Research on Contemporary Development and Design Application of Risograph Porous Printing

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Abstract

The high development of the Internet and all media has fostered the emergence of the "minority" era. People's material and spiritual needs have become more and more diversified and personalized. Consumers are no longer a unified whole, but divided into minority groups with common interests or attitudes towards life. It is also under this "minority" demand, Risograph, which was born in 1984, has quietly ushered in a revival. Firstly, through the method of comparative research, this paper analyzes the similarities and differences between risograph perforated printing and the four printing forms, and then systematically combs the historical background and development of risograph printing, discusses its operation principle and minority characteristics, combined with the multi-dimensional drive of social, market and humanistic needs, intuitively observes the artistic ecology of risograph perforated printing and summarizes its artistic effect. Then, through semi-structured interviews and case analysis, take the art printing studio, the main body of printing, as an example to deeply analyze the examples, and use the text analysis method to transform the unstructured original text into structured, highly abstract and characteristic quantitative information, so as to more intuitively reveal its ecological development, operation mode and various problems in the application and promotion of art design, This paper discusses the diversity exploration of cultural activities, the personalized satisfaction of audience groups and the possibility development of visual design, and explores the innovative path of its development and design application.

Keywords

Risograph porous printing; Graphic design; Minority printing; Visual presentation; Marketing management

Introduction

Risograph stencil printing is a spot color digital fast printing method based on the principle of stencil printing, that is, the form of screen printing. With the addition of new users mainly graphic designers and artists, the image of risograph has gradually changed from office equipment to art tools.

At the same time, risograph is also closely connected with independent publications and has become a media form that provides reproducible printing technology and artistic presentation for the independent publication of works by designers, illustrators or artists. For designers, risograph is not only a technical means, but also a part of the content of works because it can better present works, Its unique spot color, fluorescent color, accidental effect of misprint and overprint, and dot texture add imperfect authenticity to the graphic design form, highlighting the avant-garde postmodern characteristics. For consumers, behind the form of art printing is the "spiritual touch" above the "material necessity", which is the life taste, aesthetic temperament and aesthetic preference bred by the personal life proposition. Once the symbolic meaning and morphological temperament of printed paper products meet the personal life proposition of consumers, Risograph porous printing has been injected with the depth of cultural connotation through moving recognition and appeal, become a creative way with emotional dimension, and achieve the self realization of designers and consumers.

Research Focus

The high development of the Internet and all media has fostered the emergence of the "minority" era. People's material and spiritual needs have become more and more diversified and personalized. Consumers are no longer a unified whole, but divided into minority groups with common interests or attitudes towards life. It is also under this "minority" demand, Risograph, which was born in 1984, has quietly ushered in a revival. "Minority" is a term relative to the public and an interpretation of the group. In a broad sense, minority refers to a minority or a group that is more fixed and likes and does not drift with the tide because of the public's hobbies; In the narrow sense, the minority refers to a group with a specific professional background, whose needs point to more professional and have higher requirements and standards than the public. Today, with the revival of risograph, to a certain extent, it has successfully become a minority choice in the "narrow sense". The addition of new users mainly graphic designers and artists has gradually changed the image of risograph from office equipment to art tools. At the same time, risograph is also closely linked with independent publications and has become a media form that provides reproducible printing technology and artistic presentation for the independent publication of works such as designers, illustrators or artists. Risograph is not only a technical means, but also a part of the content of works because it can better present works, which is favored in independent publishing. From a foreign perspec-

tive, the Netherlands is the first country to combine risograph porous printing with graphic art, and then more and more teams and studios focus on risograph, such as ditto press in London, rizzeria in Sydney, guild in Melbourne, Chez ROSI in Brussels, risographique in Berlin and barriobajero in Stockholm. So far, there are about 400 risograph porous printing studios around the world, mainly in North America and Europe, with about 150 each, and Asia is concentrated in Japan, South Korea and other East Asian regions. In China, risograph porous printing started late, and its art printing studios are also concentrated in Hong Kong, Taiwan and first tier cities in the mainland. In 2011, the first studio dedicated to risograph was established. At the same time, with the return of European and American students, application risograph studios such as banana fish Bookstore were established one after another. In 2016, they successfully entered the graphic design courses of colleges and universities, such as the Central Academy of fine arts, China Academy of fine arts, Beijing University of Aeronautics and Astronautics, East China Normal University, etc.

This paper focuses on the graphic design application of niche printing, combs the development context of contemporary niche printing through the investigation, analysis, research and summary of Riso printing, shows the strong market vitality of niche printing, and puts forward the idea of the innovation path of art printing. As a low-cost hole printing, risograph has been favored by designers, illustrators and other groups in recent years because of its spot color fast printing method, and is more and more used in graphic design creation. However, at present, the application of risograph graphic design is still in the relatively basic “printing” behavior stage. Through the research methods of example analysis and comparative analysis, this paper establishes the analysis framework of “digital vision paper performance”, and further explores the function and emotional value of paper expression on the basis of summarizing and analyzing the advantages and characteristics of risograph graphic design, Explore the unity of design content and printing form, better present the artistic value and design concept of works, and find the innovative path of niche printing and the application of risograph graphic design.

