triveni Kala Sangam in Delhi, NCPA in Mumbai, and Bharat Bhawan in Bhopal with a focus on their unique architectural innovations, historical significance, diverse program offerings, community engagement initiatives, and socio-cultural impacts.

**Objective:** To conduct a comparative analysis of Triveni Kala Sangam in Delhi, NCPA in Mumbai, and Bharat Bhawan in Bhopal, focusing on their architectural innovations, historical significance, programming diversity, community engagement, and socio-cultural impact to understand their contributions to the cultural landscape of India.

## 2. METHODOLOGY

The methodology for this research involved a comprehensive search strategy utilizing online platforms such as ResearchGate, google scholar, and Mendeley. Key terms used in the search included "performing art centre," "culture centres," "evolution of culture centres," and "history of art centres" to encompass a wide

range of relevant literature. A total of Twenty- five papers were initially identified through this process, each meticulously reviewed to determine their relevance. Thirteen papers were shortlisted for their closer alignment with the topic of performing arts centres, while the remaining papers were excluded for their limited contribution. The paper is structured to begin with defining the history, requirements, and concept of performing arts centres, emphasizing their subjective nature. It discusses the historical, cultural, social, and political contexts, and includes examples of notable art centres such as Triveni Kala Sangam, Bharat bhavan, and NCPA Mumbai to illustrate various planning and requirement aspects. The paper also delves into the history, evolution, and other critical aspects of art centres, ensuring a comprehensive coverage supported by diverse examples to highlight the modern architectural interpretations of performing arts centres.

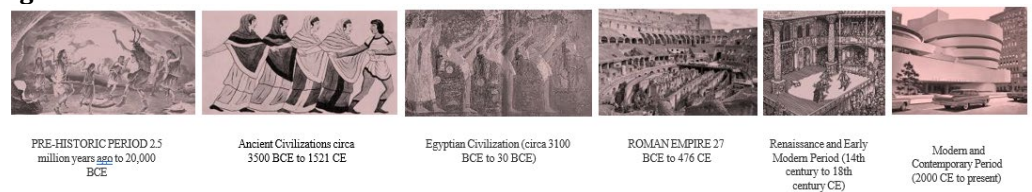
### 3. FINDINGS AND DISCUSSION

The evolution of performing arts centres has undergone a transformative journey, reflecting the shifting dynamics of societies and the ever-evolving nature of artistic expression. Originating in ancient civilizations with communal gatherings and open-air theatres, the concept gradually evolved during the renaissance with the establishment of more formal indoor theatres (Ujjwalakarkar, 2024). The 19th century witnessed the rise of opulent opera houses and concert halls, emphasizing the grandeur of live performances (Francisco, 2011). However, it was in the 20th century that a significant paradigm shift occurred, giving birth to comprehensive performing arts centres. The Lincoln centre for the performing arts in New York exemplified this evolution, integrating various art forms under one roof. This multidisciplinary approach inspired the creation of similar global landmarks, fostering collaboration between diverse artistic disciplines. Technological advancements in the latter half of the 20th century and the 21st century further enhanced the audience's experience, providing state-of-the-art sound and lighting systems. Additionally, modern performing arts centres prioritize inclusivity and community engagement, offering educational programs and outreach initiatives. Today's centres are designed with sustainability in mind, featuring adaptable spaces that cater to the evolving needs of the arts. The evolution of performing arts centres reflects a rich tapestry of cultural, technological, and societal influences, solidifying their role as vital hubs for artistic expression and community engagement.

