

## **Liberating Perspectives: Concepts and Effects of Using 360-Degree Cameras on Virtual Theater Performances**

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### **Abstract**

During the COVID-19 Pandemic, cameras became the most important piece of equipment in virtual theatrical productions. From cut-to-cut to one-shot concepts and techniques, the use of cameras for virtual theater productions continues to evolve and experiments with cinematography. New ideas and concepts emerged, for example by reviewing the idiom of folk theater in Indonesia. This idiom provides the idea to liberate the audience' perspective on watching virtual theater. Generally, the audience tends to be presented with frames or pictures that the director provides. However, the use of a 360-degree camera provides distinctive freedom in watching virtual shows. 360-degree camera records complete footage. This gives an immersive experience to exploring the footage. The audience is no longer dictated to but instead given the freedom to watch what they would like to see in the show. This study employs a practice-led research method of integrating the 360-degree camera in virtual theater concepts for RESTORASI artwork. The data was analyzed by examining the relationship between the liberation of the audience' perspective when creating or watching virtual theater and the theory of performing arts. The findings of the present study can lead to ideas and experimentation on the use of 360-degree camera for performing art production in the future.

**Keywords:** *virtual theatre, 360-degree camera, audience, performing arts theory*

### **INTRODUCTION**

The COVID-19 pandemic gives rise to migration on the performing arts medium. The physical stage in the theater which was once busy became quiet. All turned into virtual stages where the practice of using media and the concept of cinema flourished over the past two years. Experimentations on virtual theater both in terms of concept and presentation are increasingly diverse due to the involvement of the creators and connoisseurs' passion on the works of art (Dalila & Hidajad, 2022). Artists are now studying the characteristics of media such as cameras from their function to their philosophy.

Camera as a representative of the virtual audience's eyes was reconsidered. It managed to spark a new technique in virtual theatrical production. From the cut-to-cut technique, the one-shot technique was born in virtual theater. The intervention of camera techniques was started in virtual theatrical productions as it creates opportunities for contemporary theatrical performances. Padberg (2021) states that basically theater is an art form that can explore and recreate digital spaces. In addition to engineering in cinema, new technologies such as 360-degree cameras and virtual reality are new areas of exploration for the next virtual theater production.

The 360-degree camera is able to capture the entire image. While the regular camera can only capture images from one angle, a 360-degree camera can capture images from all angles with the use of a single camera. The 360-degree camera's round lens acts as an eye to capture everything at once. As a result, it shows an immersive image. This immersive experience can be further enhanced by the use of Google's VR tools, or even the cheapest, by a cellphone. When the 360-degree video is played, the image display will change based on where the cellphone is designated. For example, when the cellphone is pointed down, it will display the bottom image of the 360-degree videos.

The immersive experience in the 360-degree videos is in fact not really distinct from the concept of arena theater in Indonesian folk theater. To illustrate this, in the Longser show, the show is performed in an open space in the form of an arena stage where the show becomes the pivot or axis while the audience surrounds it. Conceptually, arena staging does not include a partition in the form of a backdrop, partition wall, or cyclorama.

The arena stage actually serves to facilitate the response between the performers and the audience. Reciprocity between the audience and the performers creates an interactive show where the performers are still in control. Performers can respond to the surrounding audience regardless of where they are. In addition, the arena stage gives freedom to the audience's vision. This way, the audience can choose to watch the performers or the other audience across to them.

This traditional concept was implemented in the RESTORASI show. This show experimented with the use of a 360-degree camera in order to represent the audience's eyes and the concept of the audience's view of the arena stage. This work creates an interactive aesthetic where it allows the audience to see what they want to see in the video. This work is different from the virtual theatrical work at the

beginning of pandemic where artists dictated what images the audience should see. Nevertheless, the audience was given freedom to see which events they want to watch.

## **MATERIAL AND METHOD**

This research uses a practice-led research method. This method involves a practical effort such as "doing", "making", or "experiencing" as a form of gaining insight. Practice becomes a way to explore knowledge based on a clear set of theoretical, analytical, and procedural (Leavy, 2017; Smith & Dean, 2009). Art creation is one of the ways to obtain data through a creative process. Therefore, art does not only become an artistic product, but also includes the existing knowledge from the process of its creation.

