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Elements, Specifications and Functions of Technical Design of Special Effects in the Musical Theatre Performances

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Abstract

Musical theatre performance is a complex work in contrast to the other theatre medium that requires a more dominant combination of acting, singing, music, and choreography. Similarly, the support of the technical special effects design should also be given more attention, especially during its production. This paper reviews the elements of technical special effects on the selected case studies to specify their design needs and purposes. The outcome indicates the effectiveness of the overall musical theatre performance, which features customization specifications and functions in producing technical design of special effects.

Keywords: Scenography, Stage Design, Stage Effects, Technical Theatre.

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1.0 Introduction

Technical design aspects of the special effects (TDSE) in the musical theatre performances became the main focus of study specifically involves the specifications and functions of the creation of technical special effects on a scene which require expertise as well as technical equipment other stages for implementation

Technical distinctive impressions displayed in the production can provide the uniqueness and navigate an identity to a musical theatre performance and simultaneously give high aesthetic value to the audience and the production. The theatrical production of the musical has a complex element in terms of acting and dance that is compacted with the technical elements and the visuals of large-scale storytelling. Mohd Nor (personal interview, 16 January 2018) states that one way to measure a successful musical theatre production is by looking at the audience's conversation after the performance; they still talk about the show after watching. They would probably discuss the uniqueness and the most successful element delivered, which would be one way to measure. Thus, the technical design of special effects has a specification detail.

1.1 Problem Indication

Musical theatre always features fresh messages and visual filling, different from others and can surprise the audience. The meaning of 'surprise' here refers to an unexpected visual scene or a difficult predictable how the projected of the story to the end. Mohd Nor

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(personal interview, 16 January 2018) also states that “the surprise element in the musical theatre performance became one of the most important components which would determine the success of a theatre plays especially musical theatre.”

In highlighting the surprise element in a musical theatre performance, production involves the technical design of a special effect in a scene. The production of TDSE is an additional invention that is reworked to raise dramatic effects in a scene. Tawel, a set designer at Istana Budaya (Personal interview, 5 October 2015), also mention that “the expertise or technical skills of the theatre arts is still at an unfamiliar level with foreign countries.”

The need for the support elements and technology facility will also help to contribute to a different design idea and be able to provide a very objectionable. Tawel (Personal interview, 5 October 2015) also believes that most theatre plays in the theatre city of Kuala Lumpur still do not have a complete technology facility or perfect base facility for a theatre stage.

Performance fittings such as stage lifts, side wagons, portal bridge, side stage equalizer, rear wagon, flying bar or cyclorama and stage house itself are difficult to find everywhere in the other venues in Malaysia except in Panggung Sari, Istana Budaya. Panggung Sari. The benchmark for the success of the musical and theatrical production in Malaysia seeks to showcase the production spectacle and creation of unique visuals and others. Hence, the technological sophistication available on the Panggung Sari contributes to musical theatre production.

1.2 Aims and Significance of the study

This study focuses on the creation specifications and the function of the technical design of special effects realistically. The specification refers to the criteria of the technical design special effects created. Functions are also referred to as the purpose of such special effects. Both parts are analyzed to see the use and suitability of the musical theatre performance. Therefore, this study signifies the crucial aspects that must be exposed as a guideline in the theatrical designing process and technical solutions in future production.

1.3 Nomenclature

TDSE	Technical Design of Special Effects
PGLM	Puteri Gunung Ledang the Musical
CTM	Cats the Musical
ATM	Aladdin the Musical

2.0 Technical Design of Special Effects

Creating TDSE in musical theatre production requires process and planning in the early stages, such as artistic design. The design is basic in describing a symbol and sometimes describing the new matter contained in a script. Creating a design means planning and managing something, but a technical design requires initial planning to obtain quality results. Generally, producing a complete design requires in-depth research and following a few checking sessions to get a solid and intact design. According to Lauer and Pentak (2008), design has a universal meaning than the commercial applications that might first come to mind. To design indeed means to plan, to organize (p.4).

