THE IMPACT OF TECHNOLOGY ON THE DEVELOPMENT OF BALINESE SHADOW PUPPETRY IN THE GLOBAL ERA

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ABSTRACT

This study is motivated by the significant changes in Balinese shadow puppetry (wayang) resulting from the integration of technology in the global era. While the introduction of technology has opened new opportunities for the development of Balinese wayang, there are concerns that its use may undermine traditional values, affect the creativity of the puppeteers, and potentially threaten the preservation of this art form. Based on this, the study poses two main research questions: (1) How does technology influence the creativity of Balinese wayang in the global era? and (2) What are the impacts on the preservation and advancement of Balinese wayang? This qualitative research employs data collection methods such as observation, interviews, and literature review. The data were analyzed descriptively and interpretively, supported by creativity theory. The results indicate that technology has stimulated boundless innovation in Balinese wayang, leading to more engaging audio-visual performances. Moreover, the use of technology has contributed to the resurgence of the wayang-watching culture in Balinese society, while supporting the sustainability of this art form in the global era.

Introduction

Balinese shadow puppetry, wayang kulit, is a cherished traditional art form that embodies invaluable cultural and life values. It represents a complex aesthetic system, often described as a "total theater." Historically rooted in religious and ceremonial functions, wayang kulit has evolved into a secular form of entertainment, adapting to societal changes over time. Within this secular context, the art form has embraced aesthetic innovations, introducing new genres influenced by modern technology in the global era.

Rather than challenging the tradition, technological advancements have provided an avenue for revitalizing and reimagining the style and presentation of wayang kulit, aligning it with contemporary audiences' preferences. Balinese puppeteers (*dalang*)

have initiated creative movements to preserve and develop this art form within modern society. These efforts ensure the enduring relevance and sustainability of Balinese shadow puppetry.

As noted by Soetarno (in Wicaksana) [1] the evolution of puppetry in urbanized societies requires sophisticated artistic techniques that are intellectually engaging and culturally enriching. According to Soetarno (in Mulyana) [2] the development of wayang kulit involves three essential components: aesthetic concepts, artistic techniques, and the social groups that provide its cultural context.

In Bali, the integration of modern technology into wayang kulit began in 1988 with the creation of Pakeliran Layar Lebar (Wide-Screen Shadow Theater). Students from the Puppetry Department of STSI (Indonesian Art College) Denpasar showcased their innovative work in Gedung Natya Mandala, establishing a new benchmark for creativity. Classified as a form of balih- alihan (spectacle art), Pakeliran Layar Lebar serves as a medium for education, entertainment, and artistic expression infused with aesthetic values [3]. Technically, this format extends beyond traditional shadow play. It incorporates computer-generated imagery projected onto a screen using LCD projectors, blending conventional shadow puppetry with modern digital effects [4]. This approach has become pivotal in advancing Balinese wayang kulit performances in the global era [5].

Among the initial Pakeliran Layar Lebar creations, two notable works introduced modern lighting technology: 1. "Pakeliran Layar Berkembang titled Anugrah" by I Ketut Kodi and I Dewa Ketut Wicaksana, and 2. "Pakeliran Baru titled Lubdaka" by I Made Yudabakti. Both productions utilized innovative lighting techniques, such as 20 low-wattage electric balloons arranged to resemble a soccer ball and integrated into traditional blencong lamps. Inspired by these pioneering works, subsequent students incorporated wide screens and electric lighting into their graduation projects. According to Sedana [6] innovation and creativity are not new to Balinese wayang kulit but rather a longstanding tradition. Performances supported by modern equipment such as keyboards, colorful lighting, and sound effects are categorized as pakeliran inovatif berpola tradisi (innovative performances with traditional patterns). Mulyana [2], defines this innovative approach as a creative expansion of traditional wayang kulit, characterized by introducing new types of puppets and modifying traditional forms. To distinguish traditional wayang kulit from its innovative counterparts, new visual elements are key: 1) Larger puppets, including newly designed comic characters (*bebondresan*); 2) Screens measuring up to 4x6 meters; 3) Electric lights, flashlights, head projectors, and LCD technology for illumination; 4) A variety of gamelan ensembles, such as *Gong Kebyar*, *Gong Gede*, and *Semarandana*; 5) Sound and visual effects; 6) Scenery and computer-generated backgrounds.

