



# Types of Projection Mapping on Art and Design Development

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**Abstract.** Technological developments have a significant impact on innovation, one of which is light projection technology which gave birth to video mapping performance art which has an impact on the development of art and design. This research is a study of video projection which is one of the triggers for the development of works of art and design. This research employed descriptive analysis method by conducting literature studies and theoretical constructs about projection mapping with the development of art and design then, analyzing several types of projection mapping according to their uses and differences. In this study, it was found how video mapping developed in other arts such as dance and music performances which currently did not only feature music or dance performances but also with new visual experiences. The use of video mapping as a single work of art that capable of hypnotizing thousands of spectators or as an installation art that is displayed indoors or outdoors. In the end, video mapping can also be categorized as a solo performance art, installation art work, and artwork that supports aesthetic elements in other performances.

**Keywords:** Art · Design · Projection Mapping · Video Mapping

## 1 Introduction

Technological development has significant impact in every innovation today. One of them is the discovery of video mapping technology that gave birth to video mapping as a performing art that impacts the development of art and design in general. There are several assumptions about the history and the impacts of the discovery that produces several types of video mapping. Therefore, it is highly significant to have a literature study on how the development of video mapping affects the development of art and design with examples of its development in Indonesia.

Video mapping is the latest video projection technique that can be applied to almost every surface and change it to be a dynamic video display, this dynamic video projection mapping frequently creates optical illusions in video mapping objects [1]. Meanwhile, according to Maniello [2] “Video mapping (also called 3D mapping, projection mapping, or simply mapping) is particular form of Augmented Reality (AR), or reality created by the developer, a kind of development of the discipline characterized by greater completeness and consistency”. The type of projection that is projected in video mapping is usually an animated video. It can be inferred that animation is a medium that is fused

from two conventions or disciplines, namely film and image. To understand and use animation techniques, both conventions must be understood and precepted. Another term for animation is motion graphics [3]. With many elements in video mapping such as text, graphics, video, audio, interactivity, and animation, video mapping can be concluded as the result of multimedia development, Multimedia itself is a combination of one or more media [4]. There are many factors that support the development of art and design. Furthermore, the innovation process is also supported by several other factors as well that make the development even richer. However, the authenticity needs to be studied further whether that video mapping is included into one of the elements that supports the development of art and design. Some examples of works that include video mapping technique are the key to reveal how this technique has developed from time to time until now. Starting from when people began to realize its attractiveness at the Fatahillah Museum, Kota Tua Jakarta in 2010 [5]. Since then, video mapping has become a topic that has been widely studied by various circles including educational institutions or practitioners. The scope of the study is mostly on how a video can be displayed attractively by following the pattern of the media or the facade of a building that interacts continuously between the media and the content of the projection. Its development continues to spread to other performances or works, so what types of video mapping have developed and what makes them different?

The development of art and design cannot be separated from the history between the two, knowledge and science continues to develop according to its circumstances and needs, by the same token, the development of design education in Indonesia since 1971 which has its roots in art education by aesthetic thinkers. But over time, studies of the history of Western design, the development of style, methodology, social, and many other complexities of problems, studies of design methodology developed into separate sciences. Same as in design review, the science has even more specifications and developed into several specializations such as product design, crafts, graphic design, interior and fashion design. In graphic design which often referred as visual communication design, in its development it notes that not all graphic design creations are in the form of printed works but also as audio-visual and multimedia works, therefore some educational institutions use the term visual communication design with new consequences and it is categorized on the communication sciences [6]. The emergence of works and performances that include video mapping techniques from various branches of art and design is one of the factors in the formulation of the problem of how the existence of video mapping which started from linear technological advances with multimedia developments in the development of art and design became one of the sustainable factors with each other so that innovation processes have sprung up to what they are today.