Several design processes should involve the technical designs, including pre-preparation planning, technical drafting, model making, production and design meeting, and rehearsal. A design should cover the field of theatrical performances, especially for the technical stage. Inventory creation also has the utility of technology and engineering. Hanson (1987) states that the realities of the physical world do not constrain the writer, painter or filmmaker as the engineer is. Thus, engineering design is the most difficult creative art (p. 5). Any created design can also influence the audience and theatre fans to come to watch the performance. Abu Bakar (2007) states that the manufacturer cannot be product-oriented (production-oriented organization) without regard to the potential perspective of the audience. The target audience is also examined to clarify the potential of overwhelming customer arrivals to the stage. The design process is a very important part of producing the effectiveness of technical special effects, which did not only provide comfort to the audience or the production party alone (Hashim, Zulkepeli & Abd Rahman, 2020).

The technical and artistic design field has also received attention to its importance in theatre performances, especially in musical theatres. Zulrashid (2007) argues that “In fact, it has yet to be robust, still unmanaged, especially in terms of the skills of creative work, and that is a backbone to the success of a stage presentation, particularly the theatre’s stage.” That means existing weaknesses have risen from the less emphasis and introduction of creative areas to being more open to the public. Designs and creative work have never received much attention as other industrial areas (medicine, engineering, or agriculture research). The lack of creative education courses offered in institutions also led to declining creativity in Malaysia’s theatre industry.

Technical theatre involves problem-solving in the design works performed. However, every individual involved with the technical use section attempts to create or create different solution techniques. Every technical design starts from the idea with the approval of all parties, including the theatre director. According to Hendrickson and Burkhurst (2008), “the set design, collaborating primarily with the director, will develop the basic visual components of the set, and within that, every desire scenic effect-what scenery, actors, and major props move where and when” (p. 275). Hendrickson and Burkhurst, 2008 believe that the design has undergone the process of identifying the details of creation and the ideas they want to build. The design process has an initial phase involving a discussion with the next director to develop other components, including special effects on the background, background setting, and technical type.

Norhafizah Hassan (2009) also noted the technical uses of the special effects of the shadow image in the performance of “Mana Setanginya”. The emergence of Mira’s character from the bottom of the stage and then lifted using the stage lift, which is the mechanical facility at Istana Budaya. Special effects action is assisted by super imposed technique (drawing image technique) which

involves editing the green screen (green screen surface). It applies the technical variation of special effects to raise the philosophical value, the power of the language arts and symbolism in delivering Noordin Hassan’s “Mana Setanginya” (Norhafizah Hassan, 2009).

Some technical guidelines and design principles should guide the creation of technical designs. It is also learned that design is a creative creation or innovation of a subject. Creating a technical design requires the implementation of several stages of preparation or initial planning in various angles and forms, whether technical drawings, models, group discussions or references.

3.0 Methodology

The qualitative method is the main choice in the process of major data collection. Data parsing of interpretative approaches is obtained through participant observation, interview, and review of documents. This qualitative approach uses the case study of three musical theatre production involved “Aladdin the Musical” (2007), “Puteri Gunung Ledang the Musical” (2006) and also “Cats the Musical” (2002) in Panggung Seri, Istana Budaya, Kuala Lumpur, Malaysia. Yin (2018) indicates six sources of evidence that can be extensively used in case study research: documentation, archival records, interviews, direct observations, participant observations, and physical artefacts. The results of the reading and data research were gathered to coordinate the process of explaining the use of TDSE in all three productions.

3.1 Participant-Observation

Observation of the stage location is carried out to obtain details on stage features, stage facilities, motor and mechanical systems at the bottom and on stage, concept stage technology, stage operating system and structure, production design procedures and processes. In contrast, observation methods in production are carried out to see the collection of technical sets that contain special effects.

3.2 Interviews

The theatre production team and individuals with high potential in contributing study data were interviewed, including directors, scriptwriters, artistic directors and technical directors.

3.3 Document Reviews

Related documents that were collected and reviewed for data contribution include technical drawings, Panggung Sari plans and tools manual, illustration drawings, box models (replicas of small set stage designs), designer references in procurement design ideas, script scripts, list of set construction expenses and props, prompt book and program books.

4.0 Findings and Discussion

The creation of TDSE has a specification and function. This special effect technical comparison contributes to creating a special technical effect capable of giving admiration, uniqueness, identity, surprise, and a technical solution to a fictional idea. The specification aspects and technical design functions for all three musical theatre productions are listed in Table 1, Table 2 and Table 3 in detail below.