Literature Review

Although risograph stencil printing was put into use in the 1980s, it has not been used on a large scale at the national or international level. Most of the documents focus on the technical fields such as printing principle, ink and digitization. Until the era of focus, risograph stencil printing, as a new form of artistic expression, has welcomed the favor of minority groups, Risograph porous printing is related to art, design, independent publishing and art book exhibition, and relevant literature has appeared. For example, risomania: the new spirit of printing, published by the Swiss independent press Niggli in 2018, is a comprehensive introduction to contemporary risograph porous printing, which tells about the rediscovery of risograph porous printing by graphic designers and artists all over the world, as well as similar almost forgotten technologies (such as wax paper mimeograph) or

other machines, And triggered an unexpected revival of art printing; Then it describes the printing scene of contemporary risograph plate printing, and shows the world-famous publishers, printers and design research centered on risograph plate printing; The core of the book is a large number of diversified example analysis, such as postcards, magazines, posters, leaflets and experimental printing products, which systematically expounds the imperfect authenticity, the unique control power of color and texture, and the "imperfect authenticity". In 2017, Sven tillack of hfbk University of Fine Arts in Hamburg discussed risograph stencil printing in his graduation thesis "exploriso: low tech fine art", which was jointly published by Stuttgart Academy of art and design, hfbk University of Fine Arts in Hamburg and HGB Academy of Fine Arts in Leipzig. In the book, the author described the historical evolution of risograph stencil printing from color, paper Risograph porous printing is introduced in all aspects of document processing and printing. In 2020, Lee Joyce S. of the University of California, published in the ethical praxis in industry conference proceedings, "recycling risograph machines: the allure of small - scale printmaking in the era of big data". He proposed that in today's era, paper documents are increasingly replaced by digital documents, which seems to have no cost and unlimited reproduction. However, the attraction of paper has not subsided, but has been strengthened again in the digital age. Through printing practice, the author concludes that risograph porous printing, as a mechanized temperament and its artistic and unique "human" temperament, has both but not the same. The author believes that this is a response to technological progress and the resulting social change, It serves as a prelude to the digital paper media with aesthetic participation.

There are relatively few literatures discussing risograph in China, and the relevant published books are still blank. The journal papers available on the China knowledge online include "exploration of risograph printing and traditional handmade paper printing design" published by Yang Kaimin in publishing wide angle in December 2019, pointing out that risograph porous printing has a unique printing effect different from traditional printing technology, Creatively combine risograph porous printing with traditional manual paper, ancient carrier and modern technology to realize the new sensory experience of art printing. In addition, the 2020 master's thesis of Suzhou University, China, Chen Yirong's "Research on the application of risograph digital hole printing technology in graphic design", takes risograph porous printing as the research object, and deeply explores its important value in graphic design. The author introduces a number of art printing cases, points out the superior artistic effect of risograph porous printing, and finally provides a new idea of risograph porous printing in the direction of book publishing.

The Concept and Characteristics of Risograph

Introduction to Printing Methods: Taking China as an Example

Printing methods can be basically divided into four forms: relief printing, gravure printing, lithography and hole printing. Printing is one of China's "four great inventions". The earliest printing method originated in China, developed from China's unique seal culture, and gradually evolved into batch block printing in the form of "relief"; The methods of stone rubbing and rubbing have gradually developed and become the rudiment of gravure printing. Hole printing can be traced back to the "paper age" in the Greek period. At that time, it was called type printing, also known as engraving printing; Lithography originated from lithography invented by Bohemians at the end of the 18th century. After the invention of drum printing machine, offset printing in the form of lithography has become the mainstream and is widely used in the printing industry.

Engraving printing is the earliest printing method in China. From the "impression" made by pottery in the primitive society, the printing printing of bark carving, to the use of seals, and then to the later engraving of wood to print silk books and banknotes, as well as the engraving inherited to this day, it is the way of engraving printing, which constitutes a long history of engraving printing and movable type printing, one of China's four great inventions, It developed on the basis of block printing. Because block printing is a relief printing method, but because it is carved on the whole "plate", it is often time-consuming and laborious, and can only be used once. Even if you change a word or a line, you need to re carve the page, so the printing technology that can change the plate more flexibly came into being: according to Shen Kuo's Mengxi Bitan, with the rich practical experience of block printing in previous dynasties, After repeated experiments, Bi Sheng, a civilian inventor in the Northern Song Dynasty, made clay movable type in the Qingli period of Renzong of the Song Dynasty (1041-1048 A.D.), which successfully made the edition "live", became an important turning point in the mode of information communication in the history of China and even the world, and completed a major revolution in the history of printing. It was not until 400 years later that Johannes Gutenberg, a German who was regarded as the father of Western printing and the father of printing press, invented lead movable type and Gutenberg printing press. The invention of Gutenberg printing press further improved the efficiency of printing, made printing more convenient, greatly promoted the dissemination of information, laid the foundation for cultural popularization, further promoted the Western religious reform, and created conditions for the Western Renaissance and the development of science and technology. The Gutenberg printing press has been used until the 19th century and even the 20th century as the main means of printing and information dissemination. Until the development of offset printing in the 20th century, the labor-intensive nature and the need to store a large number of lead fonts led to the fact that the letterpress printing process was no longer popular, and the type letterpress finally withdrew from the historical stage

under the impact of offset printing.