In addition to these visual enhancements, the thematic content must also reflect contemporary relevance. Innovation in wayang kulit is not limited to new forms or physical elements but also extends to modernizing the messages and narratives conveyed.

This study explores the cultural phenomenon of technology's impact on the development of Balinese shadow puppetry in the global era. It addresses the following questions: 1. How does technology influence the creativity of Balinese wayang kulit in the global era? and 2. What are the implications of technology for the sustainability and development of Balinese wayang kulit in the global era? This article aims to examine the creative evolution of Balinese shadow puppetry and the role of technology in its development. By doing so, it seeks to contribute to the body of research on shadow puppetry and inspire puppetry scholars to explore and document innovative works in the global era.

Method

Balinese shadow puppetry (wayang kulit) remains a vital traditional performing art, fulfilling both religious and social functions in contemporary society. However, technological advancements have influenced the authenticity of wayang kulit, affecting both its expressive mediums and the messages it conveys. The era of globalization has driven changes in the presentation styles of Balinese shadow puppetry to align with audience preferences, reflecting theprinciple of "art follows fun."

The intellectual capacity of academically trained *dalang* (puppeteers) also plays a significant role in the creation of innovative works within this art form. This study examines the outlined issues using a qualitative research method. The qualitative data were gathered through a series of steps, including observations of the evolution of wayang kulit performances in the global era interviews with puppeteer artists and academics, and a review of relevant literature. The collected data were processed and analyzed using a qualitative descriptive and interpretative approach, supported by creativity theory. The findings are presented both formally, with photographs of performances, and informally, through scientifically structured explanations articulated in clear and precise language.

Discussion

1. Globalization In Shadow Puppetry

Globalization is often interpreted as the homogenization and standardization of the world through technology, commercialization, and cultural synchronization influenced by Westernnorms. Consequently, globalization is closely tied to modernity. However, its concept remains a subject of debate due to varied interpretations, as scholars approach globalization from different perspectives. Jan Nederveen Pieterse, as cited

by M. Jazuli [7], describes globalization as hybridization: a fusion or grafting of multiple cultures, transitions from diverse cultural sources, and the repackaging of old cultural forms into new ones. Analogous to this concept, a fundamental issue arises beyond the shifting values caused by structural changes: the evolving perspectives and priorities of dalang (puppeteers) within a global framework. These developments relate to the ideological orientations of artists, which can be categorized into three variants: conservative, progressive, and pragmatic. Each category can be assessed based on indicators such as orientation, presentation format, audience relations, professionalization, challenges, and artistic strategies.

The rapid progress of global civilization in the 21st century, accelerated by advancements in transportation and telecommunications technology, has resulted in an unstoppable flow of information and communication across all nations. This phenomenon can lead to cultural shock for nations unprepared for the intersection of external influences. It is understandable, therefore, that concerns arise about the impact of globalization on the survival of local cultures, including those in Indonesia.

The influx of global cultural influences into Indonesia during the information age, driven by advancements in science and technology, has brought Indonesians into contact with people from other nations [8]. While these interactions are now facilitated by technology, it is possible that they involve descendants of shared ancestors from millennia ago who have since lost their mutual familiarity. Thus, Indonesia's local cultures, as part of the global community, cannot resist the currents of global cultural influence. As Atmaja states [9], Balinese culture, too, is undergoing transformation in the globalization era, driven by technological advancements and tourism, with implications for social, economic, and cultural aspects. Recognizing this, local and global cultures should not be seen as opposing forces, as local culture is inherently part of global culture.