Modern time: in today's era, contemporary performing arts centres stand out as architectural wonders and cultural focal points, embracing advancements in technology, inclusivity, and sustainability. Architecturally, these centres feature sleek and inventive designs, often incorporating state-of-the-art materials and technologies. Cutting-edge facilities, such as advanced sound systems, dynamic lighting arrangements, and multimedia capabilities, offer the audience an immersive and sensory-rich experience (Chan, 1997). These venues are adept at hosting a diverse array of performances, ranging from classical music, theatre, and dance to film screenings and interactive digital installations. A distinguishing characteristic of these centres lies in their dedication to inclusivity and accessibility. Educational programs, workshops, and initiatives for community outreach are woven into their mission, aiming to engage a wide demographic and eliminate barriers to artistic appreciation. Collaborations with local schools, community groups, and emerging artists further enhance the cultural fabric, nurturing a sense of shared ownership and active participation in the arts (Bublitz, 2019). Sustainability has become a paramount consideration in the design and operation of contemporary performing arts centres. From the integration of energy-efficient technologies to the

implementation of green building practices, these venues are committed to reducing their environmental impact. Some incorporate eco-friendly features such as renewable energy sources, rainwater harvesting, and waste reduction strategies, aligning with global efforts towards environmental sustainability. Flexibility is a defining feature of modern performing arts centres (Petra Haukw, 2018). Adaptable performance spaces, convertible seating arrangements, and modular stages enable these venues to cater to a broad spectrum of artistic genres and formats. This adaptability ensures that the space remains dynamic, accommodating emerging trends and evolving artistic expressions, making it a versatile and pertinent cultural asset. Present-day performing arts centres serve as dynamic and indispensable elements of the cultural panorama. Not only do they provide platforms for top-tier performances, but they also actively contribute to community engagement, education, and the sustainable growth of the arts. Ultimately, these centres embody the fusion of artistic brilliance with technological sophistication and a dedication to nurturing cultural inclusivity and environmental responsibility.

**Figure 1**



**Figure 1 Timeline**

Source Author

### 3.1. PERFORMING ARTS CENTRE

A performing arts centre is a dedicated venue designed to host a variety of live performances, including but not limited to theatrical productions, musical concerts, dance performances, operas, and other forms of artistic expression (Mccarthy, 2001). These centres serve as cultural hubs that provide a platform for artists and performers to showcase their talents to a live audience. (Mccarthy, 2001). They are designed to provide optimal conditions for both performers and audiences, with considerations for acoustics, lighting, seating arrangements, and stage design. Performing arts centres may vary in size and scale, ranging from intimate theatres for small productions to large, state-of-the-art complexes capable of hosting major performances and events. In addition to hosting performances, many performing arts centres also engage in educational and outreach activities. This can include workshops, lectures, and programs aimed at promoting arts education and community involvement. Overall, performing arts centres contribute significantly to the cultural vitality of a community by providing a dedicated space for the creation, presentation, and appreciation of various forms of performing arts. Performing arts centre is not introduced recently, rather it was started in stone age period where people used to perform/ showcase their talent in small groups under tree.

### 3.2. CASE STUDY: TRIVENI KALA SANGAM, NEW DELHI

Triveni Kala Sangam, located in New Delhi, India, is a prominent cultural and arts complex established in 1950 by Sundari k. Shridharani. Inspired by her training under renowned dancer Uday Shankar, Shridharani envisioned a space for artistic expression, which initially began with just two students in a single room above a coffee house in Connaught place. However, with the support of figures like pandit



Nehru, the institution expanded and eventually found its current home on Tansen Marg, new Delhi. Designed by the distinguished American architect Joseph Allen Stein, Triveni Kala Sangam blends modern architectural principles with traditional Indian ethos, making it a significant landmark in the city's cultural landscape.

The design concept of Triveni Kala Sangam emphasizes versatility, functionality, and integration with its surroundings. Stein's design incorporated various elements such as jali work and open spaces to create a harmonious environment for artistic pursuits. The complex was built in two phases to accommodate its diverse functions efficiently. Phase I, completed between 1957-1977, focused on essential facilities like music and dance studios, exhibition galleries, a library, a café, and administrative areas. Public spaces were located on the ground floor for easy access, while work studios and classrooms occupied the upper floors. Phase II, completed in 1977, added specialized facilities, including an auditorium, painting and sculpture workshops, and residential apartments, further enhancing the complex's capabilities.