RESTORASI uses GORPO MAX 360 camera device. Furthermore, the research procedure was carried out as follows:

### **1. Integration of Ideas**

RESTORASI is a performing art. This work is a combination of happening art and performative exhibition. The aim of this work is to reveal the role of participants in reading, criticizing, and constructing narratives. The narrative built is taken out of an inferiority complex attitude and awareness of history and identity. Thus, this show focuses on the actions of the participants independently and consciously.

Departing from the deconstruction of actors, namely participants as actors, the compilation of camera ideas as a virtualization medium must have a wide capture range. Wide shots or panoramic shots are not enough to capture what is happening in a room at once because all events take place simultaneously. The presence of a 360-degree camera is the answer to produce images that are beyond wide and panoramic shots.

### **2. Functional Concept**

Apart from being a medium for transforming live performances into recordings, the 360-degree camera provides an interface to change image presentations. This feature can be explored regarding the use and the effect on virtual theater viewing. Perhaps it can be unique in its presentation. Furthermore, the most important thing is how this camera can actually represent the eyes of the virtual audience.

To find out the functionality, it is necessary to conduct an experiment to understand directly the features provided by the 360-degree camera. This

experiment can prove whether the use of a 360-degree camera is suitable for the RESTORASI show. Because it involves the integration of concepts and the transformation from live to virtual performances. Understanding the functional concept becomes one of the procedures that needs to be done.

### 3. Analysis

The concept and results of using 360-degree camera in the RESTORASI show are investigated based on the perspectives of film theory and performing arts. In particular, they are Adorno's theory on Blind Cinema, Brecht's on alienation, Boal's on spectatorship, the idea of Indonesian traditional theater regarding the concept of the arena stage, and their relationship with the phenomena of post-digital art.

## **FINDINGS**

After integrating the concept, testing, and finally implementing the work, there are three things that have been figured out:

### 1. The 360-Degree Camera Performance

Before being integrated into a show, the technique of using a 360-degree camera needs to be examined first. This experiment was conducted using a GOPRO camera in Taman Tebet, South Jakarta. The aim of this experiment is to understand the technicalities of shooting video and the durability of the camera to record for a long time. The aim of this experiment is related to the show concept that is mobile and has a long duration.

There are four features in GOPRO MAX 360 camera that are considered useful in this work. They are wide shot, 360 degrees shot, 360 immersive-audio, and Max Hypersmooth (GOPRO, 2019). The 360 degrees shot feature is the main reason to use the camera because this type of shot can produce immersive video images. Furthermore, the 360 immersive audio complements the video. This way, it is not necessary to add a separate audio device. The GOPRO MAX 360 captures audio from all directions without the slightest reduction. Finally, the Max Hypersmooth or camera stabilizer functions to provide smooth images when the camera is moving.

Before starting the experiment, the camera was mounted on the helmet. This is an attempt to get the First-Person Point of View style video capture or a human-like vision (Kislevitz, 2020). The experiment was carried out by walking around the park while recording. While walking around, the researcher tried several motion gestures such as turning head, standing still, and running. This experiment produced a video that is 27 minutes long.



Figure 1. GOPRO MAX 360 Camera

Source:

[https://bsmentertainment.com/index.php?route=product/product&product\\_id=564](https://bsmentertainment.com/index.php?route=product/product&product_id=564)

Satisfactory results were found but with some important notes. The camera turned out to have an increase in temperature. This is certainly dangerous because the camera may turn off at any time due to overheating. Further adjustments are needed to overcome overheating because apart from interfering with the shooting process, overheating can damage the camera itself. Moreover, a device needs to be prepared to monitor images via a wi-fi network.

## 2. Immersive Video Result

The video captures from GOPRO MAX 360 are satisfying and in line with expectations. The full video was recorded in 360 degrees dimensions. Placement on top of the helmet results in a First-Person POV, although a portion of the helmet part is in frame and a bit distracting. However, the camera placement is correct and considered representative of the audience's vision. The main area of capture is on the front camera, and it adapts to motion.

