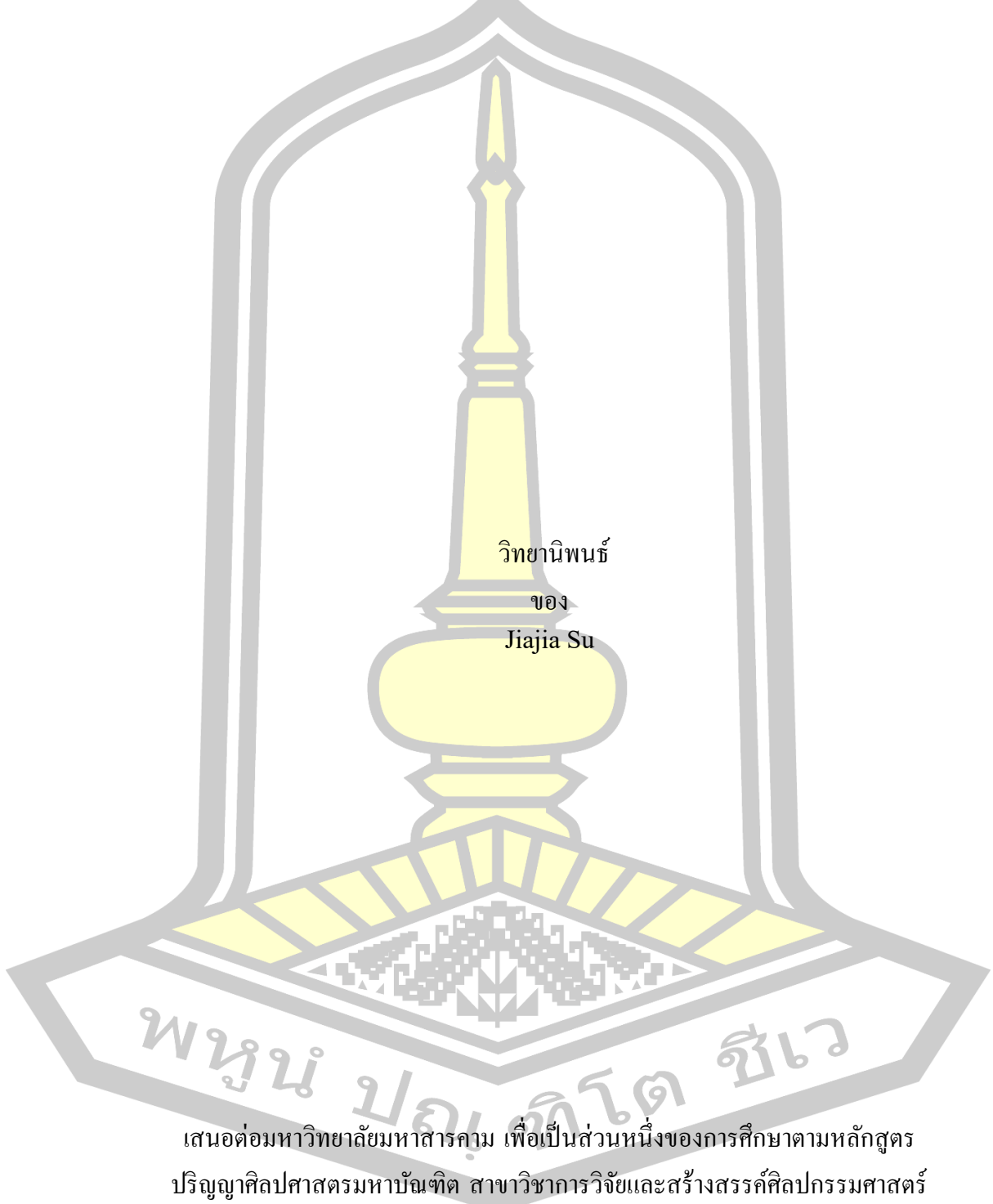Design of Narrtive Dynamic Illustration Technique: Luoyang City, China

Jiajia Su

A Thesis Submitted in Partial Fulfillment of Requirements for
degree of Master of Arts in Fine and Applied Arts Research and Creation
December 2023

การแสดงออกทางสายตาและการออกแบบเทคโนโลยีภาพประกอบแบบไดนามิกแบบบรรยาย:
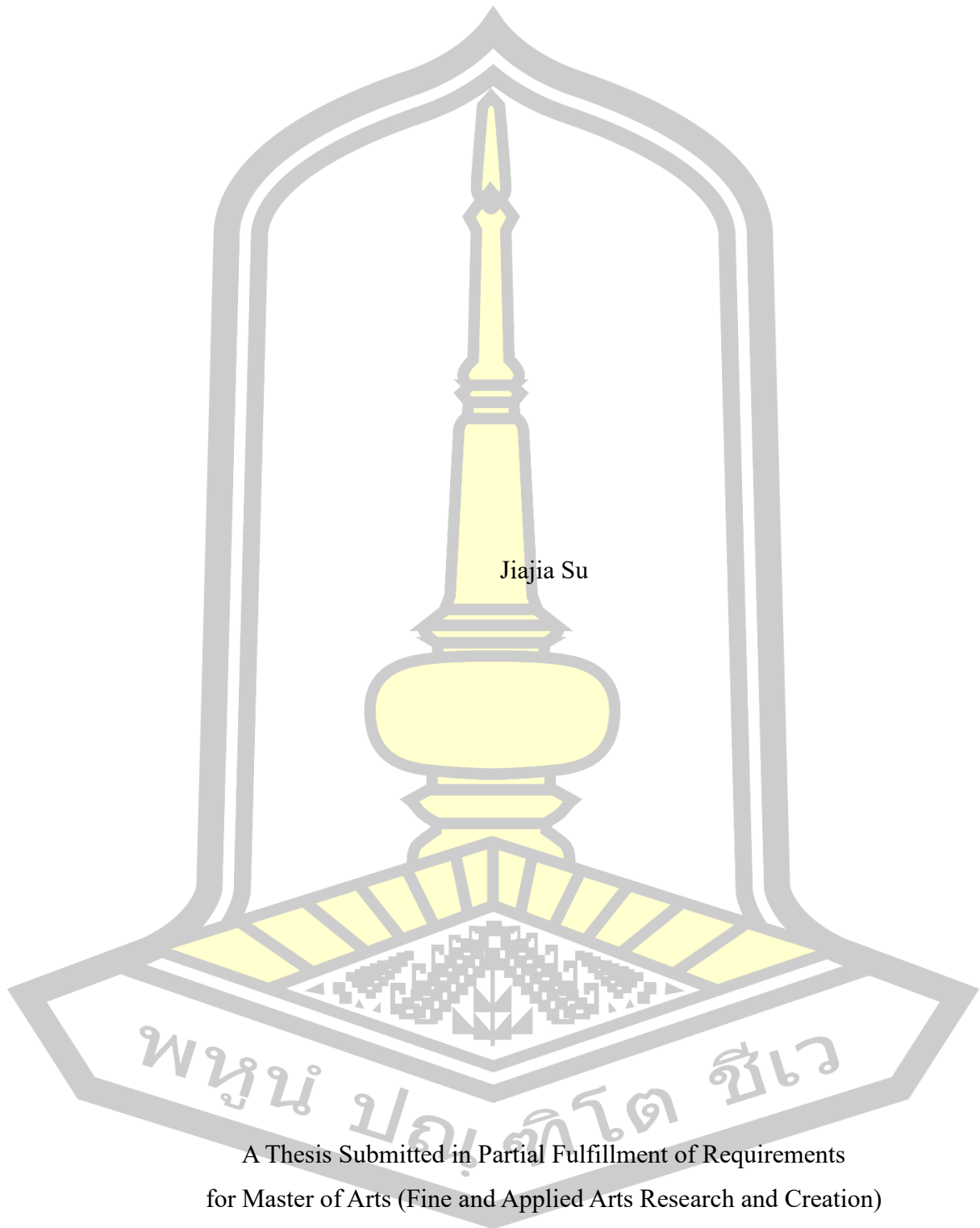กรณีศึกษาเมืองลั่วหยาง

วิทยานิพนธ์
ของ
Jiajia Su

เสนอต่อมหาวิทยาลัยมหาสารคาม เพื่อเป็นส่วนหนึ่งของการศึกษาตามหลักสูตร
ปริญญาศิลปศาสตรมหาบัณฑิต สาขาวิชาการวิจัยและสร้างสรรค์ศิลปกรรมศาสตร์
ธันวาคม 2566
ลิขสิทธิ์เป็นของมหาวิทยาลัยมหาสารคาม

Design of Narrtive Dynamic Illustration Technique: Luoyang City, China

Jiajia Su

A Thesis Submitted in Partial Fulfillment of Requirements

for Master of Arts (Fine and Applied Arts Research and Creation)

December 2023

The examining committee has unanimously approved this Thesis, submitted by Ms. Jiajia Su , as a partial fulfillment of the requirements for the Master of Arts Fine and Applied Arts Research and Creation at Mahasarakham University

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TITLE   Design of Narrtive Dynamic Illustration Technique: Luoyang City, China

AUTHOR   Jiajia Su

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DEGREE   Master of Arts   **MAJOR**   Fine and Applied Arts Research and Creation

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ABSTRACT

With the change of communication media and the demand of different levels of public aesthetics, designers have started to seek more innovative visual expressions. As a new type of information dissemination carrier, dynamic illustration presents different visual effects with diversified expression forms, personalized visual language and emotional expression characteristics, which can meet people's requirements for quick access to information in a relaxed atmosphere. Luoyang is rich in tourism resources and has an excellent geographical location. The significance of Luoyang's cultural heritage lies in the sustainability of both people and things, and people need to understand the magnificent beauty of Luoyang culture and seek multiple communication channels.

This paper mainly focuses on the design of dynamic illustration by qualitative research method, 1. to explore the characteristics of Luoyang tourism culture 2. to analyze the design principles of dynamic illustration 3. to design dynamic illustration of Luoyang tourism culture. Using interview method and questionnaire to collect information and analyze the opinions and ideas of tourists, local people, local businessmen, scenic area staff and experts in dynamic illustration design research. Using literature research method to classify the existing research results and application cases of dynamic illustration, summarize the visual expressions and design principles of dynamic illustration, explore the characteristics of Luoyang tourism culture, and carry out case practice on this basis.

Based on the theoretical study of dynamic illustration design, the characteristics of the visual expression of dynamic illustration, the structure and characteristics of the narrative language of dynamic illustration, combined with the theory of visual perception, cognitive psychology, design psychology and other related disciplines to study this topic to obtain the law of motion and signal principle of dynamic illustration; for the investigation of Luoyang tourism culture, to understand the historical development and cultural value of Luoyang tourism, according to In the process of designing the dynamic illustration, the Chinese style of illustration and classical color scheme were determined based on the tourism culture of Luoyang and the case study, and on this basis, six draft illustrations were drawn. After the

questionnaire was distributed to the target group, the 2 illustrations with the highest popularity were selected and further engraved to complete the complete static illustration. Among them, the illustration of Paradise Hall received 67.31% of the votes, ranking first. The second place was occupied by the illustration of Yingtianmen with 65.38% of votes. Three experts were invited to analyze the works and give suggestions and evaluations, and the final dynamic illustration design of Luoyang tourism culture was drawn according to the suggestions and data analysis, and the ideas were conveyed through the dynamic visual language of this illustration, thus resonating with the viewers.

Keyword : Dynamic illustration, Visual expression, Narrative, Illustration design

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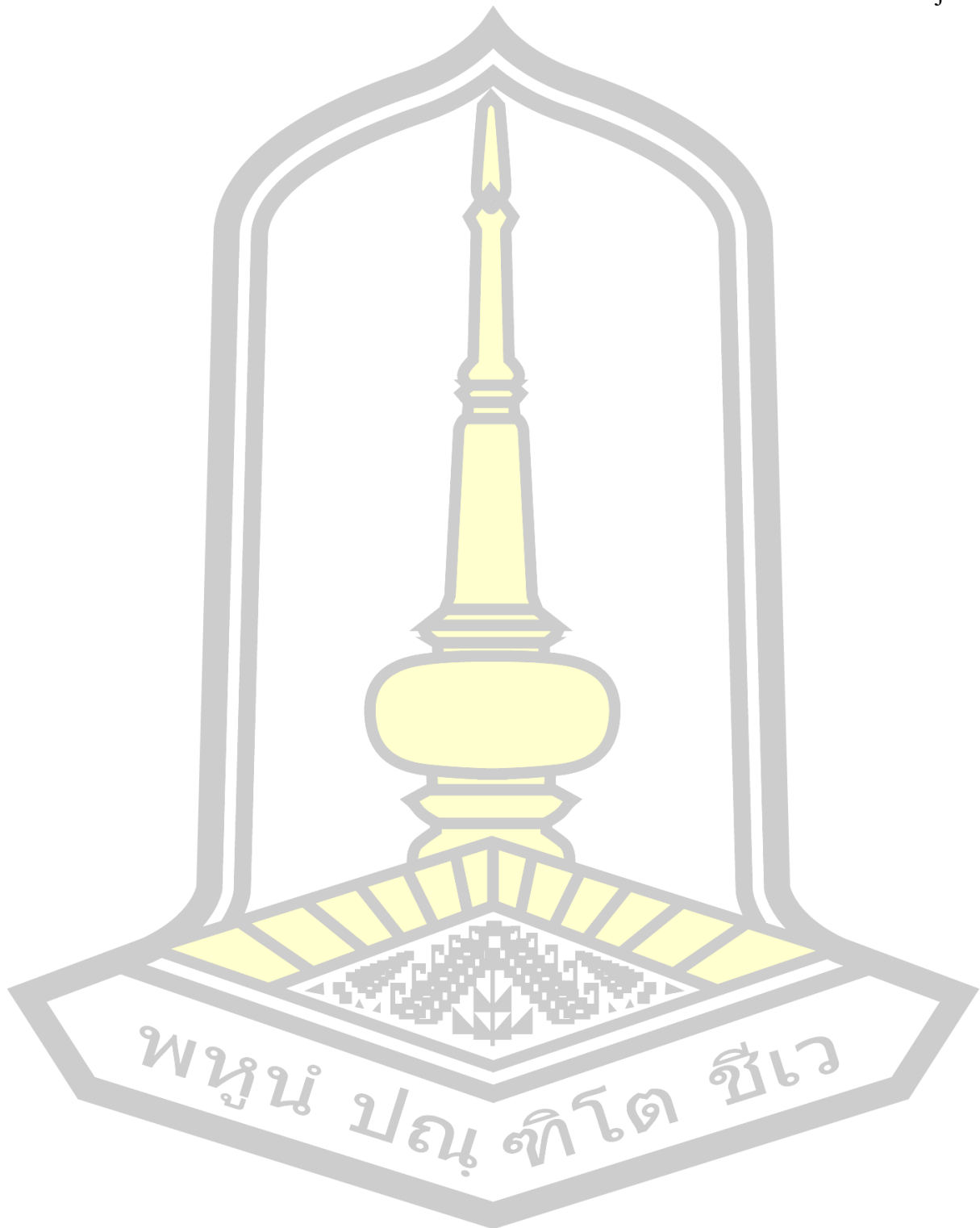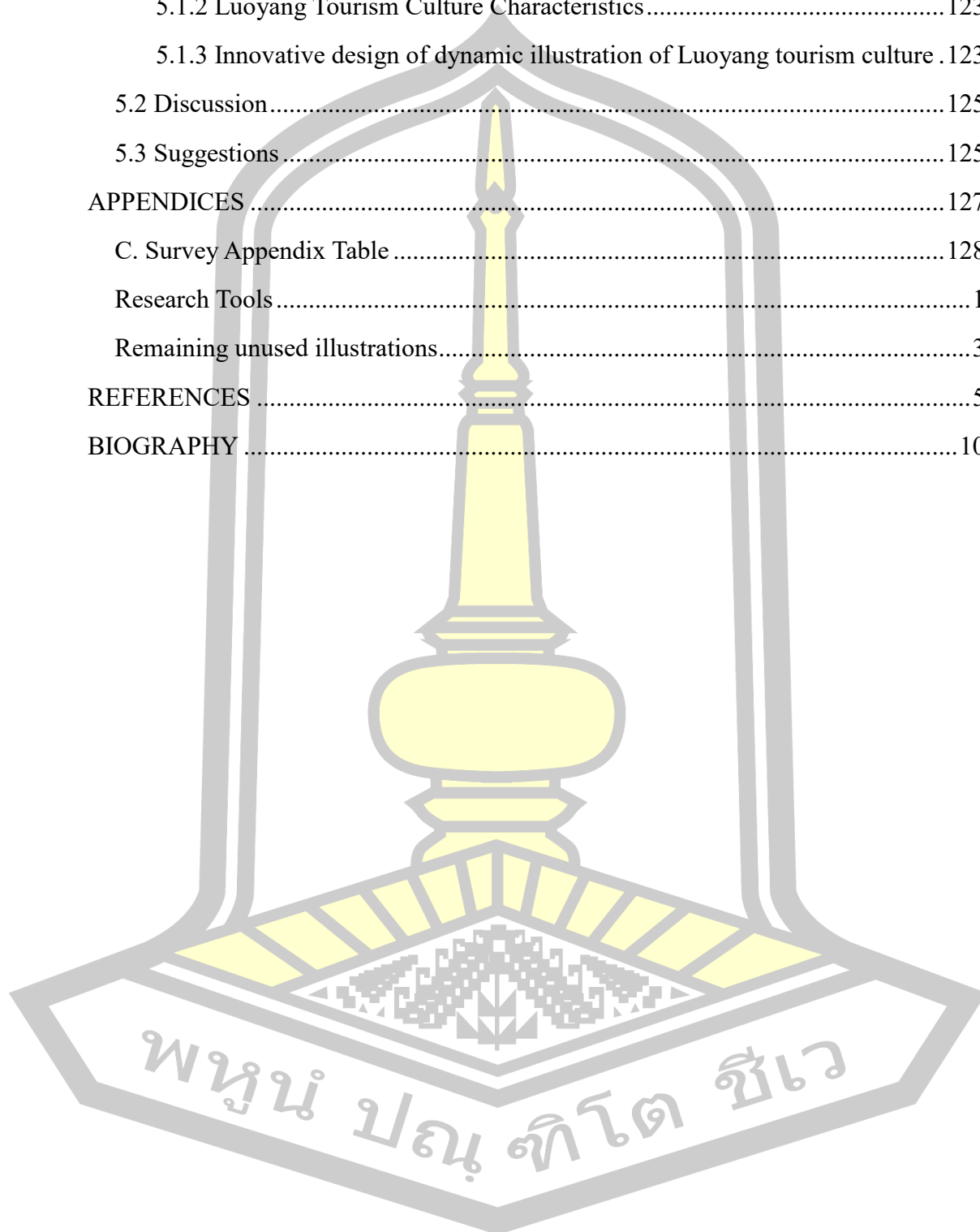
Jiajia Su