Triveni Kala Sangam is organized into distinct zones to cater to different functions. The ground floor houses public areas such as the lounge, exhibition hall, library, and café, while work studios, classrooms, and living areas are situated on the upper floors. The basement accommodates specialized spaces like the art heritage exhibition hall and storage areas. The design emphasizes characteristics like enclosure, focus, integration of nature, and accessibility to create a welcoming and functional space for artists and visitors alike.

The complex's merits include its functionality, aesthetics, natural light, and ventilation. Despite limited space, Triveni Kala Sangam efficiently accommodates multiple functions while incorporating traditional Indian design elements and modern architectural principles. The integration of the Open-Air Theatre (OAT) as a multifunctional space enhances its flexibility, while maximizing natural light and reducing the need for artificial lighting. However, challenges such as limited parking space and the absence of a lift in the four-story building are noted demerits that impact the overall user experience.

Triveni Kala Sangam stands as a testament to effective design and utilization of space in a cultural context. Its systematic arrangement, integration with nature, and attention to detail make it a landmark institution in new Delhi's cultural landscape. As "Steinabad," it not only honors the legacy of Joseph Allen Stein but also continues to inspire creativity and artistic excellence for generations to come.

**Figure 2**



**Figure 2** Site Plan

Source Bhatia, 2018

Figure 3



Figure 3 Triveni Kala Sangam

Source Stein, 2018

### 3.3. CASE STUDY: THE NATIONAL CENTRE FOR THE PERFORMING ARTS (NCPA), MUMBAI

The national centre for the performing arts (NCPA) in Mumbai, designed by Architect Philip Johnson, is a sprawling multi-venue art centre spanning 30 acres in Nariman point, Mumbai, India. Established to promote and preserve India's rich heritage of music, dance, theatre, film, literature, and photography, the NCPA serves as a cultural hub for both traditional and innovative performances. Its architectural layout encompasses various spaces including auditoriums, galleries, libraries, and rehearsal rooms, providing state-of-the-art facilities for artists and audiences alike. The NCPA's luxurious decor and meticulous attention to detail create an ambiance of sophistication and elegance, inviting patrons to immerse themselves in the artistic experience.

The site plan of the NCPA encompasses a diverse range of facilities, from the grand Jamshed Bhabha theatre, completed in 1999, with its seating capacity of 1,109 and eight entry/exit points, to the intimate experimental theatre, opened in 1986, with movable seating for 264 spectators. The Godrej dance theatre, inaugurated in, caters specifically to the needs of dancers, with its sloped seating providing optimal visibility for every patron. The little theatre, equipped with a state-of-the-art recording studio and listening area, can seat 114 people and is perfect for musicians, dancers, and poets to showcase their skills. Additionally, the tata theatre, created by the architect Philip Johnson and the legendary acoustician Cyril Harris, offers a revolving stage and brilliant acoustics, making it Mumbai's preferred venue for Indian classical concerts and theatre productions.

Structurally, the NCPA boasts innovative designs such as coffered ceilings to create column-free spaces and cantilevers at the entrance of the tata theatre for architectural flair. The use of materials like stone, plaster, and hardwood timber flooring throughout the complex adds to its aesthetic appeal while ensuring durability and functionality. The NCPA stands as a testament to the fusion of modern architectural principles with India's cultural heritage, providing a platform for

artists to showcase their talents and audiences to experience the magic of the performing arts in Mumbai's bustling metropolis.

**Figure 4**



**Figure 4** Layout Plan

Source Venue Landing - NCPA, 2019

**Figure 5**



**Figure 5** Building of the Centre

Source Venue landing - NCPA, 2019

**Figure 6**



**Figure 6** Auditorium

Source NCPA Mumbai, 2020

### **3.4. CASE STUDY: BHARAT BHAVAN, BHOPAL (BRYANT-MOLE, 2018)**

BHARAT bhavan, inaugurated in 1982, stands as a monumental achievement in Indian architecture, embodying the visionary designs of renowned architect Charles Correa. Situated in Bhopal, the capital of Madhya Pradesh, Bharat bhavan is a testament to correa's mission of blending traditional Indian architectural elements with modern design principles. The project was part of a broader initiative by the government of India in the late 1970s to establish cultural institutions in every state capital. While many of these initiatives faltered, Bharat bhavan remains a shining example of success.