Using this camera is basically the same as using a DSLR camera where the lens records what is in front of it. Nonetheless, the 360-degree camera has two front

and rear lenses so that even though the focus is on the front lens, the rear lens does the recording. When the video preview is played and the display on the GOPRO MAX 360 touchscreen is changed, the image presented will change as well.

Moreover, the preview can be zoomed in and zoomed out. This feature is more apparent when the video is played on a computer and streaming platforms such as YouTube. The audience can view details by zooming in or zooming out. This becomes an exploratory activity in enjoying the video presentation of the show. In addition, this feature can be used either on a computer or mobile phone.

The 360 Immersive-Audio feature records the hustle and bustle that occurs around the stage very well because there is a microphone at each in the front and the back of the camera. No microphone is more dominant, they are the same in terms of quality. This feature provides a more immersive experience both in terms of production and appreciation.

The use of 360 camera provides a different viewing sensation. Typically, the experience of watching a virtual theater show only involves sitting and watching. However, using a 360-degree camera allows additional activities such as changing the video presentation by shifting the layer, zooming in, zooming out, and moving the cellphone.

### 3. Implementation on the show

The Living Hub segment of RESTORASI show which took place in Room 2 in Multatuli Museum presented a narrative of the arrival of Europeans. Miniature ships, information about VOC merchant ships, and plantation of spices commodities in the archipelago, could be seen there. Meanwhile, the art installation consists of toy transportation vehicles in the form of cars, trucks, buses, and trains. The vehicles are narratives connecting the transit place nowadays and that of colonial period in Banten, Rangkasbitung. The relationship between the two narratives at different times reflects the history and existence of a transit place.

The Living Hub is a space for contribution among participants, actors, and exhibitions. Interaction occurred in waves. Participants showed their participation by taking one of the toys and playing together according to the instructions placed on the floor. The entire room was explored by the participants and created the exact events desired by the artist. This interaction

idea is a strategy to examine the narrative more closely by means of participation and exploration of artworks and museum space.

During the playing session, the cameraman was standing near the wall and in the middle. The cameraman represents a non-participating audience who just watches the playing session. The 360-degree camera has managed to capture the atmosphere of the room with the cameraman as the center point. The playing session can be seen clearly. The audience gathered in the middle and played with the actors. However, there are also those who are cool to explore the museum exhibits themselves.

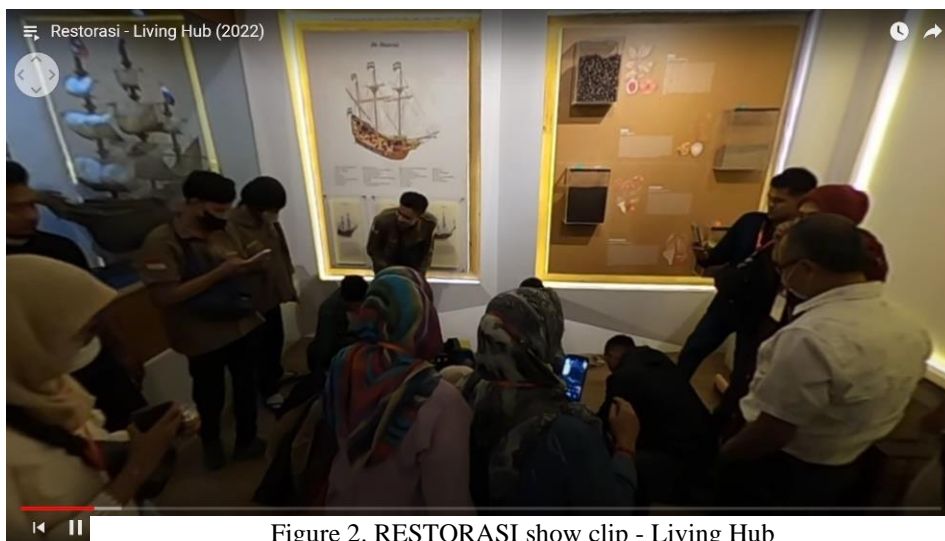


Figure 2. RESTORASI show clip - Living Hub  
Source: personal doc

The show continued until all waves of participants passed through Room 2. In the video, the cameraman captured only two waves. The first wave of participants was lively in responding to the installation, in contrast to the second wave which was rather passive. In the second wave, the cameraman moved to stand in front of the door to Room 3. There, the living room looked rather quiet because the participants kept the distance from the actor. Eventually, the second wave of participants moved to other rooms.

