

CREATIVE TEXTILE: THE INTERACTIVE ART INSTALLATION FROM THAI SILK

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ABSTRACT

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Although Thai silk fabric is well-known for its unique characteristics including shininess, smoothness, luxury, and cultural richness; its weaving technique is still limited. A textile innovation knowledge and creativity will serve as the main developmental process. The typical looks of Thai silk include vivid colors, and flat, non-functional textures that make it easily recognizable as an old-style, traditional product. Nevertheless, the finished products from Thai silk are mostly fabric and clothing, creating new texture and function by combining Thai silk yarn with other types is still an uncommon practice due to the belief that it would decrease Thai silk value. This project was aimed to develop textile surface design from Thai silk yarn with the existing resources in Thailand. The modern textile innovations will be exploring and experimenting with the weaving technique and combining with other yarn types. The objective is to enhance value of the fabric surface to be more than Thai traditional fabric but utilize them as an art form, not as a conventional application in clothing industry. During the design process, the data information from in-depth interviews for users' perspectives about Thai silkworm processing and species, Thai silk market, and textile innovations were collected. These key data will be analyzed and synthesized for exploring and experimenting on the new surface design for Thai silk. All findings from the experiment will be presented as Art installation based on "Art as Experience" theory for the audience to experience the value of Thai silk. Thai silk can be functional and creativity which are the key elements from each exploration that can be utilized to textile surface designs. Finally, the project will provide knowledge of Thai silk to silk users and designers in different ways of use, so the local Thai silk will become more attractive respectively.

Keywords: Thai silk; interactive textile; art installation

1. INTRODUCTION

Thai silk has a long history connected to Thai culture since the post-World War II, when Jim Thompson developed Thai traditional silk fabric with Thai weaving pattern and presented it to the world market under his brand name (Kurlantzick, 2011). Today, Thai silk is one of the core materials for global textile industry. Traditional Thai silk fabric is one of the most famous heritage of Thai cultures. Its luxurious look, shininess and sheen are unique characteristics of traditional Thai silk fabric of which the texture differs from the western, Japanese, and Chinese (Datta and Nanavaty, 2007). By Thai social norms, it has represented a cultural product,

however the typical looks of Thai silk fabric come along with the flat traditional pattern, and vivid color that is non-functional apart from costume. This might be affected from limitation of handweaving technique, lack of knowledge in material combination, and low innovation adapting for textile. Additionally, the finished product from Thai silk is mostly clothing, not usually in other forms. With these reasons, designers are less interested in Thai silk and leave it as only a cultural product with no improvement.

From present technology, the innovation can add value, technique, and properties to old-fashioned textile. The fabrics can be improved in several ways such as reflective fabric which is light-sensitive, or UV-dyed fabric which changes its color when exposed to UV light. As in 2015, Kunihiko Morinaga, a Japanese designer, brought the innovations to a fashion show, presenting that one clothing could change the appearance under different conditions (Irenebrination, 2015). So, there is a possibility to develop traditional Thai silk fabric into an interactive textile which the audiences can play, touch, enjoy and have more impression on.

Anyway, Thai silk clothing is not widely popular among the designers, and the value is still limited; this research tends to create the textile art installation from cultural Thai silk under “Art as Experience” concept which was found by John Dewey (1934). The Art form and installation can be experienced by the audiences and absorbed its meaning by themselves. Finally, the project will expect to improve the value of Thai cultural silk through art installation which has a combination of the textile and weaving techniques, and yarn types.

According to the stated problems to the objectives, the study will focus on species, usages, properties, advantages and benefits to complete more in-depth understanding about Thai silk. As well, the opinions on Thai silk from experienced textile designers are important to be collected for understanding the overall situation. Second, the techniques from innovative textiles will be studied and adapted to the works as experiments to explore the possible outcomes for each technique. Third, the study will try to find out that all components from Thai silk can develop creativity and finally provide interactive experience to the audiences according to the theory to combine all techniques together in the form of “Art as Experience”.

2. RESEARCH METHODOLOGY

Naturally, a research methodology will be defined by the research questions and its objective (Denzin and Lincoln, 2005). This project aims to explore and understand in depth about Thai silk by the origin from local participants. Furthermore, the data about the current situation and opinion of Thai silk will be collected as well as the information about innovative fabric from previous studies. The main research questions are as follows:

- What is the origin and advantage of Thai silk for all its components?
- How do participants in different professional careers think about Thai silk at present?
- How can Thai silk fabric can be developed according to innovative textile by previous research?
- Can the art installation interactive textile be created by using silk as a main material, combining with existing innovative textile technique?
- What opinion do participants in different professional careers have about the project idea?
- How can the interactive textile which the audience can interact with be created?

