Studies on Dyestuffs in Archaeological Textiles from Xinjiang (3rd Century BC - AD 9th Century)

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Abstract
There are various extraordinary textiles excavated from archaeological sites in Xinjiang, on the middle route of the Silk Road. It is very significant to study and identify their dyestuffs since the dyeing techniques play an important role in science and civilization of historical textiles. In order to further understand the dyeing methods this paper focuses on the dyestuffs identification. Three vegetable dyes such as madder, indigo, and luteolin-based dye were detected in archaeological objects which were discovered in Yingpan and Sampula burial sites by using high performance liquid chromatography method (HPLC). The results show that some dyes were assumed to have been imported to China from the Middle East and Western Asia through Silk Road.

1. Introduction
Xinjiang, as a hub of the Silk Road, with rich archeological objects was attracted much attention due to its unique geographical location—a land route between East and West in ancient time. Since the special (very dry) climate most archeological relics including bronze vessels, pottery works, foods and textiles remained intact in terms of shapes, colors and materials (Ma & Yue, 1998). Among these funerary objects the colorful textiles unearthed from numerous tombs of Xinjiang play a key role in the development of dyeing techniques during 3rd century BC - AD 9th century.

To our knowledge, there are many reasons why we want to know more about dyestuffs used in ancient time. Information might be sought on dating and origin; type of degradation; the dyeing process and the nature of the original dye (Hofken de Graaff, 2004). During the last three decades, thin layer chromatography (TLC) has proved to be useful for chemicals separation of natural dyes (Schweppe, 1986). However, high performance liquid chromatography (HPLC) with UV-Vis detector or photodiode array (PDA) is applied to identify coloring matters in historical fragments since the use of HPLC-PDA enables nanogram quantities of dye from a single thread (ca.0.2-1.0mg) to be identified (Wouters & Rosario-Chirinos, 1992). Recently, an even more promising method HPLC-mass spectrometry is widely used for dyes analysis which can give more information about structure of dye components whereas the PDA cannot give (Szoeket, Orska-Gawrys, Surowiec, Trojanowicz, 2003).

There are a few literatures on the identifications of natural dyes in Xinjiang, mostly from the Tarim Basin (Xie, et al., 2001; Zhang, Good, Lauren, 2008). The results suggested that one identified yellow dye was made from a weld-type plant which was not grown in ancient Xinjiang but widely used in Europe and Western Asia. In the present paper HPLC-PDA was employed to analyze the natural dyes in archeological textiles from Yingpan and Sampula burial sites for further research on the dyeing process.

2. Methodology
2.1. Extraction
To the sample of ca.0.2-1.2mg yarn, the Wouters’ solvent (Wouters & Rosario-Chirinos, 1992) was added. The mixture was heated for 30min at 105℃ in a 0.5ml open Pyrex tube in a heating block. For dissolving efficiently, 20μl DMSO was added before heating. After cooling down at room temperature, the extract was dried in an evacuated desiccator. The residues were taken up in 300μl of H2O/MeOH (1/1, v/v). After the solution was centrifuged, it was filtered through 0.45μm syringe filters and 10μl of the solution were injected for analysis.

2.2. Instruments
HPLC-PDA analysis was performed with a Shimadzu LC20A system consisting of two LC20AD solvent delivery units, a DGU-20A\(^3\) on-line degasser, an SPD-M20A photodiode array detector, an SIL-20AHT autosampler, and an LC-Solution 1.22 workstation. The chromatographic separation was performed on a C-18 column.

3. Results and Discussion
3.1. Madder-type dyes
The chemicals of red/crimson/purple samples of Yingpan and Sampula burial sites were detected. Two typical chromatograms of the extracts are shown in fig.1. The presence of alizarin and purpurin in the sample S1 and S2 indicates that both two samples were dyed with extract from root of madder-type plant. It is interesting that the two chemicals of sample S1 extracted from deep purple yarn was identified in a ratio of 15:1, whereas the chemicals of sample S2 extracted from crimson yarn was detected in a ratio of 5:9. This is probably due to the fact that the chemicals used for mordanting were different: iron for purple (Hofenk de Graaff & Van Bommel, 2001) vs. alum for crimson which can be detected using by energy dispersive X-ray detector (Koestler, Indictor, Sherryll, 1985).

HPLC-MS analysis which can give further information about molecular structure of unknown composites was carried out for dye plant species identification. The most important coloring matters including alizarin, purpurin, xanthopurpurin, munjistin were identified (not present in this paper) in archaeological fragments of Sampula. It is well known that both two madder-type plants containing...
these coloring matters were respectively classified as *Rubia tinctorum* L. and *Rubia cordifolia* L (Hofenk de Graaff, 2004). However, determining the exact specie of madder-type plant is even more difficult since little information on the dyeing techniques and trading exchange between East and West in Han and Tang dynasties can be obtained from historical documents.

3.2. Indigo dyes

The extract of blue/green fibers obtained from Yingpan and Sampula burial sites were analyzed by HPLC-PDA. Two components shown in fig.2 were identified as indigotin and indirubin, which are isomeric forms of indigo, in sample S4. There are several indigo plants including *Strobilanthes flaccidifolius*, *Isatis tinctoria*, *Indigofera tinctoria* et al., in China. The earliest historical documents of the West Zhou Dynasty (1000BC) recorded *Liaolan* (*Polygonum tinctoria*) as the first plant used for blue/green dyeing. Although it is easy to detect the major chemicals indigotin in archaeological textiles, the HPLC profiles can hardly be used to identify the exact origin of plant species.

From fig.2 it can be seen that isatin (peak 3), as the major photodegradation compound, was detected at 8.17min in HPLC profile of sample S3, as well as sample S4. This indicates that probably the dyestuffs extracted from ancient fragments was suffered a degradation process induced by light (Sousa, 2008). Therefore these textiles should be protected from light in a dry environment in museum.

3.3. Luteolin-based dyes

A typical HPLC profile of extract of yellow sample is given in fig.3. Two peaks of luteolin and luteolin-like flavonoid can be observed in the chromatogram with three other peaks. Peak1, 2 and 3, present in the fig.3 in the range of 17.5-22.5min can not be identified. Their UV spectra suggest that they may be derivatives of flavonoid occurring in extracts from luteolin-based plants species, e.g., weld, saw-wort and dyer’s broom. However, all of these yellow dyestuffs were not mentioned in the ancient Chinese documents. Therefore, we can deduced that the yellow dyes used for archaeological samples were imported to north-west China from the Middle East or Western Asia through the ancient Silk Road.

4. Conclusion

The principal coloring matters such as alizarin, purpurin, indigotin and luteolin, were detected in archaeological textiles of Yingpan and Sampula burial sites in Xinjiang. It can be concluded that the HPLC-PDA method is a reliable means although it cannot be given more information without standard substances. The results show that indigotin was absent in purple sample indicating that it is very likely that madder-type plant was dyed on iron mordant instead of alum, whereas in many other archaeological sites good quality purple is obtained from a mixture of indigo and madder. The source of yellow dyes in these fragments was considered to be imported to north-west Xinjiang from the Middle East or Western Asia through the ancient Silk Road. In future, further researches on dyestuffs identification of a number of archaeological textiles in Xinjiang will be carried out using HPLC-PDA-MS for achieving exact plant species in more details.

