“SWINDLERS” (2013) BY VIRASINEE KONGTAWEEBOONCONSERVATION OF A CONTEMPORARY OIL PAINTINGFROM THE SILPAKORN UNIVERSITY ART CENTRE

By
Mr. Prathamesh Laxman PAWAR

An Independent Study Submitted in Partial Fulfillment of the Requirements
for Master of Arts CULTURAL HERITAGE CONSERVATION AND MANAGEMENT
Silpakorn University
Academic Year 2023

-

โดย
Mr.Prathamesh Laxman Pawar

การค้นคว้าอิสระนี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรศิลปศาสตรมหาบัณฑิต
การอนุรักษ์และการจัดการมรดกทางวัฒนธรรม (หลักสูตรนานาชาติ) แผน ข ระดับ
ปริญญามหาบัณฑิต
มหาวิทยาลัยศิลปากร
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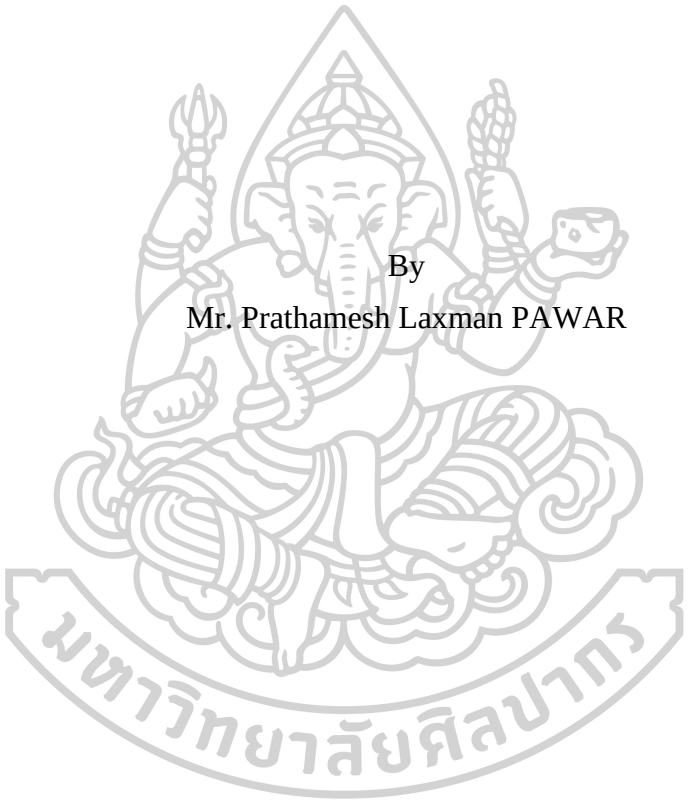

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Field of Study	CULTURAL HERITAGE CONSERVATION AND MANAGEMENT
Advisor	Dr. Thanya Lunchaprasith

Faculty of International College, Silpakorn University in Partial Fulfillment of the Requirements for the Master of Arts

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Mr. Prathamesh Laxman PAWAR : “SWINDLERS” (2013) BY VIRASINEE KONGTAWEEBOONConservation of a Contemporary Oil Paintingfrom the Silpakorn University Art Centre Thesis advisor : Dr. Thanya Lunchaprasith

“Swindlers” (2013) by Virasinee Kongtaweeboon

Conservation of a Contemporary Oil Painting from the Silpakorn University Art Centre

An award winning painting made in 2013 titled “Swindlers” by Thai artist Virasinee Kongtaweeboon from Silpakorn University Art Centre went through an unfortunate event, which caused a tear in the painting. Located at the top right side it was poorly restored. To avoid extension of tear or cause of undesired change in the physical structure of the paintings, it has to be mend with suitable materials and technique. The painting was moved from Silpakorn University Art Centre to the conservation laboratory at Silpakorn University International College. Decision to remove the old repair and attempt thread by thread tear mending is made after careful investigation, research and discussion with experts of painting conservation. The aim is to minimise interference with the original materials of the painting and to prevent any undesired changes in its physical structure. To avoid flaking of loose impasto paint layer pre-consolidation is necessary. Subsequently, tear mending should be carried by following a series of steps. Firstly, locally unstretching canvas, alignment of fibres, pulling the separated edges together, mending the threads. Ensuring the tear mending is strong enough further necessary treatments are being done; dry surface cleaning, restretching canvas, filling and retouching.

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Introduction

Silpakorn University Art Centre proudly displays the artwork “Swindlers”, created by the esteemed Thai artist Vilasinee Kongtaweeboon, who has received a silver medal in an art competition in 2013. Unfortunately, an unforeseen incident results a tear in the painting, the exact cause of the damage is unknown. To remedy the damage, the artwork is carefully transported to the conservation laboratory in January 2023 within the Silpakorn University International College (SUIC). Upon arrival the decision is made to proceed with conservation and restoration treatment of the painting. This thesis outlines the detailed steps taken during this process.

It is structured into seven chapters, beginning with the introduction of the Silpakorn University Art Centre, followed by an exploration of the painting itself, and an introduction to the artist Virasinee Kongtaweeboon. It then delves into the development of her art, examining the materials and techniques employed in creating her paintings. Additionally, a technological survey of the painting is conducted, focusing on visually analysis of each layer of the artwork, including the auxiliary support, support, ground, and paint layers. Information obtained from personal interview with artist is incorporated into this chapter, providing valuable insights and perspectives.

The subsequent chapter of the thesis entails a detailed examination of the condition of the painting, involving meticulous observations of its current state. Emphasis is placed on identifying unfavourable conditions and alterations that have occurred over time. The causes of these alterations are investigated through a comprehensive review of relevant literature. Subsequently, the thesis shifts the focus towards the aim of conservation, outlining the objectives and goals that underpin the preservation and restoration efforts for the artwork.

Following the establishment of the aim of conservation in the previous chapter, the subsequent section of the thesis focuses on the in-depth exploration of the concept of conservation. The primary objective of this chapter is to formulate a scientifically grounded and comprehensive proposal for the conservation treatment to be applied to

the painting. This chapter commences with a rigorous examination of the fundamental principles, theories, and methodologies that underpin the field of conservation. Today by encompassing both historical perspectives and contemporary advancements, a holistic understanding of conservation practices is achieved. Special emphasis is placed on preserving the integrity of the artwork, safeguarding its historical context, and honouring the original artistic intent. Additionally, ethical considerations and the decision-making processes involved in conservation treatment are thoroughly examined.

The following sixth chapter outlines the actual conservation measures undertaken for the painting, building on the previous chapters conceptual framework. A meticulous analysis of the unique characteristics and conditions of each layer informs the selection of specific conservation measures, with factors such as deterioration and compatibility with the original materials taken into account. Each chosen conservation measure is described in detail, including the scientific principles and techniques employed, the materials utilized, and any necessary preparatory steps.

The final chapter of this thesis focuses on the care and maintenance of the painting for both display and storage purposes. The artwork presents specific challenges, including a structurally unstable strainer and a tear in the right top corner, necessitating careful handling and ongoing attention. This chapter offers valuable guidelines for the care and preservation of the artwork, ensuring its longevity and continued aesthetic appeal. The scientific approach taken in developing these guidelines promotes best practices in the field of art conservation and contributes to the overall understanding and advancement of care and maintenance techniques for artwork.

1. Swindlers

“Swindlers” stands as an oil painting executed on canvas, crafted by Thai artist Virasinee Kongtaweeboon in the year 2013. This creation emerged during the culmination of her artistic education at Silpakorn University. Notably, in the same year, this opus garnered distinction by being awarded the esteemed Silpa Bhirasri silver medal, conferred upon it by Silpakorn University.

Virasinees adept brushwork is emblematic of her signature style, demonstrated through a vivacious and diverse colour palette. Employing an impasto technique for colour application, the artwork bears the characteristic tactile depth and texture that is intrinsic to her artistic mannerisms. The thematic underpinning of “Swindlers” finds its wellspring in the juxtaposition of the unblemished innocence inherent in ethnic village life and the intricate interplay of political personas wielding their influence via a plethora of propaganda media. Virasinees ingenuity encapsulates this dynamic in a captivating visual narrative, wherein the canvas emerges as a stage where contrasting narratives and intentions converge. The composition serves as a visual discourse, contemplating the interface of innocence and political manoeuvring, thereby engaging the observer in a contemplative dialogue.

Inv. Nr.: XE - 2, 30-2023 - 2/14,
Virasinee Kongtaweeboon
Artist: Virasinee Kongtaweeboon
Title/Description: Swindlers
Technique: Oil painting on canvas
Dimensions (h x w x d): 200.3 x 170 x 2.5 cm
Dating: 2013
Provenance: Bangkok, Thailand
Owner: Silpakorn University Art Centre

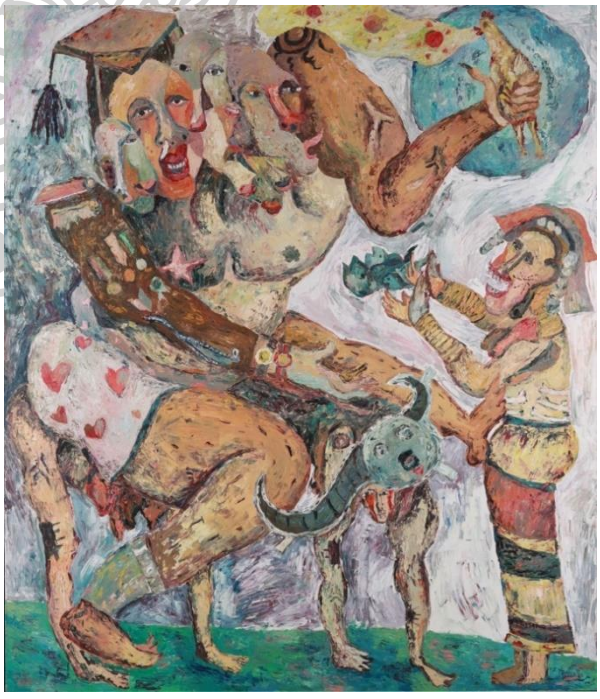


Figure 1: Swindlers by Virasinee Kongtaweeboon (2013). 200.3 x 170 x 2.5 cm, 15 March 2023.

1.1. Silpakorn University Art Centre

The Silpakorn University Art Centre is an esteemed art institution in Thailand that is housed in the historic Wang Thaphra palace campus. Its primary objective is to advance contemporary art by supporting budding artists both locally and internationally, while simultaneously promoting education in Thai contemporary art. In addition to organisation of art exhibitions and international exchange programs, the Art Centre also offers various educational initiatives, such as art workshops, artist grants, collections and archives, artist-in-residence programme, and a learning Centre. The Silpakorn University Art Centre plays a critical role in the development of contemporary art in Thailand, contributing to the cultural landscape of the region. Through its multifaceted programmes and initiatives, the Art Centre facilitates the growth of the next generation of artists and fosters a deeper understanding and appreciation of Thai contemporary art. It gives awards to upcoming artists under national level art competitions and award-winning paintings are collected by the Silpakorn University Art Centre which are displayed in the visible storage Sanam Chandra Art Gallery in Nakorn Pathom. Hundreds of sculptures, paintings, mixed media art works are displayed at the Art Centre and surrounding area. The “Swindlers” won a Silpa Bhirasri silver medal in 2013, when the 30th contemporary art exhibition for young artists competition was organised and since then it was a part of the Silpakorn University art centre.

1.2. The Artist

Virasinee Kongtaweeboon was born in 1990. She is raised in the city of Chiang Mai. The geographical location has afforded her the opportunity to become acquainted with a diverse array of lifestyles and ethnic cultures indigenous to the Lanna region of Thailand, including the long-necked Karen, Tai Yai, and Lisu peoples. From the varied and mixed lives of these groups that the artist derives inspiration for her work. Virasinee hold a particular admiration for artists Paul Cezanne and Marc Chagall.

The educational journey of Virasinee took a turn in her sixth-grade year when she enrolled in the art preparatory school, “Piaw Stanbay Art”, for a duration of seven months. This strategic decision aimed to equip Virasinee with the necessary skills and

knowledge to excel in the entrance examination of Silpakorn University, a prestigious institution renowned for its art studies programme. Her diligent efforts and unwavering dedication paid off as she triumphantly cleared the entrance examination, paving the way for her to commence her art studies in the year 2008, which continued until 2012. Attending an art preparatory school, such as "Piaw Stanbay Art", presents students with a structured and focused curriculum designed to cultivate their artistic abilities. This period of intensive training likely encompassed various aspects related to art, including the exploration of fundamental principles such as colour theory, composition, and perspective. By understanding the scientific foundations of artistic expression, Virasinee would have acquired the tools to create visually compelling and harmonious artworks.

Silpakorn University, offered Virasinee an immersive educational experience. The curriculum likely incorporated interdisciplinary perspectives, allowing her to delve into the scientific underpinnings of art. This might have involved studying the anatomy of human figures for accurate representation, the physics of light for understanding shading and highlights, and the psychology of perception to create impactful visual experiences. During her four years of art studies, Virasinee would have engaged in rigorous academic pursuits that trained her well to give her ability to represent her thoughts into creative artistic representation.

While living in Chiang Mai closely with the different ethnic groups Virasinee have seen the diversity of the Thai culture and a very simple as well as humble living of those ethnic groups.

She was also deeply interested in the ways of life of the ethnic groups residing in her community, often drawing on personal experiences or stories shared by children from these diverse groups as a basis for her paintings. She thought about equality of people. When asked Virasinee what are the primary sources of subjects for your paintings? She mentioned *"when I was young, I saw ethnic groups being discriminated against in government offices. At that time, I was depressed and moved. Therefore, I collected the stories from various situations for presented as a painting, for example, a painting of a long-necked Karen running away from police. Or the painting of a Swindlers".* Her

memories from young age are the main source of inspiration for her artworks which can be clearly seen in her other works.