The research methodology can also be divided into 3 phases: data collecting, experimenting, and creating art installation interactive textile according to the research objective.

Phase 1: Data collection

Time frame: February - November 2018

A qualitative method was chosen because the researcher can understand Thai silk and collect the data from the in-depth interviews. It needs small samples with no limit of the participants’ opinions (Collis and Hussey, 2003). First, the sample group of specific participants from different careers that have an experience with Thai silk was interviewed in depth. The same set of questions was used to collect their opinions about Thai silk.

Some sample questions were in form of semi-structured questionnaire as shown in Table 1:

Table 1: Some Major Questions for Thai Silk Experienced Participants

No	Questions
1	What is your name?
2	What is your experience on designing, merchandising, or anything relating to Thai silk?
3	What kind of Thai silk species do you know? What are the difference between each species?
4	What is the value of Thai silk in your opinion?
5	What do you think about Thai silk industry nowadays?

Table 1: Some Major Questions for Thai Silk Experienced Participants (Continued)

No	Questions
6	Do you have any problems when using Thai silk as a medium?
7	Do you have any experience using Thai silk with other fibers?
8	Do you have any experience using Thai silk to create interactive textile?
9	What is your opinion on using Thai silk with synthetic fiber?
10	In your opinion, why Thai silk is more popular in fashion than other goods?
11	Do you think that Thai silk is mostly the same pattern in the market? If yes, why?
12	Do you have any expectation over Thai silk industry in the future?
13	What is your opinion on using Thai silk as a medium to create interactivity?
14	Do you think the interactive textile from Thai silk is advantageous to Thai silk industry?
15	Do you have any suggestions for Thai silk developing projects?

Note: Interactive textile is textile which the user or the audience can interact with, such as changing color, and sound, etc.

Second, the fieldwork and in-depth interview were done in the group of local farmers and weavers. The information on Thai silk origin and its production process was collected from 3 silk farms in Chachoengsao Province, Surin Province, and Queen Sirikit Department of Sericulture.

Third, the secondary method analysis was approached for studying on innovating textile literatures. Charmaz (2000; 2006) stated that the project can develop further data and concept by analyzing the primary research dataset. Textile innovations and other yarn characteristics were studied in order to enhance traditional Thai silk.

Phase 2: Experiment

Time frame: November 2018 - September 2019

The experimental methodology is the testing among one or more independent variables for observing the results (Sørensen et al., 2010). This research was done to enhance the combination of techniques on weaving, material combinations, textile innovations, and printing techniques from information data collected from phase 1.

Phase 3: Using analyzed data from collecting and experimenting to create art installation as interactive textile

Time frame: September 2019 - October 2020

To this phase, the experiment was summarized and expressed under a concept of silk cocoon interactive textile in which the audience can interact. The combination of textile innovations was adapted and installed to create the art installation. The project refers to the basis theory of "Art as Experience", which can be studied more from the topic "The Art of Ernesto Neto: A Trip Into The Ludic", once created by the Brazilian contemporary visual artist, Ernesto Neto (The Culture Trip, 2016). He created art installation by letting the audience find the message by themselves while experiencing the art installation.

3. RESULTS AND DISCUSSION

The results from the study can be divided into 3 following phases according to the above mention methodology.

Phase 1: Collecting data

The small group of experienced participants from different fields including marketers, designers, brand owners, and studio owners were selected for in-depth interviews as in Table 2.

Table 2: Participant Details

No	Participants name	Professional career	No. of years of experience in Thai silk
1	Ms. Supang Dangklang	- Owner and weaver at Mai Thong Suranaree Thai silk	Over 50 years
2	Assoc. Prof. Rapee Leelasiri	- Owner and creative director at Rapee Leela	Over 30 years
3	Ms. Phreava Rujinarong	- Owner and creative director at Termtem studio - Work experience at Queen Sirikit Department of Sericulture	Over 15 years
4	Mr. Suradet Teerakul	- Industrial products designer, The Queen Sirikit Department of Sericulture	Over 10 years
5	Mr. Wuthigrai Siriphon	- PhD in textile, Royal College of Art - Lecturer at Department of Textile and Fashion Design, Faculty of Fine and Applied Art, Thammasat University	Over 10 years