Table 1. Summary of TDSE Specifications and Functions for ‘Aladdin the Musical’

Product / Materials		Before Performance			During Performance	
Technical Special Effect	Idea /Designs Criteria	Material/ Function	Process/ Technique	Technical Design of Special Effects	Effects	Element / Support Facility
Flying Mat	Bring two actors flying over a mat.	Platform (mat), Runway structure (steel), wheel / caster, plywood as a backdrop.	Runway/ Roller Coaster	The actor on the mat moves dynamically and dramatically, but the direction of the linear movement has its starting point and finish.	Fly, float, slide, ship cruise.	- The LCD helps display the image. - Lighting gives mood and situation. - Music and sound accompany singing.
Genie and Magic Lamp	Creating a Genie comes out of a small light.	Frame size (size determined by designer), film (Surface image display), Steel cable (flying bar frame), LCD projector, video file, and electrical source.	Holography / Image Display	Genie’s image collaboration and actors give unity and dramatic action but are limited to viewers in front of the film’s surface.	3-dimensional and 2-dimensional image display, diverse background mood.	- Help from the Over stage machinery facility that is the flying bar. - Lighting helps the uniformity of actors and dimensions generated. -Music and sound contribute to foley and special effects.
Wizard’s Crescent Moon	Crescent-based magic Wizard transportation.	Small teeth bearings, sprockets, paddle (pedestrian), mechanical frame structure set (according to designer’s ideas and functions), holders,	Chain-cycle	The position change of the Crescent position from vertical to horizontal works well and dramatically but is limited to minimum position movement.	Rotation of object, Rotational object rotation, background change technique	-Lighting exercise helps to give an acting mood. - Layer sets help in embodiments. - Music and sound accompany singing. - Help from

		handle stopper and locking.			(look to size and material).	overstage machinery facility, i.e. the flying bar.
Magic Gate of Wizard's Cave	The symbolism of the destruction of the Wizard's throne.	The structure of the set (according to design ideas and functions) has separate parts, hinges, steel cables, weights, holders, stoppers, and mounting keys.	Structure and Hanging Locks	The ruins of the gate are delivered safely according to the designated queue. The part of the ruins shows the dramatic destruction.	The collapsing gates, ruins of buildings, storms, shakes, floods, earthquakes and explosions.	- The LCD projector for a backdrop. - Lighting auxiliary actors and dimensions generated. - Music and sound contribute to foley and special effects. - Special effects of pyro-type "engine smoke" produce explosives.

(Source: Authors, 2018)

Table 2. Summary of TDSE Specifications and Functions for 'Puteri Gunung Ledang the Musical'

Product / Materials	Before Performance			During Performance		
	Idea /Designs Criteria	Material/ Function	Process/ Technique	Technical Design of Special Effects	Effects	Element / Support Facility
Gunung Ledang	It reveals a large set of mountains.	Set structure (according to design ideas and functions), wheel / caster. set base frame (iron).	Wheeled / Pushing Structure	The small sections combined into a mountain gives a dramatic visual but the stunt set operation is only done with human repulsion.	The mobility set creates a large set, mountain transformation, building, diverse range / columns, and suggestive set.	- Involve the use of onstage machinery facilities (stage lift and flying bar) - Auxiliary lighting provides patterns, colors, braid on the surface of the stupa. - Music and sound help contribute foley and special effects. - The LCD projector provides an image.
Gunung Ledang Waterfall	Displays waterfall flows in the mountain area.	Lightweight and thin fabrics, size-filled and over-the-shelf.	Fabric overflow	The transformation of a set of mounting mounts of a waterfall shows a dramatic element, but the fabric that replaces the element of water has to be carried out with the capabilities of manpower.	Waterfalls, beaches, waves, floods, mud.	- Auxiliary lighting to provide the pattern, color, fabric on the fabric's surface. - Audio contributes the sound of foley of waterfall. - The stupa set aids provide a waterfall source level. - The LCD projector provides an image. - Involve the use of Over stage machinery facilities (elevator stage)
Pinisi Ships	Transportation Puteri leaving Java.	The structure of the built-in pin assembly (according to design and function ideas), modified parts of the body (punched floor, furniture and engine removed), only have a drive system.	Manpower Technical - Push and Pull	The building structure of a ship emerged with a dramatic movement but had to be moved by the force of repulsion of manpower.	Ship cruises, large object movements such as cliffs, whales, fallen trees, and rolling stones.	- Music and sound for foley and song. - Lighting provides mood and situation.
Java Seas	Change the location from the beach to the deep sea.	Lightweight and thin fabrics, size-filled and over-the-shelf.	Fabric spread	The emergence of seaweed fabric representing seawater gives a dramatic element, but the resulting sea wave depends on manpower.	Waterfalls, soft and wavy surfaces, beaches, waves, floods, mud, seas and other liquids.	- Involves the use of Over stage machinery facilities (flying bar) - Lighting provides braids, colors and patterns on fabric surfaces. - Audio and sound help contribute to foley waves and songs.

