

Screen Printing Designs Using the Lotus as a Source of Inspiration and Selected Design Criteria by E. Paul Torrance

Myung-Sook Han and Ki-Sun Nam*

Professor, Dept. of Textiles and Clothing, Sang Myung University

Instructor, Dept. of Textile Design, Shin-Gu College*

E. Paul Torrance의 디자인 기준에 의하여 선택된 연화문(蓮花紋)을 응용한 스크린 프린팅 디자인 연구

韓明淑·南基善*

상명대학교 가정교육과 교수·선구전문대학 섬유디자인과 강사*

目次

Abstract

I. INTRODUCTION

II. REVIEW OF LITERATURE

1. The Lotus Flower

2. Design Criteria by E. Paul

Torrance

3. Screen Printing Process

III. METHODOLOGY

1. Design Criteria

2. Source of Inspiration

3. Procedure for Printing

IV. SUMMARY

V. RECOMMENDATIONS

REFERENCES

요약

본 연구의 목적은 「Guiding Creative Talent」의 저자이자 교수인 E. Paul Torrance에 의하여 제시된 디자인 기준(design criteria) 중에 3가지 디자인 기준을 선택하여, 스크린 프린팅기법에 의거, 일련의 디자인을 제작하는 것이다.

이 디자인 기준은 1958년, Torrance에 의하여 수행된 "The Minnesota Tests of Creative Thinking" 중 일부이다. 그는 "창의적인 발상전개에 있어서 보다 더 주의를 요하는 것은 마지막 생산물(the products)이 아니라 그것의 과정(the process)인 것이다"라고 강조해 왔으며, 창의적 사고에 관한 개념을 제시해왔다.

본 연구의 디자인은 그 창작의 착상의 모티브(motif)로써 연화문(蓮花紋)을 선택하여 다양한 디자인의 스크린 프린팅을 창작하였다. 12개의 디자인이 제작되었는데, 그것은 Torrance에 의하여 제안된 약 20개의 기준(criteria) 가운데 저자가 디자인 착상에 있어서 최소한의 기본요소를 생각되어, 임의로 선택한 3가지 기준에 의하여 만들어졌다 : 3가지 기준이란 1) 모티브(motif)의 수적증가(multipli-

cation) 2) 모티브(motif)의 위치변화 3) 모티브(motif)의 모양변화이다. 전체적인 디자인과 테두리 디자인(border design)이 선택적으로 디자인 과정에 포함되었으며, 최종적으로 12개의 디자인이 선택, 1가지의 색채를 이용하여 스크린 프린팅에 의하여 제작되었다. 디자인 제작과정으로, Torrance의 각각의 디자인 기준에 의한 여러 장의 스케치를 그린 후, 그중 12개의 스케치를 임의로 선택하여 옷감 위에 프린팅하였다. 디자인 제작 결과, 저자가 선택한 3개의 디자인 기준만으로도 다양한 수의 서로 다른 디자인 창작이 가능하였으며 본 연구에서는 1개의 디자인 기준을 선택 응용하였으나 보다 많은 디자인 기준을 선택하여 동시에 비교 연구하는 것도 필요하다고 본다. 그리고 1개 이상의 디자인 모티브(motif)를 함께 디자인 착상에 이용하는 것도 가능하다고 본다.

I. INTRODUCTION

The flower has been a major inspirational source of design in many kinds of art forms. It has been long appreciated, respected and honored in the history of mankind and often times has had special symbolic meanings. The flower has been one of the most frequently used motifs in the textile design area and still has unlimited potential for new creation in design. Among the thousand different kinds of flowers, the lotus attracted the attention of the researcher, and also aroused interest with its elegant beauty and various symbolic meanings.

Along with the researcher's personal interest and appreciation of the lotus, *Guiding Creative Talent*, a book written by E. Paul Torrance, was very inspiring and articulating with Torrance's unique process of creative thinking in design. In his book, he listed twenty interesting design criteria, "as a general principle used in thinking of new ideas for improving almost any product, process, organization or plan."¹⁾

For this study, three of the twenty design criteria were selected because they were fundamental and interesting. These selected criteria would be good vehicles for creating better final products. The researcher developed new interpretations of these selected criteria and adapted them to this study.

