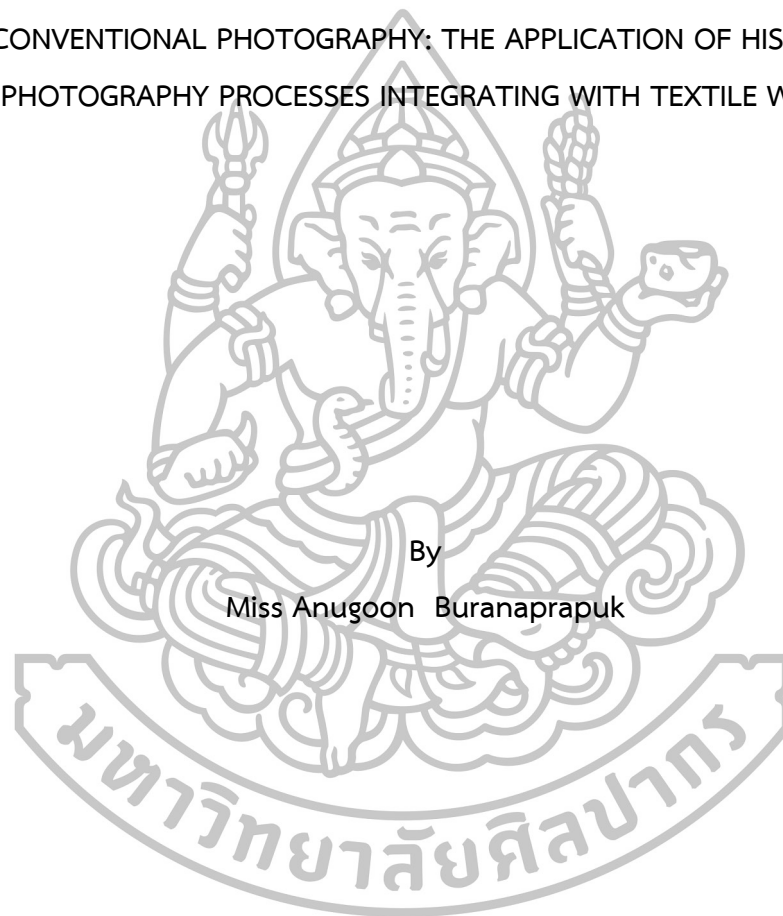




UNCONVENTIONAL PHOTOGRAPHY: THE APPLICATION OF HISTORICAL  
PHOTOGRAPHY PROCESSES INTEGRATING WITH TEXTILE WORK



By  
Miss Anugoon Buranaprapuk

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree  
Doctor of Philosophy Program in Design Arts  
International Program  
Graduate School, Silpakorn University  
Academic Year 2015  
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The Graduate School, Silpakorn University has approved and accredited the Thesis title of “ Unconventional Photography : The Application of Historical Photography Processes Integrating with Textile Work ” submitted by Miss Anugoon Buranaprapuk as a partial fulfillment of the requirements for the degree of Doctor of Philosophy in Design Arts

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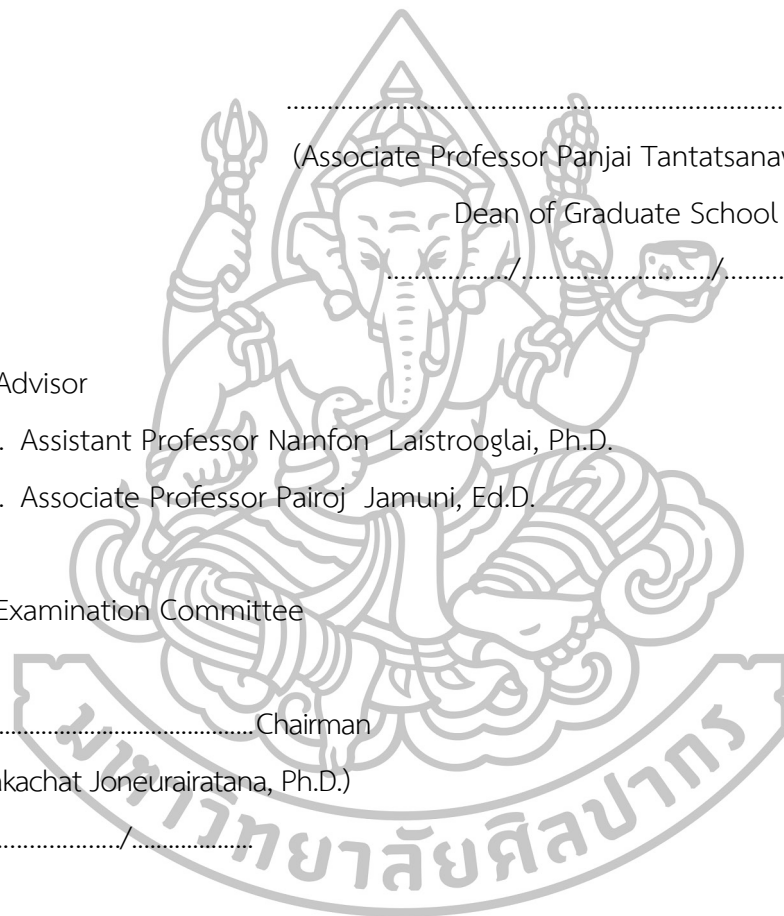
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ANUGOON BURANAPRAPUK: UNCONVENTIONAL PHOTOGRAPHY: THE APPLICATION OF HISTORICAL PHOTOGRAPHY PROCESSES INTEGRATING WITH TEXTILE WORK. THESIS ADVISORS: ASST. PROF. NAMFON LAISTROOGLAI, Ph.D. AND ASSOC. PROF. PAIROJ JAMUNI, Ph.D. 159 pp.

The beginning of photographic printing traced back to the 1800s. Images were printed with different light sensitive chemicals discovered by scientists and chemists. In that era, the photographs were done by hand from mixing the chemical, preparing the plates or paper to finishing with another set of chemical. In the early 20<sup>th</sup> century, the photographic printmaking became commercialized with silver gelatin. It became a mainstream through out the century. After that, the evolution of the digital technology predominates the industry at the turn of the century. Consequently, the history of photography is unobserved. Although, the early photographic processes has resurged around 1960s-1970s and they are called alternative photography. However, they are still obscure and not widely practiced. Therefore, the objectives of this research are 1) to preserve and reintroduce parts of historical photographic processes, 2) to experiment historical processes on different fibers and to analyze the results and 3) to develop unconventional photography by integrating historical processes with textile work. There are approximately 19 types of historical processes. However, the selected processes are considered by relevant adhesive characteristic of the chemical to the fibers. Natural fibers are found to have the right properties for the chemical to be situated. Experimented natural fibers are divided into 2 groups; first group is generic fibers that are found in common fabric stores and second group is natural fibers from Thailand's local wisdom. The first group is established to have better results. On the other hand, local fibers are more vulnerable to failure in printing. However, they produce organic appeal. With the flexibilities of the fabric fibers, stitches and embroidery techniques can be applied on to the images to create unconventional photography.

The research experiment expands the possibilities of historical photographic printing. The data analyzed can benefit those who seek alternative materials for their imaging making.

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With a humble beginning, my parents never had much opportunity to fulfill their education. Though time, they have worked very hard to secure their children's futures by providing any means for them to get as high of education as they desire. I am forever thankful from the bottom of my heart for their endless love, encouragement and support. Without them I would have not come this far.

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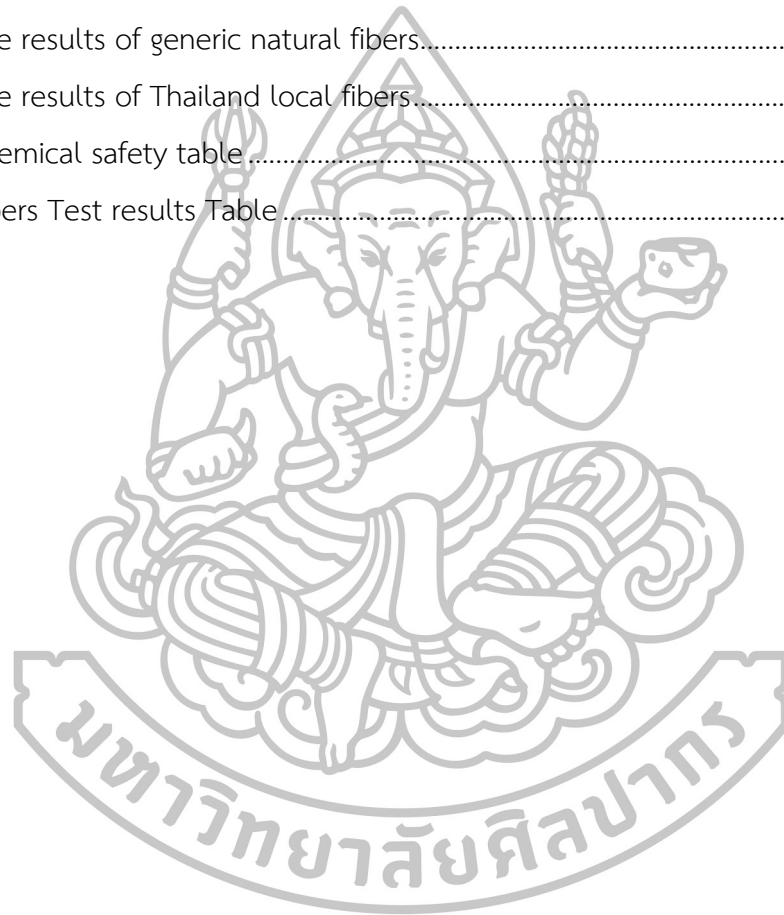
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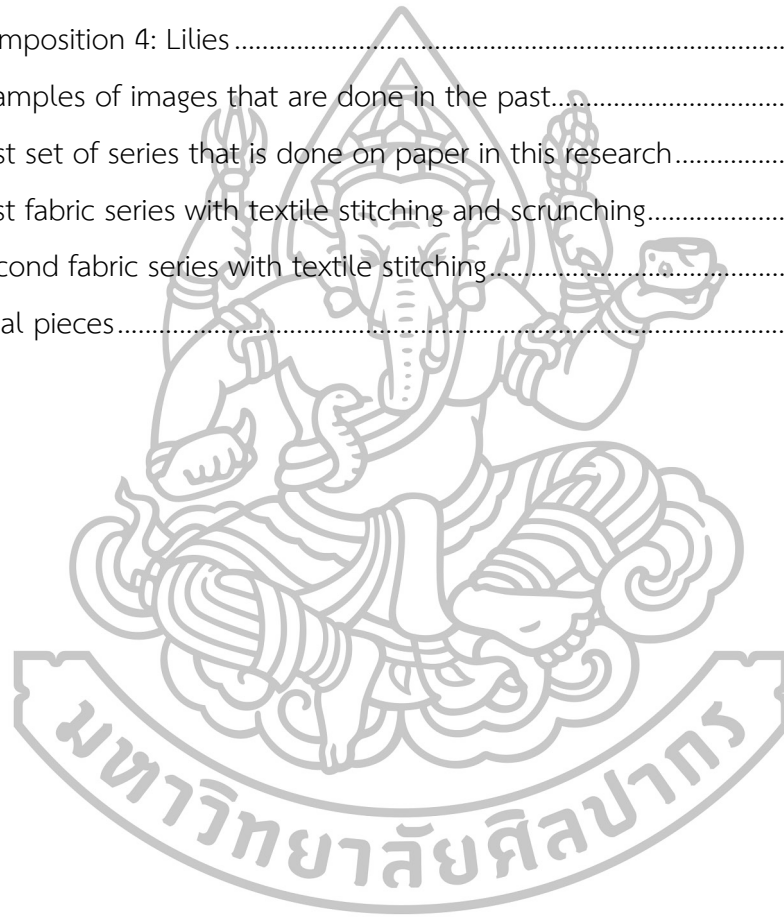
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## Chapter 1

### Introduction

#### 1. Introduction

The beginning of photographic printing traced back to the 1800s. Images were printed with different light sensitive chemicals discovered by scientists and chemists. In that era, the photographs were done by hand from mixing the chemical, preparing the plates or paper to finishing with another set of chemical. In the early 20th century, the photographic printmaking became commercialized with silver gelatin. It became a mainstream throughout the century. After that, the evolution of the digital technology predominates the industry at the turn of the century. Consequently, the history of photography is overlooked and the historical processes are diminishing. They have become rare to the newer generations.

“Photography is at the intersection of two quite distinct procedures, one of a chemical order: the action of light on certain substances; the other is of a physical order; the formation of the image through the optical device.” (Barthes, 2000: 10) This statement is only valid until the turn of the 21<sup>st</sup> century. Since the technology of photography has emerged quite rapidly in the 20<sup>th</sup> century from film to digital. The chemical order becomes irrelevant. As the advanced technology takes place, photography has become more accessible to just about everyone. Everybody can take pictures with the advantages of digital means, the pictures are instant and at the same time the numbers of captures are countless. While photographing with film would take more time after the images are captured, the film has to be processed and photographs have to be printed out in order to view the positive images. As a result, the emergence of digital culture has made photography become superficial, because photography is accessible to anyone. A lot of pictures are taken everyday. In the film era, each capture is carefully done due to the nature usage of film, in which if the mistake occurs, it takes time to be observed

and to recapture, because the processing time of the film. The conscience in capturing photographs has lessened due to the convenience of instant viewing of the images. With the conveniences of the digital mean, consideration is not taken as much as before. From its beginnings the photograph has functioned as evidence, as a truth-bearing document. Today the ease with which digital images are routinely adjusted may unsettle our faith in the truthfulness of photography. (Salkeld, 2014: 69) Taking picture has been made easier and more accessible; anyone could now be a photographer—though not necessarily a good one. (Salkeld, 2014: 32)

Looking back in photography history, the first photograph was ever recorded was in 1826 by Nicéphore Niépce and the first photograph ever captured on paper was in 1835 by William Henry Fox Talbot. Prior to that, photographs were recorded on glass plates or copper plates. Since then, photographic paper has developed along with the expansion usage of photography. There were approximately 19 types of historical processes that were used until the turn of the century, for example, Platinum process, Cyanotype, Albumen, Van Dyke, etc. Early 1900s, Historical processes fell out of use due to many factors such as the development of commercialized silver-gelatin paper, the decrement of chemicals availabilities and the increasing cost of chemicals. In the late 1960s, Historical processes resurged once again and were called Alternative photography. Photographers like Irving Penn, W. Snyder MacNeil, to name a few, were parts of the comeback. They used Platinum process to showcase their work in many prestigious galleries. Along with the platinum printing, other types of Historical processes such as Cyanotype, Gum Bichromate and Van Dyke have been favored by fine art photographers. However, historical photographic processes are still considered rare especially in Thailand.

The questions arose that what would be the future of photography? Then Christopher James mentioned “The future of photography is in its past.” (Christopher, 2009). The statement had made a realization of the photography’s value is actually in its history. “Successive processes (historical processes) are genuinely creative methods of image-making.” (Salkeld, 2014: 40) It is the becoming of this research. As the chemical aspect of photography has been almost forgotten

nowadays, the practice of the old processes should be brought back and be dignified for their significance.

Conventionally, majority of the historical processes are printed on paper, specifically of cotton linters. There were no specific papers made for historical processes. Therefore, acid-free watercolor papers are used typically. With this type of printing, light sensitive chemicals are hand mixed and applied to the surfaces of the paper. “The photochemical takes place in intimate contact with all the substances that are contained in the paper. This distinguishes the iron-based processes from conventional silver gelatin printing.” (Ware, 1995) Since, the chemicals are situated in the fibers of the paper, finding alternative fibers aside from paper is brought up to attention. “Any change of materials or conditions can change all the others.” (Seigel, 1998: 1) This research intends to diversify the materials by experimenting different fibers that are applicable. These different fibers can achieve vary aesthetics to the images since the surfaces and the textures are different. This can specify an unconventional approach to photography.

## **2. Statement of problems**

As mentioned that photography has advanced into an easy accessibility. Currently, many people are taking pictures unaware of its past, not to mention the processes in the 19<sup>th</sup> century, the black and white of silver gelatin culture in 20<sup>th</sup> century has become unknown. Moreover, in basic photography classes presently, photography history and its old processes are hardly mentioned or taught. “Photography course is the course that provide the knowledge of how to use digital camera and accessories to record images on to the memory card.” Kriengkrai Jariyapanya, Veerachai Konchoh, Panya Tongnin “Multimedia Technology to teach basic photography case studies Phetchaburi Rajabhat University” Veridian E-Journal, Vol.7, No.3 (May-August 2014). Recent photography education in Thailand only provide the knowledge of how to operate the camera and how to capture the images correctly, the history of photography is not particularly included. “If the fundamental element of knowledge in photography is superficial and not well understood, it will cause a great handicap someone who aspires to be a serious or



professional photography practitioner.” (Azahari, 2011) Consequently, the root of photography is important and should be aware of. Therefore, the problems are positioned as follows:

1. The rapid revolution of Digital technology has made photography superficial. Today the ease with which digital images are routinely adjusted may unsettle our faith in the truthfulness of photography. (Salkeld, 2014: 69)

2. The history of photography is overlooked. Initially, photography remains the province of professionals and enthusiastic amateurs. (Salkeld, 2014: 30) However, in the world of digital, taking pictures is a part of everyday life, vast varieties of people using the medium are unaware of the photography's root.

3. Historical photographic processes are diminishing. They remain obscure in the 20<sup>th</sup> and continue to 21<sup>st</sup> century. These processes take skills and knowledge due to the complications and dangers of chemical usage.

### **3. Research Objectives**

From the apprehension of declining awareness of photography history, this research is aimed to bring back some of the historical processes into practice. Furthermore, experiment of different material is carried out to obtain unconventional appeal to photography. The objectives of this research can be described as:

3.1 To Study Historical Photographic Processes in order to preserve and reintroduce the rare processes to present generation.

3.2 To experiment Historical Processes on different fibers and combine them with different applicable techniques.

3.3 To develop unconventional photography using historical processes with the possibilities of different surfaces of materials.

### **4. Research Methodology**

This practice base research is qualitative research that divides into three phases.

First is literature review includes:

1. The overview of photography history, especially, the printing processes and their value.

2. The different fibers those are qualified for printing with historical photography processes.

3. The study of art aesthetic theory for creating art forms.

4. The study of artists work in order to obtain creativity concept.

Second is the experimental of applying historical processes on different surfaces or fibers. The historical processes will be selected according to the relevance of supplying the chemicals and safety concerns. Recommended used for historical printing is cellulosic natural fiber, preferably cotton. Because cellulosic fibers are superior in terms of absorbance, the light sensitive sensitizers need to be positioned in the fiber. Therefore, the variety of natural fibers is relevant such as hemp, linen, etc. The durability of fabric fibers is the benefit because of the requirement of the long water process.

Third is to develop unconventional photography by using the study of the processes, the related artists, the aesthetic theories and the results of the experiment to create photographs unconventionally.

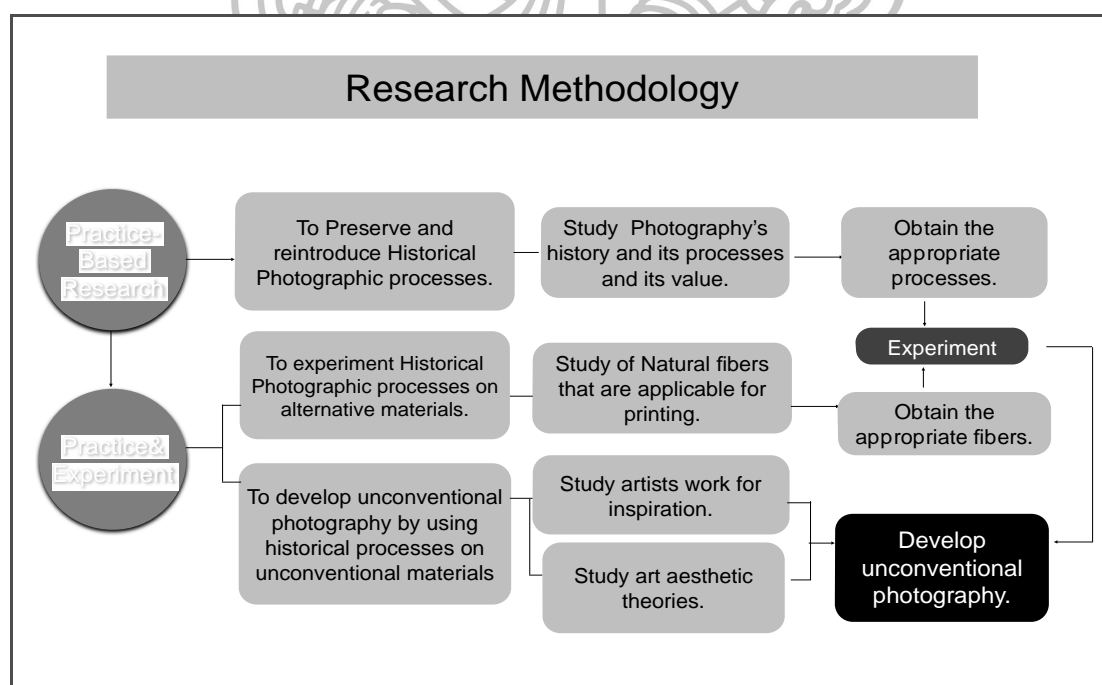


Figure 1 Research Methodology

## 5. Scope of the study

This research focuses on creating unconventional photography on different fibers by exploring the possibilities of alternative fabrics integrating with historical photographic processes.

Table 1 Gantt Chart of the study

Year		2009	2010	2011	2012			2013			2014			2015			2016			
Trimester					1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1	Literature review and related research																			
2	Develop the proposal																			
3	Process and concept explorations																			
4	Exhibition and evaluation																			
5	Conclusion and transfer to Ph.D. level																			
6	Extend and develop the proposal into Ph.D. level																			
7	Define the concept and process																			
8	Explorations of different materials																			

Table 1 Gantt Chart of the study (continue)

Year		2009	2010	2011	2012			2013			2014			2015			2016			
Trimester					1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
9	Developing unconventional photography																			
10	Journal publishing																			
11	Evaluating and editing thesis book																			

## 6. Limitation of the study

6.1 Time – Historical photographic processes are time consuming. Making prints relies on many factors such as the weather to get decent consistency of sunlight. One print takes about an hour to make by using sunlight. The UV chamber is made to replace the sunlight on cloudy and rainy days. It composes of five of 500-watt tubes. However, the exposure time takes up to 2 hours. Each printing session, tests need to be done to get appropriate exposures for each batch of chemical and for different sunlight's intensities.

6.2 Chemical – Some chemicals are hard to obtain such as Ferric Ammonium Citrate. There are two different compound, green and brown. Only brown compound is available in local chemical stores. However, the green compound is more light sensitive and gives better results. It has to be mail ordered which adds to more expenses.

6.3 Images – The size of the images is limited to the size of negative availability both traditional film and digital negatives. As the digital age evolves the traditional film is difficult to obtain the sizes are limited. For digital negatives, it depends on the sizes of the printers and the sizes of the negative sheets.

6.4 Materials – Initially, this research is aimed to use natural fibers from Thailand local wisdom. However, the availabilities of the fibers are not vast enough to obtain in varieties. Therefore, some materials are found in local generic fabric stores.

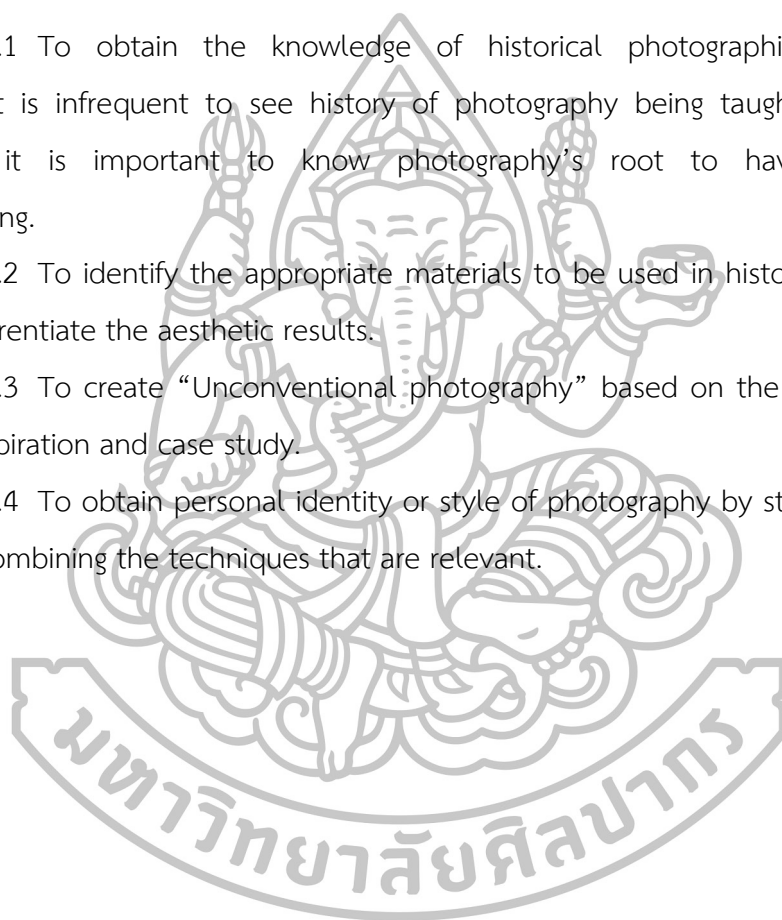
## 7. Research outcome

7.1 To obtain the knowledge of historical photographic processes. Currently, it is infrequent to see history of photography being taught in classes. Therefore, it is important to know photography's root to have a better understanding.

7.2 To identify the appropriate materials to be used in historical printing, and to differentiate the aesthetic results.

7.3 To create “Unconventional photography” based on the art aesthetic theories inspiration and case study.

7.4 To obtain personal identity or style of photography by studying artists work and combining the techniques that are relevant.



## Chapter 2

### Literature Reviews and related studies

Literature reviews and related studies in this research focuses on the followings:

1. A brief history of photography and its processes.
2. Summary of chemicals used in Historical Photographic Processes.
3. The value.
4. Current practice of historical processes.
5. Surfaces used in Historical photographic processes.
6. Suggested papers used in historical processes.
7. Summary of paper specifications for Historical photographic prints.
8. Paper fibers.
9. Fabric fibers.
10. Fabrics for printing.
11. The study of related artists.
12. Applicable aesthetic theory.
13. Summary.

#### 1. A Brief history of photography and its processes.

##### 1.1 The beginning: Camera obscura

It is reported that the earliest writing regarding the camera obscura occurred in the 5<sup>th</sup> century BCE (Before Common Era). (Christopher, 2009: 4) The Latin word “Camera Obscura” means “dark chamber”, its principle is the effect of the natural light travels through a small hole in the dark chamber and the image lands upside down on the opposite flat surface. Aristotle, the Greek philosopher, noticed this phenomenon and included in his prospectus. In the era, this spectacle of light also appeared in the journal of a Chinese philosopher, Mo Tzu. Based on Aristotle

and Mo Tzu's notes, Ibn al-Haitham dedicated himself to study optics and linearity of light, resulted in creating a camera obscura to demonstrate how our eyes processed the image.



Figure 2 Reinerus Gemma-Frisius, Solar Eclipse, 1544—Camera Obscura

Source: James Christopher, **The book of Alternative Photographic Processes**, 2nd ed. (New York, USA.: Delmar Cengage Learning, 2009), 8.

In 1490, Leonardo Da Vinci supposedly made the first recorded drawing of a camera obscura and its operation in his Codex Atlanticus (1478-1518c.). (Christopher, 2009: 6) He used the camera obscura to draft real life images projected on the wall. Later in the 16<sup>th</sup> century, the telescope lens was inserted in the hole to make the image larger and clearer.