In addition to her subject matter, Virasinees painting technique exhibits intriguing aspects. Prior to commencing her drawings or paintings, she prepares her canvas by creating a textured surface. This texturing process involves the application of gesso or texture white, among other similar materials, in varying thicknesses, resulting in an uneven surface with a range of textures from thick to thin. Furthermore, Virasinee utilised oil pastels, particularly those manufactured by the brand Pentel, for her underdrawing. Oil pastels provide a distinct medium for her artistic expression. The use of oil pastels grants her to paint her in a free style without losing the under drawing. Once the underdrawing is complete, Virasinee proceeds to paint with colours. She employs a combination of brushes and palette knives to apply the paint onto the canvas. This multi-dimensional approach to paint application enhances the visual impact of her artworks, producing captivating textures and dynamic visual effects. Virasinees distinctive drawing style, coupled with her application of paint, contributes to an engrossing visual experience that captivates viewers for extended periods. The interplay between her drawing techniques and the skilful use of colour engages viewers on multiple levels, enticing them to delve deeper into the subject matter of the painting. Of particular interest is Virasinees approach to drawing human forms. Her unique style and technique provide viewers with a fresh perspective on the depiction of human figures. This innovative approach evokes curiosity and invites viewers to explore the intricacies of the artwork, prompting a deeper connection with the subject matter. Alongside her painting work, the artist works as a freelance illustrator.

1.3. Iconography of Virasinee Kongtaweeboon artworks

As mentioned Virasinee Kongtaweeboons work focuses on humorously depicting the lifestyles of various ethnic groups living in her neighbourhood. Her creative expression is deeply influenced by the events she witnessed during her upbringing in Chiang Mai. Virasinees artistic journey began with her shocking observations of the exploitation faced by simple-living tribal communities at the hands of educated individuals. These

experiences served as a catalyst for her creative expression, as she sought to shed light on these societal injustices. Her training in painting allowed her to channel her past experiences into her artwork, resulting in a powerful reflection of the human condition and the struggles faced by marginalized communities. The vibrant and dreamlike qualities found in Chagalls work resonate with Virasinee Kongtaweeboons exploration of cultural themes and emotional narratives. Cézannes emphasis on form and structure may have influenced her approach to composition and the use of visual elements to convey deeper meanings in her artwork. While the art may appear comical at first glance, a closer examination reveals a deeper underlying message that is often not just amusing at all. For instance, the painting “Swindlers” (figure 1) was inspired by the innocence of ethnic villagers and the ways in which political figures seek to manipulate public opinion through propaganda. The artist uses a female character with exaggerated breasts as a symbol representing the burden of childbearing. In the painting, a character in uniform is shown conversing with a female villager. The artist intentionally positions tribal women characters side by side to depict fear or reverence. While the vehicles used by politicians are not actual animals, they are depicted with larger-than-normal breasts and simple stitches used to obscure the meaning of the burden of the house.

One more notable painting by Virasinee Kongtaweeboon is seen in figure 2, which features a long-necked Karen woman running away from a traffic police officer. This artwork is a compelling visual narrative that captures the struggle for freedom and empowerment in the face of authority. The elongated neck of the Karen woman serves as a symbolic representation of the cultural identity and resilience of the Karen tribe. By juxtaposing the figure with the presence of a traffic police officer, Virasinee Kongtaweeboon highlights the power dynamics and challenges faced by marginalised communities in contemporary society.

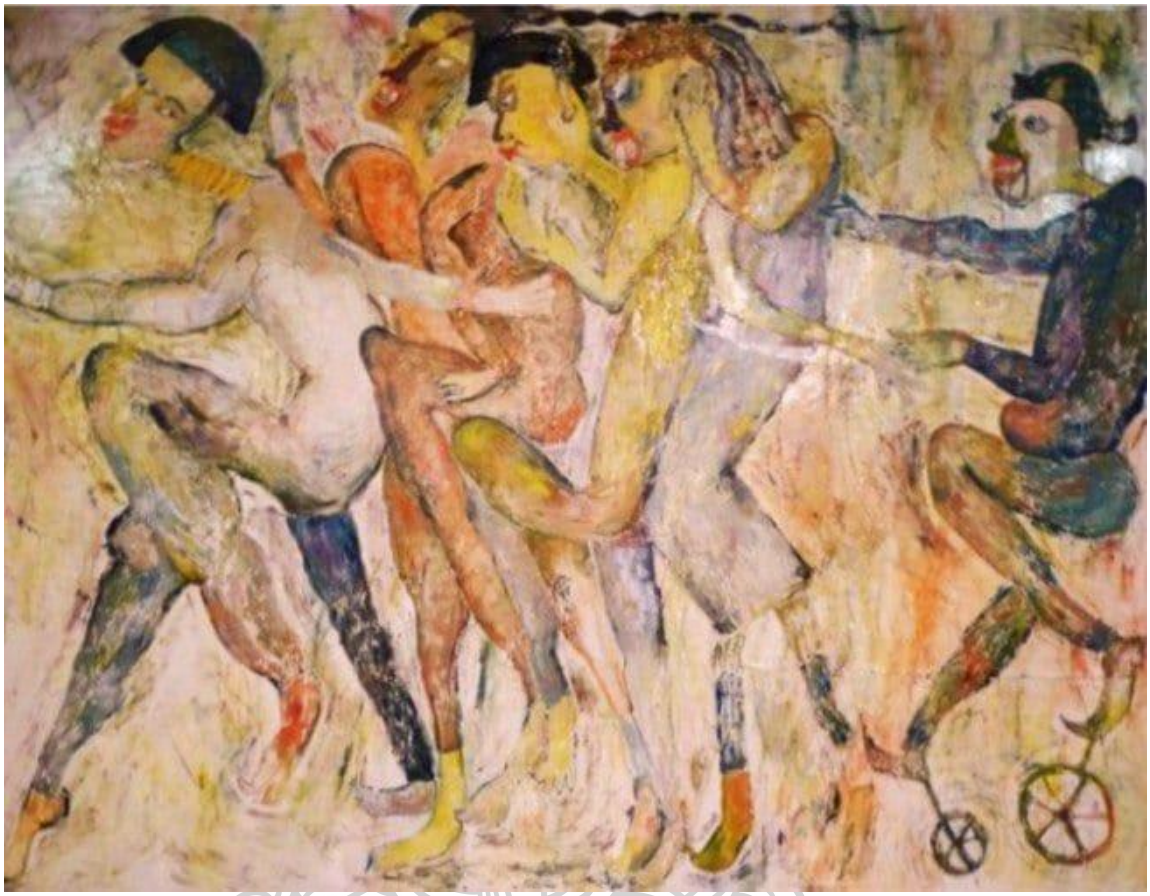


Figure 2: Run Ja Choei, Virasinee Kongtaweeboon (2013). 100 X 240 cm, oil on canvas, 2013.

In addition to the profound cultural reflections and sociopolitical commentary present in Virasinee Kongtaweeboons artwork, she incorporates a unique element in figure 2 by featuring a popular traffic police puppet known as "*Ja Choei"* in Thailand. This addition adds another layer of symbolism and narrative to the painting, enhancing its social relevance and providing a deeper understanding of the artists intentions.

Ja Choei is a well-known character in Thai culture (figure 3), often depicted as a traffic police officer puppet with exaggerated movements and comedic gestures. By including Ja Choei in her painting, Virasinee Kongtaweeboon establishes a connection between the figure of the long-necked Karen woman and the authority figure represented by the puppet. This juxtaposition allows for a critical examination of power dynamics, societal control, and the struggles faced by marginalised individuals. The use of Ja Choei as a symbol within the artwork can be interpreted in various ways. On one hand, it may

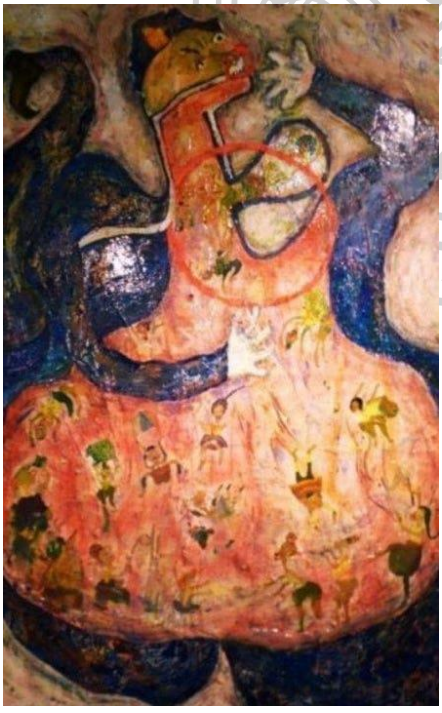
represent the oppressive presence of authority figures in society, particularly in relation to the treatment of minority groups. The Karen womans act of running away from Ja Choei could symbolize resistance against unfair societal norms and a quest for freedom and self-determination.

in Thailand).

Furthermore, the inclusion of Ja Choei highlights the artists keen observation of everyday life in Thailand, as the traffic police puppet is a familiar sight for the local population. Virasinee Kongtaweeboons choice to incorporate this specific cultural reference demonstrates her intention to engage viewers on a deeply rooted and relatable level. By using recognizable elements from Thai society, she invites the audience to reflect upon the broader issues of power, control, and injustice that exist within their own cultural context. The presence of Ja Choei and a Karen woman in Virasinee Kongtaweeboons painting not only adds a touch of cultural specificity but also serves as a visual metaphor that reinforces the overarching themes of her work. It effectively captures the essence of societal struggles, evokes a range of emotions, and prompts viewers to contemplate the complexities of power structures within contemporary Thai society.

The painting “Near birth” (figure 4) artistically conveys the shared origins and equality inherent among human races. It beautifully captures a diverse range of skin colors, harmoniously presented, while prominently showcasing the characters in a collective portrait of humanity. The artwork radiates a powerful sense of togetherness and belongingness, symbolising the inherent bond that unites all human beings, regardless of their backgrounds or appearances.

Figure 4: Near birth, Virasinee Kongtaweeboon. 150 X 190 cm, mixed media, 2013.



The artwork titled “Karen stuck in the throat” in figure 5 captures a scene where multiple police officers are actively partaking in Thai cuisine from the food cart. The visual composition emphasises a close-up perspective of the stomach region, magnified to highlight the process of ingesting the neck hanging Thai food as it falls. The food cart acts as a prominent attraction, drawing a considerable crowd of patrons, far exceeding the count of police officers present. This observation underscores the widespread popularity and extensive utilization of the cart among the general public. The image conveys a sense of enjoyment and vivacity, portraying a dynamic and spirited atmosphere. The scene is characterized by

Figure 5: Karen stuck in the throat, Virasinee Kongtaweeboon. 150 X 210 cm, mixed media, 2013.

exuberance and a sense of organized disorder, generating a feeling of excitement and amusement

2. Technological survey

In January 2023 a comprehensive technical survey was carried out on the painting for understanding of its materials and techniques. The survey involved careful visual observation and a thorough examination of the paintings physical condition. Further, to supplement this data, the artist is interviewed to provide additional insights into the artwork through an online questionnaire. The artists responses provided valuable contextual information that helped interpret the data and gain a more nuanced understanding of the artistic processes and intentions behind the work. On 20 April 2023, the artist made a personal visit to the conservation laboratory to provide additional insights into the paintings materials and techniques. Conversations with the artist revealed more information about the paintings materials, including the type and quality of the wooden support, the pigments used, and the nature of the binder and support. In addition, the artist was able to shed light on any alterations or damages that may have happened to the painting over time. Virasinee Kongtaweeboons documentation of her work-in-progress provides valuable insights into her painting techniques and processes. The inclusion of these visual references serves as a means of enhancing our understanding of Virasinee Kongtaweeboons artistic techniques. Through the captured images, it is possible to analyse her brushwork, colour choices, layering methods, and the overall progression of her artwork. This documentation enables a more comprehensive appreciation of the technical aspects employed by the artist throughout the paintings development (figures 6 and 7).

Figure 7: Swindlers in progress 1, 2013.

Figure 6: Swindlers in progress 2, 2013.

2.1. Auxiliary support

The painting is mounted on a wooden strainer, which functions as the primary structural support for the canvas.

The wooden strainer comprises four primary wooden components that are connected through a mitre joint[1], thereby constituting a frame structure (figure 8). This wooden strainer has four main wooden elements joined with mitre joint forming a frame Then there are two additional wooden elements in the centre and four wooden elements on the four corners of the frame. Artists observations indicate that the quality of the wooden strainer falls below the standard requirements for supporting the canvas. This issue is addressed through a modification involving additional staple pins (figure 9), which are applied to increase the stability and enhance the structural integrity of the wooden strainer.

[1] A corner joint established between two material pieces, particularly wood, by crafting bevels of identical angles at the extremities of each respective piece. “Mitre joint,” Dictionary.com, accessed August 24, 2023, https://www.dictionary.com/browse/mitre%20joint.

Figure 8: Verso of the painting. 15 March 2023.