The rudiment of gravure printing can be seen from the stone rubbing and rubbing methods in ancient China, but in the subsequent development of printing methods, the engraving in the form of relief printing has become the mainstream, and gravure has only been used as a means of artistic creation such as rubbing and printmaking, which has not been further developed. The formal engraving intaglio was invented by Italians in the mid-15th century and evolved from the art of engraving. It was first carved by hand, then chemical etching, and later mechanical engraving. After the invention of copper plate gravure technology in the 15th century, it was introduced into China in the form of religious prints by Western missionaries. This relatively mature gravure technology developed to a certain extent in the Qing Dynasty, and a series of famous copper plate gravure prints appeared, such as 36 scenes of summer resort and the victory of Qianlong in the western region. Gravure printing has bright colors, rich levels, high printing quality and fast printing speed, but it also has some defects, such as high plate making cost, complex plate making process and unsuitable for small batch printing.

Lithography originated from the lithography of Bohemians in the late 18th century. It was used for religious propaganda in the first half of the 19th century. It was not gradually popularized and applied to ordinary printing until the invention of photographic lithography in the mid-19th century. It spread to China. In 1832 (the 11th year of Daoguang in the Qing Dynasty), the English missionary W.H. Medhurst set up a lithography office in Macao to print Chinese books. In 1876 (the second year of Guangxu in the Qing Dynasty), the legal person Weng Xianggong (Catholic priest) and Chinese Qiu Ziang set up a “Tushanwan lithography office” in Shanghai, printed church pictorial in lithography, and the “dianbaizhai lithography bureau” was established. In modern times, offset printing has become the mainstream printing method in the world, replacing the Western lead movable type and Chinese block printing. Offset printing with low cost, simple printing, high efficiency and high popularity has become the most used printing method in the world.

In addition to the three printing methods of letterpress, lithography and intaglio, there is another printing method called hole printing, which is also a unique branch of modern printing industry. In addition to commercial printing, it has attracted much attention in the field of art and design. Hole printing can be traced back to the “paper age” in the Greek period. At that time, it was called type printing, also known as engraving printing; After Edison invented typewriting transcription printing and textile printing at the end of the 19th century, British Samuel Simon invented screen printing at the beginning of the 20th century, which has become what is often called “screen printing” and a mature form of hole printing. Screen printing uses the screen as the plate, and produces two parts of picture and text and plate film on the printing plate. The function of plate film is to prevent the passage of ink, while the picture and text part is to leak the ink onto the substrate through the scraping

and pressing of external force, so as to form a printing pattern. Screen printing has strong ink and bright color. It can be printed with any material, plane and curved surface. Therefore, it is widely used in the surface printing of textiles. However, screen printing also has the problems of slow printing speed and low production. Manual operation tests the operation technology very much, and the performance of color printing is difficult. The more colors, the more difficult printing is, so it is not suitable for mass printing. After modern times, hole printing has also realized mechanization and digitization, which provides conditions for the batch and application of hole printing.

A Spot Color Printing Method—Risograph Porous Printing

(1) The historical evolution of risograph

On September 2, 1924, Noboru Hayama was born in Tokyo as a child of a Japanese soldier. In 1946, he got his own mimeograph and began to work at his home in Tokyo. He named his studio "ideal", which is pronounced "Riso" in Japanese. He was officially registered in Tokyo on September 2, 1946. In 1948, the company moved to a sales office in Nihonbashi, the business district of Tokyo. The company's name was changed to "Riso Sha" (Japanese pronunciation), which means "ideal printing". He was soon recognized for his extremely accurate and high-quality printed works, and customers from private companies, research institutions and government departments brought him a large number of orders. However, at that time, his ink depended on procurement until he encountered a serious traffic accident on the way to purchase ink. This accident made Hayama decide to develop his own ink. In 1954, Hayama successfully developed Japan's first emulsion ink (i.e. water and oil-based ink), "Riso ink". Ideal company has developed from a printing company to an industrial technology research company. In 1955, Hayama renamed the company "ideal Science Industry Co., Ltd." and emphasized the development of new products. The ideal company thus became truly independent and laid the foundation for the birth of risograph porous printing press.

In 1980, ideal company launched revolutionary Riso mimeograph press, fx7200 and ap7200. This is the first template printer system including microcomputer. The system can sense light. Based on the core principle of risograph template printing, it integrates the technologies of automatic ink feeding, high-speed paper feeding and computer operation control. It is the first digital hole plate speed printer in the world. This equipment enjoys a high reputation in the industry. In 1995, Japan was hit by the Hanshin earthquake. Risograph played a very important role in news communication at that time: because large newspapers could not print their versions on large printing presses, risograph was widely used. Then, facing the impact of offset printing, risograph perforated printing gradually launched the market of ordinary printing materials, but up to now, risograph perforated printing has radiated new vitality in artistic expression. Compared with the early single cylinder Riso hole plate digital speed printing machine, ideal company also launched a new "riso-m" series two-color hole

plate digital speed printing machine, which is equipped with two storage cylinders at one time and two colors at one time, which improves the printing efficiency and creates conditions for the artistic presentation of risograph hole plate printing.