In the current era of globalization, traditional wayang kulit (shadow puppet) performances are losing their popularity, except for innovative adaptations that creatively cater to the aesthetic preferences of modern audiences. Contemporary wayang kulit performances have begun to break

away from traditional conventions, aligning with contemporary societal trends and mindsets [10]. Traditional formats, despite their high aesthetic value, are increasingly abandoned as audiences in the global era prefer performances that emphasize entertainment (*tontonan*) over moral instruction (*tuntunan*). This shift reflects a growing preference for humor and spectacle (*kocak*) over the didactic elements (*wacak*) traditionally embedded in wayang kulit.

2. Balinese Shadow Puppetry In Recorded Media

The Balinese wayang kulit (shadow puppetry) performances we know today have undergone a long historical evolution. However, tracing this development is challenging due to the scarcity of documented performances. Unlike other performing arts such as dance and music, which have video recordings dating back to the 1930s available on social media, knowledge of prominent puppeteers in Bali before the 1970s relies solely on oral accounts from the older generation.

The advent of recording technology in the 1970s, particularly cassette tape recordings, revolutionized the accessibility of wayang kulit. For the first time, Balinese audiences could enjoyshadow puppet performances without having to attend late-night shows in person. During this period, production companies such as Bali Record, Aneka Record, and Maharani Record actively disseminated recordings of popular puppeteers' performances. Today, many of these audiorecordings, now supplemented with visual elements, can be accessed on YouTube. Examples of notable recordings include: 1) Wayang Buduk by the late Ida Bagus Arnawa; 2) Wayang Ramayana Bongkasa by the late Ida Bagus Sarga and I Ketut Jagra; 3) Wayang Parwa by the late I Dewa Rai Mesi and I Ketut Madra; 4) Wayang Cupak Dukuh Pulu by the late I Ketut Jangga.

In addition to these commercial audio recordings, government agencies such as the Department of Culture, TVRI Denpasar, and private individuals also recorded wayang kulit performances in audio-visual formats. These recordings, now widely available on YouTube, include: 1) Wayang Parwa and Ramayana by the late I Made Kembar; 2) Wayang Parwa, Ramayana, and Tantri by I Wayan Wija; 3) Wayang Parwa, Ramayana, and Calonarang by the late Ida Bagus Sudiksa; 4) Wayang Parwa, Ramayana, and Arja by the late I Made Sija; 5) Wayang Ramayana by the late I Ketut Jagra; 6) Wayang Parwa by the late I Wayan Nartha.

Entering the 2000s, innovative wayang kulit recordings emerged, produced by companies the Bali Record and Aneka Record. Many of these recordings, initially sold in cassette stores and by street vendors, are now accessible on YouTube. Examples include: 1) Wayang Cenk Blonk by I Wayan Nardayana; 2) Wayang Joblar by I Ketut Muada; 3) Wayang D-Karbit by I Made Nuarsa; 4) Wayang Kang Cing Wie by Anak Agung Putu Sutresna; 5) Wayang Ledem by I Putu Putra Adnyana; 6) Wayang Calonarang Dug Byor by I Putu Sartika; 7) Wayang Calonarang by Ida Bagus Alit Argapatra; 8) Wayang Babad by I Ketut Juanda.

Both traditional and innovative recordings were made during live performances, often under specific agreements. For example, when Wayang Cenk Blonk gained significant popularity around the 2010s, the audience was prohibited from recording the performance without prior permission from I Wayan Nardayana. Special staff were even assigned to monitor attendees to ensure compliance. At its peak, Wayang Cenk Blonk

had an extra ordinarily demanding schedule, with up to 32 performances in a single month.

3. Soundsystem Dan Lightings

As discussed earlier, the introduction of technology into traditional wayang kulit (shadow puppetry) performances has brought fresh innovations to the form and presentation of Balinese shadow puppetry. Mulyana [2] notes that incorporating modern technology into puppet artistry is considered a vital element in creating an aesthetic ambiance. The first modern technology adopted in this art form was the loudspeaker. Before its introduction, puppeteers relied solely on their natural vocal strength to voice characters, narrate, and chant songs, ensuring their performance could penetrate the screen (kelir) and reach the audience. With the use of loudspeakers, the auditory aspects of wayang kulit performances became more engaging and interactive. Over time, puppeteers began utilizing both box speakers and loudspeakers. For example, in performances by

Wayang Cenk Blonk in large outdoor venues such as soccer fields, these sound systems significantly enhanced the atmosphere.