Correa's design for Bharat bhavan was deeply rooted in the rich architectural heritage of India, aiming to create a modern architectural style specific to the country while embracing its cultural diversity. The complex, nestled into a hillside overlooking the tranquil waters of the upper lake, is a masterpiece of integration with its natural surroundings. It comprises a series of terraces and courtyards that guide visitors through a carefully choreographed sequence of spaces, offering a journey that is both physical and spiritual.

The architectural layout of Bharat bhavan is meticulously designed to evoke a sense of ritual and reverence. Visitors entering the complex are greeted with a choice: follow the cascading terraces down towards the lake or descend into the three courtyards, which provide access to the cultural facilities within. These facilities include contemporary art galleries, a museum showcasing tribal art, an auditorium, a library dedicated to Indian poetry, a print shop, and a studio for visiting artists-in-residence. Each space is carefully positioned to engage with the natural environment and create an immersive experience for visitors.

One of the defining features of Bharat bhavan is correa's emphasis on climate-responsive design. Unlike the imported European modernism that dominated much of India's architectural landscape, correa's approach was tailored to India's hot and humid climate. Drawing inspiration from historical sites such as the red fort at Agra, Bharat bhavan incorporates open-to-sky spaces, sunken courtyards, and raised terraces to regulate temperature and provide natural ventilation. This thoughtful integration of environmental considerations not only enhances the comfort of visitors but also reduces the building's reliance on artificial cooling systems, making it a sustainable architectural marvel.

The integration of nature is another hallmark of correa's design philosophy at Bharat bhavan. The complex is designed to harmonize with its surroundings, with outdoor spaces seamlessly blending into the landscape. Circular openings in concrete shells allow light and air to filter into the interior spaces, creating a connection to the outdoors while providing a metaphorical link to India's architectural heritage. These features not only enhance the aesthetic appeal of the complex but also contribute to its overall sustainability by reducing energy consumption.

Throughout Bharat bhavan, correa masterfully incorporates elements of traditional Indian architecture to create a sense of continuity with the past. The terraces and courtyards, reminiscent of ancient Indian palaces and temples, serve as focal points for communal interaction and cultural exchange. Sculptures placed within the courtyards provide contemplative spaces for visitors to reflect and engage with the artwork on display. These elements, inspired by India's rich cultural



heritage, imbue Bharat bhavan with a sense of identity and belonging that resonates with visitors from all walks of life.

Correa's design philosophy for Bharat bhavan extends beyond aesthetics to encompass a deeper understanding of space and human experience. The complex is not merely a collection of buildings but a carefully curated sequence of spaces that encourage exploration, interaction, and contemplation. The "ritualistic pathway" that correa envisioned guides visitors through a journey of discovery, with each space offering its own unique perspective on India's cultural landscape.

In addition to its architectural significance, Bharat bhavan has become a vital cultural institution in Bhopal, attracting visitors and residents alike with its diverse array of programs and events. The complex serves as a hub for artistic expression, community engagement, and cultural exchange, hosting exhibitions, performances, workshops, and more. Its enduring popularity is a testament to its success in fulfilling correa's vision of creating a space that celebrates India's cultural heritage while embracing the possibilities of the modern era.

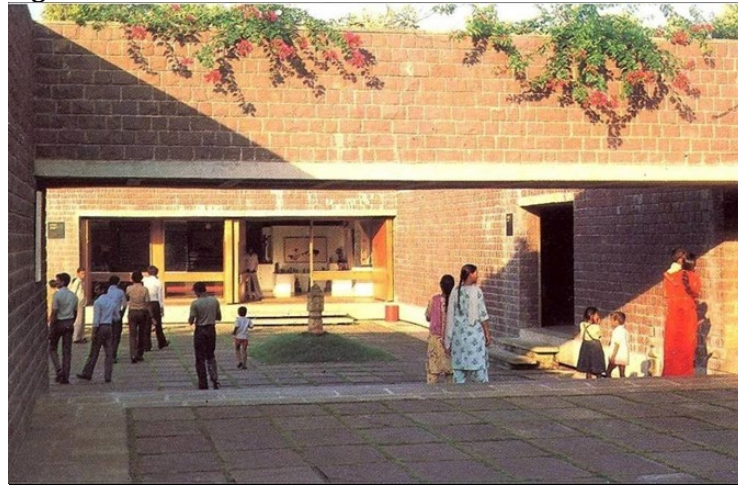
Over the years, Bharat bhavan has evolved into a dynamic cultural centre that continues to play a central role in the cultural life of Bhopal. Its open-to-sky spaces, sunken courtyards, and sculptural elements have inspired countless architects and designers, both in India and around the world. The complex serves as a model for sustainable and contextually sensitive design, demonstrating the importance of considering climate, culture, and context in architectural practice.