(2) How risograph works

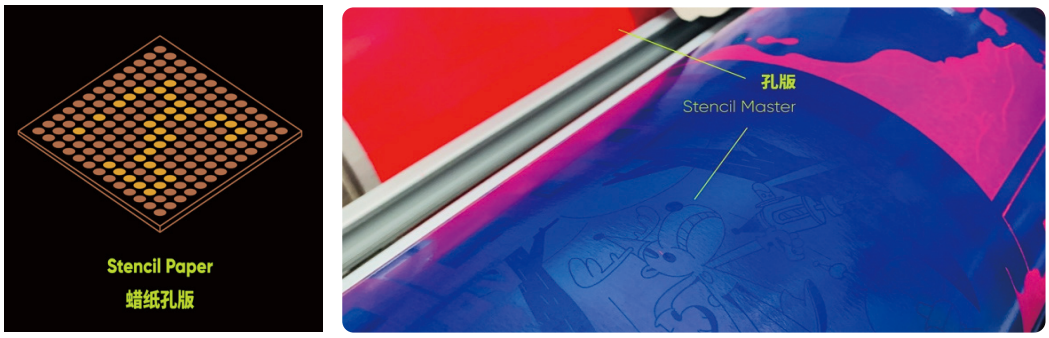


Figure 1. Stencil paper (Source: taken by the author)

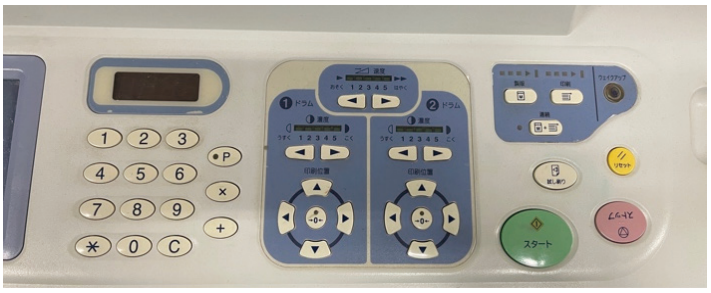


Figure 2. Machine digital interface and buttons (Source: taken by the author)

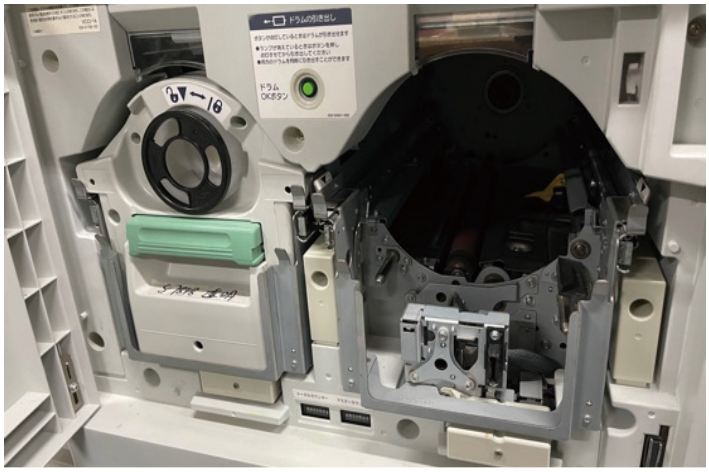


Figure 3. Details of roller (Source: taken by the author)

The high efficiency of RISOGRAPH is that it does not require the traditional printing machine to separate the plate or output the film. Instead, it can automatically make the plate through the RISO printer. The operator can debug the files directly in the computer and print directly, but we should

note that each color needs to be printed separately and the drum needs to be replaced constantly. Compared with ordinary printing, it is still more cumbersome, so it is difficult to get popular application. However, the printing process of one color and one version is also creating its unique artistic effect, which provides conditions for artistic presentation; At the same time, the manual printing process breaks the rigid general digital printing process and adds interest to risograph porous printing.

Comparison Between Risograph and Traditional Printing

Compared with the traditional hole printing, i.e. screen printing, risograph porous printing has more kinds of printed text, more exquisite printing quality and more efficient printing speed because of its digital equipment; The disadvantage is that it can only be printed on paper, and limited by the size of Riso speed printer, it can not achieve the curved surface printing of screen printing. Compared with ordinary offset printing, risograph porous printing has more characteristics in printing texture. The color is bright and interesting because the spot color ink has a variety of fluorescent colors. Offset spot color printing must be printed in large quantities, and the cost is high. As a spot color printing, risograph porous printing can be printed in small batches, and the cost of spot color is relatively low; The disadvantage is that it is far less than the speed and efficiency of offset printing. Compared with relief printing and gravure printing, risograph porous printing has higher efficiency, better printing quality and richer and diversified printed text due to digitization; The disadvantage is that relief printing and gravure printing are more manual operations, with unique ingenuity and obvious process characteristics.