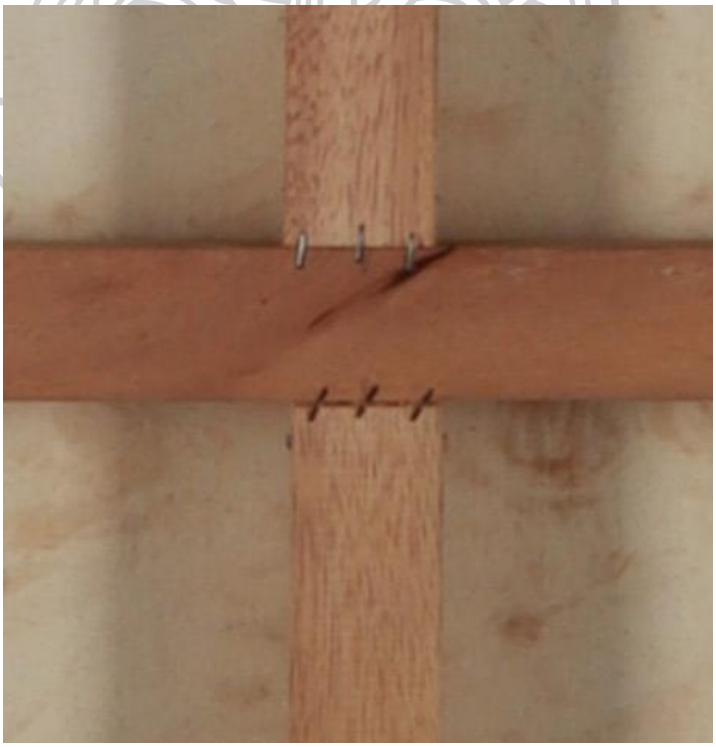


Figure 9: Close up of strainer showing additional staple pins. 15 March 2023.

2.2. Support

The painting is made on a canvas support, which was acquired in a pre-manufactured state by the artist. The exact brand of the canvas is unknown, but it was produced in China. The artist procured a large roll of the canvas material and tailored it to the specific dimensions required for the artwork. The dimensions of the canvas are 200.3 X 170.3 cm. Virasinee herself stretched the canvas with help of canvas plier and staple gun. The canvas itself is composed of cotton fibres woven in a plain weave pattern. Specifically, there are two weft threads per each warp thread which can be clearly see in figure 10. The thread counts of the canvas measures at 10 by 30 threads per 10 square mm. This indicates that there are 10 warp threads and 30 weft threads present within each 10 square mm of canvas surface area.

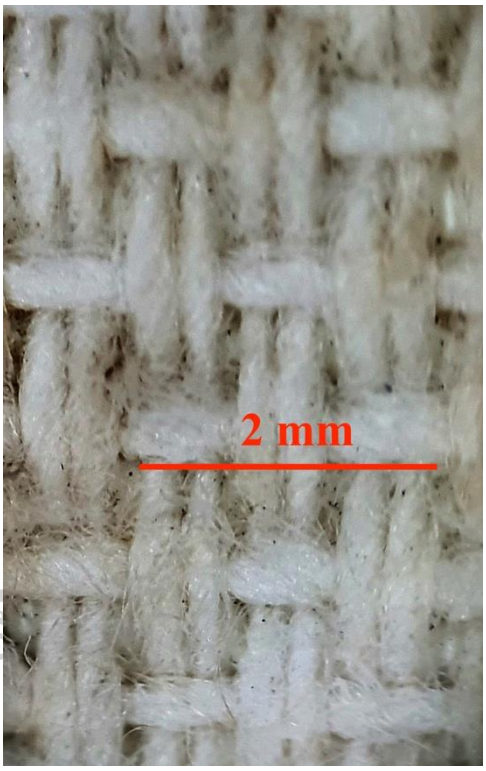


Figure 10: Close up of threads, 8x magnification. 30 March 2023.

2.3. Ground

Upon careful examination of the painting, it was observed that the artist employed a pre-primed canvas, which already had a pre-applied ground layer. The ground layer appears smooth and uniformly distributed, suggesting an even and uniform application. The exact composition of the ground layer could not be definitively determined through visual analysis and would necessitate additional laboratory testing and analysis.

2.4. Paint layers

The painting is primarily done in oil paint, but the artist employed various media to achieve her desired visual effects. During personal communication with Virasinee, she provided insight into the types of media utilised in the creation of the painting, including those utilised in the under drawing and final paint layers. A red coloured oil pastel is used for drawing (figure 6 and 7) which was made by a brand called Pentel, underdrawing can be observed upon close inspection in some parts (figure 11). The artist applied acrylic paint in some parts to create texture before layering on the oil colours. The application of the painting was executed with both a brush and a palette knife, resulting in a thick layer of impasto-style application (figure 12 and figure 13). The artists technique of layering oil paint over acrylic creates an interesting visual effect, as the paint has a varied surface quality and thickness due to the different

Figure 11: Visible underdrawings. 15 March 2023.

materials used in its application. A variety in paintings thickness can be seen in figure 14 where picture of painting has been taken in transmitted light. Lightest parts show thin application of paint layer whereas darkest parts are due to the thick paint application. Virasinee provided additional information regarding the oil colours utilised in the creation of the painting. She disclosed that she utilised various brands of oil paint, including Winsor and Newton and other brands. During the time of producing the artwork, Virasinee was a student at an art school, and she sought to reduce costs by employing oil paint from a spectrum of price ranges, ranging from affordable to more costly varieties.

Figure 12: Impasto paint layer application close up. 15 March 2023.

Figure 13: Raking light photograph, showing impasto paint layer. 15 March 2023.

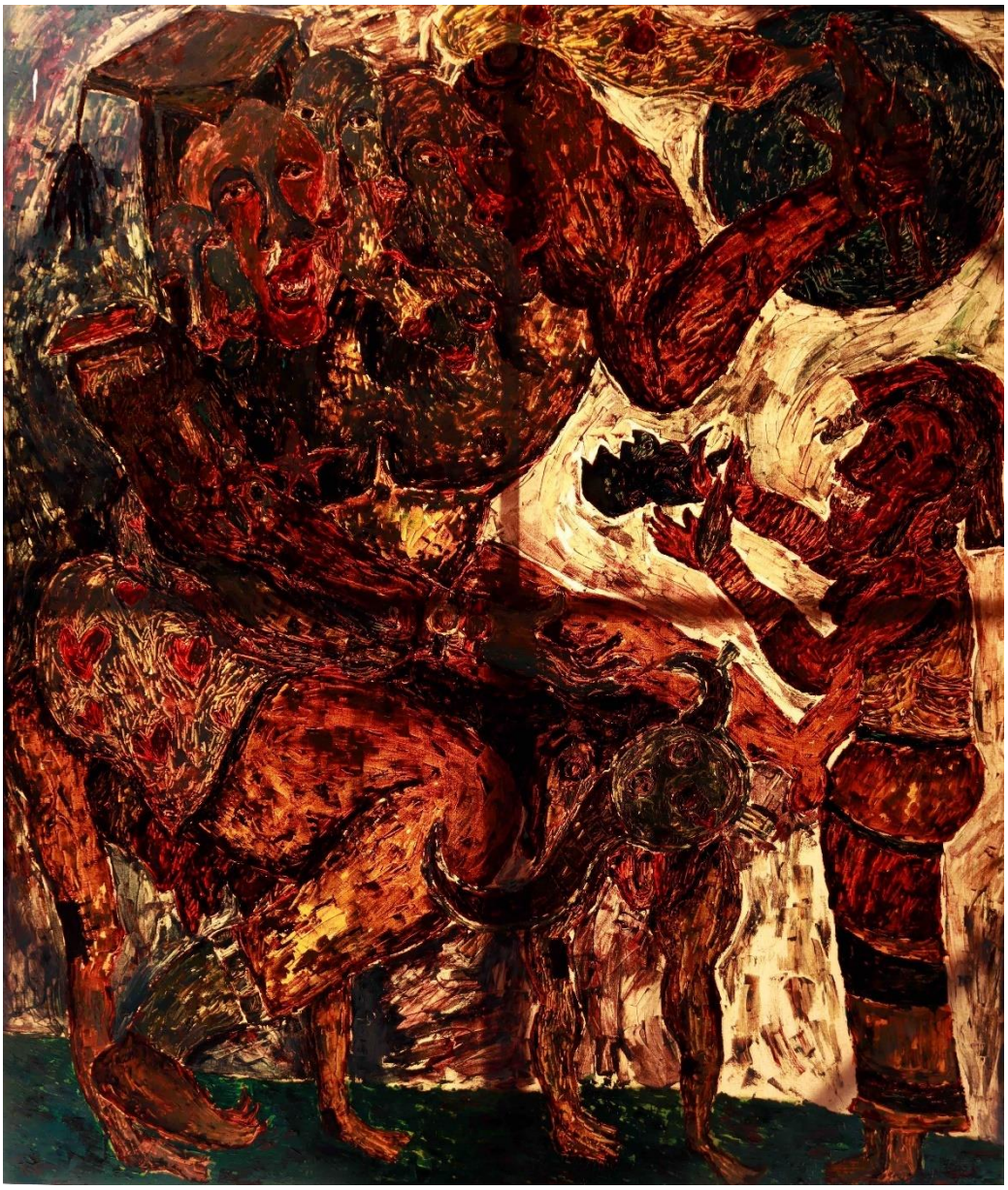


Figure 14: Transmitted light photograph of painting shows different thickness of paint

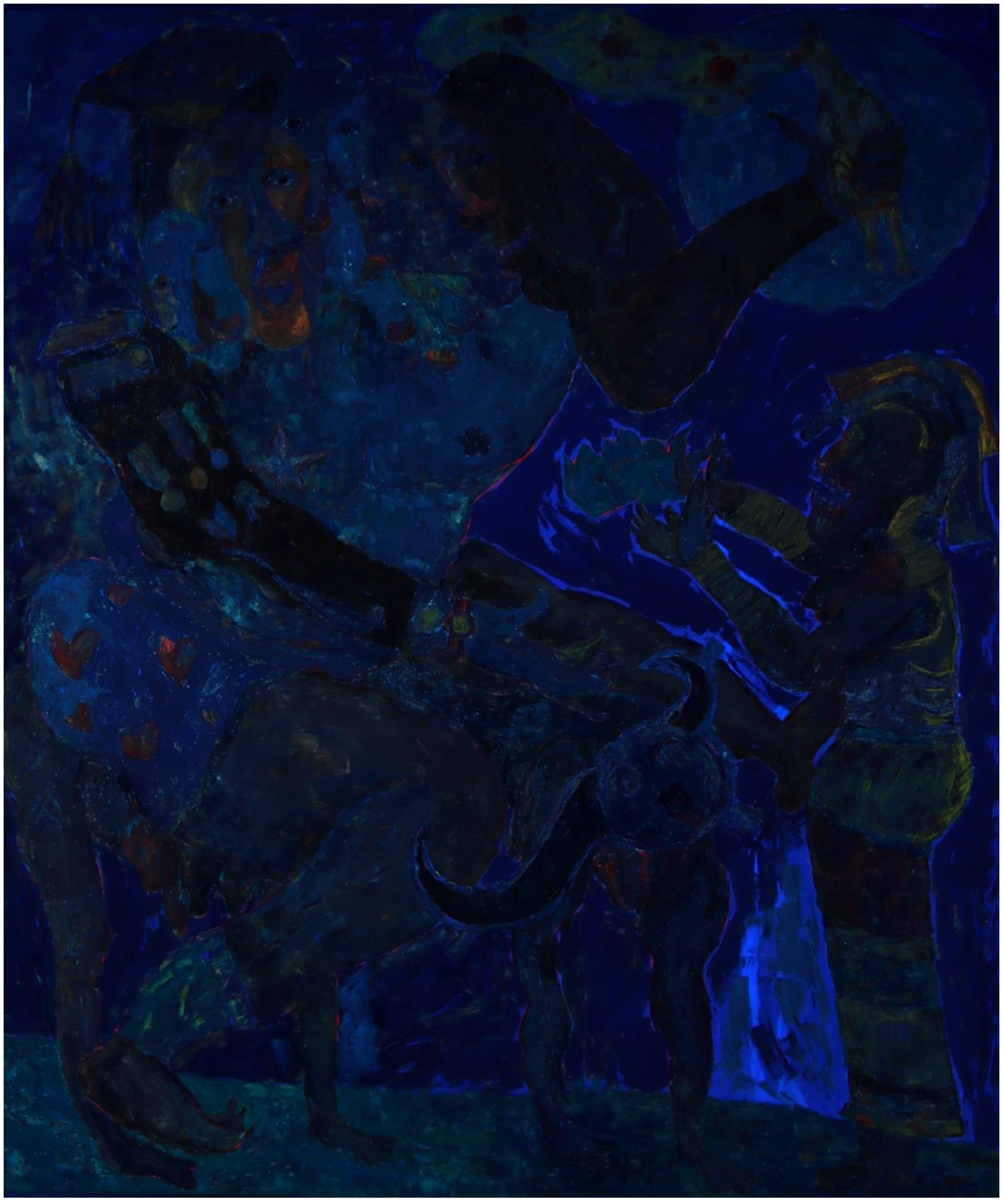


Figure 15: UV light photograph. 15 March 2023.

3. Condition survey

A meticulous condition survey was conducted on the painting “Swindlers” is done. The survey took place in the campus Silpakorn University, under the supervision of expert painting conservators. The primary method employed for the survey was a visual examination of the artwork. During the survey, several noteworthy observations were made regarding the painting. These observations encompassed various aspects of the artwork, including its physical condition, surface characteristics, and any visible alterations or anomalies. The author meticulously scrutinized the paintings materials, such as the type of pigments, binding media, and support structure, to assess their stability and potential impact on the artworks longevity. Furthermore, on the 20th of April 2023, the artist of the painting “Swindlers”, Virasinee Kongtaweeboon visited the Silpakorn University International College Campus, providing invaluable insights and shedding light on certain alterations that had occurred in the artwork.

