

**Digital and Interactive Media Analysis of Myths
and Traditions Expressed in Thai Fairground Art**

by

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Abstract

The core themes in Thai art have traditionally been didactic Buddhist ethical works and popular folkloric beliefs. Both are permeated with a cosmology and worldview that is supernatural but which is pervaded with ethical implications for people's daily lives. Buddhist art aims to encourage selfless acts for the good of others, including other individuals, society, the country and the natural world. Such abstract themes have been rendered accessible to ordinary people by means of fantastical creatures and supernatural myths that insinuate moral values and demonstrate a coherent Theravada worldview that is uniquely Thai.

This thesis explores the popular manifestations of such phenomena at the intersection of traditional folk beliefs and practices, popular entertainment, Thai official/ royal high culture and confessional Buddhist ethical instruction by analysing the art forms associated with temple fairgrounds at major festivals. Based on a review of related literature and analysis of Thai artists, it concludes that the renaissance of traditional Thai culture is reciprocal with authentic grassroots activities such as temple fairs fostered and supported by traditional patronage and cultural resources from the royal court culture and Buddhist ethics. Based on this analysis, my own work offers a modern rendering in the spirit of traditional forms utilising modern multimedia methods to create an immersive and interactive artistic experience.

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1 Introduction

The research is principally concerned with examining the imagery and use of popular art forms and multimedia used within temple fairgrounds, which commonly adjoin temples in Thailand. In these fairgrounds, the iconic and traditional images of the temple are mixed with magical ideas from ancestral folklore that originate in the rural villages of Thailand. The temple fairground is one of the most popular pastimes for rural communities that combines experiences of shopping and eating with fairground entertainments, such as carousel, Ferris wheels, monkey shows, acrobatics, gun shooting, old-style sweet shops, haunted houses and dunk tank girls etc. The oldest and the most well-known temple fairground in Thailand is Wat Saket Festival Fair, which is held annually in November at Wat Saket Ratcha Wora Maha Wihan Temple in Bangkok. One of the most important architectural structures found at this location is the Golden Mountain, a steep artificial hill inside the temple compound. Buddhist cosmology believes that this mountain is the symbolic incarnation of Mount Meru, the centre of the universe, and it is the highest landmark of Bangkok.

Cosmology is the most pervasive theme in traditional Thai painting, representing the Buddhist *Tribhumi* derived from Theravadan devotional literature (BBC, 2002). *Tribhumi* refers to three dimensions of existence: *Kamabhumi* (Sensuous Planes), *Rupabhumi* (Form Planes) and *Arupabhumi* (Formless Planes). Beyond these, the devotee aims for *Nivanabhumi*, escaping the cycle of *Kilesa*, suffering and rebirth (Simatrang, 2008). One of the most popular concepts from *Tribhumi* for Thai artists is *Himmavanta*, the mythical forest located at the base of Mount Meru, inhabited by chimerical animals and human-animal hybrids such as Naga (the king of snakes), *Upsorn Srihas* (half-human, half-deer), *Kraisorn Puksa* (a mixture of a lion and a bird), *Waree Kunchorn* (half-fish half-elephant creatures), *Narephon* (a tree bearing fruits in the shape of girls) and mermaids, all of which abound in Thai art and folklore.

Such creatures contain symbolic meanings of faith and belief, historically used to convey the messages of Buddhist ethics to the masses. Some fairs have been revived in recent years to preserve and propagate traditional Thai art forms and culture, including the Wat Arun Festival Fair, a high art festival held in the royal court, such as *Khon* (masked dance

drama), including acrobatic troupes from Vietnam, China and India. Thai temple fairgrounds are noted for their vivid images under colourful light bulbs, accompanied with very loud music. Imagery from Buddhism and local folkloric beliefs is often found side-by-side in temple fairgrounds, which reflects the deep syncretic roots of both in Thai society. This thesis is concerned with art and not with Thai beliefs *per se*, but it can be noted from the outset that doctrinaire Buddhism presents a comprehensive and robust philosophical system whose main concern is the cultivation of personal and social ethics (essentially ‘religion’ in the Western sense), while folkloric beliefs (traditionally considered ‘superstition’) are more oriented toward popular narratives used for entertainment purposes (e.g. ghost stories). As explored in this thesis, these two cultural trends are by no means distinct as experienced by most Thais, for whom they populate a common narrative of popular imagery concerning the supernatural.

My creative artworks draw on traditional Thai folkloric and Buddhist art in the world of emerging painting, multimedia and digital technology forms to create animated paintings inspired by Thai fairground art. I will investigate whether this makes them more immersive and attractive to modern audiences. This conceptual idea has been developed from my postgraduate research, which investigated the symbols of supernatural belief in Buddhism. Folkloric beliefs in Thai culture are widespread and blended with Buddhism in the syncretism of the popular imagination. The belief in ghosts and the afterlife is also widely used in Thai popular culture, films and entertainment. This research will also study the popular form of ghost-culture associated with Thai films and fairground. Thai ghosts are often presented as evil, vengeful spirits who must be defeated or appeased by magical powers, quests or devotional practices, but they ultimately serve as arbiters of karma, the law of Buddhist ethics: good deeds beget good results, while bad deeds beget bad results.

This study is focused on art-practice based research with the use of digital technology within paintings inspired by fairground art. The research activity is focused on projection mapping techniques and holographic image generation, to examine and propose a new aesthetic of these paintings. The study is divided into five chapters. After a brief overview of Thai culture, mythology and supernatural beliefs and influences prevalent in Thai and Western culture, the literature review explores the particular history of Thai traditional and fairground art associated with ideas of truths and myths from traditional belief systems.

Chapter 3 explores the uses of various traditional optical illusion techniques used in fairground shows that have had strong influences from theatrical stage shows, which were brought to Thailand by Westerners during the Ayutthaya and Rattakosin periods.

Chapter 4 explores digital media and analyses a selection of artworks by Thai contemporary artists, such as Surasi Kusolwong and the 'TAIL' (the Thai Art Initiative in London) and compares them with the European artists who use illusion techniques and digital media in their creativity and practices. Chapter 5 describes the conceptual development and technical aspects of video mapping and holographic imagery examined within these paintings. Chapter 6 presents the conclusion of my creative works with immersive digital technology and answers the research questions. My large-scale paintings have seen me experiment with projection mapping, video holographic images and digital technology devices. For example, computer, digital camera, LCD projector, mobile phones etc. as interfaces before editing with graphic computing systems and projecting on the painting itself. The result is a contemporary aesthetic in art that emerged from the beliefs inherent in Thai supernatural folk beliefs combined with immersive digital technology that generates a three-dimensional effect for an audience that instead of debunking such beliefs, allowing both to exist together without conflict, reflecting a new aesthetic of digital art for digital age.

2 Literature Review

2.1 Thai Cultures, Mythology, and Supernatural Beliefs

The belief in superstitious beings is ubiquitous across all world cultures. In Thai culture, it is presented as ghosts or *Phi*, referring to generally invisible spirits that can appear in the form of apparitions. According to the *Royal Society of Thailand Encyclopaedia* (1999, p. 735), ghosts are ‘mysterious spirit beings that are an invisible presence that someone believes they can see or feel’. The appearance of a ghost can cause good or bad results. According to Buddhism, a ghost is a kind of spirit in disembodied form. Ghosts cannot be seen with the naked eye but may haunt living persons or wander among different locations. Generally, Thai ghosts can be divided into gods and devils, commonly found in folklore and popular myths (Thai Royal Institute, 2018). Many well-known ghost stories from Thai folklore continue to manifest an enduring appeal, being adapted as popular horror movies, television soap operas and comic books.

Thai ghost films have been reproduced with emphasis on aesthetics, with some popular stories having been adapted numerous times, such as the tragic love story *Mae Nak Phra Khanong* (‘Lady Nak of Phra Khanong’), first filmed as a silent movie in 1927 and in over 30 subsequent movies, animated feature films, musicals and even an opera. As a medium, film acts as a ‘reflector mirror’ to reflect existential realities in society. Besides the superstitious belief, the *Mae Nak* ghost films also reflect the roles and practices of women in Thai society, particularly the wife’s role in marriage. In the past, Thai men had compulsory military service, making the loyal and honest wife at home alone a staple motif.

The story of Thai ghost culture is often associated with general themes and forms of popular culture, including horror films, fairgrounds and common 24-page comic book stories etc. Comic ghosts are characteristically drawn in black and white, with disproportionate figures, while the front cover and back pages are produced in vivid colourful printings. The main themes of Thai ghosts in modern media pertain to vengeance and folk beliefs within a Buddhist moral didactic framework: good deeds beget good results, while bad deeds beget bad results.

Belief in supernatural phenomena is a natural response by which human communities have sought to explain natural phenomena. The indigenous cultures of Southeast Asia with their animist beliefs strongly affirmed supernatural folk beliefs and spirit worship was the norm in Thailand before the arrival of Buddhism in 236 BCE (Dhammathai.org, n.d.). Thai society represents a multicultural blend between an official and normative strand of Theravada Buddhism and numerous animistic folk beliefs and practices from below. While the realms of Buddhism and animism generally maintain their own boundaries (expressed physically in spaces such as the temple and the graveyard, respectively), temple fairground narratives represent the intrusion of the latter into the sacred spaces of the former; this inversion of the natural order represents the core of the horror (while also manifesting the peaceful coexistence and syncretism between Buddhism and supernatural folk beliefs in Thai society and culture). Thai festivals, local performances and folk entertainment are closely related to the worship of spirits and angels. Such festivals declined during the Westernising reforms of King Mongkut (r. 1851-1868), but many long-lost temple fairgrounds have been re-discovered in the modern renaissance of Thai culture. One of the best examples is the Wat Arun Festival Fair, which takes place at Wat Arun Ratchawararam ('Temple of Dawn'), the royal temple located in the area between two royal palaces. This royal fair is the scene of definitive and iconic traditional performances, such as *Khon* (masked dance drama) as well as contributions from artists from Vietnam, China and India. Typically, Thai temple fairgrounds are embellished with colourful decoration under neon light, accompanied with very loud music.

Temple fairgrounds mix esoteric Buddhist doctrines, folk beliefs and magical ideas found particularly in the rural parts of Thailand, and they are one of the most popular pastimes for rural communities' recreation and entertainment. Even though the temple is a sacred area for Buddhist folklore, supernatural folk beliefs considered superstitious in Theravada Buddhism find a space in Buddhist temples. On entering Thai temples, one finds spirit houses inside the sacred area called *San Phra Phum*, small buildings in which spirits live to protect houses for human habitation. Therefore, a spirit house in a temple means a shrine to the protective spirit of the temple. Spirit houses are found in the Southeast Asian countries of Thailand, Myanmar, Cambodia and Laos. Ceremonial offerings of food and incense to

the spirits of these houses are believed to invoke the protection of the spirits in Southeast Asian cultures, and disgruntled spirits are a staple of folk tales.

Initially, this research was aiming to debunk illusions that depend on irrational superstitious beliefs reflected in Thai temple fairground imagery. The Thai belief system comprises intertwined elements of Buddhism and animism (Walliphodom, 1970; Sivaraksa, 1999), both of which are predicated on the ontological belief in supernatural power. For centuries Thailand has made remarkable progress in technological development, moving away from its traditionally agricultural roots to a more developed country, but magical thinking continues to permeate all levels of Thai society. Fairground shows are a good example to illustrate that Thai society is a culture of supernatural folk beliefs. One popular temple fairground show is *Thao Hua Kor Lor* ('the living head'), showing a man's head on a platter on a four-legged table (Lamb, 1976). This optical illusion tricks the eye to perceive body-distorting exhibits; the showman puts his head through a hole in the table, while mirrors on the side of the table reflect the pattern of the floor tiles and the walls, producing the illusion that his body is missing. The table has three visible legs with, presumably, the rear fourth leg concealed by the front one, while the two concealed mirrored panels are fixed by slots along the three front legs (Techniquet, 2011). Many shows have used this device as a basic kind of trick for their shows.

Magic tricks and fairground shows illustrate the enduring appeal of supernatural folk beliefs in Thai society, despite many popular exhibits having been debunked. One well-known example of this is the case of the mysterious Naga fireballs, also known as *Bung Fai Paya Nak* that appear over the Mekong River in northeast Thailand. At the end of a Buddhist fasting day the fireballs are alleged to naturally rise from the water into the night sky. Recently, technological analysis proved that the fireballs are just red flares fired high into the sky from across the river in Laos. Initially, this thesis aimed to use scientific methods and analysis to debunk fraudulent illusions playing on supernatural folk beliefs, and as a result provide explanation for the mysterious fairground shows, but it was subsequently reoriented to address the research gap of a lack of a wider interdisciplinary analysis integrating ghost literature and Thai popular culture, Thai traditional and contemporary art, with new and emerging technologies within the field of multimedia art.

I will look at other contemporary Thai artists influenced by popular culture in their practices, and how they responded to the imagery of ghosts and fairground art culture. In fact, ghost themes have been reinterpreted in innumerable formats and permutations, and remain fascinating and meaningful for many people. The few leading Thai artists who gained international acclaim include Surasi Kusolwong, Kamin Lertchaipraert and Rirkrit Tiravanija who created modern art with digital media, video, text, and installation arts that are made from objects from daily life. Surasi Kusolwong's large-scale installation *Golden Ghost (The Future Belongs to Ghosts)*, 2011 focussed on consumerism, and visitors to the installation entered into the vast field of industrial waste cotton to search for gold necklaces. People can touch and participate with artworks in the way that normally never happens in exhibition spaces. Another of Kusolwong's exhibition that gained him attention is *£1 market* – the social systems exhibition in a given space that consisted of hundreds of imported goods from Bangkok that are sourced from the marketplace and fairground where a vast array of these items are stacked and displayed in a chaotic, untidy way, thus resembling walking into a fairground. The *Ghost Nowhere* exhibition in 2013 by the Thai Art Initiative in London gave a new interpretation of the idea of the ghost in the contemporary world by raising questions based on the context of “present time” and “place” between cross-cultural differences.

This chapter also discusses Thai cultures through historical perspective and present day imagery from Thai traditional art and mural painting alongside temples that combine folklore and religious items. The imagery perception of Thai traditional art is heavily idealistic, while realistic art is rooted in empiricism and ‘realistic’ perceptions. According to Thai traditional art, scenery and human figures are always portrayed in two dimensions, with emotionless (or serene) faces, bold and darker body outlines, no muscle, no light and shadow. Thai traditional art concepts are very strict; the painting cannot identify virtual time, day or night. Architectural scenery is just symbolic rather than relevant to human scale, expressing the ideal of the home, regardless of practicalities. This was the nature of Thai art by the early modern period, before the growing relationship with Western countries and the incursion of their culture.

The first official contact between Thailand and Western countries was the British East India Company liner *The Globe* in 1612, bearing letters of introduction from King James I

of England to the King of 'Siam'. Siam sent royal ambassadors to the Court of Charles II in 1684. However, the first truly important political relationship between the UK and Siam was the 'Treaty of Friendship and Commerce between the British Empire and the Kingdom of Siam' (the 'Bowring Treaty') during the reign of King Mongkut in the 19th century. Thai traditional painting was subsequently Westernised and gradually changed under a deliberate Westernising ('modernising') drive, and traditional murals painting scenes gradually disappeared as a living and vibrant art form.

Khrua In Khong, a celebrated artist and the pioneer of the Westernised school of Thai painting, attempted to blend Western styles with Thai traditional concepts, thus he was distinguished from other contemporary artists at that time. Khrua In Khong was considered as a progressive artist who adopted linear perspective painting with the naturalistic impressions of height, width, depth and position in relation to each other when viewed from a particular point. This quantification corresponded with the advent of empirical science among the Thai elite, revolutionising the way they saw the world and challenging or reforming the way they understood Buddhism, particularly during the reign of King Chulalongkorn (r. 1853-1910), during which the Thai government hired many Western architects, artists, engineers, and academicians to serve the royal court and government services.

However, while most Thai artists abandoned the aspects of traditional cosmology, but the concepts of divinity and supernatural power continued to be affirmed by the Thai population and are reflected in all aspects of life. Nevertheless, Thai traditional idealistic art was gradually orientated to a more realistic style that implicitly acknowledged the new empirical perceptions and worldview. Thai artists initially experimented with traditional painting in Western techniques: light and shadow, perspective, and the virtual dimensions of architecture where painting can be identified with virtual time. The new concept of reality was subsequently developed and posited in Thai 'realistic art'. Thai temple fairground also changed to mirror the new orientation of Thai society, as recalled by Her Serene Highness Princess Poon Pismai Diskul (1896-1990), who described the making of Wat Benjamaborpiti (Marble Temple) in her journal, published in 1955:

In my childhood, one of the joyful events was the annual winter fair held at the temple to earn money for the unfinished works. In those days, the event was called Ngan Wat, which means ‘fairground’. The booths were set up there and were hosted by the King, officials, ladies of the court, bureaucrats, and foreign businessmen who owned the large department stores in Siam. The fairground was so immense and surrounded by various entertainments, such as *Khon Chak Rok* (Thai classical masked drama on strings), labyrinth, fishing, and amusement booths with mechanical playthings. There was a boat without rowing for one passenger, which would float into and come out of the cave by a stream.

In addition, there were photo booths that aroused astonishment among the Thais. While early photographic cameras had been introduced to Thailand by Jean-Baptiste Pallegoix (1805-1862), a missionary (the ‘Vicar Apostolic of Eastern Siam’), photography was initially limited to the royal court and senior nobility due to the prohibitive cost of equipment. Furthermore, there was a widespread belief that taking photographs shortened one’s lifespan. The first public photo exhibition was not held until 1904, at the annual temple fairground event held at Wat Benjamaborpit Temple. The exhibition included paper photography and Taxiphote (an instrument designed for viewing, classifying, storing, and projecting stereoscopic transparencies made with stereoscopic camera) (Judge, 1935).

Today, there are a small number of fairground business owners who provide haunted houses and other amusement park shows. Smaller fairgrounds are adapting to survive, with most shows being available for big fairground events only. The website of Nganwat.co., a fairground provider, specified that the making of a haunted house requires area 6x8 m and 15 amp electrical service panel, while the Hunsan-festival.co. described that the maximum audience per show is 20 persons. The ticket price is 40 pence each. The duration of making the house is flexible which can be divided into 3 levels:

- Urgent construction = 1.30 hours
- Standard construction = 3 hours
- Delayed construction = 5 hours (depends on weather and other factors)

It can be ascertained from these figures that the haunted house attraction requires high investment and an element of risk not conventionally faced in the entertainment industry. Additionally, it also requires a high level of skills and creativity. Stand-alone haunted houses with high technology are often centralised in Bangkok (the capital city of Thailand). The most popular haunted houses in Thailand in order of popularity (and, correspondingly, their degree of ‘horror’) are:

1. Ripley Haunted Adventure (Pattaya), regarded as the most horror-filled haunted house is Thailand, complete with light and sound techniques, scary scenes, costume, ghost models, and performance by ghost actors.
2. Mansion 7 (Bangkok)
3. The Tower of 13 Rooms (Palio, Nakorn Ratchasima Province)
4. The Bloody Hospital (Bangkok)
5. The American’s Best Haunted House (Santorini Park, Phetchaburi Province)
6. The Big Double Shock (Siam Park City, Bangkok)
7. The Haunted Castle (Dream World, Bangkok)
8. The Dark World (Mimosa Pattaya, Chonburi province)

Unfortunately, some of these businesses have been permanently closed in recent years as the result of financial problems. Mr. Somporn Naksuetrong, the general manager of Ripley Haunted Adventure in Pattaya, revealed that the reasons why the Ripley Haunted house has gained high popularity is because of the expectation of fear that the audience want to experience. The haunted house uses various sensations to instil that fear, including water, ropes and darkness. However, the eight haunted houses require a high investment to achieve realism and attract audience attention. The average entrance fee of about £6-8 pounds, which is very expensive considering the minimum wage in Thailand is approximately £6 per day.

The haunted house is a symbol of the temple fair and the two cannot be separated from each other. It would be an extreme loss to Thai culture if the haunted house were to disappear. In October 2012, *Kid Kam Mek* (‘Beyond Imaginary Thinking’), a documentary television programme, aired the episode ‘Haunted House’ that aimed to revive the horror of the haunted house in the fairground (Adolfzaza, 2012). The programme invited

renowned artists from two major institutions – the Pohchang Academy of Arts and Silpakorn University – to create a haunted house with a limited budget for each team of £200. Each team consisted of four students from various faculties, e.g. fine art, decorative arts, architecture and graphic design. Finally, the completed works were to be shown at the annual Golden Mountain Festival, with proceeds being donated to the maintenance of the temple.

In the past, Thai haunted house often have a repetitive pattern like the Ogress House, the ‘filth-eating spirit’, or *Mae Nak Phra Khanong*. Thai people have become familiar with these ghosts who cannot frighten nor attract people or the new generation, hence both teams tried to create the haunted house in a contemporary fashion to create a new fear. The Pohchang team designed the abandoned hospital where most people are reminded of ghost spirits and death. From the entrance, the labyrinth of corridors is approaching to a series of rooms, such as the mortuary and labour room, where ghost spirits await visitors, including a wheelchair ghost, *Phi Tai Tang Klom* (‘maternal-death ghost’), psychosis ghost and an embalmed baby in a jar. The ghosts were made from rubber and foam, while forensic photographic techniques were applied before moulding for the best results. Afterward, red colour was used to represent blood, while the same chemicals as those used in hospitals were used to simulate the olfactory characteristics of hospitals.

The other team constructed the haunted house inspired from abandoned house scenes. Each space was divided into a number of rooms where the spirits of the ex-owners still exist: a musician, husband and wife, a weaver, a Thai folk dancer. Once visitors arrived, the ghost of a landlady who haunted the place was the guide leader. The main materials in the construction of the house were cardboard, old furniture and costumes bought from one of the biggest second-hand markets in Thailand. Small space planning was used by both teams. Moreover, the tapering corridor was reminiscent of a cheap rental house. The two houses need good actors to play in the project as well, with realistic makeovers for actors playing ghosts necessitating skilled make-up artists. During the real performance, scary eyes are highly important to cause fear; hence, make-up is most focused on actors’ eyes.

The competition was divided into two rounds. The first contest was held at the actual venue Wat Saket Temple (Golden Mount). The judge was Mr. Amnuay Boonsaner, an

expert who pioneered the haunted house business for more than 30 years. Before the competition, both teams have to perform a forgiveness sacred ceremony to the ghost spirits; it was necessary to declare to the ghosts that making the houses is just a game without any intention to disrespect them at all. This ontological affirmation of the existence of ghosts, while a genuine prerequisite of the spiritual beliefs and practices of participants, also serves to emphasise the realism of ghosts and the supernatural for most Thais.

When the first round competition was accomplished, the referee and audience gave recommendations. After a short break, the second round was held in the next two days. At this time, the houses could be modified. The completed works were exhibited during the actual Golden Mountain Temple Fair. The committees for this round were Mr. Kapol Thongplub, a notable ghost expert, Mr. Watcharaphol Fhuekjaidee, a haunted house-raider, and Mr. Amnuay Boonsaner, with audience participation. Tickets cost 80p for adults and 40p for children. The tickets were also used as ballot. If both houses were satisfied enough, the tickets could be separated into two votes. Finally, after 42 rounds of four-hour shows, 170 attendances and £151 had been gained according to tickets sold. The Pohchang Academy of Arts won, with scores 98 to 72, receiving a prize of £600 in cash, while the prize runner-up received £300. Once again, arts are being used to reinterpret traditional fairground arts.

During 4-5 years, many haunted house shows have been missing from temple fairs while others have been moved to launch their new houses in large department stores or amusement parks. The ticket price for fairground show in a department store could be 30 times more expensive than fairground held in rural areas. In the big cities, most middle class workers who have more purchasing power live in a large air-conditioned buildings from dawn to dusk, completely cut off from the outside world. If there is no window to see the world outside, they are willing to spend their money in the mall until the closing time. The result of this is that the businesses have gained some popularity with an increase in interest and excitement as the results of using high technology for their fantastic shows.

Recently, the Golden Mountain Temple Festival Fair held in 2016 included 15-20 haunted house shows around their event. Certainly, this business show is extremely competitive, thus advertising is necessary to achieve attraction from an audience. Photo billboards and

colourful banners were installed around the house displaying a mermaid and a mutant two-headed baby with three hands and three legs. Undoubtedly, the highlight is the filth-eating spirit show in a dark room, where audiences expect to experience both joy and horror. Sounds from spokespersons inviting visitors to see the freak-shows by referring to Buddhism karmic law: “Do good things and good things will happen to you. Do bad things and bad things will happen to you. If you kill animals, the next life you could be born with disabilities”.

Besides entertainment and enjoyment, haunted houses are used for didactic religious purposes to teach morality. Most fairground shows deploy a common style, which requires something fresh and innovative in approach to attract new audiences. Miss Kanjana Panhuam, an owner of haunted house, explained that in the near future she has to create some new shows to draw attraction from audiences. Traditionally, Thai traditional art could be divided into two main strands (https://social.mwit.ac.th/files/58_1_doc_a30105_5.pdf):

- **Royal art** – this is considered fine art and high culture, made with exquisitely beautiful and accurate skills. Thai royal art is imbued with orthodox Theravada Buddhism, the normative national art.
- **Folk art** – artisans involved with the everyday Thai way of life produce work for local people for everyday living purposes. Folk art has strong influences and social values and religious beliefs manifesting the local environments and cultures of regional areas.