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CHAPTER I

INTRODUCTION

This chapter describes the origin and significance of dynamic illustration, the purpose of the proposed research, and lists the research plan. By describing the future development of dynamic illustration, the results of the design of dynamic illustration of Luoyang tourism culture are expected to be evaluated.

1.1 Background of Research

With the rapid development of digital technology, illustration as a visual language has undergone a new change in form. As a third form between static illustration and animation, dynamic illustration enhances the attractiveness of visual language and provides a new visual experience for the public. The innovative application of dynamic illustration has given new vitality to the traditional illustration, a long-established art form, and made it one of the pioneering forms of visual communication in the digital era. Luoyang is one of the well-known tourism cities in China. Luoyang has rich cultural tourism resources, profound heritage, high degree of combination and great development potential. Therefore, in the face of the rich ecological tourism and food resources, Luoyang tourism culture is designed and developed in the form of dynamic illustration, thus promoting the development of Luoyang tourism industry.

Illustration is a unique art form in visual communication. With its intuitive image, real life feeling and artistic influence on beauty, it has become a universal language in the field of modern design and occupies a special position in modern visual communication art. With the advent of the new media era, the boundaries between illustration and motion graphics have become blurred, and the development trend of dynamic illustration has begun to emerge. The special dynamic effect of dynamic illustration keeps the visual information in the viewer's eyes for a longer period of time, and its unique artistic influence achieves a deeper communication between the creator and the viewer, enriching the viewer's multi-level emotional experience.

The rapid development of the Internet and new media technology has greatly subverted people's daily life. As shown in Figure 1.1, according to the current data of China Internet Network Information Center, as of June 2021, the penetration rate of domestic Internet has reached 71.6%, and the scale of Internet users has increased by 21.75 million compared with last year, which shows that the penetration rate of Internet and the number of Internet users are rising year by year. From the rising trend of mobile Internet users and the fact that mobile Internet users account for 99.6% of Internet users, we know that the majority of Chinese people's daily life has become inseparable from the Internet, and mobile is now the most important way for the public to use the Internet platform. It can be seen that the development of Internet and mobile has shaped a new form of social life for the public, and the new media with the Internet and mobile as the main communication carriers has an extremely large market with the rising popularity of the Internet and the number of Internet users.

网民规模和互联网普及率

单位：万人

2018.6	2018.12	2019.6	2020.3	2020.6	2020.12	2021.6
57.7%	59.6%	61.2%	64.5%	67.0%	70.4%	71.6%
80166	82851	85449	90359	93984	98899	101074

网民规模 ——×—— 互联网普及率

来源：CNNIC 中国互联网络发展状况统计调查 2021.6

Figure 1 Internet development status statistics

Source：CNNIC

With the continuous development of science and technology in the 21st century, the application of Internet mobile media has been deeply rooted in people's hearts. Cell phones, ipads and computers have become the main tools for people to read information and become an indispensable part of people's lives. Dynamic illustration also appears more and more as a visual subject in our cell phones and computers, and is widely used in APP, advertisement, e-books, games and other fields. In daily information dissemination, dynamic illustration can express emotions more intuitively, can convey information faster and better, improve the efficiency of information dissemination, and meet our pursuit of new audiovisual enjoyment. Driven by science and technology, the development of new technologies has lowered the threshold of dynamic display of commercial illustration, eliminated the complex process of frame-by-frame dynamic production, and saved a lot of human and financial resources for animation production, making illustration more dynamic. The

increase in efficiency has further promoted the development of dynamic illustration in different fields.

The commercialization of art has made illustration widely used in commercial promotion, and illustration can also become commercial illustration. In the field of advertising promotion, ads with illustration as the main visual form began to use dynamic illustration, followed by dynamic illustration posters, dynamic illustration H5, etc. The good narrative and interactive nature of dynamic commercial illustration makes it easier for people to understand the product. Therefore, from the current point of view, dynamic illustration has a very broad development prospect and can have a place in various fields. In the game field, games with dynamic illustration as the main visual form are also growing rapidly. In the video field, there are already some short videos composed of dynamic illustrations, which makes the development of dynamic illustration more extended. When browsing foreign design collection websites such as behance, dribble and Pinterest, you can find that foreign designers often use dynamic illustration in various fields such as advertising design, poster design, interface design and web design. In recent years, foreign illustrators have also started to use dynamic illustration as the main visual expression of storytelling, which is another new way of reading stories in the context of the current era. As people pay more and more attention to storytelling and good storytelling on mobile media platforms, more and more narrative dynamic illustrations are appearing in reader interactions.

The advancement of new media technology has brought opportunities and challenges to the development and formation of dynamic illustration. First of all, in the current complex information communication context, multiple factors must be taken into account in order to make dynamic illustration better integrated with the latest technology and applicable to different communication media. Many creators do not have a sense of innovation when creating, but rather imitate the best dynamic illustration works. Secondly, the superiority of dynamic illustration has led many brands to use dynamic illustration to promote their products. However, when applying dynamic illustration, they overly pursue the kinetic and audio-visual stimulation of dynamic illustration, and blindly abuse and misuse the dynamic form, thus distracting the viewer's attention and causing visual fatigue. Finally, excessive commercialization

makes dynamic illustration lack of connotation and artistic beauty in visual expression, which leads to the audience's resistance to dynamic illustration, so that it cannot effectively communicate with the audience and convey the message. Based on the good development prospect of dynamic illustration and the current problems, the research direction of this paper is determined

"If you ask about the rise and fall of the past and present, please only look at the city of Luoyang." (Baidu Academic) From this verse, we can understand that in the long history of China, the Central Plains has been the political, cultural and economic center of China, and the culture of the Central Plains also represents the traditional Chinese culture in a certain sense. Unlike other regional cultures, the culture of the Central Plains is centered on Henan Province, covering the middle and lower reaches of the Yellow River and spreading outward layer by layer. As a result, it has been a developed agricultural civilization since ancient times, and was the first to sow the "seeds of civilization" among other regional cultures. This civilization, derived from a thousand years of history, provided the basic model for the political system and civilized manners of later China. As an important representative of the Central Plains, many buildings in Luoyang are built by water, and their humanistic connotations reveal the essence of China; ancient architectural sites such as the Longmen Grottoes, the ruins of the Eastern Zhou Dynasty King City, and the ruins of Luoyang City in the Han and Wei Dynasties are the witnesses of history and culture, while cultural heritage such as Luoyang opera, Tang Sancai, and painted sculptures are the inheritors of history and culture.

Luoyang is an excellent tourist city in China, the center of the River and Luo culture, one of the birthplaces of the Chinese nation, the ancient capital of the 13th dynasty, with beautiful scenery and unique charm. Luoyang has rich cultural tourism resources, profound heritage, high combination and great development potential. Digital culture industry is an emerging industry of digital technology and cultural industry integration, whose core is cultural creative content and practice carrier is digital technology (People's Daily，2017). Based on its superior natural landscape conditions and history and culture, Luoyang's cultural tourism strength is much higher than its political status and real economic strength, but the mode of spreading culture

by digital media has only been explored in recent years, involving mostly archaeological and scenic spots publicity. Therefore, in the face of the rich ecological tourism and food resources, efforts to build a domestic first-class tourist destination and world-renowned international tourism and cultural city. And now to the existing tourism did not have the local characteristics of Luoyang and the Hailuo culture to dig deeper, digging and smelting culture, digging cultural creativity, to create cultural characteristics. Only in the propaganda to improve the added value of the river and Luo culture, in order to make Luoyang's tourism culture rich and colorful, become a new growth point of Luoyang tourism economy, and promote the sustainable and healthy development of Luoyang tourism industry.

In 2020, the Department of Culture and Tourism of Henan Province issued opinions related to supporting Luoyang to promote the integrated development of culture and tourism. As one of the birthplaces of Chinese civilization, the eastern starting point of the Silk Road and the center of the Sui and Tang Grand Canal, Luoyang has also launched the "Belt and Road" Cultural Digital Trade Port project, using "Internet + Smart Tourism" to actively promote the organic integration of " In 2020, Luoyang applied for the creation of a national heritage protection and utilization demonstration zone, and through a series of reform measures, the thousand-year-old historical and cultural heritage was presented to the people. Through a series of reforms, the cultural heritage that has been dormant for thousands of years has been presented to people, bridging the world to explore the unique charm of Chinese civilization. A number of national projects provide an opportunity of the times to promote the development of traditional culture in Luoyang, empowering the cultural industry so that the excellent culture with great potential can go out of Henan and into the world.

In such a fast-developing era, people's demand for humanized experience and artistic aesthetics is still higher than stimulating sensory experience and novel expressions, so it is meaningful to study the visual expression of dynamic illustration. Although the development of dynamic illustration now has good market value and application prospects, as a new form of illustration expression, dynamic illustration has many not particularly mature places besides carrying richer content, having

contrast between motion and static, strong visual impact and other development advantages. Luoyang has rich tourism resources, and in order to achieve good economic development, it is necessary for illustration art creators to work harder to create and explore, and create dynamic illustration design of Luoyang's unique tourism culture. We need to think more and innovate more about the creation methods and expressions of dynamic illustration. At the same time, the research of dynamic illustration theory can provide a reference basis for dynamic illustration design in visual communication, inspire illustration designers to update the illustration creation mode, combine with the actual better to meet the needs of the audience, provide more possibilities for the development of illustration art, promote the development of tourism culture in Luoyang, and promote the innovative development of the illustration industry.

1.2 Purpose of Research / Objective

We have the following four objectives.

1．To study and analyze the current situation and design principles of dynamic illustration.

2. To study the cultural characteristics of Luoyang tourism.

3. To design of dynamic illustrations of Luoyang tourism culture.

1.3 Research question

1. What is the design principle and concept of dynamic illustration?

2.What are the cultural characteristics of Luoyang?

3.How can dynamic illustration be skillfully combined and designed with the cultural characteristics of Luoyang tourism?

1.4 Definition of Terms

Dynamic illustration means a third form between static illustration and animation, which enhances the impact of visual language and provides a new visual experience for the public. Dynamic illustration breaks the static and single expression form of traditional illustration, and gradually develops the narrative language of painting towards diversification and interaction. The innovative application of dynamic illustration makes traditional illustration, a long-established art form, rejuvenate and become one of the pioneering forms of visual communication in the digital era.

Narrative means also one of the important visual expressions of dynamic illustration. Dynamic illustration is a narrative expression through the continuous movement of multiple images, with the structure of the narrative and the arrangement of the plot, simulating the movement of the camera to help the picture to narrate the plot.

Visual expression means that the performance of dynamic illustration is short and sharp, with strong visual impact, and through the balance and contrast of static and dynamic visual forms to highlight the relationship between the main and secondary images, showing the rhythm and rhythm of the picture, thus presenting a chic visual expression.

Dynamic illustration design: The creation idea is based on hand-drawn illustration, supplemented by special effects, first using computer technology to draw illustrations, and then transforming static illustrations into dynamic illustrations using ae technology, creating the atmosphere needed for the overall work, adding a sense of image, and making the work vivid and dynamic.

1.5 Scope of Research

1.5.1 Research area

My research area is the visual representation and design of dynamic illustration, namely the city of Luoyang, China.

My research area is the visual representation and design of dynamic illustration, namely the city of Luoyang, China. Through analyzing the visual elements and artistic expressions of dynamic illustration, this paper systematically discusses the visual expression of dynamic illustration, and summarizes the application cases of dynamic illustration in various design fields, and summarizes the design methods and application forms. The main area of the study is Luoyang, which has rich cultural heritage and cultural literacy, and is one of the seven famous ancient capitals in China, with rich cultural tourism resources, rich heritage, high combination and great development potential, but not enough publicity. Therefore, in the face of the rich ecological tourism and food resources, Luoyang tourism culture in the form of dynamic illustration design and development, so as to promote the development of Luoyang tourism industry, and strive to build a domestic first-class tourist destination and world-renowned international tourism and cultural city.

1.5.2 Time

September 21, 2021 - March 28, 2023

1.5.3 Another

In order to successfully establish the tourism image, it is inseparable from the support of visual effects. The appearance of visual graphics is essentially a certain era, a certain cultural record and heritage, in which the spiritual will and material way of life of human beings are reflected as much as possible, and often this spiritual will and way of life is the carrier of the social and cultural life at that time. Luoyang city is rich in tourism resources, but the development of tourism is slowing down, and in recent years the main tourism indicators have been slowing down and decreasing in ranking among the tourism cities in Henan province. In this context, it is of great practical significance to strengthen the study of tourism resources in the city to promote the transformation and upgrading of tourism and the development of tourism in Luoyang. From various perspectives to examine the development of tourism in Luoyang, the relationship between promotional illustrations and tourist places,

according to the collected information to organize and analyze the design of a good plan.