The condition survey aimed to document and record any changes or damages to the painting, including but not limited to areas of paint loss, surface scratches, discolouration, or signs of previous restoration or conservation interventions.

Photographic documentation played a crucial role in capturing the paintings condition at the time of the survey. High-resolution images were taken from various angles and lighting conditions to ensure a comprehensive visual record of the artwork. Documentation of this painting has been done by various lighting techniques like normal light (figure 1), raking light (figure 13), transmitted light (figure 14) and UV light (figure 15). In addition to visual observations, the survey might have included non-invasive techniques such as infrared reflectography or ultraviolet examination to reveal underlying layers, pentimenti, or hidden details. The findings of this meticulous condition survey, combined with the insights provided by the artists visit, contribute to a comprehensive understanding of the artworks current state. This knowledge forms the basis for developing appropriate conservation strategies and treatment plans to ensure the long-term preservation of the artwork.

3.1. Auxiliary support

The painting utilises a wooden strainer as its auxiliary support. The artist has identified concerns regarding the quality and structural integrity of the wooden strainer, noting its inadequate stability. Although there are no apparent visible damages, the strainer exhibits noticeable instability, manifesting as a wobbling effect. Addressing this issue is crucial to ensure the paintings long-term stability and preservation.

3.2. Support

The canvas support of the painting is currently in a moderately deteriorated state. In the top right corner, there is a tear measuring approximately 7 cm in length. Accumulated dirt is also noticeable on the blank areas of the canvas. The origin of the tear remains uncertain; however, it was observed that an inadequate repair had been attempted using a sticky tape (figure 17). Moreover, an adhesive substance was applied around the edges of the tape, which is visible under normal and UV light (figure 18). The precise composition of this adhesive is unknown and would require scientific analysis to comprehensively understand its properties.

During the repair process, it was evident that the canvas had been locally unstretched and subsequently re-stretched after the tape application. This observation is supported by the presence of visible old staple pin holes, which were likely used in the original installation to secure the canvas to its support (figure 19). Furthermore, the newly introduced staple pins appear to differ in their application compared to the original ones, suggesting their incorporation during the repair attempt. As the tear was left exposed and merely secured with tape from the backside before re-stretching the canvas, a gap has formed along the tear line (figure 16). This gap is a consequence of the repair process and signifies a lack of proper restoration technique.

Figure 16: Tear from front. 15 March 2023.

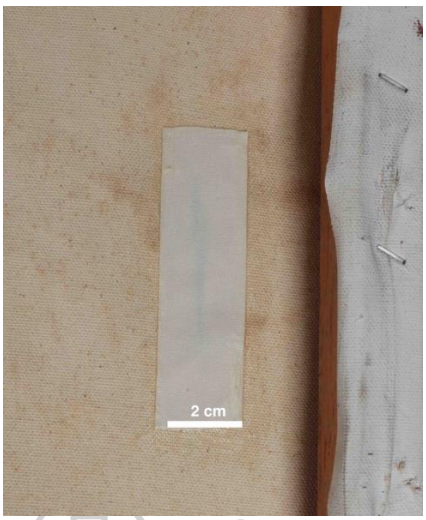


Figure 17: Tear from back. 15 March 2023.

Figure 18: Excess adhesive around the sticky tape visible in UV light. 15 March 2023.

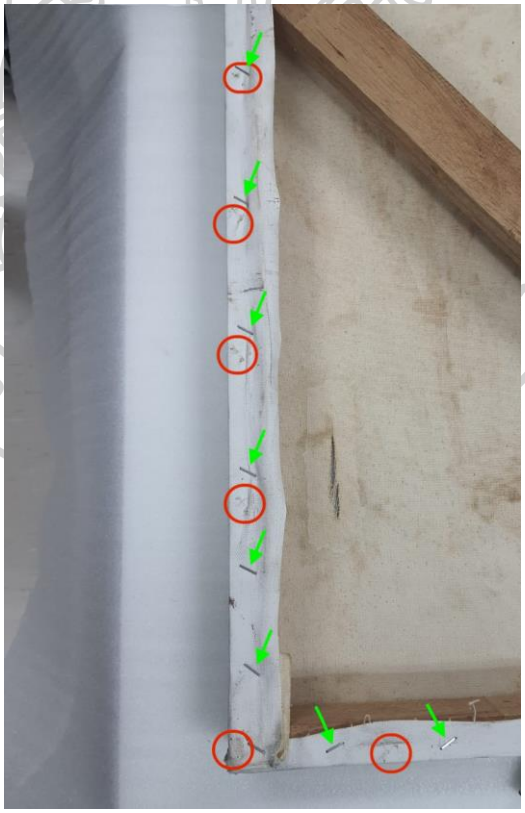


Figure 19: Original staple pin marks (in red circle), new staple pins (green arrow) during repair attempt. 15 March 2023.

3.3. Ground

During detailed observations, the ground layer of the painting was found to be in a satisfactory condition, exhibiting no signs of cracks.

3.4. Paint layers

Upon closer examination of the paint layer, it was determined that the majority of it remains well-preserved. Nonetheless, minor accumulations of dust and dirt were detected on the surface, indicating the need for cleaning and conservation interventions.

Further analysis of the paint layer revealed the existence of two distinct types of cracks primarily occurring in areas with thicker paint layers. Paintings are composed of multiple layers, following a stratigraphic structure that includes the support, primer, ground or preparatory layer, paint layer, glazes, and varnish layer. The interaction among these layers leads to the formation of craquelure[2].

Craquelure refers to the intricate network of fine cracks that emerge on the paintings surface over time. It arises from the varying expansion and contraction rates of the different layers due to environmental fluctuations, aging processes, and material properties. As the painting experienced these inherent stresses, the layers responded by developing minuscule fractures on the surface, resulting in the intricate pattern of craquelure.

[2] "I noticed several cracks on my painting. Should I call a conservator? Part I," South Florida Art Conservation, accessed April 5, 2023, https://sflac.net/uncategorized/cracks-painting-and-conservation-part-i/.

Figure 21: Drying cracks close up. 15 March 2023.

Figure 20: Another example of drying cracks on paint layer. 15 March 2023.

The first type of cracks observed in the painting was identified as drying cracks (see figure 20 and 21). Drying cracks frequently occur in oil paintings when artists neglect to adhere to the fat over lean principle during the painting process[3]. The fat over lean principle is a well-established guideline in painting techniques, advising artists to apply lean paint, containing lower binding media content, in the initial layers, followed by subsequent layers containing increased amounts of linseed oil. This approach ensures that the upper layers remain more flexible than the underlying layers, allowing the lower layers to dry before the upper layers. Failure to follow this principle can result in the formation of cracks within the painting[4].

[3] Spike Bucklow, "The Classification of Craquelure Patterns", in *The Conservation of Easel Paintings*, ed. Joyce Hill Stoner, Rebecca Rushfield (London: Routledge, 2022) 287–88.

[4] Ralph Mayer, *The Artists Handbook of Materials and Techniques* (New York: The Penguin Group, 1991), 203–04.

The second type of cracks observed in the painting are known as feathering crack as highlighted in figure 23, characterized by linear or irregular fractures within the paint film. These cracks typically result from pressure applied to the back side of the paint layer, leading to disruptions in its overall continuity. Various factors can contribute to the formation of feathering cracks, including canvas shaking during transportation or handling, as well as accidental impacts[5].

Figure 22: Feathering crack close up. 15 March 2023.

[5] "I noticed several cracks on my painting. Should I call a conservator? Part I," South Florida Art Conservation, accessed April 5, 2023, https://sflac.net/uncategorized/cracks-painting-and-conservation-part-i/.

4. Aim of conservation

The primary objective of the conservation treatment is to achieve stabilization of the physical condition of the artwork titled “Swindlers” and to restore its undisturbed appearance. The ongoing conservation process encompasses a series of interrelated steps aimed at ensuring the long-term preservation of the painting and after restoration and conservation aim is to display painting back to its existing gallery in Silpakorn University Art Centre. These steps involve conducting a comprehensive condition survey to assess its current state, performing a technological survey to analyse the materials and techniques employed, identifying potential issues that could jeopardize its preservation, and executing a conservation treatment plan that not only restores the artwork to its original appearance but also prevents any further potential damages. By meticulously following these steps, the conservation efforts aim to safeguard the artwork and preserve it for future generations.

Following the comprehensive conservation treatment, the subsequent stages aiming towards concerning the display and storage of the artwork merit meticulous attention as a preventative measure against potential damage.

5. Concept of conservation and restoration

A comprehensive conservation concept is developed for the preservation of the “Swindlers” painting. This concept is being thoughtfully crafted, taking into consideration various factors such as the materials used in the painting, the painting techniques employed, the prevention of undesirable alterations, the exhibition environment in the gallery, and the availability of necessary materials and tools.

The conservation measures implemented in a step-by-step manner, ensuring a systematic and careful approach. Each step explained in details further, considering the specific requirements of the “Swindlers” painting and its unique conservation needs. The measures encompass various aspects, such as surface cleaning, consolidation of loose or flaking paint, addressing any structural issues, and protecting the painting from environmental factors that could potentially cause damage.

Moreover, the conservation concept will emphasize the use of conservation-grade materials and techniques that adhere to established ethical guidelines and international conservation standards. This approach ensures that any interventions undertaken are reversible, minimally invasive, and prioritize the long-term preservation and stability of the artwork.

5.1. Pre-consolidation

During the thorough examination of the “Swindlers” painting, notable cracks were identified within the paint layer, as depicted in figure 23. These cracks appeared to be significant in size and exhibited signs of looseness, indicating a potential risk of paint layer flaking. To tackle this issue, an initial conservation step should be taken to avert additional deterioration. Localized pre-consolidation should be performed in areas where the cracks were prominently visible and the potential for flaking is evident.

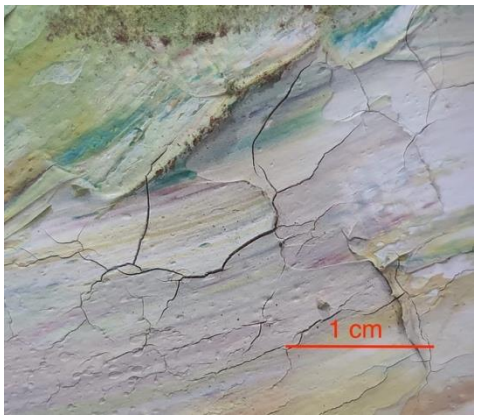


Figure 23: Loose cracks. 15 March 2023.

Consolidation is a conservation technique used to stabilize and protect paintings that have developed issues like flaking or loose paint layers over time. The primary objective of consolidation is re-adhering detached paint layers back onto the support of paintings. This process involves the strategic inserting of suitable adhesive into the cracks and loose paint layer. Once the adhesive is properly inserted, a heated spatula is employed to activate the adhesive and initiate the bonding process. Subsequently, adequate pressure is meticulously applied to ensure a secure and firm adhesion of the previously loose paint layer to the paintings support. The process of consolidation requires careful consideration of several factors, including the choice of appropriate adhesives and their compatibility with the original paint materials. While choosing adhesive, following things should be considered: specific characteristics of the artwork, such as the type of pigments and binders used in the paint layer, to ensure the selected adhesive is compatible and will not cause any adverse reactions or damage to the original materials. When consolidating, or strengthening, materials, it is important to use materials that are known and which are stable. This is because most consolidation methods are irreversible.[6]

There are different types of adhesives can be used for consolidation like, Funori, animal skin glue, sturgeon glue, methyl cellulose, carboxyl methyl cellulose, hydroxy propyl cellulose, Plextol D489 / B500, Paraloid B72, BEVA 371, Aquazol[7]. Sturgeon glue is one of a well established adhesives known for its efficacy in consolidating oil paint layers. Sturgeon glue proves advantageous due to its substantial collagen content, affording remarkable adhesive potency even when employed in minimal concentrations.[8] Moreover, it offers minimal discolouration and exceptional flexibility,

[6] Velson Horie, *Materials for Conservation Organic Consolidants Adhesives and Coatings,* (Oxford: Elsevier Ltd 2010), 105–21.

[7] Michael von der Goltz, Ina Birkenbeul, Isabel Horovitz, Morwenna Blewett, and Irina Dolgikh, "Consolidation of flaking paint and ground," in *Conservation of Easel paintings* ed. Joyce Hill Stoner, Rebecca Rushfield, (London: Routledge, 2022) 372–74.

[8] Goltz, Birkenbeul, Horovitz, Blewett, and Dolgikh, "Consolidation of flaking paint and ground," 372.

making it less susceptible to shrinkage compared to other collagen-based adhesives.[9] In this process precise temperature control during the activation phase with the heated spatula is crucial. The application of heat must be carefully monitored and adjusted as needed to avoid any overheating that could potentially harm the paint or support. The goal is to activate the adhesive sufficiently to achieve effective bonding while avoiding any detrimental effects on the artwork.

5.2. Dry surface cleaning

Cleaning plays a crucial role in the conservation of artworks by removing extraneous substances or materials that are not inherent to the painting[10]. Before initiating the cleaning process, it is imperative to assess the extent of dust-dirt present on the artworks surface. Cleaning inherently revolves around subjective criteria. Nonetheless, the overarching aim should centre on proceeding through a historical framework, encompassing both technical and aesthetic perspectives.[11]

In instances where an artist or owner of the painting neglects the matter of dirt accumulation and leaves the artwork vulnerable, a scenario often observed with contemporary works such as colour field paintings, not completely dried oil paintings or acrylic painting, the surface of the paint becomes susceptible to the absorption of dirt. The subsequent removal of this dirt could pose a considerable challenge or even

[9] Tobias Haupt. "Zubereitung von Störleim: Auswirkungen der Zubereitungstemperatur und -zeit auf Viskosität, Gelierverhalten und Molekulargewicht," *Zeitschrift für Kunsttechnologie und Konservierung*, 17(2), (2004): 318–28.