Thai fairground art is normally considered to be vulgar entertainment and even fails to achieve the status of local folk art. Indeed, while many Thai fairground artists are illustrious practitioners, they do not even consider themselves artists; most of them are artisans without formal training or qualifications of any kind. Generally, fairground art practitioners are self-taught painters who can effect increasing sophistication to a high degree of complexity. Characteristics of fairground art include the artist’s imagination associated with a childlike and innocent quality. Besides the ghost stories Thai fairground art paintings often depicted the artist’s experience with symbols from childhood memories: toys, pets, daily life events, family, festivals and landscape sceneries (Walker, 1992).

Fairground practitioners create their arts with the same passion as the well-trained artist, but without the formal knowledge of methods (Encyclopaedia Britannica, 2013). Thai fairground artists have no relation with art institutions, thus their creations are effected by lateral thinking. The qualities of such paintings reflects a complicated fantasy world. Fairground art is created with wonderful mixtures of contrast and high intensity of colours. The use of bright colours is to create a response in young children. Colour classifying is a basic ability for children who experience learning about things with different colours, enabling them to identify similarities, differences and interrelationships between things. This classifying is based on the child's ability to compare properties of each object, regardless of the colour or intensity, and to differentiate objects from colours.

Children are generally more imaginative than adults for numerous physiological, psychological and cultural reasons (Nimsamer, 1996). Imagination plays an important role for children and dreams are important components of the human imagination and culture. Children are generally acknowledged to have a superior imaginative capacity and the separation between the dream world and reality is less stark for them in their joyful affirmation of life than it is for jaded adults. Adults continue to yearn for the certainties of belief and the sensory thrills they experienced as children. They thus seek to fulfil their dreams, which are the index of powerful subconscious yearnings and complexes for adults, sometimes dreaming with open eyes (day dreams). Artists are (more than most people) daydreamers, who love to do some strange things as well. They create their own realm by dreaming, but do not seek happiness alone. Artists make their dreams come true by forms of arts and let everyone share this happiness. No matter what fancy of dream is, artists express their dreams by tangible forms of arts for everyone. On dreams as wish fulfilment, Freud (2010) states that:

If the dream, as this theory defines it, represents a fulfilled wish, what is the cause of the striking and unfamiliar manner in which this fulfilment is expressed? What transformation has occurred in our dream-thoughts before the manifest dream, as we remember it on waking, shapes itself out of them?

Artists' forms were pushed by 'latent dreams' transformed and distorted by dream work. Dream content is revealed by symbolic interpretation that artists use to express their imagination. The fairground is a place where the imaginative world of children and fairground art practitioners converge, with the catalyst of metaphysical affirmations of the supernatural in temple fairgrounds during Buddhist holy days and rites of passage (e.g. birth, weddings and funerals). In 2016, the National Office of Buddhism (2018) revealed that there are more than 40,000 Buddhist temples in Thailand, while data from the Department of Provincial Administration (2015) shows that the total amount of villages in Thailand is 75,032. This data implies that every two villages in Thailand have one temple at least. Temples have played many important roles in Thai society for over 700 years since the Sukhothai Kingdom, and they are essential to the socio-economic life of communities. This is most obvious in fulfilling religious needs, such as devotional practices and coordinating charity, as well as facilitating socializing and recreational activities. Fairground events are a counterpart to Buddhist holy days and temple activities. Thai people go to the local Buddhist temple fairground to buy foods, play game booths and engage in entertainments that surround the temple area.

Buddhist holy days are auspicious occasions when each temple holds various events. There are many special or holy days held throughout the year by Buddhist communities, but the six major festivals are:

1. *Uposatha*, the full-moon day, the new-moon day, and the two days of the first and last moon quarters of every months
2. *Makha Bucha*, the full moon of the third lunar month, usually occurs in February.
3. *Vesakha*, the enlightenment of the Buddha, which is celebrated on the first full moon day in May.
4. *Asalha Puja*, usually occurs in July to celebrate the Buddha's first teaching on the full moon day of the 8th lunar month.
5. *Kathina*, usually held in October or November at the end of *Vassa*, the three-month rainy season retreat.
6. *Sanghamitta* is celebrated on the full moon day in December.

The other special days for the Buddhist community include *Songkran* (the Thai new year during the middle of April) and *Loy Krathong*, the ‘Festival of Floating Bowls’, which is usually held in November or December. Buddhist festivals are always joyful occasions, when Thai people go to the nearest local temple to perform devotions and listen to a moral sermon (*dharma*). Buddhist rituals are held in evening with chanting of the Buddha’s teachings and meditation, alongside with temple fairground in the sacred areas. Thai traditions can be divided into two main categories, religious and social traditions and personal traditions, as discussed below.

2.1.1 Religious and social traditions

Most Thai traditions originate in religious beliefs, with meaningful and ritual customs imbuing the natural/ empirical world with spiritual meaning. For instance, *Songkran* is held on the 13th April every solar year, reflecting the orbit of the earth around the sun, while *Loy Krathong* and other festivals follow the lunar calendar. Indeed, most monthly religious activities depend on the moon. Four times a month – on the new moon, the full moon, and the days in the middle – Buddhist disciples may gather at monasteries to learn and worship. It is obviously seen that the orbits of the sun and the moon and the motion of the stars in the night sky provide a strong influence on religious and spiritual beliefs and practices.

2.1.2 Personal traditions

People’s personal traditions represent their attempt to imbue their personal activities (e.g. births, marriages, death, business, work etc.) with spiritual significance by which they seek to promote desirable outcomes and ward off harm. Fortune tellers are commonly hired to advise on the most propitious dates and times for major events, such as calculating from the zodiac based on the exact birth time of clients. The Thai Zodiac signs are analogous to the Chinese, as both follow the annual lunar year and 12-year lunar cycle, with animal signs including the Rat, Ox, Tiger, Rabbit, Dragon, Snake, Horse, Ram, Monkey, Rooster, Dog, and Pig. The actual zodiac signs can vary slightly, for example, the dragon sign in the Thai zodiac is replaced by a “large snake” while the elephant in the Northern Thailand may be used in place of the Chinese sign for the pig.

Thai people have a strong belief that the zodiac signs are the immutable codes embedded in the universe that determine their fate. Their personal traditional events, including births,

weddings and deaths, are under the influences of the constellations, within the 12-year lunar cycle's 'Golden Year', such as the Golden Dragon Year, during which wedding ceremonies or births are considered particularly auspicious. The following are particular personal traditions:

1. **Birth customs** – Thais traditionally believe that the exact time of birth is meaningful for one's future life where his or her fortune could be predicted since the child was born. Therefore, the rites for pregnant women until the deliverance safely to motherhood are essential (including good karma by not killing any insects etc.), and the hair present at birth for a baby is considered indicative of lifelong prospects.
2. **Ordination customs** – Thais believe that being ordained as a Buddhist monk is a source of blessing for individuals and families, and a way to show gratitude to parents. Traditionally, every Thai male aged 20 and up is expected to be ordained as a monk for a period. The head is shaved before ordination, and special ordination robes are worn.
3. **Marriage customs and rites** – After his term of ordination as a monk a man is considered fit for marriage. After making a marriage proposal, a couple traditionally becomes engaged. To ensure a happy and prosperous marriage, the couple should marry at an auspicious time and date. This is not taken lightly and astrologers may be consulted to see if the stars are compatible.
4. **Funeral customs and rites** – according to Buddhist beliefs, the human body is composed of the four elements that correspond to particular parts of the organism:
 - Earth (flesh, skin and bones)
 - Water (blood, sweat and saliva)
 - Air (inhalation and exhalation, breathing)
 - Fire (the warmth of the human body)

Funeral rites must be calibrated to these elements, the individual, the seasons and the lunar cycle. Cremation on Buddhist holy days is considered extremely unlucky and is not allowed.

2.2 Western Cultures, Mythology and Supernatural Belief

Supernatural folk beliefs are metaphysical affirmations of an ontological reality different from the empirical world conventionally experienced by the senses. Thai academic discourse remains anchored in orientalist narratives of the 19th and early 20th centuries, berating such beliefs as superstitions, whereby “based on fear” the primordial “religious rituals and customs have been severely affecting people in different ways by wasting their time, money and even leading to the loss of their lives” (Sriram, 2013). However, within the West itself, there has been an enlightened appreciation of the deep-rooted nature of metaphysical beliefs in all world cultures, including Western culture, and the fact that humans are psychologically hard-wired for such beliefs, which is why they continue to endure and pervade even the most materially advanced society (Brennan, 2013).

Many Thais believe in magic spells or incantations, and spiritualism (the belief that the spirits of dead people can make contact with living humans) is common, via mediums called *Râang Song*. As in the West, tales of fraudulent mediums and trickery are common. Indeed, the concept of spiritualism in this form emerged during the 19th century in the West, with prominent Europeans such as Arthur Conan Doyle lending credence to the phenomenon (Brennan, 2013). This cultural movement – which is inherently opposed to traditional Western (i.e. Judaeo-Christian) religion emerged from the enlightenment doctrine of the value of science and reason, and by rejecting traditional doctrines and allowing the possibility for life after death, spiritualism sought pseudo-scientific credentials to persuade the public of its value. Formerly the belief in ghosts etc. and folk religion in general was considered ‘superstition’, defined in the *Cambridge English Dictionary* (2018) as ‘belief that is not based on human reason or scientific knowledge, but is connected with old ideas about magic’. The *Oxford Dictionary of Word Origins* traced the etymology of ‘superstition’ to ‘the Latin word *superstitio*’, which ‘comes from super- “over” and stare “to stand”’, thus it connotes ‘*standing over*’ something in amazement or awe.

The empirical positivist tradition that formed the basis for 19th century science led to metaphysical phenomena and spirituality being considered unknowable in mainstream science and thus unworthy of serious investigation, although serious scientists have always

been fascinated by psycho-social metaphysical phenomena, from Newton to Jung (Brennan, 2013). While most Westerners consider their beliefs to be grounded in reason and logic, irrational metaphysical beliefs continue to abound as a natural human response to the conditions of life, such as ‘knocking on wood’ to avert negative events or avoiding the number 13 (or indeed believing in ‘lucky’ numbers or horses etc.).

The belief in bad omens seems to be a universal feature, such as some cultures considering black cats crossing one’s path to be bad luck, or that a black cat jumping over a coffin imbues the soul in the corpse with another life (from the cat’s nine). Every society has their own cultural patterns, and the differences between cultures and religions should be respected. Most anthropologists believe that all cultures in the world are equally valid and should be respected. Thai temple fairground and funfairs are significantly different from their counterparts in the West due to their metaphysical foundation in the beliefs of Thai people, thus they are held in the environs of temples (i.e. holy or supernatural spaces) and timed according to auspicious or potent events.

2.3 The Western Media

Traditionally, the media comprise the means of communication including television, newspapers, radio and cinema etc. In the mid-1990s, the emergence of computers and the internet that translated analogue data into digital data, also known as ‘new media’. Today digital media refers to text, image, sound, video and animation that can be digitized into media files. After that, the digitized content can be transferred into digital electronic devices and computer networks, websites, TV, radio and printing media etc. The emergence of digital media can be traced back to the mid-1900s when media industry changed from analogue to digital media, particularly the invention of the television in the late 19th century.

According to Berger (1972), the meaning of art has changed since the first camera was invented: “Because of the camera, the painting now travels to the spectator rather than the spectator to the painting. In its travels, its meaning is diversified...” The rapid changes of digital technology in the early 21st century have transformed life more rapidly than ever before. Digital media exchange information in creative processes and were used to create digital art, which is more easily accessible than traditional mediums, and which can be

made to be more immersive and interactive. The presentation process of digital art requires computer software tools to create audio-visual files. The media application programs that enable one to edit and compose digital media file formats can be divided into three categories:

1. Digital Image (e.g. Adobe Photoshop, Adobe Illustrator etc.)
2. Digital Audio (Apple Garage Band, Adobe Audition etc.)
3. Digital Video (Adobe Premier Pro, After Effect, Movie Edit Pro, Apple Final Cut Pro etc.)

When watching digital media art, digital technology has the potential to create a more immersive and interactive experience between art and audience while the traditional art cannot. The communication between audience and art could be achieved by clicking at a computer mouse or electronic sensor whereby physical movement relays information to sensor equipment. Another advantage of digital art is that it is widely accessible, particularly site-specific installation art. Digital art is adaptable in any space.

Digital art can be transformed into text, images, sounds, animation and mix these elements in audio-visual files. Its ability to be modified fundamentally distinguishes digital art from the traditional arts. Digital art's creativity has a huge impact on social change. Our experience in art has evolved; we have developed new habits to see an artwork in digital form from internet technologies, including video arts, graphics and animations etc. Social networks now allow us to create and share anything on internet, since digital technologies play roles in various parts of the creative process, from planning through to production, post-production, and publishing to reach a larger digital audience. Audiences perceive art in a different way. Today, an audience is able to reach the digitized media art from social media, internet network or computer devices.

With the advent of television in the late 1960s and early 1970s, visual and audio media were most commonly used in video art. With the rapid changes of digital technology, many artists began to explore digital technology as a new way of expression. In the early 1960s, Nam June Paik, a Korean-American artist, worked with a variety of media, particularly video art, creating his works with portable camera, a commercially available technology, and displaying them to the public at the *Cafe au Go Go*, a nightclub located in the heart of

New York City. With sculptural aspects, video is utilized as the material in video installation art. Sometimes the video sculpture art has more effects that are spectacular and interacts with audience as a result of advance computer technology. Oursler et al. (2000) demonstrated the superior performance of digital technology in enabling high-resolution projection mapping.

Tony Oursler is one of the leading multimedia and installation artists. One of his well-known works is *The Influence Machine* where he created an immersive installation art with light and sound inspired from the history of human telecommunication, from telegraph, radio, television and the internet. His works present outdoor *son-et-lumiere* ('sound and light show'), a form of night-time entertainment usually presented in an outdoor location of historical importance, which is obviously similar to fairground entertainment in this respect. He maps large-scale ghostly figures onto architectural buildings, trees and clouds of smoke. His projects could be traced back to the historical history of virtual image production, particularly the invention of television (Oursler, 2000). Another unique work is projecting videos onto three-dimensional objects, such as a single or group of spheres that placed in a room with other objects.

The video projections included the projection of eye movement or human feeling on faces onto spheres of varying dimensions. The 2014 installation art *Obscura* consists of projections of eyes onto a group of spheres exhibited at the Hans Mayer Gallery in Dusseldorf, Germany. These 3D objects were brought to life by the ghostly eyes projection onto these sphere shape objects, accompanied with a horror soundtrack from a far distance. Oursler realized that the anatomy of the eye is the embodiment of the human optical system and the *camera obscura* archetype. Oursler's installation works shows that how the advance of immersive technology systems allow audiences to see narrative movement images.

3 Methodology

3.1 Looking at Thai and Western Cultures

This study explores aspects of Thai cultures and belief systems within the context of the dissemination of Western culture and digital multimedia in Thailand. Thai society is a multicultural society, rich in ethnicity, religious belief and diversities, included by numerous sources, including Indian and Chinese culture, and cultures from the other countries in Southeast Asia. Thailand is officially a Theravada Buddhist country, and Buddhism forms the main historical matrix within which Thais perceive life and art, and within which the national political system and culture was formed. According to the National Statistical Office (2014), the survey of social and cultural conditions revealed that Thai people belong to Buddhism (94.6%), Islam (4.6%), Christianity (0.7%), other religions and atheism (0.1%). As such, Buddhist teachings and philosophy also play important roles in the formation of Thai culture, which is also richly imbued with ancillary and inter-related folk beliefs.

Although Thailand was fortunate in maintaining a much higher degree of independence and avoiding most of the colonial domination that characterised Southeast Asia during the 19th and 20th centuries, the historical relationship between Thailand and the West has strongly influenced Thai society in many aspects, particularly culture and religious beliefs. Some Western cultural themes and many technologies have been adapted to Thai traditions or used directly. The official relationship between Thailand and Western countries can be traced back to the early Ayutthaya Kingdom (1351-1767), when Christian missionary activity began (as in the rest of Asia at the time). As a strange novelty, Western culture was initially disseminated in the Royal Court of Siam, which like other countries (e.g. Japan) increasingly adopted the education, military, and architectural knowledge from Western civilization during the 19th century in order to avert colonial domination.

In the Rattanakosin era, from the reign of the King Rama III (1824-1851) onwards, Thai society adopted Western style prototypes which profoundly changed the orientation of Thai society until the present day. Elites and nobles studied English and had access to the discourse of Western superiority. King Mongkut (1851-1868) hired foreigners to teach English and Western knowledge in the Royal Court, which began tentatively promoting

ideas such as democracy alongside technical development. In addition, Western art also influenced Thai traditional art, provoking the new aesthetics of contemporary art in Thailand since then. This study examines Western cultural tendencies in Thai traditional art, and how this affects the creativity of fairground art in Thailand. The information gathered from relevant researches and theories has been integrated into fieldwork information.

3.2 Experimenting with Digital Media

The early stage of my experiment is to examine the aesthetics from historical *camera obscura* techniques, closely associated with early fairground shows. I used a standard digital camera with pinhole body cap and various type of Holga toy lens. These simple toy lenses can turn a digital camera into a pinhole camera, a closed box without a lens but with a tiny aperture. The “dark chamber” of any pinhole camera provides very blurry aesthetics that were popular in the initial incursion of Western technology and culture. A huge collection of pinhole photographs was shot from various temple fairground events and funfairs held in Thailand and the UK. This collection of photographs formed the raw materials for my experiments in the next stages. The appendices (A-D) present the process and the art works discussed in this section in more detail.

Camera obscura is also referred to as a pinhole image. A device based on the natural phenomena occurs when an image is projected through a small hole in that screen as a reversed image. *Camera obscura* is essentially a technique that predates the photographic camera but which is the ultimate forbear of the modern digital camera. It is interesting to consider how the advancement of technology has impacted and transformed the ‘limits of the human sensorium, from *camera obscura* to stereoscope, and advance digital camera in the modern today’ (Kockelkoren, 2002). Stereoscope or 3D viewers are a further development from *camera obscura*, requiring two photographs taken at slightly different angles to adjust to both eyes and create an illusion of depth (Kumar, Chaturvedi and Merhotra, 2013).

Stereoscopy was an immensely popular medium in 19th-century entertainment shows (Richardson, 2013). The new stereoscopes were produced with coin-operated slot machines and became very popular at that time, especially machines providing erotic

pictures or slide card comics. Consequently, the concept of virtual reality has beginnings that precede the time in which the term was coined and formalised. In this detailed history of virtual reality, I will look at how technology has evolved and how key pioneers paved the way for the emergence of modern virtual reality technology. The first *stereoscopic* viewers were invented and introduced to public in 1838 by Charles Wheatstone, an English inventor in the Victorian era. In the next two decades, Morton Heilig developed the first head-mounted display (HMD) so called ‘Telesphere Mask’. Shortly after the VR head-mounted display was implemented with stereoscopic 3D with stereo sound.

Digital technology now continues this tradition of virtual reality, and the representation of ghosts and spirits remains a popular application, such as the horror ghost video game played on the ‘Oculus Rift’ virtual machine (a virtual reality head-mounted display developed by Oculus VR), jointly developed by students from Interactive and Game Design Program under the School of Digital Media at Sripatum University. The thriller VDO game is called ‘Hospital Haunted BE LOST’ was inspired by a real murder in 2008. In this game, players are confined to an abandoned hospital where the atmosphere is extremely horrible from the sounds of geckos and the appearance of ghosts etc. Many noted game experts reviewed the game favourably in terms of its horror atmosphere, with fully visualised images and sound. The game was launched in 2015 with free download, and gained popularity among gamers worldwide.

Back to the 16th century, visual riddles and anamorphic techniques became popular subjects in Western art. Many artists exploited the distorted image technique as a tool to entertain viewers, and luring them with sensory perception. To achieve the optical illusion or change of forms required a practical understanding of scientific skills. *The Ambassadors* (1533) by Hans Holbein contains a distorted skull in the centre of the painting, a *memento mori* illustrating that all human activity is predicated on mortality. The earliest attempts attributable to virtual reality were investigations with panoramic paintings as a mean of creating illusion (*trompe l'œil*), with murals with a wide view surrounding the observer. *The Battle of Borodino*, a 19th-century panoramic painting by Franz Roubaud (1856-1924), depicts a cavalry battle of the Napoleonic invasion of Russia. Today the painting is installed on the Poklonnaya Hill in Moscow, enabling viewers to simulate witnessing the historical event. Digital technologies have been made for the creation of sculpture objects

until the present day. In 2000, *Skulls* (a three-dimensional sculpture) by Robert Lazzarini (b. 1935-) was made by stereography machines. The distorted skull was drawn by 3D AutoCAD files as a homage to Holbein's anamorphic skull. It is an undeniable fact that this sculpture could not be achieved without the support of digital technologies.

I gathered information by visiting major fairgrounds in UK as part of this research, as well as the National Fairground Archive at the University of Sheffield, and the Fairground Heritage Centre in Devon. In Thailand I conducted an in-depth investigation of the annual Thailand Golden Mountain Temple Festival Fair at Wat Saket Temple, and Wat Arun Festival Fair, as well as other local fairgrounds. The collected data comprises research material as a resource to create the animated paintings with Pepper's Ghost and related optical illusion techniques. At the end of 2016 I collected important information from various temple fairground festivals held in Thailand, including interviewing some fairground business owners and others, including a leading scientist who traffics in outspoken opposition to pseudoscience and what he considers superstitious beliefs, and Mr. Kapol Thongplub, a leading ghost hunter who hosts a very popular nightly radio programme. The interviews are an important source of information for my art practice-based research.

My early paintings were inspired from Thai haunted house show that was both scary and fun, with hidden mythical Thai ghosts or *Phi*. The panoramic depicted scenes were inspired by a haunted house show, which is considered an iconic show of Thai temple fairgrounds. Thai haunted house shows are represented in both static and travelling fairs. The concept of haunted houses is an ancient one in world cultures, premised on the occupation of buildings by non-human creatures, including evil and malevolent spirits, which occur organically in human communities (Brennan, 2013); the fairground haunted house is a simulacrum of this whereby artistic representations essentially aim to evoke a sense of horror and dread. I tried to use purely painting techniques to create ghost-like effects.

The second experiment was creating truly transparent ghost effects in my paintings using an illusion technique inspired by the principles of Pepper's Ghost. The completed paintings is entitled *Haunted House in the Box*, a panoramic painting with anamorphic illusions, and Pepper's Ghost videos displayed with the four holographic animations in the four tiny

boxes. This painting recalls my childhood fantasy about the fairground. The making of the four moving animations in the four tiny boxes began with two diorama models inspired from Thai temple fairground show themes, including the Snake-Wife, the Vase-Woman, the Ghost Eyes, the Haunted House, and the Two-Headed Man. The haunted house models were made from black PVC foam board (matte finish). Foam board is a material that was compressed and then coated with a thin PVC sheet. It is a strong material but lightweight. The foam is a perfect material for my model making purpose, easily cut to any shape or size. The size of the diorama models are 0.30 x 0.45 x 0.30 cm. and 0.40 x 0.65 x 0.30 (w x d x h) respectively. They include two mirror panels placed at an angle of 45 degrees from the bottom. The model is complimented with two bike blinker lights, bright and pastel papers, 'found objects' collected from various fairground stalls and toyshops. When the models were finished the set featured various cut-outs of Thai ghosts standing in the middle are, then the red and white bike blinker lights were placed behind the two mirrors. Next, I started the photo shooting with a Nikon D550 SLR camera. The shooting was performed under light-controlled conditions, which facilitated the task.

I placed the two spotlights at 45 degree angles away from the camera to the side where the model was placed on the table. The lens is set at two fixed-focal lengths: 50 mm and 85 mm. The uni-focal lenses have quite large apertures that provide sharper images. The series of freeze-frame photos were shot with the continuous 10-shooting mode and various speed shutters (1/300 – 1/1000) and F-stop. The collection of freeze-frame photos will be collected for making graphic animations in the next steps.

The painting also examined the use of panoramic scenes and anamorphic images painted on the large front boards of haunted house attractions, where audiences can see the images from a panoramic viewpoint. The painting also conceals three distorted images that appeared in natural form when viewed at a raking angle, hiding four animation clips in the four tiny rectangular boxes. The holographic images in the boxes are installed at different heights for all audience ages. Approaching the hidden moving images requires smartphones, like purchasing a ticket to enter a fairground show. Traditionally, haunted house paintings were made from reusable materials: plywood, scrap metal sheet, bolt and screw. The painting is mixed with 'found objects' from the fairground itself, including

toys, acrylic nails, cloth clips, pacifiers and toy eyes, painted with bright and contrasting colours in the style of fairground art.

The next series of my multiple-layers paintings are an investigation with projection mapping technique to turn the static surface paintings into animated display paintings. The completed paintings are entitled *Supernatural Power* and *The Haunted House II*. These multi-layered paintings are painted with acrylic and oil paints respectively. The accomplished paintings were prepared for the examination with digital technology devices and mapping projection technique to create a three-dimension like effect.

The final investigation uses the completed paintings from my early practices: *Moon Diamond Cats*, *Feline Camouflage* and *The Fairground Lover*, to transform into both animated graphics and mapping projection paintings. This particular process consists of converting these flat 2D paintings on canvases into graphic versions using advanced imaging and photo editing software (Adobe Photoshop, Adobe Illustrator, Adobe After Effect and Premiere Pro). First, the completed video animations are mapped onto the paintings themselves, changing forms and characters and consequently transforming from immobilized flat paintings into truly animated paintings. Second, the animated graphics are displayed with flatscreen television accompanied by sound and special effects. These two artworks can be hung on gallery walls, exhibited in light-controlled rooms with projection mapping onto the paintings, displaying the animated graphic painting with high-definition flatscreen televisions.