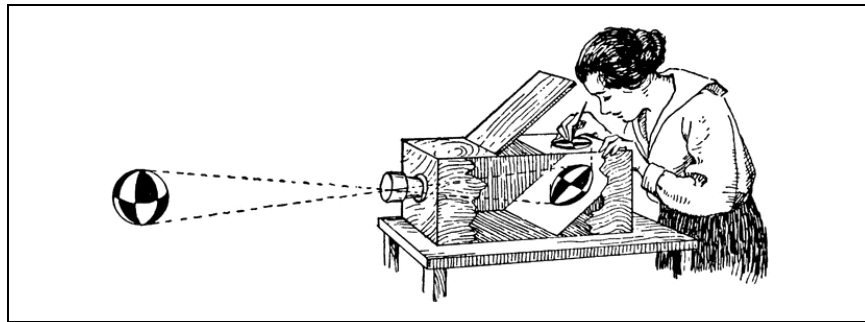


Figure 3 Drafting the image from Camera Obscura

Source: Educational Technology Clearinghouse, **Camera Obscura**, accessed March 18, 2015, available from [http://etc.usf.edu/clipart/49700/49736/49736\\_cam\\_obscura.htm](http://etc.usf.edu/clipart/49700/49736/49736_cam_obscura.htm)

### 1.2 First photographic picture.

Camera obscura had inspired many people to find ways to capture the image more than just tracing. In 1816, Nicéphore Niépce had managed to do so by using paper that was coated with silver chloride. It was the first success on this attempt, although the results were negatives. Therefore, Niépce could not find the way for the image to stop darkening. Then he started to experiment on bitumen of Judea, another light sensitive substance.

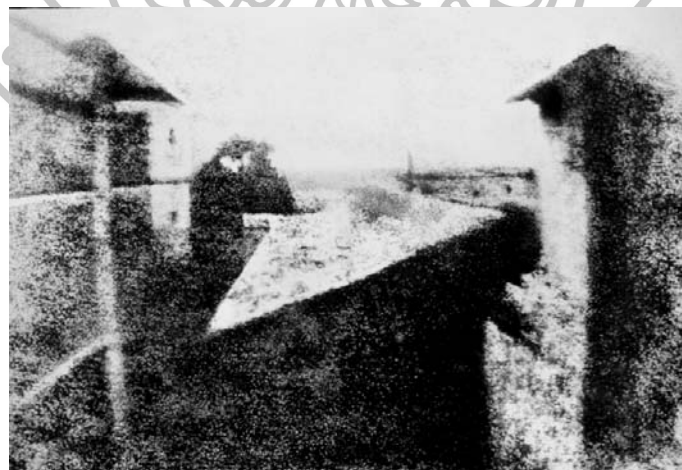


Figure 4 Nicéphore Niépce's Point de Vue du gras, 1826. First photographic picture ever recorded

Source: James Christopher, **The book of Alternative Photographic Processes**, 2nd ed. (New York, USA.: Delmar Cengage Learning, 2009), 14.



### 1.3 The discoveries of light sensitive and the beginning of photographic print making.

In 1826, Niépce met up with Louis Daguerre, together, they worked on developing images by using evaporated oil of lavender. The dark brown substance that was dissolved in alcohol and poured over a silver plate, then the plate was loaded in the camera obscura and exposed for a very long time. This process was called “Physautotype--a copy of nature herself”. After Niépce died in 1833, Daguerre worked on his own to improve Physautotype. By 1837, he established the process called Daguerrotype in which the images in iodide of silver could be developed by exposure of mercury fumes. (Jeffrey, 1981: 240) Then sodium chloride was used to preserve the images and later on sodium thiosulfate. The images of Daguerrotype process were similar to Physautotype images.

In England 1839, Sir John Herschel announced his discovery of fixing the images by using sodium thiosulfate which he had discovered 20 years earlier. He also coined the word “photography” in the same year. Sir John Herschel had contributed the great amounts of his experiments in the world of photography. In 1832, he experimented on the solution of platinate of lime, he had discovered the reaction of the ultra-violet light. He furthered his investigation on natural pigments of flowers and plants. He used plant dye to make images with the concept of bleaching by sunlight. He was aware of the minerals found in nature since artists used natural dyes for painting. Herschel called this process, “anthotype”.



Figure 5 Sir John Herschel's Anthotype portrait #10, 1840

Source: James Christopher, **The book of Alternative Photographic Processes**, 2nd ed. (New York, USA.: Delmar Cengage Learning, 2009), 141.

Traced back to 1806, camera lucida was invented by William Hyde Wollaston. The word means dark chamber. In ancient days, it is used by artists to render their drawings. The light goes through a small hole and projects an image upside down on the base panel. This accurate images that are projected then traced by the artists to get an accurate drawings. (see figure 6)

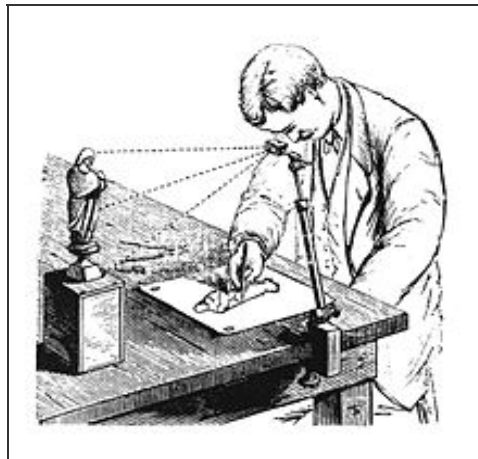


Figure 6 Camera Lucida in use drawing small figurine

Source: Wikipedia, **Camera Lucida in use drawing small figurine**, accessed May 23, 2015, available from [http://en.wikipedia.org/wiki/File:Camera\\_Lucida\\_in\\_use\\_drawing\\_small\\_figurine.jpg](http://en.wikipedia.org/wiki/File:Camera_Lucida_in_use_drawing_small_figurine.jpg).

In 1833, William Henry Fox Talbot was one of the gentlemen who possessed the tool. Lacking the skills in drawing and as a scientist, Talbot was inspired to find different ways to capture the images. 1834, he began to experiment with his knowledge of silver salt and created photogram of flowers and leaves on the paper that was coated with sodium chloride and silver nitrate. The coated solution made silver chloride which was more light sensitive than silver nitrate itself. Talbot then called his images “photogenic drawing”. This process was known as “Salt Print”.



Figure 7 W.H.F. Talbot's photogenic drawing of a plant, 1835

Source: Wikimedia commons, **photogenic drawing of a plant**, accessed May 23, 2015, available from [http://commons.wikimedia.org/wiki/File:William\\_Henry\\_Fox\\_Talbot\\_-\\_Photogenic\\_Drawing\\_of\\_a\\_Plant\\_-\\_Google\\_Art\\_Project.jpg](http://commons.wikimedia.org/wiki/File:William_Henry_Fox_Talbot_-_Photogenic_Drawing_of_a_Plant_-_Google_Art_Project.jpg)

After Talbot established the salt print, he had made another remarkable discovery in 1840. He poured gallic acid and silver nitrate over the already exposed salt paper, he then witnessed the formation of latent image\* on the paper. He called his new discovery "calotype" which meant "beautiful impression". The calotype was among the first silver-based negative techniques that could be utilized as a matrix to reproduce an image multiple times. (Christopher, 2009: 60) Salt print and calotype shared the same history; the difference was that calotype employed silver iodide instead of silver chloride of salt print. From Talbot's experiments and discoveries, he had set the negative-positive silver process on the road that reaches down directly to us today. (Mike, 1991)

1842, mentioned back to the gentleman that created the word "photography", Sir John Herschel who discovered Anthotype, the process that employed natural tincture of plants to form images. He then experimented with iron salts and other light sensitive substances. He developed Argentotype process in which he used iron salts or ferrous ions to reduce silver ions to silver metal. The images of this process had similar color to Talbot's salt prints. Another investigation that Herschel conducted was experimentation of Potassium Ferricyanide along with his discovery of the light sensitivity of Ferric Ammonium Citrate. The combination of Potassium Ferricyanide and Ferric Ammonium Citrate when exposed to sunlight, it is reduced to ferrous ammonium citrate and potassium ferricyanide, which then formed ferric ferricyanide, the insoluble Prussian blue. (Christopher, 2009: 151) The result was called "Cyanotype" process.

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\* Latent image: an invisible image produced by the exposure to light of a light sensitive material before treated by photographic developer.

Another Herschel's discovery in 1842 was Chrysotype. Chrysotype is sometimes known as gold print. This process was not well recognized because of the cost of gold compared to silver and gold had more problems of image fogging.

In October 1843, Anna Atkin, the first woman photographer, began publishing her first cyanotype photogram titled "British Algae: Cyanotype Impression". Atkins was a botanist, residing close to Herschel, she had Herschel as her mentor and used cyanotype to record her botanical specimens. In 1850, she published more collections of her work and finished a three-volume anthology in 1853.



Figure 8 Anna Atkins' Title Page of Photographs of British Algae Cyanotype Impressions, 1843

Source: Wikipedia, **Anna Atkins**, accessed May 24, 2015, available from [http://en.wikipedia.org/wiki/File:Anna\\_Atkins\\_Title\\_Page\\_of\\_Photos\\_of\\_British\\_Algae\\_Cyanotype\\_Impressions\\_\(Detail\).jpg](http://en.wikipedia.org/wiki/File:Anna_Atkins_Title_Page_of_Photos_of_British_Algae_Cyanotype_Impressions_(Detail).jpg). (public domain)



Figure 9 Anna Atkins' algae cyanotype, 1843

Source: Wikipedia, **Anna Atkins**, accessed May 24, 2015, available from [http://en.wikipedia.org/wiki/File:Anna\\_Atkins\\_algae\\_cyanotype.jpg](http://en.wikipedia.org/wiki/File:Anna_Atkins_algae_cyanotype.jpg). (public domain)

#### 1.4 In the 1850s.

After Mungo Ponton, a Scottish inventor, discovered the light sensitivity of potassium bichromate (dichromate) in 1839, William Henry Fox Talbot began to work on potassium bichromate and found that colloidal gelatin and gum Arabic became insoluble in water after exposure to light in 1854. This process was known as "Gum Bichromate (Dichromate). A year later, along with Talbot's discovery, Alphonse Louis Poitevin continued the investigation of how potassium bichromates were able to render gelatin insoluble upon exposure to light. He added carbon pigment into the solution and in 1858 made the first carbon print but it had a weakness of lacking half tones therefore the images were high contrast.

Another discovery about the same circa was albumen print. 1850, Louis Désiré Blanquart-Evrard used the albumen found in egg whites to bind silver chloride to the paper. As a businessman, Blanquart-Evrard was successfully mass-produced albumen prints. In 1851, Blanquart-Evrard and his partner, Thomas Sutton, founded the first commercial photographic printing firm in history.

After the discovery of Albumen process, 1851, Wet collodion process or wet plate process was introduced by Frederick Scott Archer. This process produced continuous tone glass negatives that enabled the final prints to be very clear.

Previously in 1847, a medical doctor, John Parker Maynard, discovered a medical dressing called “collodion” meaning “to adhere”. Collodion was used to treat the wounds from explosives in war time. He made his collodion by dissolving nitrated cotton in equal parts of sulfuric ether and alcohol, the result was clear and sticky liquid that dried to a durable flexible skin. (Christopher, 2009: 481)

Therefore in 1850, Robert Bingham suggested that collodion could be used in photography to hold light sensitive substance on glass.

However in 1851, Frederick Scott Archer was the one to publish the formula of application of collodion on glass plate then immerse the plate in silver nitrate bath. The plate was then exposed instantly when it was still wet and developed with pyrogallic acid then fixed with sodium thiosulfate.

After publishing of his formula, he realized that an underexposed negative plate appeared positive when laid against dark background. This idea later became Ambrotype. In 1854, James Ambrose Cutting from Boston declares several rights relating to this process. He is believed to name the process “Ambrotype”

Ambrotype was often referred to previous process “Daguerrotype” which was dominant in that era. The different was Ambrotype didn’t appear laterally reversed\* like Daguerrotype. Moreover, Ambrotype was cheaper to make. Consequently, daguerreotype was easily replaced by ambrotype for the next decade.

In 1856, Hamilton Smith of the United State, had come up with the idea of using thin metal sheet that was coated with black lacquer instead of using black varnished glass plate of ambrotype. The result was called “tintype”. With the advantages of the metal plate being thinner, lighter and more economical, tintype soon decreased the popularity of ambrotype.

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\* Laterally reversed: (an image) side to side reversal of the reality

## 1.5 Emersion from 19<sup>th</sup> to 20<sup>th</sup> century.

### 1.5.1 Gelatin Dry Plate

By the 1870s, there were three major variants of the wet plate collodion process: moist collodion, dry collodion and collodion emulsion. The concept of making collodion-based emulsion was the beginning of emulsion photographic technology for the next 150 years. (Christopher, 2009: 94)

Gelatin was suggested as a photographic binder with silver halide emulsion since 1853 but it was not successful until 1868 that W.H. Harrison published the first article on gelatin dry plate. Harrison's article had started the dry plate process in England.

The in 1871, Dr. Richard Leach Maddox invented gelatin emulsion using silver bromide instead of silver iodide. There were more improvements of the process in 1870s span that marked the milestone of photography.

1873, first developing-out (DOP)\* gelatin silver paper was introduced by Peter Mawdsley. However it was not available commercially. In 1884, first printing-out papers (POP)\*\* were manufactured to the German public by Johann Baptist Obernetter. A year later, Joseph Barker from England established a company that he called Britannin Works which later became Ilford Limited. The word "POP" was first used on Ilford packaging. POP papers were sometimes known as "Aristotype" which had the beginning since 1867. They were easy to use than any products in that era and were mainly used by amateurs. At that time commercial products were albumen. However, the advantages of using gelatin binder of POP instead of albumen (egg white) binder were that the images did not turn yellow and faded, also, did not crack easily when they dried.

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\* The gelatin silver print or gelatin developing out paper (DOP) is a monochrome imaging process based on the light sensitivity of silver halides.

\*\* Printing-out paper (POP) is a generic name, first used by Ilford Ltd. In 1891. It was used to describe a number of products, and techniques, that share similar chemical and working characteristics with albumen and salted paper.



Gelatin technology became more commercialized and in 1879, the first dry plate factory was established by George Eastman. The factory later on became Eastman-Kodak in the 20<sup>th</sup> century.



Figure 10 Eastman Dry Plate Co., 1881-1884

Source: **Matthew Brady**, accessed May 31, 2015, available from <http://piercevaubel.com/cam/ekc.htm>.



Figure 11 A box of 1890's Eastman Dry Plate

Source: **Matthew Brady**, accessed May 31, 2015, available from <http://piercevaubel.com/cam/ekc.htm>.

### 1.5.2 The remarkable Platinum Process

In 1872, William Willis conducted an experiment based on Herschel's discovery of light sensitive platinum salts. He used platinum salts (Potassium chloroplatinite) with ferric oxalate, he was able to reduce ferric oxalate into ferrous oxalate by exposure to ultraviolet light. Then he developed the results in heated potassium oxalate to reduce platinum salt to platinum metal. In 1873, he patented his discoveries and successfully established "The Platinotype Company" and produced commercial platinum papers.

Platinum prints are the most durable of all photographic processes. Unlike other silver print processes, platinum solution inhabited in the fiber of the paper on the surface while other processes employed binder like gelatin or albumen (egg white) to absorb light sensitive solutions. This gave the matte surface to platinum images. Platinum prints were far more superior than other processes in those days in terms of the beauty of a wide tonal range and the durability to last for a very long time. Platinum printing was loved by many photographer artists at the turn of the century. The beginning of the 1900s, platinum papers were widely manufactured in Europe and America, including Kodak.

At the time of World War I, platinum compound was called to used in the effort of war; therefore, palladium was used to substitute platinum. The cost of palladium was less expensive and the color of the prints was slightly different from platinum. Although, sometimes, both platinum and palladium are used in equal parts to lessen the cost of the process.

### 1.5.3 In the late 1800s

1889, Ferricitrate-silver nitrate was introduced by Arndt & troos. About 40 years later, the process was known as Van Dyke Brown process. It was called Van Dyke because the tonality of the images was similar to the oil painting of Sir Anthony (Anton) Van Dyke, a Dutch painter of the 16<sup>th</sup> century. Van Dyke process is based on the reduction of ferric to ferrous due to the exposure to UV light, which is similar to the 1842 cyanotype process. Van Dyke prints employ silver nitrate as a light sensitive substance and ferric ammonium citrate as a light trigger. They are developed in water and fixed with 3 percents sodium thiosulfate.

Another process that was conducted about the same time as Van Dyke was “Kallitype”. Van Dyke and Kallitype share some similarities in terms of the usage of sensitizers and the results’ tonalities. The differences are that Kallitype employs ferric oxalate instead of ferric ammonium citrate of Van Dyke and Kallitype is chemically developed instead of water.

The last process of the 19<sup>th</sup> century that will be mentioned is “Ziatype”. Ziatype was developed from Platinum and palladium process by Giuseppe Pizzighilli and Baron Arthur Von Hübl in the late 1880s. They created the sensitizer by using sodium or ammonium ferric oxalate in the original platinum and palladium formula. They used humidity to create printing-out effect and eliminate potassium oxalate development. Ziatype was later brought back and perfected by Dick Sullivan in the 1980s.

## 2. Summary of chemicals used in Historical Photographic Processes.

There are approximately 19 photographic processes that were discovered in the 19<sup>th</sup> century. The chemicals combinations of each process are shown in table 2

Table 2 Summary of historical processes and the chemicals used.

Process	Sensitizers	Developer	Fixer	Additional
1. Daguerrotype (1837)	Silver Iodide Iodide fumes Halogen fumes Bromide Chlorine	Fume from heated Mercury	Sodium Thiosulfate	N/A
2. Anthotype (1832)	Fruit or Vegetable extract Denatured Alcohol Acetic Acid or Vinegar	N/A	N/A	N/A
3. Salt Print (1834)	Sodium Chloride 2% Silver Nitrate 12%	Water	Sodium Thiosulfate	N/A

Table 2 Summary of historical processes and the chemicals used (continue)

Process	Sensitizers	Developer	Fixer	Additional
4. Calotype (1840)	Silver Nitrate 11.4% 100 grains of Silver Nitrate in 2oz. Water 5.5 ml. 33% Acetic Acid to 28 ml of 11.4% Silver	Water  Bromide of potassium	Sodium Thiosulfate	N/A
5. Argentotype (1842)	20g Ferric Ammonium Citrate  5g Potassium Oxalate 100 ml Distilled water	20g Potassium Oxalate 1.5g Silver Nitrate 100ml Distilled water	10% Sodium Thiosulfate	N/A
6. Cyanotype (1842)	27% Ferric Ammonium Citrate 10% Potassium Ferricyanide	Water	N/A	3% Hydrogen Peroxide
7. Chrysotype (1842)	1% Ascorbate (Ascorbic Acid) 40% Ferric Ammonium Oxalate 10% Gold Chloride Diluted Vinegar or Citric Acid	25% Sodium Sulfite 2% Hydrochloric Acid 5% EDTA	N/A	N/A
8. Gum Bichromate (Dichromate) (1854)	6ml Gum Arabic 1/2"-1" Watercolor Pigment 6ml 10%-13% saturated Potassium dichromate	Water	N/A	N/A
9. Carbon Print (1858)	10% Potassium Dichromate 70%-100% Rubbing Alcohol	Water	N/A	N/A
10. Albumen	72g Powdered Albumen 475ml Distilled Water 2ml 28% Acetic Acid  15g Ammonium Chloride	10g Citric Acid 30g Kosher Salt 1000ml Distilled Water	15% Sodium Thiosulfate	N/A
11. Wet Collodion	236ml Plain Collodion  155ml Ether 3g cadmium Bromide	355ml Distilled water  1g Pyrogallic Acid	15% Sodium Thiosulfate	N/A

Table 2 Summary of historical processes and the chemicals used (continue)

Process	Sensitizers	Developer	Fixer	Additional
	155ml 190 proof Alcohol  4g Ammonium Iodide  7% Silver Nitrate Bath	60ml Glacial Acetic Acid 10ml 190 proof Alcohol	<b>Varnishing</b>  414ml 190 Proof Alcohol 57g Gum Sandarac 44ml Lavender oil	
12. Ambrotype (1851)	236ml Plain Collodion  155ml Ether 3g cadmium Bromide  155ml 190 proof Alcohol  4g Ammonium Iodide  7% Silver Nitrate Bath	355ml Distilled water 1g Pyrogalllic Acid 60ml Glacial Acetic Acid 10ml 190 proof Alcohol	15% Sodium Thiosulfate  <b>Varnishing</b>  414ml 190 Proof Alcohol 57g Gum Sandarac 44ml Lavender oil	N/A
13. Dry Plate (1871)	1 Litre Distilled water 10.5g Potassium Bromide 0.4g Potassium Iodide 12g Silver Nitrate 21g Gelatin 5g Chrome Alum  0.065g Thymol  5ml 95% grain Alcohol	500ml Distilled water 3.1g metol 45g Sodium Sulfite 11g Hydroquinone 45g Sodium Carbonate 2.1g Potassium Bromide Add Cold water to make 1000ml	15% Sodium Thiosulfate	N/A

Table 2 Summary of historical processes and the chemicals used (continue)

Process	Sensitizers	Developer	Fixer	Additional
14. Printing-out paper (POP) (1873)	A - 1.5g Ammonium Chloride 5g Sodium Potassium Tartrate 80g Gelatin 750ml Distilled Water B - 25g Silver Nitrate 10g Citric Acid 250ml Distilled Water	(Wash) 10g Citric Acid 30g Kosher Salt 1000ml Water		50ml Alcohol 30ml 2% Chrome Alum
15. Platinum/	A - 16g Ferric Oxalate - 55ml of Distilled water @120F - 1g Oxalic Acid B - 16g ferric Oxalate - 0.3g Potassium Chlorate - 55ml of distilled water @ 120F - 1g Oxalic Acid C1 - 10g Potassium Chloroplatinite (Platinum) - 50ml Distilled water @ 100F C2 - 9g Potassium Chloropalladite (Palladium) - 50ml Distilled water @ 100F	Ammonium Citrate Potassium Oxalate Disodium EDTA Tetrasodium EDTA		
16 Van Dyke	27% Ferric Ammonium Citrate 4.5% Tartaric Acid 12% Silver Nitrate	Water	5% Sodium Thiosulfate	
17. Kallitype (1889)	10% Silver Nitrate 20% Ferric Oxalate	1000ml Water 100g Borax 75g Sodium Potassium Tartrate 3g Tartaric Acid	5% Sodium Thiosulfate	

Table 2 Summary of historical processes and the chemicals used (continue)

Process	Sensitizers	Developer	Fixer	Additional
18. Ziatype (1880s)	A - 10g Ferric Ammonium Oxalate 25ml Water B - 10g Ferric Ammonium Oxalate 0.9g Potassium Chlorate 25ml water C - 2.3g Palladium Chloride 1.7g Lithium Chloride 25ml water	EDTA to clear	N/A	

### 3. The Value

Mike Ware stated, “It is a truism that the manufacturers of photographic materials provide contemporary photographers with a narrower choice of monochrome printing papers today than they offered our counterparts in the past.” (Mike Ware, 1990) In the market of the mainstream photography in the 20<sup>th</sup> and 21<sup>st</sup> century, the choices are limited for photographers who seek uniqueness in printmaking. Historical photographic processes became an alternative route for fine art photographers. “Successful processes (historical processes) remain in use today not just as quaint historical curiosities but as genuinely creative methods of image-making. (Salkeld, 2014: 40) Some photographers refer to this type of printing as handmade photographs. Definitely that this processes are not well suited commercially because of the cost and the time consumption, since, it involves hand-mixed chemicals and hand coated paper. The value falls into a limited edition category. “The ranks of alternative photographers and collectors are filled with history buffs, purists, technical enthusiasts, innovators and others who delight in the one-of-a-kind, handmade prints which emphatically announce they were not spawned at the one hour photo counter. They look and feel different from ordinary

photographic prints and are generally found in art galleries and museum exhibits.” (The Wingspread Collector’s Guide to Albuquerque and Central & Southern New Mexico, 2016) Historical photographic processes are suitable genre for fine art photographers who pursue distinctiveness. There are many sources mentioned that printing with historical processes is so unique that no two prints are the same. “Although rooted in natural optical and chemical phenomena every photographic system produces a distinctive character of representation. (Salkeld, 2014:42)

“Technical limitations will probably always confine alternative printing processes to a minority practice compared with the ubiquitous 35 mm. silver-gelatin culture.” (Ware, 1995)

#### **4. Current practice of historical processes.**

Historical photography processes had made a comeback around 1960s-70s, now they are known as “Alternative Photography” which refers to non-tradition or non-commercial photographic printing process. In other word, Alternative photography is the type of photography that is not mainstreamed. For example, mainstream black and white culture will be done on commercial silver gelatin paper, or at the moment, digital photography with digital pigment printing.

There were a group of photographers in the 70s who brought back Platinum prints to execute their work such as Irving Penn, Albert Watson, etc. The platinum prints are known to have superior quality in many aspects. In the United States, historical processes have revived in popularity since 1980s. Many sources state that each photograph of these types of processes is different, unique and original.

“Alternative and non-silver processes are somewhat mercurial in nature and full of surprises; enjoy their quirks and see them as opportunities. Much of what you will personally discover will emerge as a result of play.” (Christopher, 2001: XIV). Practicing Historical or alternative photography needs dedication because it is time consuming and therefore working with chemical needs extra cautious.



Making historical photographic prints involves contact printing, which means the negative sizes are the same sizes as the final prints. This can be done by using sheet film on large format camera or darkroom duplication of smaller negatives to required size.

The advanced technologies of digital means have contributed to the increasing of popularity of historical photographic processes. Negatives now can be done by direct print out from the printers without using conventional darkroom. However, in Thailand, historical photographic processes are still anticipating to be noticed. Chemical needed for the processes are still hard to obtain and are high cost. Cyanotype process is one of the simplest processes. Due to the accessibility of the chemical, it started to gain recognitions by local photographers. Additionally, workshops are held in small groups at some institutions.

#### 4.1 Current applications of Historical processes

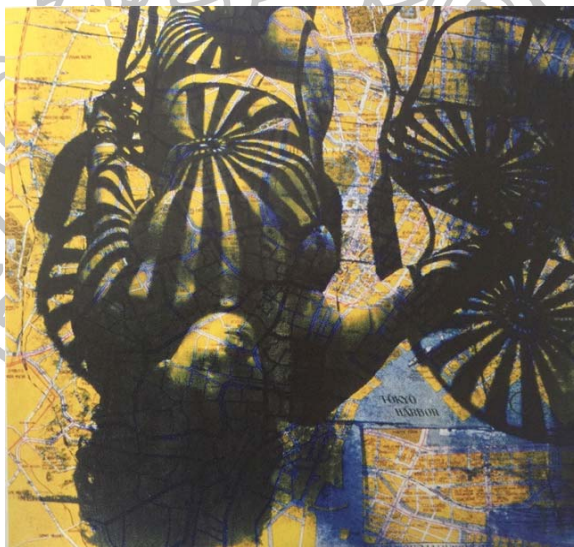


Figure 12 Cyanotype on map by Michele Robins

Source: James Christopher, **The book of Alternative Photographic Processes**, 2nd ed. (New York, USA.: Delmar Cengage Learning, 2009), 173.



Figure 13 Vandyke on handmade paper by Pinky Bass

Source: James Christopher, **The book of Alternative Photographic Processes**, 2nd ed. (New York, USA.: Delmar Cengage Learning, 2009), 321.



Figure 14 Anthotype or Chlorophyll print on leave by Binh Danh 2003

Source: James Christopher, **The book of Alternative Photographic Processes**, 2nd ed. (New York, USA.: Delmar Cengage Learning, 2009), 145.



Figure 15 Van Dyke on Newsprint by Karen Oganyan 1997

Source: James Christopher, **The book of Alternative Photographic Processes**, 2nd ed. (New York, USA.: Delmar Cengage Learning, 2009), 223.



Figure 16 Van Dyke on teabags by Erin Kawamata 2006

Source: James Christopher, **The book of Alternative Photographic Processes**, 2nd ed. (New York, USA.: Delmar Cengage Learning, 2009), 231.