Table 1. Comparison between risograph and traditional printing (Source: author analysis)

	Risograph	Porous printing	Lithography	Relief printing	Gravure
Efficiency	medium	low	high	low	low
Quality	medium	low	high	low	low
Color	high	medium	medium	medium	medium
Spot color	high	low	low	low	low
Cost	high	medium	low	high	high
Text form	high	low	high	medium	medium
Texture effect	high	high	low	medium	medium
Artistic characteristics	high	high	low	high	high

Rating: low; medium; high

Multi Dimensional Drive of Risograph Niche Development

Social Orientation

Since the concept of "sustainable development" was put forward in the Brundtland Report in 1987, green sustainability has become an important criterion for the development of design. The guiding ideology of China's implementation of sustainable development strategy is to adhere to people-oriented, take the harmony between man and nature as the main line, take economic development as the core, and take improving the quality of life of the people as the fundamental starting point, Taking technological and institutional innovation as a breakthrough, we will unswervingly and comprehensively promote the coordination of economy and society with population, resources and ecological environment, constantly improve China's comprehensive national strength and competitiveness, and lay a solid foundation for realizing the third step strategic goal. "Risograph porous printing uses water-based ink for printing. This emulsified ink independently developed by ideal company is extracted from soybean oil. As a pure natural plant ink, it can be fully integrated into the natural environment after decomposition. At the same time, it has rich output and low price. Compared with ordinary ink, soybean ink has bright color, so as to make a variety of fluorescent spot colors; At the same time, high purity enables different colors to produce transparent and overlapping effects to form a third color; Higher ink concentration, high saturated gloss, good water adaptability and stability, and can produce rich gradient effects; In addition, it has the characteristics of friction resistance and drying resistance. In the whole printing process, environmental friendly materials are used in risograph porous printing method and printing materials, which not only produce rich artistic effects, but also promote the sustainable development of the environment, which is in line with the social orientation of green printing and green design.

Market Demand

Chris Anderson's long tail theory points out that seemingly "niche" low demand products can obtain amazing market share under the condition of wide enough circulation and display channels, which is comparable to or larger than the mainstream market. Due to the subdivision of its vertical field, risograph porous printing is naturally aimed at a divided and small group, and its audience is insignificant compared with the audience of mainstream fast printing and traditional printing. However, because risograph porous printing is dominated by studios, and the printed products and publications are usually produced in small quantities and semi manually, the mode of "production direct sales" has been formed, Printing on demand is convenient and fast, which realizes the high circulation of art printed materials, enables them to enter the market faster, and obtains considerable market share through online trading platform, streaming media and offline art book exhibitions.

On the other hand, the cultural and creative industries are booming. Since 2000, the cultural and creative industries have experienced awakening, breakthrough, outbreak and maturity. As a force supporting the originality of culture and art, risograph porous printing has also received the support

of policies and the attention of social forces, taking advantage of the great prosperity of cultural and creative industries and art undertakings, It has been recognized by art and design groups and gradually established a unique influence in the fields of art, design, printing and publishing.

Moreover, under the impact of digital media, the creative power of the paper media market is booming. Being unconventional will inevitably lead to the obsolescence and stagnation of the form and concept of plane paper media carrier, and affect the development of paper media ecology that has been impacted by the era of digital media. Take photography books, which are common in art book exhibitions, as an example. In normal photography publications, they often pursue high-precision performance and look and feel as consistent with the real scene as possible. However, the high-precision pictures printed on books still can not compare with the high-definition performance on the screen, and photography books seem to be a dead end. However, the self published photographic books at the art book fair show different wild vitality: the use of risograph perforated printing weakens the effect of digital printing and strengthens the temperature of manual texture, that is, it no longer pursues the reproduction of photographic content, but establishes a guiding thinking space through the book form and structure, and enhances the texture of photographic drawings through risograph perforated printing, Present the original intention, thinking and significance of photography in various ways, issue a hidden struggle against the increasingly homogeneous digital era, and create an immersive image space-time. Risograph porous printing is not only the voice of the independent spirit, but also the exploration and display of the original design with paper media as the carrier, and has successfully won a warm paper media creative market.

Because risograph porous printing is mainly displayed in paper media, it is the opposite digital media. Through rich artistic printing effect, changeable book form and unconstrained format expression, risograph porous printing breaks the traditional limitations, has a strong experimental nature, explores various possibilities of graphic design and printing with a positive attitude, and ensures the vitality and enterprising spirit of paper media as a cultural carrier. As for the graphic design of digital media, risograph stencil printing has the limitations of high cost and low output. However, compared with the copyright protection problem that is still difficult to solve in digital media, risograph stencil printing is difficult to copy. Creativity and formal concept have become its unique advantages of artistic printing.

Humanistic Needs

In addition, the development of art and design technology, the rise of independent publishing and the diversification and popularization of binding and other technologies are also the solid foundation for the development of risograph porous printing. In terms of art and design, it is mainly reflected in the popularity of design education and media. Although it has not yet reached the level of

"everyone is an artist" and "everyone is a designer", more and more people are exposed to art and design, and can express their aura through hand drawing, board drawing and other ways, and then print rich printing effects through risograph porous printing Supplemented by binding performance, it can be presented and circulated to realize the self aura of "mechanical reproduction era".