5. Acknowledgements

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Reference
Hofenk de Graaff, J. (2004). The Colorful Past, Origins,
Chemistry and Identification of Natural Dyestuffs. London, Archetype Publications Ltd.


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Jian Liu was born in 1981, in China. He obtained his master degree (2011) in Applied Chemistry from Zhe Jiang Sci-Tech University. He has studied on traditional printing and archaeological dyes since 2004 in China National Silk Museum. Currently, His research concerns the study of archaeological dyes from Xinjiang by using HPLC-PDA-MS. Other areas of interest are the analysis techniques for natural dyes identification and the textiles conservation in exhibition.
China Color Trend Book 2013-14

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Introduction
"China Color Trend Book" became 3 years old now. Based on valuable advice given by top-level professionals of brand management and design sector in Japan, Europe, certainly China, our production team has been dedicated last few years to study and develop a style all our own, explored Chinese philosophical thought, induced modern values, discovered cutting-edge design ideas, and finally came to fruition to transmit a "new-Chinese creative style" concepts, CMF (Color, Material, Texture), and the trend.

"China Color Trend Book 2013-14" has been composed of inspirations from philosophical thought and traditional crafts, trend research of new art, design, craft, and various range of original visual materials and texts. 6 themes constantly provide visual images, colors, textures, and most-advanced design spirit combined with actual material samples, which collected from China, Japan, Europe, also our original art works, with interpretation of "Chinese" perspective in diverse angles.

The source of "China Color Trend Book 2013-14" is focused on China-oriented trend, despite the fact that Europe used to be in a leading position of global design trend over 100 years. This young, unprecedented, but treasure-trove of unparalleled creativity has gained highest level of evaluation from the professionals all over the world. A number of creators are deeply interested not only in market in China but also its culture and new ideas and creations growing in Chinese soil, which all finally reach to the inspiration to prop up their artworks and brand development activities. The major driving force of "China Color Trend Book"'s serialization should be its practical functionality which covers versatile insights applicable to Chinese-market-targeting branding and production development in various sectors, such as automobiles, home electronics, fashion and interior industries.

At the closing of this issue, I’d like to express my sincere appreciation to Jin Ze Arts Center, Chinese sociologists, trend color researchers, art curators, artists, designers, fashion and interior brands, antique collectors, who always provided necessary assistance and cooperation. Our production team also has been composed of diverse lineup; graphic designers both in China and Japan, photographers, color and pattern designers, fashion director, translator, and craftsmen.

Currently, China is standing at the dawn of its "era of creativeness". Embracing great changing times and high-speed transformation in market environment, mixture of diverse values and aesthetics, and unprecedentedly unique ideas developed by its younger generations, China is stepping into the center stage of the global trend. We strongly believe in our mission to cover the desire of all creators world-wide, to provide unique source of ideas, a fruit of the traditional Chinese culture to the new creation, the growing Chinese creative mind linked to the global trend.

Topics
1. Sprit of Asia

Concept
Intimate feelings, tribal atmosphere, and attachment to the nature... the feelings common among Asian people. The natural features influenced by Chinese civilization and aesthetics based on the ethnicities across the eternal flow of time and layers of space. Great sensitivity, depth of authenticity, true and warm spirit. Accessible luxury which is the rhythmic mixture of patterns, colors, texture and artisanal techniques. Free and bold, unconstrained interpretation through oriental viewpoint, all get together and crystallized to create a new expressions.

Color and Texture
Colors of various nuances and chromaticness symbolize the arrival of new era. Red embraces brilliant glow within, reddish brown of glossy Japanese lacquer, vivid red reminds of wet enamel. Sparkling vermilion created by the layer of weaving and embroideries; Colors of abundance. Blue, the overwrap of shading indigos. Purple with increasing depth of glamour; Brown with woven shimmer within, copper enfolding delicate dazzle. Unconstrained gold mingling with black; A string of gorgeous and dynamic waves of colors.
2. **Trance Craft**

Sensual and light texture, the fruit of respect to the nature and careful hand work expresses freshness. Papercuttings to draw scenic art, elaborate openworks of wood and brick, flowing formation of piled up gems. The landscape created by a unity of nature and human beings. Inorganic elements and organic forms. Swinging materials with layer of natural items. Dazzling fakes blow out the originals. Fresh inspirations take advantage of innovative technologies.

**Color and Texture**


3. **Exclusive Deco**
Concept
An energetic enthusiasm free from conventional values. Decorativeness, the interpretation of gorgeous passion, and advanced aesthetics which require implicative proportion of intelligence. Extreme techniques, the essence of luxury and stylishness found in edgy expression. A new style of beauty with an axis made with fusion of contrast and harmony. Deviant decoration and ordered depth, superfine brilliance and graceful gloss. They all work to create multifactorial and attractive Chinese original styles.

Color and Texture

4. Elements

CONCEPT
"Acting in accordance with the will of heaven", the ancient philosophy which advocates a beautiful harmony between the nature and human beings. Feng shi, yin-yang, conflict and balance of Ki. The wisdom to observe the reason of nature. Individual pleasure to find the mystery and beauty in the nature. Creating scenic beauty in the garden, going along with mother nature, all demonstrate a planned coincidence which realizes amazingly artful formation. An aesthetic drift along the state of unselfishness and nonresistant to the natural law.

The oriental thought is filled with unique ways and means of idea and originality.
COLOR & TEXTURE

5. Pleasure Seeking
CONCEPT

COLOR & TEXTURE
Dynamic and provoking elementary colors. Orange yellow sparkling like sunlight, peach pink like flowers of the tropics, fantastic green, brilliant bright blue. Centralize and decentralize the lights, freewheeling transformation of fluorescent yellow green and orange. Romantic medium tones overlap with odd sparkles. Floating clean glitter of lame’ found in lilac. Sensitive sky blue, translucent icy green reminds of glass. Energetic high-gross white, accompanied with silver and navy as accents.

6. Emotional Laws

CONCEPT
A trial of "nature technology" realized into inspiration, it encourages to find various natural laws and give form to the new creation. By using leading edge, create a new interpretation of divine supernature. Functionality supported by micro-structure, the principle of natural geographical formation, its fluctuation, ups and downs. Informal refers to deconstructionalistic structure. A texture sensitively stimulates the instincts. Use the tips for true comfort brought by the original intelligence within the nature.

COLOR & TEXTURE
Achromatic colors, resonance of diverse texture and curve. Woven shining gray, white fluctuating in dreamy rhythm, dark silver interfered by unevenness created by lights, feeling of metallic like a sleek stream of silk. Matte, intensive, and hard feelings of carbon black. White gold of delicate and silky feel. As an accent, Glitter of bronze just like reflection of sunset on the water. Pink with hint of yellow tangled with color of copper. Stylishly emerging deep blue.