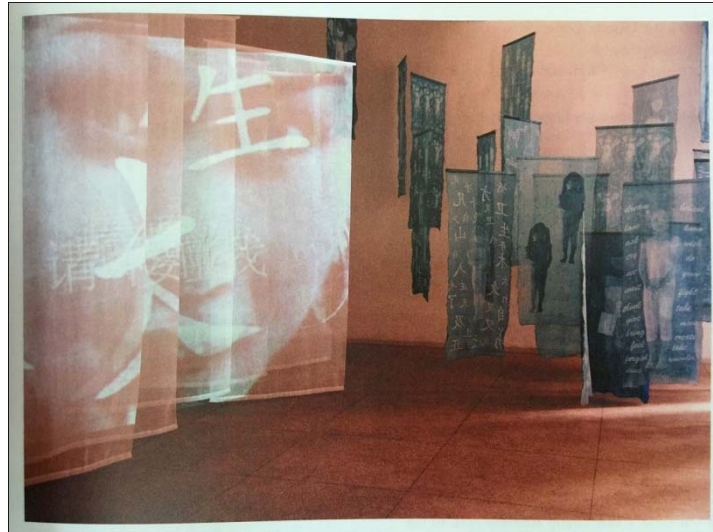


Figure 17 Cyanotype silk panel by Galina Manikova 2006

Source: James Christopher, **The book of Alternative Photographic Processes**, 2nd ed. (New York, USA.: Delmar Cengage Learning, 2009), 191.



Figure 18 Wet Collodion Plate on Glass by Peter Janosik 2012

Source: Peter Janosik, **Still with Tulips (2012)**, accessed October 15, 2015, available from <http://www.peterjanosik.sk/portfolio>



Figure 19 Tweak of Nature, Cyanotype sculpture by Tasha Lewis 2014

Source: Tasha Lewis, **Tweak of Nature**, accessed October 15, 2015, available from <http://brewermultimedia.com/tweak/>

## 5. Surfaces used in Historical Processes

### 5.1 Metal plates

Metal plates are used in the early processes like Daguerrotype and tintype. The light sensitive substance is applied on the surface by using binder like gelatin or gum. The sensitizer is situated in the binder and isolated from the plate.

### 5.2 Glass Plates

Glass plates have fairly similar surface with metal plate; however, glass is more glossy compare to metal. The processes that require glass plates are dry gelatin (dry plate) and wet collodion (wet plate). Dry plate employs gelatin as a binder; on the other hand, wet plate uses exclusively collodion on glass.

### 5.3 Paper

The most used material in historical processes is the paper. In the 20<sup>th</sup> century, the photographic papers were commercialized initially by Kodak and were called silver gelatin papers. Light sensitive substance stays on the gelatin surface. Some historical processes engage hand mixed chemical. It is necessary for the chemicals to stay on or in the paper. Processes like cyanotype, platinotype, or van

dyke need the paper that has good absorbability because the chemical will soak into the fiber. It is the uniqueness of these types of processes.

## 6. Suggested paper used for historical processes.

As mentioned earlier, paper is the most used material for printing historical processes. There are some characteristics required for the paper since the light sensitive chemicals have to adhere in the fiber of the paper. According to Mike Ware,<sup>\*</sup> “the photochemical takes place in intimate contact with all the substances that are contained in the paper. This distinguishes the iron-based processes from conventional silver gelatin printing.” (Ware, Mike, Ag+ Photographic No.7, 1995) Therefore, the paper has to be chemical compatible and the ability to withstand long water process. Most photographers use high quality watercolor papers. However, machine made papers that are produced in a large quantity; it is not perfect for these types of photographic processes but most photographers make a compromise. There were no specific papers made for historical processes until recently there are some attempts from paper manufacturers to supply the demand of small group of historical photographic practitioners. For example, Arches mill in France makes a paper called “Arches Platine”<sup>\*\*</sup> which is marketed for platinotype as the name indicates. Arches Platine is 100% acid free that makes it good archival quality. It is well responded in North America. Although the cost of the paper is fairly high but many photographers who practice historical processes find it well for using not only for platinotype but also cyanotype and van dyke. Cranes Platinotype is another brand that is available for alternative or historical processes nevertheless Cranes has a reputation of inconsistency of the paper quality.

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<sup>\*</sup> Mike Ware is a chemist who graduated a doctoral degree in chemistry. Beside science, he studies history of photography and its processes. The results of his research have improved numbers of historical photographic processes.

<sup>\*\*</sup> Arches Platine is 100% cotton paper made especially to respond the demand of alternative photographic practitioners. Tis paper is made with no optical brighteners. It is 310 grams, acid-free, alkaline-free and pH balance neutral.



Figure 20 Arches Platine has a bright white surface and a deckle edge

Source: Legion Paper, **Arches Platine**, accessed October 16, 2015, available from <http://www.legionpaper.com/arches-platine/>

In 1992, Mike Ware drew up his specifications for the paper and Chris Bingham\* had developed the handmade paper to Ware's specifications. Their paper then called Buxton paper. It is made of cotton linters. It is one of the most effective papers used for alternative photographic processes since the creators are the expert in historical processes in the chemistry aspect and the master of handmade paper.

### 7. Summary of paper specifications for Historical photographic prints.

According to the Buxton paper, the paper that is the most compatible for alternative printing, its quality is high and the performance is the most effective. The specifications of the paper in general are as followed:

1. It is made of 100% cellulosic fiber, preferably cotton. Because cellulosic fibers are superior in terms of absorbance, the light sensitive sensitizers need to be positioned in the fiber.

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\* Chris Bingham is a master in paper making. He is a founder of Ruscombe Mill. The mill started in England in the 1980s then moved to France. It is one of the rare handmade paper mills.

2. It is made from wove mold,<sup>\*</sup> not laid mold.<sup>\*\*</sup> Wove paper has smoother surface and better wet strength.

3. It is made without any additives such as optical brightening, bleaches or dyes. Or other word, it has to be acid-free and alkaline-free. If the paper contains acid or other chemical it could oxidize or have other chemical reactions to the sensitizers.

4. It needs to have good wet strength to handle long water process. Most processes need to be washed in water for approximately 15-30 minutes. If the papers are not strong it could fall apart.

5. It needs to have correct absorbency. Even though the desired paper should absorb liquid well, it should be slightly hydrophobic. Because it is important when we apply the sensitizer we need more time to spread it evenly throughout the printing area. If the fibers soak the liquid too rapidly, it is more difficult to print the image evenly.

## 8. Paper fibers

### 8.1 Cotton Paper

Cotton paper is the paper made from cotton linters. Linters are short fibers stripped from the cottonseed before the seed is squeezed to make cotton seed oil. (Neenah Paper, 2015) Cotton papers are more durable than wood pulp papers. They contain no acid, which make cotton papers more archival.

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\* Wove Mold process is original Chinese paper making process. The pulp is made by beating bark which has been washed and boiled. The pulp fibers are separated using smooth-edged stones and sticks.

\*\* Laid mold process is the process that uses bamboo mat on a wooden frame. The wooden frame is dip into the bath of fibers and when it lifted up the water drains down leaving the pulp of fiber on the bamboo mat. The mat acts like a strainer. The fibers form a sheet then it is lifted up and put on flat smooth surface of stone.





Figure 21 Cotton Paper rolls, Cotton Linters

Source: **Stocklot cotton paper**, accessed October 9, 2015, available from [http://i00.i.aliimg.com/photo/v0/115340440/Stocklot\\_cotton\\_paper.jpg](http://i00.i.aliimg.com/photo/v0/115340440/Stocklot_cotton_paper.jpg)

#### Properties of cotton paper

8.1.1 Physical properties: Like other cotton fiber products, cotton papers appear white or off white. Generally, cotton papers are graded 25%, 50% or 100%; these can be checked by watermark for a number.

8.1.2 Mechanical properties: Cotton papers are durable and have good absorbency ability.

8.1.3 Chemical properties: Normally, cotton papers are acid free, however, 100% cotton may contain small amount of acid.

8.1.4 Environmental properties: Cotton papers last longer than wood pulp papers. They do not discolor easily.

## 8.2 Newsprint

Newsprint is a paper that is commonly used for newspaper and books. It is inexpensive and not archival. Newsprint mainly consists of wood pulp. It usually comes in big roll and sold in large quantity due to its low cost. It is used in multipurpose such as wrapping and commercial printings.

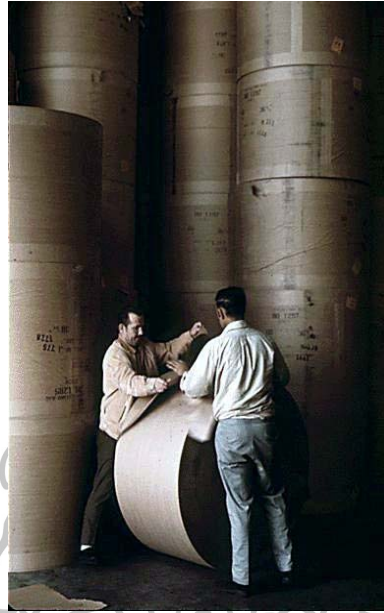


Figure 22 Rolls of newsprint

Source: National Archives and Records Administration, **Newsprint**, accessed on October 9, 2015, available from <https://en.wikipedia.org/wiki/Newsprint>

#### Properties of newsprint

8.2.1 Physical properties: Newspaper often comes in off white to yellowish color in a big roll.

8.2.2 Mechanical properties: Newsprint paper is strong and can withstand the fast running process of printing press.

8.2.3 Chemical properties: Newsprint is processed without chemical to remove lignin.\* The paper can be bleached by hydrogen peroxide or sodium peroxide.

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\* Lignin is a class of complex organic polymers. Lignins are one of the main classes of structural materials in the support tissues of vascular plants and some algae. Lignins are particularly important in the formation of cell walls, especially in wood and bark, because they lend rigidity and do not rot easily. Chemically lignins are cross-linked phenol polymers.

8.2.4 Environmental properties: According to the increasing demand of the world press, newsprint is made mostly from recycle fiber. Currently, the fibers are damaged through many recycling circles, therefore, more new fibers are added on.

### 8.3 Japanese Washi

Washi is a Japanese word for paper traditionally made from the bark of the Gampi\* tree, the Mitsumata shrub\*\* or Kozo,\*\*\* which are originated in Japan. Initially, washi papers are made by hand but at the turn of the 21<sup>st</sup> century, the technologies take over the traditional method. The machines can produce similar looking paper but the quality is less superior than the ones made by hands. (The Japanese paper place, 2015)

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\* Gampi are a group of Japanese shrubs, members of the genus Wikstroemia, some of which have been used for making paper since the 8th century. It is used to make the high quality Washi paper. <https://en.wikipedia.org/wiki/Gampi>. Gampi was the earliest and is considered to be the noblest fibre, noted for its richness, dignity and longevity. It has an exquisite natural sheen, and is often made into very thin tissues used in book conservation and chine-collé printmaking. Gampi has a natural 'sized' finish which does not bleed when written or painted on.

\*\* Mitsumata fiber is graceful, delicate, soft and modest. Mitsumata takes longer to grow and is thus a more expensive paper. It is indigenous to Japan and is also grown as a crop.

\*\*\* Paper mulberry is the most widely used fibre, and the strongest. It is grown as a farm crop, and regenerates annually, so no forests are depleted in the process.



Figure 23 Japanese Washi Paper

#### Properties of Japanese Washi paper

8.3.1 Physical properties: Washi papers come in different thickness, however, they are light in weight. Some washi papers are translucent. The colors are usually off white to brown.

8.3.2 Mechanical properties: Washi papers are very tough. They have great wet strength and also good flexibility. When washi gets wet it will shrink slightly when it dries.

8.3.3 Chemical properties: Traditionally, washi papers are made organically. They are acid free.

8.3.4 Environmental properties: Like other natural fiber, moths and silver fish can be threatening to the damage of the fiber.

## 9. Fabric Fibers

This research is focused on natural fabric fibers because of the bonding ability of fibers and fluid's molecule. Natural fibers can be classified into 2 categories; Protein fibers and Cellulosic fibers.

## 9.1 Protein fibers

Protein fibers are naturally from animal through condensation of amino acids to form repeating polyamide units with various substituents on the alpha-carbon atom. In general, protein fibers are fibers of moderate strength, resiliency, and elasticity. They have excellent moisture absorbency and transport characteristics. (Textile School, 2015)

### 9.1.1 Silk

Silk is a natural protein fiber. Commonly, it's produced from the cocoons of the larvae of the mulberry silkworm. Production of silk is complicated and labor intensive. The countries that have good silk production are China, Thailand and India due to the low labor and production costs. Additionally, these countries are situated in the best climate for silk production. Other country like Japan also produces silk but in the lower volume. While European countries like Italy, France and England would process silk into textile.

The quality of silk depends on the cultivation. The cultivation has to be in the right temperature and environment. The longer the silk thread, the better quality the silk is. A perfect cocoon can give up to 300-1000 yards of silk thread. Silk is often used as clothing and decorative pieces due to its shimmering beauty.

The variety of silk fabrics includes a broad range of weights and drapes, from heavy and luxurious velvet to floaty and translucent chiffon. While silk does not wear with great longevity, it is often chosen for couture, high-end brands and speciality fabrics. (Briggs-Goode, 2013: 126)



Figure 24 Silk

Source: Natawatchara nitithongsakul and Natcha Lounratana, **Silk**, accessed October 6, 2015, available from (<http://www.simplesilk.com/index.php?mo=30&cid=333466>)

Properties of silk:

1. Physical properties: Silk threads are very thin and luster. Silk from the cultivation is more luster than wild silk. Wild silk is rougher and denser.
2. Mechanical properties: Silk thread is very strong but the strength lessens 20 percent when it gets wet. Silk is moderate in elasticity that results in the silk to get wrinkle.
3. Chemical properties: Silk has great absorbency ability make it comfortable to wear. However, it is not heat resistant. The silk fiber can be damaged by alkaline bleach or chlorine bleach.
4. Environment properties: Silk is mold resistant. Nevertheless, silk is good food for carpet beetles and moths. Furthermore, silk can be damaged by sunlight.

#### 9.1.2 Wool

Wool is another protein fiber that comes from various kinds of sheep and goats such as Merino, Alpaca and Angora. Raw wool or grease wool contain a lot of lanolin oil, sweat residue and dead skin. Those can be cleaned out

by using alkaline solution. Lanolin oil is also valuable in the cosmetic industry. It is used to make soaps and facial cream.

Wool can be made in lightweight, fluid, fine-gauge jerseys. Wool is popular for high-end upholstery, hard wearing outerwear. (Briggs-Goode, 2013: 125)



Figure 25 Raw wool

Source: Joseph Mercola, 'Let' Them pull over your eyes-wool is your best choice, accessed October 6, 2015, available from (<http://products.mercola.com/wool-bedding/>)

#### Properties of wool

1. Physical Properties: There are varieties colors in natural wool such as white, black, cream, beige and tan. However, wool can be bleached by using peroxide. Wool's length is usually 1 to 15 inches. It is elastic, thick and fire-resistant. The level of shimmer depends on the genetic types of sheep and goats. Generally, wool is not particularly shimmer.

2. Mechanical Properties: The selection of using wool in clothing depends on the properties of the wool if the wool is tough and thick after spinning. When wool gets wet it will get wrinkle easily but dry wool has better elasticity. Due to the moderate density and light weighted, washing wool can cause permanent shrinkage.

3. Chemical properties: Wool has poor absorbency ability due to the attribute of moisture resistant. It can be damaged by alkaline bleach, chlorine bleach and strong acid. In a dry weather condition, wool can cause static and be flammable.

4. Environmental properties: Mold is not usually found on wool unless it is kept in humid condition. However, beetles and moths can eat wool if the wool gets dirty, cleaning wool can get rid of this problem.

## 9.2 Cellulosic fibers

Cellulosic fibers are natural fibers from plants, sometimes called vegetable fibers. They can be obtained from bark and leaves.

### 9.2.1 Cotton

Cotton grows in a boll. It is soft and fluffy. It is first discovered in India and Pakistan 3000 B.C. Currently, China and South America are the countries that produce cotton the most due to the warm climate that is good for cotton plantation. It grows best in spring and ready to harvest in autumn. As environmental concerns, planting cotton requires intensive irrigation and a large amount of pesticides and fertilizers, which can harm the farmer as well as pollute the water supply. (Briggs-Goode, 2013: 124)

Good quality cotton is thin, long and easy to spin for example American Pima cotton and Egyptian cotton.

Cotton is used to make breathable textile. It is the most used in clothing due to its comfort. Cotton fabrics can be lightweight or heavy, opaque or transparent, stiff or fluid, and are used for home furnishings as well as for apparel. (Briggs-Goode, 2013: 124)





Figure 26 Cotton

Source: **Cotton Australia**, accessed October 6, 2015, available from <http://cottonaustralia.com.au/cotton-library/video>

#### Properties of cotton

1. Physical properties: Cotton is usually white or off white. The length is  $\frac{1}{2}$  to  $2\frac{1}{2}$  inches. High quality cotton is called long-staple fiber or extra-long staple, which is about 1 and  $\frac{1}{8}$  inches long, usually found in America and Egypt. Cotton is matte; however, mercerization can add more shimmer and strength.
2. Mechanical properties: Cotton is moderately strong. When cotton is wet, it is 20 percent stronger than when it is dry. It is inelastic thus sometimes is combined with polyester to add more elasticity.
3. Chemical properties: Cotton has high absorbency ability, however, it takes time to dry. It can be bleached by using sulfuric acid; mineral acid but the acid can damage cotton if not used preparedly. Other bleaching agent that is not damaging is sodium hydroxide, it additionally adds more strength and more absorbency ability to cotton fiber. Cotton is not fire resistant and does not cause static.
4. Environmental properties: Mold can occur if it is kept in humid condition. Cotton fiber can be eaten by silverfish and can be damaged by sunlight.

### 9.2.2 Flax (Linen)

Flax fiber or linen fiber is the oldest fiber used in textiles. It is extracted from the stem of flax plant. In ancient Egypt, linen was preferred to use as beddings, clothing and shrouds. Flax is usually cultivated in northern Europe. Flax is sometimes known as linseed, therefore, in Europe, it is known as linen. Linen fibers are much stronger and more lustrous than cotton.

Linen is stronger and less elastic than cotton, it is highly absorbent. It has a long association with domestic products, in particular napkins tablecloths and tea towel. (Briggs-Goode, 2013: 126)



Figure 27 Flax Harvest

Source: **Joybilee Farm**, accessed October 8, 2015, available from <http://joybilee-farm.blogspot.com.au/2010/09/pierre-pflieger-and-flax-break.html>



Figure 28 Flax fiber

Source: **Textile Learner**, accessed October 8, 2015, available from <http://textilelearner.blogspot.com/2012/01/linen-fiber-characteristics-of-linen.html>

### Properties of flax (linen)

1. Physical Properties: Flax fiber is white to tan color. It is approximately 2 to 36 inches. The fiber is smooth and shimmering.

2. Mechanical properties: Flax fiber is the strongest fiber among other plant fibers. It is stronger than cotton but is less elastic. Flax fiber is stronger in the wet condition.

3. Chemical properties: Flax has good absorbency like cotton; however, it is dry faster than cotton, made it more comfortable to wear in warm weather. Like cotton, it is easily damaged by acid. Flax fiber is better heat resistant than cotton. It does not cause static.

4. Environmental properties: If linen is kept in a humid condition it can be damaged by carpet beetles. Moths and silverfish are not dangerous to linen. Linen fiber is resistant to bacteria and mildew. Additionally, linen can tolerate sunlight.

#### 9.2.3 Ramie

Ramie is also known as China grass. It is native in eastern Asia. Like linen fiber Ramie is a bast fiber. Ramie can be harvested 6 times a year and the crops last 6 to 20 years. However, chemical is essential in processing ramie because ramie contains gums and pectin. Ramie is mainly produced in China, Philippines, Brazil and Thailand. It is not widely used due to the patent of certain countries.



Figure 29 Ramie in five stages

Source: Hartmann & Forbes, **The Story of Ramie**, accessed October 8, 2015, available from <https://www.hfshades.com/blog/2011/nov/the-story-ramie>

#### Properties of Ramie

1. Physical properties: Ramie fiber is similar in physical appearance to flax fiber.
2. Mechanical properties: Similar to flax but not as light weighed. Ramie fiber is more fragile than flax, not suitable for spinning. It is extremely absorbent and stronger when wet.
3. Chemical properties: Ramie can be dye and bleached easily and will not be harmed in low acidity. It can withstand high temperature and does not shrink.
4. Environmental properties. Ramie is resistant to bacteria, mildew and mold.

#### 10. Fabrics for printing.

The choice of fabric is highly significant to the final product. (Briggs-Goode, 2013: 123) Dyes contain chemicals that penetrate the individual fibers of a fabric and become part of it. (Briggs-Goode, 2013: 134) This is similar to Historical photographic process that the chemicals situate in the fibers. Therefore, these need specific fibers to work with. If the print process and dyestuffs are not appropriate to the fabric and

fiber then you may find the print uneven. (Briggs-Goode, 2013: 123) Most dyes work well with cellulosic fibers so does the historical processes. Cotton fibers are the excellent choice for this type of printing due to its low cost, variety and efficiency. On the contrary, other printing methods such as pigment printing, the pigments sit on the surface of the fabric rather than being absorbed into the cloths. (Briggs-Goode, 2013: 133) As dyeing technique, the situation of the chemical in the fibers increases the intensity of the color; this also applies to historical processes in terms of the richness and intensity of the images' tonality.

## 11. The study of related artists

### 11.1 Irving Penn

This study is focused on Irving Penn's choices of photographing subjects and his application of old photographic process in contemporary photographs.

Irving Penn was one of the most influential photographers in the 20<sup>th</sup> century. He started his career as a graphic artist. In the 1940s, he began to shift his career into photography using his graphic sense to make stylish images and his sensitivity to create portraits of celebrities. (Westerbeck, 1997)



Figure 30 Irving Penn's portraits, circa 1960

Source: **Bert Stern**, accessed January 10, 2016, available from [http://www.today.com/id/33214155/ns/today-today\\_entertainment/t/celebrity-photographer-irving-penn-dies/#.VpH8svHfagQ](http://www.today.com/id/33214155/ns/today-today_entertainment/t/celebrity-photographer-irving-penn-dies/#.VpH8svHfagQ)

Irving Penn launched his career as a photographer with Vogue magazine in 1944, while he was working as an assistant to an art director “Alexander Lieberman”. Lieberman asked Penn to suggest the pictures for the magazine’s cover and asked him to photograph. Penn used his artistic experience as a painter; he painted background and arranged a still life set for his first cover photograph.

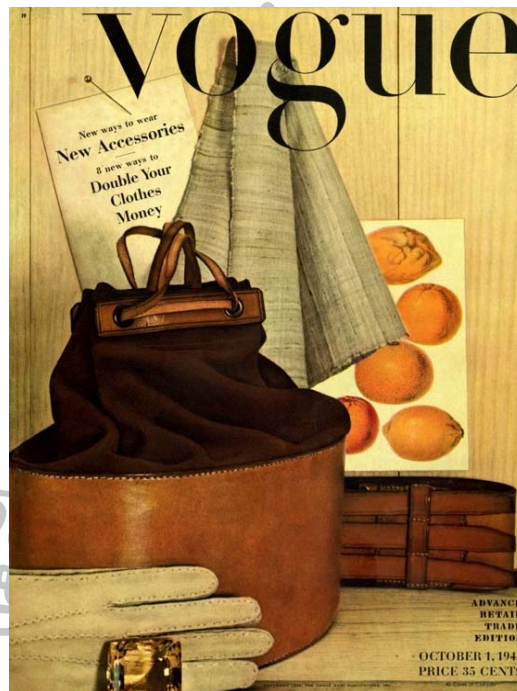


Figure 31 Irving Penn’s first cover for Vogue

Source: Audrey Withers, **Vogue Magazine Archive**, accessed January 4, 2016, available from <http://www.vogue.co.uk/magazine/archive/issue/1944/October>

Penn established astonishing versatility of his work through numbers of editorial illustrations, advertising, photojournalism, portraits and still life. He founded his own studio in New York in the 1950s. He continued to work commercially and artistically for the rest of his life.

Penn had two poles of work in contrary. His career involved high-end products and luxury lifestyles. On the other hand, he lived a very simple life and created his own personal work in the most humble gesture. In the magazine spread, we always see his pictures with sophisticated models and luxury items. However, his

personal work consisted of street found objects and sometimes tribe people or street people with the least glamour. Colin Westerbeck stated that “He had done so in order to keep an equilibrium that would enable him to keep going as photographer.” (Westerbeck, 1997: 15)



Figure 32 A book spread showing Irving Penn's contrast work

Source: Colin Westerbeck, **Irving Penn: A Career in Photography** (USA, Bulfinch Press, 1997) 32-33

Irving Penn was among one of the first photographer to use simple white or grey background to photograph his portraits. In 1948, Penn arranged two flat panels, pushed together as a tight corner. He photographs celebrities and important figures at a time. The tight, small corner is cliché. Penn used it as if to compromise the intimidation of his sitters like Marcel Duchamp and the Duchesses of Windsor. “Penn says that he invented the corner set because he felt unequal to his famed subjects.” (Westerbeck, 1997: 11)



Figure 33 Marcel Duchamp photographed by Irving Penn, New York 1948  
Source: Irving Penn, **A career in photography**, Art Institute of Chicago (U.S.A.: Bulfinch Press, 1997).



Figure 34 The duchesses of Windsor photographed by Irving Penn, New York 1948  
Source: A.G. Nauta Coutour, **Wallis Simpson & Prince Edward, a Stylish Couple (2014)**. accessed January 9, 2016, available from <http://www.agnautacouture.com/2014/04/27/wallis-simpson-prince-edward-a-stylish-couple/>



Later that same year (1948), Penn was assigned to do a fashion shoot in Lima, Peru. The set of fashion was called “Flying down to Lima”.<sup>\*</sup> Penn’s approach was to integrate real life setting with his fashion model.

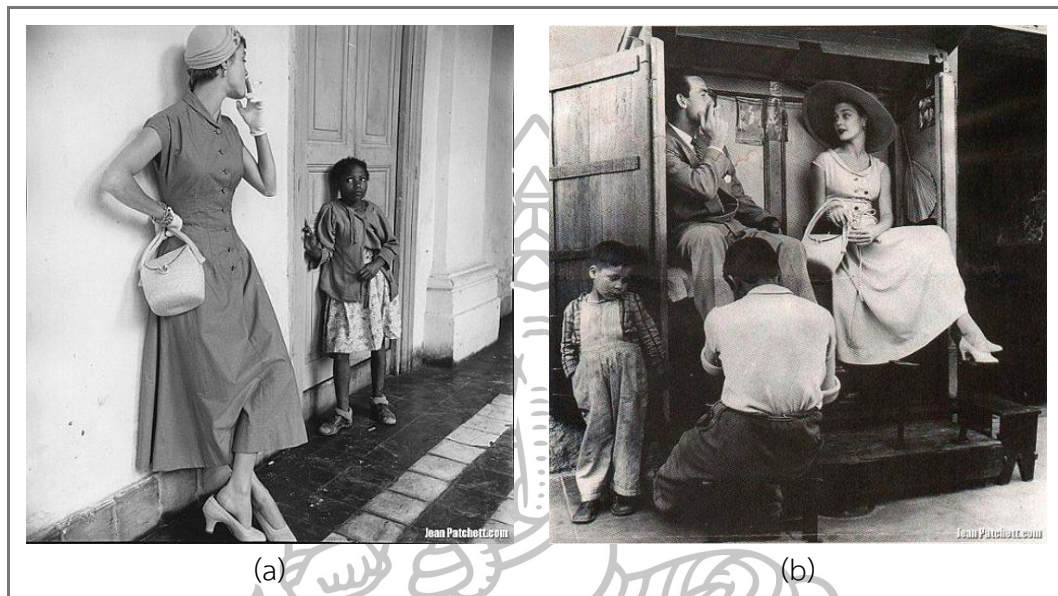


Figure 35 Flying down to Lima

(a) Vogue, February 1949

(b) Jean Patchett photographed by Irving Penn, Lima, Peru.