3.3 Metaphysical Beliefs

3.3.1 Thai Beliefs

Supernatural folk beliefs affirm the agency of supernatural power in the natural (i.e. empirical) world, including magic powers, spells and witchcraft, fortune-telling and omens, all predicated on the fear of supernatural powers. Such beliefs explain natural phenomena that are otherwise difficult to understand, such as storms, rain and thunder etc. The belief in magical power provides security for human life and eliminates existential angst, albeit replacing it with the fear of the supernatural in many cases.

Buddhism affirms the existence of spiritual realities that may or may not be perceptible to the senses and positivist science; unlike mainstream Western culture, Buddhism is not perplexed by the need to verify such phenomena empirically, but it often considers folk beliefs in the supernatural to be superstitious. According to Chutindharo (1999), superstitious belief in Thai society is understood within the normative Buddhist ontology according to karmic principles, with the beliefs in white magic utilised beneficently for positive purposes, and black magic, which is the realm of malicious sorcery for evil and selfish purposes; the latter is naturally more germane to fairground entertainment.

3.3.2 Western and Buddhist Views of the Supernatural

Conventional analysis suggests that during the 18th century Enlightenment, Western culture underwent the process of *Entzauberung* ('disenchantment'), whereby the world was stripped of sacred associations and metaphysical values and reduced to materialism. Deism reduced the universe to a physical, material system of chemical elements and natural forces iterating immutable scientific laws; in this 'Newtonian' universe (although Newton himself was a passionate mystic), nature was ruthlessly ravished and exploited and the majority of humanity was subsequently rendered subject to colonial domination in a Darwinian struggle for the survival of the 'favoured races', which has led inexorably to the current environmental catastrophe (Nasr, 1995).

Within the positivist paradigm, which remains the default position of Western culture, supernatural power is explainable by the principles of science. Edward Tyler (1832-1917) surveyed the belief in spiritual beings in 'primitive' man and in *Primitive Culture* (1871) he explained that animistic belief is caused by scientific ignorance to explain events in human and natural phenomena far beyond the control of man. According to this view, 'primitive' people believed in a spiritual and a physical duality, and that body and spirit could be separated (e.g. in dreams or by death). This concept was developed by James Frazer in *The Golden Bough* (1890), which defines magic as a kind of science at an early stage of human evolution, before it turned into the earliest form of religious belief as supernatural power, gods and scientific knowledge.

Frazer (1890) believed that the principles of magic are based on the belief that any similar thing can be affected through the same object representing it. This principle is known as

‘sympathetic magic’. For example, according to Thai belief, *Wan Suk* (‘Friday’) has the same pronunciation as ‘happiness’ in Thai, therefore cremation on Friday is considered inauspicious. In magic, the Law of Sympathy could probably be categorised into two parts: homeopathic magic (the Law of Similarity), magic commonly used to cure a person or animal by imitating resemble things to produce similar effects to the magic used; and contagious magic (Law of Contact), based on the belief that material objects or persons once in contact continue to affect each other at a distance (Figure 1). Consequently a magician can destroy someone by stabbing at a portrait picture or a wooden doll containing a trace of that person (e.g. a lock of hair).

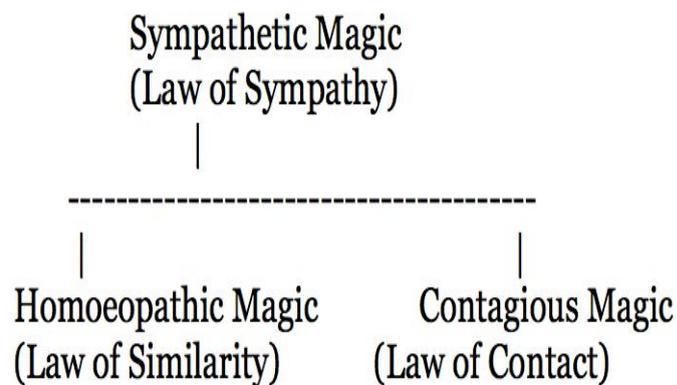


Figure 1: Sympathetic magic law

Frazer’s (1890) theory was based on pseudo-anthropological analysis, but it essentially represents Thai traditional beliefs in its division of magic into white and black magic. White magic includes amulets or talismans consecrated by a magician to attract good luck or avert evil, while black magic involves the invocation of evil spirits to harm others (e.g. to split up a husband and wife) by various practices, with love spells potentially falling somewhere between. Such practices, which might be considered ‘life hacks’ in modern parlance, are clearly predicated on the same ontology as Buddhism, but the latter is a sublime philosophical system based on escaping the snares of desire and suffering, while the former are manifestations of such desire and suffering. Consequently, Buddhism considers supernatural folk beliefs, particularly black magic, to be *Tiracchana Vijja* (literally ‘knowledge moving diagonally’) a bestial knowledge rooted in base desire, and occult abilities are considered inappropriate for Buddhists to practice or engage in (Bhikkhu, 1994). They are considered a kind of knowledge that interferes or disrupts the

path to nirvana, not *dhamma* (cosmic law and order as taught by the Buddha), which is vertical and straightforward knowledge.

3.4 Overview of Technology: From Pepper's Ghost to Mapping Projections and Holographic Images

Rapid technological changes in the 21st led contemporary artists and designers to explore the use of digital technology to create visual imagery. This study is focused particularly on how these technologies can be used within installation painting using projection mapping and how this relates to the historic precursor of holographic images, Pepper's Ghost. Pepper's Ghost's a 19th-century illusion technique that has been associated with art and entertainment since it was invented, while the hologram is the developed digital version which can create more realistic illusions. Today, the newest projection technology is projection mapping, which is widely used in the fields of art and design. Many worldwide commercial brands also use video projections for commercial purposes. The dynamic video can be projected on any building surface and can turn the static architecture into a virtual 3-D display screen used to attract audiences' attention.

3.4.1 Pepper's Ghost Optical Illusion Technique

The 'Pepper's Ghost' illusion was first invented in 1862, named after the inventor John Pepper (1821–1900). The illusion technique was commonly used in theatrical performances, amusement parks and museums. Pepper's Ghost techniques in the present day use a projector to project images onto reflective surface which is then reflected on to a transparent foil set at a 45 degree angle, thus creating transparent ghostly effects. The good example of the application of Pepper's Ghost 3D Hologram is the live performance of Hatsune Miku, a virtual singing-cartoon developed by a Japanese media company. She also performs 3D concerts worldwide with Pepper's Ghost illusions and graphic computer technology. Hatsune Miku is a singing voice synthesizer application, with 100,000 released songs produced by Vocaloid 2, the singing voice synthesizer developed by Yamaha.

In November 2013, the 'Ghost Nowhere' group exhibition by Thai artists in the Thai Art Initiative in London (TAIL) was displayed as part of the Southeast Asian Festival, which had its debut in London. They investigated and interpreted new meanings of ghosts and

spiritualist fears in the 21st century. Supaporn Sootsuwan, the chief curator, stated that the exhibition arose from a simple question: “Why did our fear of ghosts go when we moved to London?” The existence of Thai ghosts has disappeared in the place where the context is changed. It could be said that, the core concept of the exhibition was focused on the impacts of distance and fear relative to spiritualist beliefs. In London, ‘now’ and ‘here’ the ghosts should speak in English.

The cultural difference is a barrier that eliminated Thai ghosts from London as an international metropolis. Thai bilateral beliefs (e.g. black-white, right-wrong) were applied as a boundary beyond these beliefs. The concept of the Thai artists was presented in various media, including photography, illustration, sculpture, painting, installation mixed-media video art, performance, etc. The aim of this exhibition was to explore new attitudes towards ghosts. The artworks represented ghosts with new interpretation and new context in order to achieve the existence of supernatural folk beliefs in Thai culture. Moreover, the exhibition also applied the technology to construct the ghost within the context of modern society, and included an example of the venerable (though technologically obsolete) optical illusion of Pepper’s Ghost, implicitly critiquing the fraudulent use of such media in the past.

Contemporary versions of the catwalk fashion shows have also used Pepper’s Ghost technique using holograms. Alexander McQueen, one of the outstanding British fashion designers applied the illusion technique in the Paris Fashion Week in 2006. He built a huge glass pyramid (approximately 5 metres tall) and placed it in the middle of catwalk to create a dramatic finale where the model appeared to be suspended mid-air. The animated images of the filmed model were projected onto the large pyramid-shaped object (<http://www.creativereview.co.uk/cr-blog/2007/june/underwater-magic>). The Pitti Fashion Event 2007 held in Florence used a holographic technique. This was a spectacular show from Diesel (an Italian retail clothing company) under the theme Diesel’s ‘Liquid Space’. The show was attracted the audience’s attention by its application of holographic technology, which simulated a blue underwater world containing marine creatures such as sea anemone, jellyfish, sea turtle, and sea-cow, and even fresh-water fish, such as Thai fighting fish. These creatures swam along the fashion show, and sometimes even swam through the models. The audience seated at both sides of the catwalk were able to see the

animated holograms clearly. The success was a collaboration between Dvein studio from Barcelona and Vizoo, the specialist of innovative technology from Denmark. The result was the fashion world's amazement.

Subsequently, Pepper's Ghost and holography have been used many times in modern runway shows, such as the Hamburg Fashion Show in 2011 designed by multidisciplinary creative designers from Berlin. Audiences are increasingly familiar with and exposed to various techniques for 3-D enhanced video display of visual imagery.

The Pepper's Ghost illusion also collaborated with an early opto-mechanical device called the slide projector, introduced to the public in the 1950s. In 2011, Sebastian Schmieg a German artist, created an interactive sculpture '81 Points of View' from a slide projector, with 3D slide films, mirrors, and thin acrylic glasses attached to the apparatus. The viewers had an adjustable handle for selecting a slide. After the slide has been chosen, the light stream passed through the transparent slide and lens and the image was then projected onto the glass and mirrors. The artist stated that the project 'proposes an electromechanical setup that overlaps (perceived) virtual reality'. His work is a mixture of modern technology and old Victorian optical illusions that allows audiences to be able interact with the mechanical device and make adjustments relative to the audience perspective.

In 2015 advanced digital technology was used to embody the virtual reality of a haunted house when students from Interactive and Game Design Programs at the School of Digital Media, Sripatum University, jointly developed 'Hospital Haunted BE LOST', as discussed previously, a horror ghost video game utilising 'Oculus Rift' virtual machine (a virtual reality head-mounted display developed by Oculus VR). Recently, 'Jumpscare King', a leading game reviewer, experienced this horror game using Oculus Rift VR headset. He describes the realistic horror of the abandoned hospital where he is virtually walking through this horrific atmosphere of images and sound. Here the experience is further augmented using the physical sensation of wind and touch.

3.4.2 Projection Mapping Technique with Paintings

Video projection mapping is a newest projection technology used to turn objects into animated visual displays. The technique is used by artists and designers to create optical illusions onto objects. Using projection mapping for traditional painting is a well described

idea. Siggard et al. (2014) described painting using projection mapping to produce convincing results, showing that digital technologies allow painters to explore the medium in a more immersive way, particularly by employing movement. 'The Guardian' is an exhibition of collaborative paintings by Nina Topinko and Nate Siggard, American artists who specialise in projection mapped painting. These abstract paintings are collaborative artworks created using high-definition LCD projectors and specific computer graphic software programs. The paintings were made between 2013 and 2014, mapping the video projection onto the back surface. Their projection mapped paintings give transformational experiences for all of the audience to see. The exhibition was held at galleries in California and Arizona in 2014.

3.5 Hologram

As a distinct technological concept in its own right, the hologram emerged in 1947 when Dennis Gabor, a Hungarian-British engineer, developed the theory of holography while working with an electron microscope. He then continued to develop the holographic method and was awarded the Nobel Prize in Physics in 1971 for this work. The *Cambridge English Dictionary* (2018) defines a hologram as 'a visual image that photographically records an object with laser or coherent light source and then reconstitutes this image as a virtual 3-D object'. In the early days holographic projection was based on laser devices, but modern holography uses computers to generate holograms much more expediently. Holograms are widely used in art galleries, museums and theatrical stage shows etc.

Holographic images have been associated with many Hollywood films since the late 1970s, especially when the the first Star Wars (1977) movie used the technology to create the iconic holographed image of Prince Leia in the opening scene. The usage of holographic projection in films was considered highly advanced at the time, before the developments of CGI technology (computer-generated imagery). CGI specialized computer software can now also create these virtual animated 3-D effects. Hologram projection makes objects or scenes look like 3D objects to viewers. There are many types of holograms, but they can be classified according to two main types according to the MIT Museum (n.d.): reflection hologram, which uses illuminated holographic images visible

under white incandescent light; and transmission or rainbow hologram, which requires the use of laser source to illuminate objects.

Holographic images can have a sharp edge quality, which are generally preferred when technical specifications enable more realistic images, but ‘ghostly’ images traditionally depended on blurred edges and this has become part of the iconography of horror itself. Indeed, the realm of magic is associated with twilight and partial visibility in most cultures. This is reflected in the ‘Twilight Zone’ in Western media, and the concept of the ‘witching hour’ before dawn; the Arabic term for magic, *sihr*, is derived from the same root as *suhur*, the twilight period before dawn associated with partial visibility and unclear definition, and it is in the imaginative in-between spaces and times that magic, ghosts and spirits mainly disturb the human realm (Brennan, 2013).

The possibilities and potential of holographic display allows artist to collaborate with scientists using them as an artistic medium to create holographic artworks. The great surrealist Salvador Dali (1904-1989) could be regarded as the first holographer who is both an artist and a scientist; he made use of holographic methods to produce a number of holographic arts. Just as the work of Dali and the surrealists represented the breaking down of classical forms and divisions associated with the end of enlightenment rationalism in modernity, holography in general and the resurgence of interest in the paranormal in Western and global cultures (e.g. as manifest in a never-ending series of vampire and ghost movies and TV series) reflect the renewed relevance of horror and supernatural phenomena in modern culture and life, which has been reflected in many artists using holographic techniques to turn their creative ideas into hologram art.

4 Digital Media

This chapter three begins the third phase of research by studying the conceptual ideas and theories relevant to digital and multimedia. The mixtures of various multimedia (audio, image, text, video and animations) are digitised by computers. Over the last decade, the uses of digital technologies have widely expanded human creative and artistic capabilities, and digital media have become a core part of the contemporary art scene, with many artists practicing in multiple media including drawing, painting, printmaking, sculpture, photography, video and other digital technologies in making their artworks. Consequently, constructing digital art generally requires cross-disciplinary knowledge in art, science and technology (Paul, 2005).

In my investigation I test how modern technology be effectively utilised with traditional paintings collected from the early stage of my fairground art painting practices. According to Prasanpanich (2015), in terms of information technology, ‘media’ are particular forms of storage for digitized information such as CD, DVD, or Blue-ray, including the converted information stored in it as digital information, such as audio, text, images, video and animation. These media are able to store large amounts of data, especially high-resolution audio-visual materials. “Multimedia” is the means used for artistic variety or communicative media for educational purposes and entertainment, such as video games. Multimedia can be divided into five main categories depending on their digital formatting (audio, image, text, video and animation), as explored in the following sections.

4.1 Audio

Sound is a vibration of mechanical waves that requires the sound wave to traverse a medium such as air . Analogue sound could be saved as various digital audio formats, including WMA, BWF, raw, AIFF, MP3, WAV and MIDI etc. before using as part of multiple application contents. The meaning of an artwork could be different when adding with an audio sound. There are differences between sounds, music, and other arts; sound and music move in *space* and *time*, recognized by listening, while as visual arts work on *space* in both 2D and 3D dimensions.

Music continues to rotate clockwise while visual arts could see the whole at once. When watching a painting, the whole picture is revealed in front of us at once. Visual arts were composed from knowledge and skills acquired by artists through experience or education to create aesthetic feelings with images and various techniques. However, perceptions of music are different. Listening to music is not at once, but will gradually appear from seconds to minutes and hours until the end of the last note. The range of frequencies that can be heard by humans is 20-20,000 Hertz. They cannot hear frequencies lower than 20 Hz, but can feel the vibration of the sounds, such as the sound of dance music. Characteristics of music can be described by scientific and artistic terms. Visual art integrated with immersive technology will be affected the imagery or sensorial experience of the viewer.

4.2 Image

Objects are visible when light impacts on them and is reflected through space to human eyes, where it is perceived and decoded into images perceived in the brain. The object absorbs some light waves from white light, which is why colours are perceived in the brain. Therefore, light and colours play a role in the state of being able to see for humans. Colour is a natural fantastic phenomenon. Each colour has different frequency range and waves. Human eyes cannot see some light frequency ranges, just as our ears cannot hear some sound frequency ranges. Lighting plays an important role in the perception of painting. Any visual paintings could be save as variety of digital formats, such as JPEGs, PNGs, Bitmaps, TIFFs, and Vectors etc. The use of digital image files appears in many multimedia applications. Today, digital image arts created by contemporary artists and designers incorporate advanced digital imagery in artworks. The quality of digital image files can be edited by imaging and photo editing software, such as Adobe Photoshop, Adobe Illustrator, Adobe After Effect, and Premiere Pro etc., including to create or add visual and sound effects.

4.3 Text

Text is gathered from various characters (letters, numbers and symbols, etc.). Most multimedia systems use a combination of text and other media to deliver the visual presentation of data. In visual art, text is generally considered a less nuanced and

potentially brutalist way to convey messages (although it can be utilised as a highly effective device), while most painting attempts to convey implicit meanings decoded and interpreted by the viewer.

4.4 Video and Animation

Moving images or digital video is sequence of images give the illusion of continuous movement. In terms of ‘video’, a picture is called ‘frame’ instead of a ‘picture’. Frame rate is the amount of frames per second (fps); the more frames per seconds, the more smooth the animated movement.

4.5 From Pepper’s Ghost to Mapping Projections and Hologram

The Echo (2013), an interactive artwork by Marc Boulos premiered at The Fact in Liverpool to public acclaim for its spectacular illusionary technique, used Pepper’s Ghost, and such exhibits are widely used in museums, exhibitions and amusement parks, as mentioned previously. One of the most daring uses was in 2012, when the infamous rapper Tupac Sharker (who died in 1996) re-appeared on stage with the two living rappers. However, the audience on the side of the screen saw the distortion of images because the rapper was converted from 2D dimensional videos, so the projection was projected without 3D effects or holographic quality.

Thereafter, many legendary artists such as John Lennon, Bob Marley, Elvis Presley and more recently Michael Jackson have been scheduled for post-mortem tours using a high-definition video projection system called “Musion Eyeliner”. Interestingly, this system, developed from Pepper’s Ghost principles, is still used to create an illusion of life after death images. In the past, the Pepper’s Ghost method required a whole theatre to be completely rebuilt to support the effect; however, anyone can make a virtual ghost at home by watching from YouTube, downloading an application from the internet, or even buying a portable hologram kit. One of the most well known is Hatsune Miku Hako Vision, the virtual singing-cartoon from “Bandai”, with ready-made illusions in boxes using a smartphone to display video, reflecting to create 3D projection light display.

Recently, Tokyo Broadcasting System Television (TBS TV) brought a virtual Teresa Teng back on stage again. The most famous Taiwanese pop star who passed away 22 years ago

sang her famous in front of an audience with a virtual 5D technology. TBS revealed that the virtual technology is neither holographic projection nor virtual reality, but so called 'Mixed Reality'. Without support from any equipment, the audience could see her with their naked eyes.

My studies show that the static and travelling fairs and amusement parks in the West have a strong influence with supernatural themes, freak shows and optical illusions. Since the mid-19th century ghost shows were a staple of static and travelling fairground shows in the UK. In 1930 the English architect Joseph Emberton (1889–1956) invented the first 'Ghost Train', which quickly became popular in amusement parks throughout Europe and North America. The name was derived from an eponymous popular stage show written in 1923 by Arnold Ridley (1896-1984) Laister (2013), adapted in a horror film of the same name in 1941, which served to make ghost train rides popular in amusement parks and funfairs ever since. Trains themselves are fairground attractions apart from the 'ghost' element (Figure 2), and ghost trains combine fear of ghosts in a multi-sensory physical experience, with thrills of motion (e.g. sudden drops and variations of speed) and horror-related stimuli (e.g. passing through cobwebs, hearing audio and of course seeing horror imagery and ghosts) (Laister, 2013).



Figure 2: Amusement park trains at a temple fairground in Thailand, 2016

The ghost train is now a long-standing tradition in its own right, with flat-pack rides conveyed from fairground to fairground (Figures 3-4). It has metaphysical connotations in transporting the passenger from the conventional material world into the ‘other-world’ of the ghosts, using automotive engineering to suspend disbelief in the sensory experience of the spiritual. The ghost train is currently experiencing a revival with the addition of VR gaming elements, such as players being able to kill ghosts with guns.



Figure 3: Ghost Train at Sefton Park, Liverpool, 2015

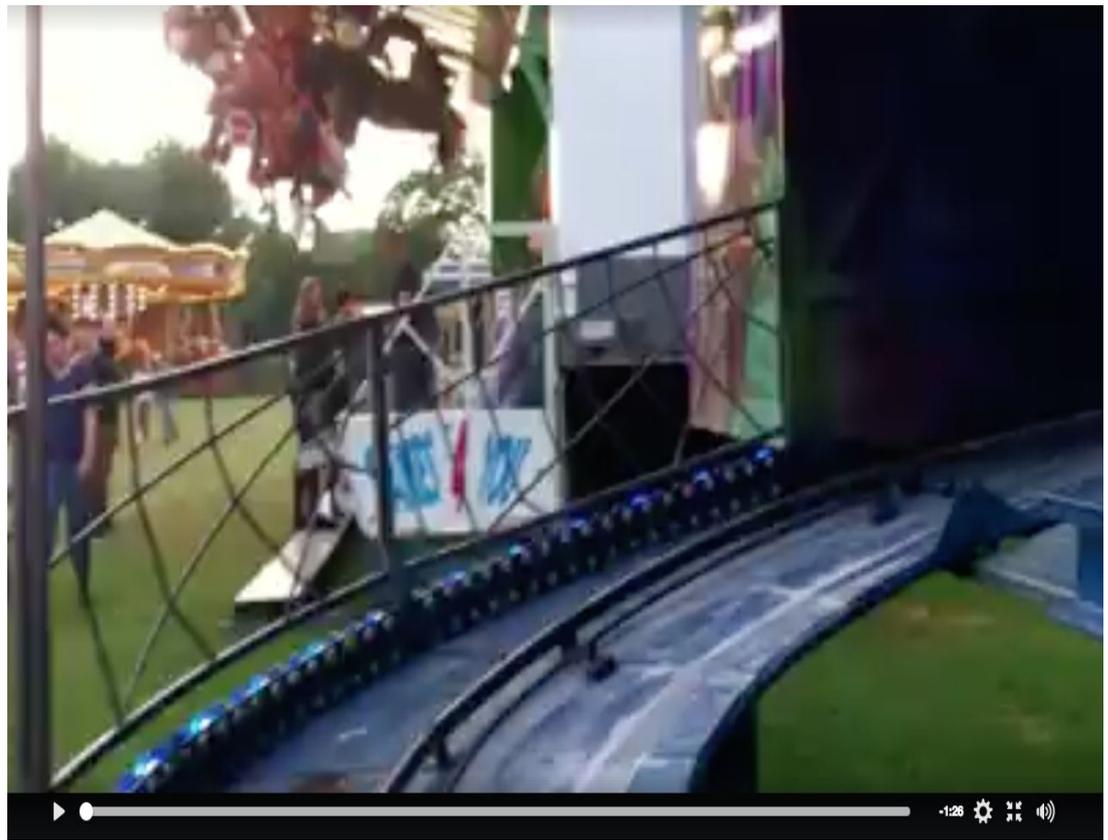
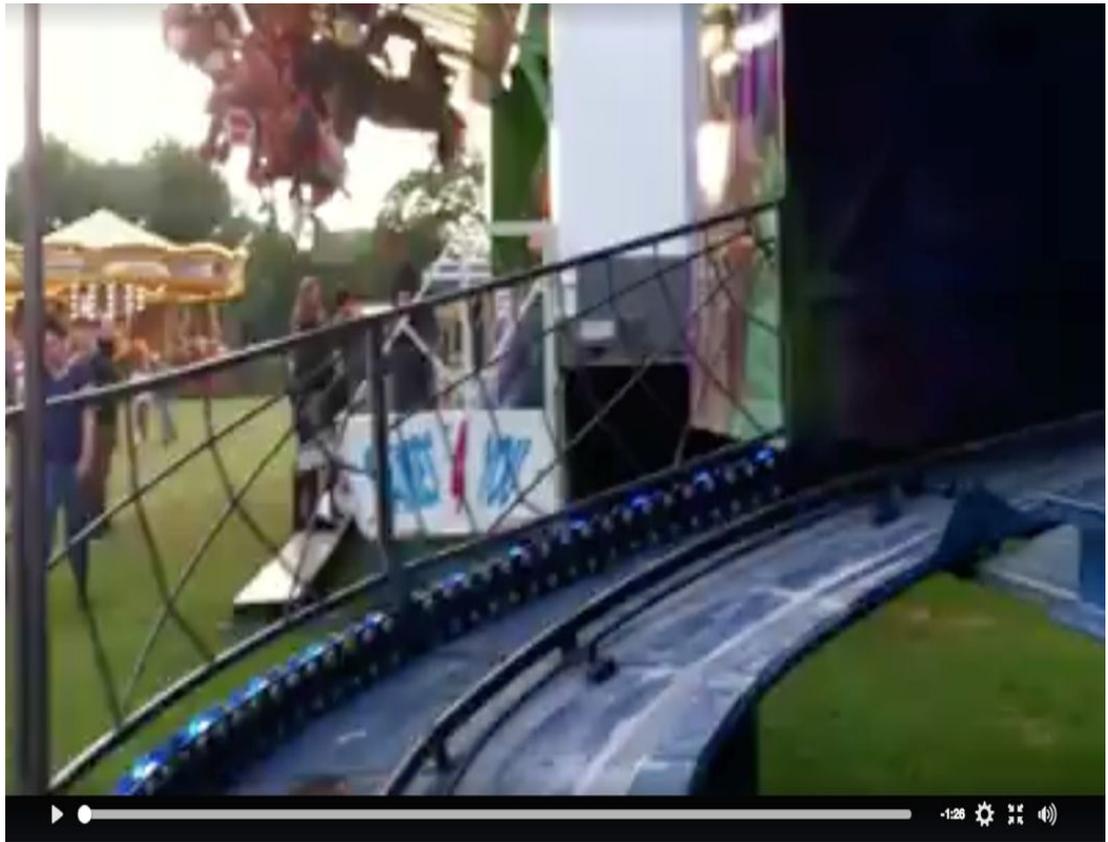


Figure 4: Caption image from the ghost train ride at Sefton Park, Liverpool, 2015

As noted by Sookanan (2010), ghosts continue to be feared in Thai society and culture. While Western cultural production may humanise supernatural creatures (e.g. vampire romances), Thai ghost films are conventionally frightening (more akin in this respect to Hollywood films about psychotic murders than actual horror films), and deeply affect the minds of audiences. Many classic horror stories have been reproduced, with formulaic plots repackaged with more realistic modern technology (i.e. advanced cinematography techniques and film making equipment). From this point of view, Thai temple fairground is regarded as a cultural reproduction as well. According to Kongpikul (2012), such cultural reproduction iterates and causes the pervasiveness of the belief system and social values that produce it, handing down culture from generation to generation. The investigation of temple fairground art with immersive technology is an interesting arena for this.