1.6 Research Methods

1.6.1 Population and Sample

The theme is a study on the visual representation and design of narrative dynamic illustration techniques - taking Luoyang City as an example, the research object is narrative dynamic illustration.

(1) Tourists

Tourists who are attracted by the culture of River Luo and come to Luoyang for tourism.

(2) Locals

Locals who live in Luoyang, near the tourist attraction areas. They are the ones who grew up here, have been influenced by the Hello culture for a long time, know the tourist attractions like the back of their hand, and are the ones who know the place best. Find out their views and suggestions on traditional culture of Luoyang.

(3) Local businessmen

Investigate the expectations and suggestions of local businessmen about Luoyang, a famous tourist city, and conduct a comprehensive analysis and study of these.

(4) Staff

Staff who manage and maintain speaking points at local tourist resorts, who play a supervisory role in all aspects of the cultural heritage of Luoyang, including those related to cultural tourism.

(5) Researchers

Professional in digital media, research and design of dynamic illustration and dynamic poster experience is very much, with the exchange and discussion will help the dynamic illustration design innovation.

1.6.2 Instrumentation

Edited questionnaires and set up interview lists to accompany the study.

1.6.3 Data Collection

（1）Using the interview method:

Talking with dynamic illustration design experts.

The interview method, also known as interviewing, is a basic psychological research method in which the interviewer and the interviewee talk face-to-face to understand the psychology and behavior of the interviewee. The interview method has different forms depending on the nature, purpose, or target of the research question. Depending on the degree of standardization of the interview process, it can be divided into structured and unstructured interviews. The interview method is widely used and is able to collect multifaceted job analysis information in a simple and narrative way, especially when studying more complex issues that require different types of material from different types of people.

(1) Literature research method:

Research and documentation related to dynamic illustration design.

The literature research method is a method to obtain information by investigating the literature according to a certain research purpose or topic, so as to fully and correctly understand and grasp the problem to be researched. Literature research method quilts are widely used in research in various disciplines. Its functions are as follows: 1. It can understand the history and current situation of relevant problems and help determine research topics. 2 Can form a general impression about the research subject, which facilitates observation and access. 3 Can obtain the comparative data of the actual data. 4 helps to understand the whole picture of things.

(2) Questionnaire survey method:

The study investigated the impressions and suggestions of travelers about Luoyang, and designed dynamic illustrations of Luoyang based on the suggestions.

Questionnaire survey method is an effective method to collect first-hand information. Data is collected through questionnaires. The main part of the questionnaire is multiple-choice questions related to the factor evaluation and overall evaluation of Luoyang city tourism image perception, and then uses SPSS social statistics software to compare and analyze the collected data. Descriptive analysis, mean analysis, validity and reliability analysis, independent sample test, etc. need to be analyzed, and relevant conclusions can be drawn to verify the perception results of Luoyang City.

1.6.4 Data Analysis

(3) Descriptive Statistics

Descriptive statistics is a method of sorting and analyzing data through charts or mathematical methods, and estimating and describing the relationship between data distribution, numerical characteristics and random variables. Descriptive statistics are divided into three parts: central tendency analysis, outlier trend analysis and correlation analysis.

(4) Central tendency analysis

The central tendency analysis mainly relies on statistical indicators such as average, median and mode to represent the central tendency of data.

(5) Correlation analysis

Correlation analysis explores whether the data are statistically related. Correlation analysis is a complete statistical research method, which runs through the formulation of hypotheses, data research, data analysis, and data research.

(6) Inferential Statistics

Inferential statistics is a relatively young part of statistics and even psychostatistics. It relies on statistical results to prove or disprove a proposition. Specifically, by analyzing the difference between the distribution of the sample and the sample, to estimate the difference between the sample and the population, the difference between the pre- and post-test scores of the same sample, and whether there is a significant difference between the score gap between the sample and the sample, and the score gap between the population and the population.

Categorize survey data. The most basic methods of comparative analysis, describing phenomena and identifying problems. Break down variables into groups for comparative or multidimensional cross-comparison analysis. The results of the study were analyzed according to the purpose of the study.

1.6.5 Research presentation

Dynamic illustration breaks the traditional illustration with static, single design and expression, and develops towards diversification, interactivity, intelligence and so on. The dynamic illustration brings us more intense interactivity and interest in the poster, and meets the requirements of the vast audience in the information age. This time I will apply dynamic illustration to research design in tourism culture. In view of the current trend of my country's dynamic illustration pattern in the process of morphological change and development, objective analysis and bold prediction are made. In-depth research explores the multiple possibilities of the application and presentation of dynamic posters in practice. To study how the visual communication under the condition of new technology should actively cater to the audience's point of view in the big environment, so as to carry out the propaganda design of Luoyang tourism name. Collected and analyzed the background culture of Luoyang tourism and the manifestations of dynamic illustrations, and deeply explored the characteristics and forms of the integration of tourism culture publicity and dynamic poster design in display practice. Summarize the ways and presentation forms of innovative forms of expression in the application of dynamic illustration design, inspire creative thinking, and break through the traditional forms of illustration.

1.7 Concept, Theory and Conceptual framework
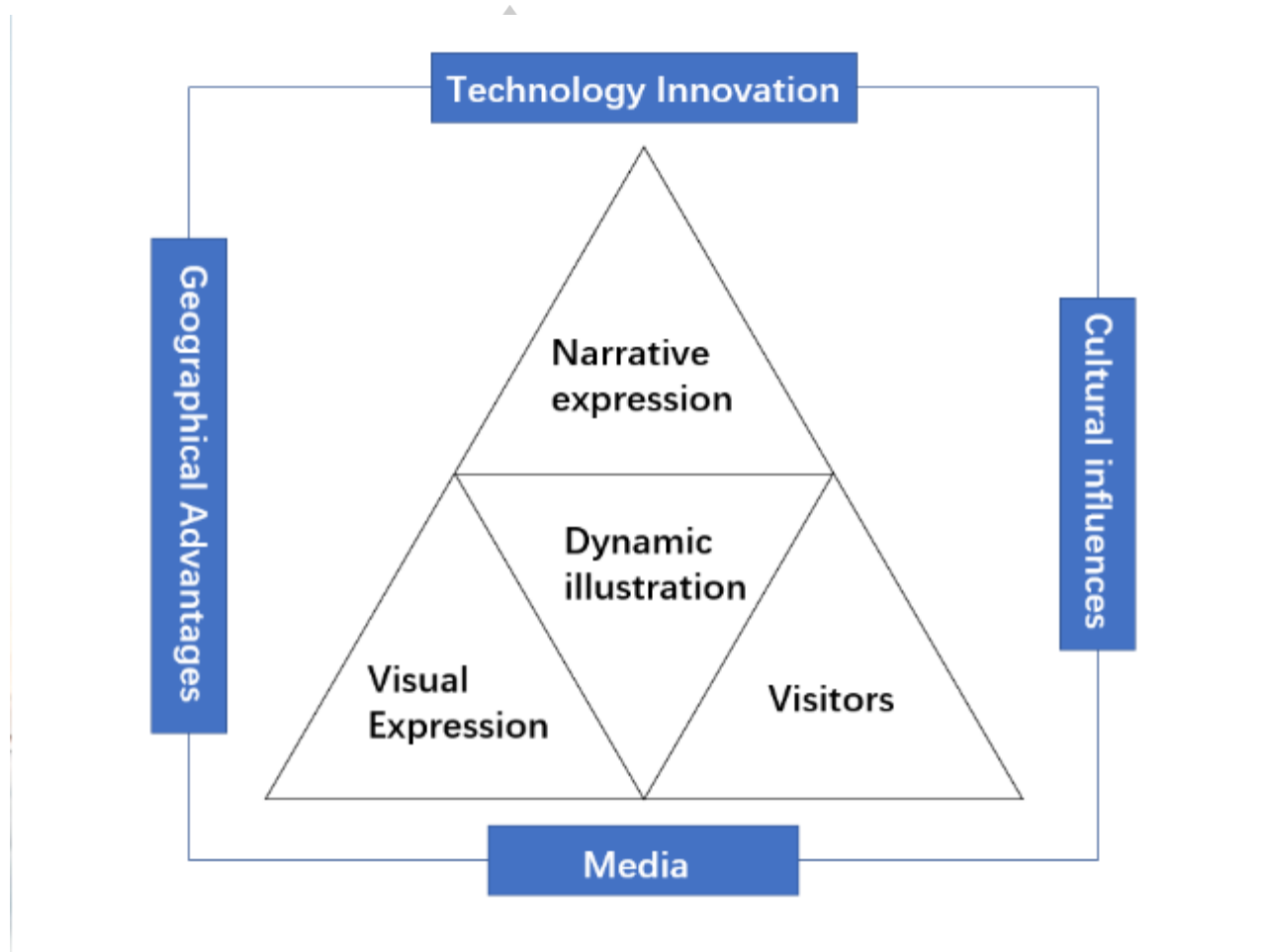
Figure 2 Conceptual framework

Source: Researcher, January 2023.
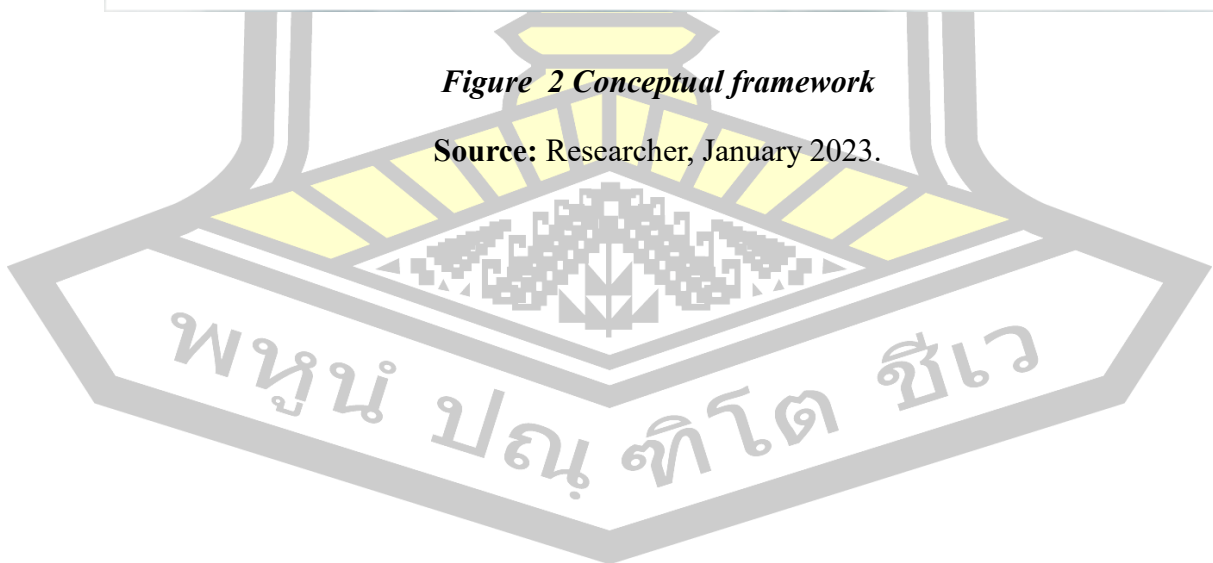
1.8 Research plan

Table 1 Operation period from November 2022 to March 2023 Operation period from November 2022 to March 2023

No.	plans/activities	Period				
		Nov. 65	Dec. 65	Jan. 66	Feb. 66	Mar. 66
1.	TS2 Research Proposal					
2.	Data Collection Chapter 2 Literature Review					
3.	Chapter 3 Data Analysis visit the area Sample SWOT Analysis Target group					

| 4. | Chapter 4 Creativity/DesignProcess

4.1 Inspiration/concept design and Idea sketch (preliminary screening with the advisor) | | | | | → |
| 5. | 4.2 Sketch Design

(Selected by experts and visitors) | | | | | → |

1.9 Benefit of Research

In recent years, the narrative language of dynamic illustration has been widely used in the Internet, games, film and television, business and other areas. Although dynamic illustration has its own limitations that make it far inferior to some cinema animation works, the advantages of dynamic illustration are also quite outstanding. With a growing audience and huge economic interests, dynamic illustration is taking over the market of commercial promotion. With the development of dynamic illustration, more good works will emerge and more audiences will be accumulated. In order to reduce the investment risk of big projects like animated movies, dynamic illustration will also produce more high-end theatrical works and eventually go to the big screen. In addition, due to the extremely low cost, the variety of illustration works will be gradually enriched, and some niche, literary, serious and deep works can also be produced as dynamic illustrations to achieve the prosperity of the cultural market. Dynamic illustration makes the audience unconsciously attracted in the fragmented time, so as to achieve the purpose of spreading the message. （Sun Mengcan, 2019:132)

Luoyang is rich in tourism resources and is strategically located, but its tourism industry is slowing down compared to similar cities. In recent years, the main tourism indicators have slowed down and fallen in ranking among tourism cities in Henan Province. In this context, it is important to strengthen the design and promotion of the city's tourism culture research and design to promote the transformation and upgrading of tourism and the development of Luoyang's tourism culture.

The significance of Luoyang's cultural heritage lies in the fact that both people and things can be sustainable, and people need to understand the magnificent beauty of Luoyang's culture and seek multiple communication channels. As an emerging industry in the information age, dynamic illustration has huge room for development, and is not only an important medium for passing on Chinese culture, but also an important carrier for achieving cultural development. (Cheng Chen, 2023: 67) As the cost of dynamic illustration production becomes cheaper and cheaper, the creativity and content of illustration become more and more important. Therefore, when inheriting Luoyang traditional culture, the relevant departments need to find the right position, enrich the content, and take advantage of the convenience of the Internet to aggregate the audience, so that the traditional culture of Luoyang "out of the circle" does not only stay in the stage results, but let the dynamic illustration and traditional culture integration to achieve "$1 + 1 > 2$" effect.
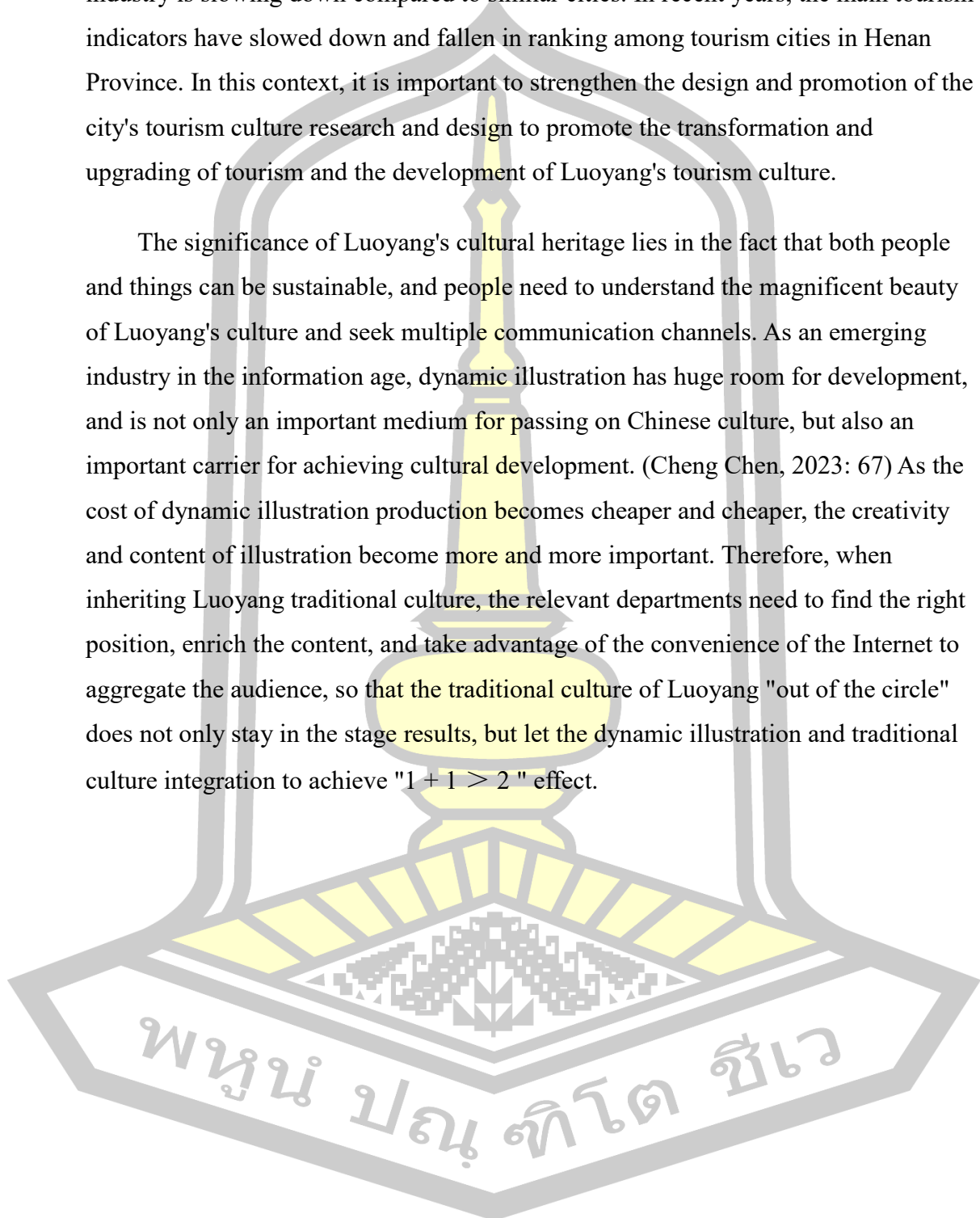
CHAPTER II

DYNAMIC ILLUSTRATION DESIGN RESEARCH

This chapter mainly explores the visual expression and design principles of dynamic illustration, and explains the overview of dynamic illustration, introduces the concept of dynamic illustration by analyzing the related concepts of illustration and dynamic graphic design, and investigates the law of dynamic movement by combining the theories of visual perception, cognitive psychology, design psychology and other related disciplines.