Source: Jean Patchett, **forties**, accessed January 9, 2016, available from <http://jeanpatchett.com/galleries/forties/>

After finishing his assignment, he continued his journey to Cuzco while all the crew went back for Christmas. He exposed to many interesting native people, he then rented a local studio to photograph these people. “The pictures he made were seminal ones for his career. It was as if, having become light-headed in the mountain air, Penn had a vision that affected the way he looked at photography. The trip to Cuzco was a crucial passage for Penn because it initiated a pattern of

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<sup>\*</sup> The title derived from the famous film in 1933: “Flying down to Rio”.  
Westerbeck, Colin, Irving Penn: A Career in Photography”

work that has continued throughout his life. He began not only photographing exotic cultures but also alternating one genre or type of project with another.” (Westerbeck and Penn, 1997: 9)



Figure 36 Cuzco Children

(a) Cuzco children photographed by Irving Penn

(b) Cuzco, Peru 1948

Source: **The Art Institute of Chicago**, accessed January 9, 2016, available from <http://www.artic.edu/aic/collections/exhibitions/IrvingPennArchives/artwork/>

In 1949-1950, his career intertwined between commerce and art. He continued to produce sophisticated fashion shoot for Vogue and created an antidote in his personal occasion.

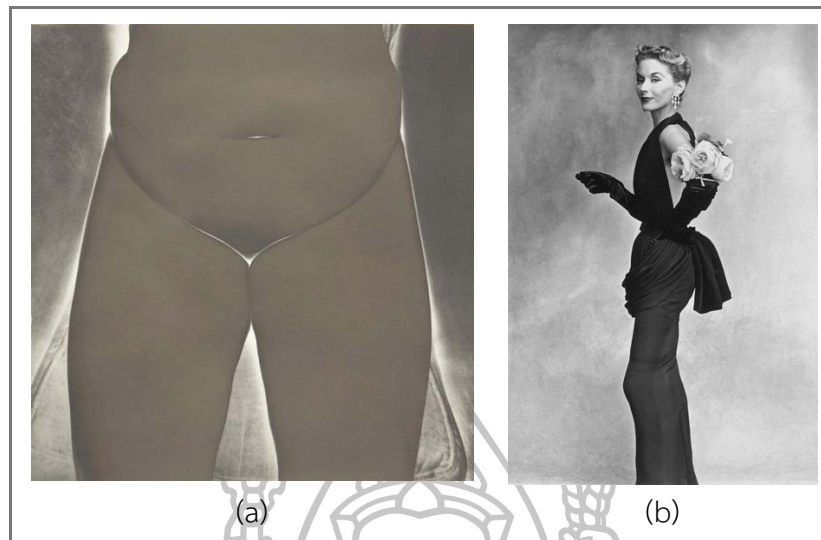


Figure 37 The comparison of Penn's contrast work

(a) Irving Penn's Nude No.150, New York, 1949-1950

(b) Woman with roses (Lisa Fonssagrives-Penn in Lafaurie dress), Paris 1950

Source: Irving Penn, **A Career in Photography**, Art Institute of Chicago (U.S.A.: Bulfinch Press, 1977), 77, 84.

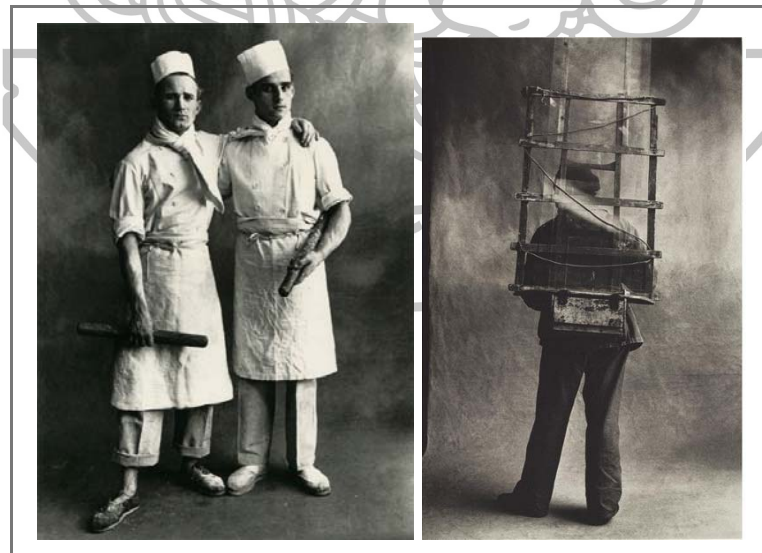


Figure 38 Pastry cooks and Glazier, Paris 1950

Source: Irving Penn, **A Career in Photography**, Art Institute of Chicago (U.S.A.: Bulfinch Press, 1977), 34, 40.

“From the results of his work in Cuzco, he embarked on more photographic expeditions that lasted from 1964-1971 and took him to Crete, Extremadura in Spain, Dehomey (benin), Nepal, Cameroon, New Guinea, Morocco and San Francisco.” (Westerbeck, 1997: 12) “Penn applied his methods to pictures of ordinary people, celebrities and fashion model.” (Salkeld, 2014: 102) Penn used the same treatment when he photographed the sophisticate and the ordinary.

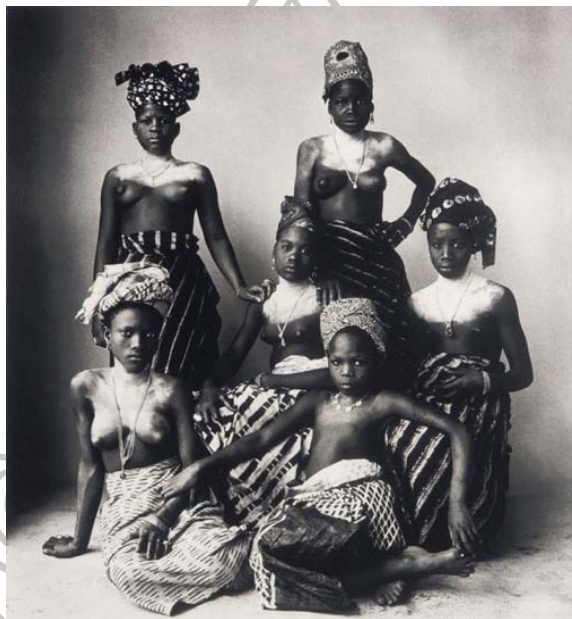


Figure 39 Six Dahomey girls, Dahomey 1967

Source: **Mutual Art Services**, accessed January 10, 2016, available from <http://www.mutualart.com/ArtworkSale/51B9A59E91BF725E>



Figure 40 Man with pink face, New Guinea 1970

Source: Irving Penn, **A Career in Photography**, Art Institute of Chicago (U.S.A.: Bulfinch Press, 1977), 121.



Figure 41 Guedras in the wind, Morocco 1971

Source: Irving Penn, **A Career in Photography**, Art Institute of Chicago (U.S.A.: Bulfinch Press, 1977), 160.

From 1972 to 1980, Penn had done three still life projects; cigarette butt, street trash and memento mori.\* “In truth, all three should be considered memento mori, for the cigarette and the trash are also symbolic reminders of death the way Penn photographed them.” (Westerbeck, 1997: 15)



Figure 42 Cigarette No. 69, New York 1972, Mud Glove, New York 1975

Source: Irving Penn, **A Career in Photography**, Art Institute of Chicago (U.S.A.: Bulfinch Press, 1977), 35, 79.



Figure 43 The Poor Lovers, New York 1979

Source: Irving Penn, **A Career in Photography**, Art Institute of Chicago (U.S.A.: Bulfinch Press, 1977), 118.

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\* Memento Mori is a reminder of mortality; especially death's-head.

Irving Penn collected trash from his daily walk from his studio in New York to the train home in Long Island. As we can see that he was high profile and established in the industry but his everyday routine was still simple and humble. “Penn’s behavior and attitude, like the jeans and sneakers he wears (purely utilitarian clothes), are unpretentious.” (Westerbeck, 1997: 19) Penn is admired from many people that had come to contact with him. He was polite, reserved and genuine, like his work very direct but profound.

Another Penn’s still life he called the series “Collapse”, he produced in 1980. This series was once again a reminiscence of decay. It was an antidote of his late 1970s advertising campaign for “Clinique”.



Figure 44 Collapse, New York 1990

Source: Irving Penn, **A Career in Photography**, Art Institute of Chicago (U.S.A.: Bulfinch Press, 1977), 92.



Figure 45 Advertising photograph for Clinique, New York 1974-1980

Source: Irving Penn, **A Career in Photography**, Art Institute of Chicago (U.S.A.: Bulfinch Press, 1977), 21.

In the mid 1960s, Irving Penn experimented printing technique of platinum palladium, the obscure process that was preferred by art photographer in the early 1900s. Penn's first work of platinum palladium process was the cigarette series. Merry Foresta had said that, "His use of small amount of precious metals to render garbage valuable is a self-critical comment." (Foresta, 1990: 11) She meant that he was testing the value of his own work by printing in platinum. (Westerbeck, 1997: 16)

### 11.2 Lillian Bassman

Lillian Bassman is one of the last great women photographers of the postwar period. (Harrison, 1997) A self-taught photographer with a background of art directing for Harper's Bazaar, Lillian excels with her own intuition to become one of the most prominent fashion photographers of the 1940s and 1950s. She re-emerges again in the 1990s as a fine art photographer.





Figure 46 Lillian Bassman in her home in Manhattan, 2004

Source: William Grimes, **Lillian Bassman**, accessed July 29, 2016, Available from [http://www.nytimes.com/2012/02/14/arts/design/lillian-bassman-fashion-and-fine-art-photographer-dies-at-94.html?\\_r=0](http://www.nytimes.com/2012/02/14/arts/design/lillian-bassman-fashion-and-fine-art-photographer-dies-at-94.html?_r=0)

In her early career, while working with Harper's Bazaar as an art director, she often spends time in the darkroom experimenting with printing techniques. She is interested in printing methods before she even takes photographs. "I was interested in developing a method of printing on my own, even before I took photographs," Ms. Bassman told B&W magazine in 1994. "I wanted everything soft edges and cropped." She was interested, she said, in "creating a new kind of vision aside from what the camera saw." (Grimes, 2016)

In her career, she has promoted many noted photographers of the era like Richard Avedon, Robert Frank, Louis Faurer and Arnold Newman. She begins her photography while Avedon is on an assignment in Paris, lending his studio with an assistant for Bassman to use. She educates herself to photograph. With her unique style, she secures an account shortly after. Her distinctive style is usually a darkroom work, she finds the way to make her photograph as she envisions, soft-edge, dreamy, paint-liked images. Working with negatives with normal tonal range, she exposed the image through a tiny hole cut into a piece of black card, only those areas that she chose were allowed to burn onto the photographic paper. (Martin Harrison, 1997) She also experiments printing through tissue and gauze and using bleaching agent to selectively reduce certain tones. (Harrison, 1997)

Bassman has strong minded and believes in herself. In Paris in 1949, she has a battle over photograph of a Piguet dress with the editor, Carmel Snow, of Harper's Bazaar. Bassman interprets the dress as delicate and translucent so she photographs the model, Barbara Mullen, with her elbow arches together with the reflection from the mirror creates the shape of a butterfly. But Snow insists that the designer intends columns of yellow chiffon – not an insect. Snow states that Bassman is there to show buttons and bows not to make art. (Harrison, 1997) This incident has created the dilemma creativity and commercial. However, Bassman continues her belief in creativity and rises to one of the most sought after photographers in 1940s-1950s.

Her vision is a breakthrough in the photography realm, creating commercial pictures does not necessarily depict every detail. The most extreme of her print manipulation photographs are surprisingly published in Harper's Bazaar in 1949-1950. The photographs resemble freehand drawings as much as photographs, they retain outline of women and essential fashion information. (Figure 47)



Figure 47 Lillian Bassman's photograph of Barbara Mullen, New York, Harper's Bazaar, March 1950, reinterpreted 1994

Source: Lillian Bassman, **Massachusetts** (U.S.A.: Bulfinch Press, 1997).

New York times mentions that Bassman is treating fashion in a bold, graphic style and floating images in space. (Grimes, 2016) “Everything she does has a positively magic power. She is the only one in the history of photography who managed to visualize that breathtaking moment between the apparition and disappearance of things”; her friend and famous photographer Richard Avedon said. (Karin, 2016)

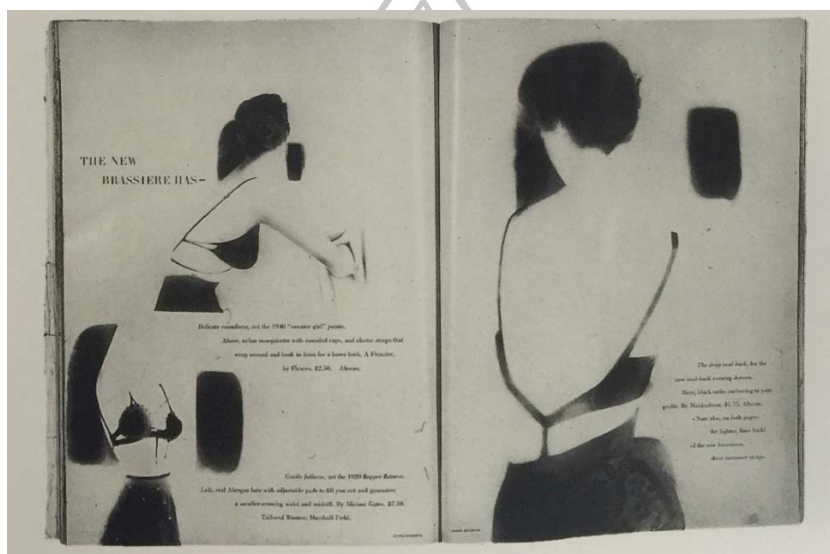


Figure 48 “The Line Lengthen”, Model: unknown, New York, Harper’s Bazaar, October 1955

Source: Lillian Bassman, **Massachusetts** (U.S.A.: Bulfinch Press, 1997).

Bassman images are mysteriously captivating. Women in her photographs never have eye contact with the camera as if they are in their own world disconnecting from the realistic surroundings and posing naturally with grace and pride.



Figure 49 Lillian Bassman's photograph of Silk organdie, Embroidered and printed, gown by Irene. Barbara Mullen, New York, Harper's Bazaar, January 1956, reinterpreted 1994

Source: Lillian Bassman, **Massachusetts** (U.S.A.: Bulfinch Press, 1997).

### 11.3 Georgia O'Keefe

One of the most celebrated artists in 20<sup>th</sup> century, Georgia O'Keefe is ahead of her time, she rises above the criticism that she encounters in her early years. O'Keefe is born poor on a farm in Wisconsin in 1887. She studies art in Chicago, Texas, South Carolina and Virginia. In 1915, she finds abstract charcoal drawings as a way to express her personal visual language. Her charcoal drawings represent a radical break with tradition and make O'Keefe one of the very first American artists to practice pure abstraction. (Georgia O'Keefe Museum, 2016) With her drawings, she is discovered by a legendary photographer, Alfred Stieglitz in 1916. Stieglitz states that he has never seen a woman express herself so fully on paper. (Stieglitz, 1916)

O'Keefe and Stieglitz become lovers and they are married in 1924. O'Keefe also becomes Stieglitz's model to photograph. She is often pictured nude or partially clothed which leads to some controversial criticism in her career. Stieglitz's photographs of O'Keefe have created her public image as sexual.



Figure 50 Portrait of Georgia O'Keeffe ("Hands") taken by Alfred Stieglitz in 1918

Source: Wikimedia, **Alfred Stieglitz**, accessed July 30, 2016, available from [https://commons.wikimedia.org/wiki/File:O%27Keeffe-\(hands\).jpg](https://commons.wikimedia.org/wiki/File:O%27Keeffe-(hands).jpg)



Figure 51 Portrait of Georgia O'Keeffe taken by Alfred Stieglitz in 1918

Source: Wikimedia, **Alfred Stieglitz**, accessed July 30, 2016, available from [https://commons.wikimedia.org/wiki/File:O%27Keeffe-\(hands\).jpg](https://commons.wikimedia.org/wiki/File:O%27Keeffe-(hands).jpg)

As a consequence, she has fought through her life to get acceptance as an uncompromising artist. Working in the shadow of a great photographer and living in the world of criticism, O'Keefe has shown her strength and dignity through the devotion to her work. She continues her love of art and passionately creates stunning images. Even so, her paintings of flowers are often misinterpreted and led to another controversial criticism. However, with her dignity and dedication, she becomes a pioneer artist of American Modernism. Her solo exhibition in 1946 at the Museum of Modern Art in New York is the first given by that museum to a woman. (Georgia O'Keefe, 2016)



Figure 52 O'Keefe's Iris 1929

Source: Ellen's Place , **Ellen**, accessed July 30, 2016, available from <http://ellensplace.net/okeeffe3.html>

O'Keefe's painting of flowers are often compare to feminine biographical details. However, that is not O'Keefe's intention. Many of her paintings are not related to female parts, for example, the blue morning glory. Once O'Keefe states that "I decided that if I could paint that flower in a huge scale, you could not

ignore its beauty.” (Georgia O’Keefe, 2016) Therefore, her paintings of flowers are magnifications of flowers segments, which sometimes the reproduction parts of flowers are in main focus, which is led to a sensual interpretation.



Figure 53 Blue Morning Glories (1935) by Georgia O'Keefe

Source: Phaidon, **Randall Griffin**, accessed July 30, 2016, available from <http://uk.phaidon.com/agenda/art/articles/2014/february/05/what-do-you-see-in-georgia-okeeffes-flowers/>



Figure 54 Black Iris (1926) by Georgia O'Keefe

Source: Phaidon, **Randall Griffin**, accessed July 30, 2016, available from <http://uk.phaidon.com/agenda/art/articles/2014/february/05/what-do-you-see-in-georgia-okeeffes-flowers/>

O'Keefe's flowers become her iconic pieces. She continues painting until the age of 95 and dies at the age of 98. Her paintings remain powerful until today.

## 12. Applicable aesthetic Theory

### 12.1 Art, in general, is artist's experience.

“Actual work of art is what the product does with an experience.”  
(Dewey, 2005: 1)

Artists have their own ways of creating work. They practice what they do best or what they are passionate of. This is truly personal experience. “A piece of work is finished in a way that is satisfactory; such an experience is a whole and carries with it its own individualizing quality and self-sufficiency.” (Dewey, 2005: 37)

The researcher has been practicing historical photography since 1998 and had tried many processes. It is realized that the handmade processes are fulfilling. Since the digital technology reigns supreme, the meaning of doing is lost. It is superficial. Therefore, experience is sentimental. “Art denotes a process of doing or making – every art does something with some physical material – which skill is exercised.” (Dewey, 2005: 48)

In photography, photographers have choices of camera and processes to execute their work. A choice of camera affects how people react. A large camera may appear intimidating and invite a serious formal response. (Salkeld, 2014:38) This is also experience; each photographer has their preferences of camera depending on their skills. Camera is a tool, one of the elements to make photographs. Nonetheless, “photography is at the intersection of two quite distinct procedures; one of a chemical order: the action of light on certain substances; the other of a physical order: the formation of the image through an optical device.” (Roland Barthes, 2000:10) Photographer has the opportunity to make a series of decisions, which enhance or encourage a particular reading: the choice of black and white or color. (Salkeld, 2014:48) “Art is really is a first stage of knowledge in which artists bring their images and intuitions into lyrical clarification or expression. (Weitz, 1956:201)



## 12.2 Photography as a representation of reality.

“The nature of photography is a realistic form of representation.”  
(Azahari, 2011: 8)

Ever since photography has invented, it is perceived as a tool to record reality. Photography illustrates the world as it really is. (Azahari, 2011: 11) The nature of photography involves subjects projected through the lens and the images are form and recorded on film. As a consequence, photographs are believed to be just the mirrors of the reality. As Roger Scruton puts it that “photography is causal, it can never be art. It can only show what is there and what exists.” (Scruton, 1989)

Nonetheless, photography has come a long way from the beginning. Pioneer photographers like Alfred Stieglitz had fought his way to make photography recognized as art. While photography has found its place in the 20<sup>th</sup> century, the rapid growth of technology at the end of the century has changed its status again. It is undeniable that photography is a part of our daily lives. We take and view our photographs through digital media or smartphone. Pictures literally are in everyone’s hands. Richard Salkeld raises the question, “How do you tell a photograph that is art from one that isn’t?” (Salkeld, 2014: 145) Photography is one of the most controversial when it comes to aesthetic. It is always referred to as a mirror of the subject. Roland Barthes mentions that, “Photography is an uncertain art.” (Roland Barthes 2000:18) However Richard Salkeld answers to his question that, “What is clear is that most photography in the world, and most that we encounter on a daily basis, has nothing to do with art.” (Salkeld, 2014: 145) “The impact of photographic images is not merely emphasize on the surface but it represents interpretive forms.” (Azahari, 2008) “The photographer understood that purpose of the photograph is not to reproduce reality but to create a new reality of the same intensity.” (Judkins, 2015: 38) Although, it is true that the camera never lies, but there are different degrees of realities. First, the reality that is obvious. For example, a tree is a tree in the landscape photographs. This is factual. This is what we see visually. But the other degree of reality is interpretative. “Photography, in a very orthodox manner, a whole network of essences.” (Barthes, 2000: 21)

It is concluded that reality of photography is signified into 2 degrees, the actual depiction of what exists and the interpretation of what it implies. As a professional photographer, photographs are not just matters of visual pleasing. Photographs are sentimental. “I see, I feel, hence I notice, I observe, and I think.” (Barthes, 2000: 21)

### **12.3 Art is in the rearrangement of forms.**

“Significant form” is the one quality common to all works of visual art.” (Bell, 1958)

Form is the important element in art. “Form is something that organizes material into the matter of art.” (Dewey, 2005: 139) Form in visual art provokes emotion. It is created by the arrangement of lines and colors. Photography is no different from other visual arts. Photographers juxtapose the subject before taking photographs and process them in the certain ways to achieve certain look. Forms of objects sometimes imply meanings or interpretations.

### **12.4 No aesthetic theory is perfect.**

“If we take the aesthetic theories literally, as we have seen, they all fail.” (Weitz, 1956) Art is subjective as we all realize. We may not agree on the same aesthetic in a piece of art. This is possible that we have different interests, different education or different upbringing. Emmanuel Kant clarifies it as the judgment of taste. (Kant, 1914)

## **13. Summary**

### **13.1 The study of historical photographic processes.**

Photography processes of the 19<sup>th</sup> century are known as handmade photographs. The processes of this era involve hand-mixed of light sensitive compound and hand applied onto different surfaces. Normally, practitioners of historical processes are experienced. Due to the toxicities of some chemical, caution is exercised seriously. Moreover, practicing historical photographic processes is time consuming; they are only suitable for those with dedication and passion. Bringing back the old processes is relevant when digital technology is mainstream, because the sentimental value is lost when everything is machine made.

There are many of the processes in photographic history. However, only some of them are appropriate for experiment under the existing condition of the laboratory. Conventional darkrooms are not set up for working with high toxic chemical. Therefore, appropriate working area should have good ventilation and should be equipped with first aid for chemical exposure. Also the practitioners should study safety chemical data sheets before working with the substance.

The value of images accomplished by historical photography processes is considered prestigious due to the rareness of the processes as a whole in current era. There are not many practitioners presently. However, the images of historical processes are loved by many photographers and museum curators. There are vast potential for these processes to be practiced into a contemporary attribute of the 21<sup>st</sup> century.

### **13.2 The study of the fibers**

The natural fibers are found to be relevant for using with historical processes. Since, the chemical is situated in the fibers. The absorbent quality is necessary. Same concept as dyeing technique, the dye color only stays on natural fibers. Dyes contain chemicals that penetrate the individual fibers of a fabric and become part of it. (Briggs-Goode, 2013: 134) Therefore, the varieties of natural cellulosic are explored and experimented.

### **13.3 The study of artists**

The researcher studies Irving Penn's work for inspiration. Irving Penn's work is intriguing in many ways. The usage of trash and other remains for his photographs is startling. He sees beauty more profoundly than just their appearance. The stories are untold through the dilapidated presence. Moreover, Penn presented his work through Platinum process; which is one of the most prestigious processes in photography due to the value of the platinum compound and the complications of the processes. Penn photographs his objects straightforward and simple combines with the humbleness of the object, the photographs speak for themselves, and the stories are untold through the appearance of the objects.

Lillian Bassman is one of the woman photographers that is strong-minded. Her determination of creating her own vision is exceptional. She believes

that there is more than just a straight photograph, having an art background enable her to diversify the medium into a unique individual. Lillian Bassman has a unique way to finish her images. Unlike Penn, Bassman's photographs are always blurred and soft, little information is present leaving the rest for imagination. The mystery in her photographs are captivating, it draws the viewers into a different world. The blurriness of the photographs is observed to apply in this research.

Georgia O'Keefe is a painter, however, through her life, involves with photography. As a wife of the legendary photographer, Alfred Stieglitz, O'Keefe is remarkable in her own right. A free-minded she is, rises above the criticisms she encounter through her life. Her passion in art is immeasurable. O'Keefe's painting is bold in color and contents.

#### **13.4 Aesthetic Theories**

Four different aspects of aesthetic are applied. First is the photograph as representations of the reality, pictures are realistic but the reality can be explored in different dimensions. Second is John Dewey's art as experience, the process of making photographs, historical photography requires hands on experience and high skills in making. Third is Clive Bell's significant form. The forms are rearranged to create new forms. Last is the concept of uncertain aesthetic theory to develop unconventional photography.

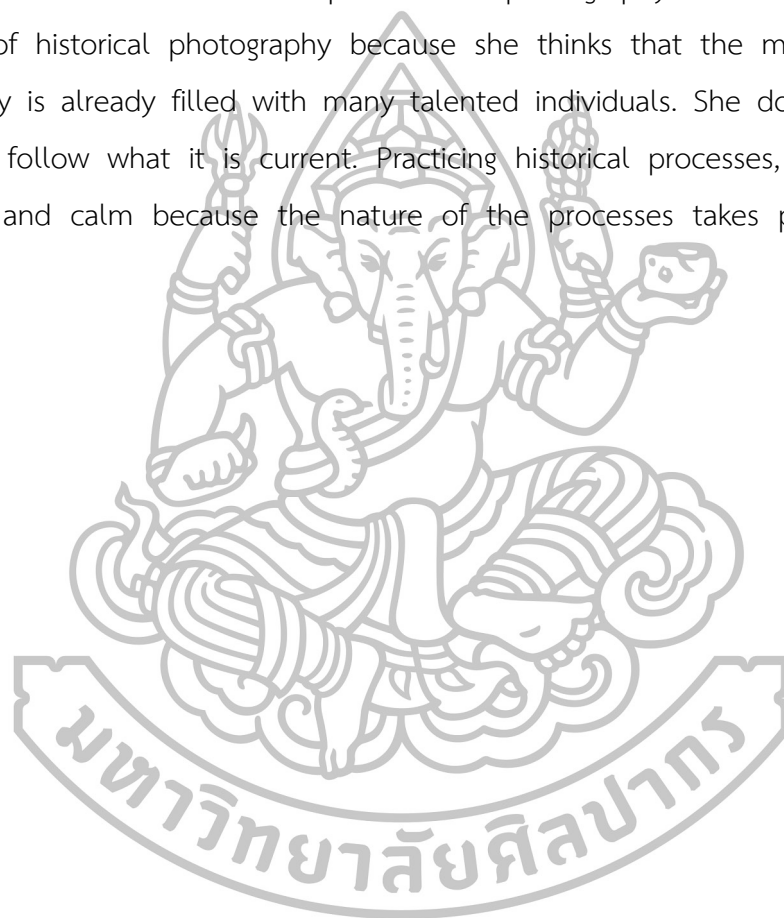
In conclusion, the development of style is accumulated from the study of photography history, the inspiration from the artists, the exploration of different materials and personal experience.

In the study of history, the focus was on obtaining the appropriate processes to use for the experiment and apply those processes to the design pieces. Aside from that, the early pictures in the history are observed to find the original style of the researcher's photography. The early pictures are found to have a genuine quality of uncomplicated machinery. The images are as good as it gets with the early technology. Because of this crudeness, it is charming and original.