Besides laptops and computers, DSLR cameras and LCD projectors, a more prosaic digital device used in mapping and holography is the flat screen television. At this stage of investigation, I used the animated graphic paintings to display with high-definition flat screen television to examine aesthetics from Thai animated fairground. The completed animated graphic paintings were burned onto DVD disc, played with DVD players connected to large-screen televisions with the video setting: < Auto-Play and < Loop Mode. When the video reaches its end, it immediately starts playing again from the beginning. Undeniably the digital world is constantly evolving and really affecting traditional television systems. Many scholars believe that traditional commercial television will cease to be the predominant cultural medium in the next 3-5 years due to changing consumer behaviour in using digital technology devices to watch television, including laptops, tablets and smartphones, with internet connectivity and ubiquitous anytime, anywhere access possibilities and enhanced viewer choice and, germane to artistic and fairground application, high-definition picture quality.

‘Mixed Reality’ technology is a mixture between digital images with the virtual world, one example of which was the use of footage from Teng’s gig in 1986 recreated with innovative 5D technology. To achieve this, the background of the footage was retouched and blended with the studio background along with camera movement with the singer. Again, the computer-generated likeness of a deceased person brings them to life.

4.6 Mobile Phones and Digital Art

Mobile phones are a new platform that allow artists to create works to access a wider audience. Mao Sakaguchi started an art project with mobile phones using Adobe Flash software to create graphic animation that can be interactive with the audience, unlike traditional static artworks. His idea is suitable for a new generation whose primary experience of daily life as well as culture is their smartphone, and who may not seriously be interested in going to an art gallery.

In 2006, there was the collaboration of more than 30 international artists under the project called 'Cell Phone Disco Installation' exhibited at the Contemporary Museum in Baltimore, USA. The artists created their own artworks with cell phone technologies only, for instance video camera phones, Bluetooth technology, ring tone sounds, and messaging. *Cell Phone Disco* by Ursula Lavrenčič and Auke Touwslager consisted of thousands LED light panels connected to an electrical signal receiver. When audiences picked up their mobile phones, the electromagnetic spectrum from each cell phone was transmitted to electric signal receivers. The frequency ranges from each cell phone caused a flashing light on the LED light panels. This project was inspired from communication with cell phones when devices and features from cell phones, such as visual and audio, are used in the creative process.

With the development of mobile technology people are increasingly proficient in the use of technology connected with the internet and social media. Many art and cultural organisations and contemporary artists have been searching for ways to utilise the potential of digital technologies, and to use them to make art as accessible as possible. In 2013 many websites of arts and cultural organisations in the UK were developed to support mobile screen and operation systems, to increase efficiency. Aside from technological aspects, mobile phones have been used in the creative artwork process itself. A comprehensive analysis of the period 2012-2015 by the Digital R&D Fund for the Arts (2015) revealed that the usage of digital mobiles in art and culture organisations indicates significant change in the proportion of organisations experiencing major positive affects from mobile technology (Figures 5-7). Many art and culture organisations are also experiencing the

major positive impacts overall from digital technology in various art formats, including literature, visual arts, combined arts, dance, music, theatre, heritage etc.

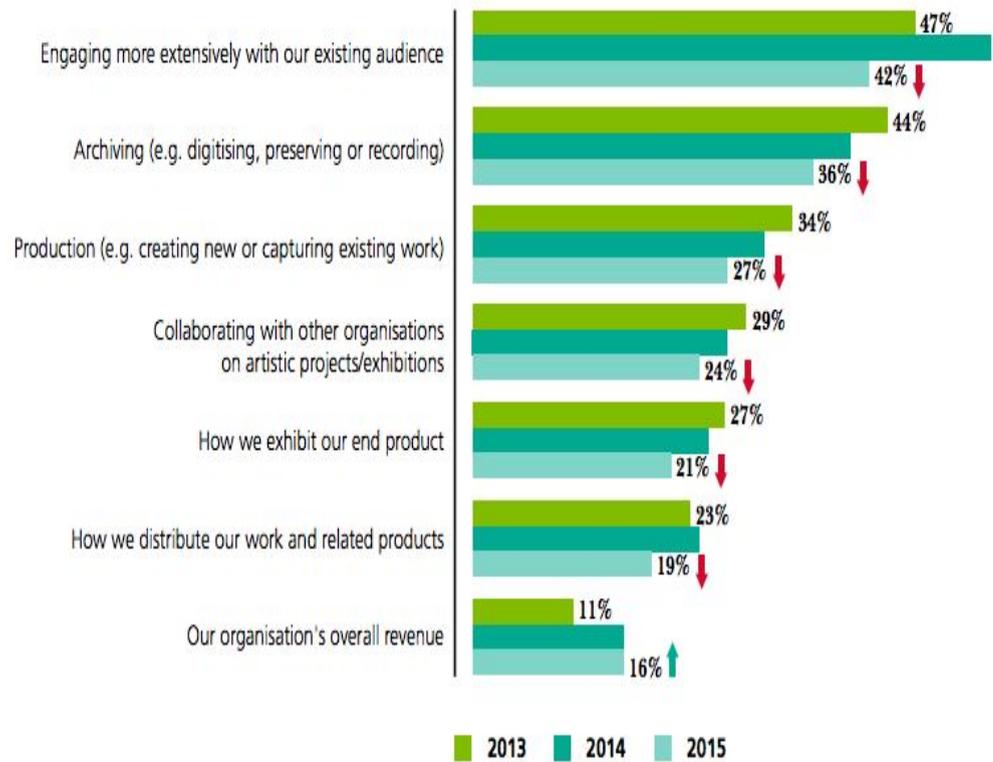
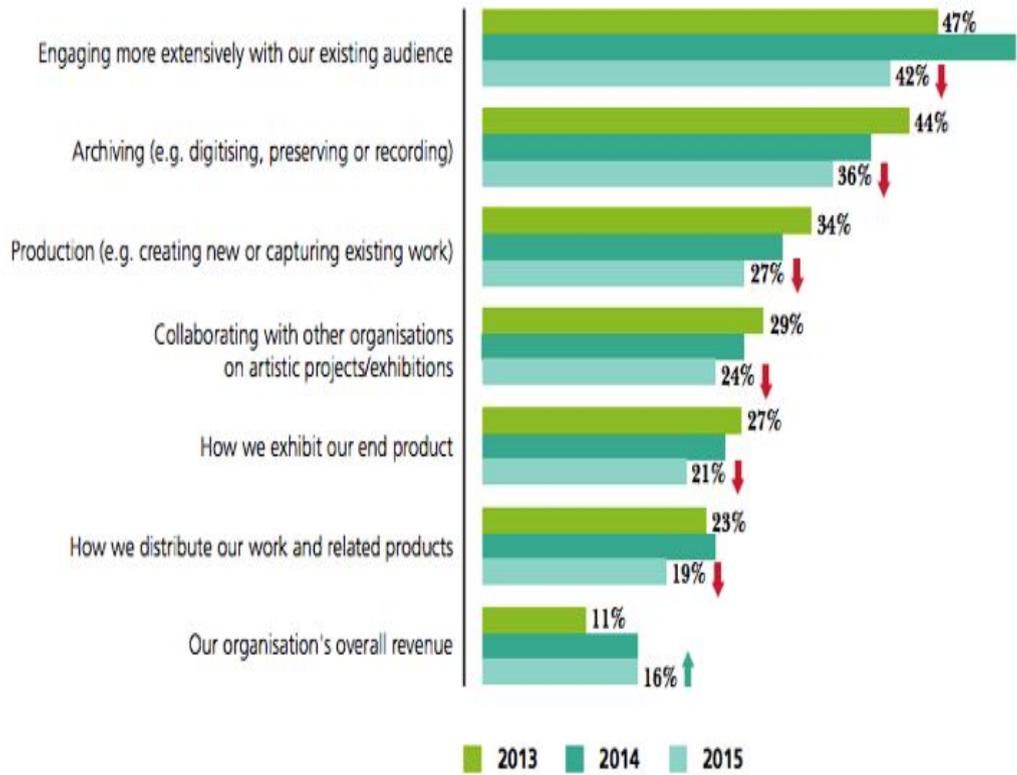


Figure 5: Areas showing a significant change in the proportion of organisations experiencing major positive impacts (ordered by size of change)

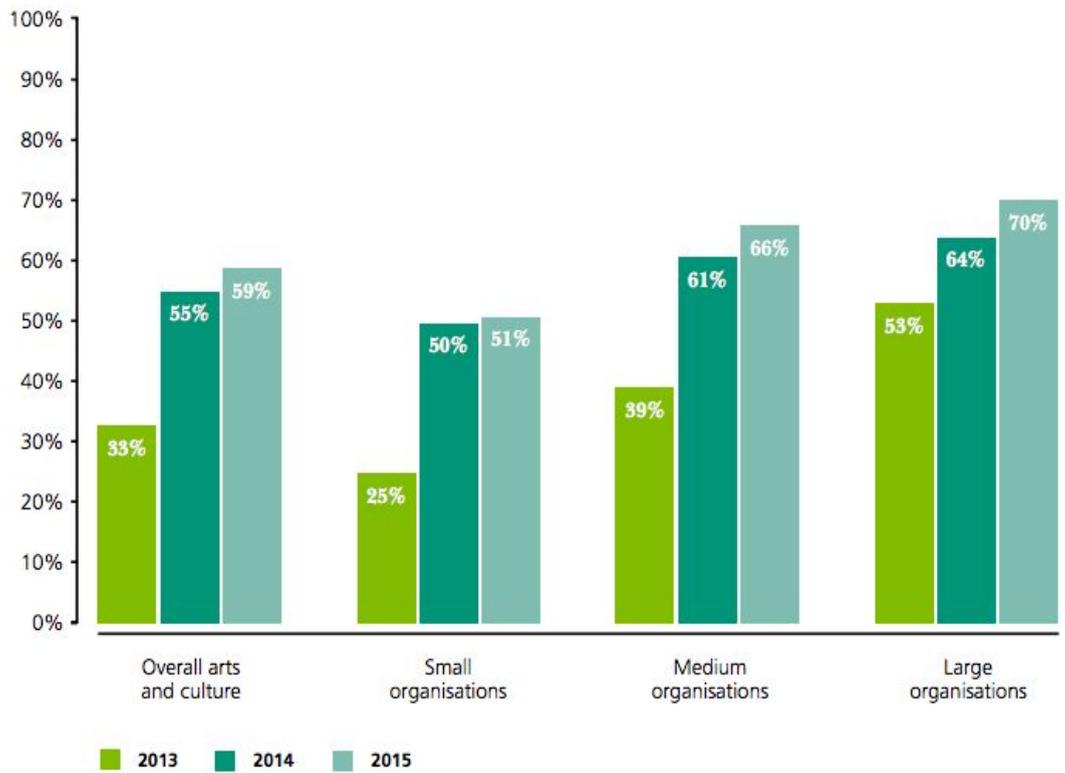
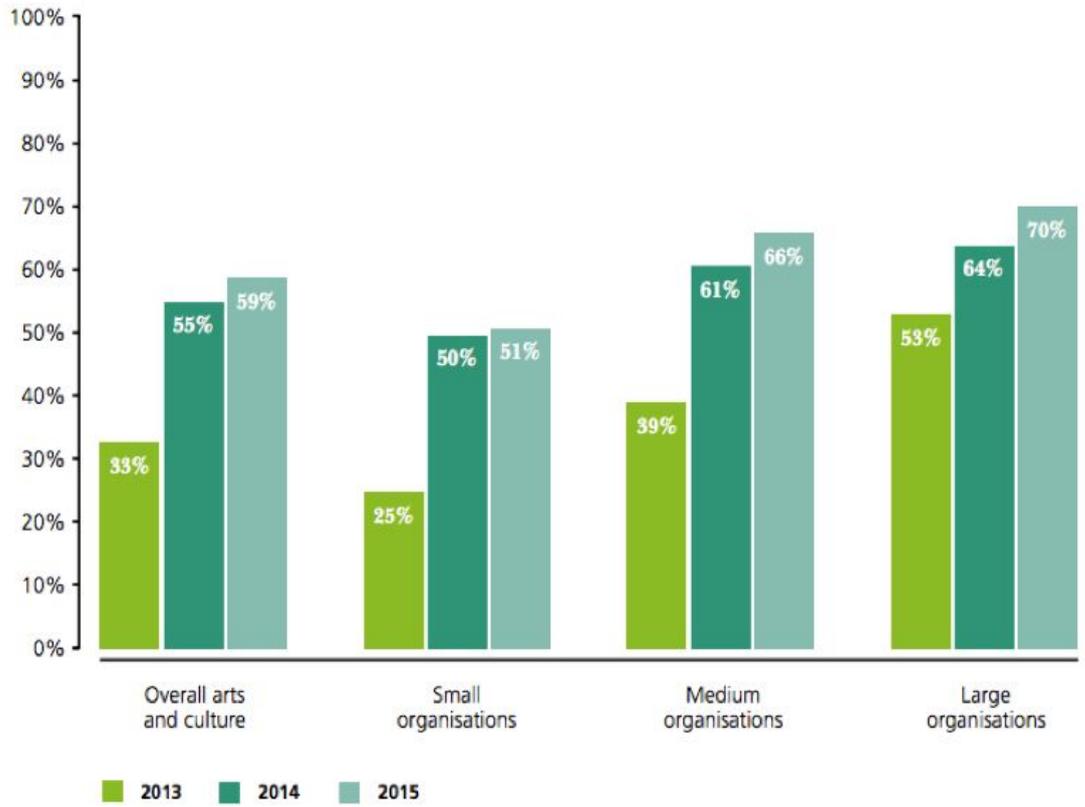


Figure 6: Proportion of organisations with a mobile-optimised web presence, 2013-2015

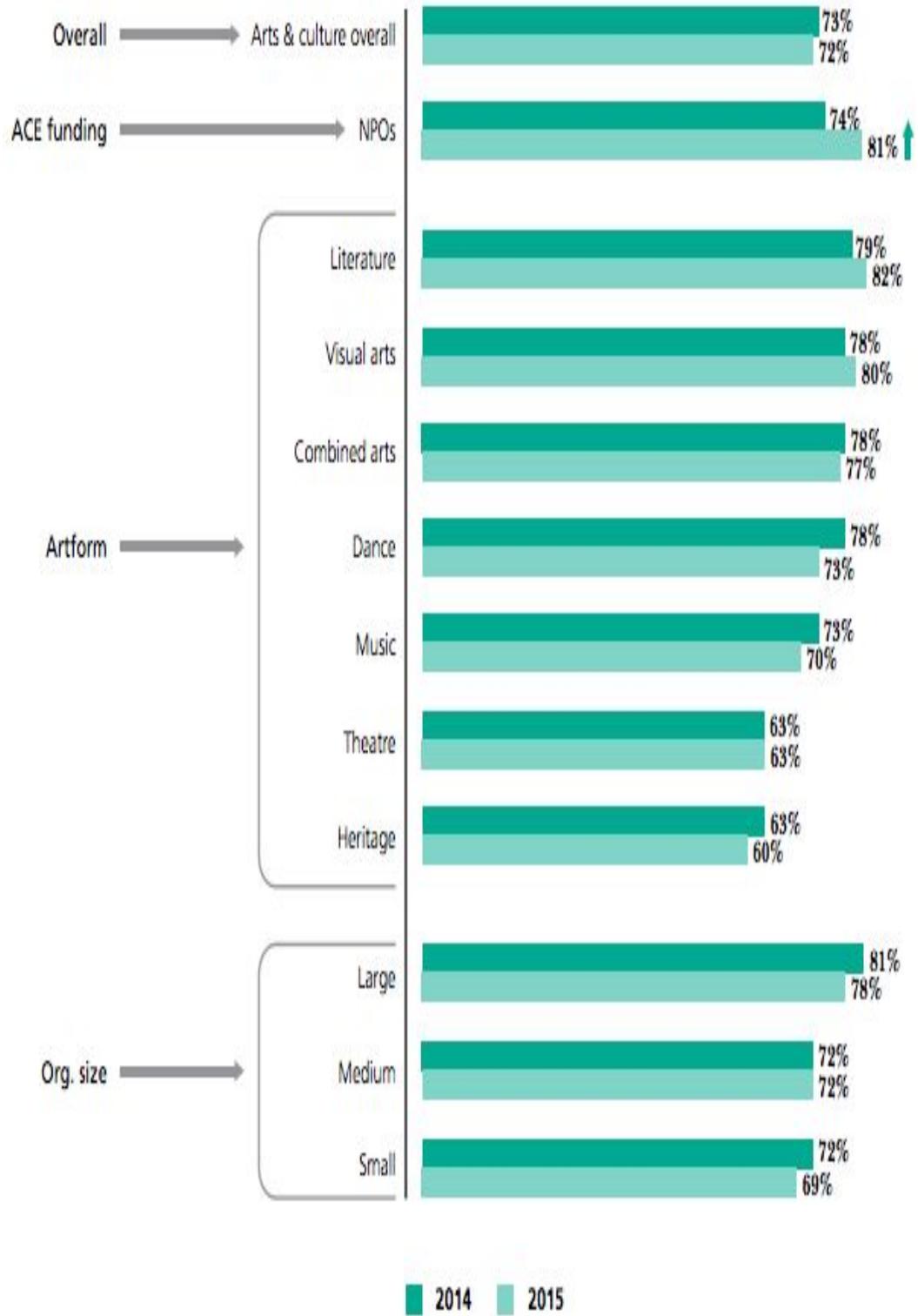


Figure 7: Organisations experiencing major positive impacts overall from digital technology

Sing London, the University of Leicester and Antenna Lab (a leading provider of technology in UK) collaborated in the ‘Talking Statues’ project in 2011, commissioned to animate public statues across Manchester. When passing a talking statue, audiences scanned its QR code or softly touched a mobile to the plaque to activate the Near Field Communication (NFC). After the phone rings, each statue has its own message to communicate with the audience. This initiative brought the story and history of these statues to life after decades of neglect and inattention. The monologues were not focused on dry historical facts, but entertainment purposes only. This represents an interesting and novel application of smartphones in public spaces, as well as allowing users to either access art contents from websites or create original works of art.

Today, digital technologies also play roles in various parts of the creative process, from planning through to production, post-production, and publishing, and digital technology is helping art organisations to reach a larger digital audience as well (Digital R&D Fund for the Arts, 2015) (Figure 7). In the mid-1980s digital artists were already active, but the required technology was extremely expensive, which inhibited their achievements; with the advance of commercially available lower-cost, higher-performance computers from the 1990s onward there was a corresponding boom in the creation of digital art.

The ubiquitous technology today with implications for art in digital space is the smartphone, which most people use as a platform for accessing the internet or communication, which is now being investigated as a tool to access hidden imagery or animations concealed within paintings or installation art. Though the concepts behind the Thai temple fairground are complex, the experience of entering is accessible and enjoyable, analogous to the smartphone itself, with which it can be coupled to provide an immersive experience.

5 Fairground Art Painting

5.1 The Uses of Mapping Projections and Holographic Images

This study investigates the uses of digital technologies with installation paintings to explore how digital computer and graphic programmes (e.g. iMovie, Adobe Photoshop, Adobe Illustrator, Adobe Premiere Pro and Adobe After Effect etc.) could be integrated within multimedia installation painting. This stage examines the use of projection mapping by the projection of moving images onto multilayer paintings made from black soft mesh fabrics. These multilayer paintings are not merely defined with forms and two-dimensional space width and length, but include the volume space in depth. Normally, the space on canvas is neutral unless something is projected onto it. The video is created from PowerPoint and graphic programs, and projected onto the paintings with standard LCD video projectors. Instead of projecting on a flatscreen, the moving images are mapped onto the surface and the layers underneath, turning the 2D paintings into 3D ones with the addition of sound, light and visual effects, transforming the painting into a more immersive experience. Projection mapping is increasingly used in festivals and big events, whereby moving images are projected onto objects and buildings, accompanied by music and colourful lighting and imagery.

The most difficult process in projection mapping is distortion and perspective. The optical illusion techniques I used on my own animated paintings are based on Pepper's Ghost technique, augmented by 3D holographic projection. A hologram (a 3D computer-generated image of an object made with a laser) requires complex software systems and innovative equipment such as projectors, ultra-high definition televisions, LED walls, synchronized intelligent lighting, and motion sensors etc. (Digitalarti, 2018). The 3D computer-generated hologram of Tupac Shakur mentioned previously was created by AV Concepts, an audio visual and event production company commissioned by two living rappers, Dr. Dre and Snoop Dogg. As noted by Smith (2012), the Tupac holographic projection was an expensive project, requiring extensive studio time and resources. Holographic projection can be achieved much more economically in painting than in performance art.

I used boxes with large-scale painting on 4 mm plywood instead of canvas for 'Haunted House in the Box' (1.65 x 3.00 m), tested with holographic projection videos in the four plywood boxes (width: 65 mm, length: 115 mm) placed in specific positions. The boxes are ready to use the QR code reader application from various electronic devices such as smartphones and tablets to read the QR code on the side of the box to access to uploaded videos on YouTube. The painting depicted my childhood memories permeated with the common fear of haunted house ghosts among Thais (Sookanan, 2010). The images were painted with vivid colours in the style of fairground art mixed with reusable materials and 'found objects'. The artwork also hides the three anamorphic images, including the holographic animations in the four tiny Pepper's Ghost boxes placed at different specific points.

Each ghost animation is related to the haunted house show where the box is located. The four holographic projection videos were simply made with stop-motion technique by my MacBook Pro laptop, PowerPoint, and iMovie program while the previous series of paintings were made by the same materials and advanced graphic programs developed by Adobe Systems: Adobe Photoshop, Adobe Illustrator, Adobe Premiere Pro, and Adobe After Effect. Even though the holographic images are quite small, the moving images were not as smooth as I expected but the overall outcomes were satisfied. If my computer graphics skills were improved, I would examine the project in the near future and would like to take advantage of holographic qualities on my own paintings or installation art.

The completed works will be exhibit at a major temple fairground events instead of an art gallery space to examine aesthetics from Thai fairground art and an examination the significance of these stories, Furthermore, I will also test the effectiveness of established and emerging technologies to make experiences of art more immersive and interactive with audience. My creative artworks also explores the uses of technological advancement of smartphones in digital art. Since the smartphome revolution during the 2000s, sophisticated devices and internet infrastructure have come along to offer ubiquitous access to communication with digital messages, SMS messages and e-mails. The small-screen display can be scaled to fit the operating system, with appropriate quality for interactivity with any digitised medium. Given the existing and improving quality of display screens and sound systems in smartphones, they can now be used as functional 'canvases' in the

implementation of art projects, which has become one of the most exciting and dynamic areas of new media art.

My new artwork investigates the use of internet access from smartphones to integrate installation paintings. Access to the moving images hidden in the painting's boxes requires the QR code on the side of MDF boxes, to access specific sites from YouTube from audience members' smartphones. The holographic images will be reflected off the thin clear plastics, as in Pepper's Ghost technique. The blue colour from LCD gave the best result with black *light* or ultraviolet light effect. Generally, black light fluorescent tubes are used in theatrical show and several art forms where decorations and painted backdrops that fluoresce under black light bulbs. In multilayer paintings, the blue light from the LCD projector alternates repeatedly with light from graphic animations, causing the neon colours and glow-in-the-dark objects to glow, revealing changes in the shapes and forms of pigment colours (oil and acrylic) under the projected graphic animation. Sometimes the colours change, and sometimes not, depending on the light shining on it. The combinations of the colours from LCD projector and multilayer paintings reflects colour changes and 3D likenesses from 2D paintings, in full view of the audience.

In the 21st century the development of modern art has mainly been in the application of new technologies (Gregory, 2017). Artists have been created something new that has not been examined before, while audiences are expectant of the technological evolution of art. Many installation art pieces require audience participation in addition to observation and passive appreciation as an intrinsic part of an immersive artistic experience in sculpture and painting in addition to installation pieces (Sobel, 2017). In addition to digital art, immersive art is currently used for commercial purposes by many companies by presenting products to attract customer's intention with large digital format projection on the architectural facades of buildings, combining artistic design with commercial content.