(Source: Authors, 2018)

Table 3. Summary of TDSE Specifications and Functions for 'Cats the Musical'

Product / Materials		Before Performance			During Performance	
Technical Special Effect	Idea /Designs Criteria	Material/ Function	Process/ Technique	Technical Design of Special Effects	Effects	Element / Support Facility
Magical Floating Tyres	Magical vehicles to the Heaviseide Layer.	Cylinder hydraulic system, electronic console, power source, portable underhead space, trapped door system, platform (tires).	Hydraulic cylinders	The magical state of a floating tire into the air provides dramatic elements accompanying music and foley	Fly, lift, fall or down, Elevator Lift System (up and down), the gimmicky appearance of the artist (concert).	- Lighting gives mood and mood. - The haze machine provides magical effects of smoke. - Music, audio and sound contribute to the action of floating tires. - Involving the use of under-stage machinery helps the room door trap.
Magical transformation of Mr. Mistoffeeles	Creating a magical cat.	Harness systems (bikinis or single point type), cable and safety cables, hanger clips, ballast, stopper, pulley, power source, monitor console, switch panel and tracked harness machine.	<i>Harness (Bikini, Single Point Harness)</i>	The appearance of the character is magical and shocking situations provide dramatic elements that are accompanied by music and foley	Flying, floating, hanging spiders, flying butterflies, fairies, bouncing objects, dropping off planes, parachutes, gimmicks appearances of artists (concerts, theatres).	- Lighting gives mood and mood. - Music, audio and sound contribute to the action of floating tires. - Involving the use of over-stage machinery in terms of stage house room.

(Source: Authors, 2018)

The creation of technical designs is subjective, but each has unique ways of translating a creative and innovative idea. All the ideas and TDSE have unique distinctions in terms of impact, design ideas, techniques, usage concepts, material usage, size and physical build, specification and functionality, and their ability to contribute to the amazement of the stage.

In the context of technical creation of special effects in the production of selected musical theatres, the use of technology is also undoubtedly that some technical special effects use modern or technological technical designs. But some manual methods or approaches are implemented in the creation of technical designs of special effects. It means a technical design creation that does not apply technology in its operation. Some technical designs are intended to be manual to provide a sense of an aesthetic of traditional presentation concepts. Technical designs are manual operations driven by human resources and processed according to creative choreography ideas. The functionality and purpose of a special effect determine the suitability of the choice of technical designs to be used (Hashim, Zulkepli & Abd Rahman, 2019).

Technical or manual designs have advantages and benefits depending on the design work's specs and functions. Technological technical designs have helped in some areas in terms of technical facilities, demonstrating modernity and helping to realize a more difficult idea to perform on the musical theatre stage. Similarly, traditional technical designs are also helpful on several occasions, such as demonstrating a timely technical design and providing flexibility for users in operation, thus bringing an impact to the audience.

5.0 Conclusion

The TDSE created in the musical theatre has certain goals and specifications, although they are built in small sizes. Nevertheless, the design features of the design certainly have a great impact on a scene or action. The three performances of the musical theatre – Aladdin the Musical, Putri Gunung Ledang the Musical, and Cats the Musical contained the technical designs that were produced to bring the element of spectacle to the show. The TDSE in musical theatre plays certainly contributes to the story's dynamics and raises dramatic action to a more effective level. All designs have the specs and the creation function for each special effects tech. Creative and different techniques showcase the unique features of technical design creation to technical and technological designs. Impacts that show admiration are important to ensure the effectiveness of a special design effect.

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