**Table 1**

<b>Table 1 Comparative Analysis</b>					
<b>S. No.</b>	<b>Parametrs</b>	<b>Triveni Kala Sangam, Delhi</b>	<b>NCPA, Mumbai</b>	<b>Bharat Bhawan, Bhopal</b>	<b>Analysis</b>
1	Architectural innovations in performance spaces	Triveni Kala Sangam showcases several architectural innovations in its performance spaces, such as the open-air theatre (oat), which serves as a multifunctional space for various artistic events. The design incorporates elements like jali work and open spaces to create a unique atmosphere that enhances performances.	The NCPA incorporates innovative features like the revolving stage in the tata theatre and hardwood flooring in the Jamshed Bhabha theatre for enhanced acoustics and performances.	Bharat bhavan's auditorium features curved seating arrangements and adjustable lighting and sound systems, integrating traditional Indian elements with modern design to enhance performances' ambiance and audience experience.	Each institution exhibits unique architectural innovations tailored to enhance performance experiences. Triveni Kala Sangam uses traditional design elements, NCPA incorporates modern technological features, and Bharat bhavan blends traditional and modern styles for optimal performance settings.
2	Multifunctional performance spaces	The complex offers multifunctional performance spaces that cater to diverse artistic disciplines. The oat, for example, hosts music concerts, dance performances, theatre productions, and workshops, demonstrating its versatility and adaptability to	CPA's venues, such as the experimental theatre and little theatre, are versatile, accommodating a range of events from seminars to concerts, with features like movable seating and recording studios.	Serving as a versatile cultural hub, Bharat bhavan offers various performance venues, including an auditorium, smaller theatres, and outdoor amphitheatres. This flexibility allows for diverse programming, from concerts to film screenings, catering	All three centres provide highly adaptable spaces that cater to a variety of performance types, showcasing their versatility. Triveni Kala Sangam focuses on traditional and community events, NCPA emphasizes technological flexibility, and Bharat bhavan balances between tradition and modern multi-functional