The purpose of this study was to create a series of screen print designs employing E. Paul Torrance's three design criteria : 1) Multiplication of motif, 2) Change of position of motif, and 3) Change in shape of motif. This design explored various screen print renditions Incorporating the lotus motif as a source of inspiration.

This study is designed to investigate the following objectives :

1. to explore various screen print renditions incorporating the lotus motif.
2. to employ three of the design criteria by E. Paul Torrance.
3. to create unique and suitable designs for wall hangings.

II. REVIEW OF LITERATURE

This chapter introduces the lotus flower which is reviewed under its classification and symbolic meanings both in general and in different countries. Then design criteria by E. Paul Torrance are closely examined. Finally, silk screen printing is reviewed in terms of its usage, history, and method.

1. The Lotus Flower

In this section, the lotus flower is classified and symbolized in terms of its origin and color. Then the section presents the uses of the lotus motif in eastern cultures were identified : Egypt and other Mediterranean Re-

1) E. Paul Torrance(1952). *Guiding Creative Talent*. New York : Prentice-Hall, Inc. p.23.

gions, India and China, and Korea and Japan.

1) Classification and symbolic meanings of the lotus flower

The lotus flower is one of the most revered plants with a long history of religious significance. It is a member of the tropical water lily family, Nymphaeaceae.²⁾

Generally, each color of lotus has a different symbolic meaning. For example, the pink lotus represents fertility and passion, while the white lotus represents purity and passionlessness.³⁾ Besides, symbolic meanings of different colors tend to vary among different cultures. The blue, or the white lotus is found frequently in Egyptian ornament, whereas the pink lotus appears in the ornament of Hindu art.⁴⁾

2) Lotus symbols in different countries

As well as in sculpture, lotus motifs were found in various cultures in the forms of borders and all-over patterns in Egypt, in architecture of Greece, in paintings of Korea and Japan.

In Egypt, "the lotus flower has always been a favorite motif in sculpture, painting, and handicrafts".⁵⁾ According to *The New International Encyclopedia*,⁶⁾ the Nymphaea lotus, which was found in ancient Egypt, was used as a parent motif of all Egyptian decoration in

the form of borders and all-over patterns. It was also extensively used as a symbolic ornament in Assyria, Persia, and Greece. The lotus has been claimed as the parentage of the greater part of all historic ornament.⁷⁾

The lotus flower was also used as a symbolic motif in architecture and sculpture in Mediterranean regions including Egypt. In Egypt, the lotus was the symbol of creation and resurrection and was their flower emblem while, in Persia, it symbolized the sun and the light.⁸⁾

The lotus has played an important part in Buddhist sculptures. Since lotus was universally used as a seat for the Buddha, it was natural that this flower became associated with sovereignty. These sculptures having lotus flower were mainly found in the eastern world where people believed in Buddha.⁹⁾

In the mythology of the Hindus in India and the Chinese, the Nelumbo lotus played a distinguished part, being called the sacred bean. In India, the lotus of Hindu deities symbolized the world or the residence of the gods, and female beauty.¹⁰⁾ According to Lehner,¹¹⁾ the lotus was the emblem of mystery in Hindustan, Nepal, Taoism and Tibet ; it is also the National flower of India.

In China, the lotus flower has more symbolic meanings than in any other country. The lotus had a similar and poetic meaning,

2) E. & Johanna Lehner(1960). *Folklore and symbolism of flowers, plants and trees*. New York : Tudor Publishing Company. pp. 383-384.

3) E. McCune(1966). *The Art of Korea*. Rutland, Vermont, Tokyo, Japan : D. Van Nostrand Company Inc.

4) *The New International Encyclopedia*(1918). New York : Dodd, Head and Company.

5) A. Eckardt(1929). *History of Korean Art*. London : Edward and Goldston, Leipzig : Karl W. Hiersemann. p. 128.

6) *The New International Encyclopedia*. 전게서, p. 384.

7) *The New International Encyclopedia*. 전게서.

8) E. & Johanna Lehner. 전게서, p. 37.

9) E. D. Saunders(1960). *Mudra : A Study of Symbolic Gesture in Japanese Buddhist Sculpture*. New York : Pantheon Book.

10) *The New International Encyclopedia*. 전게서. p. 384.