[10] Kamlesh Gupta , *Restoration of Oil Paintings* (New Delhi: National Museum Institute of History of Art, Conservation and Museology, (1993): 18.

[11] Konrad Laudenbacher, "Considerations of the Cleaning of Paintings," *Smithsonian Contributions to Museum Conservation*, no. 3, (2010): 7–10.

present safety concerns, rendering the process difficult or potentially unsafe to execute.[12]

This assessment aids in determining the appropriate cleaning approach to safeguard the delicate paint layer. The initial stage of dry cleaning entails employing the gentlest methods, such as dry brush cleaning and dry brush with vacuum. Dry brush cleaning involves using soft, non-abrasive brushes to delicately sweep away loose dust and debris from the surface without the need for any solvents or liquids. The dry brush with vacuum cleaning technique combines gentle brushing with simultaneous vacuum suction to ensure that loosened particles are effectively removed from the artwork. In cases where additional cleaning is deemed necessary specialised materials such as sponges, erasers, soft substances, and microfiber cloths are used.[13]

Within the realm of dry cleaning, sponges play a foundational role in the conservation process. Their significance, however, extends beyond this primary function. Sponges exhibit a multifaceted utility, particularly in scenarios where cleaning mandates the utilisation of solvents, reagents, and chelates.[14] In these situations, sponges act as intermediaries, facilitating the controlled application and distribution of these agents onto the surface being cleaned. This approach ensures a targeted and precise cleaning procedure, while also mitigating the potential risks associated with direct application.

Soft sponges like Akapad© or other similar sponges specifically designed for conservation purposes can be utilized. These sponges are carefully selected to ensure they do not pose any risk of scratching or damaging the paint layer during the cleaning process.

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[12] Stephen Hackney, "The Art and Science of Cleaning Paintings," *Smithsonian Contributions to Museum Conservation*, no. 3, (2010): 11–15.

[13] Maude Daudin-Schotte, Madeleine Bisschoff, Ineke Joosten, Henk van Keulen, and Klaas Jan van den Berg, "Dry Cleaning Approaches for Unvarnished Paint Surfaces", *Daudin Cleaning proceedings* (2010), 209–18.

[14] Juana Escobar, "Sorbent and abrasive: A Critical Assessment of the Potential Role of Proprietary Synthetic Sponges in Conservation," *Zeittschrift Fur Kuntstechnologie und Konservierung,* no. 2 (2013) 261–89.

Considering the presence of a thick impasto paint layer, it was determined that the use of Akapad® sponges or any other type of sponges would be unsuitable for this particular cleaning task.

Since there is only minor dust dirt accumulation observed on the painting no further cleaning methods like aqueous cleaning, solvent cleaning is required. By adhering to appropriate cleaning methods, the conservation concept prioritizes the long-term protection of the painting.

5.3. Removal of old repair

In previous conservation of the artwork included a crucial step where a sticky plastic tape was applied to repair a tear at the back of the painting, as shown in figure 9. Additionally, excess adhesive was applied along the tape's edges which can be clearly seen in UV light shown in figure 10. Although the exact composition of the adhesive is currently unknown, scientific analysis could provide insights into its properties and nature. The removal of this previous repair is deemed highly significant due to its obstructive presence, covering a significant portion of the canvas from the back. This obstruction impeded the canvas with its natural ability to expand and contract in response to changes in temperature and humidity. Such hindrance has the potential to cause alterations in the canvas physical characteristics, highlighting the importance of its removal during the conservation efforts.

While removal of sticky tape approach is to minimise potential adverse effects on the paint layer and canvas. It is essential to thoroughly analyse the sticky tapes characteristics before proceeding with the removal process. To safeguard the integrity of the paint layer and canvas, priority should be given to gentle and non-invasive techniques like, mechanical removal methods, employing soft and simple tools, over the use of water or chemicals, which could potentially cause damage or discoloration to the artwork.

In cases where the sticky tapes adhesive proves stubborn, alternative removal methods may be employed. In such instances, controlled humidification techniques may be utilized to loosen the adhesive and facilitate safer removal without harming the paint layer or canvas. Or using of solvents which can loosen the adhesion of sticky tape without any diverse effect of paint layer or support.

Before removing the old repair with the sticky tape, a thorough examination was conducted to assess its condition and characteristics. Subsequently, a meticulous mechanical removal trial was chosen as the safest approach. This method involved the careful and gentle removal of the patch without the use of heat or solvents that could have potentially had adverse effects on the canvas and the painting. Prioritizing mechanical removal as the simplest approach aimed to minimize any potential risks associated with alternative techniques.

The removal of the sticky tape was performed with meticulous care, employing a methodical approach. The process commenced by trial of delicately inserting a fine spatula, as shown in figure 24 The objective was to cautiously assess the adhesive strength and ensure that it was weak enough to facilitate the gentle separation of the sticky tape from the canvas.

Figure 24: Trial of inserting spatula between sticky tape and canvas. 21 March 2023.

5.4. Locally unstretching canvas

A widely held consensus posits that any interventions or enhancements originating from the artist should remain unaltered.[15] The imperative to locally alleviate canvas tension was necessitated by the presence of a discontinuity stemming from a tear. In a preceding restorative endeavour, the original staple fasteners utilized in previous restoration attempt in this specific region should be substituted with new counterparts. However, within the ongoing process, these replacement fasteners have been disengaged, and the canvas has been locally detached from the stretcher to facilitate the ensuing procedures. Through the temporary attenuation of canvas tension preceding the tear mending procedure, the primary objective encompassed the closure of the discontinuity and the reinstatement of the canvas to its original state.

[15] Michael Goltz and Joyce Stoner, "Consideration on Removing or Retaining Overpainted Addition and Alteration" in *The Conservation of Easel Paintings*, ed. Joyce Hill Stoner, Rebecca Rushfield *(*London: Routledge, 2022), 497–99.

5.5. Tear mending

Chosen approach involved meticulous thread-by-thread mending. This intricate restoration procedure comprised several stages, each meticulously executed to ensure optimal results. The successful completion of each stage contributes to the overall restoration outcome, allowing the artwork to regain its original form and visual appeal. The mending of the tear plays a pivotal role in the conservation of this painting, signifying its utmost importance. To accomplish this, the thread-by-thread tear mending method should be carefully selected. The thread-by-thread tear mending technique is a highly precise and minimally invasive approach utilized by conservation experts to restore both the mechanical properties and visual appearance of the original fabric. This technique aims to preserve the inherent characteristics of the textile support while ensuring that no inadvertent alterations occur. Unlike traditional methods such as linings, patches, or glued joints that involve the application of epoxy resin to fill tears, the thread-by-thread mending technique prioritizes the preservation of the textile's properties.[16] Implementing the thread-by-thread mending technique entails a meticulous process of joining individual broken threads. This delicate procedure is carried out under a microscope to ensure the utmost precision and accuracy. Figure 28 provides a visual representation of the step-by-step process involved in joining a single thread.

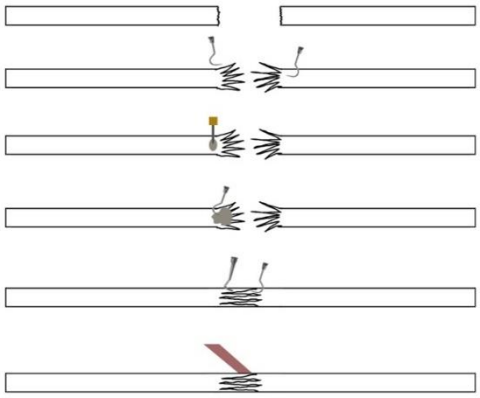

Figure 25: Step by step method for mending of a single thread. 1 June 2023.

[16] Hannah Flock, Stefan Diebels, Elisabeth Jägers and Wulff Possart, "Thread-by-thread Tear Mendings in Conservation of Canvas paintings: a problem of reproducibility in bonding qualities," *The Journal of Adhesion*, (2020): 1–20, https://doi.org/10.1080/00218464.2020.1761797.

5.5.1. Alignment of fibres

Alignment of fibres is one of the most important steps in thread by thread tear mending, The physical integrity and harmonious visual completely depends on this step. Alignment of fibres can be done directly if the fibres are in good strength and if there is no gap in the tear. However, in situations where a gap forms in the tear, it becomes necessary to make the canvas pliable. This helps in minimizing the gap and ensuring proper alignment of the fibres.

This necessitated a critical step involving the controlled introduction of moisture to enhance the flexibility of the canvas. However, direct introduction of moisture can lead to canvas shrinkage.[17] To overcome this challenge and ensure precise moisture control, an indirect moisture transfer method should be employed. This can be archive by using GORE-TEX© sheet. When utilized effectively, it demonstrated remarkable efficiency in delicately and uniformly humidifying objects. Moreover, it facilitates enhanced management and precision over the desired humidity levels.[18]

5.5.2. Closing the tear gap temporarily

After introducing moisture to increase the pliability of the canvas, the tear mending process involves closing the gap by delicately bringing the two sides of the canvas together and temporarily securing them in that position. For temporary securement during the tear mending process, two viable methods are available.

[17] Gustav Berger, William Russel, *Conservation of Paintings Research and Innovations* (London: Archetype Publications), 2000, 45–61.

[18] Nancy Purinton and Susan Filter, “Gore-Tex: An Introduction to the Material and Treatments”, American Institute for Conservation, accessed 30 June, 2023, Link:https://cool.culturalheritage.org/coolaic/sg/bpg/annual/v11/bp11-33.html.

The first method involved the utilisation of a specialised tensioning device known as the Trecker, which was developed by Winfried Heiber in the mid-1990s.[19] This device was specifically designed to facilitate controlled tensioning and secure fastening of the canvas. By utilizing the Trecker, conservators ensures that the torn edges remain in close proximity throughout the mending process.

Alternatively, kinesiological tape served as an alternative approach for temporary securement. This type of tape boasts advantageous properties such as resistance to moisture, strong adhesion, and ease of removal without leaving adhesive residue. These characteristics made it a suitable choice for temporarily closing the gap during tear mending procedures. By considering the strength of the original canvas, controlled tension is meticulously applied using small pieces of kinesiological tape to unite the torn edges in perfect alignment. This temporary alignment allowed for the tear mending process to be carried out with utmost precision and accuracy. The act of securing the canvas in place during this stage plays a crucial role in maintaining the desired alignment. By securely fastening the canvas at the designated locations using the kinesiological tape, conservators ensures that the torn edges remain in close proximity, facilitating a seamless and cohesive repair. This technique of temporarily holding the canvas in position during tear mending is a widely adopted practice by conservators, aiming to achieve optimal results. The controlled tension applied to the canvas plays a significant role in achieving a visually cohesive and structurally stable restoration of the repaired area.

5.5.3. Joining the threads

An essential aspect of the tear mending process involves the close examination of the original weave pattern of the canvas. Before joining the threads, weave pattern must be observed carefully then a plan for the thread mending should be made for the perfect

[19] Petra Demuth and Winfried Heiber, “Der Trecker Eine Spannkonstruktion für die Rissverklebung”, *Restauro*, no. 5, (2000): 344–47.

joining for each torn thread. Preserving the original weave pattern is crucial to maintain the original condition of canvas. The process of joining a broken thread involves several sequential steps that ensure a secure and durable connection. Figure 24 illustrates these steps, highlighting the intricate nature of the procedure. Initially, when two parts of threads are brought together, it is important to assess if any open threads exist. If there are no open threads, controlled manipulation using dental tools is employed to delicately open the threads up to a maximum length of 1mm. This controlled opening of the threads serves a crucial purpose as it facilitates the overlapping of the threads, which ultimately contributes to a sturdy joining of the thread segments. In situations where the possibility of opening fibres is absent, an alternative method for attachment involves utilizing a butt joint.[20] However, it is important to note that this type of joint is less effective compared to an overlapping and intermingled joint. Apart from butt joint and intermingled joint, threads can be joined by other methods as shown in figure 25.

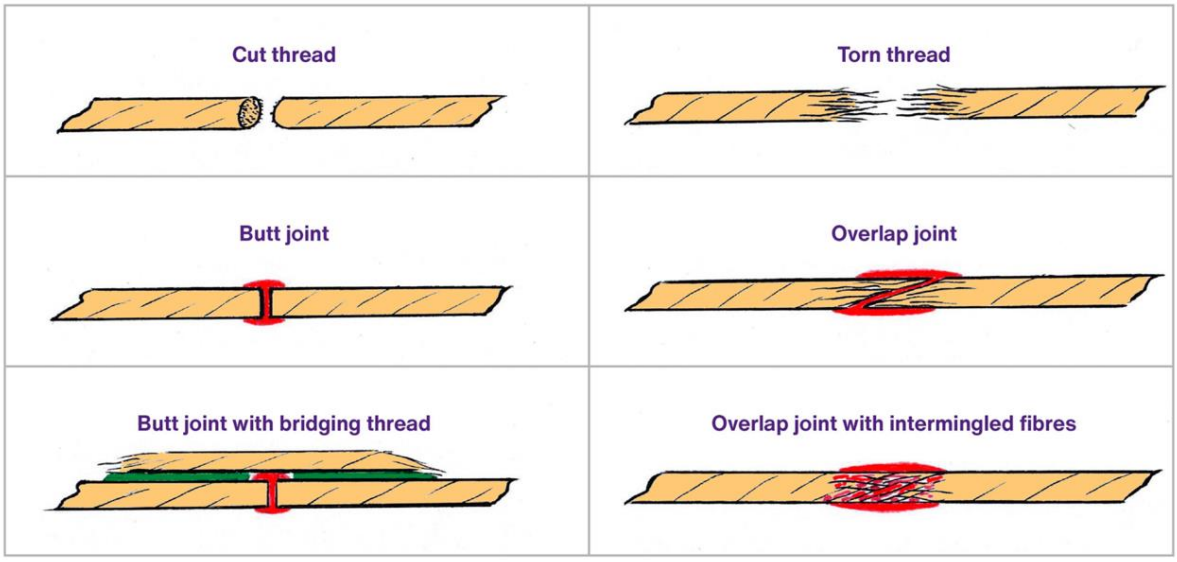

Figure 26: Different methods for thread joining.