Contemporary society is an era of audience with distinctive personality. The audience's subject consciousness and dialogue consciousness are constantly strengthened. It has the emotional needs of highlighting personality and shaping self and strong cultural consumption demands. In line with the trend of audience diversification, risograph porous printing is based on more and more detailed vertical fields and is oriented to minority groups with clear interests and personality. The subdivided minority groups realize minority aggregation through the platform of network media and art book exhibition. On the one hand, they become viewers and readers of risograph graphic design product exhibition, On the one hand, it has also become the aesthetic recognizer and product consumer of risograph graphic design products, showing the tendency of fans under this dual identity. The audience of risograph porous printing can be divided into the following groups: first, subculture lovers with clear ideas and distinct interests, mainly young people, with high consumption ability; Second, art professionals who love art and design and pursue formal beauty and expression, mainly artists, designers, illustrators and art students in school, have high aesthetic ability and occupy the main body of the audience; Third, the media and publishers, often on-the-job printing, media and publishing workers, have an attitude of learning and communication, and are keen on communication and discussion; The last category is family visitors. Parents generally have educational purposes, while children choose intended products through their interests. In a word, risograph stencil printing establishes communication and contact through the strong cultural and psychological identity of the audience. The audience itself is synonymous with pioneer thought, artistic atmosphere, design beauty, cultural consciousness, innovation consciousness and love for life, which makes risograph stencil printing studio have high brand stickiness, The audience has also become a loyal fan of risograph porous printing. Cultural media diversification, audience diversification, individual consumption differentiation, paper media reading heterogeneity... Risograph porous printing, as a small and long tail cultural and creative activity, is bound to be recognized and welcomed by contemporary people.

Artistic Effect of Risograph Visual Presentation

Color Expression Breaking Through Color Threshold

Spot color refers to that when printing, the color is not synthesized by printing C, m, y and K, but specially printed with a specific ink. Spot color inks are pre mixed by the printing factory or produced by the ink factory. For each spot color of printed matter, there is a special color plate corresponding to it during printing. The use of spot color can make the color more accurate. Although

the color cannot be accurately represented on the computer, the accurate color of the color on the paper can be seen through the pre printed color sample card of the standard color matching system. For example, Pantone color matching system creates a very detailed color sample card. From the perspective of color threshold, CMYK four-color printing can only show a limited color gamut, and the RGB color value visible on the screen may not be represented by four-color printing, which is a major source of common "color difference" in design. Lab color space is a color opposition space, with dimension L representing brightness and a and B representing color opposition dimensions. It is based on the nonlinear compressed CIE XYZ color space coordinates. Compared with RGB and CMYK color space, lab color is closer to human vision and is at the maximum color threshold. This color can not be expressed by screen RGB color, but can only be achieved by spot color printing.

Risograph porous printing uses soybean ink with bright color, so the colors are spot colors. Since the beginning of the 21st century, Riso ink has added fluorescent colors. These brilliant fluorescent spot colors have been loved by designers, illustrators and other printing demanders. Graphic design works and illustration works are transformed from digital documents into paper art. The established screen color breaks through the conventional color gamut, brings unexpected emotional experience, gorgeous and strong fluorescent color, and reinterprets the artistic expression of plane images, bringing novel visual perception experience.

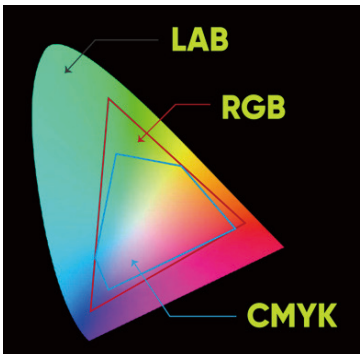


Figure 4. Color threshold
(Source: taken by the author)



Figure 5. Risoink spot color ink
(Source: taken by the author)

Unexpected Morphological Combination

Risograph stencil printing is both manual and mechanical, showing the morphological characteristics of the combination of delicacy and roughness. The "printing error" of "uncontrollable". The generation of misprinting makes risograph stencil printing add an "imperfect reality" beyond the color gamut, with strong postmodern characteristics.

In the process of printing multi-color drawings, Riso hole plate printing machine will produce wrong version because it needs to overprint many times. Traditional digital printing is industrial-

ized, accurate, standard and stereotyped. Its essence is to output works by “reproduction” as the main means; While risograph perforated plate printing is not so “perfect”. Strictly speaking, the printed works are different from each other. From the fragmented ink sheets in the initial ink test stage to some wrong plate overprint or white gap in the complete printing stage, it is like an accidental event in the traceable printing order, because its changes are diverse and unpredictable, Make such characteristics beat our visual perception. These contingencies also bring interest in the printing process. The mistakes and inaccurate color registration in risograph perforated plate printing have brought an imperfection of “human” attribute. No one is perfect. Risograph perforated plate printing is more in line with the psychological characteristics of contemporary people. This “imperfect authenticity” seems to be a satire of standardized and perfect modernism, which is filled with postmodern meaning.



Figure 6. Misprint and overprint effect (Source: taken by the author)

Another “surprise” of risograph porous printing is its overprint effect. Because the soybean oil ink used in risograph porous printing has good permeability, it is very suitable for overprint. Riso ink is not only fluorescent ink with these characteristics, but also ordinary color has high transparency and saturation. Therefore, risograph printers began to explore layered overprint with the nature of artistic experiment. Overprint with mixed ink is a way to create space depth. The superimposed images have a sequence, and the colors of the overlapped color blocks have rich and colorful changes, so as to create layered special effects. Risograph stencil printing is not an unsustainable trend. It has great challenges. The advantages and limitations it brings can stimulate more creative design.