In addition to sound systems, puppeteers in Bali have started using electric lighting, drawing inspiration from Javanese wayang kulit performances. In Bali, 300-watt electric lamps are commonly used to enhance the lighting effects in innovative shadow puppet performances. However, traditional performances such as Wayang Sapuh Leger, specifically conducted for purification rituals of individuals born in the wuku wayang period, continue to adhere to more conventional lighting methods.

Young puppeteers in Bali, many of whom are academically trained, have been particularly creative and progressive in embracing contemporary challenges. Among these challenges is the pervasive influence of telecommunications and information technology on Balinese social and artistic life in the 21st century. To ensure shadow puppetry remains relevant, these puppeteers continually innovate. The emergence of performances such as Wayang Cenk Blonk, Wayang Joblar, Wayang D-Karbit, and Wayang Dug Byor in the 2000s is evidence of Balinese puppeteers' adaptability to modern times.

Through their ability to integrate modern technology, these puppeteers have achieved sharper and more vibrant shadow projections. Figure 1 highlights the difference in lighting quality between traditional wayang kulit performances using blencong oil lamps and those employing electric lighting.

Figure 1. A comparison of the use of lights in Balinese shadow puppet shows. Left image, lighting effect using *blencong* lamps, right image lighting effect using electric lamps.
[Source: YouTube]

With the ability to harness telecommunications and information technology, puppeteers have begun incorporating computer programs into their performances. These programs enable the creation of dynamic visual effects such as moving clouds, fire, ocean waves, the sun and planets,

and expansive depictions of the universe. These computer-generated visuals are used as backgrounds for specific scenes, enhancing the storytelling experience in alignment with the narrative.

In traditional wayang kulit performances, the Wayang Kayonan puppet was used to symbolize and visualize elements like apah (water), teja (fire), and bayu (wind). Over time, the visualization of the Panca Maha Bhuta element water, fire, wind, air (ether) has been expanded through computer-generated imagery. These technological advancements offer a more vivid and immersive representation of these natural elements. Figure 2 shows this illustratuion.
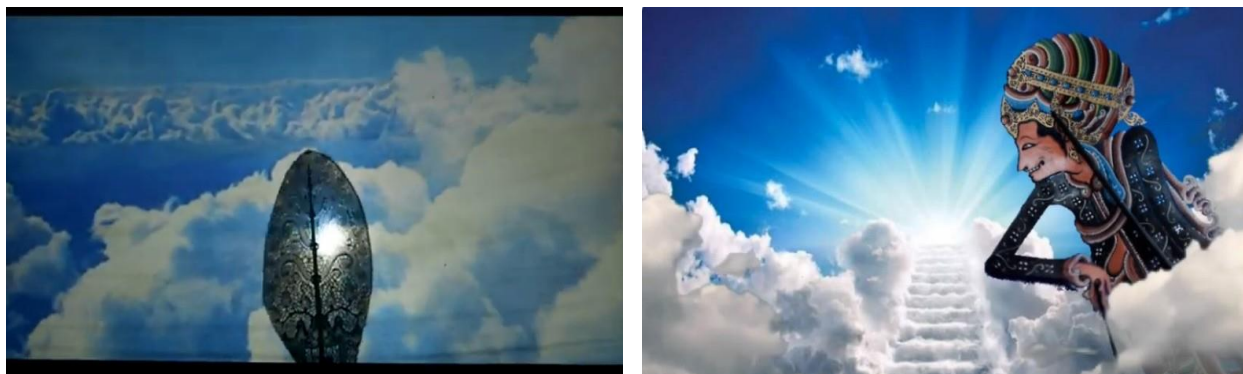

Figure 2. Computerized backgrounds in Balinese shadow puppet shows.
[Source: YouTube]

In traditional shadow puppet shows, the puppeteers visualize the flames using "fire puppets" that have been prepared. Along with the development of Science and Technology (IPTEK), the puppeteers can now easily access the scene or background in the form of flames through a computer program as shown in figure 3.