2.1 Overview and characteristics of dynamic illustration

2.1.1 Definition of the concept of dynamic illustration

It is a new and modern visual art that collides and innovates between illustration art and motion graphic design (as shown in Figure 2.1), using the design rules based on illustration art in visual expression and motion graphic production techniques. Broadly speaking, dynamic illustration is a form of visual expression that combines the language of illustration and motion graphic design, based on the flow of time. On the one hand, dynamic illustration should conform to the basic aesthetic principles of illustration design, and realize the artistic expression and ideological connotation of the work through various digital illustration techniques; on the other hand, dynamic illustration should follow the communication rules of network dynamic pictures, otherwise it is against the original creation purpose of dynamic illustration.

Illustration Art   Motion graphic design

Dynamic illustration
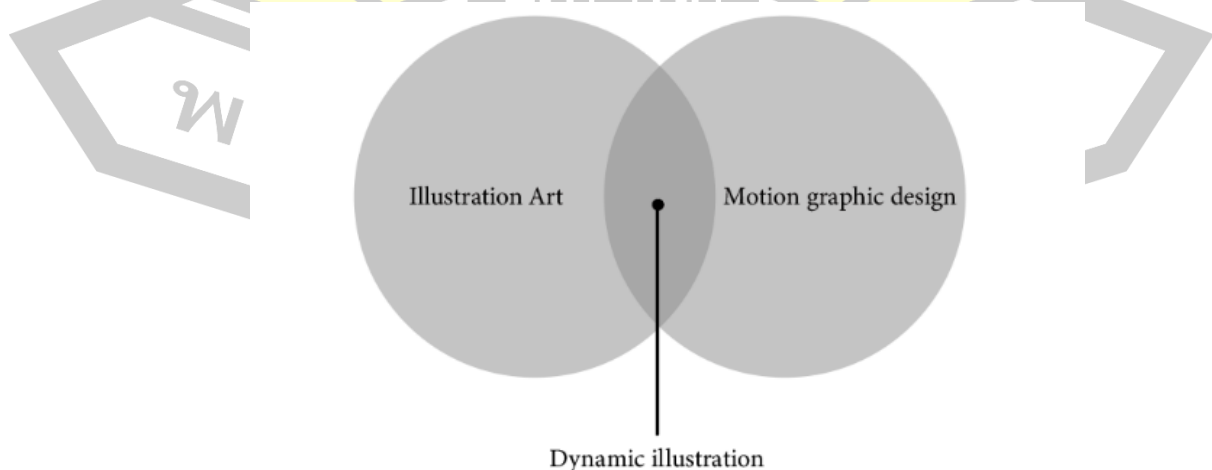
Figure 3 Dynamic illustration illustration

Source: Researcher, February 2023

Most people nowadays confuse dynamic illustration with animation, because most dynamic illustration and animation use similar design software, such as Photoshop and Adobe after effect, and both follow the same dynamic design principles in terms of motion logic. Therefore, they share the same design and production process, and it can be said that dynamic illustration draws on the best parts of animation. This relationship makes it difficult to distinguish between them in terms of form and concept, but they are not the same concept. Motion illustration is also a form of motion design, which is the application of graphic design theory to new media through animation or film techniques. Therefore, motion illustration is similar to motion graphics and animation in terms of visual expression. Although motion illustration is also about making the objects you draw move, the difference is that the visual representation of animation is usually narrative in nature, relying on the narrative of characters and plot. Dynamic illustration, however, can include not only narrative visuals, but can also simply create a mood. At the same time, dynamic illustration can also include interactive mechanisms to achieve information exchange and emotional communication with the audience through interaction. It can be said that the expression form of dynamic illustration is more diversified and richer, which not only integrates the technology of animation but also differs from the traditional animation in terms of expression and communication form.

In general, dynamic illustration is a combination of diverse visual images and various forms of movement, creating a lively and interesting space for audiences to interact with each other.

2.1.2 The origin of dynamic illustration

(1) Change of information transmission method

Compared with textual language, the visual language of images has a better communication effect, and this significant advantage has led people to move from the

era of text-only reading to the "era of reading pictures. In the era of reading pictures, illustrations have become one of the main carriers of information transmission in the Internet era, instead of being subordinate to words, they have blossomed independently. Because of the lower cost of Internet communication, stronger interactive ability, and wider coverage, the dissemination of information is also faster. This also leads to a state of information overload in the modern society, which distracts people's attention. Therefore, in the face of such a complicated information environment, the reading of the public has also undergone a great change, and people can only selectively filter and receive information. The German-American psychologist Arnheim argues in his "Visual Thinking" that "active selection is a fundamental feature of vision; a single unchanging thing produces aesthetic fatigue, and people always try to free themselves from boredom." In the process of reading information, people will develop an "inertia" mentality, and will put forward higher requirements for the efficiency and accuracy of information dissemination, and pursue a more relaxed way of reading than before, and this change has greatly expanded the communication channels and applications of illustration. （Li Mingyuan,2022:9）

In the dissemination of information under the visual language of graphics, the transmission of information by moving images is superior to that of still images. In his book "Art and Visual Perception", Arnheim mentioned that "Motion, the phenomenon that most easily attracts strong visual attention." While things that remain the same tend to lose their freshness and become visually fatigued, things that are richly varied and interactive are more likely to capture the viewer's attention and provoke them to more actively perceive the message and emotion behind the image. Under this concept, the single, static expression of traditional illustration can no longer become the mainstream of the current visual design performance, so the introduction of this dynamic expression form into the development of illustration can be said to be the trend.

(2) The impact of media technology innovation

The rise of dynamic illustration is inseparable from the progress and development of technology, and illustration has now moved into a new era of

combining art and technology. The popularity of the Internet and the continuous development of digital technology have led to the birth of many new media, making the "picture reading era" move towards the "screen reading era" once again. The medium of communication has been gradually extended from the paper media to the digital media, and the traditional one-way linear communication centered on the communicator has been transformed into a two-way interactive non-linear communication form. Electronic products such as cell phones, tablet computers and e-books have started to intervene in the lives of the public, and the public can not only be the receiver of information, but also the disseminator of information. This change has brought tremendous changes to people's way of thinking, lifestyle, and cultural communication. Not only has it broken the time and space limitations of traditional media and provided new channels for the dissemination of information, it has also led to the development of visual design in a more diversified direction to suit each medium.

The progress and development of technology has led to the extension and expansion of the art of illustration in the direction of dynamism, with richer visual forms, so that it can be more in line with the overall trend of the changing times. The emergence of software such as image processing software, special effects editing, and three-dimensional drawing have all provided solid support for the rich expression of dynamic illustration. It has transformed from a flat, static and single medium to a dynamic, three-dimensional and spatial form. This variety of creative methods has enriched the creative thinking of artists, and the public can use various creative methods to express their emotions and convey their messages in any media platform. In addition, technological advances have made production software easier and easier, which greatly simplifies the process of creating illustration art and provides a viable way for the public to participate in the creation of dynamic illustration, which has also contributed to the popularity of dynamic illustration. At the same time, the ease of dissemination of new media has made it possible for dynamic illustration to be spread around the world via the Internet in a relatively short period of time, allowing more people to feel, appreciate and experience it. Therefore, it can be said that the development and innovation of media technology is the fundamental reason for the

transformation of illustration design into a dynamic form, which not only revolutionizes the form of illustration creation, but also provides a stage for dynamic illustration to be active. It drives the development of dynamic illustration design and provides the technical support for its creation and dissemination.

(3) Change in the aesthetic style of the public

The fast-paced social life of modern people has led to a change in popular visual culture. People are eager to get more information in less time to get rid of the burden of reading, so they start to pursue "speed culture" or "fast food culture". Especially in the age of information technology, people can freely and easily access graphic and visual information through online platforms, and communicate and share with others in real time. At the same time, the innovation of media has also changed people's aesthetic activities and way of thinking, and people's visual aesthetics are no longer only satisfied with the basic functions, but more concerned with their emotional needs. The development of the market economy and the influence of the consumer society have not only lowered the threshold of access to and understanding of art, but the interactivity of new media has also pushed design to become a popular art, and the cultural concepts, aesthetic approaches and creative processes contained therein have become more open and free. Art aesthetics has shifted from the initial elite art to a more popular aesthetic orientation, which has eliminated the distance between time and space, class and hierarchy in aesthetics. As a result, the public is no longer willing to accept overly rational and obscure visual representations, but tends to pursue a more accessible and entertaining visual experience.

Influenced by the aesthetic consciousness of the public, dynamic illustration has become the best carrier to express emotions and satisfy people's aesthetics. Its visual expression is also developing in the direction of more "entertaining", "sensual" and "personalized", which has a great impact on the development of dynamic illustration. In the era of rapid development of information technology, the single expression of static illustration has failed to keep up with the development of the times in terms of the ability to disseminate information and meet the aesthetic needs of the audience,

therefore, the emergence of dynamic illustration is the inevitable trend of visual information development.

2.1.3 Characteristics of dynamic illustration

2.1.3.1 Richness of information content

Dynamic illustration is an extension and innovation of traditional illustration art, which combines animation technology and new media technology. It not only inherits the aesthetic characteristics of static illustration in visual presentation, but also greatly expands the information volume of the picture. Static illustration is limited by the scope of the picture, and the information capacity presented is more limited. When the amount of information to be presented is too large, only a certain amount of information can be removed, or the length of the picture can be increased to achieve the purpose of presenting all the information. In contrast, dynamic illustration can break through the visual limitations of the size of the picture, and the picture can no longer be limited by space and time, and can be presented through a variety of changes in perspective. Within the same display range, dynamic illustration can convey more information than static illustration, which greatly reduces the complexity of receiving information and also reduces the misunderstanding of the audience about the content of information conveyed by limited images, making the dissemination and sharing of information easier. Therefore, dynamic illustration is an effective expansion of the information capacity of static illustration, which can better portray what needs to be expressed and the deeper meaning of things, so that the viewer can obtain more information content. Therefore, as a means to convey information and express emotions, dynamic illustration is better than static illustration in presenting information.

2.1.3.2 Diversity of expressions

Because motion illustration is a combination of the aesthetic composition of traditional illustration with the dynamic principles of animation. Therefore, it combines the advantages of "illustration" and "animation", but unlike motion graphics, motion illustration is a relatively figurative form of painting, rather than a completely abstract visual graphic design. Although the picture of dynamic

illustration is dynamic, the dynamic and static forms of the picture are not opposed to each other, but can be transformed into each other. At the same time, not all the design elements of dynamic illustration are in motion, but the graphics are selected according to the purpose of the dynamic effect, and the contrast between "motion" and "static" leads the viewer's eyes to the visual focus of the picture, thus guiding the audience's reading order of the information. The contrast between "motion" and "stillness" draws the viewer's eye to the visual focus of the picture, thus guiding the audience's reading order of information. Therefore, dynamic illustration is to highlight the relationship between the main and secondary images through the balance and contrast of dynamic and static visual forms, and to show the rhythm and rhythm of the images, thus presenting a charming visual effect. Although dynamic illustration is highly dependent on digital media in terms of creation and display environment, it can only be created through specific equipment and software, and its advantages can only be brought into play through specific carriers and distribution channels. But it does not mean that it cannot be applied to paper media and other extended fields. As a combination of motion and static art, the most distinctive feature of dynamic illustration is that even without the dynamic effect, its static moment can still be seen as an independent work and used for offline extension. It can be said that dynamic illustration has more diverse forms of expression, not only for online communication, but also for offline extension.

2.1.3.3 Plurality of communication methods

Although dynamic illustration incorporates the dynamic principle of animation in its visual performance, it is still different from animation in the way of conveying visual information. The new media platform gives audiences more choices in the way they receive dynamic illustrations, mainly in two types, one is that audiences do not need to click to play or interact, but passively accept the information conveyed. This type of dynamic illustration is mainly presented in the form of GIF animation, which is different from the form of animation, and can be presented directly in front of the audience without the need to click to play. This simplifies the process of receiving information to a large extent and saves the viewer's browsing time, so it is often used in expression pack design or poster design. Another kind of dynamic illustration is the

one that can interact with the audience. The audience has more initiative in choosing the information, and can decide whether to stay for a long time or not and whether to interact with the picture according to whether the content shown in the dynamic illustration is interesting or not. This kind of dynamic illustration with the characteristics of purpose and entertainment is often used in the game page interactive advertising. Therefore, dynamic illustrations are more flexible and can offer more choices to the audience.

2.1.4 Categories of dynamic illustration

2.1.4.1 Text-based dynamic illustration

The second type is the combination of text and illustration, in which the text changes with the shape of the illustration subject. For example, in Figure 2.2, the letters in the illustration are twisted around a glass of Coke, and at the same time, the visual effect gives the impression that the text is the Coke bottle. Then, as the illustration changes dynamically, the letters turn into vegetables and meat, while the yellow background plate evolves into the word BBQ, surrounded by vegetables and meat. In this way, the organic changes of fonts, graphics and colors are used to realize the dynamic creative design expression of graphics, highlighting the fun of the work.