Author
Eri Omae, Color Director of DIC Color Design, Inc., writer, editor and CMF (color, material and finish) specialist, building her career in USA, China and Japan. Eri joined Color Communications, Inc., (Chicago) in 1999 as a color designer and marketer, then for Color Mark Japan and DIC. Her influences in various marketing, branding and CMF have been applied into many leading consumer products of electronics, cosmetic, interior, food packaging and urban design in Japan and China. Eri held various seminars and workshops for a number of prominent organizations including CFCA (China Fashion Color Association), JAFCA (Japan Fashion Color Association), Japan Display Design Association, Yamagata Textile Union, Technical Information Institute CO.,LTD, Shanghai Jiao Tong University, Urban design divisions of government in Japan and China, Fujitsu, Casio, Panasonic, Mitsubishi Pencil pertaining to Color Culture and Color Trend. Eri has two books published in 1993 and 1997 in China, <Japanese Colour and Landscape> published in 2006 in Japan. She is also editor of <DIC International Traditional Color Dictionary>, <DIC China Color Trend Book> and <Jiang Nan Color Palette>.
Chinese Traditional Dyeing Technology and Vegetables Dyes

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扎染艺术的意象感知与创意表现——源于扎染艺术教学的随想

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Abstract

Image is a kind of artistic image, it is through the creation of emotional activities of the subject being created. The beauty of images is one of the main characteristics of tie-dye. In the creative, material selection, rolling and dyeing of each session, They are permeated with the thought and Practice on image perception and creativity, creative show. This study, tie-dye image perception of general characteristics are analyzed, methods and ways of how to creativity and performance was explored about shape, color, texture, fashionable of the tie-dye design.

摘要

意象是客观物象经过创作主体的情感活动而创造出来的一种艺术形象，意象之美是体现扎染艺术表现力的主要特征之一。在扎染的创意、材料选择、扎制以及染色的每个环节中，都渗透着意象感知、创意表现以及创造力形成等方面的思考与实践。本文通过分析扎染意象感知的共性特点，探讨了在现代扎染设计中，如何从形态、色彩、肌理、时尚追求等方面的进行创意、表现的方法与途径。

1. 引言

意象是客观物象经过创作主体的情感活动而创造出来的一种艺术形象，是主体的审美意识与审美客体的有机统一。感知来源于感觉与知觉，是感受系统对事物个别属性的反应，1) 知觉透过个人理解形成的对事物表面现象的综合释义。由于知觉的个体差异，人们由感觉和知觉而统括形成的感知便产生了差异。就扎染艺术创意和评判而言，每个个体的感知是不尽相同的，这种不同不是因为客观的存在，而是源于主观理解和判断的区别。在扎染艺术的教学及创意实践中，如何去以较为准确的意象感知来领悟和体现扎染的艺术特点，如何运用感知的共性和符号特点来拓展扎染艺术的创造力，便成为了笔者在教学和实践中常常思考的问题。

2. 意象感知与形态的创意表现

2.1 意象之美中的感知与追求

扎染作为古老的染色工艺之一，有着与其他印染工艺截然不同的意象感知以及创意表现的途径。意象之美是中国艺术追求之最高境界，也是中国及东方扎染艺术最主要的艺术特征。中国艺术意象的创造与表现，一般都试图客观物作为主观感知的象征和表现依托，而不是从客观的形态出发，而是倾向于意象感知的创造。这种意象感知的创造，与现代扎染设计中，如何运用感知的共性和符号特点来拓展扎染艺术的创造力，便成为了笔者在教学和实践中常常思考的问题。

2.2 虚而为实的感知与经营

方士庶在《天慵庵随笔》中道:“山川草木，造化自然，此实境也。因心造境，以手运心，此虚境也。虚而为实，在笔墨有无间。”借此精粹妙论来阐述扎染艺术意象感知的“虚而为实”也应该是非常恰当的。扎染形态的构成和中国画的表现一样，常常追求画面和形态表现中留有相应的空白，让虚实有致的空间来引导创作者和观赏者去想象和回味，去进行意象感知的再创造，使作品所要传达的
意味在那些空白中得以延伸，达到“书不尽意，画不尽意”之境。虚而为实，虚实相生，静中有动，处处皆成妙趣，也应该是扎染形态表现的要素之一。以宇宙之万物为对象，通过对形象、色彩、秩序、节奏的玩味，将实景的意象感知，创造为虚境的象征，这就是扎染艺术超越物外的境界。黑格尔在他的美学论著中曾说：“最杰出的艺术本领就是想象”，而空白正是作者和观者产生想象和意象感知的桥梁。中国人对“道”的体验是“于空寂处见流行，于流行处见空寂”).

在不经意间而得到的偶发形态，不但可以造就一幅有特点的作品，由偶发形态引发的偶发设计更是创造力的一种发挥。偶发形态的出现常常并非在于等待，而在善于发现。偶发形态出现的自身概率极小，但只有敏锐的设计师才能发现它，并捕捉到具有创意价值的部分，并且恰当地利用它们。利用偶发趣味的设计是对必然设计或称作常规设计的固有方法的突破，从某种角度说也是对一般表现形式的反叛或违背，偶发形态和趣味在一定程度上能帮助设计师完成创意的突破。

偶发形态和趣味的利用不同于创意中的顿悟，顿悟是指在有准备的前提下，创意不期而至。而偶发形态和趣味的利用是在无任何准备的条件下，无意中的意外收获，是帮助设计师发现创新点、突破设计陈规的火花。

3. 意象感知与色彩的创意表现

3.1 浪漫朦胧的感知与体验

在扎染的意象感知和创意表现中，形象的产生常常依赖的是其妙趣横生的色彩变化。在这些色彩变化中，“雨雾感”是最主要的特征之一。“雨雾感”即由含蓄莫测、若明若暗色晕变化所形成的色彩朦胧美和可意会而难以言传的含蓄美。这种抽象虚无、浪漫飘渺的朦胧色彩感知，往往可以给观者带来儿时仰望秋日流云的无尽乐趣。而斑斓色彩的跃动，其应运而生中似乎没有定法，而无法中又似乎包含着有法。
彩的雨雾感，凭借意象的感知和形象的超越，让形、色合舞而构成其独特的色彩神韵，这样的体验应该不失为是扎染创意的途径之一。现代各种染色助剂的出现，可以使扎染获得多种由深及浅或多次拔色、再套色，以及混底浅花的反相效果，打破传统手工扎染的许多局限，使扎染的创意和制作可以形成更加丰富多彩的朦胧效果。

3.2 自然之得的感知与妙用

在中国传统艺术中，很多作品都崇尚自然之得。工艺制作中的唐三彩、蜡染、玉石雕刻等都和扎染一样，无不存在着自然造就的种种因素。如果拿扎染色彩效果和唐三彩来进行一番比较的话，我们可以看到在这类工艺中，的确有许多不是人为可以完全左右的自然因素。扎染制作中的扎和唐三彩制作中的制坯、上釉一样，为一个把握结构的过程。此过程中，扎结的疏密、松紧，各种方法的变化都可通过周密的设计来完成，也即人为把握的成份较多。而扎染中的“染”和唐三彩的“烧制”过程，都是一件作品的显现和升华阶段，也是决定作品优劣的关键。此阶段中，人为因素虽起着重要的作用，但往往又不是人的因素完全可以预料和把握的。对于这种自然之得，在我们的创意和表现中，应该采用的态度是顺应、总结、提升，并使这些自然的赐予成为我们作品中的亮点和精髓。如强化水与色的参差渗透效果，再如，在多种色彩的浸染过程中，几种染料可以分别浸染或套染，亦可以利用几种染料调和后不同的上染率，在一次浸染中获得多次浸染的效果等。