The inspiration is drawn from the influential photographers and artists of the 20<sup>th</sup> century. The study of their work and style are accumulated to develop and create unconventional photography in this research.

The exploration of different materials can lead to find alternative surfaces for photography. Correspondingly, other techniques that are compatible with the new surfaces can be integrating with photography images. However, the researcher's expertise is photography, other techniques will just be a decoration to the main focus of this research.

The researcher's experience in photography are involved many processes of historical photography because she thinks that the mainstream of photography is already filled with many talented individuals. She does not have interest to follow what it is current. Practicing historical processes, she finds it meditating and calm because the nature of the processes takes patience and dedication.



## Chapter 3

### Research Methodology

This practice base research is qualitative research that divides into three phases.

1. Literature review includes:

- 1.1 The study of photography history, focused on the printing processes. The conclusion of the historical processes' characteristic.

- 1.2 The study of the fibers. The conclusion of the fibers those are qualified for printing with historical photography processes.

- 1.3 Development of style.

2. The experimental of applying historical processes on different surfaces or fibers. The historical processes will be selected according to the relevance of supplying the chemicals and safety concerns. Recommended used for historical printing is cellulosic natural fiber, preferably cotton. Because cellulosic fibers are superior in terms of absorbance, the light sensitive sensitizers need to be positioned in the fiber. Therefore, the variety of natural fibers is relevant such as hemp, linen, etc. The durability of fabric fibers is the benefit because of the requirement of the long water process.

3. The development of unconventional photography using the study of the processes, the related artists, the aesthetic theories and the results of the experiment to create photographs unconventionally.

#### 1. Literature review

First phase is literature review. This phase aims to study history of photography and focuses on the historical processes and their value. Then, the study of the materials those are applicable to use with selected historical photographic processes and related techniques. Furthermore, the study of artists in the related field to obtain appropriate concept and subject matter.

Primary resources are used in this research. However, occasionally they are hard to access since the subject is an obscure area of photography practice. Therefore, secondary sources are also accommodating in order to gather related information to make this research possible.

### **1.1 The study of photography history.**

The study of photography history is focused on the printing processes of the 19<sup>th</sup> century. There are 19 processes mentioned in chapter 1. Each process employs different chemical combinations. However, the result images share common characteristic.

The conclusion of the historical processes' characteristic in common.

1. They give monotone photographs because of the chemicals reactions. Most chemicals used in 19<sup>th</sup> century are sensitive to the end of the violet-blue spectrum of light. Therefore, they only render monotones. However, each light sensitive substance presents its own unique color.

2. They are printed with ultraviolet light. "Camera images were called 'sun pictures'." (Jeffrey, 1981:10) Sun is the most primitive source of ultraviolet light. Hence, the light sensitive chemicals, which are discovered in the 19th century, are observed by sunlight.

3. Hand-mixed chemical is applied. Since historical processes are not mainstream, each step of the process has to be done manually.

4. The images are the same size as the negative because contact-printing technique is implied.

5. Most processes that are printed on paper, the chemicals situate into the fiber of the paper.

6. The images are nostalgic attribute. Because they are monochromatic and the tonalities are unique, unlike images on commercial silver gelatin.

If historical processes are categorized by the usage of printing materials, they can be divided into three groups; metal, glass and paper. (Figure 55 ) The study shows that flat surfaces are used for historical printing, mostly, paper.

In the group of paper, it is also divided into two sub categories; first group is using binder\* to adhere light sensitive chemical onto the surface and the second group is light sensitizer without binder that means the sensitizers submerge into the fibers of the paper.

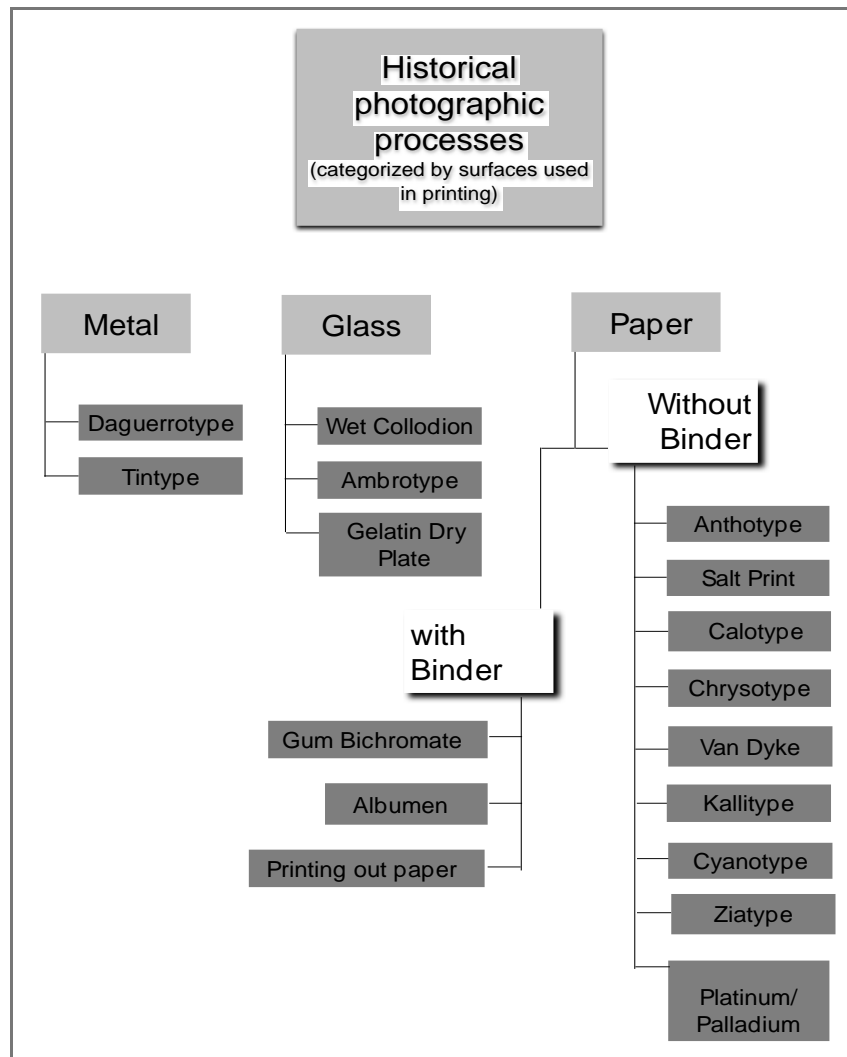


Figure 55 Historical Photographic Processes (categorized by surfaces used in printing)

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\* Binder is substance that binds two materials together, in this case, binder is used to hold chemical onto the surfaces. Example binders are Gum Arabic, gelatin and albumen.



This research is focusing on the processes that employ chemical's submergence in the fibers. It is because the fibers can be alternated and diversified. To narrow down the types of processes that will be designated for the experiment, the chemicals used for sensitizers are observed. For Chrysotype process, gold chloride is a main solution. Platinum/Palladium and ziatype employ Platinum chloride and palladium chloride. Gold Chloride and Platinum Chloride are very expensive and hard-to-obtain compounds. Experimenting, with these compounds, is irrational because substantial quantity will be required. On the other hand, Anthotype is a process that uses natural tincture of plants the results of this process is unpredictable and also the images of Anthotype fade over time. Looking into the silver processes, Kallitype and Van Dyke processes employ Silver nitrate as a light sensitive agent and silver nitrate is extremely corrosive. Experiment with extra caution is suggested. Although, silver nitrate is not as expensive as gold and platinum, but the cost is quite relatively high. Lastly, Cyanotype is known as a blue print. Cyanotype is the most appropriate process to use for experiment because of the accessibility of the chemicals and as Christopher James mentions cyanotype as, "the absolute simplicity of the nearly fail-safe technique and chemistry and the likelihood of making successful print within a very short time." (2009: 148)

Therefore, cyanotype is selected to be used in the experiment along with Van Dyke. These two processes work comparable. While cyanotype is modest, Van Dyke is slightly more complicated and temperament. However, both processes are ferrous iron-based and the chemicals are available locally.

Furthermore, experimenting with fabric fibers employs more amounts of chemicals due to the absorbency abilities of fabrics. Therefore it is reasonable to use modest chemicals because a large amount will be required for the experiment.

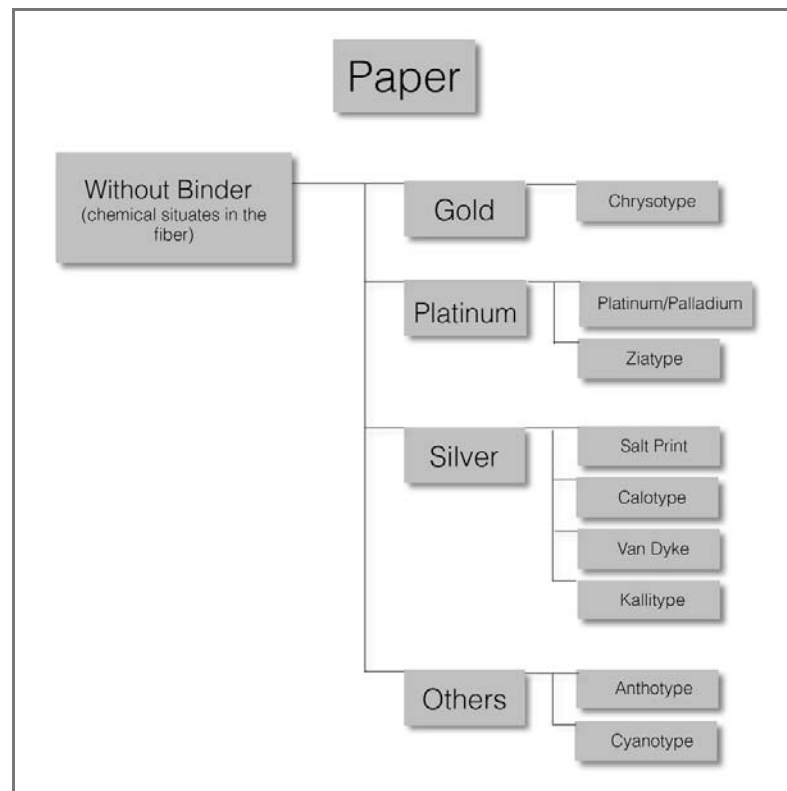


Figure 56 Processes grouped by types of chemicals

The conclusion of the chosen processes of Cyanotype and Vandyke:

1. The chemicals are low to moderate in toxicity. Since the darkroom is not set up to work with high toxic chemicals, it is important to be cautious and aware of safety.

2. The chemicals are available locally and are moderate in price. For the experiment, a large amount of chemicals are needed because fabrics are more absorbent than papers.

3. The results are more effective.

### 1.2 The study of the fibers.

Recommended used for historical printing is cellulosic natural fiber, preferably cotton. Because cellulosic fibers are superior in terms of absorbance, the light sensitive sensitizers need to be positioned in the fiber. Therefore, the variety of natural fibers is relevant such as hemp, linen, etc. The durability of fabric fibers is the benefit because of the requirement of the long water process.

Cellulosic Natural fibers are plant fibers. “Cotton is one of the most of all natural fibers.” (Hallett & Johnston, 2014: 52) There are also varieties of cotton and cotton blends for example cotton gauze, cotton twill, etc. Like other cellulosic fibers, cotton absorbs moisture and liquid fairly well. This quality is suitable for printing historical processes when the chemical has to situate in the fibers. Another cellulosic fiber that has excellent absorbency is linen. “Linen fiber is hygroscopic, absorbing up to 20 percent of its weight.” (Hallett & Johnston, 2014: 49) Other plant fibers are hemp, ramie and jute.

Prior mentioned of [blueprintsonfabric.com](http://blueprintsonfabric.com), this site provides cyanotype treated cotton, linen and silk. However, there is no further exploration on other types of natural fibers.

Initially, local natural fibers are intended to be explored. However, obtaining local fibers are not as accessible as planned. After visiting “Thailand Textile Institute” and talking to Mr. Sanan Boonla, Thailand textile institute expert, it is found that not many of the fibers are woven into textile. They are mostly in the forms of yarn. There are some manufacturers that produce cotton and hemp but they are not able to supply small amount for the experiment.

However, the experimented fabrics are divided into 2 groups; first group is generic fabric that can be found in common fabric stores, second group is local natural fibers from Thailand local wisdom.

### **1.3 Development of style**

1.3.1 From the study of photography history, I was drawn to the enigmatic of the early captures. For example, the first picture that was recorded by Nicéphore Niépce, the simplicity of the mechanism causing the image to look unclear. The ambiguity intrigues me and draws me into the image. But at the same time, I can imagine the excitement of seeing the picture recorded for the first time. It reflects the genuineness without artificiality.

1.3.2 Irving Penn was one of the most influential photographers of the 20<sup>th</sup> century. This case study is focused on Irving Penn’s choices of photographing subjects and his application of old photographic process in contemporary photographs.

Choices of Irving Penn's photographs can be concluded that he focuses on one simple object at a time and his objects are the ones telling the story. He always photographs with plain background to lessen distractions. Penn's personal work is the opposite of his assignments.

Irving Penn once said, "Photographing a cake can be art." I believe he implied that art is everywhere, depending on how we perceive it. Penn had the ability to see art in anything of any forms regardless of the normal perceptions of beauty. "Elegant women, still life objects or substances in decay: all were beautiful to Irving Penn. Mr. Penn taught us the angles and possibilities for finding beauty in our everyday lives." (Miyake, Issey, Irving Penn and Issey Miyake: Visual Dialogue)

However, Irving Penn saw the beauty in the dilapidation. Therefore, his choice of objects suggested different emotions. Some may find it disturbing. Richard Salkeld states of Penn's sophisticated models and the native people that; "The contrast between the cool sophistication of the method and the ritual-based costume is startling and disturbing" (2014: 102)

1.3.3 Lillian Bassman's captures of women are awe-inspiring. The blurriness high contrast images lay mystery and ambiguity. With Bassman's strength of envisioning makes her undeniably admirable. Dropping the small details and leaving only enough for the viewers to interpret her images, her photographs are different in many ways. She has pushed the boundaries of idiosyncrasy of photography.

1.3.4 Georgia O'Keefe's paintings of flowers are captivating. Like Lillian Bassman, O'Keefe is a head of her time. But on the other hand, O'Keefe's paintings pay attention to enlarge the small segments of the objects. However, it creates new shapes and forms of reality.

#### **1.4 The study of aesthetic theory**

From the study of the aesthetic theories, it is concluded that art is subjective. Although, there are many theories in the judgment of aesthetic, but it is as Morris Weitz states, "the theory of art is forthcoming." (Weitz, 1956) However, the fundamentals of art creations are skills or experience. Artists possess experience

depending upon their liking, their taste, their practice, etc. With their possessions, they initiate pieces of work that express themselves and show who they are.

## 2. Experiment and practice

With data collections of different historical photographic processes, conclusion of the processes to be used in the experiment will be the processes that can be printed on fibers without binders. Therefore, the availabilities of the chemical are also considered, some processes require gold and platinum compounds, which make it irrational to experiment on such exclusive compounds.

The most appropriate processes found are cyanotype and van dyke, which are low to moderate in toxicity. Although, chemical like silver nitrate is extremely corrosive and very expensive but it is possible to work with extra caution.

Experiment is done as follow:

### 1. Preparing negatives.

Before printing, negatives have to be provided. The size of the print will be the same size as the negative due to the requirement of this type of printing that is contact printing. The researcher would like to persist the traditional photographic as much as possible, hence, the traditional film is selected. The sizes of the film that the researcher can obtain are 4x5 inches and 8x10 inches. Since, the films are hard to find and are expensive, testing will be done in the smaller size of films only. Preparing negatives are done in the following steps.

#### 1.1 Recording the negatives

In the photographic term, this will be capturing pictures on the film by using camera. The film size will determine what kind of camera to be used. In this case, the researcher chooses to work with 4x5 films type Tmax 100 by Kodak, therefore 4x5 field camera is used. "A choice of camera affects how people react. A large camera may appear intimidating and invite a serious formal response." (Salkeld, 2014: 38)



Figure 57 Large format field camera, film and film holders

Traditionally, before capturing the real film, Polaroid, the instant film will be an aid for the right exposure. Since, the advance technologies took over the film industry, Polaroid was out of business. It is impossible for the researcher to obtain the Polaroid. Therefore, the exposure is determined by using the light meter along with the experience of the researcher in order to provide the right negative density.

Loading of the negatives into the film holders has to be done in total darkness. One holder can take two sheets of negatives, one on each side.



Figure 58 Magnifier 4x (Lupe) and Light meter

In a large format camera, the image appears upside down on the ground glass in which we use for focusing. The ground glass is the same plane as the film in order to get the right sharpness on the image when we insert the film holder. In an aid of focusing, a 4x magnifying Lupe is used to correct the sharpness and the dark cloth helps getting rid of distracting ambient light.



Figure 59 Dark cloth helps getting rid of distracting ambient light while focusing. The image appears upside down on the ground glass

After finding the right sharpness, the focusing knob will be locked to the position before inserting the film holder. Then the film is exposed by letting the light in at the right amount of time and aperture.

### 1.2 Developing the negatives

After exposing the film, we need to develop or process the film. Since it is a sheet film the processing is different from roll film. The researcher chose to use the method of tray processing. This process has to be done in total darkness. Four trays will be prepared prior to turning off the light. All the trays are arranged at 24 degrees Celsius. After turning off the light, emerging the sheet in the trays as follow:

1.2.1 Water: Presoaking the film sheet is a good start to get the water on the sheet evenly before emerging the sheet in the developer.

1.2.2 Developer: Kodak D76 is used for developer. From the manufacture recommendation for sheet film is full strength (no dilution from the solution). At 24 degrees Celsius, the processing time is 5 minutes. While processing, the tray needs to be agitated constantly, also sheet film needs to be flipped every 30 seconds.

1.2.3 Stop bath: Water is used to stop the reaction of the developer. Sheet film stays in this tray for 1 minute with agitation.

1.2.4 Fixer: Ilford Rapid Fixer is used 1:4 dilution with water. Fixing process takes 6 minutes. Light can be turned on after 2 minutes of fixing.

After fixing the film is no longer light sensitive since the chemical is already washed off. Next step is to wash the fixer off the film by leaving the film in running water for 20 minutes. The last step is to coat the film with Photo Flo solution and hang dry.



Figure 60 The developer, stop bath and fixer are prepared at the same temperature. Processing each tray in total darkness. Washing off the fixer for 20 minutes in running water. Hang dry



## 2. Preparing chemical for historical photographic processes.

### A. Cyanotype Process

Cyanotype formula varies from different sources. For example, Original Herschel's formula (1842) calls for:

Solution1: 20% Ferric Ammonium Citrate and

Solution2: 16% Potassium Ferricyanide

When mixing photographic chemicals, percentage means gram (weight) per 100 milliliters of distilled water. In this formula, 25% of Ferric Ammonium Citrate means 25 grams of chemical per 100 milliliters of distilled water.

While in 1990s, Mike Ware's\* "The Traditional Cyanotype Process" shows the formula of:

Solution1: 25% Ferric Ammonium Citrate and

Solution2: 10% Potassium Ferricyanide

The formulas are differentiated depending upon the photographers' preferences. The results may vary in terms of exposure times, contrast and the intensity of Prussian blue. However, these differences are not significant. Therefore, in 1995, Mike Ware had developed new cyanotype formula that shortened exposure time significantly. He employed Ammonium Iron (III) Oxalate instead of Ferric Ammonium Citrate.

Mike Ware's new cyanotype formula (Ware, 1995: 74-81)

Ammonium Iron (III) Oxalate	30 grams
Potassium Ferricyanide	10 grams
Ammonium Dichromate	0.1 grams
Distilled water to make	100 Milliliters

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\* Mike Ware is a chemist and photographer, known for his work in alternative photographic processes. He had worked to improve Platinotype, Cyanotype and Chrysotype. A Kodak Photographic Bursary (1984) initially supported his research on printing in noble metals, which was recognized by the award of the Hood Medal of the Royal Photographic Society (1990), of which he was a Fellow, and by the Richard Farrand Memorial Award of the British Institute of Professional Photographers (1991).

Table 3 Comparison table between traditional formula and new formula

Traditional Cyanotype Formula	New Cyanotype Formula
1. Exposure time of about 20-30 minute.	1. Exposure time of about 2-4 minutes.
2. The two solutions of the formula have to be stored separately and mixed before actual coating.	2. All the solutions are mixed and stored in one bottle.
3. Ferric Ammonium Citrate is vulnerable to mold growth.	3. No chemical is vulnerable to mold growth.
4. The solution sometimes not well immersed in the fiber.	4. The solution situates in fiber more readily.
5. The chemicals are not particularly toxic.	5. The chemicals are highly toxic.
6. Less expensive.	6. More Expensive.

Obviously, there are more advantages of the new formula than the traditional formula. However, the formula that the researcher chooses to use is one of the varieties of the traditional ones. According to the low cost and the moderate toxicity of the chemicals, these allow the researcher to experiment the process on different fibers more effectively and more possible to develop these experiments into other usages.

The formula that is used for experiment:

Solution 1: 24% Ferric Ammonium Citrate

Solution 2: 12% Potassium Ferricyanide

### B. Mixing cyanotype chemicals

There are 2 solutions in this formula that will be mixed in 2 separate brown glass bottles. Storing the solutions separately, the shelf lives are approximately 6 months. However, if the 2 solutions are mixed, the shelf life is

approximately 3 months. Therefore, Ferric Ammonium Citrate will develop mold but it can be easily strained out with coffee filter.

#### Solution 1: Ferric Ammonium Citrate.

Ferric Ammonium Citrate appears in reddish brown or green powder. It is used as acidity regulator in food and in medicine to treat iron deficiency. Ferric Ammonium citrate is soluble in water. In making cyanotype, ferric ammonium citrate is reduced to ferrous ammonium citrate when exposed to ultra violet light.

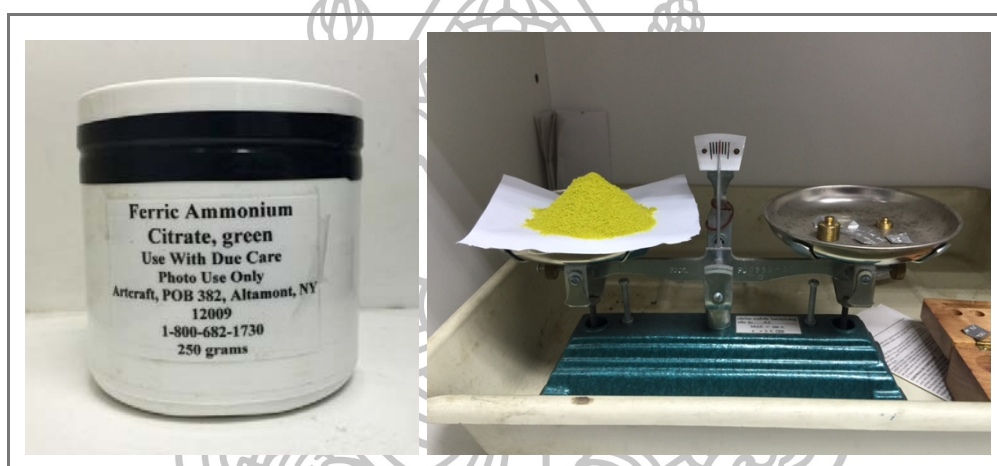


Figure 61 The green powder of Ferric Ammonium Citrate is measured before dissolving in distilled water

#### Solution 2: Potassium Ferricyanide

Potassium Ferricyanide is the substance that turns into Prussian blue when reacts to ferrous iron. The compound is orange-red in color, soluble in water and odorless. It is used in traditional blueprint method. In photography, it is used as an oxidizing agent to remove silver from negative and positive, it is also a bleaching agent for sepia toner. Potassium ferricyanide is also used in many amperometric biosensors as an electron transfer agent replacing an enzyme's natural electron transfer agent such as oxygen as with the enzyme glucose oxidase. It is used as this ingredient in many commercially available blood glucose meters for use by diabetics. (Wikipedia, 2015)



Figure 62 Potassium Ferricyanide is measured before dissolving in distilled water

Potassium Ferricyanide is measured 8 grams per 50 milliliters of distilled water. Both solution 1 and 2 are stored in brown glass bottles. It is important to put the labels on the bottles to identify the solutions and also put the mixing date to notice shelf life.



Figure 63 Solutions of Ferric Ammonium Citrate and Potassium Ferricyanide in separate bottles labeled and dated

### C. Preparing the surfaces

As recommended widely to use paper with cotton linters, the researcher started with cotton paper. The paper is cut to the appropriate size and marked the area to be coated. Other paper material like Japanese washi will follow the same procedure.

For fabric, it needs to be washed in warm water and let dry before cutting and coating, since some fabrics shrink after washing. This procedure is called sizing it will allow the fabrics to absorb the chemical more efficiently. While fabric is more absorbent than paper, the marking is not necessary because it is hard to control the direction of the chemicals emerging into fibers.

### D. Coating cyanotype chemicals

Coating the chemical needs to be done in the area that is away from UV light. Before coating the chemicals, we need to mix the two solutions in equal parts. It is convenient to use dropper to measure the solutions into the shot glass and stir well. The dropper is also useful to use for dropping the chemical onto the surfaces of the materials. After dropping the chemical, the Japanese hake brush<sup>\*</sup> (Jerry's Art Arama, 2015) is used to spread the chemical to cover the surfaces marked. After coating the chemical, hang the coated material dry away from UV light.

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<sup>\*</sup> Japanese Hake brush is an Asian style of brush with a broad, flat wooden handle. These brushes usually contain goat hair and are extremely soft. Historically, these brushes were used in Sumi-E painting to cover large areas, but now watercolorists of all styles employ these brushes.



Figure 64 Dropper, shot glass and Japanese Hake brush



Figure 65 Preparing the coating area: Cyanotype solutions, shot glass and dropper, Japanese hake brush



Figure 66 Using dropper to drop the chemical on the surface. Spreading the chemical with Hake brush

### E. Printing Cyanotype

Cyanotype chemical is sensitive to UV light so exposing the coated paper or fabric has to be done with sunlight or other UV light sources by contact printing<sup>\*</sup>. Negative is pressed tightly on the coated material in between 2 plates of clear glass. Then the plates are brought out to the sunlight. The exposure times are varied, depending upon the intensity of sunlight, the chemical (each batch of chemical can give different exposure time) and the amount of the chemical on the surface (each coating is different depending on the absorbent abilities of different surfaces). A sunny day, the exposure is normally in between 15 to 20 minutes. To get the right exposure time, test will be carried out prior to making an actual print. This is called making a test strip.<sup>\*\*</sup> Test strip is done the same way as the conventional darkroom printing.

The UV light reduces iron and turns the areas that are exposed to the light into steel gray color.



Figure 67 Exposing the image by putting the contact plates in the sunlight

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<sup>\*</sup> Contact printing is a photographic printing by pressing the film negative tightly to the light sensitive material. The result image is the same size as the negative.

<sup>\*\*</sup> Test strip is done by using partially blocking the light from the light sensitive material, then open the area blocked with the same consistent time. Test strip is used to determined the right exposure time for each negative and each type of paper.



Figure 68 Test strip is done with the increment of 5 minutes each.



Figure 69 After exposing to the UV light, the exposed areas turn a steel blue color

#### E. Developing cyanotype print

Processing cyanotype print simply uses water. The exposed print is put in the tray with running water for 15 to 20 minutes, depending on the types of the material; thicker material could take more time to wash. This process is important if the chemical is left unwashed it could get darker if it is exposed more to



sunlight. After washing, immerse the print in diluted 3% hydrogen peroxide and pat dry with paper towel before hanging the print to dry. Hydrogen peroxide will restore the intensity of the blue color that is washed off in the water process.



