

Digital Media Technology on the Theatre Stage

Jinming Zhang^{1,2,a}

¹The Central Academy of Drama, Beijing, 100710, China

²Wimbledon College of Arts, University of the Arts London, London, SW19 3QA, England

^ajinming.zz@outlook.com

Abstract: This study delves into integrating new media technologies in contemporary theatre stage design and their consequent effects on the audience's perception. Incorporating virtual reality, projection mapping, advanced screen displays, and artificial intelligence has redefined conventional stage design paradigms and broadened the horizons of performative spaces. By examining works like *Cinematique* (2015), multiple renditions of *The Magic Flute* (1995, 2012, 2019), *Heaven Gaia* (2021 Chinese New Year Edition), and *An Imperial Banquet in the TANG Dynasty* (2021 Henan TV Spring Festival Edition), this paper elucidates both the augmentative and detrimental potentialities of new media in theatre. While adept incorporation of these technologies can yield immersive and interactive experiences, overindulgence may detract from the intrinsic artistic narrative. Thus, designers are tasked with judiciously harnessing new media avenues to complement, rather than eclipse, the core performance.

Keywords: Contemporary Theatre, New Media Technology, Stage Design, Audience Engagement

1. Introduction

The convergence of technology and art has intensified in recent years, particularly within theatrical design. Advancements in new media technology enable designers to offer audiences unparalleled visual and auditory experiences in theatre settings. Contemporary stage designers are increasingly inclined towards leveraging these technologies, a trend that has dramatically redefined the paradigm of stagecraft. However, a nuanced understanding of integrating technology into theatrical design is essential. With this, imprudent applications can maintain the integrity of a performance. When designers judiciously consider the role and functionality of technology within their plans, the outcomes can be transformative and spellbinding. It is thus imperative to critically evaluate the appropriateness of media technology utilization in modern theatre settings. This paper delves into the definition of media technology, illustrating its influence on stage design — both advantageous and otherwise — through case studies including *Cinematique* (2015), *The Magic Flute* (1995, 2012, 2019), *The Magic Flute* (2012), *Heaven Gaia* (2021 Chinese New Year Edition), and *An Imperial Banquet in the TANG Dynasty* (2021 Henan TV Spring Festival Edition).

2. The definition of new media technology

According to Prof. Chengyu Xiong of Tsinghua University, new media, often characterized as digital or online media, represents a suite of media platforms anchored in computer information processing technology and the Internet, primarily geared for communication. It not only retains the familiar modalities of traditional media like newspapers, television, and radio but also markedly integrates contemporary attributes such as interactivity, immediacy, extensibility, and integration.^[1] Conversely, Jason C. Chavis offers a more expansive perspective, defining new media technology as any application designed to disseminate information via digital means, computer systems, or data networks.^[2]

For performing artists, this integration of new media technology introduces a canvas that is both comprehensive and theatrical. It serves as a conduit to craft immersive and transformative artworks that can be revolutionary in scope and even challenge the very paradigms of artistic production.^[3] However, the 'new media' concept is only sometimes agreed upon. Professor Zhang Peili, from the New Media Department at the China Academy of Art, posits that the term 'new media' is, in essence, evanescent. To him, it's a fluid, relative, and time-bound construct. He asserts, "The designation of 'the new' is primarily situational, versatile, and relational, rather than being anchored to a specific media platform".^[4]

In synthesizing these perspectives, it becomes apparent that "new" is a temporal descriptor, while

"media" leans more toward material and technological dimensions. Central to the new media's identity are the tenets of dialogue and interaction^[5]. For the context of this paper, new media technology in theatre design and the performing arts is defined as the ensemble of tools and technologies that designers and artists leverage to foster dialogue and interaction. This encompasses but is not limited to, virtual reality, projections, video screen technologies, artificial intelligence, and the like.

3. New media technology and the theatre stage

Traditional theatre, confined by the constraints of its main stage and side wings, offers a specific kind of spatial experience. These conventional designs often hinder swift and seamless scene transitions, potentially limiting actors' performances and occasionally causing moments of emotional disconnect for the audience. This age-old format can sometimes seem static and outdated, especially to a younger generation accustomed to the dynamism of Hollywood blockbusters and the immersive realms of VR technology. These modern audiences crave more than mere tradition; they yearn for potent visual stimuli, auditory immersion, and novel sensory experiences enabled by cutting-edge technologies^[6].