Table 2: Participant Details (Continued)

No	Participants name	Professional career	No. of years of experience in Thai silk
6	Mr. Thaweesak Chatsuwana	- Brand owner "T.Chatsuwana" which works on modern Thai ikat silk - the winner of <i>TIFA Innovative Fashion</i> (2015) - the winner of <i>Creative Textile Thailand</i> (2015) - the First runner up of <i>SDC International Design</i> , London (2015)	7 Years
7	Ms. Awika Samuksaman	- New generation of textile artist - Part-time lecturer at Chulalongkorn University	4 Years
8	Ms. Sammiyah Hakueling	- Applied Arts young designer	5 Years

Major questions were asked for their open opinions. Most participants gave their opinions about Thai silk value in the same way that it is a valuable cultural fabric, which has a shiny and beautiful texture. Also, Thai silk is connected to people’s belief from generation to generation. According to Ms. Supang Danklang, a Thai silk designer, Thai silk fabric is a short-term trend and not popular before long. Assoc. Prof. Rapee Leelasiri supported the idea that the usage of Thai silk is so limited because people mostly use the materials for fashion. Although most participants have an experience on interactive textile as well as the combination among yarn types, they thought that the pattern and usage of Thai silk remains the same. Some stated that the combination of Thai silk yarn and others are in the same way as it can create new surface design and properties, but the value of silk will decrease compared to one hundred percent silk. Mr. Suradet Teerakul discussed that the innovative textile and cultural Thai silk do not link together, then the flat pattern would be currently valuable silk as people understand. However, Mr. Thaweesak Chatsuwana as young Thai silk designer indicated that the young blood designers are still interested in adapting Thai silk to other forms because of its value. As the research idea expressed to all participants, they believed that the project would increase the value of Thai silk in terms of "Textile Art Installation from Thai silk". Ms. Phreava Rujinarong suggested that the project can break the wall of idea about cultural clothing product for the upper class. Assoc. Prof. Rapee Leelasiri supported that it can connect to the future as digital world. Also, Mr. Wuthigrai Siriphon as a professional stated that the designers can have fun adapting Thai silk to be more than cultural product.

From the fieldwork, Thai silk species data collecting from Baan Darn Jaroen, Baan Na-trang, Surin Province on ikat Thai silk fabric shows that most weavers use one hundred percent silk. Most patterns are inspired by local culture and softer finishing by clay mud. Apart from data collected from Surin Province, the data from Baan Aung-toei, Chachoengsao Province group of Sericulture and Silk Reeling producer and Department of Sericulture show that there are 2 main silk species in Thailand that are mulberry silk worm and eri silk worm. The mulberry silkworm can be classified as Univoltine, Bivoltine and Multivoltine, as shown in Table 3.

Table 3: Mulberry Silkworm Classification

Univoltine	Bivoltine	Multivoltine
		
Silk spinning company Ex. Jul Mai Thai	Silk spinning company Ex. Jul Mai Thai	Local Thai farmer (Sam-Rong Species)

From the secondary data method, some existing major innovative textiles such as reflective ability and UV sensitivity technique were indicated. Reflective yarn was first created to enhance the night time clothing ability (Önlü and Yaşar, 2011). Its high-visibility qualification is usually a benefit for clothing to be easily seen at night. On the other hand, UV sensitivity or photochromic pigment is a printing pigment which can change the color from translucent white to its responsive color when exposed to the sunlight. The photochromic pigment has been applied to the textile surface by coating them on the surface (Khattab et al., 2018). However, both techniques can be used as dyeing and printing colors. Some yarn types such as wool and Lurex yarn have

unique characteristic which can create different appearance to the fabric weaving surface. They would be picked to experiment for creating new texture to the fabric.

Kunihiko Morinaga is a Japanese fashion designer who use photochromism textile in his Anrealage Collection S/S 2016. He represented “bone”, “shape” and “color” in his collection. One of the shows represented the models dressed in white clothes while they walked through the runway, all the patterns on white dresses were lit by UV light.

Another interesting project from Kunihiko Morinaga was inspired by “reflection”, on which the pattern only appears through Iphone camera application after being photographed with a flash.



Figure 1: Innovative Textile of Kunihiko Morinaga, Anrealage Collection S/S 2016
Source: Irenebrination, 2015

Phase 2: Experiment

The research experiment set up by using the combination as the independent variables as weaving pattern, dyeing technique, printing technique, and yarn types by following topics. The result is shown on Table 4.