## 2 Methods

This research employed descriptive analysis method by first conducting a literature study on the development of projection mapping in Indonesia. This research focuses on finding types of projection mapping in the development of projection mapping in Indonesia. Researcher conducted a literature study on projection mapping and its relationship to the development of art and design. Then, the researcher constructed a theory from several

theories of art and design in relation to projection mapping. After that, the researcher reviewed several projection mappings in various art and design developments in Indonesia. Lastly, the researcher analyzed descriptively how this projection mapping is divided into several types and what makes it different.

### 3 Indonesian Projection Mapping

In Indonesia, which was recorded and documented by the media, Indonesian projection mapping was first held in March 2010 at the Fatahillah Museum, Kota Tua Jakarta when prominent British multimedia artist D-Fuse collaborated with Sakti Paratean and Adi Panuntun from Sembilan Matahari Film. Then it entered Bandung four months later, on July 25th, 2010 at Gedung Merdeka/Museum of the Asian-African Conference, Jl. Asia Afrika no.65 by Interakta FSRD ITB in the Pasar Seni ITB pre-event [7].

In its development, video mapping is one of the developments of film. Film is a form of mass communication media. Video mapping is often inferred to be a derivative of film since it has almost the same elements, structure, and production methods. The notion of technique in projection mapping and film is the videos that can be displayed in the video mapping itself. In the sense of film according to Effendy, it is defined as the result of culture and means of expression in art. In its development, film depends on technology and a blend of artistic elements to produce a great quality films [8]. Apart from film, video mapping is also a development of animation. The types of videos shown in video mapping shows a lot of animation. There are various definitions of animation, the word such as animation, animated, and animator comes from the Latin word *animate* which means “have a soul or alive”. Paul Wells gives the meaning that to animate is the same as giving life to an inanimate object, therefore Prakoso mentions that animate is like giving a soul by giving motion or the impression of moving. Animation is like a film which is an audio-visual communication medium in which there are narrative or non-narrative elements, visual elements, and sound elements [9].

In educational institutions, video mapping is starting to become topic research in Indonesia. It gets a lot of research because it simply is an interesting topic. One of the video mapping studies began to emerge in 2014 in Indonesia, through the creation thesis of Ahmad Khotib Sya’ Roni. The research discuss about the video mapping of Bandung Lautan Api as an interesting historical educational media. In conclusion, this study declares video mapping as a learning medium that is considered more attractive since in its application it combines audio-visual elements and utilizes a facade that has changed shape due to optical illusions caused by projected light. Furthermore, Andrit Bahtiar’s creation thesis also made video mapping as a learning medium about the human respiratory system. In the same year, Gina Fitria Adita’s thesis used video mapping as a medium to collaborate with Cirebon mask dance. In this study, the use of philosophical meaning in the Cirebon mask dance is poured into visual exploration in the video mapping performance. Other creation research was also carried out such as Deni Kurniawan Nivak’s research which used video mapping as a promotional media in 2016 and Agung Bhakti Persada who used video mapping as a technique for creating video art in 2018. In 2016, Lia Dwimulyani also began researching video mapping using the method qualitative analysis using Roland Barthes semiotics with the title Representation



Fig. 1. JVMF 2018 poster.

of Betawi Culture in Video mapping “Revitalization of the Old City of Jakarta”. In 2017 Erny Anggraeni also researched the process of Design and Creative Thinking Strategies in Video Mapping 3 by Raphael Dony in his thesis [7].

The development of video mapping in Indonesia is quite advanced with the existence of the Jogjakarta Video Mapping Festival 2018 (JVMF) which is an annual art festival in collaboration with the Festival Kesenian Yogyakarta (FKY) 30 which was held on 2nd to 4th August 2018, on the Malioboro area and the 0 km point (Fig. 1). in the Special Region of Yogyakarta (DIY). In 2018, the Jogjakarta Video mapping Festival not only featured light projection projects on buildings, but also installed new media artworks along Malioboro Street. Data regarding visitors who come to watch the NRMO video mapping is not known for certain, but in the data that was combined with other FKY events, the organizers of FKY 30 which involved 1,880 traditional arts performers, 73 artists from districts in Yogyakarta, 20 literary-theater artists, 35 filmmakers in FKY cinema, 2160 performers of performing arts, totaling 4,176 artists involved. Until the seventeenth day of Wednesday (8/8), FKY 30 was visited by 160,472 visitors with an average visit of 9,440 visitors/day [10, 11].