Contemporary artwork has the potential to transcend traditional limitation to 2D or 3D objects, hanging on a wall or displayed in a showcase. Immersive art can be adapted to any spaces, indoors and outdoors, with architectures and even projection on water screens. Digital technology for immersive art always developed in order to foster interaction with audiences. With innovative technology, digital artworks are created with interactive images

surrounded by high definition sounds. Of course, creative interactive artworks provide fascinating immersive and sensory experiences with art and entertainment. Temple immersive art and temple fairgrounds similarly have elastic concepts of the way they inhabit and utilise spaces. Generally, temple fairgrounds are held in temple courtyards, public parks or parking areas. Fairground shows usually use low-tech technology while immersive arts require high-tech technology. I seek to find new meanings for Thai temple fairground art with digital technology, exploring the ways in which Thai fairgrounds use light and sound and to integrate these techniques within my own paintings.

The indispensable ingredient is audience engagement and participation, the latter of which (unlike in mainstream installation art) is an intrinsic part of the fairground experience. The interactive piece 'Echo' (2013) by Marc Boulos, premiered at The Fact in Liverpool, gained public acclaim for its spectacular illusionary techniques with digital technology devices, essentially based on Pepper's Ghost. The participation process of this interactive art begins with the audience entering a huge dark room with a spotlight shining from the ceiling above. When an audience member stepped into the spotlight beam, the lights in the room were dimmed before the holographic animation was initiated, controlled by sensors, cameras and computers. The mirror image of the audience appeared on a large sheet of Plexiglas installed at a 45 degree angle from the floor. My project creates the series of paintings inspired from traditional fairground shows, made immersive by digital computing to generate a 3D effect, with light and audio effects appearing to surround the participating audience, to be tested at a fairground show for effectiveness in achieving an immersive artistic experience.

Recently, I created a series of paintings artworks to examine with mapping projection and animated graphics. I conducted this project based on childhood memories and experiences on visits to temple fairground events to create a series of large-scale paintings inspired from fairground art, and examined these artworks with projection mapping and animated painting with digital technology. The digital animations are examined with computing graphics software (Adobe Photoshop, Adobe Illustrator, Adobe After Effect, and Adobe Premier Pro etc.). The graphic software programs that enable me to manipulate images or models visually on laptop computers.

5.2 Projection Mapping Painting

5.2.1 Introduction

Mapping projection on painting utilises video projection techniques to turn any plain or arbitrary surface into a visual imagery display. Artists can create optical illusion images augmented by computer-generated effects (e.g. sound, video and graphics etc.) onto their artworks. To archive this, the projection procedure requires specific software programs and digital technology devices. Both computing systems have the potential to bring virtual reality into static artworks, making them more immersive and interactive. This project explores mapping projection techniques with computer and LCD projector to map accurately animated graphics on plain surface and multi-layers paintings. The animated graphics are mapped onto paintings in order to generate three-dimensional images efficiently. The animated graphics include video and digital images, such as bitmap and GIF files. Furthermore, I will take the advantage of lighting effect from reflected colours (exploiting the way a coloured object is reflected to viewers' eyes when projecting with different lighting colours).

5.2.2 Related Work

Projection mapping allows artists to paint moving images and light onto object surfaces, often irregularly shaped into a display surface for video projection. Today, projection mapping techniques are used by advertisers to project any advertisings videos onto buildings and displayed in public spaces to reach a wider audience. This technique is also used by artists who can add optical illusions and movement onto static objects to make it more immersive. Nina Topinko and Nate Siggard, artists who specialize in projection mapped painting, demonstrated a system that enabled high resolution projection mapping. 'The Guardian' is an abstract collaborative painting created by high-definition LCD projectors and specific computer software programs during 2013 to 2014, mapping the video projection onto back of its surface. Their projection mapped paintings give transformational experiences for all audience members to see. The exhibition was held at galleries in California and Arizona in 2014.

'The Gallery Invasion' (2016) is a series of experimental paintings with dynamic projection mapping created by Skull Mapping Studio (2016). These paintings are

collaborative artworks between figurative art painter, animator and 3D modelling artists. The group of painting were arranged on four wall panels in the gallery spaces. The multiple LCD with 'Mirror Head' can rotate 270 degrees and follow the movement of the projected videos and animations. The paintings came to life when the monkey was chased by an airplane, and escaped from painting to painting, jumping around the gallery from wall to ceiling and ground. The static 2D paintings came into live-action and animation, augmented with visual-audio to entertain the surrounding audience. The studio was run by Filip Sterckx and Antoon Verbeeck, who started their first experiments with projection mapping over ten years ago; they are now experts in digital technology-related creation.

5.2.3 System Overview and Equipment Setup

The experiment in this stage of the projection mapping painting consists of two parts: the multi-layers paintings and the LCD projectors. Before the system is usable, the laptop and projectors need to be set up to projects the lighting and videos on the specific areas on each painting. My equipment setup consists of a standard MacBook Pro laptop with the two LCD projectors on the bracket wooden shelves near the ceiling. The laptop needs an adjustment by setting the scaled of the display screen at 1280x800, which is related to the size of the paintings (2.00x1.60 m). The shelves were made from planks of wood supported with two L-brackets. The lighting passed to each projector covers the whole area of the paintings and is ready to be tested with the videos and moving images.

5.2.4 Mapping Projection Paintings

The advantage of digital technology can be created a combination from traditional paintings and computer technologies to bring more immersive and interactive. Digital projection technology allows me to turn the multi-layers painting surface into my own animated paintings integrated with audio-visual elements. Each painting used a simplified version of projection mapping with a single projector. The animated video was made from series of freeze-frame images collected from the early experiments. The images were edited by photo and video editing software programs. Thai fairground shows could be considered as a kind of *son et lumière* or night-time entertainment with light and sound and show in outdoor venues of sacred areas of a temple. Temple fairgrounds are connected with audiences who have expectations of an entertainment experience. The animated graphics on the surfaces of static 2D painting provide a great level of immersion dynamic

and three-dimension effect. The technique helps traditional painters by augmenting the static canvas with audio and visual elements. These paintings support artists in achieving their goals by means of projection mapping, extending the digital world into the real world.

5.3 Summary

The techniques discussed in this chapter represent experiments in the effective uses of modern technology to integrate mapping projecting techniques within my own paintings. I found that these techniques are very useful for fairground art painting. Similarity between my painting and *son et lumière* night-time entertainment lies in both creations requiring special lighting effects projected onto the painting surface, accompanied by sound and music. The next steps are implementing multiple LCD projectors and complicated software programs to improve the precision mapping and make the painting more immersive.

6 Conclusions and Future Work

This chapter reviews the paintings examined with digital technology from *camera obscura* photography, holographic images, projection mapping techniques, and animated graphics. The artworks (presented in detail in the appendices) were exhibited at Liverpool School of Art and Design gallery at LJMU, Liverpool. They were displayed in the open spaces while the projection mapping paintings were shown in the light-controlled room, representative of temple fairground events. In future, I will try specialized software for mapping projection rather than projecting onto flat screen paintings, with uneven surfaces or irregularly shaped objects. The advancement of software programs enables more sophisticated mapping projection that displays on irregularly shaped objects, with feedback from audiences who have experienced exhibits.

Investigating the aspects of fairground entertainment and the contemplation of painting as originally proposed led to the development of practice utilising technical methods. From my art practices with emergent digital technology, the results of a recent study show that these newest technologies can give the new aesthetic and the aspects of harmony in painting by increasing appearance of the visual language of digital technology (Bridle, 2014). The term ‘new aesthetics’ as applied to my own painting concern image processing with immersive digital technology, which provided 3D or illusion effects on 2D plain surface painting. In early experiments I used *camera obscura*, the photographic camera associated with Pepper’s Ghost technique, to create illusionary ghosts.

I approached this established method with graphic computer software and digital equipment, including computers, LCD projectors and smartphones. The projecting animations onto painting produced 3D-like effects and dynamic movement on multi-layered paintings. First, I examined the video mapping with LCD projector. Mapping projection uses video projection techniques to turn surfaces into a dynamic video display. The mapped projection paintings enhanced with sounds produce some truly beautiful audio-visual artworks. However, getting the mapping projection to overlay perfectly on a painting requires significant effort.

Second, I explored the use of holographic box to display ghosts' reflection on clear sheet of plastics. The boxes are installed on the painting where holographic images can generate ghost images floating in the air. The potential of holographic technology can create artwork interacts with audience. Third, I used the original paintings from the early stage to try the ability with advanced photo editing software that produces animated movement of the original painting. The static paintings were converted to animated graphic paintings integrated with audio-visual elements. With this immersive technology, the physicality of these paintings has been changed. At first glance, the paintings appear different which changed the interaction between the paintings and human sensorium.

While formerly used to debunk superstitious beliefs and magical theatricals, I found that modern immersive technologies can be used to enhance viewer experiences of paranormal experiences, rendering them in a tangible form. One of the main purposes of this thesis was to investigate how modern technology be effectively used to embody, animate, transmit or communicate truths or myths from traditional Thai belief systems, particularly supernatural folk beliefs known as *sai-ya-sard*, which are a local manifestation of a universal phenomenon. Technology has always held the potential to propagate supernatural beliefs, including fake spiritualism and Pepper's Ghost, and modern digital technologies have given a fillip to pseudoscience and hoaxes, disseminated via online social media. Conversely, there are some academic experts in Thailand who attempt to use the same technological advancement to expose such 'fake news', such as Assoc. Dr. Jessada Denduangboripant and Assoc. Dr. Weerachai Phutdhawong. However, the syncretic Thai worldview, which blends supernatural folk beliefs with Buddhist ontology, is unlikely to be effaced by the narrow waters of positivism. As Assoc. Prof. Dr. Weerachai Phutdhawong acknowledges, 'we cannot delete superstition beliefs from one mind, but we can stop the fraud'. According to the first National Science Technology and Innovation Policy written by the National Science Technology and Innovation Policy Office, promoting scientific thought and combatting superstition is an official part of the national agenda.

Aside from the issue of debunking superstition, the tradition of theatrical and optical illusion techniques in fairgrounds is a valid source of popular entertainment in its own right, whose philosophical implications due to being intertwined with the history of the

temple fairground shows is mainly coincidental (i.e. there is no deliberate agenda to fool people in such fairgrounds, they are simple a long-established cultural activity). Forerunners of modern projection mapping include fairground technologies such as the magic lantern (the forerunner of the modern slide projector) and *camera obscura* (pinhole images) etc. While the belief in spiritualism and the paranormal was a common phenomenon and the subject of scientific investigation in the 19th century, it was also from its inception a source of entertainment, as manifest in Pepper's Ghost, using optical projection and magic tricks to present enthralling theatrical shows.

This research demonstrated that Thai temple fairgrounds have exhibited strong influences from Western culture since the 19th century and the beginning of Westernisation in Thailand, particularly since the reign of King Mongkut. Today, advancing technologies challenge traditional indigenous cultural production, with the internet and computer games being more compelling than traditional temple fairgrounds, thus to maintain the vitality of Thai culture such productions must utilise modern technologies to remain engaging for modern users. Projection mapping and realistic theatrical horror can provide a sensory spectacle, alongside traditional local food stalls, folk performances, carousels and acrobatic displays. The temple fairground has changed in numerous respects into something more attractive for new audiences, for example including large music bands with stages and dance floors and extensive light and sound system equipment, or panoramic outdoor cinema

For further art-based practices, I found possibilities to establish emerging technologies to make experiences of art more immersive with increasing interactivity using early optical illusion techniques to create fairground art in 3D installation paintings. I examined video mapping technique with large canvas paintings. Projection mapping is also known as 'spatial augmented reality' (the mixture between real world and virtual world through software and equipment computer-generated sensory input such as text, sound, video and graphics). In the next phase, I examined photography shooting with digital *camera obscura* (pinhole image), and creating large-scale painting with hidden illusions in boxes by using a smartphone to display video reflecting in tiny Pepper's Ghost boxes. I created a series of 3D installation paintings to exhibit at an annual temple fairground event instead of an art gallery. The 3D paintings are created to focus on the process for the audience to be

involved with the local community events. The works were exhibited at the Exhibition Research Gallery in the John Lennon Art and Design Building during March 6–31, 2016.

Technical problems were faced in the execution of these creative arts. Every single piece was created by the collaboration of computing system and flat 2D paintings on canvases. Mostly, my works are large-scale paintings; some of them took from one month to three, and graphic creation entails a lot of graphic information and complex procedures. Once the paintings were accomplished, I started the graphic computing process with the use a lot of raw files pictures to create each animated graphic video. It was a time-consuming process, and if something went wrong I had to re-edit material or start afresh, from the beginning. Moreover, the qualities of animated graphic could be better in earlier works if I had sufficient knowledge to create a wide range of graphic effects for my own works. I found myself learning on the job, with extensive study and creation of my animated graphic videos with limited time and equipment. All problems were resolved with good advice from my supervisor, who encouraged me to find fresh perspectives and come up with innovative solutions.

I would like to take advantage of holographic qualities on my own mapping projection paintings to use in future projects. If possible, I would like to exhibit the new completed artworks at art gallery spaces in Thailand. Besides that, the new experiment projects will be exhibited at major temple fairgrounds, such as the Thailand Golden Mountain Temple Festival Fair held annually in November at Wat Saket Temple and Wat Arun Festival Fair in Thailand, as well as other local fairgrounds across the country. The new artworks will examine the new aesthetics from Thai fairground art integrated with advanced digital technology. The new projects will also examine popular aesthetics from Thai fairground art and the didactic significance of these stories. I will test the effectiveness of established and emerging technologies to make experiences of art more immersive and interactive with audience who participated the fairground events and art gallery spaces.

Appendices

A: Introduction and Overview of the Development of this Practice-Based Investigation

Background

In the early experiments, I experimented with *camera obscura*, the photographic camera technique associated with Pepper's Ghost as a method of creating illusionary ghosts. I approached this established method with graphic computer software and digital equipment including computer, LCD projector and smartphone. Projecting animations onto the paintings produced 3D-like effects and dynamic movement onto the multi-layered paintings. First, I examined the video mapping with LCD projector. Mapping projection is a video projection technique used to turn surfaces into a dynamic video display. The mapped projection paintings enhanced with sounds produces truly beautiful audio-visual artworks. Getting the mapping projection to overlay perfectly on a painting is laborious.

I explored the use of holographic box to display ghosts reflection on clear sheet of plastics. The boxes are installed on the painting where holographic images can generate ghost images floating in the air. The potential of holographic technology can create artwork interacts with audience. Third, I used the original paintings from the early stage to try the ability with advanced photo editing software that produces animated movement of the original painting. The static paintings have been converted to animated graphic paintings integrated with audio-visual elements.

From further art-based practices, I found possibilities in established and emerging technologies to make experiences of art more immersive and some kind of interactive by using early optical illusion techniques to create fairground art into 3D installation paintings. I examined the video mapping technique with large canvas paintings then examined photography shooting with digital *camera obscura* (pinhole image), and created large-scale paintings with hidden illusions in boxes by using a smartphone to display video reflecting in tiny Pepper's Ghost boxes.

The 3D paintings were created with a view to promoting audience participation in local community events. The technical problems for these creative arts result from every single piece being created by the collaboration of a computing system and flat 2D paintings on canvases. Mostly, my works are large-scale paintings, taking up to 14 weeks to complete, and graphic information and complex procedures were necessary, as described previously.

Pinhole Photos with Pinhole Digital Camera and Toy Lens

In the early stages of practice I examined childhood dreams with the aesthetic images from historical *camera obscura* performed in fairground shows. I approached the pinhole photography examination by using Nikon D550 SLR camera with a pinhole lens cap and Holga plastic toy lens for shooting the series of digital pinhole photos and pinhole videos. Pinhole lens cap and toy lens are simple, lightweight and easy to install for all Nikon cameras. The photos provide traditional pinhole camera effect, with vignette and soft edges that fades into the background.

After that, I made a haunted house model from a Paladone Zombie Movie Making Kit purchased from Amazon. The box contains a film backdrop, variety of the characters and props to make my cinematic movie clips. The backdrop is a city scene made from a thin-coated paper (measuring 56 x 38 cm), while the cut-out characters include zombies, survivors, and props made from thick, pre-cut card. Before shooting the movies, I had a plot and storyboard ready with a smartphone and a digital camera to record the series of movies. I got the apps from Paladone's website. When the movie was accomplished, I added special effects and soundtracks before uploading it on my YouTube channel to test effectiveness when the video is projected in the boxes.

Next, I used the 'Interchangeable Lens Compacts': the plastic lenses set 'Holga for Nikon SLR cameras – HL-N'. The lenses come with an adapter to install with Nikon F mount cameras. The set of plastic lenses are included: fixed-aperture plastic lens (60mm), tele lens 2.5x – 120/135, wide lens 0.5x – 120/135, macro lens set and fisheyes lens.

The shooting of pinhole images is simple, with no viewfinder or exposure considerations, and shooting requires a tripod to avoid shaking and a light meter. I got the PinholeMeter application for mobile phones to calculate exposure time and focal length. The photo

shooting with the caps and plastic lenses is different from normal lenses. The photos go blurry with vignetting effect, whereby the edges are dark but the middle is brighter. Photo shooting was conducted on sunny days. Some photos were collected for the animation making in the next experiments.



Figure 8: Holga toy lens for Nikon Camera DSLR



Figure 9: Pinhole photos from Nikon Camera DSLR and Holga toy lens exhibited at the final thesis exhibition

B: The Early Stage of Mapping Projection Paintings with Digital Media Technology

I approached the investigation with small multi-layer canvases with both black and white fabrics to find the best effective solution. The composition of the paintings consisted of a legendary aquatic creature commonly found in the folklore of many world cultures. The mermaid is one most popular Thai fairground motifs. The graphic animations mapped on the multiple-layers painting were made with laptop computers and the graphic programs iMovie, Photoshop, and PowerPoint etc. and mapped on the canvases to test the 3D accuracy mapping and perspective distortion.

All the artworks in the next stages examined the aesthetics from fairground art style, inspired from Thai fairground shows. Most fairground shows reflect supernatural beliefs in Thai society, such as magic and ghosts. The composition of the paintings depicted the scenes from fairground shows; painted with acrylic, oil colours, glow-in-the-dark paint and found objects. The paintings were completed but materials to examine them with digital technologies made the experiences more immersive. The animated graphic videos projected onto this painting using projection mapping technique were created by advanced graphic programs developed by Adobe Systems: Adobe Photoshop and Adobe Illustrator. The graphics were finally edited with Adobe Premiere Pro, and After Effect for better quality and smoothly animated movement than in the previous stages.

‘Mermaid and Other Legendary Aquatic Creatures’

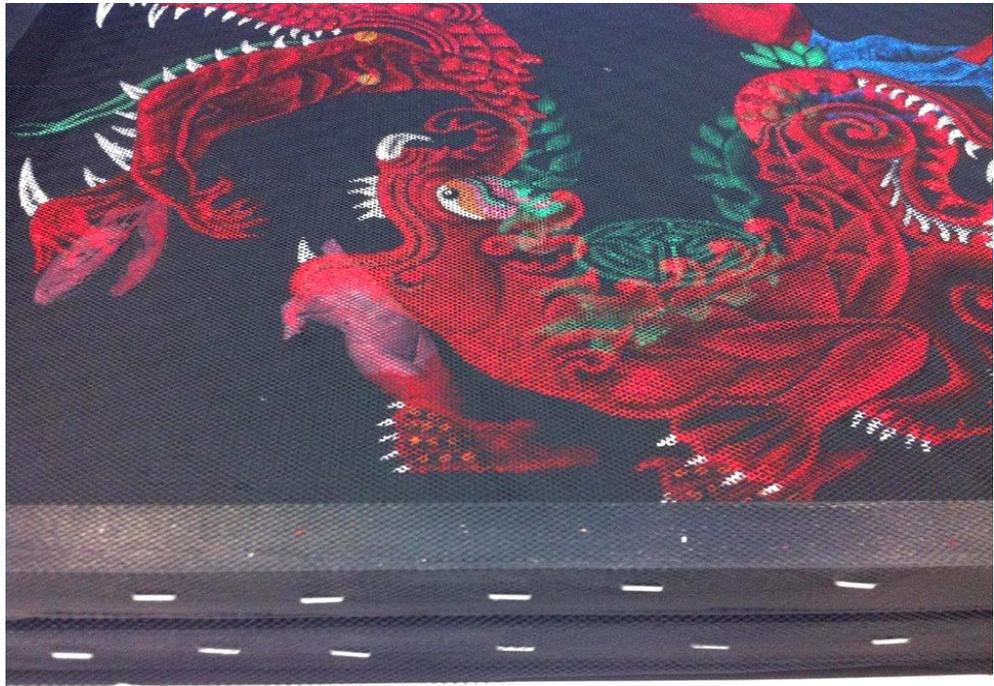


Figure 10: Details of the three-multi layered painting



Figure 11: ‘Mermaid and Other Legendary Aquatic Creatures’

‘Haunted House I’ Painting

Acrylic, 1.65 x 3.00 m

Traditional entertainments like fairground shows struggle to compete with modern technological change, which has changed human behaviours; people can watch any entertainment media on the go with smartphone devices. Technological change also causes new kinds of habits and addictions; a new generation is spending too much time using many forms of social media. Fairground shows are perceived as old-fashioned activities for them, replaced by something more interesting. I am interested in the artistic fairground styles reflecting stories from traditional Thai belief systems, which form an important vehicle for the preservation of Thai culture. This is an early painting developed from my postgraduate study that adopts a Buddhist perspective, reflecting the meaning of superstition (credulity and intoxication) as opposed to enlightenment (being awakened and brightened). Animism and Buddhism coexist peacefully in their own spaces in Thai society, but they come together in a common space and time for temple fairground events. The toothbrush stencilling technique was used to create transparent figures and ghost-like effect for figures in this painting (Figure 14).

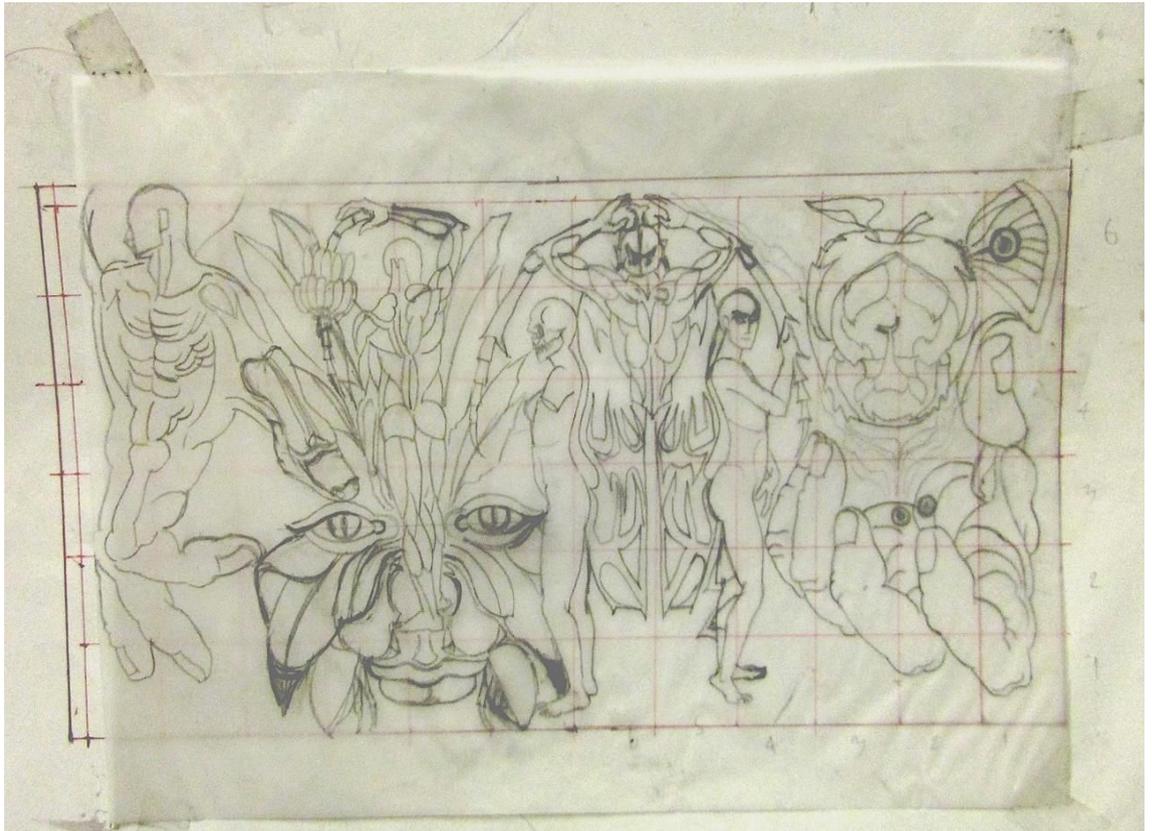


Figure 12: Sketches for 'Haunted House I' painting



Figure 13: Painting in progress



Figure 14: Whole painting accomplished by toothbrush stencilling technique



Figure 15: Completed 'Haunted House I' painting

‘Haunted House in the Boxes’ Painting

This artwork was inspired by childhood memories from the scariness and fun of haunted house experiences. The painting imitates a haunted house entrance and facade where the audience can see these images from every viewpoint. The artwork hides three distorted anamorphic images in the paintings. The painting also hides the animations in the four tiny Pepper’s Ghost boxes installed at different height levels for all ages of audiences. Approaching the hidden moving images requires a smartphone. The artwork was made from reusable materials and ‘found objects’. The painting was painted with contrasting colours in the style of fairground art.