3.3 个性色彩的感知与探索

时代的发展、科学技术的进步、审美观念的更新，不管是服饰面料还是家用纺织品面料的设计正走向一个由材质引导、由情感点化的个性化、多元化新时代。扎染的色彩效果，除了染料的直接表现外，通过材料、材质的二次开发和创新，亦可获得更为个性和多元化得色彩效果。注重研究材质色彩的层次性、色彩形象的多维性、搭配处理的灵活性，注重传达材质色彩的体验，追求色彩组合的流行趣味，已成为国内、国际众多扎染设计师推陈出新的法宝。材质的再设计就是将不同肌理的扎染材质进行多层叠加处理，形成整体或局部的重叠、互相渗透、虚实相间的别样色彩效果，使原有扎染面料再服装或家纺产品中显现出更多的层次感和更为丰富的质感。常用的重叠手法有：透明材质的重叠；透明材质和不透明材质的重叠等。材质的破坏性再设计也是体现色彩个性化的一种途径。可以通过拼贴、剪切、撕扯、镂空、烧花、烂花、抽纱等方法，破坏材质的原有表面形态，使其呈现看似不完整、不规则，但具有对固有观念的叛逆和创新色彩的效果。

4. 意象感知与肌理的创意表现

4.1 无为而治的感知与体验

扎染的扎结过程，从另一种角度来看，也是在织物上创造多维肌理效果的一种方法。在一般情况下，扎染色彩完成后需解开线结并将织物熨烫平整，以适应一般面料的使用需求。在现代扎染中，很多的作品已经打破了传统二维的概念，而是有意识地去将扎染过程中的肌理呈现，最大化的转换为作品或产品最终追求的三维肌理效果，从一个新的视角表达出意象与肌理的关系。在现代服装设计和面料运用中，许多面料和服装设计师，反其道而行之，充分运用扎染过程中形成的“疙瘩”和高温定型后形成的多种肌理效果，甚至有的都将扎结线绳材料都保留在面料上，使之达到“无为而治”的特定肌理效果。

4.2 现代科技的感知与运用

缩皱热定型工艺是来源于扎染工艺的一种现代工艺处理方法，主要是通过捆扎、结扎、平缝抽褶等方法表现独特的肌理图案，然后通过高温湿定型的工艺达到永久定型。现代扎染中的缩皱工艺方法（缩皱热定型工艺，收缩膜热定型工艺和机器压褶热定型工艺）对于表现抽象的肌理图案有着独特的效果。这种独特工艺所产生的三维肌理，其不规则的压褶改变了传统扎染面料的肌理面貌，显示出一种雕塑感、立体化的肌理效果。也大大弥补了传统扎染肌理语汇的单调，使面料肌理打破了单一的视觉效果，获得了视觉与触觉的双重美感。

绞撷喷染汽蒸定型工艺，是在现代扎染的缠扎和聚集手法基础上，对具有天然质感外观的各种面料进行扎染和聚染，然后通过高温高压定型，辅以其它如喷色、刷绘、拓印等工艺，获得变化多端的自然纹样浮雕肌理效果和多种色彩的组合。
在褶的处理上，三宅一生先生无疑是获取了最大的成功服装设计师之一，他的“创新”颠覆了传统，体现了前所未有的新观念，首开传统扎染与现代服装时尚结合的先河。而后，新井淳一先生的设计，不管是在阻燃金属纤维染色还是在使用热转移印花、热融解等技术改变面料的原始面貌等方面，都始终体现着传统与现代相联合的观念，并坚信传统工艺不能与现代科技相分割。

4.3 面料再造的感知与追求

多元面料的开发和再设计是艺术和技术的一种结合，它不但可以拓展材质在纺织品创造中的艺术表现力，丰富设计思维，突显设计师的创造理念，更可以表现出风格迥异的使用功能和新颖独特的视觉冲击力。经过再创造的面料从某种角度说，比原有的面料具有更高的艺术审美价值，艺术的再创造也将带来更多的经济附加值。面料的再创造包括面料的解构重组，这种重组、重塑的面料视觉、触觉肌理往往可以打破常规，具有较强的视觉震撼力，也更容易使产品在竞争中脱颖而出。

强调面料、材质本身作为创作、设计的灵感来源，重视研究对材质风格的二次开发和创新，注重运用多种艺术处理手段，研究，甚至把玩面料视觉形象的多维性、搭配处理的技巧性，注重传达面料本质美的体验，追求面料组合的流行趣味等，已成为国内外众多设计师推崇出新的法宝。

5. 意象感知与时尚的创意表现

5.1 时尚经典的感知与重构

提到扎染，在一般消费者的感知中，会出现圆形撮扎为主的图形及具有退晕的色彩效果。但在世界扎染艺术中，扎结和染色的方法非常多，一些传统的经典工艺和意象表达方法，已与现代生活方式很好地结合，同样可以造就时尚的流行。

传统染工艺有其自身的独特性，但在现代社会中也应该不是一尘不变的。染染中的“鱼子缬”是非常传统和有特点的扎结方法，这种方法从最初的以指尖撮布扎结，到唐代传入日本后改进为使用简单工具“扎勾”来制作，这种从徒手到借助器具的过程虽然提高了一定的工作效率，但它还是以“费工费时”和昂贵的价格，只能为少数人使用。上世纪九十年代，日本研究人员根据“鱼子缬”扎结的工作原理发明了一种扎结的机械化生产线，其扎结的花样被称为“蜘蛛纹”。这种扎结的点虽比“鱼子缬”大点，但它的工作效率却得到了几十倍甚至上百倍的提高。

这种工具的改进，应该说就是对科学技术的吸纳，对社会进步的一种适应，也使得本来不太可能运用于一般扎染服饰中的点状纹样得到“现代的运用”，前些年受消费者青睐的扎染“菠萝形”就是这一技术进步的结果之一。
重构的概念我们再这里可以理解为是将传统与时尚元素的有机结合。时尚性重构是将传统染撷图案中的优秀元素或工艺方法运用到现代扎染设计之中。时尚性重构可以将传统染撷图案中的优秀元素或工艺方法运用到现代扎染设计之中。时尚性重构可以将各种染撷工艺综合运用,扬长避短,发挥各自的优势,将两种或多种染撷技法综合运用,不仅能使表现语言更加丰富多彩,而且还能形成新的风格。

许多传统手工艺及技术与现代大工业的生产方式相比较,我们可能会认为是落后的。但这些手工艺所承载的生产方式、生产原理、生态原理以及所呈现的艺术形式,都是“当时的工匠们在长期与环境、自然的相处中产生和发展起来的,这里面所包含的生存策略、所呈现的对自然的理解,对人类自身的理解,对于现代设计而言,它们可能是更生态、更时尚”更多样化文化和多形式生存智慧和承载体。”