In 2018 JVMF became an interesting event that received high appreciation from various levels of society according to Jogja.com (2019). It doesn't only feature visual artists from Yogyakarta, the program which started in 2013 gathers many creators, artists, or art groups in the form of studios in the scope of video mapping Indonesia in a single festival. Although the development of new video mapping in big cities in Indonesia is considered rapid, it tends to only develop on the island of Java.

## 4 Projection Mapping on Art and Design Development

Since then, video mapping has been widely studied by practitioners and academics as well as creative studios, both individually and in groups that are successfully provide new artworks media in public spaces similar to video mapping works at the Fatahillah Museum, Jakarta 2010 (Fig. 2) [12]. At the Video mapping event “What A Wonderful Jabar” at Gedung Sate in 2011 which was also initiated by Nine Matahari who created

video mapping that made the public more enthusiastic to watch this performing art (Fig. 3) [13].

Similar to the show in Kota Tua Jakarta, this video mapping show at Gedung Sate Bandung also narrated a historical story, so the narrative that was made is the story of West Java, from the beginning of ancient times when the gods created land, water, and kingdoms. The spirit of “Bandung the Ocean of Fire” when the Bandung people burned the city before (it fell) into the hands of the Dutch East Indies Civil Administration (VOC) and the Allied army. And the journey of its rich culture and traditions. In making this work, there are about 20 individuals from various backgrounds, such as artists, designers, architects, illustrators, animators, engineers, and so on, contributing to the collaborative work.

At educational institution in 2014 Ahmad Khotib Sya’Roni wrote a thesis about the creation of “Video mapping Bandung Lautan Api as a Historical Education Media.” Research that uses video mapping as an educational medium for the in-class education. The thesis brings the lack of interest of students in historical education as the problem. Video mapping as a learning media is considered more interesting. By implementing it, combining audio-visual elements, and utilizing facades to produce optical illusions, this increases the audience’s interest or attention. Besides that. Similar to Ahmad Khotib’s research, audio-visuals in video mapping accompanied by amazing animations and optical illusions have motivated Andrit Bahtiar to create learning media with video mapping. In conclusion, making video mapping can be useful for educational purposes (Fig. 4).



**Fig. 2.** Museum fatahillah video mapping 2010.



**Fig. 3.** “What A Wonderful Jabar” Video mapping Gedung Sate 2011.



**Fig. 4.** Isola gama video mapping 2015.

Video mapping is an exclusive show that is not available and can rarely be enjoyed every time. Many people will flock to watch this show if it is held. In Bandung apart from Gedung Sate, the Asia-Afrika Museum, the video mapping show began to spread to Isola, Universitas Pendidikan Indonesia in 2015, for almost every year these three places often become a media facade that is often used as a projection object for video mapping projections (Fig. 5) [14].

The development of video mapping is not only in Jakarta and Bandung, many big cities in Indonesia have also started to hold this performance as a solo art performance, it also becomes an exhibition of new media art works such as in Yogyakarta and Surabaya. The sensation of a new media art exhibition with this video mapping is more attractive to the public. Asides from aesthetic projections that spoil the eyes, this artwork will be amazing in front of the camera. One example is the exhibition titled “LUME” in Surabaya, a modern art exhibition held from December 2019 to March 2020 at Pakuwon Mall Surabaya. This exhibition was initiated by Outside the Box Group. The “Dream Control” An interactive projection mapping installation that used a table as its main area which can only be activated by the audience who enter a room. Audiences were required to put their hands to activate the visuals that led them to enjoy the “Lucid Dreams” because they were the ones who can control their own dreams. Luna will accompany you in exploring your dreams (Fig. 5) [15, 16].