		different artistic needs.		to a wide range of artistic expressions and audience sizes.	spaces.
3	Sustainable design in performance venues	Triveni Kala Sangam embraces sustainable design principles in its performance venues. The integration of natural light and ventilation reduces the reliance on artificial lighting and air conditioning, creating a more environmentally friendly space for artists and audiences.	Sustainable materials like stone and plaster are used in construction, and coffered ceilings help reduce energy consumption while providing column-free spaces for performances.	Bharat bhavan's sustainable design utilizes passive cooling techniques, such as open- to-sky spaces and natural ventilation, along with locally sourced materials and efficient lighting systems, reducing energy consumption and environmental impact while maintaining comfortable indoor conditions.	All three centres emphasize sustainability but approach it differently. Triveni Kala Sangam focuses on natural light and ventilation, NCPA uses sustainable materials and energy-efficient designs, and Bharat bhavan employs passive cooling and local materials for eco-friendly performance venues.
4	The role of lighting in performance spaces	Lighting plays a crucial role in enhancing performances at Triveni Kala Sangam. The design ensures ample natural light during the day, while carefully placed artificial lighting enhances the ambiance and highlights the performers on stage, creating immersive experiences for the audience.	State-of-the-art lighting systems enhance ambiance and visibility in performances, with features like chandeliers in the Jamshed Bhabha theatre adding elegance to the space.	Advanced lighting systems in Bharat bhavan's auditorium provide customizable illumination, creating dramatic effects for theatre productions or subtle ambiance for musical performances. This enhances the visual experience, complementing the artistic content and engaging the audience on a deeper level.	Lighting is pivotal in each centre, enhancing performance, visibility and ambiance. Triveni Kala Sangam utilizes natural and artificial light, NCPA employs advanced lighting with aesthetic features, and Bharat bhavan focuses on adjustable lighting for diverse performance needs.
5	Spatial design and audience interaction:	The spatial design of Triveni Kala Sangam fosters interaction by providing open spaces and courtyards that allow audiences to mingle and engage with the performers and the art community.	State-of-the-art lighting systems enhance ambiance and visibility in performances, with features like chandeliers in the Jamshed Bhabha theatre adding elegance to the space.	The spatial design of Bharat bhavan promotes audience interaction and engagement with performances. With unobstructed views of the stage and flexible seating arrangements, coupled with surrounding courtyards for socialization during intermissions, the complex fosters dynamic interactions between performers and audience members, enriching the overall cultural experience.	Each centre's spatial design enhances audience interaction uniquely. Triveni Kala Sangam uses open spaces and courtyards, NCPA utilizes its diverse venues for seamless experiences, and Bharat bhavan combines flexible seating with courtyards for dynamic interactions, enriching cultural engagement.

**Figure 7**

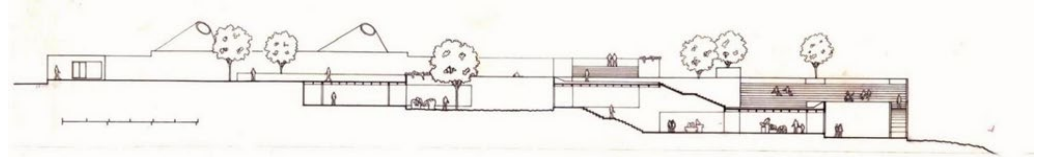


**Figure 7 Open Space**

**Source** Bryant-Mole, 2018

In conclusion, Bharat bhavan stands as a shining example of Charles Correa's architectural vision, blending tradition and modernity to create a space that is both timeless and contemporary. Its success lies not only in its aesthetic beauty but also in its ability to engage with the natural environment, foster community interaction, and celebrate India's rich cultural heritage. As a cultural institution, Bharat bhavan continues to inspire and delight visitors, serving as a beacon of creativity, diversity, and innovation in the heart of Bhopal.

**Figure 8**



**Figure 8 Section of the Site**

**Source** Bryant-Mole, 2018

#### 4. COMPARATIVE ANALYSES

The architectural innovations in performance spaces at Triveni Kala Sangam, NCPA, and Bharat bhavan highlight their unique approaches to enhancing artistic experiences. Triveni Kala Sangam's design features include traditional elements like jali work and open-air spaces, creating a distinct atmosphere that enriches performances. NCPA, on the other hand, integrates modern technological advancements such as a revolving stage in the tata theatre and hardwood flooring in the Jamshed Bhabha theatre to optimize acoustics and performance quality. Bharat bhavan merges traditional Indian design with contemporary elements, incorporating curved seating and adjustable lighting and sound systems to create an inviting and effective performance environment. Each institution employs a distinctive architectural strategy to create optimal settings for performances, from Triveni's traditional focus to NCPA's technological innovations and Bharat bhavan's blend of old and new.

In terms of multifunctional performance spaces, all three cultural centers demonstrate remarkable versatility. Triveni Kala Sangam's open-air theatre (oat) is

a prime example, hosting an array of events from music concerts to workshops, showcasing its adaptability. The NCPA features venues like the experimental theatre and little theatre, which offer movable seating and recording studios, accommodating a diverse range of events from seminars to concerts. Bharat bhavan serves as a cultural hub with various performance spaces, including an auditorium, smaller theatres, and outdoor amphitheatres, allowing for a wide range of artistic events from concerts to film screenings. This versatility across all three centers highlights their commitment to catering to a broad spectrum of artistic disciplines, each with its unique emphasis: Triveni on community and traditional events, NCPA on technological flexibility, and Bharat bhavan on a balance of tradition and modernity.