Figure 70 Exposed material is washed in running water

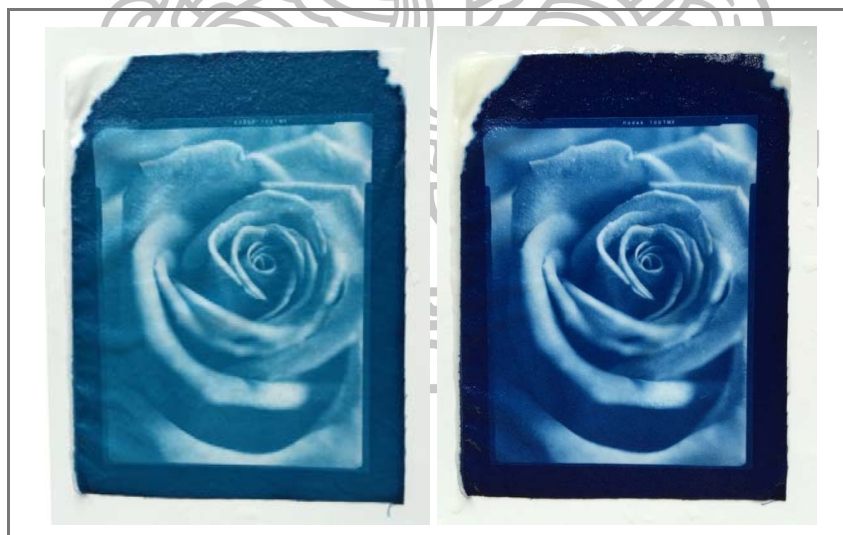


Figure 71 Left: after washing for 15 minutes. Right: Hydrogen peroxide increases the intensity of the color

## F. Van Dyke Process

Vandyke brown first patented in German by Arndt and Troost in 1895. The original formula is as follow:

Sensitizer:

27% Ferric Ammonium Citrate

4.5% Tartaric Acid

12% Silver Nitrate

Fixer

5% Sodium Thiosulphate

By using Silver Nitrate, it is essential to fix\* the image. In fixing process, 5% Sodium Thiosulphate is used, it is a less concentrated fixer solution than regular fixer.

Solution 1: Ferric ammonium Citrate

As use in cyanotype, ferric will turn into ferrous when reacts to ultra violet light.

Solution 2: Tartaric Acid

Tartaric Acid is white crystalline powder. It is used in pharmaceutical to improve the taste or oral medications. Tartaric acid is in a group of sugar acid that can occur naturally in plants such as tamarinds, bananas and grapes. It is a food additive to give a sour taste, if mixes with baking soda can act as a leaving agent. Tartaric acid also is found as an acid in making wine.

Solution 3: Silver Nitrate

Silver nitrate is a precursor to other silver compounds like silver halide or silver fluoroborate. In medication, silver nitrate is used to treat warts but seldom leaves darken spots on skin. Silver Nitrate appears colorless and odourless. It is sensitive to light and is used widely in photography.

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\* To fix photographic image means to stabilize the image by removing unexposed silver nitrate from the image.

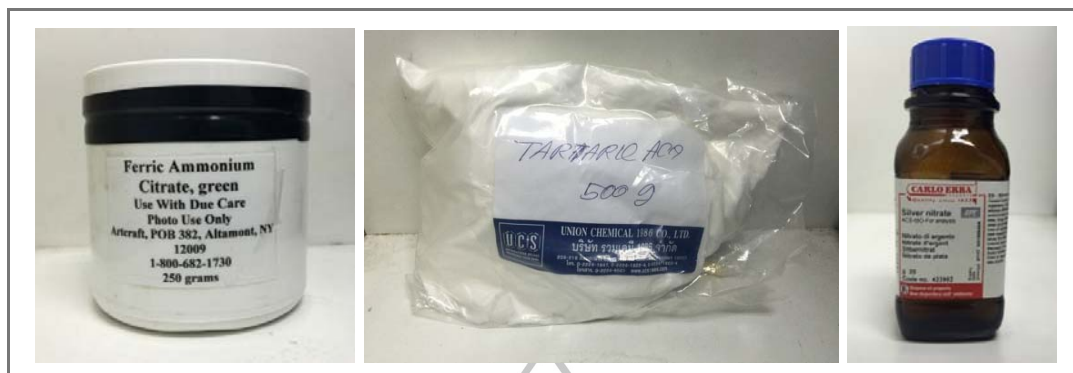


Figure 72 Van Dyke Chemical: Ferric Ammonium Citrate (green), Tartaric acid and Silver Nitrate

Fixer: Sodium Thiosulfate

Sodium Thiosulfate is sometimes called Sodium hyposulfite or “hypo”. Discovered by Sir John Herschel in 1830s, It is used as a fixer in photographic silver-based process. In medication, It is used as an antidote to cyanide poisoning, Thiosulfate serves as a sulfur donor for the conversion of cyanide to thiocyanate, which can then be safely excreted in the urine. (Wikipedia, 2015)



Figure 73 Sodium Thiosulfate appears clear crystalline

### G. Mixing Van Dyke Chemicals

1. Ferric Ammonium citrate is measured 13.5 grams before putting in 50 milliliters of distilled water. Stir to dissolve the substance and store it in brown bottle.

2. Dissolve 2.3 grams of Tartaric acid in 50 milliliters of distilled water. Store in brown bottle.

3. Dissolve 6 grams of Silver nitrate in 50 milliliters of distilled water. Store in brown bottle. Extra caution is exercised since liquid silver nitrate is extremely corrosive.

Mix all the solutions in the same amount in the same bottle as needed one day before coating. Keep the rest separated to extend the shelf life.

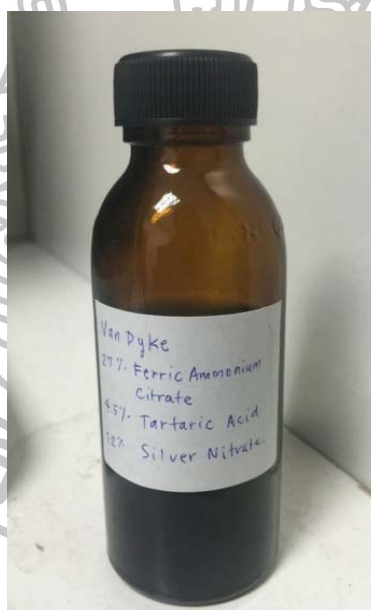


Figure 74 Van Dyke solution is ready to be used in brown bottle

Fixer is mixed separately before processing the print. The researcher mixed the amount of 600 milliliters; therefore, sodium thiosulfate was measured 30 grams.

### H. Coating and printing Van Dyke

Coating chemicals is done the same way as cyanotype. However, Van Dyke solution is more sensitive to light than cyanotype. It is recommended to proceed this procedure in the darkroom with safe light (red light). The solution is dropped on the surface with the dropper and spread it with Hake brush. It is wise to have a designated brush for each process to avoid oxidation.

Printing Van Dyke is also contact printing with UV light. The negative is pressed on the coated material and put in between two plates of glass before putting out in sunlight. The exposure times also vary depending upon the intensity of the sunlight and the chemical coated. Van Dyke solution is more sensitive to light than cyanotype; therefore, the exposure time is less, approximately 8 to 10 minutes on a bright sunny day. Certainly, testing will be carried out to find the right exposure. The exposed image appears orange brown.



Figure 75 Van Dyke test strip is done in 3 minutes increment. The exposed image before processing appears orange brown

## 2.1 Experimenting different fibers.

The fibers for the experiment are divided into 2 groups.

2.1.1 Generic natural fibers are the fibers that are available in regular fabric stores.

Starting from the basic, cotton paper is used. Cotton paper is the most reliable material to print on as recommended widely. Then selections of other types of paper that are different is determined by the following factors:

1. The papers have to be able to absorb the chemical.
2. The papers have to be able to withstand long water processes.
3. The papers have the least amount of other chemicals that can interfere with the solutions.

Asides from paper, some fabrics also have the same qualities of paper, like cotton, that has the absorbent ability as well as other types of natural fibers. In this phase of the research, different fibers are prepared for testing including cotton, hemp, linen and silk. These fibers are divided into 2 groups: one is generic natural fiber that is available from general fabric stores and the other group is the natural fibers from Thailand local wisdom.

The first group of fiber consists of cotton, cotton with hemp, linen and ramie. These fabrics are found in the fabric district of Bangkok called Sampeng. According to the storekeeper, they are imported from different countries. They are manufactured in mass, bleached and white in color. Before initial use of the fabric, it is recommended to rinse the fabric preferably in warm water to get rid of the starch. Additionally, some fabrics shrink in the warm water at first wash.

Second group of fiber is natural fibers that are made locally. First few pieces are obtained from remote provinces. However, acquiring fabric from local wisdom is difficult. Some are only available in yarns. There are some manufacture but the fabric are only available in wholesale. Obtaining these types of fabric is done by contacting Thailand textile institute. Small samples of organic cotton hemp and some cotton blend with pineapple fibers are provided by the textile expert.

### 3. Develop unconventional photography

#### 3.1 Artist's experience; the practice of historical processes.

Based on the researcher's background of platinum and palladium printing in 1998, the desire to study other historical processes is occurred. Most especially, when the world of photography turns digital, currently, printmaking relies on technology. The value of hands-on processes is disappearing. With the force of advanced technology, it is important to look back and appreciate how things are made in the past. Photography is one of the fast growing technologies that has significant change. The old processes are forgotten. Many photography business of the 20<sup>th</sup> century went out of business such as Kodak and Polaroid, only those who develop digital technologies are still standing. The popular silver gelatin of the 20<sup>th</sup> century is becoming rare. Photographers in this era are trained not only how to use the camera but also how to master themselves in the darkroom. Silver gelatin culture, that rules the period, is not recognized anymore in the 21<sup>st</sup> century.

Therefore, the development of this research is based on the researcher's experience in photography, the historical processes in particular. From the theory of John Dewey, "Art denotes the process of doing and making." (Dewey, 2005: 48) Historical processes are rare and difficult to some extend. The dedication is needed for this kind of practice. The researcher chooses to use old conventional photography because of the familiarity of the processes. The old processes require hands on experience. The large format camera is selected because of the film size that is critical to make contact print.

#### 3.2 Photographs as a representation of the reality

Irving Penn is the photographer artist that the researcher selects for case study. From studying Penn's work, it is found that Penn has 2 sides of works, one is his sophisticated commercial assignment and the other one is his down-to-earth personal work. Both are different ends of the spectrums. If the idea of "photographs are the representation of the reality" applies on Penn's work, his sophisticated photographs are the reality of the materialistic world, the world that is deceptive and artificial. On the other hand, his personal work is realistic in the

truthful way. Penn has seen the reality profoundly. Penn's work teaches others to look at the subject beyond its appearance.

Initially, the researcher develops the first series by observing the appearance of the roses, from blossoming to withering. (figure 3.34) This series is printed on watercolor paper. The negatives are painted to add more textures to the appearance and more ambiguity to the interpretation. Originally, the concept is the reality of time for the being of life, inspired by Irving Penn's series of memento mori, the symbol of death, as Colin Westerbeck refers. (Westerbeck, 1997: 15)



Figure 76 Images of the same rose captured three different days to observe the changes through time

Continued from the first series, the second sets of photographs are the stages of wilting roses, in which some of them fully blossom and losing one by one petals but some of them just droop downward without opening up.





Figure 77 Last stages of the roses

It is intriguing to capture the beauty of one subject's life. This is true to the fact that photographs are representation of reality not only visible reality but also the reality in a more profound way that photographs represent.

The next photograph shows the same concept of life. But the subject is changed from roses to amaryllis. (figure 78) This image is more simplified to be just the beginning and the end. Still the concept remains exploration of time in realistic life.



Figure 78 The beginning and the end

From the beginning photographs, the flowers are observed because they represent vulnerable life. Flowers are delicate and fragile. In the researcher's opinion, flowers portrays femininity. Each type of flower is unique in shapes and forms, not to mention the scent, one of the elements that makes flowers so seductive. They suggest many interpretations which make them intriguing.

### 3.3 The rearrangement of forms

While working with 4x5 film, the limitation of size becomes an obstacle. Four inches by five inches size is small. In order to make the image larger, the researcher composes the images with more than one negative. Each series of photographs consists of two or more frames to tell story. From the experiment on the newsprint, the exploration is done by integrating the text with the image.



Figure 79 Cyanotype on newsprint collage

This rearrangement of the images creates new image and increases the size. In the middle of this collage, the texts appear “We are trying to focus on the thing we can do.” The message is clear and complimenting the researcher’s print making processes. The newspapers used are collected from London Tube. They are left in the train from London commuters. This relates to Penn’s trash series but instead of using trash as a subject, trash is used as a material.

#### 4. Development of style to create unconventional photography summary

From the study of history of photography and selected artists, it is concluded that certain styles and characteristic are observed. The inspiration is drawn from this uniqueness of each artist from the past.

Table 4 Styles of photography that are accumulated from the study


Source	Character	Pictures
1. Observation from Historical Picture.	The photographs are done with simple mechanism; the crude quality is inspected as charming and original. The soft edges of light against shadow makes the photograph obscured, however, it is an accomplishment in the photographic form in the early era.	

Table 4 Styles of photography that are accumulated from the study. (continue)





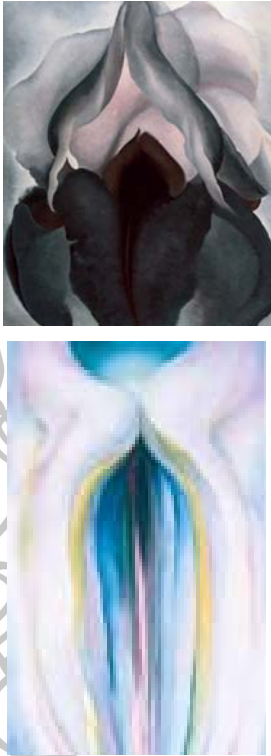
Source	Character	Pictures
2. Irving Penn “Trash series”	Irving Penn carefully records the physical details of the object of his choice. He photographs trash and remains in the most simple way on the plain background and no other elements. He lets the object speak for itself. He presents the beauty of photographic art form through the truth of physical detail reality.	 
3. Lillian Bassman's women	Lillian Bassman's vision of photography is different. She believes in something more than just straight photographs. Manipulations of photographic surfaces transcend her images to another level and create the new meaning of photographs.	 

Table 4 Styles of photography that are accumulated from the study. (continue)

Source	Character	Pictures
4. Georgia O'Keefe's Flowers	One of Georgia O'Keefe's quotes – “ I decided that if I could paint that flower in a huge scale, you could not ignore its beauty.” Her intention of painting flowers initially to show the beauty of the flowers by painting them in segments and magnifying them in a bigger scale and cropping them in certain ways. However, the interpretation is led to different contents of controversial.	

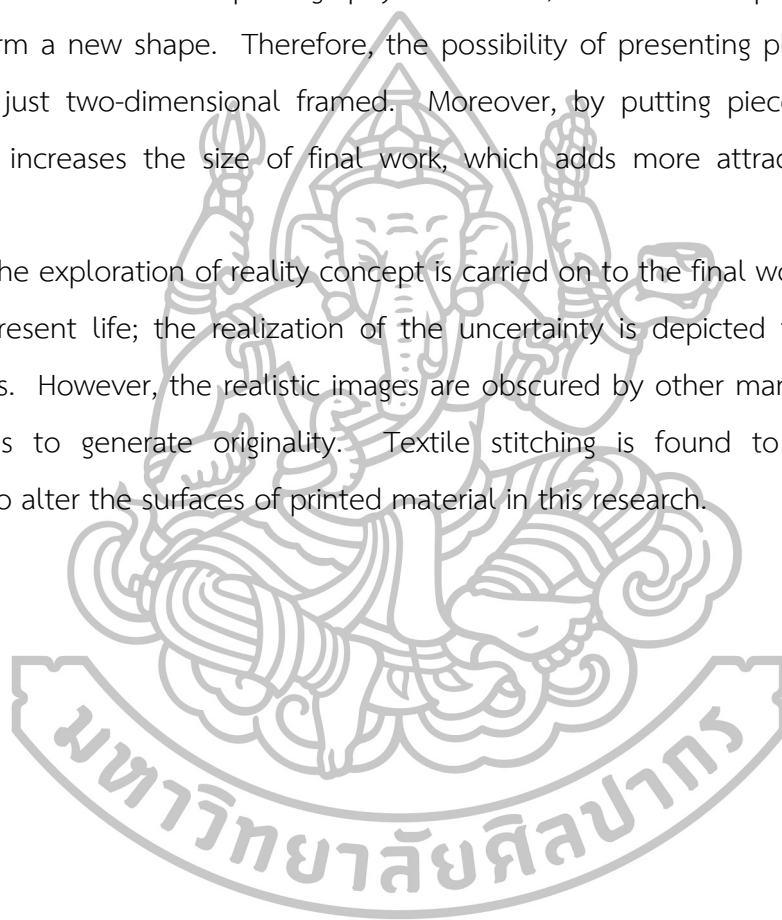
## 5. Summary

The study of photography history leads to achieve the right and appropriate processes for the final creations. The selected processes are suitable to use on fabric, in terms of the way the chemicals situate in the fibers and also give effective results.

The study of artists for inspiration is to find the originality for this research. Irving Penn gives significance to unwanted objects. Lillian Bassman diversifies the visual of photographs. Georgia O'Keefe has a bold control of lines, colors and forms. From this information, the researcher applies them along with her intuition for creating unconventional photography.

The next chapter, the final results of experiments are recorded and explained. Therefore, the final pieces of photographs are developed by using the results of the experiment on fibers. Fabric has more flexibility than paper, so that expands the possibilities of unconventional idea. Unlike paper, fabrics can be stitched and can be scrunched up. These techniques can be applied and developed into a different dimension of photography. Moreover, stitches fabric pieces together can also form a new shape. Therefore, the possibility of presenting photographs is more than just two-dimensional framed. Moreover, by putting pieces of images together, it increases the size of final work, which adds more attractions to the image.

The exploration of reality concept is carried on to the final work. With the flowers represent life; the realization of the uncertainty is depicted through their appearances. However, the realistic images are obscured by other manipulations of the surfaces to generate originality. Textile stitching is found to be suitable technique to alter the surfaces of printed material in this research.



## Chapter 4

### Results and evaluations

In this chapter, there are conclusions and the results of the study and the experiment. The study shows different types of historical processes. Each process has its own uniqueness and certain degrees of difficulties. Despite of the resurgence of these processes, they are still obscurely practiced around the world, due to many factors such as the harmfulness of the chemicals, the high-cost supplies and the devotions. With the evolution of the digital era, the printmaking methods are more convenience and instant. However, photographers with traditional practice background believe that digital prints are nothing compare to traditional photographic printing. The continuous tones of film can never be reproduced by digital technology.

In photography history, printmaking processes can be separated into three different eras. First, historical processes in the 19<sup>th</sup> century, the chemicals are hand-mixed and applied on different flat surfaces like glass plate, metal plate and paper. It is a handmade photography era. Second, in the 20<sup>th</sup> century, the silver gelatin, commercialized photographic paper is a mainstream. This makes photography printing more convenience by cutting the processes preparing the plates and chemicals. However, it is still involves labor in a smaller degree than the past. Third, the digital age of 21<sup>st</sup> century, with high technology machines takes over human effort; the photographic printing can be done more instant by printers. Each printing technique gives different attribute to the images due to the types of surfaces and the types of printing. See figure 76, in the figure shows how images situate on fiber of each printing types. Most of historical processes have the chemical imbedded into the fiber, the images weds in the fiber. On the other hand, silver gelatin and digital printing, the images stay on the surfaces on different binders.

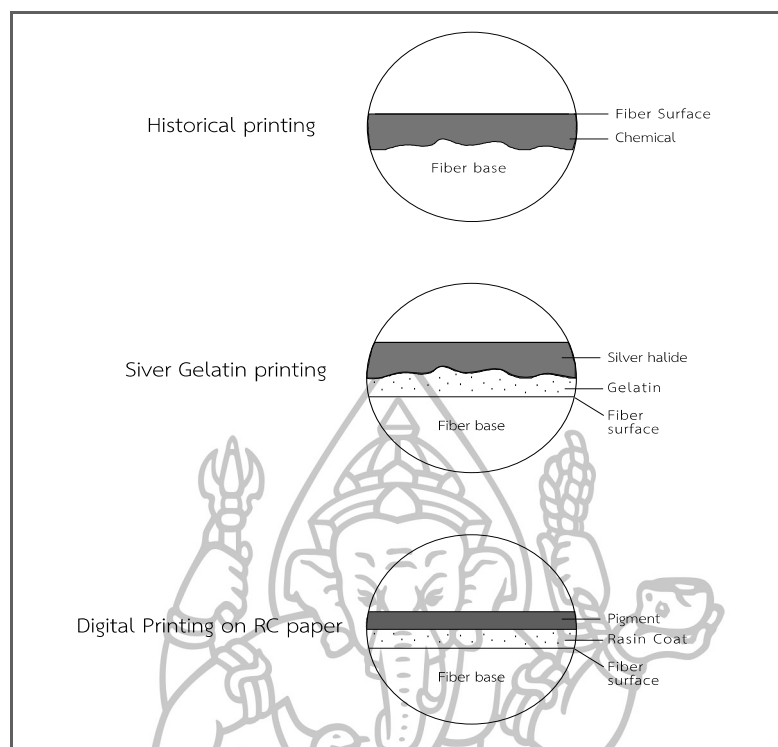


Figure 80 Section of layers on fibers

Therefore, with different characteristic of historical printing, when the image is imbedded in the fiber, it gives an intimate quality and aesthetic. “The photochemical takes place in intimate contact with all the substances that are contained in the paper. This distinguishes the iron-based processes from conventional silver gelatin printing.” (Ware, 1995)

### 1. Fibers experiment.

The fibers experiments are separated into 2 sections, which are generic fiber and organic fibers. The cyanotype process is tested on various fibers. On the other hand, Van Dyke process is tested on some of the fibers due to the limited amount of chemical.

1.1 The results of generic natural fibers and paper, generic natural fibers are available from general fabric store.



Table 5 The results of generic natural fibers



Fiber	Performance Results	Aesthetic Results
<p>1. Cotton Paper Cyanotype</p>  <p>VanDyke</p>	<p>Cotton paper: The paper works as well as watercolor previously used but it is slightly more hydrophobic which makes the coating process easy to control. A few drops of chemical can cover a 4x5 inch area. The paper needs double coats of chemical to get better density on the print. Cotton paper can withstand water process very well.</p>	<p>Deep blue color is accomplished well on cotton paper. The brushstroke is shown clearly, this gives a paint-liked image.</p>
<p>2. Japanese Washi</p> 	<p>Japanese Washi paper is the paper made from specific Japanese tree barks. Two types of Washi paper from the old town of Takayama, Japan are experimented. One is in a package of 50 sheets, very thin and translucent. This Washi paper is sometimes called Gampi, which is the name of the tree. It is very lightweight and tissue-liked. It only takes a few drops of chemical with single coat.</p>	<p>The image on Japanese tissue gives a delicate feel. The brushstroke is added to be one of the elements of the image. On the translucent piece, the image looks more delicate and less contrast due to the thinness of the paper.</p>

Table 5 The results of generic natural fibers (continue)

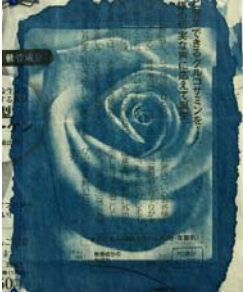
Fiber	Performance Results	Aesthetic Results
	<p>The water process can rib the paper if not careful. However, it can withstand soaking in water for the entire process.</p> <p>The other one is sold by sheet, thicker and more yellowish. It is a handmade paper. A few drops of chemical can cover a 4x5 inch area. The absorbency ability is similar to cotton paper. Due to its lightweight, only single coat is required.</p>	
<p>3. Newsprint</p> 	<p>Newsprint is a low cost paper widely used for newspaper and books. It is made from wood pulp. Newspaper is lightweight but can withstand the water process very well. The absorbency ability is similar to cotton paper. Due to its lightweight, only single coat is required.</p>	<p>Newspaper is chosen to test because it is more interesting with the texts, which add more character to the paper itself. The texts become one of the elements as well as the rough edges from the breeding effect of the chemical through fiber. The blue color is more faded than other types of papers.</p>

Table 5 The results of generic natural fibers (continue)



Fiber	Performance Results	Aesthetic Results
<p data-bbox="300 492 593 524">4. Cotton 375 counts</p> 	<p data-bbox="612 492 1075 1487">Cotton fabric (375 counts) is very fine cotton used for beddings. The threads are woven tightly. The absorbency ability is more than cotton paper because the fibers are more fluff. The image is very fine and it shows the continuous tone of the negatives very well. When chemical is dropped on the fabric it absorbs fairly quickly make it harder to control the areas to be coated. The chemical goes through the other side of the fabric; therefore only single coat is needed. This fabric needs more chemical than paper. This cotton is very easy to print and it gives superb print quality.</p>	<p data-bbox="1094 492 1391 1375">Luscious tones are presented obviously on this fine cotton because of the high counts of the fibers that allow the chemical to position in full capacity. The deep blue color adds more enigma and ambiguity to the image. Although, the blue color appears deep but the image feels warm and sentimental.</p>
<p data-bbox="300 1514 593 1545">5. Cotton Hemp</p> 	<p data-bbox="612 1514 1075 1886">Cotton Hemp is the cotton fiber woven with hemp. While cotton fiber is finer than hemp nonetheless hemp adds more textures to the fabric. This fabric is less absorbent than fine cotton because hemp fiber is tougher.</p>	<p data-bbox="1094 1514 1391 1886">With the surface that is rougher than cotton, the image is not as definitive. However, the brightness is great. The mood of image is cold and dry</p>

Table 5 The results of generic natural fibers (continue)






Fiber	Performance Results	Aesthetic Results
	<p>The chemical partially goes through the fabric. It is hard to make the chemical goes in the fiber evenly although the chemical breeds in the fibers rather quickly. Single coat is needed and more chemical applied.</p>	
<p>6. Linen Cyanotype</p>  <p>VanDyke</p> 	<p>Linen is made of stem fiber of flax. It is widely use for clothing. Fine linen has excellent absorbency. When chemical is dropped on linen, it breeds through the fiber rapidly and goes through the other side of the fabric. Linen has a superior quality of drying very fast. The quality of the print is good but the tone is duller than cotton.</p>	<p>Fiber of linen is not as fine as cotton, which allows it to be woven loosely. (Clive Hallett, Amanda Johnston, 2014: 51) The gap between the yarns is bigger than cotton; this quality affects the image to be faded and has a vintage attribute.</p>
<p>7. Ramie</p> 	<p>Ramie shares several visual characteristics of linen. (Clive Hallett, Amanda Johnston, 2014:62) However, ramie is lighter weight. The chemical penetrates quickly through ramie fiber. Since it is a lightweight fabric, little chemical is used.</p>	<p>Ramie is slightly translucent. It is similar to linen but not as tightly woven. The image is faded and distance.</p>

Table 5 The results of generic natural fibers (continue)

Fiber	Performance Results	Aesthetic Results
8. Cotton lawn 	Cotton lawn is a lightweight cotton, semi transparency and has smooth surface. The chemical penetrates quickly through the fiber. Small amount of chemical is needed. This cotton dries fast. The chemical stays in fiber evenly.	With its lightweight and smooth surface, it gives the image a solid look.
9. Cotton Batiste 	Cotton Batiste is lightweight but heavier than lawn. The chemical penetrates quickly through the fiber. Small amount of chemical is needed. This cotton dries fast.	The image appears on this fabric seem lifted. The tonality is delicate and gentle.

1.2 The results of cyanotype on Thailand local natural fibers, the fabrics are obtained from different places. Some are from remote provinces; some are given from the generosity of the textile expert from Thailand Textile Institute. The expert says that it is not easy to obtain such fabrics because the manufacturers do not want to give away samples and do not want to retail in a small amount. Other option is to obtain the yarns and have them woven into textile. However, some of the samples are given for this research in small amount.