11) E. & Johanna Lehner. 전게서.

being related with Buddha and symbolizing female beauty, the small feet of their women being called kin-loen which means golden lilies.¹²⁾ The Buddhists in China regarded lotus as the symbol of Buddha, because it is one of the symbols in Buddha's foot print.¹³⁾ Hulton and Smith¹⁴⁾ also said that "the lotus is the central symbol of Buddhism, raising its pure and brilliant blossoms out of this imperfect world". Buddhist painting of the early tenth century from Huang in Chinese Central Asia showed an example of the merciful Buddhist divinity Kuan Yin sitting on a lotus throne by a lotus pond.¹⁵⁾

To the Chinese, the lotus flower is the symbol of fruitfulness, strength-both spiritual and material-offspring, perfection, purity. It is the flower of July, and the emblem of Summer. Because the beautiful blossom grows clean and untouched by the sullied water of the muddy pools from which it rises, the lotus is called symbol of perfection and purity.¹⁶⁾

McCune¹⁷⁾, in his book, *The Art of Korea*, stated that the lotus flower symbolizes all phenomena, good as well as bad when it blossoms out of primal water. According to his book, Buddhist symbols extensively used in Korean architecture include the lotus flower and eight treasures : a pair of books, rhinoceros-horn cups, a jewel, a lozenge, a painting, a jade chime, an artemisia leaf, and a coin. The lotus played a more important part in ornament than any other plant of flower.

In the period of ancient Korea (earliest times-890 A. D.), many ornaments using lotus motif decoratively were found. The lotus has been a favorite motif for sculpture, painting, and handicrafts. Especially during the Koryo dynasty (912-1392 A. D.), Buddhism was regarded as the national religion, the lotus motif was extensively used in architecture and in art including pottery. The great diversity of form in Koryo pottery was very striking. Melons, pumpkins, bamboo-shoots were especially popular as well as the lotus.

The most popular ten symbols used in Korea to represent long life and immortality were the lotus, chrysanthemum, pine-tree, bamboo, tortoise, crane, stag, dragon, unicorn, and clouds.¹⁸⁾ For example, during the eighteenth century, Hond-Do Kin, one of the heroic artists in Korea, left a beautiful painting of pink lotus symbolizing fertility.¹⁹⁾

Saunders²⁰⁾ said in his book, *Mudra: A Study of Symbolic Gesture in Japanese Buddhist Sculpture*, that lotus symbolized spontaneous generation, and divine birth. He also mentioned the usage of lotus flower for sculpture of Buddha. As in other Buddhist countries, many sculptures of the lotus flower were found in Japan. Besides its use in Japanese Buddhist sculpture, the lotus was also used to have some other meanings. The eight-petaled lotus, Hasu, is a symbol of the past, the present, and the future because the buds, blossoms, and seed-pods can be seen simultaneously on the same plant. Also it is a flower of midsummer

12) *The New International Encyclopedia*. 전게서.

13) E. & Johanna Lehner. 전게서.

14) P. Hulton and L. Smith(1979). *Flowers in Art from East and West*. London, England : British Huseum Publications Ltd. p. 7.

15) E. & Johanna Lehner. 전게서.

16) E. D. Saunders. 전게서, pp. 159-160.

17) E. McCune. 전게서, pp. 49-51.

18) A. Eckardt. 전게서.

19) E. McCune. 전게서, p. 49.

20) E. D. Saunders. 전게서, pp. 159-163.

as it is in China.²¹⁾

There is also variation in the shape of the lotus. Three forms were found especially in paintings of the Japanese Buddha : the three-stemmed lotus bud, the five-stemmed lotus bud, and the lotus fully opened. All these three lotus forms symbolized the teaching of Buddha.

According to their color, lotus flowers may be divided into three groups : the red with rounded petals, the blue with pointed petals, and the white lotus. These three may take different forms in artistic presentations.²²⁾

Ernst & Johanna Lehner²³⁾ wrote about lotus flower in their book, *Folklore and Symbolism of Flowers, Plants, and Trees*. In this book, they showed different paintings of flowers including lotus in different countries. Plants of the more broad-leafed type like lotus were less popular as subjects for pure ink painting in China and Japan because of the technical difficulties.

2. Design Criteria by E. Paul Torrance

This section describes design criteria developed by E. Paul Torrance.