Video mapping has not only developed as a technique that supports developments in the world of fine arts, in 2015 in Bandung Gina Fitria Adita collaborated with Wajiwa



**Fig. 5.** Lucid Dreams Highlight.



**Fig. 6.** Video mapping Cirebon mask dance.

Creative House in a Cirebon mask dance performance, this show made a more interesting show that has content and body movements (Fig. 6). There are many philosophical meanings between all the elements in the show. The creation research made video mapping the dominant supporting medium in the meaning of Cirebon Mask Dance, making the visual exploration in the performance appeared more visible combined with the performance of the dancers. The final project and collaboration with Wajiwa Creative House presented the poetic meaning behind the five Cirebon Mask Dance masks; Panji, Samba, Rummyang, Tumenggung, and Kelana went through various visual explorations. The fairy tale described the life journey of a human being in the world, from the day of birth to the time of his death. Through his journey, he found ‘culture’ in the midst of ‘modernization’ as well as other morals of life [17].

In the music realm, similar to video mapping as a media collaboration with dance performances, visual elements from video mapping are widely used as supporting elements in musical performances, such as the collaboration between Uvisual and Sins/Of/Suns initiated by Ishaq Haris ‘botak’, Yogaswara & Dissa Kamajaya, then the young composer Ramadan Zulqi joined, making a band from Bandung that explores a wider range of music (Fig. 7) [18].

One more example is when Burgerkill in its 25th Anniversary virtual concert in 2021, video mapping becomes an aesthetic element that made the audience not only listen to



**Fig. 7.** Collaboration video mapping & music sins/of/suns.



**Fig. 8.** Burgerkill “25th Anniversary virtual concert”.

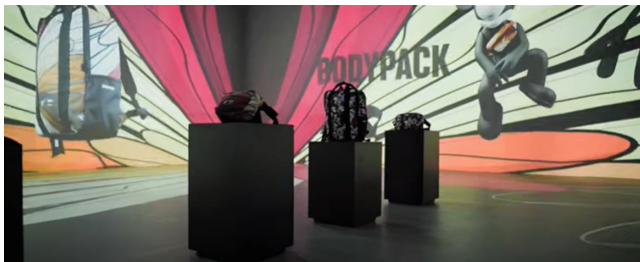
music and personnel, but also visual presentations from the video mapping presented at the concert (Fig. 8) [19].

The development of video mapping spreads to the fashion realm, many fashion shows and display and installations use video mapping visualization as an element of designation so that the identity and aura of a fashion designer’s work is more prominent and conveyed. One of the examples is at Raisa’s concert at the 2013 Inaicta Award event. At that time, it was still not a collaboration between video mapping and a fashion show because it was still assisted by a performance from Raisa (Fig. 9) [20].

In addition to fashion works, in product display installation, video mapping is also can be utilized as a supporting element to show a product that is assisted by an adequate interior to provide maximum projection results. As in the case of fashion video mapping as an element of designation so that the identity and aura of a product design work are more prominent. For example, the launching of the Bodypack product in collaboration



**Fig. 9.** Video mapping dress raisa fun.



**Fig. 10.** Bodypack x Arkiv video mapping.



with Arkiv visuals and Uvisual. Video mapping which gave a message at the limited launch of the latest Bodepack and Arkiv products about the story of a visual artist's journey who visited childhood memories and feelings, then processed them into contemporary works so that The bodepack will appear as the presence of a person who is online to "make a difference" to dive into a world that is curved firmly and colorfully, made directly by the half animal, half dream (Fig. 10) [21] (Fig. 11).

The most amazing event with the development of video mapping in Indonesia was at the 2016 West Java PON XIX Opening Ceremony at the Gelora Bandung Lautan Api (GBLA) Stadium, how video mapping was able to collaborate with various aspects at once in one luxurious performance, starting from involving the appearance of hundreds of singers, dancers, percussionists etc. who were united in an opening show that become harmony with each other.