[20] A type of joint where two components unite by their ends or edges, without any overlap, Dictionary.com, accessed August 24, 2023, https://www.dictionary.com/browse/butt-joint.

Choosing a type depends on the condition of the thread which is to be mend. After preparing two ends of thread a minute quantity of adhesive is applied using an insect needle. This precise application ensures that the adhesive is distributed in an optimal manner, promoting an effective bond between the thread segments. The adhesive serves as a binding agent, enhancing the strength and stability of the joint but excess adhesive can make fibres more rigid so it is important to use optimum amount of adhesive. The next step involves intermingling the open threads, thereby connecting the two ends of the threads. This intermingling of the threads reinforces the cohesion between the segments, further fortifying the integrity of the joined thread. To expedite the drying process of the adhesive, a hot needle is cautiously applied to the join. The controlled application of heat aids in evaporating the moisture from the adhesive, accelerating its solidification and ensuring a prompt bond.

5.5.3.1. Adhesive for tear mending

In the context of thread-by-thread tear mending, the selection of an appropriate adhesive is a crucial consideration. Several factors must be taken into account during the adhesive selection process to ensure optimal results. These factors include the adhesives strength to establish a durable bond, the absence of any allowance for post-mending adjustments, the avoidance of stiffness in the adhesive, and the requirement for flexibility.

The adhesive must possess sufficient strength to effectively secure the threads and maintain the integrity of the repaired area over time. This strength ensures the longevity of the mended tear and minimizes the risk of subsequent damage or re-tearing.

Furthermore, it is imperative to recognize that once the adhesive is applied and the threads are joined, no further adjustments can be made. Therefore, careful consideration must be given to selecting an adhesive with the appropriate viscosity and workability that allows for precise and accurate application during the mending process. Additionally, the adhesive should not become stiff upon drying, as this rigidity could

negatively impact the overall flexibility and pliability of the repaired area. Maintaining flexibility is essential to ensure that the mended fabric retains its natural movement and does not experience any limitations or restrictions.

According to tests mentioned in New Investigations of Adhesives for Tear Repair of Canvas Paintings by Hannah Flock, Stefan Diebels, Elisabeth Jägers & Petra Demuth. The application of certain adhesive formulations has yielded promising outcomes in establishing dependable bonds for conservation purposes. Notably, the pH-neutral EVA-dispersion Lineco®, along with the well-recognized sturgeon glue combined with wheat starch paste (both in native and modified forms), has demonstrated highly favourable results in this context. Additionally, a novel composition involving the combination of sturgeon glue and Arbocel® BWW 40 cellulose fibres has shown significant potential in achieving robust adhesive connections.

The pH-neutral EVA-dispersion Lineco® stands as a notable contender, offering stability and compatibility with various substrates due to its neutral pH characteristics. This makes it an ideal choice for applications involving sensitive or delicate artworks, as it minimizes the risk of chemical interactions that might compromise the integrity of the materials. The sturgeon glue combined with wheat starch paste presents a well-established adhesive mixture. This blend possesses a track record of successful bonding and is versatile enough to be adapted in either its native or modified form, offering flexibility to conservationists in addressing varying restoration needs. Furthermore, the novel combination of sturgeon glue with Arbocel® BWW 40 cellulose fibres introduces an innovative approach. This composite mixture capitalizes on the inherent adhesive properties of sturgeon glue while enhancing its performance with the incorporation of cellulose fibres. These fibres not only contribute to the adhesives mechanical strength

but also introduce a controlled degree of porosity, aiding in the creation of secure and stable bonds[21].

For this particular restoration endeavour, sturgeon glue is a good choice as the adhesive due to its desirable properties for tear mending applications. To enhance its adhesive properties, modification can be made by incorporating Arbocel, a cellulose-based material[22], into the sturgeon glue. The modified adhesive is prepared by mixing 20% sturgeon glue with 100% Arbocel® BWW 40 in a ratio of 20:1. The modified adhesive should be tested on a sample thread and after ensuring its strength it should use for the tear mending. During the application of the adhesive, a precise and minimal amount of adhesive is used to maintain the original properties of thread. Following the precise application of a minute quantity of adhesive onto the threads, a controlled and uniform distribution was achieved through the utilization of an insect needle. This meticulous dissemination of adhesive served as a preparatory step before intertwining and joining the individual threads.

Subsequent to adhesive application, the intertwining process facilitated the seamless amalgamation of threads, culminating in a unified structure. To expedite the drying of the adhesive, a heated needle was employed. The application of heat induced a rapid evaporation of moisture present within the adhesive matrix. This expedited drying process significantly minimized the temporal duration required for adhesive solidification.

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[21] Hannah Flock, Stefan Diebels, Elisabeth Jägers and Petra Demuth, “New Investigations of Adhesives for Tear Repair of Canvas Paintings”, *Studies in Conservation online*, (2020): 1–17. https://doi.org/10.1080/00393630.2020.1827185

[22] Material Safety datasheet, “Arbocel® BWW 40”, Kremer Pigmente, accessed June 6, 2023, https://www.krem er-pigmente.com/media/pdf/59770_MSDS.pdf.

5.5.4. Additional fibres bridge

Subsequent to the completion of the tear mending procedure, the augmentation of structural strength can be achieved through the integration of fibre bridges originating from the reverse side of the canvas. The incorporation of loose fibres, oriented perpendicular to the tear, serves to impart supplementary strength. Ensuring compatibility, the attachment of these loose fibres to the canvas necessitates the use of an adhesive formulation that avoids undesirable reactivity with the adhesive utilized for the tear mending process. This objective can be achieved by initially applying a thermoplastic adhesive to the fibres, followed by a thorough drying period. Subsequently, the fibres can be affixed onto the tear area by reactivating the thermoplastic adhesive. An optimal selection for this application is Plextol© B500, a suitable thermoplastic adhesive offering compatibility and adhesive strength.

During the incorporation of fibre bridges, a pivotal factor to be cognizant of pertains to the arrangement of threads in varying lengths and orientations. The objective is to prevent the formation of a linear configuration, as the alignment of fibres in a straight line could potentially induce a bulge within the canvas upon stretching. By adopting this randomized arrangement, the exerted pressure is effectively distributed across the canvas surface, thereby circumventing the development of a bulge.

5.6. Restretching canvas

Following the incorporation of fibre bridges, a subsequent step involves the re-stretching of the canvas. This phase necessitates meticulous attention, particularly given the proximity of the tear to the canvas edge where tension is heightened during the stretching process. The canvas should undergo controlled stretching to achieve appropriate tension, facilitated by the utilization of canvas pliers. Securing the canvas in place can be achieved through the application of a staple gun. However, during this procedure, prudent practice dictates the interposition of a buffering medium between

the staple pin and the canvas surface. Materials such as a sheet of leather or substantial paper can serve this purpose. This precautionary measure is implemented to prevent any potential damage to the canvas, particularly in scenarios where staple pins may need to be extracted subsequently for any reasons.

5.7. Filling

Following the successful re-stretching of the canvas to restore its structural integrity, the focus will shift towards addressing the area where both the ground layer and painting layer had been lost due to the tear. This critical phase involves meticulous steps to seamlessly integrate the lost layers while preserving the artworks visual coherence. Prior to the application of the filling material, a preliminary isolation needs layer to be applied to ensure the future reversibility of the restoration efforts. Sturgeon glue, comprising 3% of the mixture will be used as the isolation layer. The filling material is prepared by skilfully combining Champagne chalk powder, rabbit skin glue, and a drop of linseed oil. Through thorough mixing, a homogenous blend is achieved, ensuring the proper compatibility of these components. This mixture will serve as the foundation for reconstructing the lost layers. With the filling material ready, a flexible spatula will be employed to apply it over the tear mended area.

5.8. Retouching

The retouching process will be exclusively applied to areas exhibiting paint loss, assuring that regions where the original paint layers remained intact were not subjected to overpainting.[23] The overall appearance of the painting presents a matte quality, prompting the deliberate choice of employing gouache colours and the invisible retouching technique. The utilization of gauche colours for retouching could

[23] Shawn Peer, Karen Thomas, Roy Perry, Joyce Townsend and Stephen Gritt, “The Imitative Retouching of Easel Paintings.” *The Conservation of Easel Paintings*, ed. Joyce Hill Stoner, Rebecca Rushfield (London: Routledge, 2022), 607–34.

be a well-considered decision. During the retouching procedure involving gouache colours, a meticulous and comprehensive study of the original colour application should be undertaken. The technique employed by the artist in layering colours is subject to close scrutiny, enabling conservators to execute retouching that harmoniously emulate the artists original brushwork.

6. Measures carried out

6.1. Pre consolidation

The consolidation process involved the meticulous application of a 7% solution of sturgeon glue. Before initiating the consolidation process, careful consideration was given to selecting a specific area for consolidation. To avoid exerting unwanted pressure on the canvas and creating undesirable dents, supportive wooden blocks were strategically positioned around the designated areas. Freshly prepared sturgeon glue to be meticulously applied over the cracks, ensuring thorough penetration into the crevices. A hot spatula, carefully coated with soft silicone, was then employed with gentle pressure along the periphery of the cracks to securely hold them in place.

Throughout the application of the hot spatula, careful observations were made regarding the alteration in the appearance of the paint layer. It was noted that areas where the spatula was applied exhibited a shift from a matte to glossy appearance. To mitigate this effect, the use of a silicone-coated hot spatula consistently prevented the paint layer from transitioning to a glossy state. In the procedure, a heated spatula was utilised and coated with liquid silicon, as shown in figure 26. The purpose of this coating was to apply a layer of silicon material onto the surface of the spatula. The choice of liquid silicon suggests that it was in a state where its molecules were not bound together, allowing it to flow and conform to the shape of the spatula. After applying the liquid silicon coating, it was left to dry for an extended period, specifically overnight. This duration ensured that sufficient time was given for the liquid silicon to undergo a process of curing (figure 27). Following the curing process, the consolidation phase continued as shown in figure 28. The silicone-coated hot spatula proved to be an effective tool in maintaining the desired matte finish. Consequently, it was employed throughout the entirety of the pre-consolidation process, ensuring uniform treatment application.

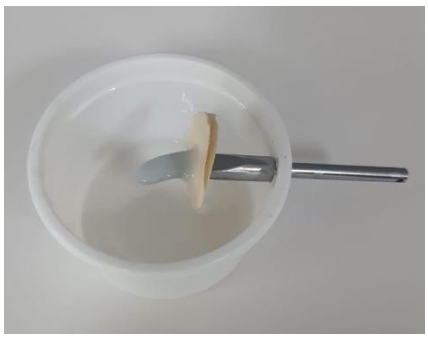

Figure 27: Spatula coated with liquid silicon. 1 February 2023.

Figure 28: Spatula after silicon coating is completely dry. 2 February 2023.

Figure 29: Consolidation with silicon coated heated spatula. 2 February 2023.

6.2. Dry surface cleaning

In the case of the “Swindlers” painting, a minor accumulation of dust and dirt was observed on the surface of the paint layer, indicating the need for a dry surface cleaning procedure. To perform the dry cleaning process, a brush and a vacuum cleaner were utilised. Considering the presence of a thick impasto paint layer, it was determined that the use of Akapad© sponges or any other type of sponges would be unsuitable for this particular cleaning task. This decision was made to prevent any unintended damage to the uniquely created impasto paint layer, which could be susceptible to alteration or removal with the use of sponges. By employing the brush and vacuum cleaner method, the accumulated dust and dirt were effectively removed from the paintings surface. The brush gently swept away loose particles, while the vacuum cleaner efficiently suctioned them, leaving the painting clean without compromising the integrity of the impasto layer. The dry cleaning process proved successful in achieving the desired result, and no further cleaning procedures were deemed necessary for the painting. This careful approach to cleaning ensures the preservation of the “Swindlers” painting while maintaining the original appearance intended by the artist. The elimination of the dust and dirt contributes to the overall visual clarity of the artwork, allowing viewers to appreciate the intricate details and colours without distractions.

6.3. Removal of old repairs

Once it was confirmed that the adhesion had sufficiently weakened, the subsequent step involved the careful and gradual detachment of the sticky tape from the canvas. This operation was conducted with utmost caution to minimize the risk of any damage or alteration to the underlying surface. The step-by-step progression of this procedure is visually documented in Figures 30, 31 and 32 providing a visual reference for the process.

Figure 30: Separating sticky tape from canvas. 21 March 2023.

Figure 31: Removing sticky tape by pulling. 21 March 2023.

Figure 32: Completely removing the sticky tape. 21 March 2023.

6.4. Locally unstretching canvas

Prior to commencing the tear mending procedure, a localized unstretching of the canvas was executed by extracting staple pins situated on the reverse side of the painting. This removal process was carried out utilizing a staple pin remover and pliers to ensure the preservation of both the canvas and the strainer. During the extraction of the staple pins, those affixed during the preceding conservation intervention were removed, while pins originally applied by the artists were kept intact.