1. The tiny boxes were made from the assembly of five 3mm box-joint pieces. The box patterns are easily drawn online from make-a-box websites by setting the dimensions: width x height x depth, saving these dimensions and generating PDF drawings to print out using 3D laser-cutting machines. The box sizes are compatible with commercially available smartphones.
2. After the boxes were accomplished, I put the clear acrylic plate at a 45 degree position to reflect the projection images from smartphones.
3. I uploaded the accomplished videos to my YouTube channel.
4. Next, I created the QR codes using the online website QR Code Generator, and printed each code on sticker printer papers before sticking them on the side of the boxes. The audience can use QR code reader or LINE application from smartphones to scan the QR code, which is linked to uploaded videos.
5. Smartphones can be used to set the brightness and volume before putting the mobile screen down to the boxes. The length of each video length is decreased to 1-2 minutes, from my previous works that went for up to 8 minutes, which took a lot of effort and editorial skill.



Figure 16: 'Haunted House in the Boxes' (painting in process)



Figure 17: Details of the three anamorphic images

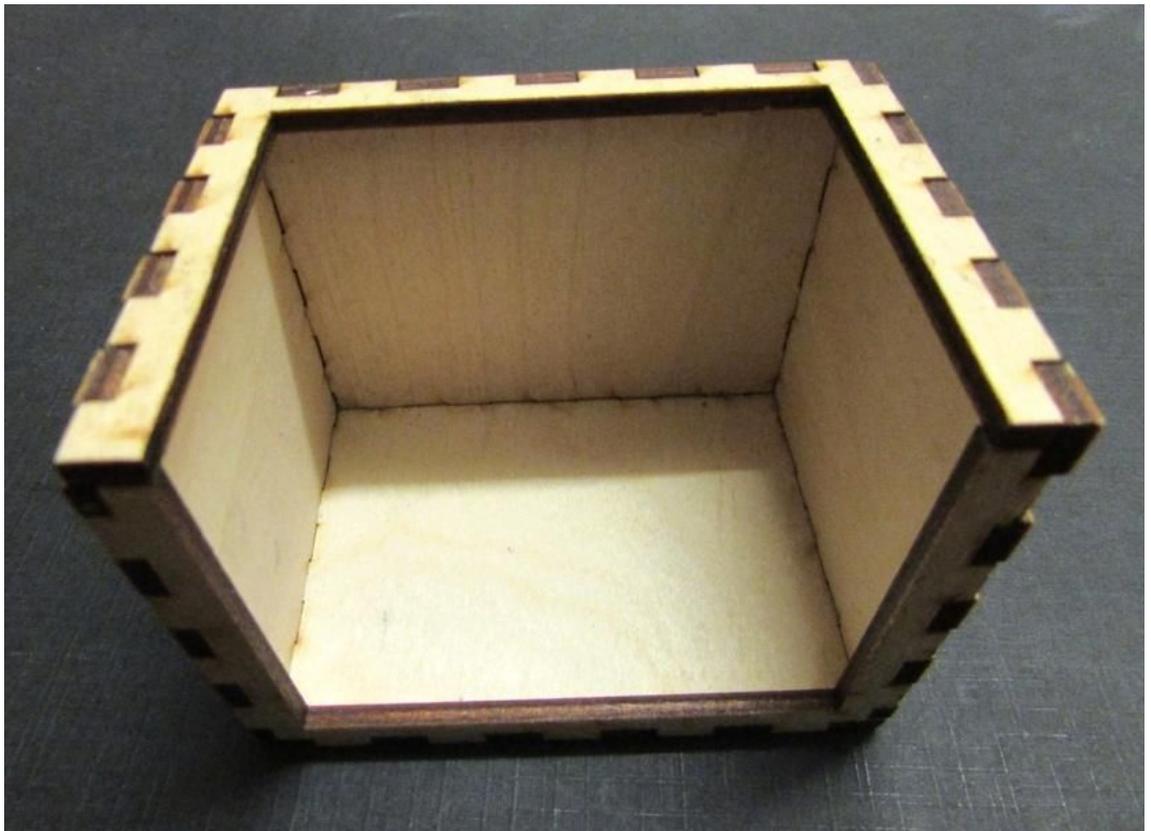
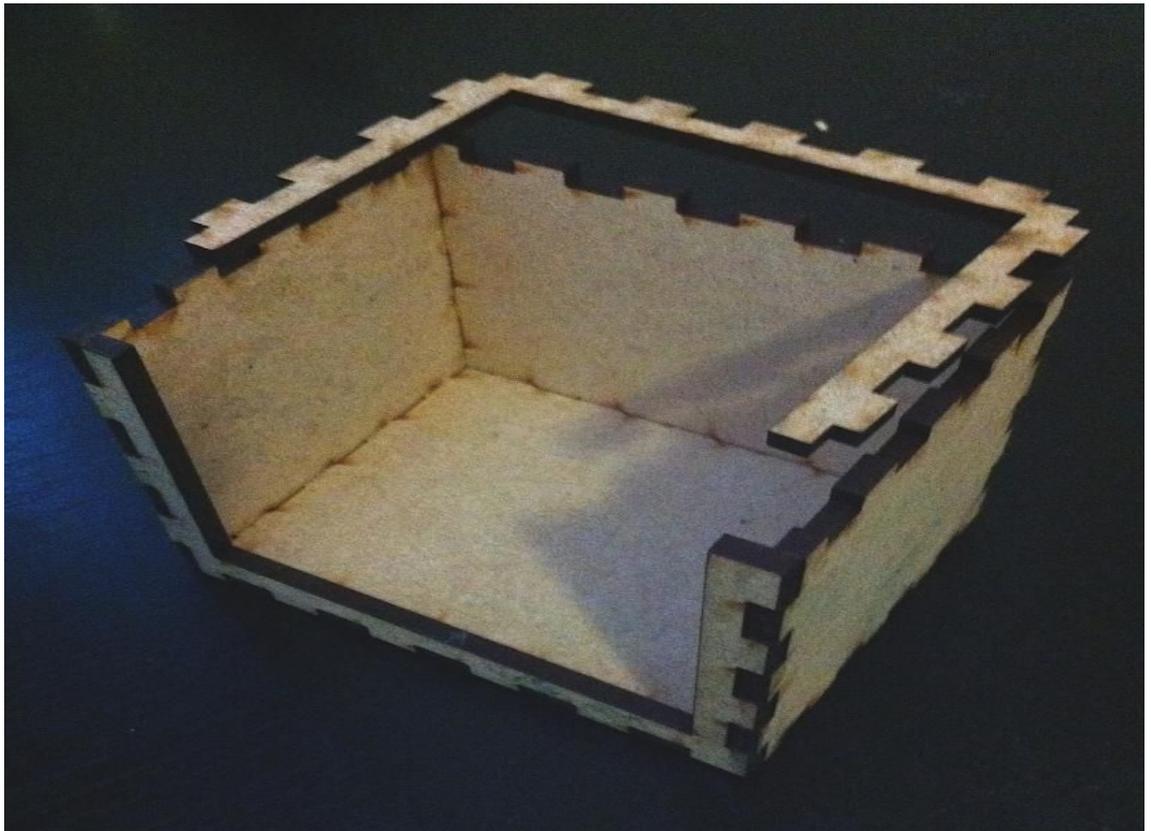


Figure 18: Plywood box joints



Figure 19: Plywood boxes installed in the plywood painting

‘Supernatural Power’ Painting

An early experiment of multilayer painting with digital media from the concept of ‘Haunted House’. This iconic Thai temple fairground piece has strong influences from 19th-century optical illusionary techniques. Although it is a relatively low-tech technique, the ethereal ghost can cause horror due to the explicit abhorrence of the spectacle. Unfortunately, the creation of illusionary ghosts applied in Thai haunted house gradually declined during the 20th century; the concept of this project is to investigate how modern technology can be effectively used to embody the myths from traditional Thai belief systems. The painting is composed of various iconic images inspired by Thai traditional art: ghosts, evil spirit, folklore creatures, etc. This painting is an early investigation with mapping projection technique. The painting requires an LCD overhead projector and laptop computer for displaying in the light-controlled room.



Figure 20: The making of three-multi layer frames with black soft mesh fabrics

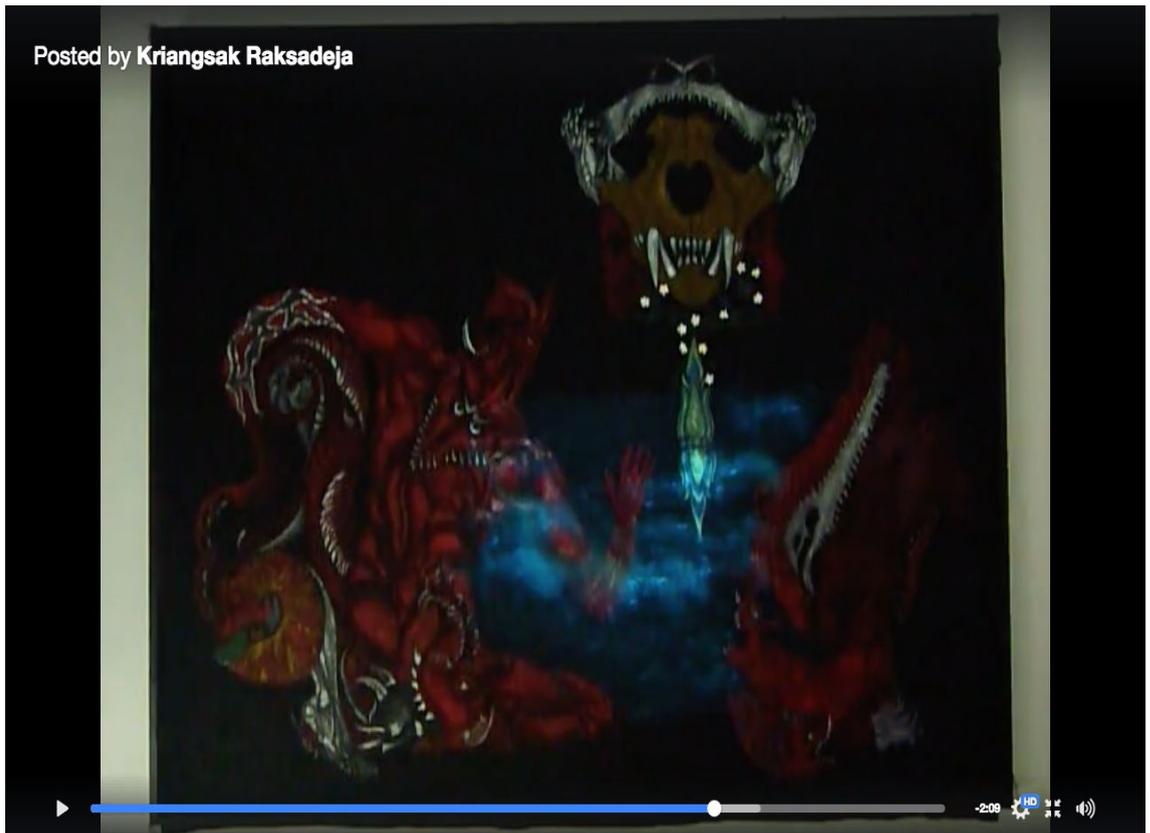


Figure 21: 'Supernatural Power' with the mapped projection video

‘Haunted House II’ Painting

Oil painting, 1.65 x 1.65 m

The belief in the supernatural is based on the violation of natural normalcy as apprehended by ‘science’ (i.e. positivism). The magical power of evil spirits is dissipated by any attempt at enlightenment, and emboldened by darkness and doubt. In the 19th century, the Pepper’s Ghost optical illusion technique was devised for theatrical plays and fairground haunted house shows. This multilayer painting made from black soft mesh fabric is an examination of a projection mapping video. The painting is added with various ‘found objects’ collected from various fairground markets: glow-in-the-dark threads, toys, embroidery, ornaments, etc. The two paintings were painted with both acrylic and oil paints respectively. The completed paintings were prepared to the next experiment with digital technologies. These two paintings were tested with GIF, Flash animation, and stop motion technique made from freeze-frame images collected from the early stage of experiments before the series of images were transformed into high-definition videos.

The video mapped onto the painting embodies the visible and tangible forms of ghost illusion effect. The painting requires an LCD overhead projector and laptop computer for displaying in the light-control room, where the ‘Supernatural Power’ painting displayed adjacent to this one. Generally, fairground shows are nocturnal events (i.e. after sunset), so many activities are held in the night, with special lighting. One of my inspirations sprang from historical *camera obscura* shows performed in dark rooms like other fairgrounds shows. Similarly, the paintings will be exhibited in a dark room and the surroundings of the projected image have to be relatively dark: the black soft mesh fabric served as space pattern which already defined as the final sketch.

Space is an important visual element in composition of shape and form in art, which is related to other visual elements. In these paintings, the space defined by lines created the visible 2D dimension shapes, while the soft mesh fabric became a space pattern around the defined shapes. The black fabrics is also emphasised intensity the colour shapes and figures as well. The portion between space, shapes, and forms on canvas is equalised to maintain when seeing it without mapping.

To achieve these paintings I examined the usage of contrasting colours (red and black), or even complementary colours (orange and blue, red and green), which provides true contrast intensity. The paintings were painted directly from acrylic or oil colour tubes, or mixing with analogous colours to maintain the painting still brighten in the dark space. The semi-transparent quality of the black mesh fabrics layers allow lighting spread throughout the underneath layers with the result of blurry images. When the fairground paintings were accomplished, the next trial is a combination between pigment colours and spectrum colours projected from LCD projector.

In the first stage, I began the series of experiments with drawing a rectangular shape on each slide page on OpenOffice presentations (Apple Inc., 2018b), filled in a colour on each single slide from the 'menu bar' that resemble to the range of spectrum colours: (ultra) violet, blue, cyan, green, yellow, orange, red, and (infra) red. The LCD projection and my MacBook Pro did not fit entirely on the screen, requiring some adjustment for the display resolution to fit with the LCD projector:

- Set the resolution for MacBook Pro display's resolution
- Choose Apple menu > System Preferences, click Displays, and then click Display.
- Select Scaled, and then select the options for the connected display.

Next, mapping the projection of each single slide onto the paintings to test the results occurred, whereby spectral colour beams were projected onto the completed paintings. When the rectangular backgrounds were mapped onto the paintings painted with various pigment colours (acrylic, oil, glow in the dark paints, and various 'found objects'). The combination between pigment colours and spectral colours produced the 3D effect. Moreover, the three layers are also provided gradually distorted images that appears when viewed from different angles, but will be a normal painting when viewed from a certain point (front view). The *Merriam-Webster Dictionary* (2018) notes that "anamorphosis" is derived from Greek *anamorphōsis*, meaning 'transformation' and 'to shape'. The result of applied effects with layered fabrics generated 3D-like impressions where the fabrics served as a filter to turn down the colour for a softer effect, reducing intensity in underneath layers. Mapping moving animations on the paintings requires precision. Stories from the

video run through the black space patterns, and sometimes overlap with provided figural shapes and forms on the paintings.

Working on my first animation, the consecutive images were made from the ready-made GIF file, saved as a PDF file before converted to JPG files. The JPG images were collected and combine to the iMovie program frame-by-frame. The actual animation is setting at 12 fps, so the movement of the animations are not smooth as expected. I found that the graphic animation is much better move when to use with 16 fps similar to the standard of making black-and-white silent films.

The second experiment is making graphic animation from the freeze-frame photos. I used the iMovie from MacBook Pro to edit the videos and freeze-frame photos to make the graphic animations for my paintings. With iMovie, the animations can be created by mixing photos and other types of video clips in the same project. The videos can be mixed with sound, special effects, filters, and other features before save in the *Project Library*. The raw video files can be edited and export as a lower resolution to highly quality 4K video (Apple Inc., 2018a). The files can be share directly from iMovie to Vimeo, which is converted in to a lower resolution before sharing on YouTube, etc. The video files are supported on several platforms, including mobile phones and laptop computers.

The projection mapping began with graphic animation from Microsoft PowerPoint and graphic images (GIF and PNG images). Each image was moved on a frame-by-frame basis like stop motion technique. The size of each graphic animation must be exactly related to the actual size of forms and spaces on the black surface. Next, the PPT file was exported as a PDF file to make the graphic animation with iMovie, then special effects were added: animations, graphic and sound effects (the real sounds effects from nature: crickets, bullfrog, raining, lighting and thunder, etc.). The natural sounds represented natural phenomena like thunderstorms and raining. Finally, the finalised graphic animations were exported as HD 1080p movie (1920 x 1080).

The final graphic animation was rendered from an LCD projector onto the painting at the actual location. The most difficult part of the experiments was making the graphic animation fit specific forms and spaces on the painting. The painting consisted of three layers of black soft mesh fabric layers and display in the lighting controlled room, where

the lighting and graphic animations from LCD projectors revealed images. Projection mapping focusing images on soft transparent fabrics is challenging, and sensing transparency is difficult because the projection will be penetrate all three layers. The images will look normal when viewed from the front, but will become three overlapped images when looking from different angles.



Figure 22: 'Haunted House II' painting in process

‘Moon Diamond Cats’ Painting

Oil painting, 0.90 x 0.90 cm

This oil painting was inspired by the supernatural importance attached to cats, famously worshipped in ancient Egypt and believed to have many supernatural powers (e.g. the ability to see spirits) in many cultures worldwide. The cat is a nocturnal hunter, roaming the spirit realm of the night world in the darkness. Many Thais believe that cats can see the spectre of death, and they are often associated with bad omens, feminine power and sexuality. In this painting, the cats are associated with a *Nang Tanee* (as confirmed by the banana trees in the background).



Figure 23: Detail from ‘Moon Diamond Cats’ painting

‘Feline Camouflage’ Painting

Oil painting, 1.20 x 1.65 cm

Suea-Saming (‘Tiger Man’) is a ghost or a demon according to Thai and Karen belief concerning forest spirits. Suea-Saming has the shape of a large tiger and feeds on men. It is believed that he is a shape-shifting creature, a human metamorphosed by sorcery or a demon incarnate, whose chief passion is eating humans, whose souls then haunt the tiger and who can materialise in human shapes. Another belief holds that Suea-Saming is normally in the shape of a man, but he can metamorphosis into a tiger during the night when he hunts, which may also involve shape-shifting to lure victims (e.g. by appearing as an acquaintance of the prey or a pilgrim monk to entice them deeper into the forest). Though Suea-Saming holds a strong position in Thai belief, it is rarely found in Thai temple fairground as tigers are rarely seen in this context. Moreover, the popular ghosts and spirits in the fairground are usually female, such as filth-eating spirit or *Nang Tanee*, a tree nymph (the female spirit inhabiting the banana tree).

The shape-shifter or metamorphosis of men into beastly and ferocious creatures can be found among world cultures, such as the berserker and werewolf in European cultures; the term ‘lycanthropy’ describes the mythological ability or power of a human to shape-shift into werewolf. India’s Hindi myth has a story about Narasingh, a half-man, half-lion creature who is the avatar of Vishnu. Feline creatures that humans are commonly believed to be able to metamorphosis into include cats, tigers, lions and lynxes.



Figure 24: Detail from 'Feline Camouflage'

‘Fairground Lover’

Oil painting, 0.90 x 0.90 cm

Amusement rides are iconic of fairground events. Merry-go-round rides are commonly populated with horses and other animals mounted on posts. Ferris wheel is a combination of pleasures of a high view and gentle motion and mild thrill of being suspended. Both carnival rides are swirled in different directions; merry-go-round movement is a flat ride while the Ferris wheel is vertical. The movement of the two rides is like a series of gears and springs of a traditional type of watch movement.

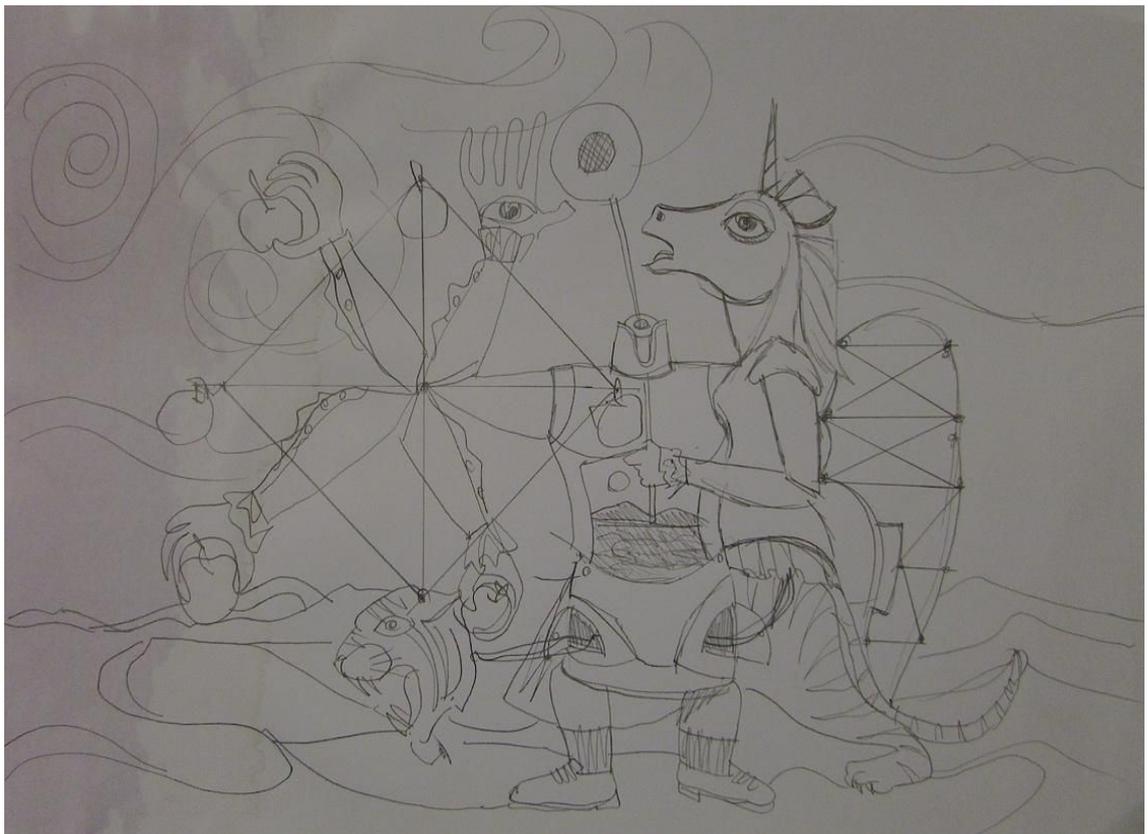


Figure 25: Sketch of ‘Fairground Lover’ painting

C: Fairground Art Paintings with Mapping Projections and Holographic Media

‘The Mermaid and the Wings’ Paintings

Video, acrylic on multilayer black soft mesh fabric frames (0.45 x 0.60 m.)

These paintings are from the early stage in the examination of paintings with digital media technology when I started the investigation with small multilayer canvases with both black and white fabrics to find the best results. The graphic animations were simply made with laptop computers and the graphic programs iMovie, Photoshop, and PowerPoint, etc. Next, the paintings were animated by projecting the animated graphic video onto the canvases to test the 3D appearance, accuracy mapping and perspective distortion. The knowledge from this stage was further explored in subsequent paintings.