Figure 3. Comparison of fire backgrounds in Balinese shadow puppet shows. The left image uses an electric light, the right image uses a computer program.
[Source: YouTube]

In addition to using computer programs to create backgrounds and enhance the atmosphere in each scene, puppeteers can also use colored electric lights to enhance the lighting in a scene. In traditional shadow puppet shows that still use traditional blencong lamps, it is very difficult to arrange the light. When the puppeteers want to create an atmosphere of darkness and horror, they can do so by covering the flame tongue with a layer of banana stems. After the introduction of electric lights as lighting, puppeteers can freely create lighting from electric lights, LCDs and computer programs. With this multimedia use, the lighting of shadow puppet shows becomes more beautiful and glamorous, like the art of cinema. Figure 4 shows the lighting with colored electric lights.

Figure 4. The background of the Balinese shadow puppet show uses colorful electric lights.
[Source: YouTube]

In addition to enhancing the performance with sound systems and lighting, telecommunications and information technology especially cell phones have inspired Balinese puppeteers to create a new performance format known as Virtual Wayang Kulit. These virtual performances, available on YouTube, are recorded using video cameras or cell phones. Unlike traditional wayang kulit performances, which require supporting artists, virtual performances can be performed by the puppeteer alone, as exemplified by Dalang I Made Nuarsa and Dalang I Nyoman Sutama.

These virtual performances often inc lude pre-recorded musical accompaniment and audience laughter, making it impractical to repeat the same title or theme in subsequent performances. This presents a unique challenge for puppeteers, who must constantly develop new themes and create new characters. In an interview, Dalang I Wayan Sutama highlighted the difficulty of finding new sources of inspiration or ideas for the next series of Virtual Wayang Kulit. Similarly, Dalang I Made Nuarsa noted the importance of creating new characters or figures for each theme to enhance the narrative and message conveyed.

Dalang I Wayan Nardayana emphasized in an interview that staying relevant on YouTube requires consistent productivity, suggesting that puppeteers should aim to produce at least two new series per month. The following images illustrate virtual wayang kulit, a result of innovative developments in wayang kulit performances in the global era.

Figure 5. Wayang Kulit Virtual is the result of innovative wayang kulit performance development in the global era. Left image, the virtual Cenk Blonk puppet show. Right image, the virtual Karbit puppet show [Source: YouTube]

After Balinese puppeteers successfully introduced Virtual Wayang Kulit, a new creative innovation emerged in Balinese shadow puppet performances known as Wayang Cinema. This performance genre combines the art of traditional puppetry with filmmaking, driven by advancements in film production technology. Wayang Cinema, often pioneered by academics in the field of shadow puppetry, has enriched the repertoire of Balinese puppetry in the global era.

According to Astika et al. [11] Wayang Cinema serves as an alternative performance model for developing Indonesian puppetry by integrating traditional elements with modern technology. The production process involves sophisticated recording equipment and computer-based editing techniques. Scenes can be filmed at various locations and later assembled to follow the narrative structure.

Over the past four years, Wayang Cinema has gained popularity both in Bali and Java. In Bali, it has been spearheaded by students from SMK 3 Sukawati, as well as by students and faculty members from the Puppetry Program at ISI Denpasar. While Wayang Cinema in Bali retains the essence of traditional puppet stories, its distinctiveness lies in character portrayal. Sometimes, performances exclusively use shadow puppets, while in other instances, puppets are combined with live human actors. Figure 6 illustrates a Wayang Cinema performance featuring traditional shadow puppet characters alongside human actors.