Sustainability is a key aspect of the design in all three performance venues, albeit with different approaches. Triveni Kala Sangam focuses on utilizing natural light and ventilation, minimizing reliance on artificial lighting and air conditioning to create an eco-friendly environment. The NCPA employs sustainable materials like stone and plaster in its construction and features coffered ceilings that reduce energy consumption. Bharat bhavan incorporates passive cooling techniques, such as open-to-sky spaces and natural ventilation, along with the use of locally sourced materials and efficient lighting systems, to maintain comfort while minimizing environmental impact. Each centre's commitment to sustainability is evident in its design choices, from natural solutions at Triveni to material and energy efficiency at NCPA, and passive cooling at Bharat bhavan.

Lighting plays a pivotal role in enhancing the performance spaces at these centers. Triveni Kala Sangam makes extensive use of natural light during the day and strategically placed artificial lighting to enhance the ambiance and highlight performers at night, creating an immersive experience for the audience. The NCPA employs advanced lighting systems that not only enhance visibility but also add aesthetic value with features like chandeliers in the Jamshed Bhabha theatre. Bharat bhavan's auditorium features customizable lighting systems that can create dramatic effects for theatre productions or subtle ambiance for musical performances, significantly enriching the visual and emotional experience for the audience. The thoughtful application of lighting at each venue underscores its importance in performance art, with Triveni balancing natural and artificial light, NCPA focusing on advanced and aesthetically pleasing lighting solutions, and Bharat bhavan prioritizing adjustable illumination for varied performances.

The spatial design and audience interaction strategies at these cultural centers also reflect their unique characteristics. Triveni Kala Sangam's layout includes open spaces and courtyards that encourage mingling and engagement between the audience and performers. NCPA's diverse venues facilitate seamless audience experiences, enhancing engagement through well-designed spaces. Bharat bhavan promotes dynamic interactions with unobstructed views, flexible seating arrangements, and surrounding courtyards that provide social spaces during intermissions. These designs foster a deeper connection between performers and audiences, with Triveni emphasizing open social spaces, NCPA optimizing venue design for smooth interactions, and Bharat bhavan combining flexible seating with social courtyards to enhance cultural engagement.

## 5. CONCLUSION

In conclusion, this research paper has provided a comprehensive overview of the evolution and transformation of performing arts centres from ancient times to the present day. By examining the architectural, technological, and socio-cultural



factors that have shaped these centres, the study` has highlighted their pivotal role in the cultural landscape.

The comparative analysis of Triveni Kala Sangam in Delhi, NCPA in Mumbai, and Bharat Bhawan in Bhopal has shed light on the unique contributions of each institution. Triveni Kala Sangam, designed by Joseph Allen Stein, blends modern architectural principles with traditional Indian elements, creating a harmonious environment for artistic pursuits. NCPA in Mumbai, established by JRD Tata and Dr. Jamshed Bhabha, serves as a beacon for cultural preservation and promotion through its diverse programming and state-of-the-art facilities. Bharat Bhawan in Bhopal, designed by Charles Correa, is a testament to sustainable and contextually sensitive design, with its open-to-sky spaces and passive cooling techniques.

These case studies illustrate the importance of considering architectural innovations, historical significance, programming diversity, community engagement, and socio-cultural impact when evaluating the role of performing arts centres in India. They showcase how these institutions have evolved to meet the changing needs of artists and audiences while preserving and promoting the country's rich cultural heritage.

As we move forward, it is crucial to continue exploring the dynamic interplay between architecture, technology, and societal values in shaping the landscape of performing arts venues. By fostering collaboration between diverse artistic disciplines and embracing principles of inclusivity and sustainability, these centres can continue to serve as vital hubs for cultural expression and community engagement.

## **CONFLICT OF INTERESTS**

None.

## **ACKNOWLEDGMENTS**

None.

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