5.1 生态魅力的感知与展现

传统扎染中的自然材料和植物染料等生态元素,是现代人向往和追求的境界之一。在现代扎染艺术中,特别是个性化和小型化的产品中,利用植物植物染料色彩就是体现生态魅力的方法之一。传统植物染色中的许多技术、方法的科学性受到时代的局限,在色素的萃取和色牢度上也存在着许多无法解决的问题。而现代科学发展已可以采用乙醇替代水溶剂,在萃取液中添加阳离子或非离子表面活性剂等方法,使萃取率和染色速度和牢度得到较大的提高。这样科学方法的运用不但不会影响扎染艺术本的造物和造美的功能,反而可以提高品质,体现生态理念。再者,传统植物染色的媒染剂大都含有重金属离子,在现代看来也是一种非环保因素。而现代科技已发现用稀土——柠檬酸结合物做为传统媒染剂的替代物,不但可以解决重金属的问题,还可以提高色牢度和染色深度。诸如此类的现代科学发现,在现代扎染艺术的发展中都是应该以开放的态度积极吸纳和运用的,而不是死抱住传统不放,或因为传统染色方法存在的不足而降其拒之门外。
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参考文献:


注：
3) 宗白华. 中国艺术意境之诞生 (增订稿) [M]// 宗白华全集: 第 2 卷, 安徽教育出版社, 1994 年版: 373.
5) 诸葛铠. 适者生存: 中国传统手工艺的蜕变与再生, 装饰 [J], 2003,4: 4-5.
Costume Colour in China
- A Survey of Chinese Urban Residents’ Costume Colour Preferences

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Abstract
The China Fashion Colour Association conducted a survey of urban residents’ colour cognition and preferences in major cities of China in 2005, one of the topics being “costume and finery colour preferences”. This survey encompassed seven major cities and nearly 3,000 participants. The results reflect consumers’ cognition of and preferences for costume colour from several perspectives. Two important findings arose from the survey results: one the invariability and across-age tendencies found when respondents selected certain costume colours, which were associated with the temperament, style, and features of a nation and the soil for living and inhabiting; the other refers to the concentricity and oneness when selecting certain colours. Chinese consumers’ cognition of colour was found to be in the primary stage of relying on intuition, which was seen as a representation of immaturity in colour cognition and selection, and seemed incongruent when compared with the degree of development of the economy of China. This paper attempts to analyzes and discusses these phenomena starting from the basis of existing data, and explores the reasons for this apparent inconsistency in view of the rapid economic advancement and cultural development of China.

In 2005, the China Fashion Colour Association carried out the second survey of Chinese urban residents’ colour preferences and the fashion colour trends between 2006 and 2007, one of the to covered being “costume and finery colour preferences”. According to the results of the survey white and black were still the favorite and the second favorite colours of respondents respectively. From the perspectives of gender and age as well as territory and season, people preferred neutral colours (nearly 50%) to other achromatic colours. This survey indicated that people’s cognition of costume colour and aesthetic preferences showed a high degree of uniformity which was not only unexpected but also raised interest in the topic. In this paper, opinion and analysis of the uniformity and oneness of selection is discussed from three perspectives, i.e., color expression at an age of desire, colour selection at an age of the cult of the personality and the selection of “mature” colour at a naive age.

1. The Convergent Colour Expression in an Age of Desire

China may be said to be in an era full of expanded desires, abundant information, booming material consumption, various ever-changing entertainment trends, congested media and advertisements as well as spread short messages. In addition, there are various large and small international and national exhibitions, academic discussion of various disciplines and so on. In such a restless period, although there are more and more costume categories as well as more and more abundant designs and colours to choose from, the level of people’s cognition of costume colour is still very traditional and uniform, which is inconsistent with the main stream in the era. This creates a sharp contrast, leading to questions about people’s state of mind and the reasons for such a state.

Such seemingly convergent colour selection results would not appear to represent the real preferences of Chinese consumers at the present. However, it is an indication of the methods used by the general public to express their emotions by means of the language of colour are insufficient, and reflects that the overall aesthetic appreciation of colour is at an elementary stage.

The survey results show that people prefer white or black when they select the colours for their formal wear in different seasons. To some extent, it reflects the universal acknowledgement of the costume colour levels (Li Liting, 1996) of Chinese. Black and white costumes are thought to be suitable for formal occasions. And, as a result, they are called “superior colours”. The so-called impression of “superior” costume colour is dominant in people’s selection of costume colour in their daily lives. To many people, the pursuit of superior costume colours means the pursuit of superior costume feelings. This is one means by which they may encounter changes with consistent appearance. In addition, consumers who have limited knowledge of colour can show their prudence, class and taste either consciously or unconsciously.

The number of people who prefer neutral colours such as white and black in costume is greater in the case of males than females. This is consistent with the survey results of females’ preferences when they selected costume colour for their husbands or boyfriends. They evidently prefer achromatic colours, such as black and white. Thus it can be seen that the personality of silence, mystery, decency, nobleness, uniqueness and profoundness represented by black and the significance of elegance, gentleness, cleanliness and vividness represented by white are very fixed in people’s minds. The males in China, and those who observe them require their image to be precise, definite and profound.

Convergent colour expression is also shown by people’s preferences for national colours, such as blue, red and yellow. According to the survey results, these respondents, including enterprise and company employees, professionals without fixed incomes and the personnel with different educational backgrounds, prefer blue only second to white and black. Likewise, from the perspective of age, people born in different ages rank blue as their second favorite colour; the people in Beijing, Shanghai, Guangzhou, Chengdu and Wuhan also rank blue as their second favorite costume colour; the second choice of the colour of formal wear in spring and summer is also blue; besides, blue appears in the first chromatic colour block in the colour blocks for the match of upper and lower clothing.
The preference for blue next to achromatic colours has its roots in Chinese history. Indanthrene (dark blue) and light blue starched cotton cloth were worn by school children in the last century purplish blue was the colour of the Chinese tunic suit during the Cultural Revolution, dress suits and casual wear as well as the batik fabric dresses of national minorities and blue print fabric shirts indicate that blue has played an important role in modern Chinese costume. In addition, simplicity, introversion and harmony are represented by blue: it is suitable for the natural instincts of gentleness and moderation of Chinese, also for the complexion of the majority. In the answers to the question concerning which colour which can show Chinese culture the most favoured colour was red, accounting for 55.8%, and yellow came next, accounting for 22.9%. This is also applicable for costume colour selection. The professionals without fixed income rank red as their second favourite colour; in spring and summer, the respondents who had finished their education at primary level prefer red formal wear relatively; the consumers born in the 1950s, 1960s and 1970s rank red as their third favourite colour for formal wear in autumn and winter; public servants, the employees in public service units and the professionals without fixed income also rank red as their third favourite colour in casual wear colour selection in autumn and winter; and for accessories the respondents who selected red shoes ranked second after shoes of neutral colours. Enterprise and company employees, postgraduates and university students as well as the consumers born in the 1970s prefer yellow and rank it as their third favorite colour for casual wear in autumn and winter.