Unique Texture dot Texture



Figure 7. Gradient effect (Source: taken by the author)

The unique texture of risograph stencil printing, that is, the granular color form, comes from its stencil dot setting. Riso hole plate speed printing machine can preset the size of dots on the computer and customize the size, shape and density of dots. Its unique gradual effect is actually to show the intensity of color through the density of dots. Therefore, on the picture with ink concentration of less than 100%, the arrangement state of dots from dense to sparse can be found with the naked eye. This rough and harmonious dot gradual effect, compared with the perfect transition of ordinary printing, can better highlight the sense of momentum and bring the strong texture of "frosted".



Figure 8. dot effect (Source: taken by the author)

Example Analysis: Taking "Monster Workshop" Art Printing Studio as an Example

Brand Audience Analysis

In the era of audience, risograph porous printing realizes minority aggregation through the platform of network media and art book exhibition. Therefore, the brand audience of risograph porous printing studio is a young group based on more and more detailed vertical fields, with strong subject consciousness and dialogue consciousness, emotional needs to highlight personality and shape self and strong cultural consumption demands.

According to the data provided by the "monster workshop" art printing studio, the demand for risograph porous printing is mainly concentrated in art and design related groups, among which the proportion of designers and illustrators is the highest, and the age range is 18-28 years old; Subculture lovers and hand-painted lovers also account for a high proportion. In addition, the semi-structured interview data show that the demand for risograph porous printing generally has a good economic level, and the residence is generally in first tier cities such as Beijing, Shanghai, Guangzhou and Shenzhen. Risograph perforated print consumers show a wider audience in terms of data. Although the main body is still in art and design related groups, art print is also accepted by the wider market as a cultural and creative product, such as a considerable proportion of middle-aged groups

who buy from children's educational demands; Women account for a considerable proportion and have higher life aesthetic requirements and decorative intention.

On the whole, both the demanders of risograph stencil printing and the consumers of risograph stencil printing are concentrated in art and design related groups. Risograph printing and circulation are shown as internal activities in the circle of interest convergence, and the groups have a high degree of identity identity and trait convergence, As a result, risograph porous printing is also the search and mutual confirmation of commonality within the group, which is the basic feature of the miniaturization of contemporary art printing. The creation of such commonness is the key to the aggregation of risograph minority printing groups.

Risograph porous printing studio expresses its cultural style and aesthetic ethics on a broader living platform. Therefore, we should not only see the class differences and minority combination within the audience group, that is, the strong artistic characteristics, but also see that its group is the source of social vitality with integrity and creative tendency. Their life style not only points to the presentation of personalized needs and taste, but also has the common ground of young people of the same age group, which is the basis for the "Popularization" of risograph perforated printing.

Diversified Marketing Methods

Risograph porous printing has changed from "technical media" to "experience behavior", and experience has become the focus of marketing. In the "expectation process influence" model of experience, the process shaping of risograph porous printing is the contact point for deepening the experience, and creating a perfect art printing process is an important means for the development and development of risograph porous printing studio. From the perspective of the "monster workshop" art printing studio, its marketing model is carried out in five ways. First, it takes the offline object - art book exhibition as the starting point, uses the agglomeration effect of its minority groups to quickly establish a brand audience group, and then carries out normal audience cultivation and development through online new media means. Tiktok is a daily audience. It can be noted that although audiences in this era are dispersed due to the end of the art exhibition, strong brand identity is generated by their strong identity. The brand audience is willing to experience punching cards, willing to consume and willing to spread their own initiative, or through the new media such as WeChat official account, micro-blog, and jitter, for people, or for social networking or daily attendance. Publicity and display of xiaohongshu and other platforms to maintain the popularity of the brand audience. The third and fourth methods are mainly in offline forms. First, cross-border cooperation, that is, consignment, further meet the needs of existing audiences and explore new markets with the help of offline forms such as cultural and creative activities and independent bookstores; Moreover, it is a self branded physical store, which mainly serves the audience groups in local cit-

ies, establishes a printing experience place, and further deepens the process experience from simple printing to risograph porous printing. The last way is the art practice product line, which is mainly in the form of online. It carries out circulation and art printing business through official wechat, microblog or Taobao and other trading platforms, so as to deeply develop the national risograph perforated printing audience and break through the regional space restrictions.

Norman's "emotional design" puts forward three levels of design experience: instinct level, behavior level and reflection level. These are the three logics of the marketing model of risograph porous printing: the instinct layer is the basis for the interest of risograph porous printing induced by the first impression; The behavior layer is a brand in-depth process, including the functions, features and artistic expression of risograph perforated printing, as well as the communication and fun satisfaction of the audience; Reflecting on the experience of art practice, through risograph porous printing, we can have a higher experience of design expression, artistic creation, consciousness and emotion, so as to promote the audience to reflect. Xin Xiangyang proposed three organic parts of experience "EEI model": expectation, event and impact. In risograph porous printing, it is embodied in: the expected goal setting of art printing, the behavior process and unexpected artistic effect of art printing, and finally the reflection and emotion caused by art printing.