The Minnesota Tests of Creative Thinking was implemented by E. Paul Torrance in 1958. Since that time an attempt has been made to develop a set of tasks which can be used from kindergarten through the graduate school. "When the Bureau of Education Research of the University of Minnesota began its studies of creative thinking, it felt that what was needed was a set of tasks which could be used from kindergarten through graduate school."²⁴⁾ E. Paul Torrance, a tea-

cher and counselor, attempted to construct tasks, each requiring several types of thinking, which would be models of this creative process. After three years of experimentation, over twenty-five tasks were developed varying greatly in the nature of the stimulus and the kind of thinking involved.

"Torrance has emphasized that it is the process of creative thinking which demands urgent attention more than the products which have so far claimed major consideration." According to Torrance, he has defined creative thinking as "the process of sensing gaps or disturbing missing elements ; forming ideas or hypotheses ; and communicating the results, possibly modifying and retesting the hypotheses."²⁵⁾

The tasks developed in the Minnesota Tests of Creative Thinking may be classified into three major categories : 1) non-verbal tasks, 2) verbal tasks using non-verbal stimuli, and 3) verbal tasks using verbal stimuli. Specific examples of the Minnesota Tests of Creative Thinking for each of these respective three categories are :

- 1) In complete figures, Circles and Squares, and Picture Construction.
- 2) Ask and Guess Test, and Product Improvement Tasks.
- 3) Imaginative Stories about Divergent Animals and People, and Just Suppose Test.

The second category, Product Improvement Tasks, was selected to be used in this study. In product Improvement Tasks, four different toys have been shown to subjects to make them "think of the cleverest, most

21) E. & Johanna Lehner, 전계서.

22) E. D. Saunders, 전계서, p. 161.

23) E. & Johanna Lehner, 전계서.

24) E. Paul. Torrance, 전계서, p. 144.

25) R. J. Goldman, *Explorations in Creativity*, New York : Harper & Row, p. 269.

interesting and most unusual ways of changing the toy so that boys and girls will have more fun *palying with it.*"²⁶⁾ The test is limited to five minutes, and the task offers possibilities of scoring for fluency, flexibility, and originality.

The design criteria used by Torrance using twenty or more general principles provided in thinking of new ideas for improving almost any product, process, organization or plan. Torrance's design criteria are : 1) adaptation, 2) addition, 3) change color, 4) change shape, 5) combination, 6) division, 7) magnification, 8) minification, 9) motion, 10) multiplication, 11) position, 12) quality of material, 13) re-arrangement, 14) reversal, 15) addition of sensory appeal of ear, 16) addition of sensory appeal of eye, 17) addition of sensory appeal of nose, 18) addition of sensory appeal of touch, 19) substitution, and 20) subtraction.²⁷⁾

3. Screen Printing Process

1) Definition and general description

Screen printing is a method of printing whereby woven mesh (silk, linen, organdy, nylon, copper, bronze, brass, or stainless steel) is tightly stretched over a woven or metal frame.²⁸⁾

In the Process, the stencil allows ink to flow through open image areas and prevents ink from flowing through the non-image areas. There are several methods of "preparing" stencils in use. Since silk screen uses various inks and is used for printing on many

surfaces, it is necessary to select the type of stencil which will best do the job at hand. There are the paper stencil method, the tusche and glue method, the film-stencil method, the block-out method, and the photographic stencil method.

2) History of screen printing

Scholar had their opinion about the origin and development of screen printing differently. Biegeleisen²⁹⁾ said that "Though silk screen has had many godfathers, it is difficult to trace the discovery to one man." But almost all descriptions about the origin of screen printing agree that the development came from somewhere in the Far East.

According to kafka,³⁰⁾ "Stenciling is a technique which originated early in China and Japan, and is probably one of the most widely used methods." Kafka says the stenciling was developed by the Japanese to a high level of skill and eliminated bulky "ties" by using raw silk strands, and sometimes hair, to hold the various portions of the design in place. Marsh³¹⁾ says that the silk screen process was used by the ancient Egyptians, and Greeks, as well as by Chinese Japanese.