In addition to the event at the Opening Ceremony of PON XIX West Java 2016 at GBLA, at the video mapping event at Prambanan in Yogyakarta by Sembilan Matahari, video mapping was presented in collaboration with theatrical performances. The video projection here is a supporting element to strengthen the show to make it more stunning. From video mapping prambanan & Opening Ceremony PON XIX Jawa Barat 2016 we can make conclusion how the projection mapping can support the other element like music, percussion, dance, theater, design for make exciting visual experience (Fig. 12) [16].

From the development of video mapping in Indonesia, video mapping can be categorized into three types as shown in the following Table 1.

First, video mapping becomes a single performing art that can present an audio-visual sensation experience for appreciators with concepts and stories that have been made,



**Fig. 11.** Opening ceremony PON XIX Jawa Barat 2016 GBLA.



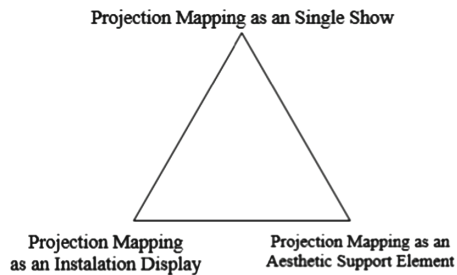
**Fig. 12.** Video mapping Prambanan

**Table 1.** Type's of Projection mapping.

Types of Projection Mapping	Projection Mapping as an Single Show	Projection Mapping as an Installation Display	Projection Mapping as an Aesthetic Support Element
Sample	Video Mapping Museum Fatahillah 2010	Lucid Dreams Highlight	Video Mapping Prambanan
	Video mapping "What A Wonderful Jabar" Gedung Sate 2011	Video mapping Bodypack x Arkiv	Opening Ceremony PON XIX Jawa Barat 2016 GBLA
	Video mapping Isola Gama 2015		Video mapping Tari Topeng Cirebon
			Collaboration Video Mapping & Music Sins/Of/Suns
			Burgerkill "25th Anniversary Virtual Concert"
			Video mapping Dress Raisa

such as the 2010 Fatahillah Museum Video Mapping show, Video mapping "What A Wonderful Jabar" Gedung Sate 2011 and Video mapping Isola Gama 2015, the performance only shows a video mapping performance without any other performances. Watching this performance is no different from watching a movie in a cinema, but the media is different when watching a cinema indoors by shooting a projection onto a flat screen, watching video mapping can be indoors or outdoors with volumed facade media.

The second type is video mapping being displayed in an exhibition such as Lucid Dreams Highlight by Lzy Studio, the video projection was an installation work that had a certain concept and purpose since it can be a work of art using video mapping

**Fig. 13.** Types of Projection mapping.

techniques or an installation of information media to provide information for an event, other products or advertising such as Video mapping on Bodypack x Arkiv (Fig. 13).

## 5 Conclusion

Video mapping is a video projection technique that uses lighting and projections. Video mapping techniques are the result of the development of electronics and information technology. Video Mapping in Indonesia began and be known in 2010. Since then, video mapping in Indonesia has continued to develop and has begun to be widely researched. Therefore, as a mean to support the development of novelty in art and design. From the development of video mapping in Indonesia, by looking at the intent and purpose of video mapping, it can be divided into three types of video mapping. The first type of video mapping is video mapping as a single performing art in which the audio-visual presented can stand alone without the help of other performances such as the example of Video Mapping Museum Fatahillah, Video mapping “What A Wonderful West Java and Video Mapping Isola Gama 2015. Both video mappings are works of art. Installation arts that are displayed in an exhibition or installation in a space open to the public with a specific concept and has purpose as an installation of art or as design works such as the works of Lucid Dreams Highlight and Bodypack x Arkiv are belong to second type. Third type is video mapping as supporting aesthetic elements to support the work or other performances such as the Prambanan Theatre, West Java PON XIX Opening Ceremony, Cirebon Mask Dance, Sins/Of/Suns collaboration music, Raisa’s performance with video mapping on her dresses, and Burgerkill 25th Anniversary Virtual Concert. From these samples, video mapping is only to strengthen the visual experience in the show in order to give a different sensation.

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