From the perspective of the colour block match of upper and lower clothing, the match of white and black ranks first, followed by black and black, white and blue, red and black and white and dark grey. The preferred colours accessories were black and white respectively, which shows that achromatic colour plays a predominant role in finery colour match nowadays.

In an age of desires, convergent colour expression greatly reflects people’s preferences for traditional aesthetic appreciation. Although the results of such selection may be inconsistent with the market trend it seems that people still seek those changeless factors.

2. The Convergent Selection in an Age of Cult of Personality

No significant differences in the survey data could be seen, which indicated that respondents were unwilling to adapt to the changes influencing aesthetics in recent times. This finding seems to be more consistent with the situation in the 1970s or 1980s when there was no selection of colour based on personality and people's aesthetic attitudes were nearly the same. Nowadays, greatly affected by the trend of material consumerism, it would seem that people should attach more importance to the pursuit of personality. Therefore, the degree of uniformity in colour preferences suggests that the respondents lacked personalized cognition of colour.

The convergent selection can be interpreted as the similarity of city life and culture brought about by trend. Everyone faces the same problems and challenges, including competition, pressure, pollution, health and the like. The fast dissemination of information enables people in different cities to experience the same trend at the same time. Everyone is pursuing trend and fashion. Overwhelmed by trends and influenced by all kinds of famous international brands, most people actively or passively accept them before they have time to think. That may be an indispensable phase to develop the same aesthetic attitude in the process of internationalization.

The psychological convergence is also driven by the doctrine of the mean. White and black are present in the colour palettes every year. For each occasion and at any time, it is acceptable to wear white or black costumes. This kind of attitude which is safe and effective and bears no aesthetic risks is the popular attitude towards costumes.

In addition, the psychological convergence is reflected by people's profound understanding of dressing on different occasions. In general, different occasions require different costumes, the colour of which is usually sober and elegant on formal occasions. Neutral white and black are believed to be superior colours, and that has a great influence on people’s psychology when choosing costumes. The commonest match is the match of white upper clothing and black lower clothing. In fact, this kind of "standard" match cannot be seen everywhere in real life. The decisions on selection often come from the aesthetic cognition rather than the actual dressing. The costumes of white and black may also indicate a bold character and fashionable taste.

The psychological convergence also reflects the similarities between male and female respondents in their costume colour selection, that is, selecting neutral colour and hence showing a preference for neutral colour costume. The achromatic costume colours, including black, white and grey, seem to match with others with unlimited possibilities for combination. The achromatic colours can easily be worn by men, or women, the young or the old, in winter or in spring, for formal wear or casual wear, as underwear or outer garments, for clothes or accessories. In the positive sense, costumes of neutral colours can indicate a steady and serious temperament. Nonetheless, the universality in selection is sure to result in a depersonalization of the wearers.

3. The Selection of "Maturity" in a Naive Age

It might seem that the selection of black and white in costume is a high grade trend. Alternatively it may be seen as a simple selection indicative of the fact that people’s colour knowledge is still limited. A group's colour knowledge may be said to resemble a screw type development, i.e., the colour selection process graduates from simple primary colours to multifarious colours and subsequently to subtle simple colours. The selection of achromatic colours, according to the results obtained from the primary and advanced stages, follow a similar pattern and there are two distinct cognition levels and expression stages. The colour cognition levels may be referred to as follows: primary stage - "pupil", intermediate stage - "middle school student", and advanced stage - "undergraduate". Educationally and culturally, most respondents may be seen as being still at the "pupil" stage.

Primary Stage - "Pupil": If the similarity of data results and preferences for the colours black and white are attributed to internationalism, then the selection of colours may appear as if at a primary
stage for a nation. Black and white have played an important role on the stage of international fashion, so it’s natural thing to adore and imitate these. As a consequence, when the people select colours, they will automatically choose black and white irrespective of the kind of costume.

People’s understanding of costume seasons is relatively unified today. Regardless of whether it is formal wear or casual wear, white is the first choice in spring and summer and black is the first choice in autumn and winter. The most basic requirement of the clothing is to keep the wearer comfortable, similarly it is elementary to select colours according to the seasons.

Intermediate Stage - "Middle School Student": Chinese women may be classified as being at the intermediate stage in colour selection. This may be attributed to their sensitivity to both promotional materials and the changes which occur in product ranges. The survey results also reflected this point – their selections were diverse and their preference was pastel shades. For example, female consumers ranked pastels as the most desirable colours for formal wear followed by bright colours neutrals. In the case of casual wear the first choice was pastels and the second was bright colours, followed in third place again by the neutrals. Few differences were found between consumers in Guangzhou and other cities. Firstly, the preference for neutral colours in the other six cities was stronger than that in Guangzhou; secondly, the proportion of rose pink colouring in Guangzhou is slightly higher than that in both Beijing and Shanghai; and thirdly, the consumers in Guangzhou preferred pastel- shade costumes. The geographic factor may have influenced the findings. Guangzhou, being located in the south of China, has less extreme changes in temperature for the different seasons, so it is customary for people to wear brilliant colours. In addition, the economy of Guangzhou grew more rapidly than that of other cities in China. Guangzhou may also be said to be different in the sense of the attitudes of the people and the atmosphere found in the city. This would appear to have influenced in turn the diversity and nature of costume colour.

The young respondents and ones with a higher education all clearly expressed their preferences for chromatic colours when selecting the colours for casual wear, i.e., the consumers born in the 1980s preferred the hue of purple and rose pink for casual wear for both autumn and winter; the graduates and undergraduates students in the higher education level preferred formal wear of bluish violet and yellow for both spring and summer; the preferred colour for formal wear in autumn and winter was bluish violet; and for the casual wear, the bluish violet was the second preference. In addition, they also strongly preferred yellow and orange casual wear. Bluish violet was also popular with the respondents, after the hue of blue. Bluish violet was the second most popular hue selected by respondents with different occupations for autumn and winter; it was also the second selection for formal wear of the respondents born in the 1970s, 1960s and 1950s for autumn and winter. The chromatic colours were preferred for causal wear.

example, pastel shades were selected by the respondents for spring and summer, their second choice having been bright colours, both of which took precedence over neutral colours. The pastel shades were listed in first position, and neutral colours in the second position, for autumn and winter, according to the chroma. The chromatic colours, in particular pastel shades, bluish violet, purple and rose pink were evidently the most popular.

Advanced Stage - "Undergraduate": The preferences in an age of maturity combined the influences of internationalism nationalism the demands of others and individual preference. Consumers seek internationalism as well as being concerned about nationalism. Popularity and fashion may be preferred, but what more important is to highlight individuality.

Conclusion
From the results of this survey report (clothing) and the results analysis, two conclusions may be drawn. I. The universality of the choice of black and white costume is reflected in the people’s cognition and selection of the colour of formal wear. The preference for the colours blue and red reflects some habits and features of relevance to the traditions of the nation. The race the Confucian influence on the Chinese, and other factors formed some of the habits, custom and concepts. II. The similarities in selection reflect the state of colour education in China. The colour cognition and preferences of the people may be said to be immature. It is worthy of mention that there remains considerable scope for the universal education of colour and the development of commercial opportunities.