Figure 6. Wayang Cinema performances with puppet characters and characters played by humans. Left image, Bima character. Right image, Subali and Sugriwa character.
[Source: YouTube]

4. Musical Accompaniment

Musical accompaniment plays an essential role in wayang kulit performances, as it does in other performing arts. The type of accompaniment used in a wayang performance is tailored to the specific genre being presented. For example, Wayang Parwa is accompanied by the Gender Wayang gamelan, Wayang Ramayana by the Batel Gender Wayang gamelan, Wayang Cupak and Wayang Calonarang by the same Batel Gender Wayang, Wayang Arja by the Geguntangan gamelan, Wayang Gambuh by the Suling Pegambuhan gamelan, and both Wayang Tantri and Wayang Babad by the Palegongan gamelan.

With the evolution of time and the development of Balinese wayang kulit performances, traditional live accompaniments have begun to be replaced by recorded music or MIDI (Musical Instrument Digital Interface) compositions. Several modern wayang kulit performances, such as Virtual Wayang Kulit and Wayang Cinema, have started

incorporating MIDI music. The MIDI music creation process involves recording and aligning the music with specific scenes. In contemporary compositions or *Pedalangan* projects, students from the Puppetry Program at ISI Denpasar frequently utilize MIDI music as an accompaniment.

From an aesthetic perspective, however, MIDI music has limitations. It cannot spontaneously accentuate movements or dialogues (*antawacana*) nor accommodate the improvisations of characters during a performance. As a result, MIDI music tends to be static and less adaptive to the dynamics of the narrative. Consequently, MIDI music is typically used for performances with a maximum duration of 30 minutes. For extended, community-commissioned performances, puppeteers generally continue to prefer live musical accompaniment, which depends on the type of gamelan required. The primary advantage of MIDI music lies in the boundless creative opportunities it offers composers. It allows them to craft accompaniment using a wide array of instruments, both traditional and Western, providing a new dimension to the artistic presentation of wayang kulit.

5. The Impact of Technology on *Wayang Kulit* Art

The changes in presentation styles and the development of wayang kulit in the global era are inseparable from the influence of technology. The openness of wayang kulit performances to embrace change is undeniable, as the evolution of human thought, particularly among puppeteers, aligns with the shifts of the times. The artistic activities of Balinese puppeteers have experienced periods of prominence and continue to transition to subsequent generations. For instance, the popularity of three notable puppeteers in the 1970s served as a benchmark for those who rose to fame in the 1990s. Similarly, the success of puppeteers in the 1990s became a model for those active in the 2000s and 2010s.

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From this perspective, the positive impact of technology on wayang art lies in its ability to enhance the creativity and productivity of Balinese puppeteers in a sustainable manner. Visually, technology has transformed the aesthetics of Balinese wayang kulit performances, making them more grandiose and glamorous, while providing a new

perspective on the art form's future survival. However, the strong influence of technology has also brought challenges, particularly for traditional wayang kulit performances, whose existence is gradually fading from public life.

After the 2010s, traditional wayang kulit performances, especially Wayang Peteng (nighttime performances), have become increasingly rare [12]. Although some still occur, they

appear marginalized. Audience numbers are often minimal, especially when performed by amateur puppeteers. Furthermore, these performances are typically held within private residences of those who commission them, limiting public access and further reducing their visibility. This dual-edged impact of technology underscores the critical need to balance innovation with efforts to preserve traditional wayang kulit practices for future generations.

Conclusion

This study concludes that, since the 1970s, technological advancements have significantly influenced the presentation system of Balinese shadow puppetry. Innovations such as loudspeakers, electric lighting, and computer-based programs have expanded creative possibilities for puppeteers. These developments culminated in modern formats like Virtual Wayang Kulit and Wayang Cinema, which align with the preferences of younger, technology-savvy audiences in the digital era. While these technological innovations have revitalized interest and facilitated the evolution of Balinese wayang performances, they also pose challenges to the preservation of traditional forms. The growing popularity of technology-driven puppetry risks overshadowing traditional performances, particularly among younger generations. This shift underscores the need for preservation strategies that incorporate technology while safeguarding the cultural and historical essence of traditional Balinese shadow puppetry. This research highlights the dual role of technology as both a catalyst for creativity and a potential threat to heritage preservation. The findings provide a foundation for further exploration of how digital integration can support sustainable cultural practices without compromising traditional values.

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