During the recording process, there was no cut or pause. The camera was left on and recorded everything that happened in the show. The instruction given by the director was only regarding the position of the cameraman so as not to block the pathway and not to cover the camera. The rest of the cameramen acted as participants but only watched and did not participate.

This technique humanizes camera gestures. The cameraman walks, stops, and watches as the participants do. Nevertheless, virtual spectators do not possess

the power to participate. However, the direction of the video can be changed by sliding it using the mouse on a computer. Meanwhile, on mobile, it is sufficient to change the direction of the cellphone into the desired perspective. This technique is a mimetic form of human movement through a 360-degree video interface.

## **DISCUSSION**

The concept of using a 360-degree camera is linked to the Blind Cinema initiated by Adorno. He argues that film is a tool for constructing illusory narratives and that there is a hidden reality behind it (Wayne, 2005). Cinema should be able to display authentic reality by reducing subjectivity in image capture. Adorno wanted something organic from the object of a film. Even though the audience are aware of the presence of the camera, their behavior is not manipulated, and everything goes as it is (Adorno & Levin, 1982).

The concept of Blind Cinema is considered too straightforward by letting the camera record whatever is in front of it. However, Adorno's opinion encourages to criticize the power relations that exist in the world of cinema, especially the political element of the camera that frames and creates a new reality called Hyper-reality (Hansen, 1966). In relation to the culture industries, Adorno opposes this power to counter illusions and framing.

The limitations of technology in the past did not fully facilitate the concept of Blind Cinema. The camera was limited by the lens and framing remained because not all highlights could be captured at once. Therefore, a lot of cameras and footage pooling were necessary. Today with the presence of 360-degree cameras and happening art, the concept of Blind Cinema can be reconsidered. The GOPRO MAX 360 camera is fairly portable and easy to carry. With the quality of 6K resolution, the use of this camera can be an alternative in today's virtual theater concepts and productions.

Looking at the concept of RESTORASI, the show has the artistic idea of getting out of the static stage. The concept departs from the study of specific spaces. The post-dramatic theater moves out of the theater stage. The show is looking for an alternative space for performances (Lehmann, 2006).

Meanwhile, looking at the phenomena of theater in the eastern world, they hold performances at specific times, places, and situations (Schechner, 2005). This idea was obtained from the reception of traditional performances based on the arena



stage. When changing the show's spot, the show does not instantly possess a definite place where the audience should watch. Instead, they watch where they want.

In that situation the stage becomes an arena, a horseshoe, or even a proscenium in line with the boundaries and how the audience creates a viewing space at the performance spot. In the Living Hub segment, the show took place in an indoor space. However, the show provided space for participants to surround the installation in the middle. Thus, the stage orientation in the Living Hub changes to an arena stage.

For the audience to enjoy the situation as it happened, the concept of a one-shot with a 360-degree camera was created. For the researcher, it is quite unfortunate if they have to frame certain parts, such as the installation area. Therefore, for those who do not wish to participate, they are allowed to watch or wait for their turn. Even those who did not have the opportunity to play need to be recorded as part of what happened in the show.

The arena stage in traditional Indonesian theater gives the audience freedom to see events on stage. The audience can see what is happening in the show because they are part of the events. Adaptation of vision in the arena concept was conducted while using the 360-degree camera. This immersive concept is a liberation from the camera technique of taking pictures as a whole in conventional film production. The 360-degree camera literally recorded what happened during the show and it is the audience who decided what they want to see in the video.