Figure 4 Text-based dynamic illustration
Source: behance

3.1.4.2 Expression-based dynamic illustration

Emotion-based dynamic illustration is the most popular type of dynamic illustration, which is mainly expressed in the form of expression packs. With the advent of the Internet era, various social platforms such as WeChat, QQ and Weibo have gradually become the main way to communicate with people in their lives. In order to add fun to daily online communication, besides the necessary language and text communication, people more often use funny expression images to express their

current mood. These dynamic emoji packets include photos, cartoon images and dynamic illustrations. Emoticons are popular, intuitive, simple, and have strong social attributes, and can be easily circulated on various social platforms, making them the most popular and widely used form of communication in the Internet media nowadays (Figure 2.3).
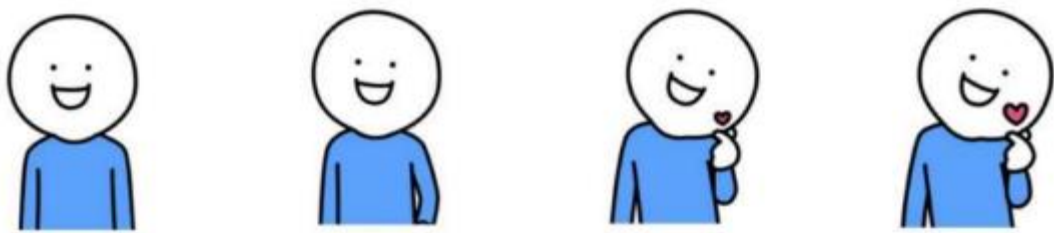
Figure 5 Little Blue Emoticon
Source: WeChat Emoticons

2.1.4.3 Theme-based dynamic illustration

Theme-based dynamic illustration is also a relatively common type of dynamic illustration, usually multiple dynamic illustrations created around a theme to form an illustration series to illustrate the same central theme, the single dynamic illustration in the series also has independent and complete content. For example, China is a large farming country, and the 24 solar terms are the ancient solar terms and farming culture of China, but the 24 solar terms of farming culture seems to be fading out of people's view in today's society. For example, the illustrator Halogen Cat's series of dynamic illustrations of the 24 solar terms (Figure 2.4)
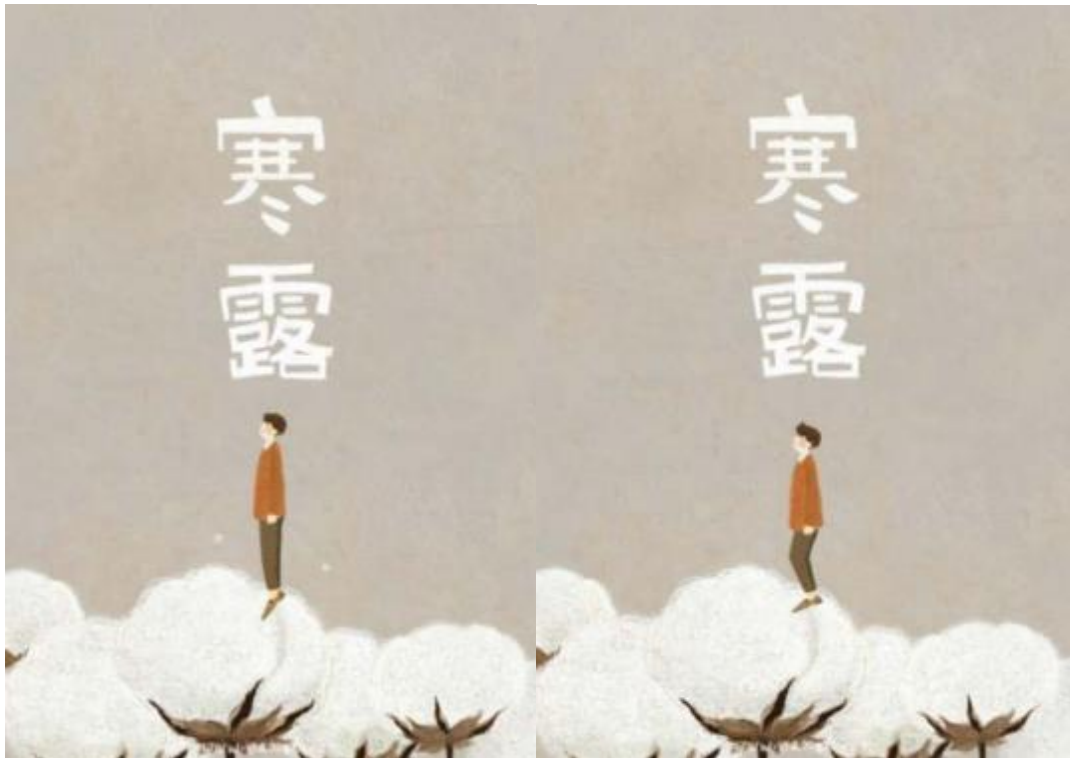
Figure 6 "Illustration of the Twenty-four Solar Terms"

Source: Halogen Cat Weibo

2.1.4.4 Dynamic Storytelling Illustration

The core quality of story-based dynamic illustration is that the work has a certain storyline, with narrative characteristics. This storyline can be a reflection of real life or a fantasy of the world in the author's mind. Story-based dynamic illustrations are more complex and more difficult to create. When creating this type of illustration, the illustrator needs to grasp the overall story framework, the timeline of the story, the rhythm of the plot, and the characters and scenes, as well as consider the dynamic effects and the application of camera movement effects to create a story atmosphere (Figure 2.5).

Figure 7 Gopher's story fragment

Source: Site Cool Design Website

2.2 A study of the narrative language of dynamic illustration

2.2.1 Structure of dynamic illustration narrative

2.2.1.1 Character narrative

Characterization is one of the most critical parts of the narrative structure of dynamic illustration. First, the main character, supporting characters and secondary characters need to be identified. In the process of character development, the purpose of the characters and the internal conflicts between them need to be clarified, as this is the key to advancing the narrative illustration. The interaction and conflict between the protagonists and supporting characters determines the development of the story

line. At the same time, the shaping of the supporting characters is also particularly important, different character characteristics of the characters have different behavioral interaction guidelines, we should fully perceive the behavior of different characters at the same time, and can be appropriate to enlarge their characteristics, when necessary, can also be given different defects characteristics, so that the character more three-dimensional, flesh and blood more full. In the Disney animated movie "Animal City", the rabbit image, which has always been labeled by the public, breaks the previous public perception and appears in the public eye as the image of a police officer. (Figure 2.6) Whenever we mention this handsome bunny, we do not have the stereotypical image of being vulnerable in traditional cognition in our minds, but the handsome and heroic posture when we put on the police uniform to arrest the criminals, and these sensory impressions depend entirely on the new definition given to it by a successful characterization.

Figure 8 Officer Rabbit
Source: Baidu

In the film, we can see the seemingly docile and well-behaved assistant sheep mayor's dark, cunning side, playing the role of the biggest villain. As shown in Figure 2.7.

Figure 9 The Mayor of Sheep

Source: Baidu

It is also possible to see the loyal and kind side of Mr. Fox that overturns our perception. (Figure 2.8) In this virtual world, which is at the creator's disposal, the line between black and white need not be very clear. Good and evil can be added to any image, thus giving the story unlimited creativity and possibilities.

Figure 10 Mr. Fox

115111

Source: Baid

2.2.1.2 Temporal narrative

A temporal narrative is usually a narrative that unfolds in a timeline, divided into linear and non-linear narratives. In a linear narrative, we usually follow an objective chronological order from the beginning to the end of the events according to the direction of the plot, Aristotle mentioned the issue of "narrative integrity" in his Poetics, emphasizing that the integrity of the plot depends on the logical order of things, that is, the events from the beginning to the end The development of the plot should be based on the logical sequence of things, that is, the events from the beginning to the end of the story should be carried out in a natural state of development, as the saying goes, what to do at what time, the behavior of the characters should have a logical trajectory, and the development of the plot should take the result of the previous event as the logical support for the next story, and the narrative should be complete from the beginning to the end, that is, the so-called beginning and the end.(Mai Shiqi,2022:41) The non-linear narrative is similar to the literary narrative of flashbacks, interpolations, filler narratives and sub-narratives, i.e. the images in the footage do not appear where they should at the objective point in time, but in a form of interpolation, as a supplement to the previous shot or a hint to the next episode. This non-linear narrative technique was introduced into the montage editing theory and can be seen in many psychological, reminiscent and action sequences. Because of the short duration of dynamic illustrations, each dynamic change in each frame must have practical meaning, which requires the illustrator to precisely control the meaning of each element's appearance and guide the audience's visual focus through changes in color, light and shadow, shape, and movement paths to help the audience better understand the meaning of the content.

Time is the measure of the length and sequence of events. In the long history of human existence, we have relied on this fundamental measure of time so that we do not get lost in the material equation day after day. The word time is not new to us. Time, like space, is invisible and intangible, but always with us. Time is not only a

measure of length and order, but also a wordless narrative vehicle. As a means of creation, time narrative is a narrative method that many authors are willing to adopt. Compared with the horizontal basic framework of spatial narrative, time narrative is more like the vertical basic framework of illustration. Driven by the vertical axis of time, it follows the storyline, builds the story framework, deduces the story logic, intersperses the story philosophy, and insinuates the story connotation. With the passage of time, the narrative plot evolves. Time is like a thread that connects the fragmented minutiae to form an organic overall story. Time as an invisible force brings the storyline of the illustration into a deeper dimension, deepening the narrative depth of the illustration

2.2.1.3 Spatial narrative

Spatial narrative is a narrative method that throws out information points by creating a scene and space-time in which things are located, using the viewer's habitual perceptions and associations to give things a spatially structured connection. Generally, the location of the characters is a logical space, but there are cases where the creator puts the characters in an "unsafe" or "illogical" situation in order to express some abstract concepts, For example, in this work (Figs 2.9), the exhaust from the chimney is standing above the clouds, and the figure is standing in the air as if he is painting the black smoke from the chimney into white, as if he is cleaning the environmental pollution caused by the chimney. This is the narrative connection brought by spatial dislocation. In fact, this expression technique has been reflected in the surrealist style of illustration for a long time, Dali was very good at using spatial dislocation to express the picture. This leads the viewer to find the connection between these spaces and the misplaced "visual symbols" and to develop a new understanding of the images. The location and environment of the story in dynamic illustration can show the spatial characteristics of the narrative structure. Spatial narratives in dynamic illustration present images of things out of their original space, using the viewer's perceptions and associations to create abstract spatial connections.
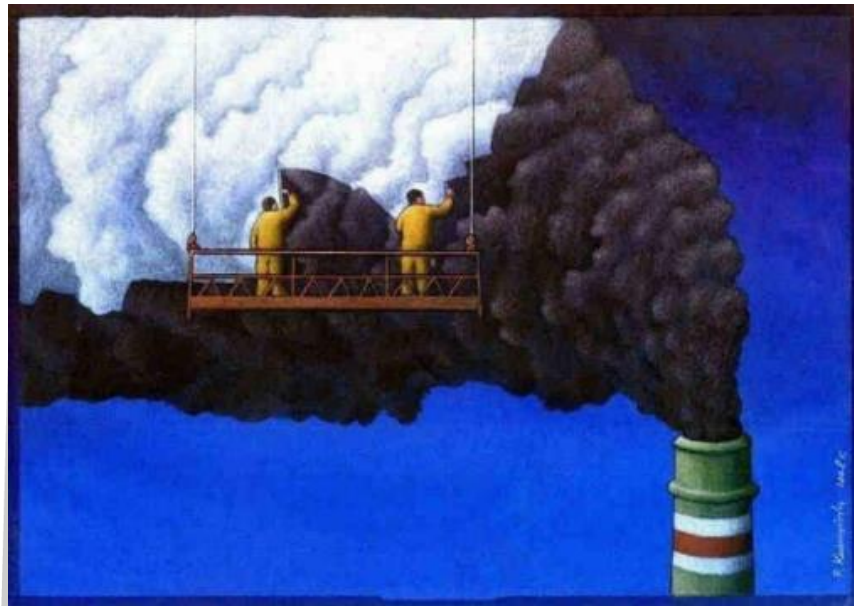
Figure 11 Artificial purification of air creative illustration

Source: Baidu Academic

With the rapid development of modern technology, the timeline in computer software can also control the movement of objects at different points in time. The linear movement of the graphics in the time axis creates changes in the shape of the graphics, and the abstract sense of depth created by the back-and-forth movement of the graphics, to a certain extent, gives the dynamic illustration a spatial narrative character.

2.2.1.4 Sound narrative

Sound is an integral part of human perception of the world and our surroundings, and humans use sound to communicate. Similarly, in the process of building cities, humans use various sounds to indicate different meanings. The "beep" of a truck backing up is a warning to pedestrians to stay away, and the whistle of a kettle reminds people that the water is boiling. In everyday life, the sound of a text message also draws attention to a notification. We find that "sound" itself is a kind of communication medium, and the importance of sound "symbols" comes to the fore when there are empty shots with some deeper meaning in the picture, which allows us to quickly grasp the information in the picture and use the association to

It allows us to quickly grasp the message of the picture, to understand the content of the picture by association, and to give the dynamic illustration more narrative space.

Sound design is like a primitive yet direct language that crosses the barriers of verbal communication and allows the viewer to make visual perceptions of things. At the same time, it builds auditory memory in the brain and strengthens the visual narrative. Returning to purity and simplicity, "good design is as little design as possible", the sound design in dynamic illustration needs to be concise and fit the overall atmosphere of the illustration in order to immerse the viewer, further mobilize emotions and trigger empathy.

2.2.2 Characteristics of the narrative language of dynamic illustration

2.2.2.1 Mnemonic circularization

Narrative dynamic illustration is different from real animation, which has a long duration, and is more often created in a time dimension of no more than one minute. The GIF animation is an effective memory in the mind. It is based on static illustration and uses dynamic movement to enhance the effect of information transmission, which makes it easier for the viewer to understand the design concept of the creator. In a sense, it is a more convenient technique to realize the editing technique of repetitive montage. It also creates a closed loop of memory in terms of content understanding, so that each single painting has an independent memory point to be recognized and linked to the series of paintings to create a new conceptual perception. Under the development of digital era, this kind of dynamic expression with short effect and memory point is widely used in the commercial field, mostly placed in the electronic screen with large area for promotion.

2.2.2.2 Fragmentation of splitting and reshaping

Narrative dynamic illustration is different from real animation, which has a long duration, and is more often created in a time dimension of no more than one minute. The GIF animation is an effective memory in the mind. It is based on static illustration and uses dynamic movement to enhance the effect of information transmission, which makes it easier for the viewer to understand the design concept of

the creator. In a sense, it is a more convenient technique to realize the editing technique of repetitive montage. It also creates a closed loop of memory in terms of content understanding, so that each single painting has an independent memory point to be recognized and linked to the series of paintings to create a new conceptual perception.(Mai Shiqi, 2022: 48) Under the development of digital era, this kind of dynamic expression with short effect and memory point is widely used in the commercial field, mostly placed in large electronic screens for promotion, and becomes a popular commercial creation mode nowadays because of its powerful memory loop and narrative expression, and will be used in more fields in the future.

2.2.2.3 Diversity of interactivity

With the rapid development of digital technology, people's demand for Internet applications is getting higher and higher, and mobile devices such as cell phones, iPads and laptops have become inseparable new partners in people's work, life and entertainment. In order to meet the spiritual needs, various kinds of mobile apps came into being. In recent years, we found that, surrounded by many 3d games, some 2D games with more concise dynamic elements stand out, such as "Cat's Backyard", "Jiangnan Hundred Scenes" and so on. Their animation is done very exquisite concise, in the dynamic of the illustration with a unique style, smooth dynamic effects, multiple modes of interaction In terms of screen expression has a more vivid visual aesthetic. There are even narrative games such as "Yin Yang Shi" that combine two-dimensional illustrations with three-dimensional models, which use dynamic illustrations to assist three-dimensional models for content narrative, allowing players to better understand the game's character settings and plot content, and dynamic interaction can fully mobilize the sensory senses of players in the visual, auditory and tactile senses. It is easy to find that the narrative language of dynamic illustration has been more and more widely used in the field of interaction that we touch every day, becoming an inseparable part of the current dynamic visual language system, bringing more diversified choices for our entertainment life.