Schwalbach³²⁾ says that the Chinese and Japanese developed the art of stenciling between 500 and 1000 A. D. for the pictures of Buddha. He also wrote about famous caves of the Thousands Buddhas at Tun-Huang in western China, which was a strategic trade center at that time. The walls of Tun-Huang are covered with images of Buddha ; a few

26) R. J. Goldman. *전계서*. p. 271.

27) E. P. Torrance. *전계서*. pp. 234-235.

28) M. Yates, *Textiles-a handbook for designers*. New York : Prentice-Hall Press. p. 97.

29) J. I. Biegeleisen and M. A. Cohn. *Silk Screen Techniques*. New York : Dover Publications Inc. p. 9.

30) F. J. Kafka. *Decoration of Fabrics*. Bloomington, Illinois : Mcknight & Mcknight Publishing Company. pp. 6-7.

31) R. Marsh. *Silk Screen Printing for the Artist*. London, England : Alec tiranti, Ltd. p. 5.

32) J. A. and M. V. Schwalbach. *Screen-process Printing*. New York : Van Nostrand Reinhold Company.

were carved but many were stenciled.

Marsh³³⁾ and Schwalbach³⁴⁾ mentioned that the earliest example of screen printing was the hand prints on the wall of Gargas Caves which is located near Aventignan in the French Pyreness(15,000~10,000 B.C.). Besides the Gangas Caves, Schwalbach gave two more examples of early stencil such as Tibiran Cave near Gangas Caves and mal-travies Cave in the Spanish province of Estremadura. By the exiteenth century, stencil craft had become an established art form and this was spread between the East and West through conquests and crusaders.³⁵⁾

Though the stenciling appeared so early, no real development was made until the late seventeenth and early eighteenth centuries. Although the silk screen process and its roots in the Far East and was applied to other parts of Europe and England, it was America that developed the silk screen printing product commercially and succeeded with the process.³⁶⁾

The competition between commercial sign paintings and small print shops sparked the early development of the screen process craft in the United States in the twentieth century.

Grocery chains in the United States, needed many inexpensive signs. These signs were produced by local sign painters which they were changed frequently. In 1925, the automatic screen process printing machine was invented ; many innovations in textile printing followed. And today the process of screen printing has developed into a highly merchandised and thriving industry.³⁷⁾

III. METHODOLOGY

This chapter is reviewed under design criteria, sources of inspiration, procedure for printing. By following three design criteria established by E. Paul Torrance in his Product Improvement Tasks, various new designs were created. As a sources of inspiration, this study used the lotus flower motif. Screen process printing was selected for the production procedure.

1. Design Criteria

The three criteria chosen from E. Paul Torrance were 1) Multiplication of motif; 2) Change of position of motif and, 3) Change in shape of motif. The term, motif as used in this thesis refers to the single lotus flower itself with petals and stamen, excluding stems and leaves. The chart of three design criteria applied to the designs summarizes the modifications applied in each design (Fig. 4).

The floral motif(In actual size) used in Design Set #1 is shown in Fig. 2. The floral motif(in actual size) used in Design Set #2 is shown in Fig. 3.

- 1) Multiplication of motif is defined for the purpose of this research project to be either of the following, or combination of the following :
 - a. Repetition of the motif
 - b. Repetition of parts of the motif
- 2) Change of position of motif is defined for the purpose of this research projects to be either of the following, or combination of the following :

33) R. Marsh. 전계서.

34) J. A. and M. V. Schwalbach. 전계서.

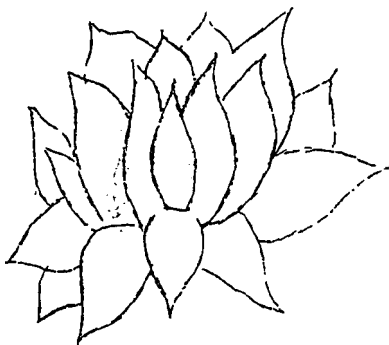
35) J. I. Biegeleisen. *The Complete Book of Silk Screen Printing Production*. New York : Dover Publications, Inc. pp. 9-10.

36) R. Marsh. 전계서.

37) J. A. and M. V. Schwalbach. 전계서.