References
4. Lai Qiong-qi, The Colour Psychology of Design, Taiwan, the limited company of communication culture, (2001)
7. "Baidu"(www.baidu.com)

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Tongxiang Multi-colour Stencilling Printing

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Abstract

Stencilling printing is a unique traditional and finishing craft which has developed over a thousand years in Yangtze River region. Currently the traditional handcraft of the multi-color stencilling printing has gradually been decreased due to the rapid development of the modern printing technology and its industrialization popularly. There is still preserve of the multi-color stencilling printing industry in Tongxiang City and the printed clothes are particularly used for marriage portion which is a kind of the local distinct wedding tradition. By substantive on-the-spot investigation, object analysis and together with the design practice, the study systematically investigated the traditional multi-color stencilling printing’s procedure, technical requirements and the handicraft’s features.

摘 要

镂版印花作为我国传统的手工印染工艺,至今已有千余年历史。但随着时代的变迁,该工艺已在各地失去了原有的生存空间。然而位于浙江北部的桐乡至今仍保留着这一古老工艺。本文通过对镂版印花的发展历史进行了梳理,同时通过对桐乡彩色拷花工艺的考察,归纳总结了工艺的工艺流程与技术要点,并通过实物分析的方法,对彩色拷花工艺的艺术特色进行分析。

关键词

镂版印花;手工印染;桐乡

1. 镂版印花的发展

镂版印花工艺也叫镂版刷花、镂版漏印、彩印花布等。[1, 2] 据考古发掘报告,最早使用镂版印花工艺的织物是在距今两千年的西汉末年,此后新疆阿斯塔纳、福州黄升墓、苏州虎丘塔、西夏拜口寺双塔都有实物出土,到清末及民国时期,镂版印花工艺的发展达到顶峰。随着时代的变迁和工业的发展,手工镂版印花工艺逐渐在各地退出历史舞台。然而在浙江北部的桐乡市,至今依然还保留着被当地人称为“彩色拷花”的镂版印花工艺。本文通过文献研究、实地考察和实物分析相结合的方法,对该工艺的历史沿革、工艺流程、技术要点与艺术特色进行介绍与分析。

1.1. 镂版印花工艺的形成期

镂版印花工艺在各历史时期都有使用,各地也都有出土实例。秦汉以来,用型版印制织物的技术,已经兴起并且迅速发展起来。[4] 甘肃武威磨咀子汉墓出土的标号为20的三件套色印花丝织物,经专家鉴定,这三件草筐上的印花绢采用了镂版印花的工艺。采用事先刻好三种单花镂空版,先印绿花纹,再印小的白花纹,最后印大的白色花纹,分三次套印出来的。这种涂印的技法成熟,风格精致新颖。[5] 据此推断秦汉时期应是镂版印花的发展期。

1.2. 镂版印花工艺的成熟与普及


1.3. 镂版印花工艺的高峰期

清末及民国时期,随着纺织业的发展,尤其化学染料及染色助剂的出现和引入,并运用于镂版印花工艺之后其鲜艳度与色牢度有了较大提升,镂版印花在清末得到了极大的发展,从事镂版印花的大小染坊在集市随处可见,石门镇上的丰同裕染坊就是著名漫画家丰子恺先生家的祖业。此后,民间镂版印花用的天然染料基本被化学染料取代。在江南地区,由于镂版印花与蓝印花布生产的繁荣出现了专业化分工,刻版与印花分别由专业作坊完成,其中苏州“李灿记”刻版店享有盛誉,所刻的花版行销全国。

2. 桐乡彩色拷花的工艺流程

一直过着男耕女织、自给自足的生活,浙北农村妇女在农忙之余将自家种的棉花或养的蚕茧纺成纱、织成布,再将其交给染坊进行印染加工。早在女孩十岁左右,母亲就开始为其准备嫁妆,将织好的绸布拿去染色或拷花。在桐乡,彩色拷花与蓝印花布都被称为“拷花布”,为了区别于蓝印花布,于是有了彩色拷花的叫法。两者都是利用镂空的纸版进行加工的印染工艺,所不同的是蓝印花布需要先在布上印制用黄豆粉与石灰调制的防染层后在染缸内浸染,而彩色拷花是把镂刻花纹的纸版平放在布上,然后对镂空处局部染色,属直接印花;每款蓝印花布只需要一张纸版,而彩色拷花每款图案需要几张纸版,一色一版,依次地用不同色彩的染料刷印到布面上;蓝印花布是印花与染色两种工艺的结合。而彩色拷花只是采用多色印花工艺。

表 1：蓝印花布与彩色拷花的工艺比较

<table>
<thead>
<tr>
<th>染料类型</th>
<th>植物染料</th>
<th>化学染料</th>
</tr>
</thead>
<tbody>
<tr>
<td>显花原理</td>
<td>浆料镂版印花防染</td>
<td>镂版印花直接产生图案</td>
</tr>
</tbody>
</table>

注: [1] 本文参考了以下文献:《尚书·皋陶谟》、《考工记》、《周礼·天官·内司服》、《周礼·天官·内司服》、《周礼·天官·内司服》等。
桐乡彩色拷花基本保留了传统的制作工艺，可分为刻版、练布、调色、印花和固色五个步骤。

2.1 刻版
刻版是指根据设计好的花样，在桐油涂抹过的纸上分色刻版的步骤。纸版加工过程可分为糊裱、描版、刻版、刷桐油等工序。拷花用的镂空纸版，比蓝印花布用的纸稍薄，型纸的传统做法是用四五层桑皮纸用柿漆裱糊在一起，再经过刻花、上生桐油、火烘、上熟桐油、晾干等工序。现在型纸的做法大多采用牛皮纸或硬卡纸上刷清漆的方法，甚至还有使用塑料板代替的。

2.2 练布
练布就是使绸布胶化的过程。染坊收染的都是当地农民的自织绸布，由于织布前需将丝线上浆处理，因此织完的绸布生硬而刚性强，因此必须先在碱水中煮半小时，然后漂洗晾干。原理是退浆并将蚕丝脱胶精练，这样练过的绸布变得柔软而有光泽。

2.3 调色
调色就是在染液中分别加入助剂与胶粉并调成浆状（图一）。传统拷花使用天然染料，如今都已改用化学染料。棉布上印花大多使用直接染料，加酸作为助染剂；丝绸上以使用酸性染料为主，某些颜色（如玫红、墨绿）则因为碱性染料效果比酸性染料好，因此也有两种染料同在一块面料上使用的情况。为了提高上色率，酸性染料还需加冰醋酸做助染剂。

2.4 印花
印花就是在白布上覆盖纸版再把颜色涂刷上去进行着色的过程，是所有工序中最复杂、也是最关键的一部分。由于自织绸布的门幅一般只有二尺一寸（70厘米左右）宽，因此印布面之必须先将布缝合在一起，一般大的被面用三幅绸布拼合，小的则用两幅，拼合后的被面长约240厘米，宽210厘米左右。印制前先将绸布固定在台板上，一般先从底色印起，这样再印其他颜色时就有了一个位置作为参照，底色印好后则再从画面中间印其他颜色（图2），然后再向四周扩散，最后印花边，颜色印制基本遵循先印浅色再印深色、先印大块面后印小块面的原则。工匠使用的刷子以前都是从湖州定制的羊毛刷，大的有碗口粗，小的则有乒乓球大小，现在则以油漆匠用的刷子代替。