Table 4: Experiment Results

Experiment 1: Dyeing silk yarn with UV-sensitive technique



Before dyeing in UV sunlight



After dyeing in UV sunlight

Comment: The UV dyeing can change the color of silk yarn.

Table 4: Experiment Results (Continued)

Experiment 2: Weaving the finished dyed yarn with collapse weave technique



Comment: The result was good for the weaving fabric that was tested with the UV flashlight.

Experiment 3: UV-sensitive ikat in corporation with Surin local weaver and silk farmer



Comment: Finished woven fabric had unclear pattern and color.

Experiment 4: Printing UV-sensitive pigment on 100% Thai silk



Picture: UV-sensitive dyed to print screen on fabric surface.

Comment: The result was straight forward to the printing pattern. The pattern was shown clearly and had a good effect to the UV light.

Table 4: Experiment Results (Continued)

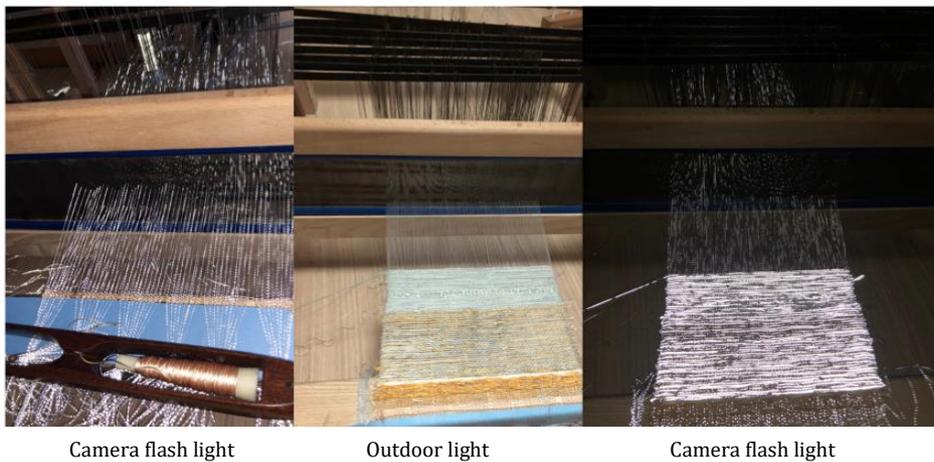
Experiment 5: Printing reflective print on 100% Thai silk



Picture: Reflective color on the fabric surface when taking the photo without and with flash.

Comment: The reflective print interacted obviously with the light and flash.

Experiment 6: Weaving reflective yarn with Thai silk



Camera flash light

Outdoor light

Camera flash light

Picture: Reflective color on the fabric when taking the photo without and with flash.

Comment: Looks and textures were unique and had their own characters, which were different when taking the photo using flash.

Experiment 7: Printing UV-sensitive pigment on 100% Thai silk and weaving on reflective yarn warp



Camera flash light

UV light

Camera flash light

Picture: The results of fabric in different conditions.

Comment: All techniques were clearly shown on both patterns. The old tradition Thai silk fabric can be playable, touchable, and interactive with the audiences.

Table 4: Experiment Results (Continued)

Experiment 8: Weaving raw Thai silk with reflective yarn then print UV-sensitive pigment on raw silk.



Picture: The results fabric in different conditions

Comment: All techniques were clearly shown on both patterns. The old tradition Thai silk fabric can be playable, touchable and interactive with the audiences.

From overall experiments, two main sensitivities to environment colors; which are UV-sensitive colors and reflective colors; have been brought to develop the fabric due to their properties that can be easily shown by the interactions between fabric and the audiences. UV-sensitive color pigment has its own limitations of use, whereas the reflective colors show its advantages clearly in any patterns. However, the combination among the materials, interactive techniques and weaving techniques can play around to create several product types; aspects of appearance and uses as can be seen from experiment 1 to 8. In the research, it is expected that the results from these experiments can be finally installed as interactive art installation textile.