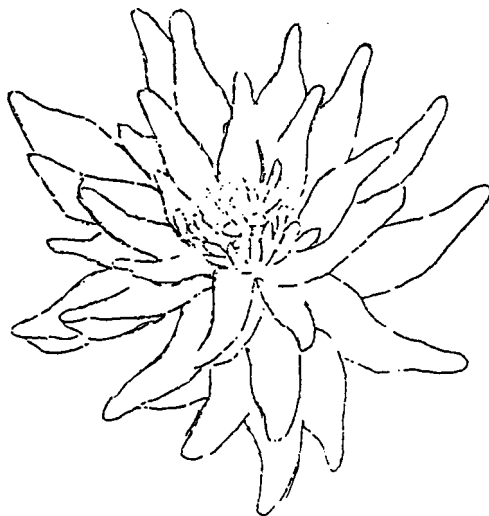
		CRITERIA #									
		1) Multiplication		2) Position			3) Shape				
Design Set #1											
Design	a	b	a	b	c	a	b	c	d	e	f
1	*		*	*			*	*			*
2	*		*	*			*	*			*
3	*		*	*	*		*	*			*
4	*	*	*	*	*		*	*			*
5	*	*	*	*			*	*	*		*
6	*	*	*	*		*	*	*	*		*
7	*	*	*	*		*	*	*	*		*
Design Set #2											
8	*			*			*	*	*	*	*
9	*	*		*			*	*	*	*	*
10	*	*		*			*	*	*	*	*
11	*	*	*	*			*	*	*	*	*
12	*	*	*	*			*	*	*	*	*

<Fig. 1> Chart of Three Criteria Applied to the Designs.



<Fig. 2> Actual motif used in Design Set #1.

- a. Rotation to any degree of the motif
 - b. Placement of the motif
 - c. Reverse mirror image of the motif
- 3) Change in shape of motif is defined for the purpose of this research project to be either of the following, or combination of the follow



<Fig. 3> Actual motif used in Design Set #2.

- ing :
- a. Increase or decrease of the size of the

motif

- b. Addition of a leaf or leaves to the motif
- c. Addition of a stem or stems to the motif
- d. Deleting a portion of the motif
- e. Changing of the flower motif(i.e., changing the shape of petal, changing the shape of stem, and changing the shape of leaf)
- f. Any combination of the three chosen criteria or parts thereof.

2. Source of Inspiration

The design motif was created by referring to the picture of an actual flower. The 12 designs were divided into two Design sets. Design 1, 2, 3, 4, 5, 6 and 7 were categorized into design Set #1. Design 8, 9, 10, 11 and 12 were categorized into Design Set #2. The primary difference between design Set #1 and Design Set #2 was the change of the flower motif (i.e., 3. (e) Change of the flower motif : changing the shape of petal, changing the shape of stem, changing the shape of leaf).

The flower motif in Design Set #1 has big, roundish, plump petals. It has no stamen showing. The flower motif in Design Set #2 was created from the motif used in Design Set #1. The flower motif in Design Set #2 has sharp pointed, linear, narrow shaped petals with the stamen in the center of the flower showing.

Change in shape of motif is one of the three design criteria that the researcher chose. For that, the researcher created two different basic shapes of the lotus motif. Within each Design Set, the researcher applied the change in shape motif (once again) as well as change of position of motif and multiplication of motif. Figure 1 summarizes the modifications used in each of the twelve designs. Figure 4 is Design 2.

3. Procedure for Printing

1) Translate design onto film positive

Photographic stencils are light-sensitive and require the use of photographic equipment. The film positives are used to properly expose the stencils. Ulano Rubyolith (RM 3-Red) was used as a film positive. To translate the design onto the Rubyolith, first, cut a sheet of Rubyolith to the size of design. Second, center the film and trace-cut the complete outline of the design with X-acto knife. The X-acto knife is a good, all-purpose knife for cutting paper and film stencils. Third, carefully, peel off the film with the point of the knife.

2) Coat emulsion directly onto the screen

The emulsion hardens when it is exposed to light rays. Unexposed areas remain soft and can be rinsed away with warm water. Therefore, a film positive is needed to keep light rays from hardening the emulsion for the design area. Chromoline Magnacure which is ultra violet light sensitive and water-resistant was used as emulsion.

3) Place the film positive onto stencil

The film positive was placed on top of the stencil so that emulsion side is down during exposure.

4) Lay the glass over the stencil and position to hold them tightly against each other.