2.2.3 Use of camera language

Dynamic illustrations are mainly narrated through the use of camera language, which draws heavily on and imitates the effects of film camera movement. The visual effects of camera movement and transitions are presented by simulating camera movement and montage. Montage and transitions are both film and television terms. Montage is an important means of narrative composition and plays an important role in creating a sense of rhythm, while transitions are transitions between one scene and the next, helping the dynamic illustration to integrate the scenes together in a rational way. The plot of dynamic illustration is narrated in the scene, and the different narrative techniques also lead to the change of the scene. There are two types of narrative performance: narrative in a single scene and narrative through transitions in multiple scenes. The choice of the appropriate narrative technique depends on the content of the scene, the amount of information content, and the desired visual effect.

2.3 Visual expression methods of dynamic illustration

2.3.1 Setting of dynamic effects

2.3.1.1 Follow the law of motion

Motion is the phenomenon with the most variety and charm, and it is a visual beauty that all art tries to express. Like television and movies, it is widely loved because its dynamic effect reproduces the objective phenomena of the real world. And the law of motion is a kind of interpretation and summary of the process of movement of objective things. Dynamic illustration is drawn by the illustration picture in motion, which must have a reasonable dynamic design in order to fully convey the visual effect that it wants to achieve, otherwise the presentation effect of the picture will be greatly reduced. Therefore, the dynamic effect of the picture must be smooth, natural and in accordance with the laws of movement in order to achieve a good dynamic effect.

Dynamic design is mainly divided into the dynamic presentation of objective things such as characters, animals and natural elements. For the dynamic effect of dynamic illustration, one of the most expressed is the dynamics

of characters, and the other is the dynamic design of natural objects. Both characters and natural objects have their own specific movement rules. Sometimes, for the sake of artistic effect, besides exaggerating the graphic design, the dynamic effect will also be exaggerated under the condition of following the law of motion in general. But for its dynamic design must be in accordance with the objective world of biological and natural objects in the process of movement to carry out the most characteristic settings, follow the real world such as gravity, friction, inertia of the dynamic logic. Therefore, the creator needs to clarify the characteristics of the movement of various things, so as to facilitate the design of action performance can be drawn from and based on. The elements or body structure of the character to be designed dynamically are set according to the laws of dynamics, and the direction of movement, active or passive state of movement, rhythm, intensity and center of gravity of movement are adjusted reasonably to make the dynamic effect more in line with the laws of movement.

2.3.1.2 Control of dynamic rhythm

The rhythm is the expression of the movement and life of things" (Shu Wenting, 2011: 24). If there is no rhythm, the dynamic illustration newspaper will easily appear chaotic and disorderly visual effect when various composition elements change in the picture. In the dynamic design, we should arrange the time node and order of various compositional elements, coordinate the part with the whole, so that the picture has a certain order, when the picture is transitions, we should also pay attention to the connection between the visual elements, to ensure the order and coherence of the picture content, so that the dynamic illustration picture is presented smoothly and naturally.

The dynamic performance of dynamic illustration is closely related to the design of time, which is a reflection of the continuity and sequence of dynamic changes in the picture of dynamic illustration. Here the dynamic rhythm refers to the frequency of dynamic changes in the dynamic illustration, mainly in the form of action "movement" and "static", action amplitude of "collection" and "release", the speed of the action of the "rush" and "slow" three performance. Dynamic rhythm is about the smoothness of the dynamic effect and

the beauty of the form. Within a certain time frame, dynamic rhythm is too fast or too slow, will affect the visual perception of the picture. Therefore, in the dynamic design, need to pay extra attention to the rhythm of the grasp, as long as the relationship between the dynamic form, dynamic speed, dynamic range, the action will not look dull, more rhythmic.

The change of speed is a major factor in creating a sense of rhythm in dynamic effects. In dynamic illustration, the motion effect is mainly presented by the continuous change of each frame in the timeline. The spacing between the initial keyframe and the ending keyframe and the playback rate determine the playback speed of the dynamic illustration. In frame animation, the fewer the number of frames, the faster the motion, and the more frames, the slower and more detailed the motion, within a fixed point in time. Another factor that affects the dynamic rhythm is the change in the amplitude of the movement, i.e. the time it takes for the whole process from one action to another, and this amplitude change is reflected by the key frames occupied by the whole action. When setting the amplitude of the action, it is necessary to consider the change of speed according to the need of time rhythm and then set the amplitude of the action. The overall momentum of the key action should be grasped first, and then the number of frames of the secondary action should be added, so that the dynamic effect can be smoother.

Of course, the overall dynamic rhythm is determined by the state of motion of the character or design element, and the different dynamic rhythm makes the effect of the picture different. As shown in Figure 2.10, in the work "Ice and Snow Wonder Tour" created by designers Zhou Fangyuan and Shi Chen Chen in collaboration with People's Daily for the Beijing Winter Olympic Games, the skaters in the picture change rapidly in a very short period of time through the quick setting of key frame movements. The peripheral scenes are also blurred to emphasize the rapid movement of the athletes in the center of the visuals.
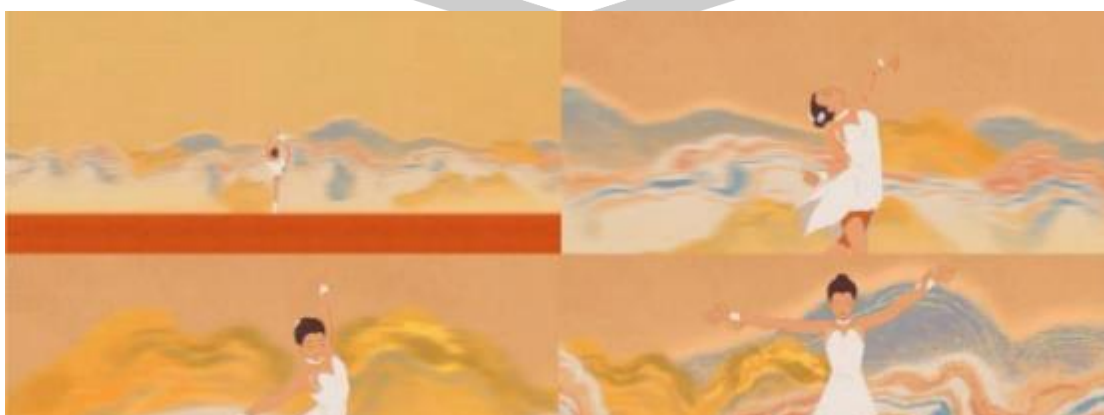
Figure 12 Frozen in the Beijing Winter Olympics

Source: Baidu Academic

2.3.1.3 Selecting dynamic forms

At present, more and more advanced software technology gives designers a rich platform to combine the picture with dynamic design, such as Photoshop, Adobe Atfer Effects, Flash and other software applications can carry out some dynamic effects on the design elements. There are mainly two ways to create dynamic effects for dynamic illustration, one is to set the key frames and then generate the interval animation of transition frames through the software, this way can make a slightly more complex and coherent dynamic effects, and present a smooth picture. The other is a series of keyframes drawn by the continuous combination of frame-by-frame animation effect, the pursuit of more blunt or delicate, unpredictable dynamic changes, the production method is more flexible. In terms of form, dynamic illustration should follow certain dynamic design principles and develop a rich imagination.

(1) Displacement

Displacement is the simplest and most commonly used dynamic design, is the overall movement of the graphic elements in space changes, the elements themselves do not change, only the position of the elements in the picture has changed, the change of position can be in two-dimensional or three-dimensional plane, when the graphic elements in the three-dimensional plane position change often need to consider the impact of perspective, the form of the elements themselves often change.

(2) Rotation

Rotation is the movement of a graphic element around one of its own axes or axes. Like displacement, it can occur in two dimensions or in three. Depending on the location of the axis, different rotational effects can occur. In simple terms, when the axis point is located in the design element itself, we call such a rotation self-rotation; when the axis point moves to the outside of the graphic element, we call it a rotation around. Rotation in 3D space is often accompanied by deformation.

（3）Deformation

Deformation refers to the change in the shape of the graphic elements themselves, the shape of the same change in size is called regular deformation that is scaled, while the change in shape through extrusion, bending, elongation, etc. is called irregular deformation. When we need to design such a movement, we can summarize the natural movement of the object as a combination of regular and irregular deformation, and grasp the overall law from the subtle point of view.

2.3.2 Creation of scenario space

2.3.2.1 Spatial creation of the scene

Scene is an important element in dynamic illustration to support the picture. The scene space of dynamic illustration is composed of many design elements, which are divided into figurative elements and abstract elements of atmosphere. The stylistic elements are mainly composed of architecture, scenery and characters, while the atmospheric elements are natural elements, props and other decorative elements, and light and shadow effects. The setting of the scene is closely related to the expression of the narrative content, and is a prerequisite for dynamic illustration to be able to convey emotions and meanings. Therefore, when conceiving the spatial organization of dynamic illustration, we must first determine the overall spatial layout and movement of the scene from the content of the message we want to express, and then clarify the color tone and style of the picture to perform. In dynamic illustration, the creation of the scene space mainly has the following role.(Mai Shiqi,2022,19)

（1）Account for the overall background environment

In dynamic illustration, scene setting serves to explain the temporal and spatial relationship between the character and other design elements, to illustrate the identity, environment, personality, and psychological activities of the character in the picture, and to reflect the plot setting of the picture. There is little difference between the scene elements involved in dynamic illustration and animation, and most of the design inspirations are referenced from the real objective world. The scenes build the narrative space of dynamic illustration, containing the background through which the plot is created and developed.

When designing scenes for a picture, it is important to focus on the content or theme that the picture wants to express, and to clarify the temporal and spatial relationships between the characters and the elements of the scene, otherwise it will be easy to have a disparate look and feel. It can be said that the scene is the stage for the dynamic illustration to display.

（2） Highlight the main visual center

Gestalt psychology believes that human visual perception has primary and secondary vision. In motion illustration, the primary visual is the main object or the main character in the center of the picture, and people are often attracted to this visual center. The secondary visuals are the backgrounds and props in addition to the primary visuals. Therefore, when constructing a dynamic illustration scene, it is necessary to follow the principle of highlighting the main character in the hierarchical relationship. In the composition, the main object or the main character is placed in the visual center of the picture, and other design elements or backgrounds are used to set off the main object. Highlighting the subject can more effectively clarify the relationship between the main and the secondary of the picture and eliminate other visual distractions for the audience. So the scene elements must be as simple as possible, to achieve precise refinement, so that the picture looks clear priority.

（3） Create the atmosphere of the picture situation

In dynamic illustration, the mood of the picture is the dominant element that constitutes the style of the picture and can intuitively affect the psychological emotion of the audience. The mood of dynamic illustration is created through the combination of different atmospheric elements to create visual association and make people feel emotional when viewing the picture. For example, the rain is a metaphor for the dreary atmosphere, and the falling maple leaves can reflect the sullen atmosphere. These atmospheric elements can make the scene more realistic and infectious, and usually echo with the narrative, making the picture present a sense of mood.

2.3.2.2 Local dynamic loops

The dynamic loop effect of local elements is a very common expression of dynamic illustration, mainly through the limited dynamic design of multiple repetitions of action, to achieve a continuous dynamic effect of the picture. This method of expression is relatively simple to produce, which can greatly reduce production costs and workload, and can also achieve a certain artistic effect. This type of dynamic illustration does not focus on the plot of the picture, but tends to reflect the characteristics of dynamic illustration of the combination of motion and static, through the design elements in space, such as displacement, swaying, shaking, rotation and other dynamic cycle, to shape the picture of the situation or show the character's state of motion. Dynamic loops are created by linking the end and beginning of an action in a timeline and repeating it over and over again to form a dynamic loop, making dynamic illustration more sustainable in time. When designing dynamic loops for dynamic illustration, the direction of the loop and the number of loops should be fully considered. It is important that the end of the dynamic cycle is not visible to the audience.

2.4 Overview of the cognitive psychology of dynamic illustration

2.4.1 Basic theories of cognitive psychology

Cognitive psychology is a trend of psychological thinking that emerged in the West in the mid-1950s and became a major research direction in Western psychology of cognitive psychology in the 1970s. Cognitive psychology identifies

human thinking activities as similar to computer information processing, i.e., input-processing-output process. And the core theory of cognitive psychology is information processing theory.

Information processing theory summarizes human cognitive processes into four core systems: the perceptual system, the control system, the memory system, and the response system. Firstly, people will cognize the environment through the perceptual organs. When people cognitively perceive the external environment, 95% of the reception of external stimuli originates from vision. At the end of sensory perception, the information enters the control system, which sifts through the intricate information elements. In this case, "attention" is the processing of information by means of filtering processing. "Attention is the selective perception of stimuli in the surrounding environment. Attention is selective, however, in the sense that a person cannot pay attention to more than one thing at a time, but can focus on one thing at a time. One of the most famous experiments in the history of psychology, "The Invisible Gorilla," explains the selectivity of attention by showing that even the most obvious information can be missed. The information in the poster has important information and common information, how to let the viewer can quickly notice the important information is also a dynamic poster design needs to be considered.(Zhang Geng, 2022:135)

2.4.2 Principle of visual perceptual signal

What is perception? It essentially serves to extract and process sensory information to enable us to see, hear, taste, or touch real objects and to respond to them Visual perception is very important to our daily lives, allowing us to move freely, see the world, read books, and so on. In addition, visual perception is particularly important because we depend on its accuracy for our survival. In fact, the current process of converting information for visual perception is so complex that no computer can simulate a fraction of human visual perception, even if the environment is artificially simplified. In recent years, researchers have made considerable progress in the field of visual perception. Much of this progress has come from the efforts of cognitive neuroscientists. Although the full picture of

visual perception is not available, their work has enabled us to learn more about the brain systems involved in visual perception.

Any object in the outside world is known to the brain through visual stimuli acting on the retinal receptors and then processed. It has a total of three processes: first, the absorption process of external objects by retinal receptors, second, the conversion of the absorbed physical energy into chemical electrical energy, and finally, the conversion of these chemical electrical energy into the corresponding neurological activity.

Hubel and Wiesel identified two types of neurons that touch the visual cortex, simple cells and complex cells. Simple cells allow for maximum response to black blocks in bright areas, white blocks in black areas, and straight edges in the middle of light and dark areas. This explains why some Soviet posters are so striking. The complex cells, on the other hand, allow for a greater response to the contours of motion, and the poster's extensive use of curves to show movement is the key to a greater response to the poster. Later, a new type of cell was discovered, the hypercomplex cell, whose special function was to make people more responsive to lines that ended in a certain area rather than to lines that crossed or extended outside the area.

2.4.3 The use of cognitive psychology in dynamic illustration

The main purpose of illustration design is to promote and attract the attention of a specific group of people to view a poster. The process of viewing an illustration corresponds to the four core systems of human cognitive process. First of all, the viewer will perceive the image visually. After the perception of the information elements will enter the control system, the traditional static illustration of the basic visual elements are: text, graphics, patterns, etc., dynamic posters on the basis of these added graphic movement, flashing, etc., the human eye is more sensitive to dynamic objects, dynamic elements can quickly attract the viewer's attention, but "attention" also has a But "attention" also has a time limit, people can not maintain attention for a long time. When viewing dynamic posters, if you can't get the information quickly, and watch the graphic movement and flicker for a long time,

it will make the viewer annoyed and dissatisfied and other negative emotions.(Zhang Geng, 2022:66)

Information enters the memory system after passing through the control system. Memory is divided into long term memory and short term memory, but there is no need for the viewer to deliberately engage in long term memory for either important information or ordinary information on the screen. In life, most of our memories are stored in the external world, just like a common dollar coin, we can't remember all the text and graphic layout on it. What illustration needs to do is to attract the viewer and build a basic feeling for the viewer, not to make the viewer remember all the information elements on it clearly. Ultimately, the information will enter the response system, which will command the effector to respond to the external environment: for example, the viewer notes the information on the poster with a pen and paper after seeing it, as in Figure 2.11.