6.5. Tear mending

Tear mending was in several stages as mentioned in further subtopics. Entire tear mending process carried under the 4X magnification stereo microscope (figure 33)

Figure 33: Tear mending under stereo microscope. 3 April 2023.

6.5.1. Alignment of fibres

Prior to commencing the tear mending process, it was of paramount importance to address the gap between the torn sections of the canvas. This process started with making canvas more pliable with introduction of controlled moisture. For introducing desired controlled moisture levels, a careful approach was adopted, utilizing blotting paper in conjunction with a GORE-TEX© sheet. The GORE-TEX© sheet offered

notable advantages due to its exceptional versatility in humidity control[24]. The process of introducing moisture using the GORE-TEX© sheet involved placing the moist blotting paper in close proximity to the canvas. This arrangement facilitated the gradual transfer of moisture from the blotting paper to the fabric. The presence of the GORE-TEX© sheet acted as an intermediary, ensuring a controlled and gradual absorption of moisture by the canvas. The GORE-TEX© sheet, renowned for its breathability and moisture management properties, played a crucial role in regulating the moisture transfer process. This carefully managed introduction of moisture played a pivotal role in rendering the canvas more pliable, thus enabling the subsequent tear mending procedure to be executed with precision. By employing the indirect moisture transfer method, it was possible mitigated the risk of excessive shrinkage and ensured optimal conditions for the tear mending process.

6.5.2. Closing the tear gap temporarily

After rendering the canvas pliable, it became imperative to temporarily secure the canvas in position by closing the gap within the tear. This facilitated the subsequent tear mending procedure. To achieve this, specialized Kinesiological tapes have been utilized to temporarily hold the canvas in place and close the gap between the tear. The use of Kinesiological tapes in this temporary closure serves as a vital step in the tear mending process. Small pieces of tapes were applied close to the torn canvas edges and afterwards were carefully pulled together to reduce closing the tear gap. Use of several small tapes allowing for precise alignment during subsequent restoration stages. Once the canvas was appropriately held in place, the tear mending process is commenced.

[24] Nancy Purinton and Susan Filter, “Gore-Tex: An Introduction to the Material and Treatments”, American Institute for Conservation, accessed 30 June, 2023, Link:https://cool.culturalheritage.org/coolaic/sg/bpg/annual/v11/bp11-33.html.

6.5.3. Joining the threads

After applying Kinesiological tapes each individual thread is observed carefully observation ensure precise alignment. Fine adjustments were made to the alignment by manipulating the position of the tapes. This meticulous process ensures that the threads are correctly aligned before proceeding to the thread mending stage. An Interlacing weave pattern is observed carefully then plan for the thread mending was made. Preserving the original weave pattern was crucial to maintain the original condition of the canvas. During the actual thread mending process, two conditions are encountered. In the first condition, there is no loss of fibres in the broken threads. In such cases, the threads are joined together after aligning the original fibres meticulously. This meticulous alignment ensures that the repaired section of the canvas seamlessly integrates with the surrounding area, creating an imperceptible repair.

In the second condition, where some fibres have been lost in the broken threads, in such condition additional new thread is introduced to fill the gap and create a uniform thread. The new threads are carefully integrated into the original weave pattern to recreate close to original condition of the canvas. This meticulous technique involved the gradual progression from one end of the tear to the other, ensuring a consistent and inconspicuous repair. The choice of starting from one side of the tear and progressing towards the other end is crucial for achieving a seamless restoration outcome. It allowed a careful alignment of the torn edges, thread by thread, ensuring a nearly invisible mend that blends harmoniously with the original artwork. This entire process has been done under the microscope with 4x magnification.

6.5.3.1. Adhesive for tear mending

Adhesive for tear mending was prepared by mixing 20% sturgeon glue with 100% Arbocel® BWW 40 in a ratio of 20:1. Adhesive was applied in tiny amount with the help of insect niddle and to accelerate the drying process heated niddle is employed.

6.5.4. Addition of fibre bridges

Following the meticulous completion of the tear mending process, a subsequent step was undertaken to introduce supplementary fibres, thereby augmenting the overall reinforcement of the repaired region. This strategic reinforcement was necessitated by the tears proximity to the canvas edge, where inherent vulnerability demanded enhanced stability and long-term endurance, particularly when subject to the re-stretching phase of the canvas. To execute this reinforcement strategy, fine jute fibres were carefully selected, and a layer of Plextol© B500, which is a thermoplastic acrylic medium, was applied onto the fibres. Subsequently, the dried fibres were judiciously positioned in a perpendicular orientation over the tear site, effectively creating a network of fibre bridges (figure 34). Different lengths of fibres are used and they positioned in such a way that they don't form a perfect line. This strategic arrangement of fibres over the mended area facilitated the transfer of stress and weight across the tear, enhancing its stability and distributing tension during the re-stretching process.

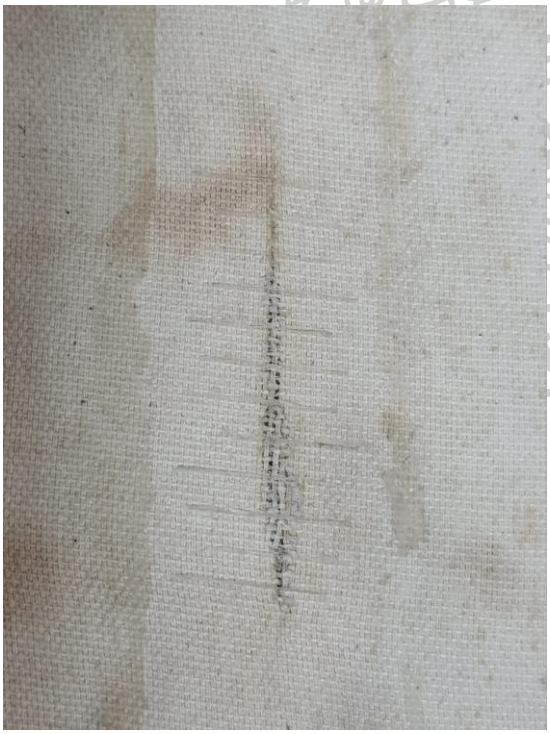

Figure 34: Fibre bridges (detail). 19 April 2023.

To ensure a secure bond between the fibres and the repaired area, a heated spatula was employed. The application of heat served to reactivate the Plextol© B500, promoting optimal adhesion between the fibres and the canvas. This methodical procedure guaranteed the firm integration of the supplementary fibres into the mended section, further consolidating the tear mending and reinforcing its structural coherence.

6.6. Restretching canvas

Subsequent to the implementation of fibre bridges to bolster the tear mending, a re-stretching procedure was executed to restore the canvas to its taut condition. This crucial step aimed to reinstate the original tension and structural integrity of the canvas, aligning with the artworks intended presentation. The re-stretching process involved the utilization of canvas pliers, which facilitated controlled manipulation of the canvas to achieve the desired tension. This meticulous tensioning ensured that the canvas was free from creases or undulations, creating a smooth and visually appealing surface. To secure the canvas in its newly stretched position, staple pins were employed. These staple pins, applied using a staple gun, anchored the canvas to the wooden stretcher bars, firmly holding it in place. This stapling procedure was carried out in a precise and methodical manner to maintain the even distribution of tension across the canvas. To prevent any potential physical harm or damage to the canvas during the stapling process, an additional protective measure was taken. A carefully positioned protective sheet of thick paper is interposed between the canvas and the area to be stapled figure 35). This precautionary sheet served as a barrier, shielding the canvas from direct contact with the staple pins and staple gun. This protective intervention minimized the risk of unintended marks, indentations, or abrasions on the artworks surface.

Figure 35: Thick paper under staple pin. 19 April 2023.

6.7. Filling

The application process was executed with precision to ensure uniform distribution and seamless integration with the surrounding area. This approach aimed to create a harmonious transition between the restored area and the original artwork (figure 35). Upon the complete drying of the filling material, any excess residue was carefully removed using a scalpel. The delicate task of refining the restoration extended to the elimination of any minute traces of excess material within minuscule recesses. This was accomplished using a wet cotton swab, ensuring the utmost attention to details. To achieve a truly cohesive restoration, the texture of the repaired region was meticulously matched with the surrounding areas. Elements such as the canvas grain and impasto paint application were carefully harmonized using white gouache colour (figure 36). This painstaking effort contributed to the seamless integration of the restored section, enhancing the artworks overall visual continuity. After achieving desired result in filling, the isolation layer is applied after the filling and before the retouching.

Figure 36: Filling. 20 April 2023.

Figure 37: Texture matching as the original surroundings. 21 April 2023.

6.8. Retouching

involved the precise application of minute dots or finely rendered lines using colours that matched the original palette. The strategic utilization of these retouching elements facilitated a seamless and virtually imperceptible blend with the surrounding areas, ensuring a coherent and aesthetically pleasing visual integration. The process of retouching was executed through the strategic application of minute dots or finely delineated lines, employing colours that impeccably matched the surrounding areas. This method was chosen with precision to achieve a seamless integration that remains imperceptible to the viewer, ensuring a coherent and aesthetically harmonious outcome. Before and after images of retouching below figures 38 and 39.

Figure 38: Before retouching. 21 April 2023.

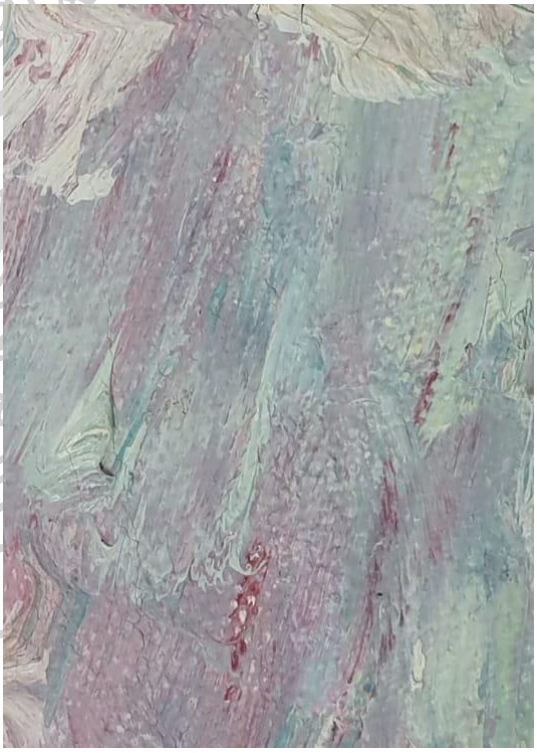

Figure 39: After retouching, 20 April 2023.

7. Recommendations for care, maintenance, display and storage

Given the distinctive artistic techniques and materials employed in the paintings creation, several considerations become imperative concerning its subsequent care, ongoing maintenance, suitable exhibition conditions, and appropriate storage methodologies. The paintings unique artistic execution and the materials utilised necessitate a specialised approach in these aspects. This involves instituting protective measures against an array of ten deterioration agents, encompassing factors such as inappropriate temperature and humidity, light exposure (including ultraviolet and infrared spectra), pollutants, fire, water, pests, dissociation, physical forces, theft/vandalism. By implementing a comprehensive approach centred on preventive conservation and the collection care strategy, paintings can be conserved over extended durations, substantially mitigating the vulnerabilities posed by these deterioration agents.

7.1. Preventive conservation

Paintings are made from different materials which makes painting one of the most sensitive objects in collection. The core objective of preventive conservation is to avert potential damage to an object proactively, prior to its occurrence. This methodology serves to markedly diminish the necessity for resource-intensive and time-consuming conservation interventions[25]. This underscores the significance of preventive conservation. Through a comprehensive comprehension of the pivotal deterioration factors and their impacts on artworks, these factors can be effectively mitigated, thus ensuring the enduring preservation of "Swindlers." Subsequent to the completion of the conservation regimen, the painting is poised to be reinstated within its original location, situated within the visible storage gallery at the Silpakorn University Art Centre,

[25] Curatorial Care of Easel Paintings by *NPS Museum Handbook*, Part I (2000), 6, https://www.nps.gov/museum/publications/mhi/appendl.pdf.

wherein it shall resume public exhibition. The underlying objective of this proposal focus to the formulation of a preventive conservation strategy specifically tailored to the period during which the painting is showcased on display.

7.1.1. Incorrect temperature

Temperature plays one of the vital roles in reservation of paintings. According to curatorial care of easel paintings by NPS Museum Handbook Part I (2000), temperature range of 18^0C to 24^oC is ideal for preservation of paintings in storage. Change in temperature doesn't cause harm to painting directly compared to relative humidity (RH) for paintings, but sudden change in temperature fluctuations can impart detrimental effects. Translocating a painting from a cooler environment to a warmer setting can prompt surface condensation owing to moisture changes[26].

Mitigation of abrupt temperature fluctuations can be achieved through the implementation of climate control systems. The phenomenon of elevated temperature resulting from direct sunlight exposure within the gallery environment is particularly pertinent in the context of South East Asian regions, such as Thailand. To counter this, it is recommended to employ blinds on glass windows if direct sunlight ingress is observed. This measure aids in regulating the temperature within the gallery space.

7.1.2. Incorrect humidity

Optimal recommended relative humidity is around 50%[27]. Curatorial care of easel paintings by NPS Museum Handbook Part I (2000) mansions that, it is imperative to sustain an RH level spanning 40% to 55%. RH levels below 35% hold the potential to

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[26] Curatorial Care of Easel Paintings by *NPS Museum Handbook*, Part I (2000), 6, https://www.nps.gov/museum/publications/mhi/appendl.pdf.