Kumar's 2013 study accentuates this sentiment, asserting that "new media has broadened the scope of drawing new audiences to theatre." He suggests that the inherent interactive elements of theatre are particularly enticing for younger viewers^[7]. As new media technologies mature, they open doors to innovative theatrical expressions. The integration of sound, lighting, electronic, and virtual technologies has dramatically expanded the traditional boundaries of the stage. Performances can now transcend the physical realm, diving into virtual spaces that heighten the audience's spatial perception and realism. Consequently, theatre is steadily evolving beyond the limitations of time and space, metamorphosing into an art form that fosters more profound unity between performers and their audience.

This blend of live performance with the wonders of new media technology answers the contemporary audience's call. It crafts a unique amalgamation, producing an experience at the intersection of theatre and film - an ethereal realm of 'unreal reality'^[8]. An infatuation with sublime technological feats characterizes our present era. As we navigate this epoch, the allure of human prowess is steadily overshadowed by a newfound reverence for technical grandeur. Our collective belief in the transformative might of digital technology—where the virtual begins to eclipse the real—becomes ever more palpable^[9].

4. The application of new media technology in theater

4.1. Analysis of examples of the application of new media technology

In today's theatrical landscape, the fusion of new media technology—embodying elements such as projection screens and video displays—stands at the forefront of reshaping the dramatic tableau, ushering in an era where the stage becomes a canvas of limitless potential. These cutting-edge media tools are not merely augmentations but a conduit to a "uniquely pliable and poetic space"^[9], challenging and redefining traditional notions of stagecraft. In the evocative 2014 adaptation of *The Curious Incident of the Dog in the Night-Time*, Bunny Christie's visionary design intricately harnesses projections on quartet screens, painting a vivid portrait of Christopher Boone's complex mental landscape as he navigates the challenges of an Asperger's-like condition. This masterstroke not only brings Boone's intricate cognitive interplay to the fore but also fosters a profound empathy in the audience, effectively diminishing the chasm between character and spectator. *Ugly Lies the Bone* (2016), brought to life by Es Devlin and Luke Halls's genius ventures further by conceptualizing an immersive 3D world—a chilling icy expanse juxtaposed against the familiar terrestrial setting. The deliberate positioning of the lead character downstage, juxtaposed against the sprawling digital backdrop, serves as a poignant visual metaphor. It speaks volumes of her profound isolation, all while magnetically pulling the audience into her emotional vortex. Similarly, Fleur Elise Noble's *Rooman* (2020) is a testament to the symbiotic relationship between tangible performance and digital craft. Noble weaves an ethereal narrative that straddles the real and the imagined by interweaving projection and animation across a triptych of screens. The audience is transported into a transcendent love narrative between a woman and a fox, a seamless amalgamation of physical performance and digital artistry.

Such groundbreaking productions exemplify the metamorphic potential of new media technology in the realm of stage design and posit it as an indispensable tool. Far from mere ornamentation, these innovative inclusions deepen narrative layers, amplify emotional undercurrents, and redefine the

paradigms of theatrical storytelling. Using new media technology in theatrical productions isn't merely an afterthought or a nod to modernity. It represents a calculated artistic choice to enhance narratives, deepen emotional resonances, and elucidate themes. As theater metamorphoses in this digital epoch, the avant-garde melding of technology foreshadows even more nuanced and evocative audience experiences. Opera stage design, echoing the broader narrative of technological progress, epitomizes the symbiotic marriage of innovation and the arts. As designers and artists harness sophisticated tools, the demarcation between tangible reality and digital realms becomes increasingly tenuous, paving the way for unparalleled theatrical experiences. Integrating technological marvels, notably augmented reality (AR), into stage design has reshaped performer and audience interactions with the theatrical milieu. AR, in its promise of melding the real with the virtual, curates an amplified immersive landscape. Its role isn't merely ornamental—it's a conduit for interaction, fluid storytelling, and seamless narrative transitions. The audience is transformed from passive spectators to active participants in a mutable, digital-influenced reality.