Perception System	⇨	The viewer perceives the poster visually
Control system view	⇨	Dynamic elements attract the viewer's attention
	⇨	The viewer screens the information elements on the poster
Memory system	⇨	The viewer remembers the important information elements on the poster
Reaction system	⇨	The viewer reacts to the external environment
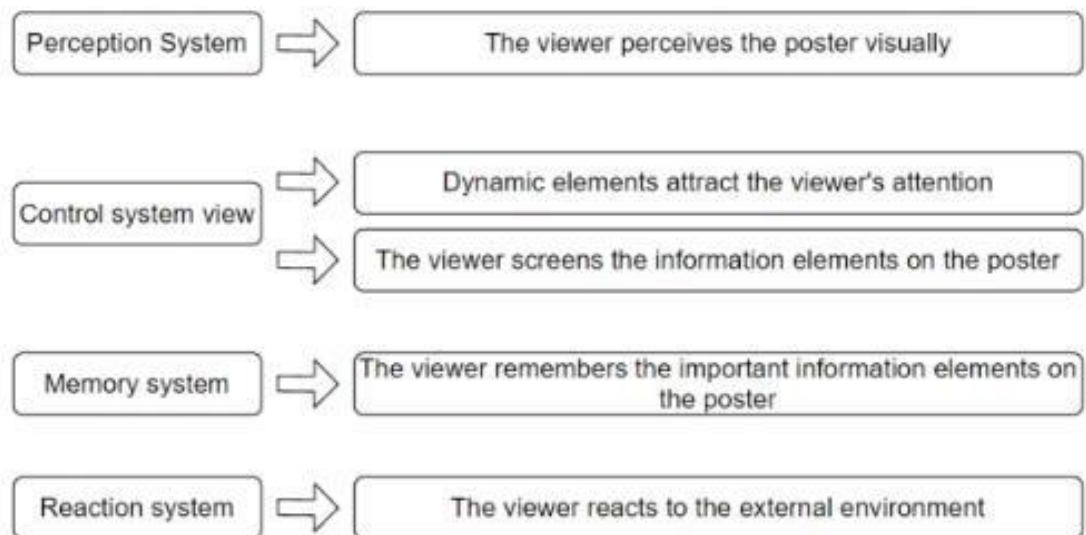
Figure 13 The four major systems of human cognition

Source: Researcher, February 2023

Multisensory experience is an improvement of the perceptual system, turning the "viewer" into an "experiencer". The multi-sensory experience enriches the

information that can be conveyed by a single object, making it easier to attract human attention.

Dynamic illustration is just a starting point, it simply stimulates human's vision. But the human perception system is not only visual, in the future dynamic poster is likely to add surround sound, or even stereo moving images and other technologies. Let the dynamic poster to diversified, multi-sensory form in the public's view, fully mobilize the viewer's perception system, to obtain and understand the information in the picture. But no matter how the technology, in the process of dynamic illustration design, not simply "show off technology", designers need to comply with the cognitive psychology of human cognitive laws, so that the design results in attracting the attention of the viewer and in line with the mainstream aesthetic, but also to the outside world can quickly convey the information elements on the illustration, only then can bring the viewer a better Only in this way can we bring the viewer a better experience.

2.5 A study of multiple applications of dynamic illustration

2.5.1 Use in commercial promotion

Illustration has always been one of the most popular forms of commercial advertising, as early as the Ming Dynasty, illustration has been widely used in commercial posters, in line with the development of the digital age and the popularity of new media, illustration has also appeared more diverse forms of expression, dynamic posters is a new art form in line with the new media context, it meets the public in the digital age of high interest, high aesthetic, high efficiency of the hard demand, but also because of its strong narrative expression, is widely used in the commercial field.

Dynamic illustration has become the best choice for brand promotion due to its low cost, high efficiency and wide distribution in online media, and is now widely used in many business fields. Dynamic illustration can be seen in dynamic advertising on e-shopping platforms, dynamic logos, and dynamic IP image design. In the process of commercial promotion, due to the diversification of customer needs, the flexible creation and dissemination of dynamic illustration can be

adjusted and modified anytime and anywhere according to the needs of customers, which makes it more suitable for commercial operation. Therefore, dynamic illustration has been promoted to the commercial field, and the market demand for dynamic illustration has in turn promoted the development of dynamic illustration, thus forming a virtuous circle. In the commercial promotion, dynamic illustration can be used in the following areas.

(1) Application in dynamic signs

Dynamic illustrations and brand logos can be effectively combined, which not only help attract the public's attention, but also quickly help brands build their corporate image. Dynamic illustration has a rich sense of dynamics, atmosphere, narrative and immediacy, and is highly extensible in the construction and promotion of brand image, which can be combined with the brand's web advertisement, IP image design, product promotion, etc. to show the inner spirit and cultural connotation of the company more completely. Therefore, brands often use dynamic illustrations to enhance their visual images when designing their logos. For example, Internet search engines and e-commerce websites often combine dynamic illustration with logo design, which is often called Doodle, meaning logo doodle. It is usually used to redesign the original logo on major festivals, anniversaries, or to commemorate outstanding figures, so as to create an emotional output of the brand and products, to make users feel the atmosphere and fun when browsing the web or using the brand, or to remind the audience of the current social hotspots. As shown in Figure 2.12 and 2.13, Google Search Engine designed two logo Doodles to commemorate the Beijing Winter Olympic Games and the Winter Paralympic Games respectively. It also stimulated the audience's interest in sports events. In particular, the dynamic Doodle for the Winter Paralympics combined graphics and text, highlighting the Google search engine logo through the projection of animal athletes, which was creative and interesting.

Figure 14 Google Winter Olympic Games Dynamic Doodle

Source: Google

Figure 15 Google Winter Paralympic Games Dynamic Doodle

Source: Google

(1) Application in dynamic posters

Advertising needs to attract attention quickly in order to achieve the effect of publicity, so dynamic illustration with rich visual expression has become the best choice for many brands to promote their products and activities. As part of the graphic design system, illustration is widely used in poster advertising design. With the addition of dynamic effects, the poster can attract the public and deliver the message to the audience in real time. Most of the dynamic posters use the dynamic cycle of expression, this form is very suitable for the communication characteristics of posters. By dynamically shaping the contextual atmosphere of the picture, it not

only adds interest and artistic atmosphere to the brand, but also stimulates the audience's desire to buy the products. Therefore, in recent years, many e-commerce brands such as Tmall and Jingdong have started to use dynamic illustration for poster design. As shown in Figure 2.14, Mao Zhao, an illustrator, created a dynamic poster design for Bajirao in collaboration with Shanghai Fine Arts Film Studio (SAFP). The poster is designed by combining the surrounding atmosphere elements to emphasize the central object in the form of motion and static, and the traditional Chinese colors to form a contextual atmosphere consistent with the overall tone of the product, so that the audience can focus on the product.

Figure 16Showing the way to beautiful skin

Source: Site Cool

(1) Application in IP image design

Dynamic illustration is also commonly used in IP image design, which is a figurative image of a brand. It is usually used to draw the public's attention to a brand or product with anthropomorphic visual images, so many people also call IP images cute things. Due to the trend of dynamism, the design of IP image has also started to develop dynamically. Adding dynamics gives IP images virtual life and makes them more relatable, which can quickly open the communication channel between brands and audiences. It helps to attract the public's attention and play the role of communication with consumers and brand promotion. As shown in Figure

2.15, the IP image design of Tmall International under Tmall is presented with 3D style visual effects. This dynamic IP image is highly extensible and can be applied not only in online and offline advertising design, but also in the UI interface of APP, webpage and emoji design. By dynamically processing IP images according to different scenarios, it not only brings users closer to the brand, but also increases the stickiness of users to the brand.

Figure 17 Tmall IP image

Source: Taobao Tmall

With the rise of the concept of "metaverse" in the 21st year, AI virtual characters have become popular again and have also led to new changes in the visual presentation of IP images. The metaverse is essentially a process of virtualization and digitization of the real world, and now there are not only virtual idols, virtual anchors, virtual netizens and other forms, but also hologram technology, motion capture technology and 3D modeling technology can be combined to realize the spatial span of two-dimensional images to communicate and interact with audiences. For example, Watsons launched the AI virtual brand spokesperson "Qu Chenxi" (see Figure 2.16), an IP image that is a highly anthropomorphic secondary virtual idol created through dynamic illustrations. It can not only appear in various marketing activities and communication channels, but also provide professional services to customers according to different consumer preferences and needs, thus better facilitating communication between brands and consumers. Another form is the virtual idol girl group generated by Lehua Entertainment and Byte with the help of Live2D drawing and rendering technology, as shown in Figure 2.17. The virtual image creates a vivid "faux 3D" effect in 2D style, and by creating a distinctive and

personalized persona and a rich and varied image, and combining dynamic illustration with real-time motion capture and 3D modeling technology, virtual idols have started to come into reality and are widely welcomed and loved by the public.

Figure 18 Watson's virtual idol spokesperson
Source: sohu.com

Figure 19 A-SOUL virtual idol girl group

To sum up, the rich expression of dynamic illustration can not only improve the extensibility of brand commercial promotion, but also combine with various emerging technologies to draw closer to the audience through interesting and dynamic images, and combine audio-visual and interactive forms to communicate with the audience emotionally, and in this subtle way attract the audience's attention to the brand and product. This shows that dynamic illustration plays an extremely important role in the commercial promotion of brand products.

2.5.2 Use in mobile media

The popularity of mobile media in the new media environment has changed the form of information dissemination, and mobile is mainly through the network platform for information dissemination. For example, the UI design in mobile APP, H5 page design, and the emoji design in social media platforms, etc. can all see the use of dynamic illustration. Therefore, mobile media has become an active stage for dynamic illustration.

(1) Application in UI design

UI is a brief name for user interface. The traditional static UI has limitations to the audience's experience and is not enough to attract and manipulate the user's attention. Dynamic illustration is mainly used to decorate and beautify the interface, and at the same time, it can present the design content and information function more intuitively, and dynamic illustration applied in UI design can also strengthen the interaction form, enhance the audience's visual feeling and user experience, so that users can speed up the understanding and operation when applying the product. Therefore, dynamic illustration is widely used in UI design, not only in micro-interaction design, but also in guide page design, operation splash screen, and mobile dynamic theme interface. As shown in Figure 2.18, in the dynamic lock screen interface of the cell phone theme "Charming City" of Xiaomi Mall, interesting dynamic illustrations are used to shape the rich atmosphere of city life, the lock screen interface and the application interface are added with dynamic and interactive

mechanisms, and the entire city can be explored by clicking search. It allows users to personalize the interface of their cell phones, so that they are not just faced with a boring and single interface when using their phones, but also enhances the fun experience of using the product.

Figure 20 Xiaomi phone theme "Charming City
Source: Site Cool Design Website

(2) Application in Emoticons

The rapid development of emoji packs stems from the sharing nature of the Internet, in which audiences can freely and fluently choose the information they need and participate in the dissemination and distribution of information. The diversity and fun of expressions and the active play of GIF images have made emoji packets widely used and distributed in many online social media such as microblogs, WeChat and postings. The use of dynamic illustration in the design of emoji packs can make them more infectious and communicative, and can express emotions and attitudes more vividly and witty. Dynamic illustrations are usually designed as a whole series of expressions and dynamics of a character, as well as small scenes of the character, to show the popular trends in public life and trigger the resonance of the audience. As shown in Figure 2.19, Yuan Bo, an associate professor at the School of Fine Arts of Tsinghua University, led a design team to create an emoji pack inspired by New Year paintings, hoping to increase the public's attention to and use of the intangible cultural

heritage of New Year paintings through the promotion and penetration of the emoji pack on mobile social media platforms. The emoji pack is based on the visual characteristics of traditional woodblock prints, combining the cute image of the fairy with the trend of young people and the auspicious blessing of the New Year, conveying the fashionable and alternative blessing of the Chinese New Year through a fun and dynamic form, and reshaping the new visual image of traditional New Year paintings.

Figure 21 Tsinghua University Academy of Fine Arts "New Year's Painting Talking Year" Series Emoticon
Source: WeChat Emoticons

(3) Application in H5 ads

Dynamic illustration has become a new carrier for visual presentation of H5 ads, which is derived from HTML5 technology and mainly uses mobile as the communication platform, and can integrate pictures, text and videos together and combine with interactive technology. The rich expression of dynamic illustration and the easy and fast production method can reduce the production and dissemination cost of H5 ads. It can not only meet the audience's visual aesthetic needs, but also fully

mobilize users' senses, thus effectively promoting information dissemination and enhancing users' experience.

As shown in Figure 2.20, in the commemorative H5 ad "Long Scroll of Good Life" jointly produced by People's Daily and Meituan, the audience is brought into the whole scenario by the expression of dynamic illustration, linear narrative and analog camera movement, and they can view the characters' introduction to the main points by sliding the screen to the left and triggering the interaction in the screen, and learn about China's ecological forest protection, agricultural e-commerce, aerospace achievements, energy conservation and emission reduction, winter and winter. The audience can learn about China's ecological forestry, agricultural business, aerospace achievements, energy saving and emission reduction, Winter Olympics and other achievements of China in 2021. The realistic style and the contents are based on life, so that the audience can be immersed in it and feel the rapid development of the country and the change of people's living conditions.

Figure 22 H5 page of "Long Scroll of Good Life" by People's Daily and Meituan
Source: People's Daily Public

To sum up, the dynamic, contextualized and episodic visual expression of dynamic illustration, as well as the form that can combine audio-visual and interactive, is more conducive to its application and dissemination in mobile media. It can also enrich the expression effect and communication form of mobile media, effectively attract and mobilize the audience's attention and emotion, and thus enhance the audience's experience of using mobile media.

3.5.3 Use in Digital Reading

The popularity of mobile media and the introduction and rise of electronic devices such as iPad and Kindle have made the market for digital reading more and more extensive, and the way people read has become extremely easy. The audience can read all kinds of books with only one electronic device, and in the process of reading, it can also combine with sound, interactive and other rich forms of expression to enhance the audience's reading pleasure. This rich and portable form of reading is gradually replacing paper-based reading, making the traditional paper-based media also began to transform with the trend, so the trend of digital reading is unstoppable. This also makes dynamic illustration in the field of digital reading has been widely used, the following magazines, popular science books and children's picture books to illustrate examples.

(1) The application in the design of electronic magazines

E-magazine is also a new type of carrier of dynamic illustration, online e-reading magazine cover as important as poster publicity, dynamic illustration with visual expression for the e-zine to attract the audience to read plays an important role. As shown in Figure 2.21, domestic illustrators LISK and Halogen Cat created an environmentally friendly cover based on ELLE Fashion magazine's environmental theme of "recycling" and "regeneration" for the current month, showing the relationship between people and animals, and people and plants. The dynamic twinkling stars, the sea of flowers swaying in the wind and the flying butterflies make the picture dreamy and full of harmonious beauty, reflecting the close relationship between human and nature, implying that human beings must learn to live with nature and protect each "you" on earth, otherwise once other species are pushed to extinction, they are also destroying their own habitat. home.

Figure 23 ELLE fashion magazine electronic dynamic cover
Source: Microblog

(2) Application in science books

Dynamic illustration is very suitable for science books, which can show the objects of science in books more vividly and illustrate the text of science directly, and the picture is very easy to understand. It can stimulate children's interest in knowledge and enhance their cognitive ability, concentration ability and imagination through audio-visual and interactive experience when they read books. As shown in Figure 2.22, "Ebuk's 3D Notes" is a hand-drawn 3D children's science book combined with AR augmented reality technology. The picture is drawn by the famous cartoonist Nie Jun, and through the exclusive APP, the virtual images can be presented to children in the form of 3D dynamic effects, and many subject knowledge can be demonstrated in its entire working process in a holographic three-dimensional form. There are also interactive test games to guide readers to understand the content of the science through interaction and dynamic display.