[27] Improved Protection of Paintings during Exhibition, ed. Elin Dahlin, Norway, Norwegian Institute for Air Research, 2010. 19-20.

induce brittleness across all painting components, fostering the emergence of cracks and losses. Conversely, RH levels surpassing 65% facilitate the propagation of mould growth[28].

As per data extracted from wheather-atlas.com, the mean annual humidity levels in Bangkok oscillate within the range of 60% to 79%[29]. This range surpasses the prescribed humidity parameters conducive for painting storage. Consequently, meticulous monitoring of humidity within the gallery is imperative. This vigilance can be facilitated by the deployment of data loggers, which enables the tracking of environmental conditions. Maintaining optimal Relative Humidity (RH) levels and precluding abrupt fluctuations therein constitute pivotal objectives.

During the rainy seasons, the RH can experience rapid escalation within short time spans. This issue can be effectively mitigated by the installation of dehumidifiers within the gallery space. Additional strategies encompass the adoption of double doors and windows, which serve to attenuate sudden RH variations coming from outside environment to inside the gallery. Furthermore, the integration of a good air ventilation system throughout the gallery is recommended, as it substantially diminishes the probability of elevated humidity.

The spectre of humidity intrusion through seepage from walls, particularly during periods of precipitation or owing to inadequacies in drainage systems, mandates vigilant consideration. In this context, continual monitoring to detect potential sources of seepage is pivotal. Timely rectification measures must be executed to address any identified seepage concerns promptly. This proactive approach ensures the sustenance of an optimal gallery environment, aligning with the imperatives of maintaining optimal RH levels for the preservation of artworks.

[28] Curatorial Care of Easel Paintings by *NPS Museum Handbook*, Part I (2000), 6.

[29] Weather-atlas, "Climate and monthly weather forecast Bangkok Thailand," accessed August 31, 2023, https://www.weather-atlas.com/en/thailand/bangkok-climate.

7.1.3. Light: UV and IR

Light is important to see but light becomes deterioration agent if it includes UV and IR radiations. The sources of UV and IR radiations can be direct sunlight as well as the lights installed in the gallery. UV light can cause degradation of pigments, cellulose in canvas, ground layer by changing the molecular structure[30]. IR radiation does not exert a direct impact on paintings; however, it possesses the potential to induce thermal elevation, subsequently leading to incorrect temperature conditions that might result in degradation. In order to prevent the adverse consequences of UV and IR, it is imperative to shield paintings from direct solar irradiation. In cases where gallery is vulnerable to solar exposure, strategic measures such as the installation of light-absorbing curtains or the application of specialized UV and IR radiation attenuating films onto glass windows are advised as viable protective strategies.

Paintings are also sensitive to the time of exposure and strength of the light source. Mentioned by Julio M. del Hoyo-Mele´ndez and Marion F. Mecklenburg, delicate museum items react to light exposure according to the reciprocity principle. This means that the same amount of damage can occur whether they are exposed to bright light for a short time or to lower light for a longer period during exhibitions[31]. Damage happened to painting due to light is irreversible therefore it is important to preserve painting from light damage. To prevent painting damage from light painting should be display away from direct sunlight. A luminance of 50 lux proves sufficient for the optimal observation of a painting. However, in scenarios necessitating heightened illumination, it is imperative to constrain visible light intensities below 200 lux[32]. Lighting systems

[30] Mina Magdy, “National Museum of Egyptian Civilization, Insights into the Effect of UV Radiation on Paintings: A Mini-Review for the Asset Preservation of Artworks” no. 2 (2022): 46–54.

[31] Julio del Hoyo-Meĺendez and Hoyo Mecklenburg, Marion F,” An Investigation of the Reciprocity Principle of Light Exposures Using Microfading Spectrometry”, 44: 1, (2011): 52–62, http://dx.doi.org/10.1080/00387010903508572.

[32] Curatorial Care of Easel Paintings by *NPS Museum Handbook*, Part I (2000), 7.

in painting should be museum grade which does not emits UV and IR radiations. Whenever there are no visitors in the gallery then all lights should be turned off to reduce the time of light exposure.

7.1.4. Pollutant

Contaminants within gallery environments are sourced predominantly from extraneous origins. Notably, particulate pollutants such as dust and dirt have facile ingress via windows and doors. Industrial residuals, exemplified by smoke emissions, possess the propensity to infiltrate, thereby exacerbating the pace of deterioration processes. Furthermore, the generation of waste and utilisation of materials during cleaning, construction, and repair endeavours within the gallery can engender pollution.

Mitigation strategies centre on direct and indirect interactions with these pollutants through the enforcement of hygienic and environmentally-responsible work practices, thereby cultivating an environment characterized by cleanliness and freedom from pollution.

7.1.5. Pests

Pests represent a formidable category of deterioration agents posing significant threats to paintings, as their inconspicuous nature renders them challenging to detect. Pests, whether consuming painting materials as sustenance or colonizing artworks, exert deleterious effects through the deposition of waste materials that yield staining or chemically harmful residues.

Mitigating pest induced damage necessitates the upholding of stringent hygiene within the gallery environment. This encompasses the prohibition of eating and drinking activities therein. To reinforce these measures, the positioning of facilities such as canteens, cafés, and waste management systems should be strategically distanced from the gallery premises, thereby deterring the incursion of pests that might be attracted to these areas.

Instituting an Integrated Pest Management (IPM) protocol is pivotal, predicated upon the distinctive needs of the gallery. By adopting this comprehensive strategy, the prevalence of pest-induced impairment can be minimised, safeguarding the integrity of artworks including “Swindlers,” while concurrently sustaining the broader artistic works housed within the gallery.

7.1.6. Fire

The potential for fire ignition within a gallery setting stems from multifarious origins, inclusive of electrical system malfunctions, the presence of ignition sources, and the introduction of heat sources. Conflagrative events can elicit direct conflagration of artworks within the gallery, culminating in their irrevocable loss, or alternately, inflict harm through the deposition of heavy suit onto the paint layers.

To avert these deleterious outcomes, the implementation of robust electrical infrastructures within the gallery space is of paramount import, necessitating regular surveillance to ascertain their sustained efficacy. Concurrently, stringent prohibitions must be imposed on activities such as smoking and the proximity of heat and open flames to the gallery environment, thereby bolstering the overall efficacy of fire prevention measures.

The construction materials employed within the galleries interior should adhere to fire-retardant or fire-resistant specifications, mitigating the propagation of flames in case of an outbreak. An instrumental stride involves the proficient training of personnel tasked with gallery oversight, coupled with the establishment of symbiotic relationships with local fire authorities. This endeavour ensures preparedness in responding to potential fire emergencies, underscoring the imperative of efficient coordination and prompt mitigation in the face of such contingencies.

7.1.7. Water

Water induced damage can manifest through diverse mechanisms, including compromised plumbing conduits, air conditioning malfunctions, sprinkler system anomalies, or environmental exigencies such as floods and heavy rainfalls. Mitigating the risk of water-related detriments entails strategic interventions. Primarily, the layout of plumbing networks should be meticulously devised to divert their trajectory away from the gallery space. In instances where spatial constraints preclude such design, the selection of premium plumbing materials is imperative, coupled with the establishment of a regimen for periodic monitoring to ensure their optimal functionality.

Furthermore, meticulous attention ought to be directed towards the drainage mechanisms associated with air conditioning systems, with their configuration engineered to preclude any seepage or inadvertent water ingress.

To forestall potential water damage in gallery settings, the conventional employment of water-based sprinkler systems for fire suppression should be reconsidered. Instead, the implementation of fire control systems predicated upon non-aqueous agents such as carbon dioxide (CO_2) or other gas-based alternatives is recommended. This judicious substitution circumvents the inadvertent introduction of water-related hazards into the gallery environment, thus safeguarding against the dual perils of fire and water-induced impairments.

7.1.8. Physical forces

Physical forces can cause mechanical damage to the painting. This can happen from non-intentional accidents or while handling the painting for transportation. The appropriate handling of a painting constitutes a cornerstone in ensuring its safety and preservation. It is crucial to acknowledge that the majority of damages sustained by

paintings and their accompanying frames transpire during the course of handling[33]. The structural imperfections within the canvas strainer underscore the necessity for a deliberate and cautious approach when interacting with the painting. The imperative lies in minimizing any inadvertent movements or stresses imposed on the canvas during handling. This precautionary measure safeguards the canvas from encountering forces that might exacerbate its existing structural vulnerabilities. This could encompass utilising supportive tools or temporary loose lining and implements during movement, employing secure and stable mounts during display, and adopting strategic approaches that alleviate any potential stressors on the canvas.

7.1.9. Dissociation

Dissociation, also known as "custodial neglect," encapsulates the inadvertent lapse in retaining pertinent information and documentation associated with artworks. The preservation of documentation, labels, and research germane to paintings assumes a pivotal role as these components are inherently intertwined with the artworks themselves. Neglecting the custodial aspect of such materials can engender a diminution in the inherent value of the artworks.

To preclude this adverse scenario, the institution of a structured system is imperative for the organization and maintenance of all pertinent documents and labels. This system should not only ensure their physical preservation but also prioritize the conceptual clarity of these materials, rendering them comprehensible to both extant and future staff members involved in the system. By adopting such measures, the risk of dissociation, and concomitant loss of valuable information, is effectively mitigated, thereby safeguarding the holistic integrity of the artworks and their associated documentation.

[33] "Basic Handling of Paintings" Canadian Conservation Institute, accessed August 31, 2023, https://www.canada.ca/en/conservation-institute/services/conservation-preservation-publications/canadian-conservation-institute-notes/basic-handling-paintings.html.

7.1.10. Theft and vandal

Galleries contend with the unwelcome occurrences of theft and vandalism, posing significant challenges to their operations. Addressing this issue necessitates the establishment of a effective security apparatus. An effective preventative measure involves the prohibition of bags within the gallery premises, thereby curbing potential avenues for unauthorized possession or concealment of artworks.

In the context of “Swindlers”, artworks lacking varnish and protective glass are particularly vulnerable. To counteract this vulnerability, a prudent approach entails maintaining a prudent physical distance between the displayed artwork and the gallery visitors. This distance acts as a safeguard against deliberate or inadvertent harm that might befall the artwork. The realization of this measure can be achieved by implementing demarcated distance lines on the gallery floor or by introducing barricades, collectively serving as a buffer zone that safeguards the artworks from undue proximity and potential harm.

Taking into account the manifold agents of deterioration, the systematic and recurrent monitoring of paintings emerges as an elemental regimen pivotal to their sustained conservation and upkeep. Essential to this endeavour is the comprehensive training of pertinent staff members, acquainting them with the spectrum of deterioration agents and the potential pathways through which they may infiltrate.

To bolster these efforts, the provision of a concise housekeeping manual assumes significance, furnished in both Thai and English languages. This manual serves as a lucid reference, furnishing staff with instructions for routine monitoring activities and offering guidance for navigating critical scenarios. By engendering these measures, a veritable framework is established, facilitating the enduring preservation of artworks such as “Swindlers” and concurrently extending its purview to encompass the holistic safeguarding of the broader array of paintings housed within the gallery.

Summary

The conservation and restoration endeavours applied to the painting “Swindlers”, created by Thai artist Virasinee Kongtaweeboon, stand as a paradigmatic representation of the preservation of cultural heritage via a scientific conservation methodology. The treatments enacted sought to attain a dual objective: to stabilize the physical state of the artwork and restore its intrinsic visual essence, while exerting minimal intrusion upon the authentic materials and techniques utilized by the artist. These interventions encapsulated a nuanced interplay between artistic appreciation and scientific approach. Underpinning this endeavour was an all-encompassing technological survey and meticulous examination. This analytical exploration yielded invaluable insights into the artistic composition, disclosing not only the artists materials and techniques but also the vulnerabilities inherent in the artworks support structure. Notably, a suboptimal wooden strainer was identified as a weak point, contributing to the artworks precarious condition. Furthermore, the paint layer exhibited various types of cracks, exposing underlying structural fragilities that necessitated targeted remediation. To combat the risks imposed by the tear and preclude further deterioration, a comprehensive conservation strategy was meticulously formulated. A sequential and methodical treatment regimen commenced with a pre-consolidation phase, orchestrated to stabilize the compromised and cracked paint layer. This phase harnessed the adhesive properties of sturgeon glue, a material celebrated for its adhesive efficacy and compatibility with diverse paint mediums, thereby mitigating the threat of paint flaking and detachment. Proceeding to the subsequent stages, meticulous surface cleaning ensued, eliminating accumulated particulate matter. Delicate removal of previous flawed repair attempts transpired, meticulously executed to minimize disturbance to the original substrates. The tear itself underwent intricate resolution employing a thread-by-thread mending technique, adeptly restoring canvas integrity and safeguarding the artists intent. The filling, retouching, and re-stretching processes were punctuated by the conscientious application of suitable materials and techniques, ensuring a harmonious visual outcome and structurally stable result. Throughout this conservation odyssey, paramount importance was assigned to the preservation of the artworks cultural significance. This endeavour was fortified by the strategic collaboration with proficient conservators and

the artist herself, imbuing the treatment with elevated authenticity and scientific rigor. Each step was meticulously documented, capturing the employed materials, methodologies, and visual records, thus reinforcing transparency, replicability, and the scholarly rigor of the conservation process.

In summation, the conservation and restoration campaign directed towards “Swindlers” exemplifies an amalgamation of scientific methodology, technical acumen, and artistic sensibility. The meticulous rectification of the tear and restoration of the artworks original aesthetic essence resonate as a testament to this scientific ethos, destined to ensure the enduring exhibition, admiration, and safeguarding of the artwork for the enrichment of forthcoming generations.

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