5) Make the exposure under yellow safelight. 5000 watts ultra-violet light was used. The screen was exposed light to the light for 10 minutes, 48 inches away. Correct exposure can be calculated for any type of stencil using an "exposure calculator."

6) After exposing the stencil, remove the glass and film positive.

7) Spray the piece of the film with warm water on the emulsion side until unexposed image areas gradually wash out.

8) Dry the screen using a fan.

9) Arrange ink (texilac Po TIPO-E black), squeegee, screen, and fabric.

10) Print onto the fabric.

11) Dry the fabric.

IV. SUMMARY

The purpose of this study was to create a series of screen print designs employing E. Paul Torrance's design criteria. The designs explored various screen renditions incorporating the lotus motif as a source of inspiration. Twelve screen printing designs were created employing three major design criteria suggested by E. Paul Torrance. They were : 1) Multiplication of motif, 2) change of position of motif, 3) change in shape of motif. The adapted designs were printed on fabric using one color by the photographic stencil method.

V. RECOMMENDATIONS

This design project served as a work adapting E. Paul Torrance's design criteria into the screen printing designs. For the future study, careful considerations should be made in interpreting the terms, "motif", in design criteria.

The researcher would like to suggest the following directions :

1. Define design terms, specifically the term, "motif"
2. Obtain different opinions regarding interpretation of design term, specifically the term, "motif"
3. Select fewer design criteria.
4. Compare more than one author's design

criteria.

5. Explore different design criteria.

REFERENCES

1. Biegeleisen, J.I., *The complete book of silk screen printing production*. New York : Dover Publications, Inc., 1963.
2. Biegeleisen, J.I. and Cohn, M.A., *Silk screen techniques*. New York : Dover Publications Inc., 1958.
3. Chieffor, C.T., *Silk-screen as a fine Art*. New York : Van Nostrand Reinhold Company, 1967.
4. Eckart, A., *History of Korean Art*. London : Edward and Goldston, Leipzig : Karl W. Hiersemann, 1929.
5. Goldman, R.J., *The Minnesota Tests of Creative Thinking*. In R. I. Mooney & a. R. Taher (Ed.), *Explorations in Creativity*. New York : Harper & Row, 1967.
6. Hulton, P. and Smith, L., *Flowers in art from East and West*. London, England : British Museum Publications Ltd., 1979.
7. Jafari, J.K., *Islamic calligraphy on fabric*. (Master's Thesis, University of Wisconsin Stout), 1985.
8. Kafka, F. J., *Decoration of fabrics*. Bloomington, Illinois : McKnight & McKnight Publishing Company, 1959.
9. Lehner, E. & Johanna, *Folklore and symbolism of flowers, plants and trees*. New York : Tudor Publishing Company, 1960.
10. Marsh, R., *Silk screen printing for the artist*. London, England : Alec Tiranti, Ltd., 1968.
11. McCune, E., *The art of Korea*. Rutland, Vermont, Tokyo, Japan : D. Van Nostrand Company Inc., 1966.
12. Peter, C.S. and Frederick, A.P., *Art of China, Korea, and Japan*. New York, 1963.
13. Peverill, S., *The Fabric Decorator*. Boston,

- Toront, London : Little Brown and Company, 1988.
14. Saff, D. and Sacilotto, D., *Screen printing, history and process*. New Jersey : Holt, Rinehart and Winston, 1979.
 15. Saunders, E.D., *Mudra : A study of symbolic gesture in Japanese buddhist sculpture*. New York : Pantheon Book, 1960.
 16. Schwalbach, J. A. and M.V., *Screen-process printing*. New York : Van Nostrand Reinhold Company, 1970.
 17. Soothill, W.E., *The lotus of wonderful law*. London and Dublin : Curzon Press, Tota-wa : Rowman and Littlefield, 1975.
 18. *The New international encyclopedia*, New York : Dodd, Head and Company, 1918.
 19. Tilton, E.B., *Textile design show : a new look at ancient Peruvian ceramics*. (Master's Thesis, University of Wisconsin-Stout), 1979.
 20. Torrance, E. Paul, *Guiding Creative talent*. New York : Prentice-Hall, Inc., 1952.
 21. Yates, M., *Textiles-a handbook for designers*, New York : Prentice-Hall Press, 1986.