一个熟练的工匠一天只能印两条大被面，因此印花也是一道既费时又费力的工艺。绝大部分的拷花布采用平涂的方法，此外还有用飞白法与晕染法。飞白法是用刷子在事先计划好的方向涂刷，并使其留有飞白而体现出立体感（图3）；晕染法多见于对花瓣的塑造，具体做法是先刷浅色，未干时再刷深色，从而使之自然渗化，具有层次感。

2.5 固色
印花后的布料还需放入大锅上的木桶内进行高温蒸，这个过程就是固色。这对于天然染料或化学染料都是必须的步骤，它能促进染料着色，使得各种颜色能够牢固与稳定，并能提高颜色的鲜艳度。程序是将各种印制完成的布料卷起，外面包裹白布并放入桶内蒸2小时左右。固色过程不能让水滴在印好的布上，否则颜色即会渗化，破坏图案的效果。固色后取出晾晒，整烫叠齐，至此整个加工过程全部完成。

3. 彩色拷花的色彩与染料
传统的彩色拷花以矿物染料及植物染料（如红花、靛蓝、槐花、乌桕、薯莨、桑椹）印染而成，色彩多见大红、品红、玫红、品绿、藤黄、土黄和茄紫等色，其鲜艳、亮丽、丰富的色彩效果是其他印染工艺所无法比拟的。随着化学染料及染色助剂的出现和引入，并运用于彩色拷花工艺之后其鲜艳度与色牢度有了较大提升，民间彩色拷花的用料基本被化学染料取代。据桐乡百年老店东仁和拷花的赵宝荣师傅介绍，解放前彩色拷花以使用进口染料为主。这类使用进口化学染剂的彩色拷花在桐乡还被称为“洋拷花”，以区别使用传统染料制作的拷花布。在江南一带，这种以艳丽为特色的纺织品被广泛用于妇女服饰及儿女婚嫁。然而到今天，拷花布只用于婚纱的被面而不做别的用途，婚后一般都有50-60条左右的被子，其中采用彩色拷花等传统染色方法制作的被子有8条左右，因此彩色拷花这种传统印染工艺传承至今，并在当地市场占有其独特地位。以前的拷花布每幅可达12种左右的颜色，而现在的则减少到6-8种颜色，色套越多，则工序越多，难度越大、成本越高。工匠常用极少的几种高纯度的颜色去概括与表现各种对象，形成极具装饰性的色彩效果，用色强烈和夸张是拷花布的特点。

4. 彩色拷花的图案特征
彩色拷花的工艺流程全部采用手工操作，产品适用于百姓日常生活，具有较高的实用价值、工艺价值和审美价值。图案题材来自传统的民间民俗文化，与刺绣、年画、剪纸等其他艺术形式有着密切的联系。

4.1 图案题材
彩色拷花过去有衣料、被面、包袱、门帘、帐沿、枕顶、桌围等不同的形式和用途。所采用的大多是花鸟、瑞兽、果品和戏剧人物等题材，其花纹图形以民间传统的吉祥图案为主，如凤穿牡丹（图4）、龙凤呈祥、喜鹊登梅、鸳鸯荷花、橙花开百子、富贵三多、四喜满堂、事事如意、四季平安、麒麟送子、金鱼闹莲等。
连年有余、五福捧寿等，具有浓厚的乡土气息，同时还反映了人民对幸福生活的追求和渴望。此外，根据不同的用途，图案题材也会有所不同，被面用于婚嫁，因此以瑞兽、花卉、童子为主，以求富贵和美、多子多福；包袱以花鸟、几何纹样为多；衣料则以花卉为主。

4.2 图案的造型特点

由于是利用型版来造型，彩色拷花的图案有着自身的特点。型版的制作在很大程度上影响甚至决定了拷花图案的风格。型版的花型塑造需要经过镂刻来实现，而要考虑到型版的耐用度，因此图案造型就受到极大的制约，其不能是封闭图形，长线条要分段刻画，小点要刻大，细线要刻粗，否则后期刷染时将不易将其涂刷到位。然而这种制约反过来也成为了其造型的特质，利用色块与短线造型是彩色拷花大的特点，这就形成了彩色拷花浑厚、质朴、粗犷与明快的风格。彩色拷花没有像年画那样的轮廓线，各种大小不一、色彩各异的块面合理地分布于画面各处而相互呼应，并且色与色之间常留有空白或空出白线，这些被挤出来的白线也就成了彩色拷花图案的另外一大特色，这些白线既是对形象的勾勒刻画，又能防止颜色与颜色之间的相互渗化，还保证了画面的透气感，同时将各种鲜艳的色彩分隔开来使之具有调和感。

4.3 图案的组织形式

彩色拷花图案的组织形式，主要有折枝花、团花、四方连续和适合纹样，其构图考究，装饰性强，注重画面的均衡性和表达性。图案构成还根据具体用途有不同的形式，衣料有布多采用四方连续的小花图案，被面多由花心加花边组成，但花心有满花和稀花两种形式，满花是指采用四方连续的大花图案，稀花是指中央团花加四个角隅图案的组合，花边大多分两层，其中内层花边多采用二方连续的花卉纹样，外层花边则多为简洁的几何纹样或喷涂成单色。方巾、包袱、围巾、门帘则多采用适合纹样。由于受到型纸大小的限制，满花大被面的花心图案需 6 次涂刷，小被面则需分 4 次涂刷，通过平移、旋转、正反对印等不同方法将纹样印满画面。稀花则是团花、角隅分别印制，花心的团花纹样题材一般为对龙、对凤、对狮、对孔雀等对称图案。花心和花边的型版需分刻制，花边印印时比较灵活，根据长短可扩大或缩小。除此之外，彩色拷花还注重画面中的秩序感，利用纹样中图形的大小对比、疏密对比、位置关系对比、装饰方法对比来烘托画面中的主题，使主体形象鲜明，视觉中心突出，画面具有清晰的条理性。

图 2. 印花：底色喷好后，从画面中央开始涂刷

图 3. 飞白效果：用飞白法处理的兔图案

图 4. 风穿牡丹（方巾，2008 年），尺寸：66×66CM

5. 结语

彩色拷花布平凡而简朴，有工艺简单、操作便捷、颜色艳丽等特点，它凝聚着桐乡人民对生活的热爱与对美的追求，从客观世界中进行提炼化复杂为简单，抓住事物最美的本质特征，将其完美再现出来，从而创造出新的视觉形象。这样的造型方法在营造这些纹样的同时，也帮助人们在生活中创造了一个理想的精神世界，寄托自己的情感。

参考文献

[3] 袁济长，山东民间印花布，济南，山东美术出版社，1986。
[4] 陈维稷，中国纺织科学技术史，古代部分，科学出版社，1984。
[5] 甘肃省博物院、武威磨咀子三座汉墓发掘简报，文物，1972，第 12 期。
[7] 郑墨，美在民间，北京工艺美术出版社，1987。
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