The Magic Flute (2012) stands as a testament to this revolution. Its framework, which permits performers to engage with the digital environment seamlessly, artfully obfuscates the borders of reality and imagination. The amalgamation of vivid animations, striking chromatic juxtapositions, and the intricate dance between performers and their digital doppelgängers craft an inimitable theatrical tableau. Yet, this confluence isn't without its tribulations. Perfect congruence between live performances and projections is paramount. Any discord disrupts the illusion's potency, momentarily extricating the audience from the encompassing narrative. Juxtaposing this with the 1995 rendition of *The Magic Flute* accentuates the seismic shift in opera presentation within a few decades. This antecedent, sans technological flourishes, delivered an unadulterated, quintessential operatic encounter where performers, their sonorous harmonies, and the narrative's core took precedence. While visually less opulent, it fostered an intensified intimacy between actors and their audience. In contrast, James Brining's 2019 interpretation appears to find equilibrium. It employs technology judiciously, ensuring that while visual allurements are plentiful, the opera's emotional profundities and thematic nuances remain undiminished. Such discerning use of technology safeguards the performance's heart and soul while harnessing modern innovation's boons.

Another very representative example is the *An Imperial Banquet in the TANG Dynasty (2021 Henan TV Spring Festival Edition)*, an innovative dance show that showcases the Chinese Tang Dynasty and historical artefacts through the performance of actors and virtual reality technology (see Figure 1). Fourteen beautiful girls dressed in Tang dynasty style are playing music with various Tang dynasty musical instruments on the stage. During the stage performance, they travel through time and bring to life the magnificent night banquet at the Tang Palace which might have happened thousands of years ago, allowing the audience to appreciate the exquisiteness of traditional Chinese culture. However, the 'linear time and space' of the original dance has been dramatically altered with the re-creation of *An Imperial Banquet in the TANG Dynasty* through augmented reality technology. With the help of AR, the stage presents some of the famous paintings of the Tang Dynasty and Chinese national treasures from different dynasties to the audience. Content on all screens change as the historical background progresses from one dynasty to the other. The entire stage is unified -- the floor screens, background screens and liftable screens are in line with the actors' movements and change in a harmonious way. Together with the performers' singing and dancing, the use of multimedia technology on stage gives the audience a new audio-visual experience. In *An Imperial Banquet in the TANG Dynasty (2021 Henan TV Spring Festival Edition)*, the real scenery is combined with the virtual images created on the big screen, echoing the reality and the imaginary. As the camera moves, the audience not only transcends the physical space between the stage and the auditorium, but also shifts from a distant view to an immersive one. The performance also creates a sense of psychological rapport between the audience and the dance. The audience is not only watching the performance of the musicians in the Tang banquet, but also following these lovely dancers from the Tang dynasty to a broader Chinese culture, from the banquet to the fertile soil of the Central Plains, enjoying the glittering pearls of Henan Province's abundant culture. The change in the spatial and temporal field of the work extends the scope of its expression and enhances the depth of its imagination.

In summation, technological assimilation in opera doesn't seek to supplant traditional facets but endeavors to augment and contemporize them. With the relentless march of technology, its artistic integrations will continue to morph, reaffirming art's perennial adaptability and its timeless allure across epochs.



Figure 1: *An Imperial Banquet in the TANG Dynasty (2021 Henan TV Spring Festival Edition)*



Figure 2: *Heaven Gaia (2021 Chinese New Year Edition)*

Utilizing new media technology in stage design can be akin to a double-edged sword. When employed thoughtfully and seamlessly, it can elevate a performance, immersing audiences into dimensions previously unreachable by traditional means. Yet, the converse is also true: when haphazardly incorporated, this technology can disjoint the narrative, causing more dissonance than harmony.

The production of *Heaven Gaia's 2021 Chinese New Year Edition* stands as a cautionary tale in this context. Intended to be a luminous homage to the splendor of traditional Chinese costumes, the outcome appears more as a collage of disparate visuals than a cohesive portrayal of history and fashion. With eight scenes condensed into a mere five minutes, each celebrating distinct outfits, the backdrop—rendered through screens—fell short of complementing the attire on display. Ideally, the successive locations should transition smoothly, weaving a narrative that marries the foreground and background. However, as in Figure 2, the stark inconsistencies in visual themes, the rhythmic flow of colors, and the juxtaposition of the costumes against the backdrops underscore the pitfalls of ill-conceived technology integration. Such discord undermines artistic value and risks diluting the rich legacy of traditional Chinese aesthetics.