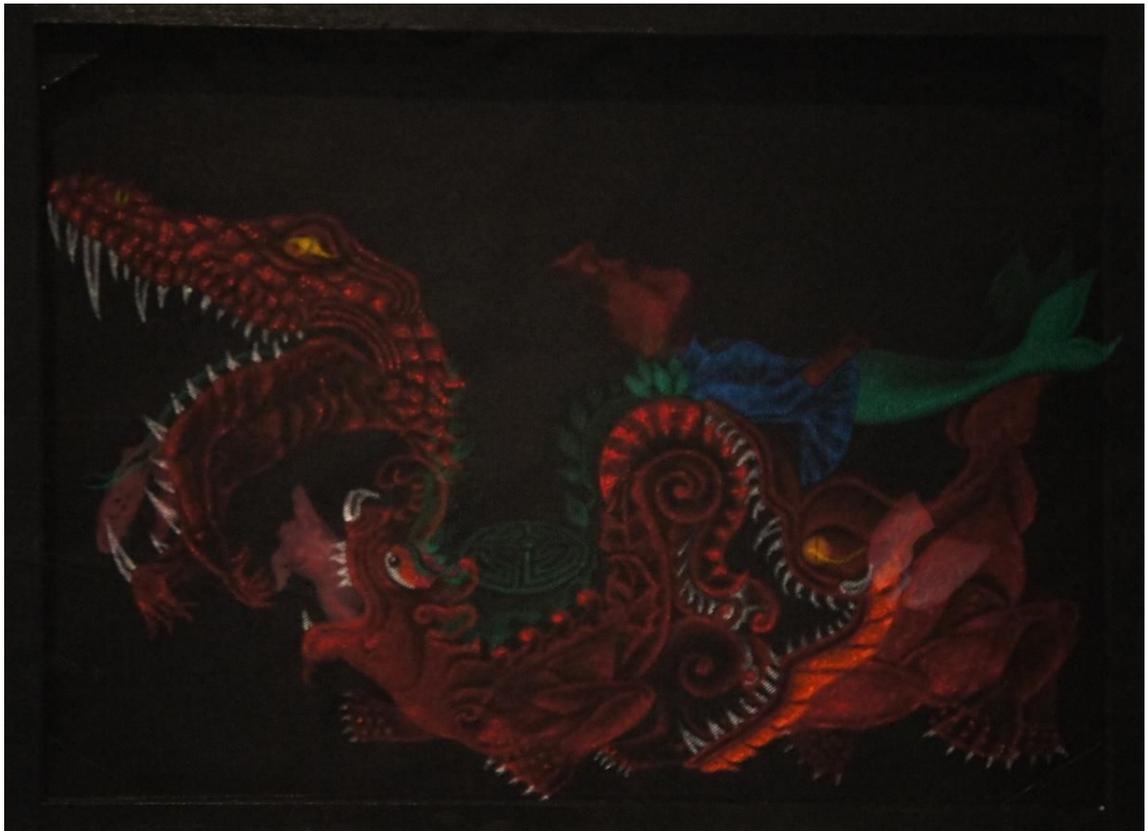


Figure 26: ‘Mermaid’ painting



Figure 27: 'Mermaid' experimented with mapping projection technique

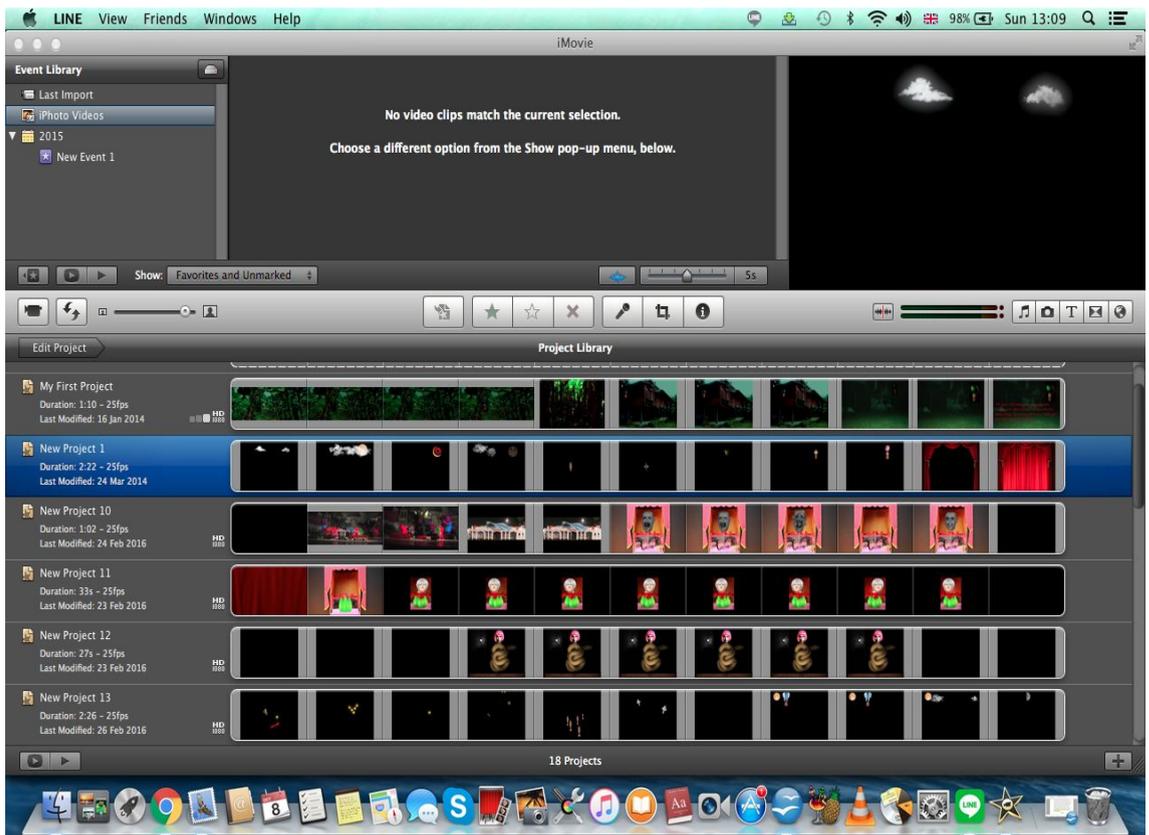


Figure 28: Animated graphic videos with iMovie program

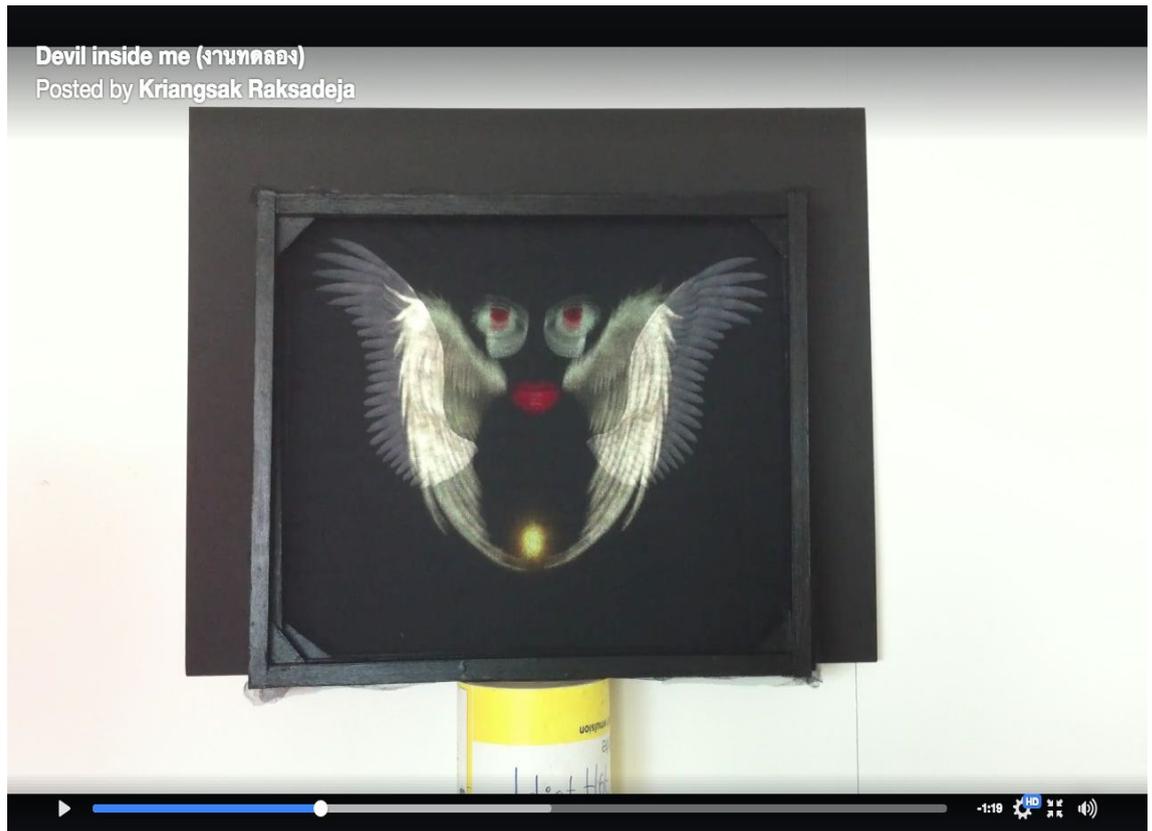


Figure 29: 'Wings', an experiment with mapping projection technique

‘Haunted House in the Boxes’

Oil colour on plywood and animations (1.65 x 3.00 m.)

Like ‘Haunted House’ I and II, this artwork was also inspired by childhood memories of haunted house shows. The painting is a replica of a haunted house entrance and facade where the audience can see the picture from every angle viewpoint. The work hides the three anamorphic images in the painting which present a distorted image that appears in natural form under certain conditions, as when viewed at a raking angle. The painting also hides the animations in the four tiny rectangular Pepper’s Ghost boxes installed at different heights audience members of all ages. Approaching the hidden holographic images requires a mobile phone, like purchasing a ticket. The artwork was made from reusable materials, for example, plywood, metal sheet, bolt and screw and daily life objects, with strong and contrasting colours, which are preferred among fairground artisans.

The four animations were made using MacBook Pro and iMovie program, as in the previous paintings. Each animated video used stop-motion techniques from freeze-frame photos collected from photo shooting with Nikon D550 SLR camera and normal lens. The number of images appeared to move on its own but the movement was uneven and inconsistent, which was improved in subsequent paintings. The accomplished animated video was uploaded on YouTube, ready to use the QR code reader application from various electronic devices such as smartphones. Each video run was no longer than one minute, to draw attention from audience. The four animated videos are:

1. The Eye (duration 0:43 minutes)
2. The Snake Wife (duration 0:28 minutes)
3. The Vase-Woman (duration 0:34 minutes)
4. The Two-Headed Men (duration 1:03 minutes)



Figure 30: The tiny plywood boxes placed on the painting

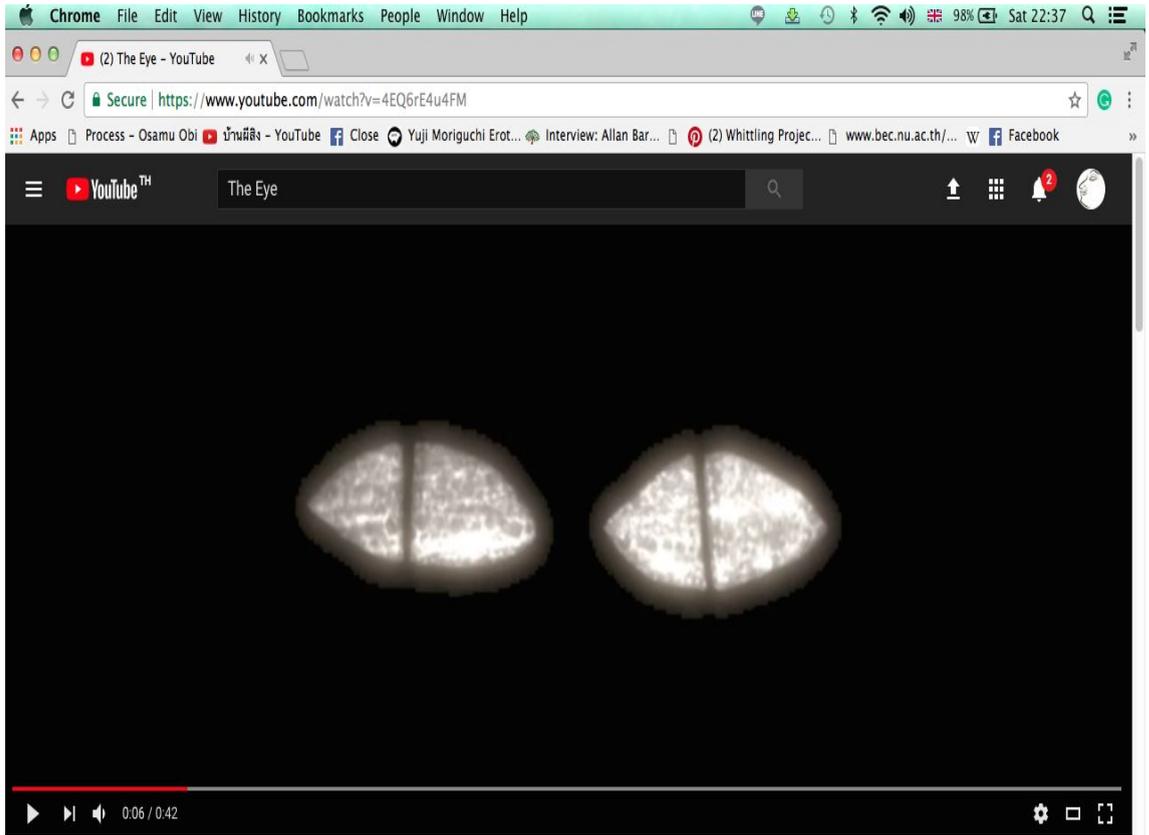
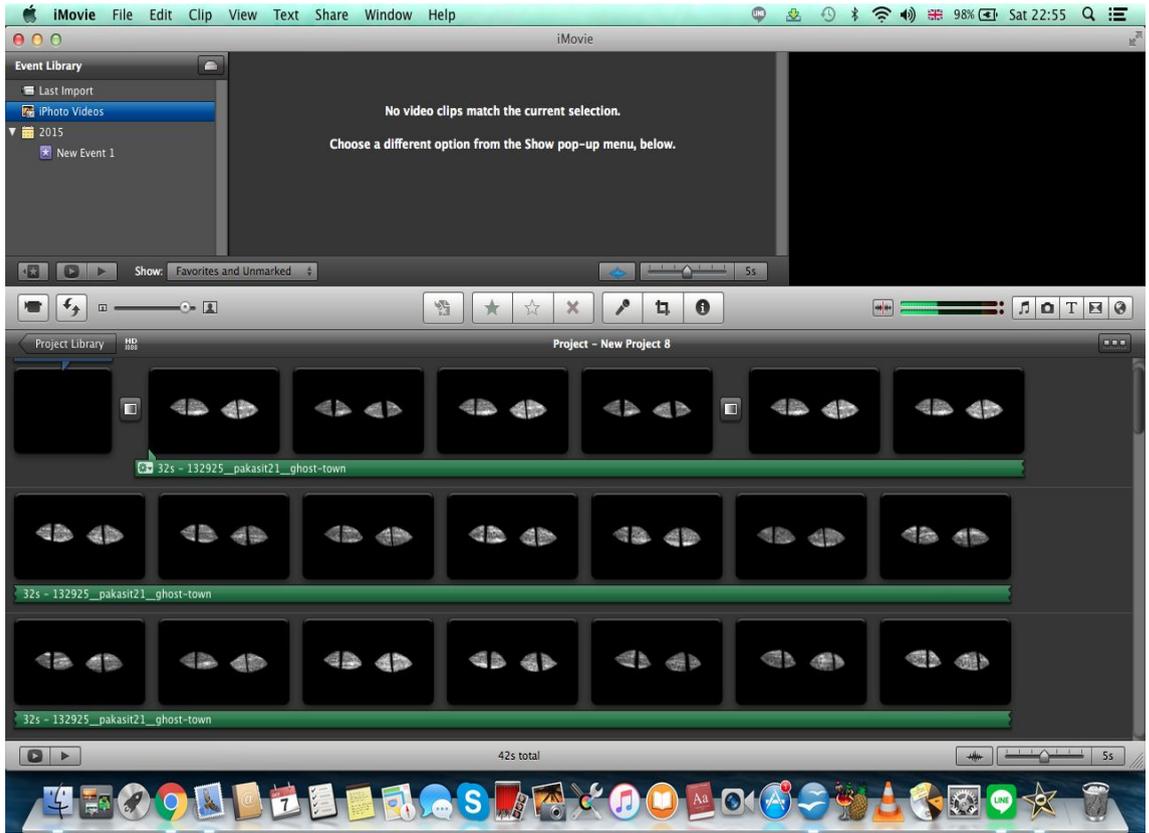


Figure 31: 'The Eye', animated video on YouTube channel (created by iMovie)

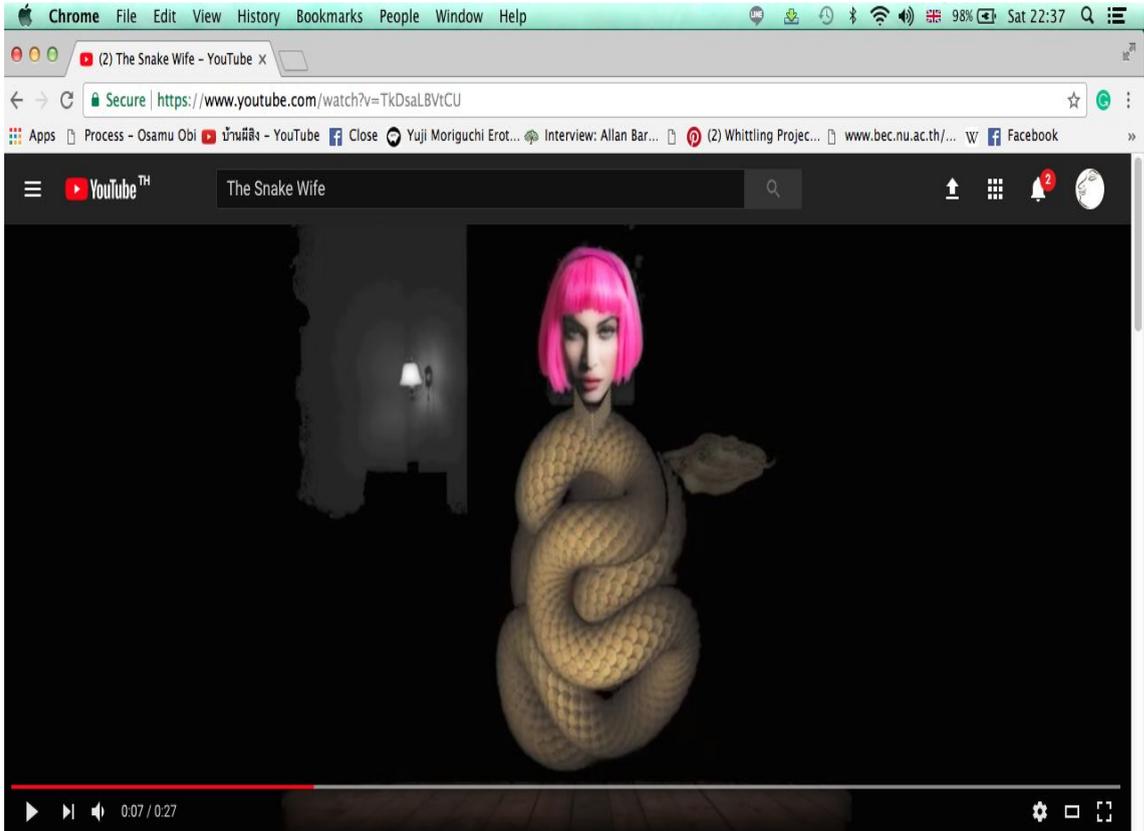
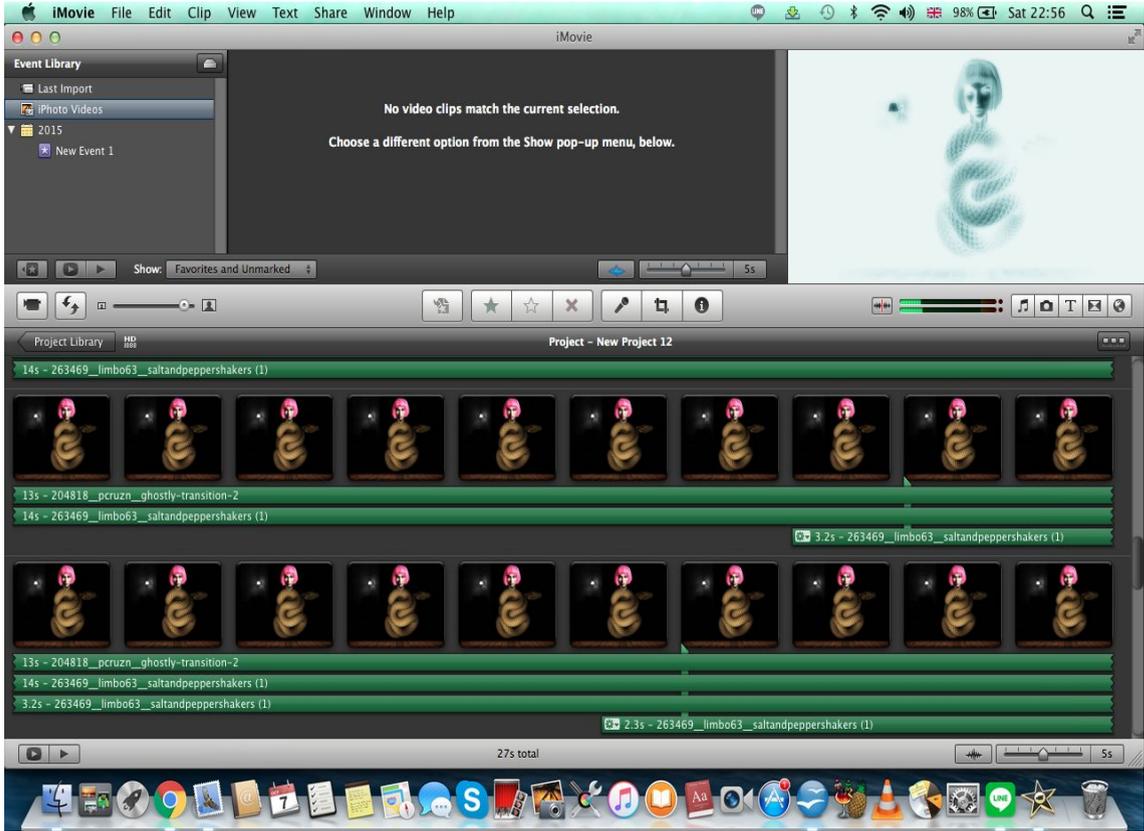


Figure 32: 'The Snake-Wife', animated video on YouTube channel (created by iMovie)

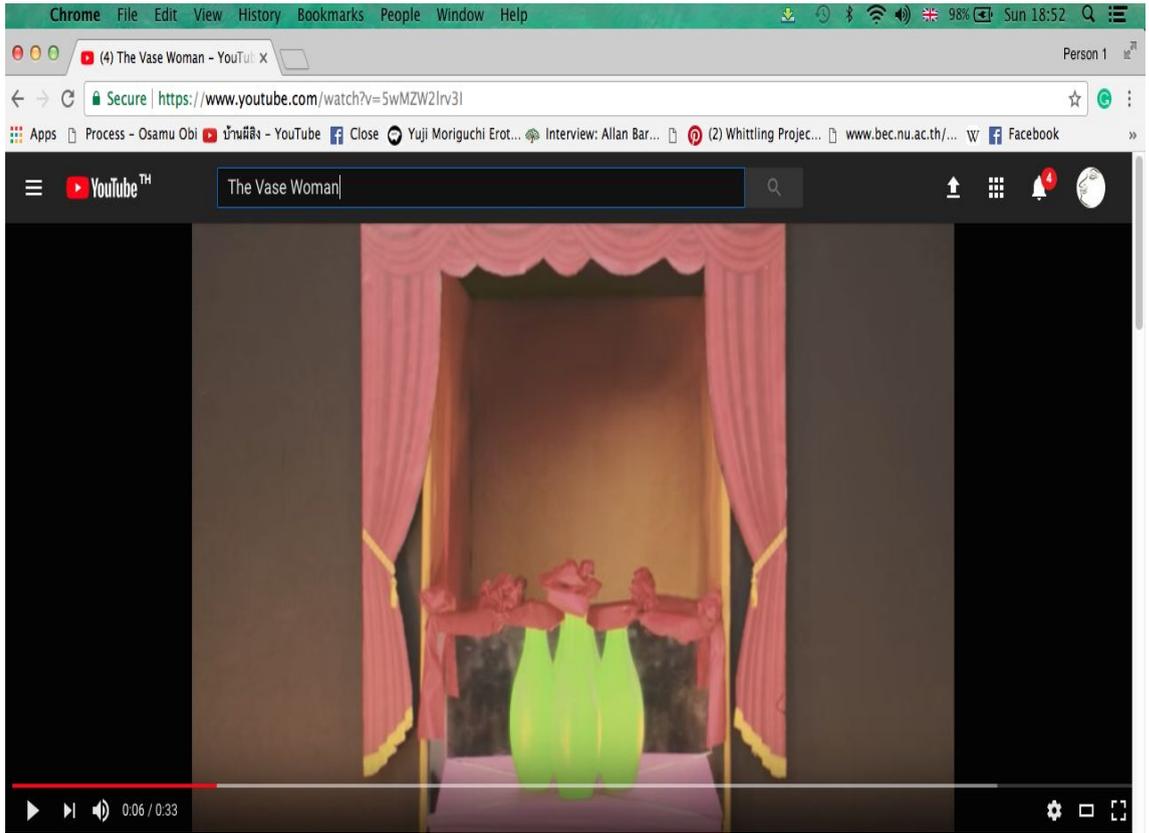


Figure 33: 'The Vase Woman', animated video on YouTube channel (created by iMovie)