Kotler defines brand as a set of specific features, benefits and services that sellers provide to buyers for a long time. The marketing strategy of risograph porous printing is based on the artistic development of printing practice, the innovative design of text and image, and the promotion and dissemination of "Popularization" and "cultural and creative products" of art printing, so as to ensure the long-term stability of the audience. As shown in the figure, "monster workshop" studio carries out marketing strategies through five levels: text level, product level, channel level, communication level and audience level, so as to deepen art experiments and win a niche market. Among them, the text level is the innovative design of text image. Only through the rich text image drawing and design, can we better adapt to the risograph porous printing method, so as to win the love of consumers. The product level is also the key part of graphic design. How to develop art printing with paper as the carrier into various forms of art design and cultural creativity requires a variety of binding design, packaging design and multi-dimensional form design. At the channel level, based on offline physical stores, accumulate brand audiences through art book exhibitions, and then maintain the circulation of art printing products through online channel cultivation and cross-border cooperation. The communication level is to form a long tail with the help of mass communication and expand the breadth of brand communication; At the same time, it also depends on the characteristics of high communication and interpersonal communication density of minority groups to improve the depth of communication. The audience level is to stabilize the demand of risograph porous printing, seek the further expansion of consumers of risograph porous printing, and provide a broad exhibition and exchange space for cultural and creative products with wide circulation with the "broken

circle" of minority art printing of art and design related groups.

Results

The founding of risograph porous printing studio in early China has almost the same development background. The directors often have overseas study experience, unique pioneer and innovation consciousness, and few have completely local background; After returning home, all kinds of illustrations and graphic designs are printed by risograph porous printing, and then sold through independent bookstores or art book exhibitions. It can be found that in the early 20th century, the development of domestic risograph porous printing was extremely sluggish. As an imported product, risograph porous printing sprouted in China with the efforts of a group of overseas students majoring in art, design or media. However, in recent years, there are more and more risograph porous printing studios, and not all of their principals have overseas study background. Young artists, designers, media people and publishers trained by local education have inspired more innovative and creative inspiration, have a high cultural consciousness and self-awareness, and begin to deeply explore Chinese culture, Collide with the spark of tradition and innovation. It can be said that as an art printing method, risograph porous printing has deeply spread the paper media innovation consciousness, independent spirit and independent publishing concept among the groups of art and design, and promoted the development of domestic paper design innovation and art independent publishing ecology. Contemporary risograph porous printing has created distinct localization and local ecological characteristics.

Risograph stencil printing itself is an act of artistic exploration. Can the artistic prints that embody the spirit of independent artists be recognized? Can the combination of text content and printing form be harmonious? Can vanguard's concept and self discourse find resonance? These questions will be answered in the application and promotion of risograph porous printing. The sale of each art print means the realization of an individual experiment, which is a great exploration of risograph porous printing. Of course, the artistic creation of risograph porous printing should also avoid blindly innovating and falling into the nest of radical extremes; Similarly, it can not cater to the public or pursue imitation, and lose creativity, uniqueness and the expression of self discourse. For consumers, what is emphasized behind the form of art printing is the "spiritual touch" above the "material necessity", which is the life taste, aesthetic temperament and aesthetic preference bred by the personal life proposition. Once the symbolic meaning and morphological temperament of printed paper meet the personal life proposition of consumers, Risograph porous printing has been injected with the depth of cultural connotation through moving recognition and appeal, become a creative way with emotional dimension, and achieve the self realization of designers and consumers.

Conclusion

From the perspective of artistic effect, risograph porous printing, as a spot color printing, makes the established screen color break through the conventional color gamut, brings unexpected emotional experience, gorgeous and strong fluorescent color, and reinterprets the artistic expression of plane image, bringing new visual perception experience. The gradual effect of dot, compared with the perfect transition of ordinary printing, can better highlight the sense of momentum and bring the strong texture of "frosted". At the same time, it is both manual and mechanical, showing the morphological characteristics of the combination of delicacy and roughness. "Uncontrollable" printing errors. The emergence of misprinting makes risograph porous printing outside the color gamut, which brings an imperfection of "human" attribute and adds an "imperfect reality", with a strong Postmodern meaning. Risograph porous printing has a good sense of permeability, realizes the exploration of color layered overprint, brings rich and colorful visual changes, and stimulates more creative text image design.

In the artistic ecology of risograph stencil printing, both the demanders of risograph stencil printing and the consumers of risograph stencil printing are concentrated in art and design related groups. The printing, creation and circulation of risograph are shown as internal activities in the circle of interest convergence, and the groups have a high degree of identity identity and trait convergence, As a result, risograph porous printing is also the search and mutual confirmation of commonality within the group, which is the basic feature of the miniaturization of contemporary art printing. The creation of this commonness is the key to aggregate risograph text image design, artistic practice exploration and product form design. In addition, while this minority lifestyle points to the presentation of personalized needs and taste, it also has something in common with young people of the same age. This is highlighted in the analysis of risograph consumers, which is the basis for the "Popularization" of risograph perforated printing.

Therefore, risograph porous printing should pay attention to industrial management and cultural ecology, carry out the creation experiment of "design printing", adhere to the positioning of "niche" and "Popularization". Through the artistic development of printing practice, the innovative design of text and image, and the promotion and dissemination of "Popularization" and "cultural and creative products" of art printing, complete the transformation from printing equipment to design tools, and explore the unity of content and form in the application of graphic design, To present the miniaturization, decentralization and sociality of contemporary art in a more profound and divergent narrative and media form, and to reflect the relationship between art exploration and the context of the times; At the same time, explore a broader emotional space from the paper language, establish a dialogue between tradition and innovation, local and international, and realize more diversified artistic expression.

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