Table 6 The results of Thailand local fibers



Fiber	Performance Results	Aesthetic Results
<p>1. Local Cotton from Lamphoon</p> 	<p>Local cotton from Lamphoon--This fabric was cut and prepared to be a plate mat. This fabric needs to be washed many times before use. The absorbance is not as good as cotton and linen. It is slightly hydrophobic. The chemical does not go through the fiber evenly; mostly it breeds through the weft yarn. It is suspected that the warp yarn is a synthetic blend. The quality of the print is poor.</p>	<p>The quality of the print is poor. However, it is aesthetically beautiful in its own way. The image appears nostalgic and wistful.</p>
<p>2. Organic cotton from Sakon Nakorn</p> 	<p>Organic cotton from Sakon Nakorn, in the province of Sakon Nakorn, north eastern of Thailand, some population still practice indigo dyeing, some weave there on fabric from natural fiber for indigo dye. The cotton fabric found was for indigo dyeing. The fabric's absorbency is very poor because it was prepared for being soaked in the liquid dye. The chemical does not penetrate well, mostly stays on the surface fiber. If this fabric is used for historical photography printing, a lot of chemical is needed and the soaking technique is needed. The print result is uneven throughout the surface.</p>	<p>The image printed on this fabric seems technically poor. Nevertheless, the melancholy and the ambiguity are appealing.</p>

Table 6 The results of Thailand local fibers (continue)






Fiber	Performance Results	Aesthetic Results
<p>3. Cotton Silk by Jim Thompson</p> 	<p>Local cotton silk from Jim Thompson, This fabric is woven from silk and cotton. Silk is a protein fiber so the absorbency is a lot lesser than cotton, however the cotton fiber of this fabric is very fleecy, that makes it more absorbance. It needs a lot of chemical and it is very hard to control because the chemical penetrate immediately. The chemical is hard to be washed off. It is very hard to print and the quality of the print is poor.</p>	<p>This special fabric is a blend of cotton and silk. The fiber of this cotton is extreme fleecy and fragile, therefore, it is woven with strong silk as a warp yarn. The image appears blotchy due to uneven absorbance. The image feels distance and ethereal.</p>
<p>4. Organic hemp Cyanotype</p>  <p>VanDyke</p> 	<p>This organic hemp is supplied by Thailand Textile Institute. It is in natural color of slightly brown. It is initially hydrophobic but once the liquid absorbs it goes through the fiber quickly.</p>	<p>Organic hemp has a natural unbleached color, so the highlight is in natural color. It makes the image appear organic and aged.</p>

Table 6 The results of Thailand local fibers (continue)

Fiber	Performance Results	Aesthetic Results
<p>5. Organic Cotton Hemp 80% cotton 20% hemp Cyanotype</p>  <p>VanDyke</p>	<p>Organic Cotton Hemp is also supplied by Thailand Textile Institute. It is in natural color. The fabric is fairly thick and needs a fair amount of chemical. It is initially hydrophobic but once the liquid absorbs it goes through the fiber quickly.</p>	<p>This fabric is also in natural unbleached color. The image looks organic and nostalgic.</p>
<p>6. Cotton Pineapple 80% cotton 20% pineapple</p> 	<p>Cotton pineapple has a rough surface. This piece of fabric has a blend of brown cotton. The threads are thick. It absorbs very well. However, the chemical is hard to be washed off.</p>	<p>This fabric has brown stripes from the cotton yarns that give the image more texture. However, the stripes can either be distraction or compliment to the image depending on the contents.</p>



### Results Summary

Cyanotype process is a much simpler process than VanDyke. The chemical of these processes are moderate in toxicity except for silver nitrate, which is extremely corrosive. Cyanotype gives a more consistent result. However, Vandyke is more sensitive to light. It takes approximately 8 minutes to print. On the other hand, cyanotype takes 20 minutes while printing from the same negative. Cyanotype renders better contrast. Both processes give unique monotone colors, which suggest different moods.

### 2. Creating unconventional photography

The final pieces of photographs are developed by using the results of the experiment on fibers. Fabric has more flexibility than paper, so that expands the possibilities of unconventional idea. Unlike paper, fabrics can be stitched and can be scrunched up. These techniques can be applied and developed into a different dimension of photography.

The images are composed of multiple negatives to increase to size. The subject in this photograph series is lotus. It is observed by capturing different angles of front and back to show the different appearances of a single object. (see figure 4.10) Some of the lotus is cut in sections to explore what lies beneath. (see figure 4.6) From the photography is a representation of reality concept; the researcher tries to depict the reality of the unobvious. As inspiration taken from Georgia O'Keefe's flowers, the researcher intends to show the details of the flowers in a different perspective as if the flower itself has transformed into a new type of flower.

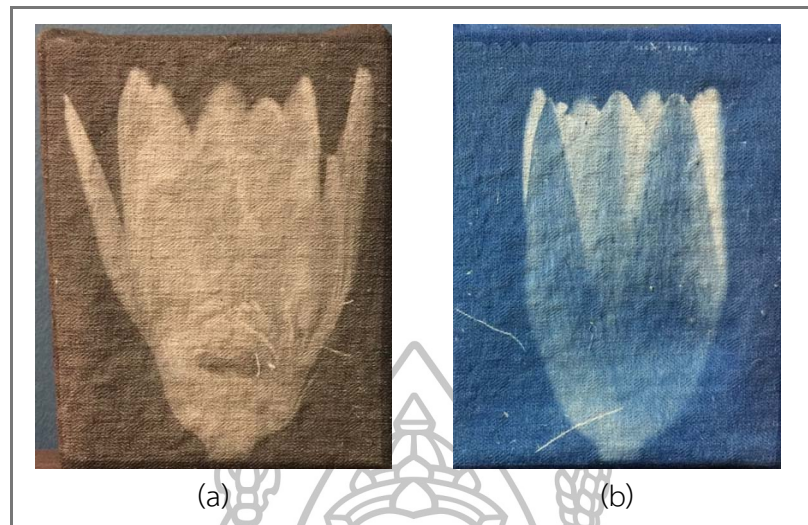


Figure 81 A section and a front view of a lotus.

(a) Section cut of a lotus (b) Front view of a lotus.

With the flexibilities of the fabric that are different from paper, fabric can be bundled up and released without being ripped. The experiment is carried out in trying different method to alter the appearances of the images. (see figure 83, 84) Lillian Bassman has altered her negatives in the darkroom to create unrealistic images. She uses bleaching agent to manipulate her surface of photograph to create an unreal vision that transcends the imagination beyond the photograph itself.

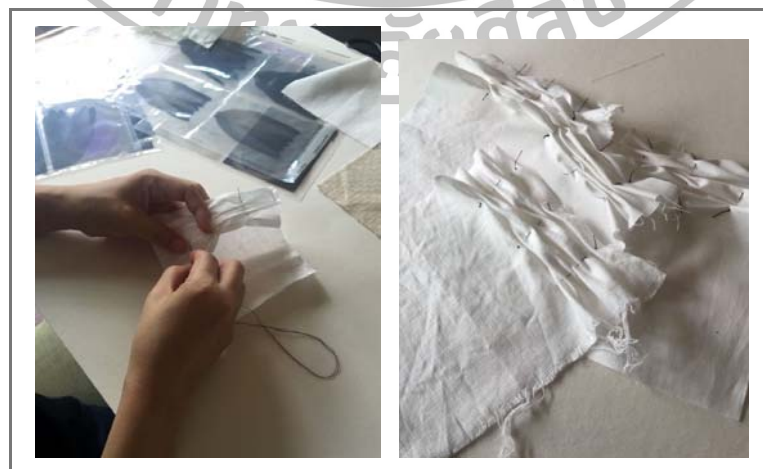


Figure 82 Bundling up the fabric before coating chemical



Figure 83 After printing on bundled fabric



Figure 84 Release the fabric and put them together



Figure 85 Images of the lotus, showing front and back

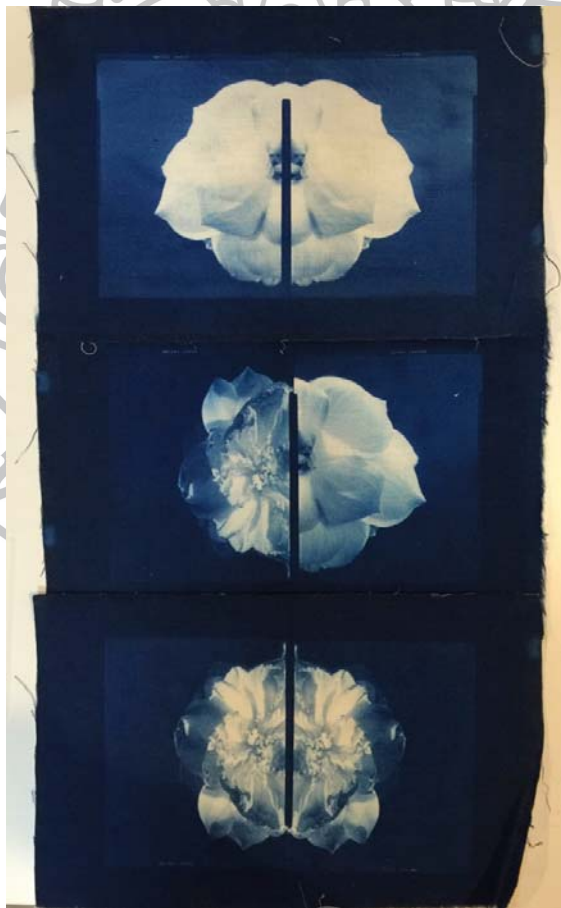


Figure 86 To increase the size of the image, multiple frames are put together to create new image

This series of photographs are printed on linen. The exposure time of each frame is 45 minutes due to the densities of the negative; the exposure time is higher than other negatives. Once the photographs are printed and processed. The stitches are added on to create more textures and depth.



Figure 87 Adding stitches to create more textures and depth

Shiny threads are selected to use to make it more interesting, however the monotone colors of thread is used for the subtlety. The simple pattern is added to the background to create more graphic look and also add more ambiguity to the interpretation of the image.

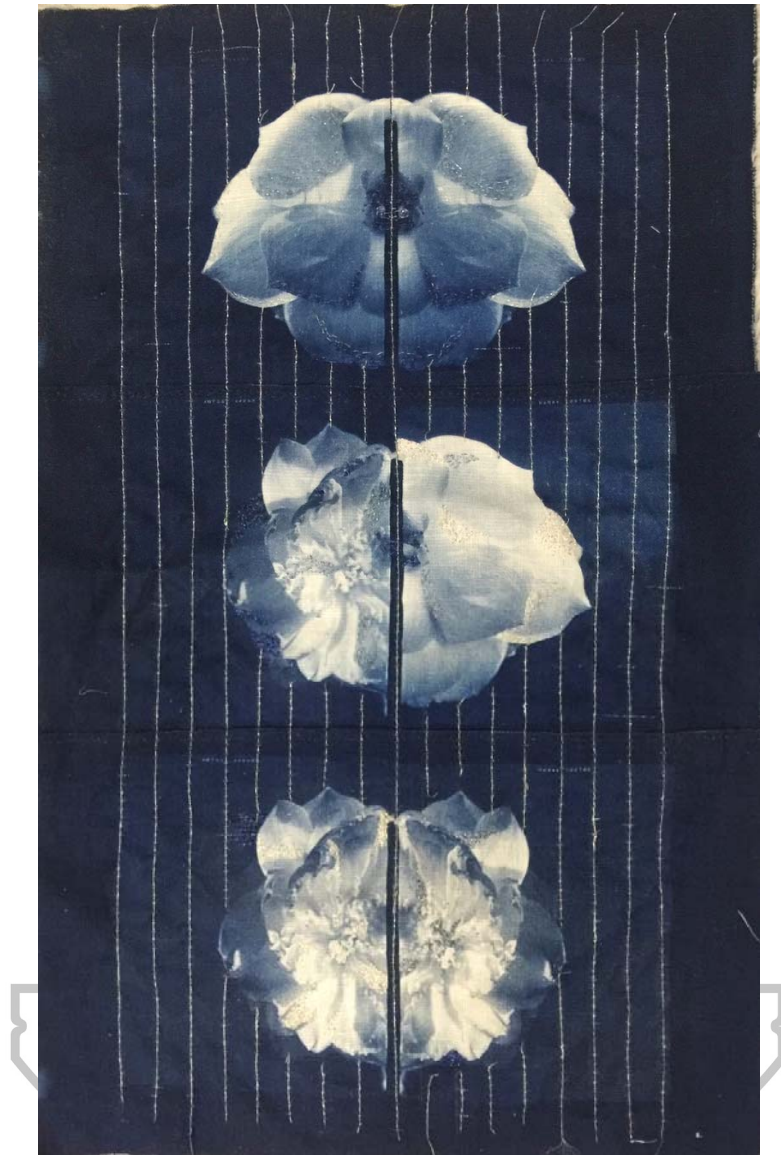


Figure 88 Finishing the image with stitches

The next piece is also composed with multiple negatives. This time the negatives are overlapped to create layers. The image of lotus that is cut in section, juxtaposed with its own shells. The image looks like the lotus is opening up in an unusual way to reveal what is inside.

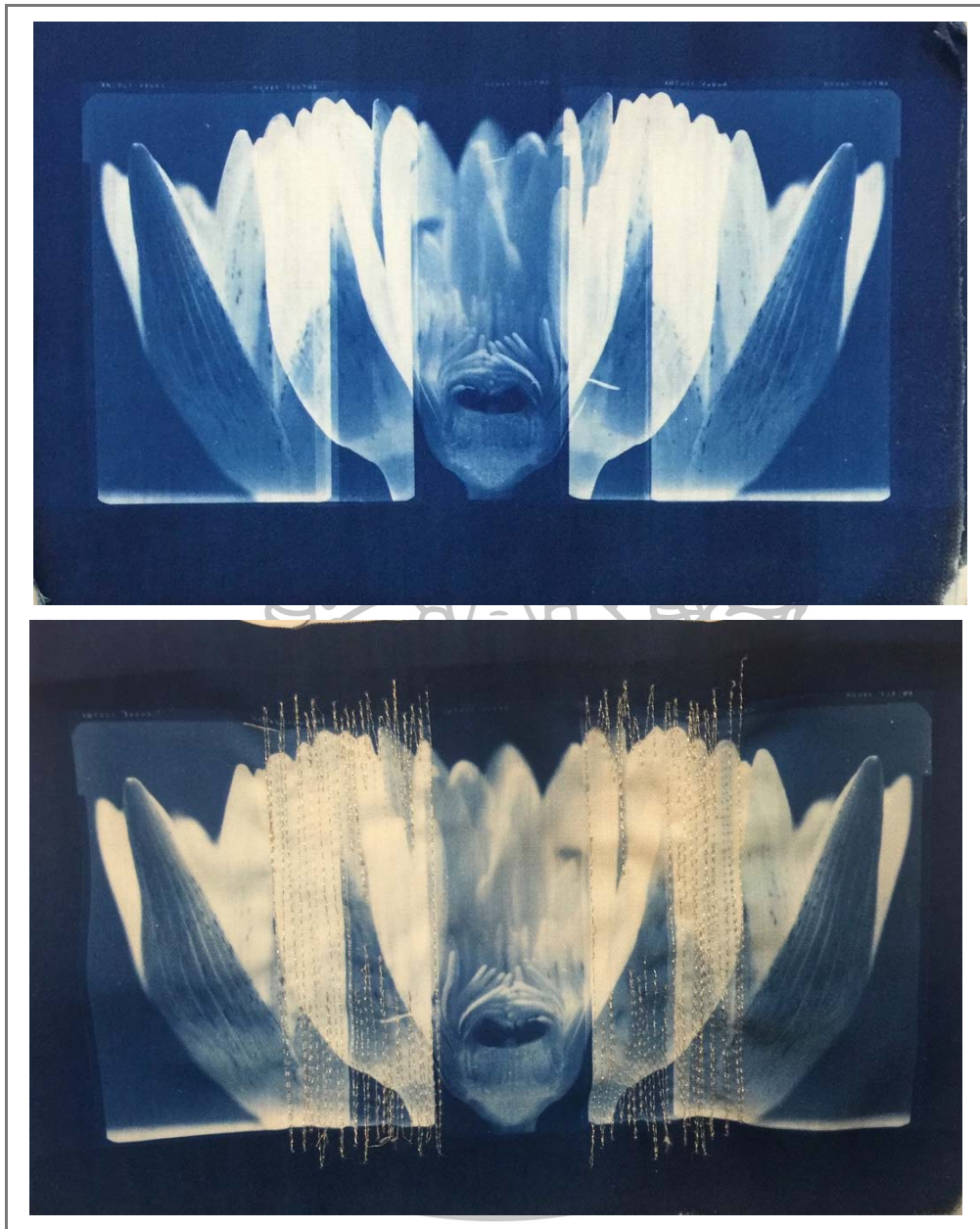


Figure 89 Multiple negatives are overlapping to create new image. Stitches are added

Another exploration of the flexibilities of the fabric, some of the images is captured only part of the subject. The contour stitches are added to continue the lines in the abstract way; which add more textures and ambiguity to the final appearance. (see figure 89)



Figure 90 Contour stitches are added

The presentation is also explored by adding dimension to the images. The skeleton wooden frames are made to create the next piece(s). Multiple images show different perspectives of the objects are printed and stitched together. One by one side, the wooden frames are covered with the images.



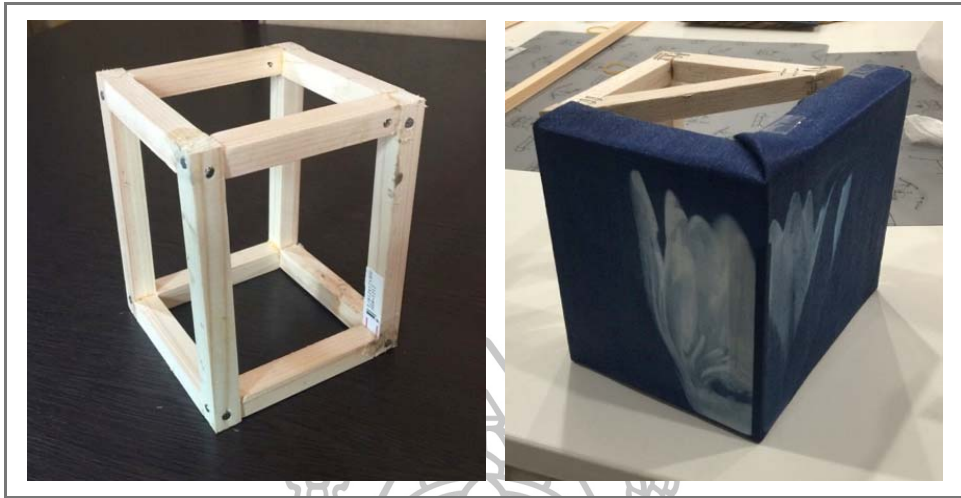


Figure 91 Wooden frame is made and the images are put together on the wooden frame

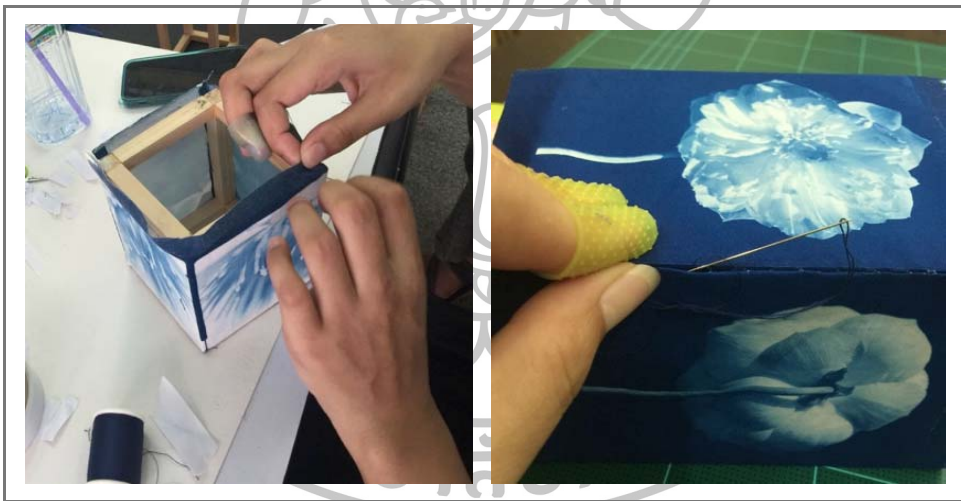


Figure 92 Making three-dimensional presentation by sewing the pieces of images on the wooden frames



Figure 93 The finished pieces are hung in space

### 3. Summary of the first fabric series

From the practice and experimentation with forms and textures, the researcher realizes that making photographs by hand and adding more hand stitches is the dedication that is a part of her personality. It is concluded that to create unconventional photography is by using unconventional materials, in this case fabrics. Moreover, with the characteristic of the fabric that is different from paper, diverse techniques can be applied on the photographs to add more interpretations and depth. The reality is the concept in this series; which depicts through Lotus flower because lotus is symbolic in Buddhism. The main belief of Buddhism is “Realize the ultimate truth” (K. Sri Dhammanada, 2002: 18) Furthermore, from the inspiration drawn from Irving Penn, the interpretation of his profound reality is seen in his work. In Penn’s world of sophisticated high-end work, he embraces the stories of modest, humble objects and photographs them in the same manner.

The limitation of this creation is mainly time. Historical processes take time to make from the beginning of mixing and coating the chemical. Exposure of the light sensitive relies on sunlight. Only on sunny days give the consistent results. With the intensities of the sunlight fluctuate during the exposure; the results of the prints are never the same, some lighter or darker than the other. This is one of the attractions

of the process. The attempt of making simple UV light chamber is carried out. The chamber is consisted of five of 500w tubes. It can be used at night and overcast days, however, the exposure time is eight times greater.

Last evaluation, the continuations of the series should be preceded, however in a bigger scale or more defined to create final pieces. The other limitation of the process is the negative size that is only 4 inches by 5 inches. However, digital negatives are tested but the aesthetic quality is not satisfactory. Moreover, historical processes are explored in this research; it is more relevant to use traditional film since the continuous tone is carried out more beautifully.

Further development is to create bigger pieces of images by using collage technique by putting many images together not only increases the sizes of the image but also creates a new perspective and new meaning to the photograph. Sewing methods are applied to accentuate the depth of the reading. Metallic threads are used to signify positivity. The objects are photographed in their different stages of appearance, the blossom and the decay. However, in the decay, the beauty is still presence.

The characters of the photographs that the researcher applies to her work to create her unconventional photography are as follow:

1. Soft and ambiguous, initially, the negatives are painted to blur the edges and to create unusual texture for photographs.
2. The subject matter is explored in different angles, magnified and cut sections to create different line and forms distorted from the reality.
3. To produce bigger images, collage technique is used, while working with fabric, patchwork technique is applied. When collage technique is present the images is put together from pieces creating new design pieces.
4. Using fabric, the researcher is using hand and machine stitches as supposedly paintbrush in painting, adding on the colors and strokes to the compositions that are collaged together.

#### 4. Further Development

From the latest series, the development is carried on further to increase the size and complexity of images. Working with the inspiration that is drawn from Irving Penn in the aspect of revalue the unwanted objects like trash, this series is recomposing of scrap pieces from the experiment and the error of inconsistent light and others. Throughout the process, it is found that there are a lot of printed pieces do not get use due to the following factors;

4.1 Exposure error: A lot of prints that are done in the early morning and late afternoon, the tone of the prints are faded or darken due to the rapid changes of the sunlight intensity. In the morning the light intensity elevates quickly from 8-10 o'clock which make the prints darker than the test strips. On the other hand, in the late afternoon from 3 o'clock, the light faded which makes the print under exposed.

4.2 Age of the coated materials: When coated fabrics are left unused for more than a week, the print results turn out without highlight. These can occur because of the way the materials are stored. If the materials are stored in total darkness it could extend its life. However, the materials are stored in a regular black envelop in a normal condition, through time, it could get fogged and darken slowly.

4.3 Some prints got damaged from not having proper rinsing procedure or chemical contamination.

As a result, all these prints are meant to be thrown away. However, they were kept for keeping the records. Therefore, they are revised and given a consideration again.



Figure 94 Scrap pieces from experiments and error

The leftover prints are edited and recomposed by arranging the tonalities, shape, lines and forms. The images are composed from the same types of flowers in each composition for example; the first composition is composed from the images of the roses, the second one is the images of the water lilies, etc.

Collage technique is used to assemble pieces together due to the sizes of the negative is limited, so is the size of the prints. To make an image a bigger size, collage technique is applied like patchwork to create new compositions with more complexity. These also increase the sizes of the images.



Figure 95 Composition 1: Roses

(a) Before applying stitching techniques

(b) After applying stitches

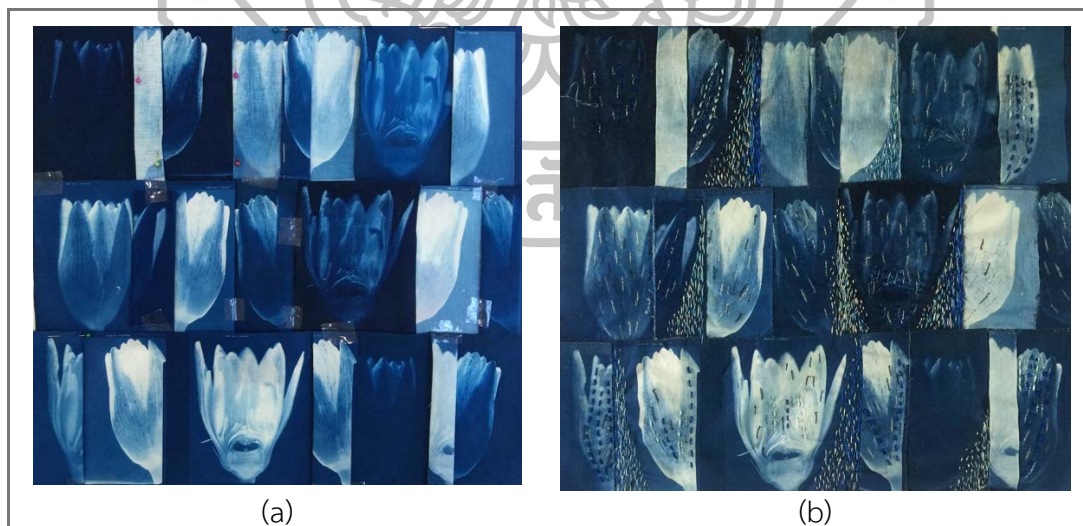


Figure 96 Composition 2: Water Lilies

(a) Before hand stitching

(b) After hand stitching

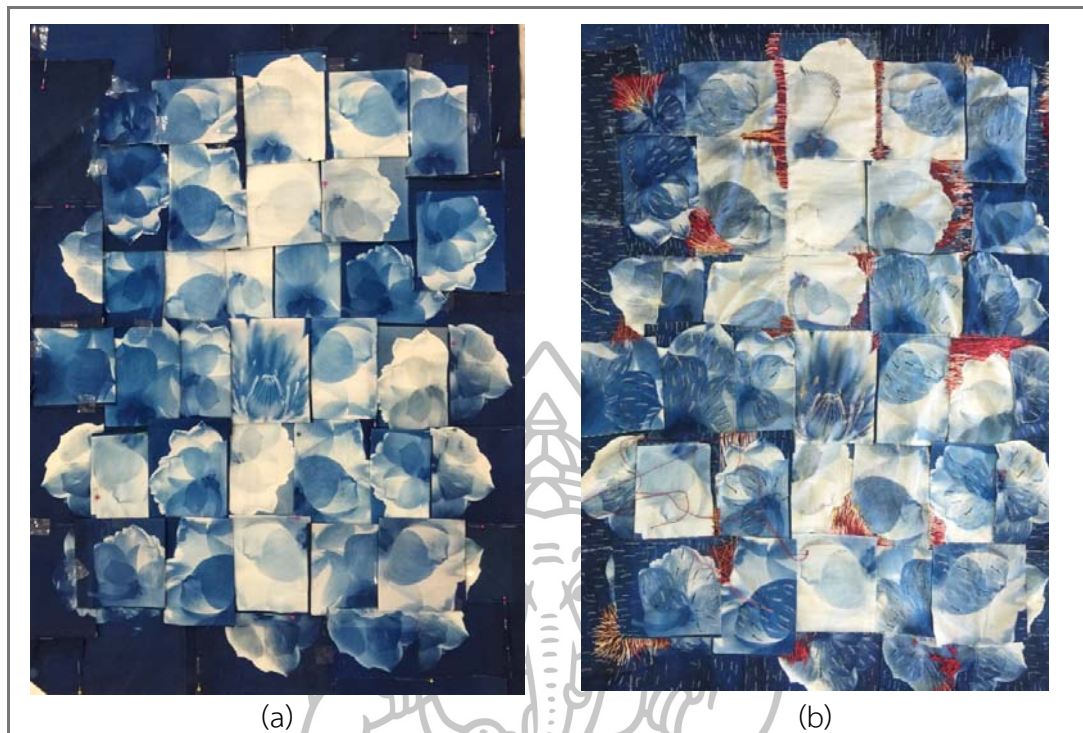


Figure 97 Composition 3: Lotus.