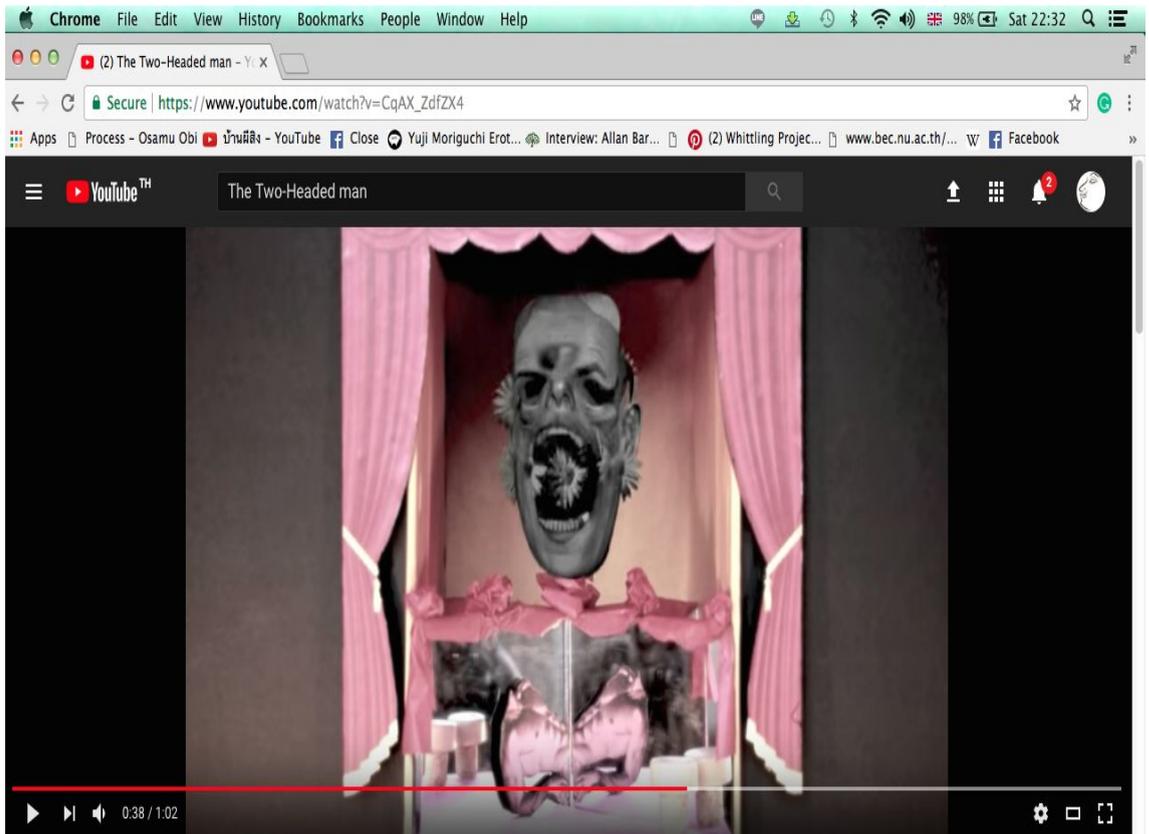
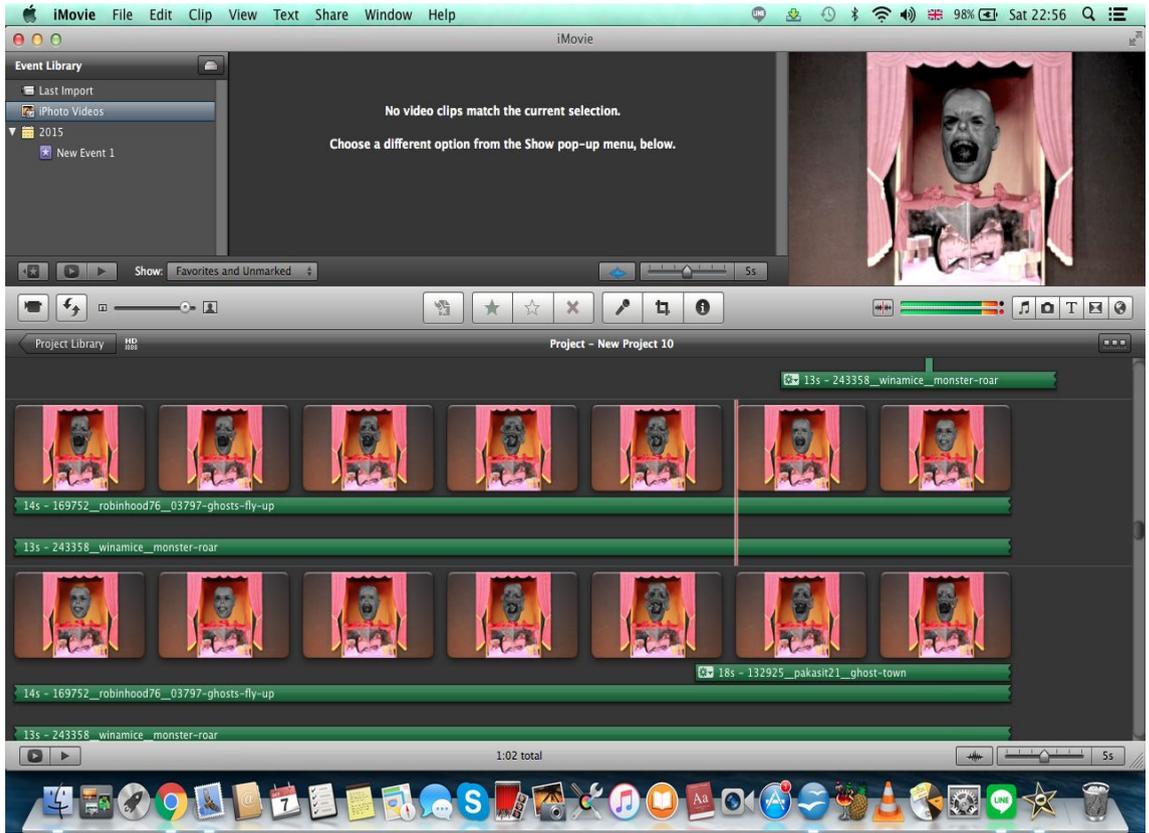


Figure 34: 'The Two-Headed Man', animated video on YouTube channel (created by iMovie)

D: Projection Mapping and Animated Graphic Paintings

‘Feline Camouflage’

Oil colour on canvas, 1.20 x 1.50 m

This painting depicts *Suea-Saming* (‘Tiger Man’), a half-man half-tiger consumer of humans, as described previously. The three paintings ‘Feline Camouflage’, ‘Moon Diamond Cat’ and ‘The Fairground Lover’ experimented with dynamic projection mapping technique and animated graphics. The video and graphic images were accomplished by the imaging and photo editing software programs Adobe Photoshop, Adobe Illustrator. These graphic software programs converted the 2D paintings into the animated graphics. Some moving graphic images were added special effect with Adobe After Effect, and then overlaid each image on specific areas, such as the blooming of torch gingers, and the nocturnal sky turning into twilight.

The Feline Camouflage also added the ready-made GIF animations and overlaid the faces of a black panther and clouded leopard to show the transformation of the Tiger Men. Next, the sounds and sound effects were added and edited with Adobe After Effect. At the final stage, the videos were finalized with the video editing software Adobe Premiere Pro, and then exported to HD 1080p videos. The completed animated graphics are ready to test how these graphic images and sound to integrate within the paintings. Towards the beginning of the video is accompanied by the horrific sound recorded from a Thai cemetery, but the last 17 seconds of the video is a sound of forestry tractor (the video length is 1.26 m). The sounds imply the deforestation of land, converted to human habitation or industrial use. Deforestation have a negative impact on the loss of habitat for millions of wildlife species, including *Suea-Saming* and other mythical creatures.



Figure 35: 'Feline Camouflage'

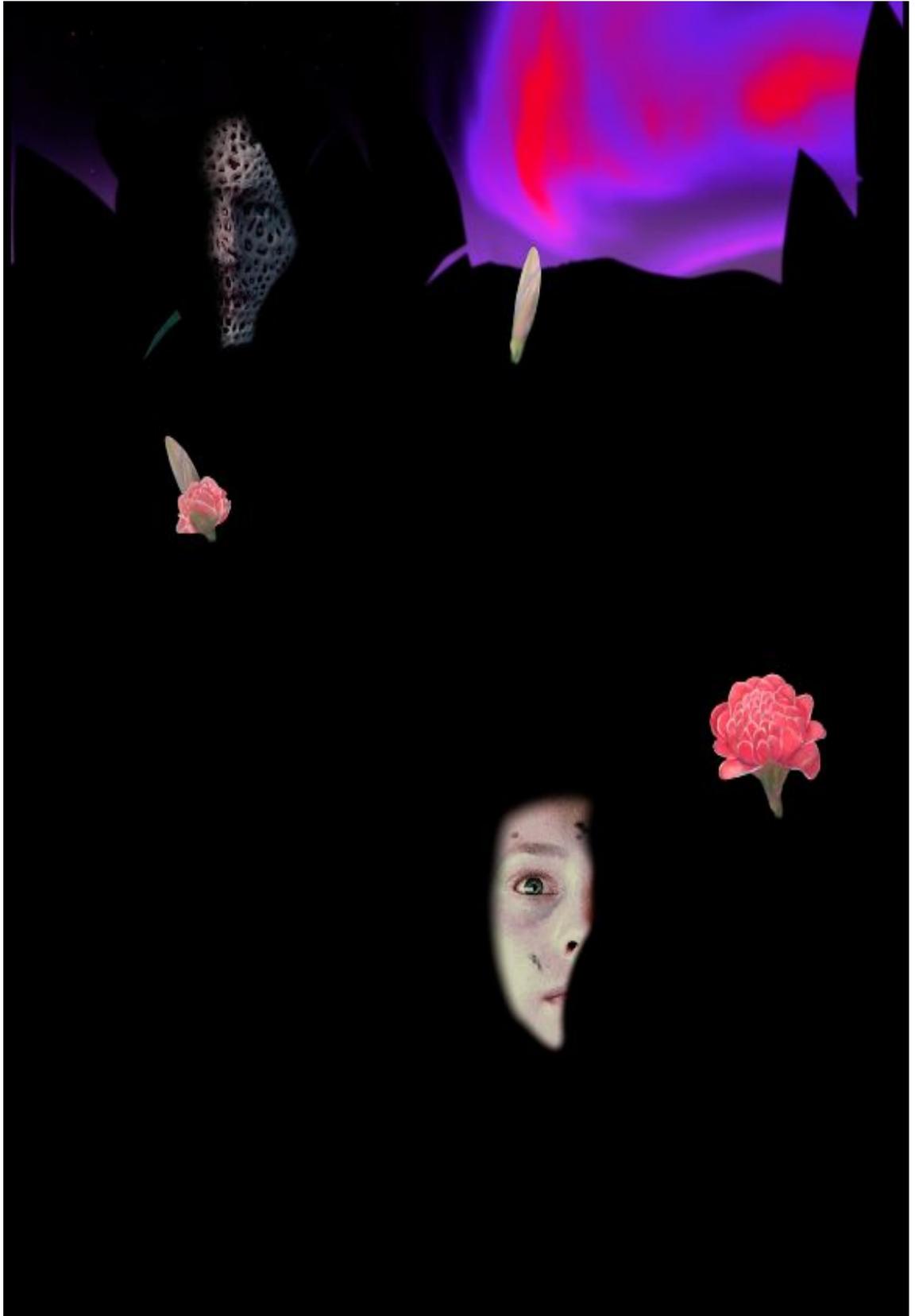


Figure 36: Projection mapping for 'Feline Camouflage' painting



Figure 37: 'Tiger Man'

'Moon Diamond Cat'

Oil colour on canvas, 0.90 x 0.90 m



Figure 38: The original 'Moon Diamond Cat' painting



Figure 39: Projection mapping for 'Moon Diamond Cat' painting, I

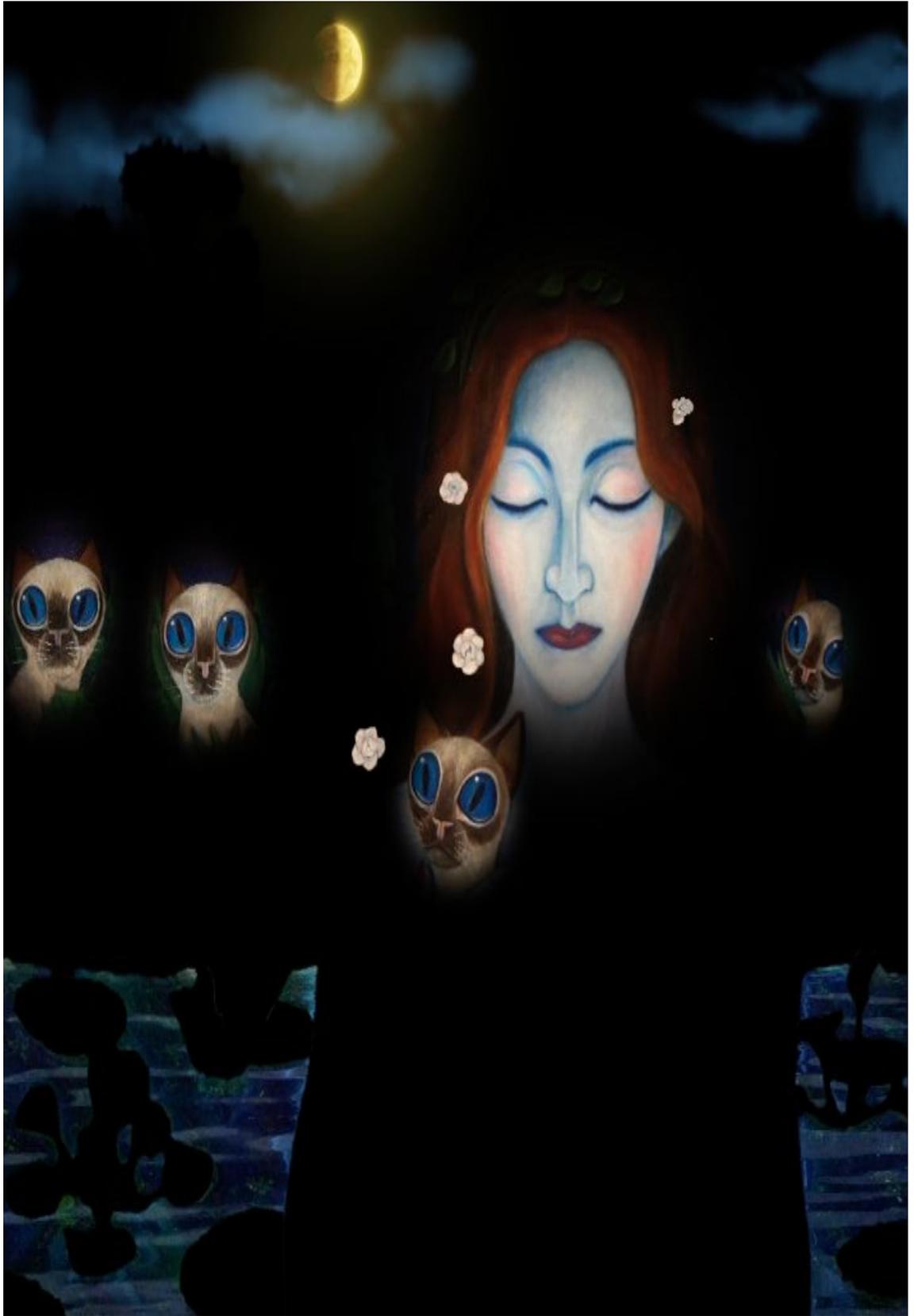


Figure 40: Projection mapping for 'Moon Diamond Cat' painting, II



Figure 41: Animated graphic for 'Moon Diamond Cat' painting, I



Figure 42: Animated graphic for 'Moon Diamond Cat' painting, II

‘The Fairground Lover’

Oil on canvas, 1.00 x 1.20 m

I was very inspired by the two particular amusement rides: merry-go-round and the Ferris wheel. Both are iconic fairground rides with similar principles of operation on different planes. For some reason, merry-go-rounds in the UK and Thailand typically turn clockwise, while in other European countries they turn anti-clockwise. I would like to express the fantastic joyfulness of the two amusement rides with dynamic movement in the painting: the swirling night clouds, and the clockwise circular movement of the Ferris wheel. The fairground organ sound accompanied the artwork to make it more evocative of genuine fairground attractions.



Figure 43: Animated graphic for 'The Fairground Lover' painting, I



Figure 44: Animated graphic for 'The Fairground Lover' painting, II

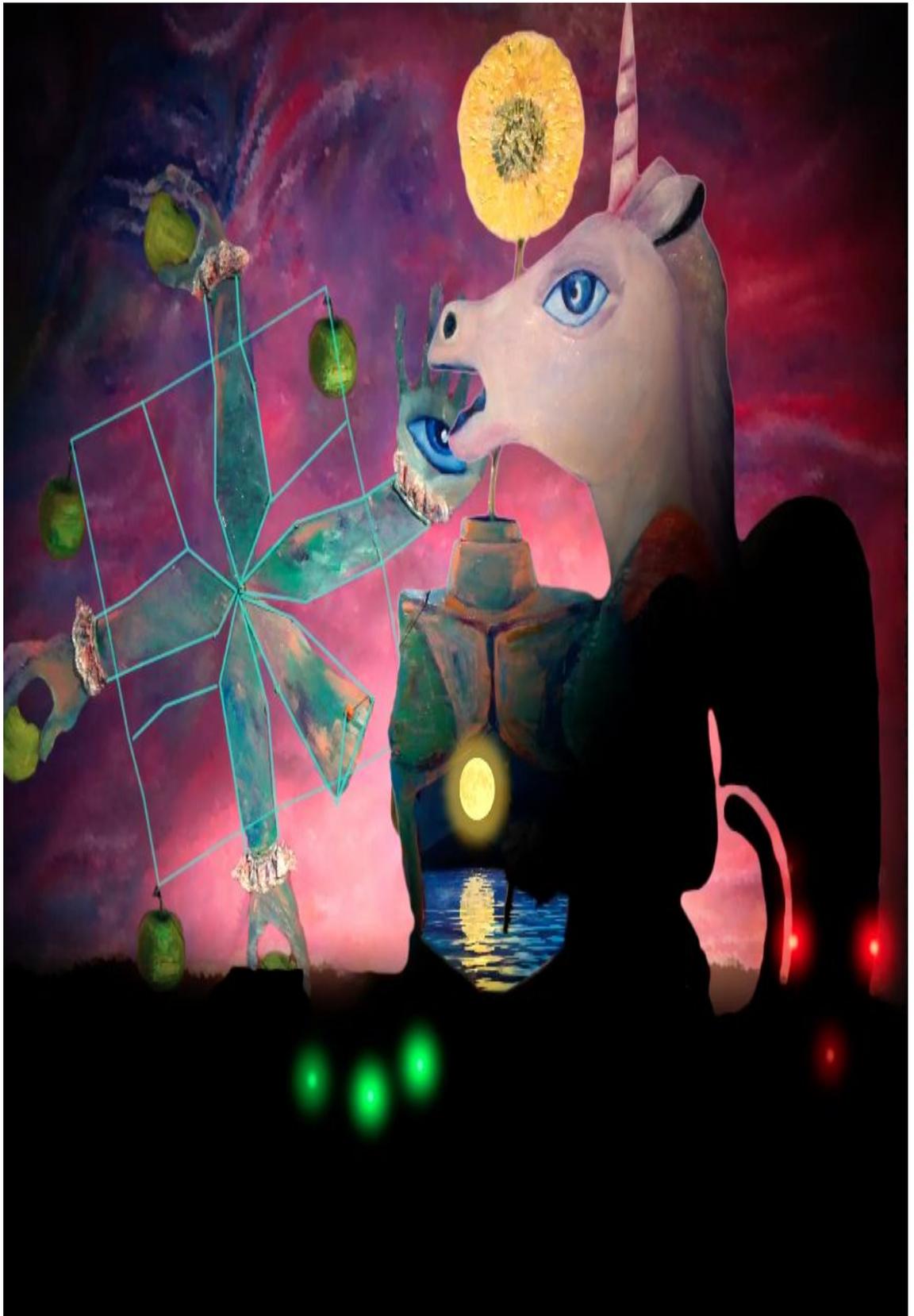


Figure 45: Projection mapping for 'The Fairground Lover' painting, I



Figure 46: Projection mapping for 'The Fairground Lover' painting, II

‘Haunted House II’

Video & oil colour on black soft mesh fabric (1.60 x 2.00 m.)

This multilayer painting has a strong influence from fairground haunted house shows I experienced as a child, as explained previously. The painting was painted with various colour paints: oil, neon colours, and ‘found objects’, fragment of an object that collected during the Halloween festival in the UK, such as glow-in-the-dark threads, toys, embroidery and ornamental things etc.



Figure 47: 'The Haunted House II' painting with mapping projection

‘Superstition’

Video & acrylic colour on black soft mesh fabric (1.60 x 2.00 m)

This painting is motivated by supernatural folk beliefs reflected in haunted house shows, an iconic Thai temple fairground attraction. The theatrical illusion has strong influences from 19th-century optical illusionary techniques. The creation of illusionary ghosts among Thai haunted houses is gradually declining with the rapid development of digital technology. The concept of this investigation is to investigate the uses of light and sound integrated with iconic images from Thai fairground art to reinvigorate such attractions. At this stage, I would like to examine the new aesthetics meaning of the painting with mapping projection techniques.

The ‘Haunted House’ and ‘Superstition’ paintings are three-layered canvas frames made from 1 ½” x 3” wooden frame stretched on black soft mesh fabric (1.60 x 2.00 m). The mapping projection was made freeze-frame photos collected from the pinhole photography shooting with digital camera and Holga toy lens. Each photo was arranged in sequence and dragged to iMovie to create stop-motion video, which makes the photos appear to move autonomously. The movement of the stop-motion video is uneven due to the projection speed of frames per second (12 fps). The next video was set at 16 fps, the same standard silent film speed.

I examined the mapping projection of ‘Haunted House’ painting with ready-made graphic images and GIF animations, inserted in the Apache OpenOffice ‘Presentation Template’, similar to Microsoft PowerPoint, designed for creating effective multimedia presentations. I created a number of slides with graphic images and GIF animations. The movement of each image can be customized with ‘Custom Animation’ from ‘Tool Bar’, whereby the movement of the objects was improved from the previous painting. However, the next experiments provided the best quality animated video with the best imaging and photo editing software (Adobe Photoshop, Adobe Illustrator, Adobe After Effect, and Premiere Pro). Some templates were filled with blue colour to imitate UV ultraviolet black light used in haunted house shows. Finally, the paintings were placed in the lighting control room at the specific position and distance from the LCD overhead projector.



Figure 48: Oil, neon colours, and 'found objects', fragment objects, glow-in-the-dark threads, toys, embroidery, ornaments etc.



Figure 49: 'Superstition' painting with mapping projection



Figure 50: 'Haunted House II' and 'Superstition' paintings with mapping projection in a light-controlled exhibition room

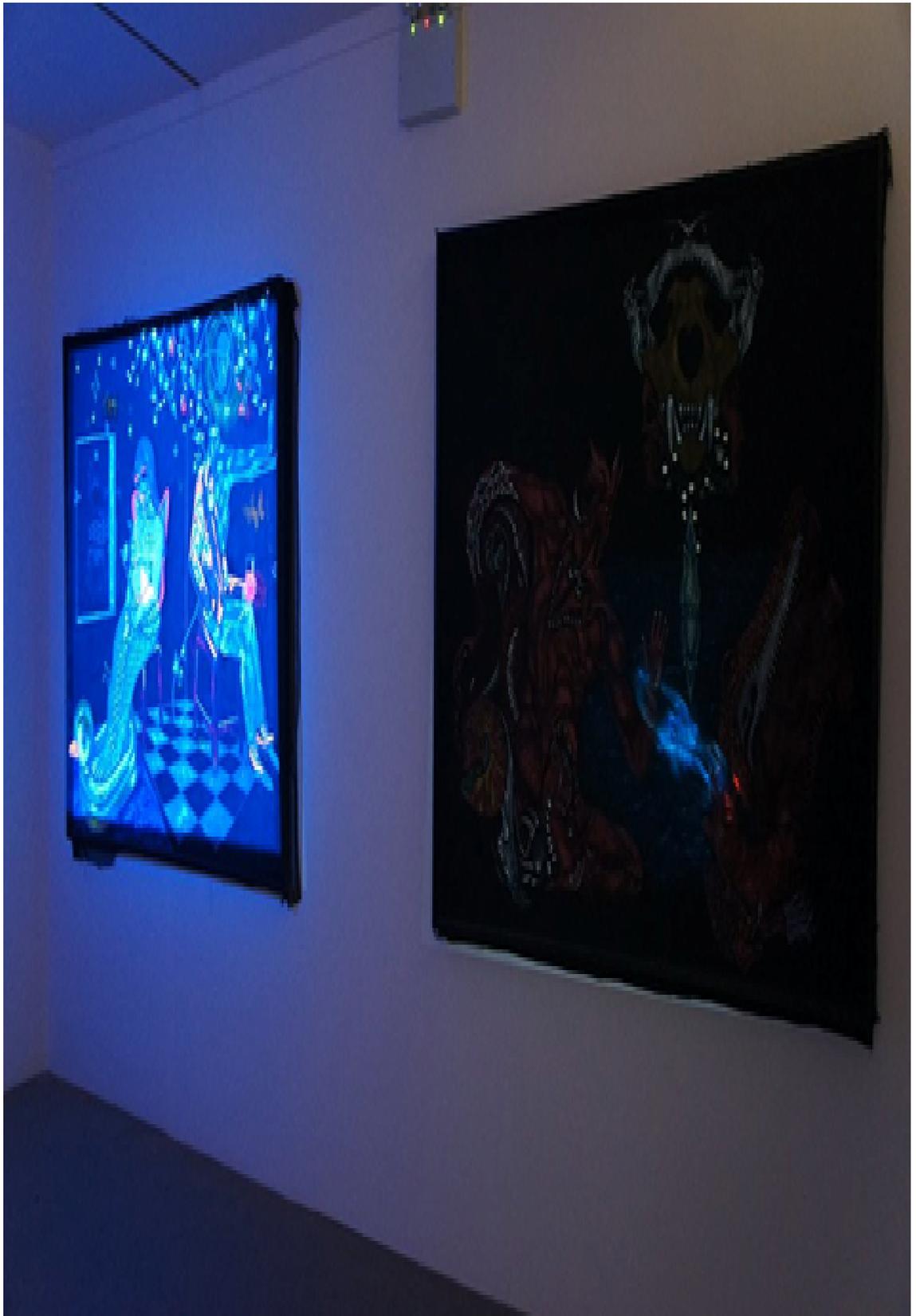


Figure 51: 'Haunted House II' and 'Superstition' paintings exhibited in a light-control room

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Curriculum Vitae

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 - Drawing Exhibition by Art Instructors and Artists in Prof. Corrado Feroci's Day, Malaiman Art Gallery, Suphanburi, Thailand
- 2000 – The Sixth Art Exhibition by the Members of the College of Fine Arts, National Art Gallery, Bangkok
 - Arts Exhibition by Independent Artists, Songphanburi Hotel, Suphanburi
- 2001 – The 3rd Malaiman Art Gallery Exhibition Small Art Object
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