The overarching message is clear: while new media technology brims with potential, its integration into artistic productions demands careful deliberation. It's about embracing the latest advancements and discerning when, where, and how to weave them into the creative fabric. The debate around technology usurping human roles in artistry will persist. Yet, what remains undeniable is technology's role as a catalyst in the evolution of theater and arts. It beckons designers and artists to tread the balance, harnessing the power of technology not as a mere addendum but as a tool to deepen artistic intent, amplify narratives, and craft experiences that resonate profoundly with audiences. The quest isn't just about integrating technology but mastering the art of doing so in ways that enrich, not overshadow, the essence of the performance.

4.2. The change in design thinking



Figure 3: New Media Art: Interactive Art Stage Play, 2015

Cinematique is a testament to the revolutionary transformations new media technology brings to theatre art. This confluence redefines traditional performance paradigms, shifting them from concrete and tangible sets to spaces borne out of digital constructs. The inherent fluidity of the digital realm offers artists a versatile canvas. Here, the bounds of physical reality are dissolved, allowing limitless creative expressions. In *Cinematique*, this unlimited potential is on full display. Rather than being constrained by tangible set pieces, the performance is enveloped in a dynamic digital expanse (see Figure 3). This landscape continually morphs with the actors' movements, emotions, and the evolving narrative, becoming an active participant in the storytelling process. This form of theatre eschews the physicality of the traditional stage, celebrating instead the intangibility of digital constructs.

There is a surrealism inherent in such performances. Audiences are not just passive observers but are invited into a sensorial journey—a dance between the ephemeral and the real. The designer's choice to utilize light, dispersing clusters of English characters, and undulating lines underscore this concrete and abstract melding. Such visual elements evoke recognition and dissonance, drawing the viewer into a liminal space that oscillates between familiarity and novelty. Moreover, there's an added layer of intimacy in stripping away tangible set pieces and spotlighting only the actors within this digital realm. The actors are not merely performers in this space; they become integral to it. The fusion of light and shadow ensures that they aren't just contained within the performance space; they are the performance space. However, it's also worth noting that radical departures from tradition come with challenges. They demand precision, synchronicity, and a deep understanding of the deployed technology. Any lag, any misalignment between the actor and the projections, risks jarring the viewer out of the immersive experience. Ultimately, *Cinematique* underscores the transformative power of integrating new media technology in stage design. It stands as a beacon for what's possible when artists harness digital tools as embellishments and central pillars of their creative vision. As the boundaries between the physical and digital worlds continue to blur, one can only imagine the myriad of ways theatre will continue to evolve, morphing into forms previously unimagined.

Adrien Mondot and Claire Bardainne's perspective on the world of digital art emphasizes a transformative ethos, where the traditional and the digital blend seamlessly, birthing a new paradigm of expression and perception.^[10] Their definition embodies the notion that technology is not just a tool; it's an active player in the artistic process, reshaping how stories are told and perceived. In the evolving landscape of theater and art, *Cinematique* is a pivotal exploration of this blend. It does not merely feature technology as an adjunct to human performance. Still, it places it center-stage, establishing a dialogue between the organic and the digital, between the tangible and the intangible. This isn't just a showcase of what's technologically possible but a deep dive into how technology can reshape narrative structures and emotional landscapes. The abstract, fluid nature of such performances, epitomized by *Cinematique*, defies linear narratives and conventional systems. Instead, it engulfs the audience in a sensorial tapestry oscillating between the familiar and the abstract. This form of theater challenges audiences to let go of their conventional moorings, immersing them in an experience that transcends the traditional storytelling frameworks. It mirrors dreams' unpredictable, fleeting nature, where logic takes a backseat, and emotion steers the narrative. Alain Virmaux's description of Artaud's film scenarios provides a fitting analogy for such performances. The overlap between theater, film, and the nebulous reality of dreams speaks to the blurring of lines between these forms.^[9] It suggests a new theater mode that isn't rooted in any one discipline but is an amalgamation of various shapes, resulting in a unique hybrid experience. However, the effectiveness of such performances lies in the meticulous synchronization between the human and the digital. The beauty of *Cinematique* and similar arrangements are not just in their innovative use of technology but in how they harmonize technology with human emotion and expression. It's about finding

the delicate balance where neither overshadows the other, but instead, they complement, enhancing the overall impact.