Phase 3: Creating art installation as interactive textile

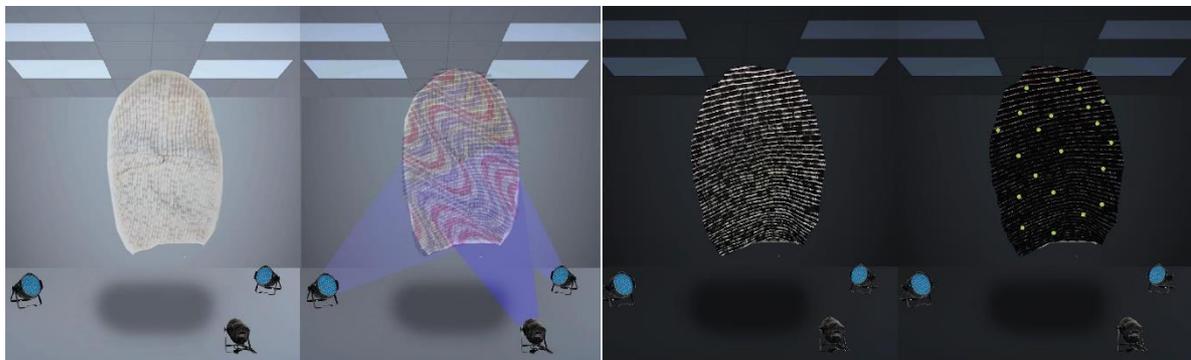


Figure 2: Cocoon Art Installation under 4 Conditions Appearance

The interactive textile has been created as an art installation under the concept of Cocoon story telling a story of Thai silk origin. The concept of the story is inside the cocoon form of silk fabric that was inspired by the silkworm life to the origin of the silk yarn origin. In addition, the outside will show interactive art from silk fabric in four appearances (Figure 2) according to the condition as follows.

Normal light condition effect - All fabric textures and patterns will show up on the normal light. Silk will show its shiny and soft surface by itself. The concept is straightforward to show the traditional Thai silk fabric work.

UV light condition effect - The UV effect will be shown when the fabric is contacted to the UV light. The printing pattern that is hidden on the fabric surface will show up and disappear over time.

Reflective light condition effect - The reflective appearance will be shown when the audience use the flash spot to the fabric or taking the photo with flash. All other area will be disappeared from photos because the reflective yarns will bright back to the camera, then the audience can see only the reflective yarns in photo.

Dark condition effect - When turn off all the lights in the exhibition halls, fluorescent beads will appear in the dark. The audience will see only the fluorescent marble flying.

Feedbacks from virtual presentation and concepts

After finishing the virtual work and concept, the survey was sent to the audiences for their feedback in order to expand the development area for completing the final art installation form. The feedback was excellent as the audiences can see the modern textile innovations to be adapted in Thai local Multivoltine silk and present it as art installation. The art form and concept were totally impressed by the audiences as they can understand value of Thai silk.

4. CONCLUSION

From the research, Thai silk environment from experienced designers and marketers' perspective can be well-understood. Thai silk was not popular nowadays and can be valued as only cultural products for high-end customers. Moreover, it is mostly in the form of clothing, and to combine it with other yarns would be understood as decreasing its value. So, the improvement of Thai silk is needed for adding value and stepping out off what people mentioned about. According to the in-depth field study, it can be classified each species' benefit according to the ways to feed, and the way to turn into products. So, their strength and weakness of each species were indicated. In order to develop Thai silk, some innovative textile techniques from previous literatures were studied and chosen to test.

As developing Thai silk, some excellent functions were decided to test the experiment such as UV-sensitive print and reflective yarn. Each technique has its own strength, weakness and usage limitation. After adapting their strength and usability together, the tested sample fabric had good reaction in which the audience can interact. All components of Thai silk such as raw yarn can be used to increase value in other forms apart from its fashion area. The combination among different yarn types was not the reason for devaluation as designers and marketers understand, but creating new surface designs and appearances. The art installation has combined several weaving techniques, yarn types and textile innovation to Thai silk in one interactive textile form. Although some materials are expensive and difficult to find locally, these innovations bring more value to the old fashion cultural Thai silk textile to the next level. Finally, designers can experience this experiment to develop interesting products in the future such as creative art form.

From overall experiments, the researcher created interactive textile by printing photochromic pigment on the fabric surface that was weaved from Thai silk with reflective yarn. The art installation attracted more attention from the audiences to enhance the value of Thai silk from the origin of Thai traditional culture. In addition, it provided them new perspectives about Thai silk that can be more developed into other industries, not just only clothing. It is strongly recommended to research other ways around these experiments to find other combinations among innovations, materials, techniques, way of uses, and way to present. Also, it is expected that the interactive textile from Thai silk can expand Thai silk fabric market and also utilize local cultural materials to build the future of Thai design.

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