The liberation of perspective is a critique of the director's hegemony in establishing the structure of the film's presentation. Aesthetic communication in films generally comes from the relationship between characters and objects that are sewn through montage arrangements (Eisaesser et al., 2010; Rose, 2001). Smith (1995) stated that in general the illusion in the film is closely related to the nature of its commercialization. Hence, most films establish the construction of illusion and imagination rather than encouraging people to act. In this liberation, montage is omitted. One-shot recordings and panoramic 360-degree presentations produce an epic theater aesthetic that destroys illusions in a performance presentation which is not tangled in empathy (Benjamin, 1998). Panoramic shots have been popular long enough for people to witness reality beyond the limitations of existing frames (Balazs, 1931). Now, the 360-degree camera provides more vision than panoramic shots.

As for the RESTORASI show, the concept of happening art gives a strong reason to incorporate a 360-degree camera. This is because the camera captures images

thoroughly and is able to give a presentation of space, time, and real time events without excessive directing interference.

Moreover, the 360-degree camera opens up virtual viewing freedom. Brecht alienated the audience by breaking the fourth wall and the effect that the audience was aware that this was a spectacle in the hope of reflecting on the social problems that (Adorno T et al., 1980; Bradley, 2006; Mumford, 2009). It happened virtually. However, the 360-degree camera provides something more radical. Aesthetics of effect gives power to the audience because it is intended to activate the audience so that they feel empowered to act (Boal, 2008; Fischer-Lichte, 2016). Instead of following the visual construction created by the director, they are free to choose the visuals they want to see. Uniquely, each audience has a different way to choose and watch. Even if an event is present as the center of attention, the audience can ignore it and see other details in the visual. Furthermore, this setting may provide a different point of view in interpreting a narrative.

The show could be presented in a more challenging way to look like a real-life event if the live streaming feature on the 360-degree camera was used. Virtual audiences could gather to watch the event even though they were not physically present on the spot. They would become organic virtual viewers who wonder what would happen next. As a result, it would be in contrast to when the virtual theater has been rendered to a complete video where the virtual audience can jump for a certain duration when watching the video.

The use of 360-degree cameras is not merely to try out technology. The exploration and adaptation carried out in the work of RESTORASI provides a new perspective on how to watch. The audience is given the freedom to choose. Virtual audiences are given the opportunity to experiment in enjoying a virtual theatre. Immersive experiences in virtual reality can be developed from the use of 360-degree cameras (Bates, 1991) in virtual theatrical performances. Performing arts which are normally enjoyed live now has developed as if the virtual audience is actually present on site, represented by a cameraman.

Delivering immersive experiences can be enhanced further by incorporating virtual reality technology. The development of virtual reality involves a human exploration to seek sensory sensations in relation to the virtual world (Schuemie et al., 2001). Mix-reality technology can be a further developed in that the audience is no longer represented by the cameraman but instead they can freely explore the stage independently. Nevertheless, compared to the production and experimentation of virtual theater in Indonesia, this concept is still premature.

In relation to the term post-digital art, today's art and technology (especially in film) can produce more interactive art practices (Ben Shaul, 2008). Today, kinetic sensors in artworks are widely used to help create generative art. Moreover, artists who try to liberate their art are getting responses from visitors or audiences. The presence of technology not only makes art sophisticated, but also creates a space of freedom and democracy for visitors or audiences.

## **CONCLUSION**

The use of the 360-degree camera has an artistic relation conceptually and practically. The 360-degree vision in the work of RESTORASI departs from the view to liberate perspectives from the camera framing established by the director through editing. This concept departs from the experience of watching traditional theater which takes place on the arena stage. Every audience is free to see anything in the show.

This series of concepts can be manifested with the features provided by the 360 GOPRO Max 360 camera. The camera captures all events in 360-degree video format. As a result, an immersive video is created. It can be explored more by virtual audiences. For instance, changing video presentations, zooming in, zooming out, or even moving the phone to change perspectives.

The use of 360-degree camera provides further reflection on the power of virtual audience in virtual theater performances. The audience can ultimately be granted more power in viewing activities. Thus, they are no longer dictated by the director's image construction. The audience decides for themselves what and how they enjoy virtual theater. The use of 360-degree cameras has the potential to grow further considering Virtual Reality technology that continues to develop to produce an immersive sensory experience in viewing activities.

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