In conclusion, the fusion of live performance and digital imagery, as seen in *Cinematique*, is not just an evolution in the theater—it's a revolution. It signifies a shift in how stories can be told, perceived, and experienced. As theater continues to embrace the digital, it's poised to offer audiences experiences that are both novel and profoundly evocative. When done right, the marriage of the human and the digital can birth performances that resonate deeply, lingering in the minds of audiences long after the curtain falls.

5. Conclusion

Integrating new media technology into theatre design is a fascinating evolution in the world of performing arts. With the rapid advancements in technology, the possibilities in theatre are expanding exponentially. Projection mapping, augmented reality, and intricate sound design have all added layers of depth, transforming traditional stages into multi-sensory environments. The audience, once passive observers, are now often engaged in immersive experiences that envelop them in the world of the play. However, like all tools, new media technology's efficacy depends on how it is wielded. Its incorporation into theatre design is more than just showcasing the latest tech or dazzling audiences with spectacular visuals. At its heart, theatre is about storytelling, conveying emotions, ideas, and narratives that resonate with viewers on a deeply human level. Therefore, new media technology should be in service of the story, not a detraction from it.

The risk is evident: over-reliance on technology can overshadow the narrative. Spectacles, without substance, can leave audiences feeling empty, with visuals that may be remembered but stories and characters that are quickly forgotten. It's akin to adding many spices to a dish without considering if they complement the main ingredient. Furthermore, the integration of technology into theatre increases the complexity of productions. It demands that designers have a robust understanding of traditional stagecraft and a deep knowledge of the tech tools at their disposal. This dual expertise is essential to ensure technology is used effectively, enhancing the narrative rather than overwhelming it. Another potential challenge is providing the technology is accessible and does not alienate audience segments. While younger generations may be more familiar with certain tech elements, older audience members might find them disorienting or distracting.

In conclusion, while the potential of new media technology in theatre design is immense, its incorporation needs thoughtful deliberation. The theatre has always been a reflection of society, and as our world becomes increasingly tech-driven, it's only natural for the stage to mirror this evolution. However, it's crucial to remember that theatre is about human connection and storytelling. Technology should be a bridge to enhance this connection, not a barrier. The challenge for modern theatre artists is to find that harmonious balance where tech serves the story, creating a richer, more immersive experience without losing the soul of the performance.

References

- [1] Zhang Xingnian. *Crossover and symbiosis: the application of new media art in theater stage design [D]*. Nanjing University of Aeronautics and Astronautics, 2017.
- [2] Jason C. Chavis. *What is New Media Technology?* [online] Retrieved from <https://www.easytechjunkie.com/what-is-new-media-technology.htm>.
- [3] Bulut M. *Digital Performance: The Use of New Media Technologies in the Performing Arts [J]*. A Thesis. Aristotle University of Thessaloniki, 2018.
- [4] Ito M, Horst H A, Bittanti M, et al. *Living and learning with new media: Summary of findings from the digital youth project [M]*: the MIT Press, 2009.
- [5] *Why Is It so Difficult to Define New Media Art?* | Widewalls. Retrieved from <https://www.widewalls.ch/magazine/new-media-art-definition>.
- [6] Kumar V, Chaturvedi R, Merhotra S. *Art of Theatre on New Media Platform & Audience Viewing Experience [J]*. *Global Media Journal: Indian Edition*, 2013, 4(2).
- [7] Virmaux A. and Sanzenbach S. *Artaud and Film*. *The Tulane Drama Review*, 11(1), 1966. p. 154.
- [8] Dixon S. *Digital performance: a history of new media in theater, dance, performance art, and installation [M]*. MIT press, 2015.
- [9] Wen Ming, Peng Pingping. *Sorrow and joy on the stage: a history of world theatre*. Beijing: China Environmental Science Press, 2006.
- [10] *Cinématique*. [online] Retrieved from <https://www.am-cb.net/archives/cinematique>