- (a) Before stitching
- (b) After applying stitches

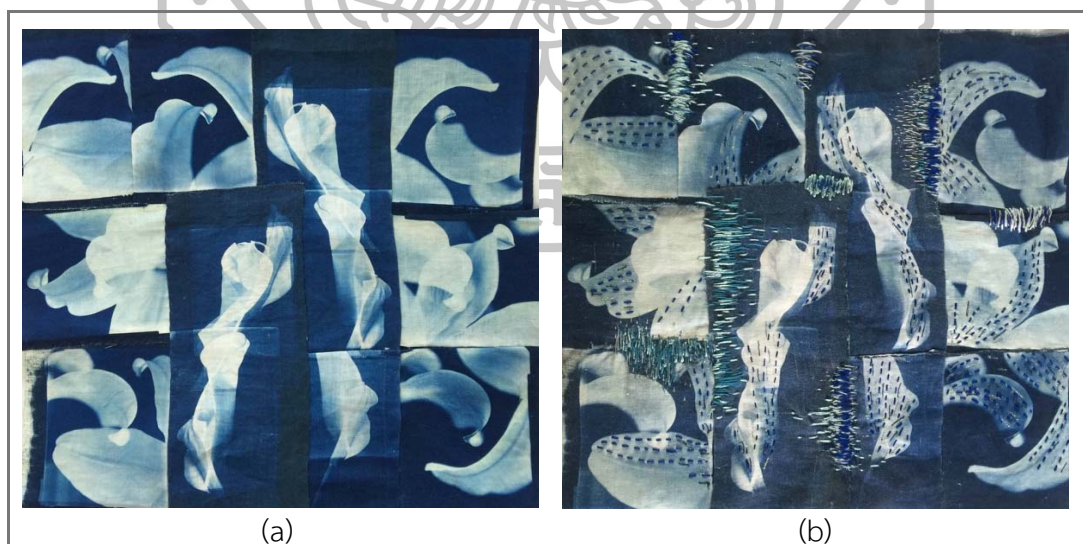


Figure 98 Composition 4: Lilies.

- (a) Before hand stitching
- (b) After hand stitching

## 5. Summary

Throughout the creative session, flowers are objects of choice. The researcher believes that flowers reflect life, femininity. She is drawn to the vulnerability of the flowers. They stereotypically are always beautiful. However, what lies beneath could be different. From the researcher's experience, she relates flowers to sadness and melancholy. She often photographs single flower in an empty space, or if two flowers are present, one will be wilting while the other is in a normal condition.

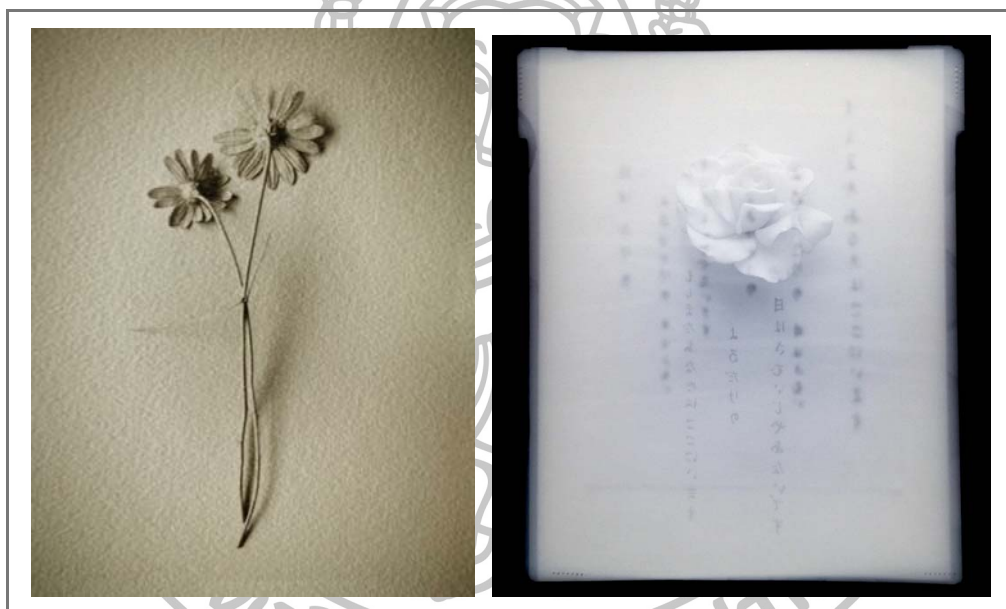


Figure 99 Examples of images that are done in the past

From these sample images, the image on the left, flowers are tied together with a thin thread (almost invisible) and both of the flowers turn away from the camera. The message of desolation is intended but the relation of the two flowers is unknown. The image on the right, a single flower is floating in space, it is so pale that it dissolves into the emptiness surrounding. Unknown notes of a foreign language drift over to give a mysterious message.



These two sample images show the melancholy either with conscious or unconscious intention. The same sentiment carries on to this series of work in the research, same type of mood, from the artists' work studied, draws the attention from the researcher. Irving Penn is an introverted person. His work also reflects melancholy or sadness through the trash and memento mori series.



Figure 100 First set of series that is done on paper in this research

This set of work is influenced from the past that combines with the inspiration from the artist; Lillian Bassman, she disconnects her object from the real world by creating ethereal space. By doing so, it creates the loneliness and isolation. However, the time sequence is initially implied in the series. Silently, these images also suggest solitude despair.

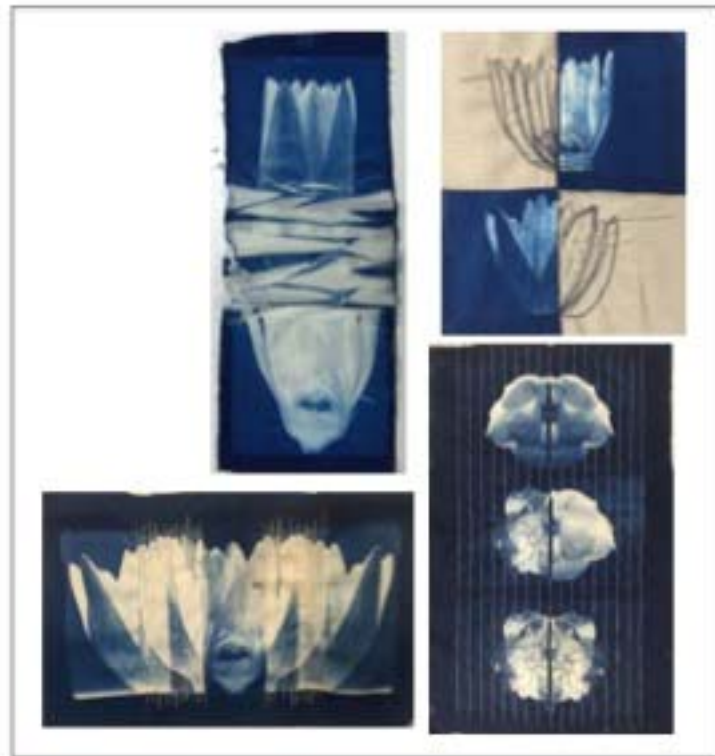


Figure 101 First fabric series with textile stitching and scrunching

In this series, aside from inspiration drawn from Lillian Bassman's art, it is also drawn from Georgia O'Keefe. Bassman manipulates photographic surfaces by using bleach on the print and paintbrush on the negatives; she alters her pictures to be soft and paint-like that transcends her photographs into a different classification. The researcher applies some techniques that can be used with fabric to alter her surfaces. This creates illusion to obscure the appearances. The subject matter is still carried on from the last series. But it is more in depth of how the subject looks in different angles. Additionally, overlapping of the negatives are used to create new forms. The researcher connects this series to Georgia O'Keefe's flowers. O'Keefe paints her flowers big and in segments, magnifying certain parts of the flowers. Her painting is often erotically read either it is her intention or not. O'Keefe's dedication to her art is what counts.



Figure 102 Second fabric series with textile stitching

This second series is done continuously from the previous series; the images are put together using multiple negatives to expand the sizes. Photographs of historical processes are always in monotone; using stitching techniques have given the researcher more freedom in expanding the shades of colors. O'Keefe is brave in using colors and forms. Inspirations is drawn out from her boldness, however, the choice of colors used is rather out of the researcher's comfort zone. Having worked with monotone for many years, trying to add more colors is pushing the boundary of how historical pictures supposed to look. At this point, the researcher is disconnected herself from being just a photographer. She feels detached from her root.



Figure 103 Final pieces

The sizes of the final pieces are average 19 inches by 27 inches. As mentioned earlier, the researcher feels overwhelmed with the big sizes of the images. Scrap pieces are put together by collage and patchwork. In this series, even though pieces of flowers parts are put together but the researcher feels that they are separating apart. In the middle piece, red color is used to indicate distress.

According to the last series of this research, stitching is not the researcher's specialty, therefore, it is overwhelming. However, the researcher choose the crude way of stitching to indicate the issue. After all, it is an experimental art of mix media. The experience, the study and the experiment in this research are put to create an unconventional photography. The researcher believes that this outcome can benefit those who seek the alternative way of expressing their work of art.

## Chapter 5

### Conclusion

What have been achieved in previous chapter are artifacts of historical photography application on fabric and integration of textile stitching techniques to reflect the individuality of this research.

#### 1. Research outcome

The series of photograph images are unconventionally accomplished by using Historical photographic processes integrating with textile techniques. The images are inspired by the work of Irving Penn, Lillian Bassman, Georgia O'Keefe and the photographic processes of the 19<sup>th</sup> century. Fabric Materials tested are used instead of traditional paper to diversify the appearance of photographs. Therefore, unconventional photography can be defined as photography that is done in an alternative method however it still stays true to its root. Unconventional photography is the opposite direction of what it is current. Integrating with other media gives a fresh look to photography. Although, photography has been mixed with other medias but it is rare for historical processes to be brought up. The outcome of this research's artifacts can be obtained as example of how to apply history into current occasion. The researcher's aesthetic is the inspiration of the historical photographic processes of 19<sup>th</sup> century, synthesizes it to create unconventional photography, a new perspective of historical processes' application.

However, the processes used in this research are old from the past of 19<sup>th</sup> century, they are brought back to use not only in the realm of photography but it is also expanded into textile field. Digital photography has been seen and worked on fabrics but historical processes have not been widely explored with other integrations. This research obtains the initial possibility of the historical photographic processes practice that can benefit not only in photography field but also textile and mix media.

## 2. Contribution

### 2.1 In photography field

Thus, bringing back historical processes to use in this research is benefiting many aspect of photography. For example, the new generations can acquire these processes and apply them into an alternative use. With the fast growing of technology, especially in the photography field, it is important for photographers in this era to slow down and pay attention to more details. Digital culture can sometimes make people taking things for granted because of its conveniency and instancy.

Additionally, using historical processes is an approach to reintroduce history of photography in the realm of digital era. Knowing its root can help us understand photographs and its purposes. And with a better understanding, photography can be applied into many directions.

A slow approach is a celebration of process; work that has reflection at its heart and skills that take times to learn. (Sharpe, 2016)

In the late 20<sup>th</sup> century and the beginning of 21<sup>st</sup> century, a part of slow movement is reconnecting with the past and slowing down the processes that are done with the fast technology. Bringing back historical photographic processes is a perfect example in photography field, which has been taken over by digital media. Slowly, we see film culture diminishing; it is disheartening for many photographers. Pre-commercialized photography is one of the alternative routes for photographers who seek uniqueness and mind-fulfillment processes.

### 2.2 In textile field

Complying with the slow movement in the late 20<sup>th</sup> century, textile art is one of the awareness for many people who do craft. Hand stitching and slow stitching are one of the techniques chosen for the slow processes.

The speed of life in the 21<sup>st</sup> century can often be overwhelming. Life is relentlessly busy, ... , that we have no time to reflect where we have been and whether we intend to go. Around the same time, William Morris and makers within the arts and crafts movement were consciously returning to pre-industrial processes...

despite the wide availability of faster, modern alternatives. (Claire Wellesley-Smith, 2015)

By using fabric for photographic printing, textile techniques of stitching are accommodated in this research. With the craft of hand made being appreciated in the 21<sup>st</sup> century, the artifacts from this research are made with skills that are connected to the past of pre-industrial, the combination of photography and textile work can be an alternative realm for obtaining creativity in textile field.

As mentioned of the fast growing pace of digital technology, when photographs are applied on fabric, digital media is often used. However, historical photography application can be an alternative for the connection of the slow movement.

### **2.3 In commercial field**

Commercially related to textile field, there are clothing, interior upholstery, fashion accessories, etc. In these industries, different materials are always sought out. New designed surfaces are always in demand for cutting edge design masterpieces. Although, textile printed with historical processes is not practical in everyday usage, it can still be used for exceptional pieces, for example, some pieces in fashion are design as conceptual, and these pieces are not necessarily practical. Historical processes printed fabric can be used in this area of creativity.

### **3. Further Research**

In technical aspect, the further research is suggested in the areas of exploration of different materials. Although, many fabrics are explored in this research but other interesting fibers are not obtained due to the unavailability, especially, those fibers from Thailand local wisdom. They have unique organic appearance; which adds more aesthetic to the images. However, they do not give consistent results. Further experiment is to find the right formula to use with organic fibers and to technically test the exposure by using grayscale.

In artistic aspect, photography in postmodern era, it is no longer a reliable form of truth. It is an era of skepticism. Photographs are manipulated and distorted from reality. Everything has been done in photography, now it is time to re-create

the image from the image. Multiple exposures, overlapping images, photomontage are applied these days. However, this researcher has obtained another procedure of a creative usage of historical photography. The results of this research can be accounted for experimental art that could lead to be one of the ways to apply photography. Many photographers will seek out the way to differentiate themselves from others. Photography will merge with other media depending upon the style and background of photographers.

Subject matter, with the techniques of combining historical photography and textile techniques, other subjects or themes are possible to explore, such as architecture or people.

#### 4. Conclusion

This practice-based research is divided into three major parts. First is the study of photography history and its processes, the fibers, and the aesthetic. Second, the experiment of historical processes on different types of fibers and apply other techniques that are relevant. Third is the creation of unconventional photography by using historical processes on fabric fibers and integrate with sewing and stitching techniques. Currently in photography field, digital culture predominates the realm. It is important to not forget its root. Although, there are some practices of historical processes but it is still considered obscure. There are limitations to the practice because of the high toxic chemical that the practitioners need to understand and seriously study the chemical safety sheets. Proper laboratory is essentially equipped with good ventilation system and first aid chemical washbasin.

Historical photographic processes are different from modern printmaking. It is time consuming and dedication is needed. Like other art practices, it takes skills and knowledge; which can be obtained by practice.

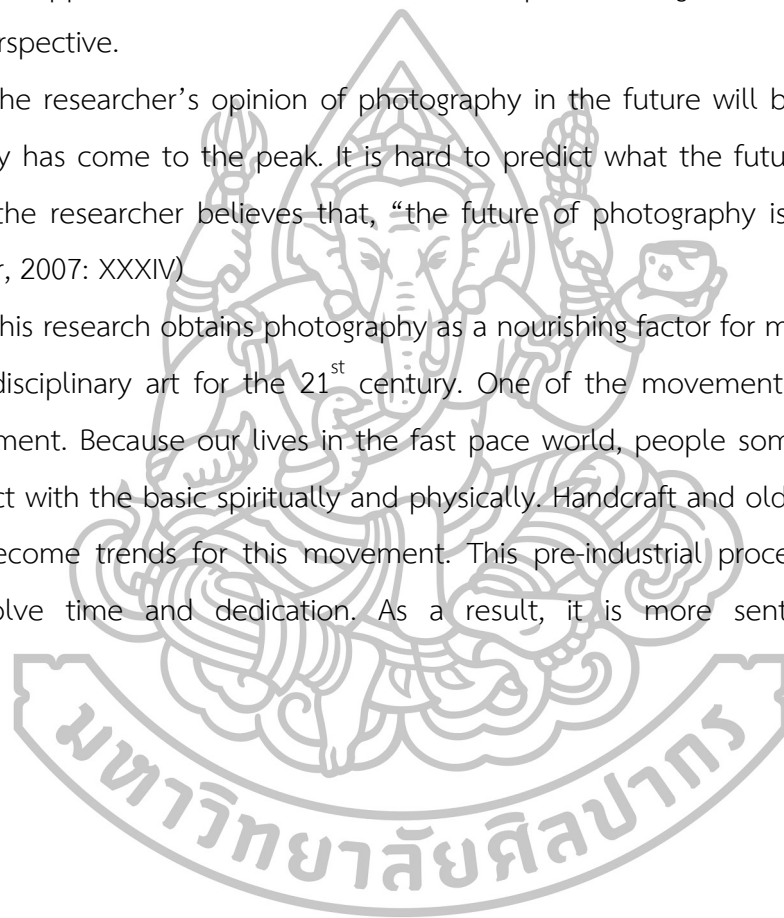
The experiment on different fibers obtains diverse materials for alternative use. The samples of prints on different fibers are displayed to show the results. Additionally, the performances of each fiber are recorded.



The creation of unconventional photography is developed by the knowledge of historical photographic processes and the result of the experiment. However, some of the fibers are not enough for the final creation because they are hard to obtained. Once the fabric fibers are used instead of paper, there are more possibilities to work with the fabric's flexibilities. More techniques that are used on fabric can be applied to add more texture and depth; which give the photography the new perspective.

The researcher's opinion of photography in the future will be mix-media. Photography has come to the peak. It is hard to predict what the future withholds. Therefore, the researcher believes that, "the future of photography is in its past." (Christopher, 2007: XXXIV)

This research obtains photography as a nourishing factor for mix media and other interdisciplinary art for the 21<sup>st</sup> century. One of the movements currently is slow movement. Because our lives in the fast pace world, people sometimes need to reconnect with the basic spiritually and physically. Handcraft and old processes in art have become trends for this movement. This pre-industrial processes art and design involve time and dedication. As a result, it is more sentimental and meaningful.



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Appendix



Appendix A  
Chemical Safety Table



Table 7 Chemical safety table

Chemical	Toxicity level	Explosive	Flammable	Corrosive	Ingestion	Inhalation	Remark
Ferric Ammonium Citrate	Not particularly toxic.	Not explosive.	Fire is possible at elevated temperatures or by contact with an ignition source.	Directly corrosive. Dust can irritate eyes and skin	Large amount may cause nausea, vomiting, diarrhea and black stool.	Dust can cause nose and throat irritation.	Food Additive. Treat iron deficiency.
Potassium Ferricyanide	High concentration can be poisonous. Under very strongly acidic conditions, highly toxic hydrogen cyanide gas is evolved.	Not explosive.	Not flammable.	Can cause skin and eyes irritation and redness.	Large amount may cause nausea, vomiting and diarrhea.	Dust can cause respiratory tract irritation or shortness of breath.	Does not decompose to cyanide in the body.

Table 7 Chemical safety table (continue)

Chemical	Toxicity level	Explosive	Flammable	Corrosive	Ingestion	Inhalation	Remark
Tartaric Acid	Not necessarily toxic.	Not explosive.	Not flammable.	It is corrosive to eyes and skin.	Large amount may cause nausea, vomiting and diarrhea.	Inhalation can cause lung irritation. Over exposure to the compound can severely damage lungs and tissue.	It is used in medication and in making wine.
Silver Nitrate	It is hazardous upon the physical contact.	It is explosive in the presence of static discharge.	Not Flammable.	Exceptionally corrosive. Silver nitrate can cause gray pigmentation of the skin.	If ingested, silver nitrate can cause potentially fatal gastroenteritis and gastrointestinal bleed.	Inhalation can produce irritation to respiratory tract. Severe over-exposure can produce lung damage, choking, unconsciousness or death.	In medication, silver nitrate is used to treat warts.

Table 7 Chemical safety table (continue)

Chemical	Toxicity level	Explosive	Flammable	Corrosive	Ingestion	Inhalation	Remark
Sodium Thiosulfate	Slightly hazardous.	It is explosive in the presence of static discharge.	Not flammable.	Slightly corrosive.	Hazardous in case of ingestion.	Hazardous in case of inhalation.	



Appendix B  
Fibers Test Results Table

Table 8 Fibers Test results Table

Fibers	Absorbency And repellence	Water Process	Drying time	Coating	definition	Amount of chemical (for coating 4x5)
1. Cotton Paper	Fairly good absorbency ability. Slightly repellent. Chemical situations in the fiber on the surface, it does not go through.	15 minutes in running water to rinse off the excess chemical.	Moderate Drying time	Easy to apply the chemical evenly and to control the area marked. Need double coats to achieve good contrast.	Good definition, slightly soft.	Double coats, 0.7 ml. for first coat. Second coat needs 0.5 ml.
2. 2.1 Japanese Washi (Translucent)	Decent absorbency ability. Slightly repellent. Chemical is soaked through the paper.	7-10 minutes in running water to rinse off the excess chemical or using 3 clean baths of water for 3 minutes each bath. Care should be carried out because of its delicacy.	Very fast to dry.	Easy to apply the chemical and to control the area marked. However, the paper is delicate and easy to get pulled by the brushstroke.	Good definition.	Single coat: 0.5 ml.

Table 8 Fibers Test results Table (continue)

Fibers	Absorbency And repellence	Water Process	Drying time	Coating	definition	Amount of chemical (for coating 4x5)
2.2. Japanese Washi	Excellent absorbency ability. Chemical is partially soaked through the paper.	10-15 minutes in running water or using 3 clean baths of water for 3 minutes each bath.	Very fast to dry.	Slightly difficult to apply the chemical evenly and hard to control the area marked because of the fast absorbency that makes the chemical breeds through the fiber quickly.	The image is slightly soft.	Single coat: 0.7 ml.
3. Newsprint	Fairly good absorbency. Slightly repellent. Chemical is partially soaked through the paper.	10-15 minutes in running water or using 3 clean baths of water for 3 minutes each bath.	Very fast to dry.	Easy to apply the chemical and to control the area marked. However, the paper is easy to get pulled by the brushstroke. Need double coats to achieve good contrast.	The image is slightly soft.	Single coat: 0.7 ml.
4. Cotton 375 counts	Excellent absorbency ability. The chemical is soaked through the fabric.	15 minutes in running water to rinse off the excess chemical.	Moderate drying time.	Slightly difficult to apply the chemical evenly and hard to control the area marked because of the fast absorbency that makes the chemical breeds through the fiber quickly. Need more chemical then paper.	Excellent definition.	Single coat: 1.5 ml.

Table 8 Fibers Test results Table (continue)

Fibers	Absorbency And repellence	Water Process	Drying time	Coating	definition	Amount of chemical (for coating 4x5)
5. Cotton Hemp	Good absorbency ability. Chemical is partially soaked through the fabric.	15 minutes in running water to rinse off the access chemical.	Fairly slow to dry.	Slightly difficult to apply the chemical evenly and hard to control the area marked because of the fast absorbency that makes the chemical breeds through the fiber quickly. Need more chemical then paper.	Good definition, slightly soft.	Single coat: 2 ml.
6. Linen	Excellent absorbency ability. The chemical is soaked through the fabric.	15 minutes in running water to rinse off the access chemical.	Fairly fast to dry.	Slightly difficult to apply the chemical evenly and hard to control the area marked because of the fast absorbency that makes the chemical breeds through the fiber quickly. Need more chemical then paper.	The image is sharp.	Single coat: 2 ml.

Table 8 Fibers Test results Table (continue)

Fibers	Absorbency And repellence	Water Process	Drying time	Coating	definition	Amount of chemical (for coating 4x5)
7. Local cotton (Lampoon)	Moderate absorbency ability. Chemical mostly stays in the fiber on the surface; it is partially soaked through the fabric.	15 minutes in running water to rinse off the access chemical.	It takes a long time to dry.	Difficult to apply the chemical due to the slow absorbance. Chemical mostly breeds through the web yarns.	The image is soft.	Single coat: 3 ml.
8. Local cotton (Sakon Nakhon)	Poor absorbency ability, it takes a long time to absorb the chemical.	15 minutes in running water to rinse off the access chemical.	It takes a long time to dry.	Very difficult to apply the chemical because of the poor absorbance.	The image is soft.	Single coat: 1.5 ml.
9. Silk Cotton (Jim Thompson)	Extremely absorbent.	30-45 minutes in running water to rinse off the access chemical.	It takes extremel y long time to dry.	Very difficult to apply the chemical because it absorbs too quickly.	The image is very soft.	Single coat: 15 ml.



Table 8 Fibers Test results Table (continue)

Fibers	Absorbency And repellence	Water Process	Drying time	Coating	definition	Amount of chemical (for coating 4x5)
10. Organic hemp	Slightly hydrophobic.	30-45 minutes in running water to rinse off the excess chemical.	It takes a long time to dry.	It takes time for the chemical to absorb initially. However, it absorbs well.	The image is interesting with the highlight of a warm color of the fabric.	Single coat: 3ml.
11. Organic Cotton Hemp 80%cotton 20%hemp	Slightly hydrophobic, however, it absorbs the chemical well.	30-45 minutes in running water to rinse off the excess chemical.	It takes a long time to dry.	It takes time for the chemical to absorb initially. However, it absorbs well.	The image is interesting with the highlight of a warm color of the fabric, and interesting texture.	Single coat: 5ml.
12. Cotton Pineapple 80%cotton 20%pineapple	Slightly hydrophobic.	30-45 minutes in running water to rinse off the excess chemical.	It takes a long time to dry.	Slightly difficult to apply the chemicals. It takes time to absorb.	The image is interesting with the highlight of a warm color of the fabric, and interesting texture. The image is soft.	Single coat: 7ml.



Appendix C

Acceptance Document for Publication

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บัณฑิตวิทยาลัย มหาวิทยาลัยศิลปากร  
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3 มิถุนายน 2559

เรื่อง แจ้งผลการพิจารณาบทความเพื่อจัดพิมพ์เผยแพร่ในวารสารวิชาการ Veridian E - Journal, Silpakorn University ฉบับ International (Humanities, Social Sciences and Arts) ปีที่ 9 ฉบับที่ 4 เดือนมกราคม – มิถุนายน 2559

เรียน นางสาวอนุกุล บุรณประพุกษ์

ตามที่ท่านได้ส่งบทความเรื่อง “การถ่ายภาพทางเลือก: การทดลองกรรมวิธีพิมพ์ภาพ Cyanotype บนใยธรรมชาติชนิดต่างๆ” เพื่อพิจารณาจัดพิมพ์เผยแพร่ ในวารสารวิชาการ Veridian E - Journal, Silpakorn University ฉบับ International (Humanities, Social Sciences and Arts) ปีที่ 9 ฉบับที่ 4 เดือนมกราคม – มิถุนายน 2559 นั้น

ในการนี้ บัณฑิตวิทยาลัย มหาวิทยาลัยศิลปากร ขอเรียนให้ทราบว่าผู้ทรงคุณวุฒิได้พิจารณาบทความของท่านแล้ว เห็นสมควรให้ตีพิมพ์เผยแพร่บทความดังกล่าวในวารสารวิชาการ Veridian E - Journal, Silpakorn University ฉบับ International (Humanities, Social Sciences and Arts) ปีที่ 9 ฉบับที่ 4 เดือนมกราคม – มิถุนายน 2559 บัณฑิตวิทยาลัย มหาวิทยาลัยศิลปากร ได้

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