Figure 24 The Stereoscopic Notes of Ebke
Source: sohu

（3） Application in children's picture books

Stimulating imagination is an important function in children's books, and the fun and interactive nature of dynamic illustrations can increase the freshness of picture books for children and make them more in line with their cognitive ability. Not only can they quickly attract children to immerse themselves in picture books to arouse their interest in reading and help them find the joy of learning in the pictures, but they can also cultivate children's rich imagination and how to express their emotions. Figure 2.23 shows a foreign children's picture book "Goodnight Lad", which also combines AR augmented reality technology, and when the mobile app is pointed at the picture book, it can transform the flat picture into a three-dimensional dynamic form. The little people in the book can jump out of the paper from the flat form and come to life in front of the children's eyes. This dynamic and interactive form allows children to get a more realistic and interesting experience, and can effectively attract the children's attention, thus enhancing their interest in reading.

Figure 25 "Goodnight Lad" magic children's picture book
Source: Site Cool Design Website

Another type of picture book design is the combination of gamification and graphic interaction, as shown in Figure 2.24, a white bear interactive picture book is used in this form, which mainly adopts linear and non-linear narrative structure, and the combination of sound effects and interaction with children. The overall style of the picture book is very cute and cute, there is a narrator throughout the interpretation of the content. A large number of dynamic effects are designed to connect the reader's interactive behavior, which can stimulate the child's interest to actively interact with the picture, and instantly get the corresponding dynamic and sound feedback. And also can choose a different perspective, easier for children to understand the content of the picture book, can be experienced in the interactive and reading pleasure. Such as the electronic children's picture book in which the tortoise and hare story is a non-linear narrative structure for the presentation of the content, the reader can choose to be the main perspective of the tortoise or the hare, and even have the choice of behavior, such as the choice of rest or choose to persist, the choice of different final end will be different, so that children can learn in a fun and educational atmosphere.

Figure 26 White Bear Interactive Picture Book-"The Hare and the Tortoise

Source: Site Cool Design Website

To sum up, the rich and interesting visual performance of dynamic illustration, as well as the combination of audio-visual and interactive expression, can not only meet the visual experience of readers, but also enable readers to get a new experience that cannot be obtained in traditional paper books and picture books with the interactive behavior of vision, hearing and touch. It can be said that, with the continuous progress of mobile media and Internet technology, dynamic illustration will be more often used in digital reading in the future.

2.5.2 The diverse functions of dynamic illustration

2.5.2.1 Entertaining the public

Popular entertainment has enriched the cultural life of society, and this kind of art, which advocates entertainment and fast pace, has a wide cultural consumption market. In the era of mass entertainment, the public's pursuit of entertainment provides a wide space for the development of dynamic illustration. As a popular art form, dynamic illustration can attract people's continuous attention because, in addition to vivid visual experience and interesting interactive experience, it also needs to bring people a sense of psychological satisfaction and spiritual pleasure. Interesting dynamic images successfully make illustration out of single and

boring performance, and strengthen the interest through exaggeration, abstraction, metaphor, symbolism and other techniques to increase the interest of picture content and artistic atmosphere.

The web page is a platform for carrying various applications, a bridge between the brand and the customer, the communicator and the receiver, and the content and the audience. Pictures and text are two important elements of web pages, so improving the uniqueness and attractiveness of pictures is one of the important ways to improve the communication effectiveness of web information. Currently, although static brand logos still dominate the market, the emergence of dynamic illustrations has provided many companies with a novel way of expression. The integration of dynamic illustrations and brand logos has become a new bridge for mutual understanding and communication between companies and consumers, and is supported by entrepreneurs and the general public.

With the advent of the Internet era, the way people socialize with each other has changed, and people started to communicate through social platforms such as QQ, WeChat, Baidu Post, Weibo, Facebook and Twitter. Emoticons are popular because they can express people's mental activities more vividly and concretely instead of words, and they are exaggerated, interesting and diverse. For this reason, on July 18, 2017, the Ministry of Education and the National Language Commission released the "Report on the State of Language Life in China (2017)" in Beijing, and emojis were selected as one of the top ten new words in Chinese media in 2016. In the early days, emojis were mostly presented as simple symbols and emoji expressions, but in recent years, emoji culture has become increasingly diversified, and some dynamic emojis have become popular on the Internet, using screenshots of popular movies and TV shows as materials and spreading them with appropriate text. Similarly, emoji illustrators with a forward-looking sense also try to make static illustrations move, based on exaggerated facial expressions or body movements combined with personal brand IP (see Figure 2.25). Dynamic emoji packs make the expression of emotions in daily communication more diverse and vivid, and make the difficult semantic meaning direct and interesting.

Figure 27 Cat Emoticons

Source: WeChat Emoticons

3.5.2.2 Guiding the audience

Dynamic illustration can make the information most directly, clearly and distinctly conveyed to the audience. Through dynamic changes and trends can produce visual traction to guide the visual flow of the whole picture of dynamic illustration. While arousing their interest, it also stimulates the potential desire in the audience's heart and eventually induces them to take action. Therefore, dynamic illustration is a service art form that not only supports the content of the message visually, but also guides and persuades the audience through interesting interactions or narrative forms. By stimulating the audience's curiosity to actively participate in the work to complete the cognitive activities and deepen the audience's impression, so as to guide the audience and strengthen the audience's memory purpose.

In today's society, digital technology is developing rapidly and people's demand for reading is also increasing. E-books that can carry text, static images and even dynamic illustrations and sound effects not only bring people a sense of visual freshness, but also meet people's multifaceted spiritual needs, and have become a popular trend of modern reading. Specifically, in the field of e-books, dynamic illustrations are widely used, such as children's picture books, science books, etc.,

which can incorporate dynamic illustrations to convey richer information in this novel form of visual expression. Piaget, a Swiss psychologist, referred to the period from birth to age two as the "perceptual stage" of cognitive development, during which children respond to stimuli from the external environment with information derived from their senses, and perception still dominates the cognitive activities of children aged 3-6. Therefore, visually, children can recognize the world through colors, shapes, and space. On the one hand, the movement of the dynamic figures and the changes in distance and proximity in the book add interest to the picture and effectively guide children to observe things from a flat to a three-dimensional perspective; on the other hand, children can be more immersive in the process of reading with the narrative of dynamic illustrations, which makes the reading experience more profound and helps them to On the other hand, the narrative with dynamic illustrations is more immersive and makes the reading experience more profound, helping children to understand the text and stimulating their possibilities of knowledge and exploration.

Figure 28 Little lamb lost picture book story

Source: Site Cool website

2.5.2.3 Relieving emotions

Dynamic illustration itself has the ability of emotional communication, and its interesting drawing style not only can quickly make the audience change their mood, but also can arouse the audience's curiosity and empathy, and play the function of relieving the viewer's emotion and psychological healing. For example, when the web server crashes or disconnects, a 404 page often appears, which usually causes people to complain and get angry. Error page design is also a very important part of UI design, its role is to inform users of errors and provide solutions, the ultimate goal is to allow customers to continue to visit the site rather than leave. Therefore, many 404 pages are currently designed with dynamic illustrations to alleviate users' anxiety and irritation caused by page crashes through interesting 404 pages and help users build a good relationship with the website. As shown in Figure 2.27, the 404 page is presented in the form of dynamic circular illustration, comparing the missing page to a missed bus, with a witty and humorous presentation. Another 404 page design is presented in the form of a game, as shown in Figure 2.28, Google Chrome has a built-in game called T-Rex in the 404 page for users to pass the time. The 404 page is visually pixelated, and the user can control the little dinosaur to jump and move to pass the page, so as to ease the user's emotion when encountering the error page through gamification.
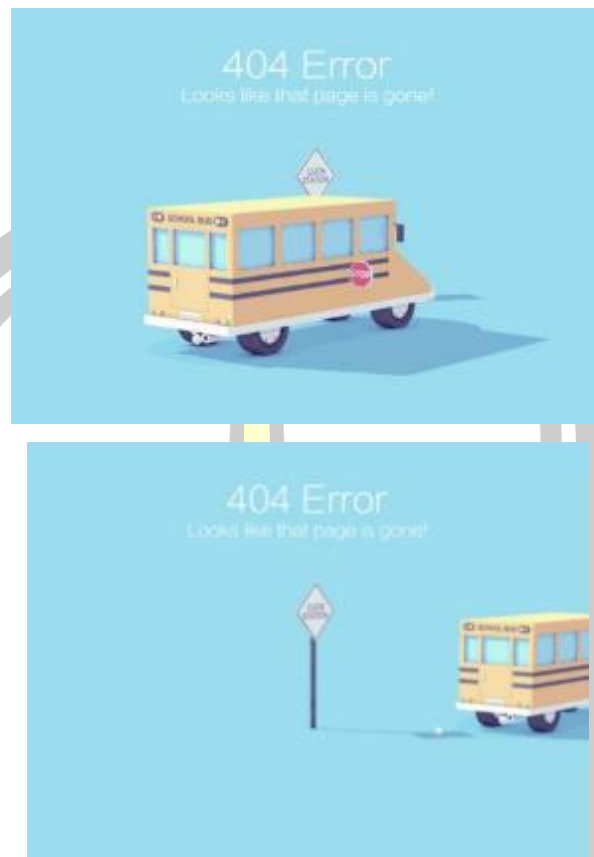
Figure 29 Web error page dynamic illustration

Source: T-Rex

Figure 30 Google web error page dynamic illustration

Source: Google

2.5.2.4 Enhanced Information

      We are in an era of extremely convenient reception and delivery, and the addition of business models has greatly increased the amount of information that the human brain needs to process every day. If we rely only on textual descriptions and comprehension, it is difficult for us to have the patience and interest to read them one by one. Dynamic illustrations are created based on narrative texts, which are translated into the visual language of illustration after the creator has interpreted the text. Before conceiving a picture, the creator is required to fully understand the logical elements and central ideas to be expressed in the information text, and to visually extend them, thus transforming them into images and helping readers to grasp the main points of the information and understand the content more quickly. The emergence of narrative language makes the creation of dynamic illustration more lens-like, with a more concise, fluid and dynamic visual language to convey the content to the reader, thus eliminating the need to rely too much on textual elaboration. This makes dynamic illustration an independent form of design that can resonate with readers and stimulate their imagination. Such a form of creation can greatly reduce readers' reading costs and help people make full use of the fragmented time in their daily lives. The successful launch of fragmented mobile apps, such as Racer and Jitterbug, has helped the narrative language of dynamic illustration to expand its adaptability and become the mainstream means of information dissemination nowadays.

  The rich expression of dynamic illustration can also strengthen the content of information. The ability of graphics to summarize is more advantageous, and with the dynamic effect, it can transform cumbersome information content into visual graphics and present it to the audience in a more concise and intuitive form. It can be said that dynamic illustration can quickly reduce the viewer's difficulty in understanding the information content and simplify the communication cost of information. Therefore,

the information transmission and communication effect of dynamic illustration is far better than the presentation of static images and text.

2.6 Analysis of popular narrative dynamic illustrations nowadays

2.6.1 Narrative dynamic illustration

In order to make the images more interesting and intuitive for the transmission of information, and to establish an emotional connection between the creator and the viewer, "Diary of the Fight against the Epidemic" is mainly presented by a non-linear narrative structure. Therefore, the dynamic effect of the picture is expressed through the dynamic expression of the characters and the dynamic change of the atmospheric elements of the scene to create a sense of atmosphere. The dynamic effect of the screen is designed mainly through four kinds of dynamic forms: displacement, rotation, deformation, and flashing.

Figure 31 Nucleic acid testing in winter
Source: Site Cool Design Website

As shown in Figure 2.29, the scene depicts the main character and his classmates waiting in line for the nucleic acid test. In the dynamic design of the scene, the flickering light effect is created by changing the frame number of layer transparency

in the timeline of the street light layer. The dynamic design of the snowflake layer and cloud layer was also used to create the dynamic effect of falling snowflakes and floating clouds to create the atmosphere of medical staff working hard in the early spring in the northeast. At the same time, the dynamic design of the characters is carried out through the dynamic design of rotation and displacement of the characters. Firstly, the upper body of the main character waiting for the nucleic acid is designed with a short rotation and displacement, so that the main character has a dynamic effect of bending down. The dynamic design of the health care worker is a parallel displacement on the timeline of the right hand layer, which makes the dynamic effect of the character more natural and harmonious through the change of key frames.

Figure 32 Dormitory life during quarantine

Source: Site Cool Design Website

This one depicts the main character studying in the dormitory during the isolation period, as shown in Figure 2.30. In the dynamic design of the atmosphere elements of the scene, the opacity of the light layers of the desk lamp and the notebook are changed in the timeline to achieve a flashing visual effect, adding a romantic atmosphere to the scene. The second hand of the clock is rotated to create a dynamic effect of the second hand rotating. The dynamics of the clouds in the window

scene are presented by adding a dynamic design of displacement in the timeline. In order to make the dynamic effect more natural and rich, the blinking of the characters, the movement of their hands, the dynamic effect of their hair, and the flying birds and the fluttering curtains in the scene are drawn dynamically frame by frame through frame animation.

Figure 33 Pleasant moments during quarantine

Source: Site Cool Design Website

As shown in Figure 2.31, this scene depicts the protagonist listening to and supporting the singing of his classmates outside the window. The dynamic design of the scene is also presented through the scene dynamics and character dynamics. The scene adds a romantic atmosphere through the flashing and changing starry sky outside the window, and the twisting and changing pentameter and the jumping notes around the window express the singing outside the window. At the same time, the dynamic design of the characters follows the dynamic rhythm of the scene, and the arms of the main character are presented in the dynamic form of rotation, making the scene and the dynamic rhythm of the characters consistent.

Figure 34 Volunteers distribute supplies

Source: Site Cool Design Website

This dynamic illustration depicts a scene in which the main character is acting as a volunteer distributing supplies, as shown in Figure 2.32. The scene creates a sense of atmosphere by changing the opacity of the lighting layer to reflect the flickering effect of light and shadow. In the dynamic design of the plot, the character is set to distribute the supplies first, and then the dormitory students open the door to collect them. The dynamic effects of both characters are expressed frame by frame through frame-by-frame animation, which makes the movement of the characters more natural.

Figure 35 Imagine a better life

Source: Site Cool Design Website

This image depicts the protagonist at the end of the day, while resting in his dorm room. As shown in Figure 2.33, the scene depicts the protagonist thinking about the wishes he wants to fulfill after the epidemic is over, such as going shopping, eating food, shopping, and so on. As the bubbles of the protagonist's fantasy emerge, the corresponding images appear in turn. Therefore, in the dynamic design, the flickering effect of the star lights is achieved through the flashing technique to increase the atmosphere of the scene. And through the deformation technique to carry out the dynamic effect of the image bubble from small to large, to show the main character in contact with the isolation of the life of the picture plot.

This series of dynamic illustrations depicts the author's experience in the school's participation in the fight against the epidemic. The author chooses scenes of doing nucleic acid at school, studying during the quarantine, listening to classmates singing and supporting them, volunteering to inspect and distribute supplies, and thinking about the end of the epidemic in his dorm room at the end of the day.

2.6.2 Appreciation of the dynamic illustration of Luoyang

As shown in Figure 2-34, the original author's paintings of Luoyang Laojun Mountain and Longmen Grottoes use realistic painting techniques, with yellow as the main color tone and high overall color saturation, showing the opulence of Luoyang. The picture is decorated with a single main object plus simple Chinese-style clouds, and the overall picture is simple and exquisite.
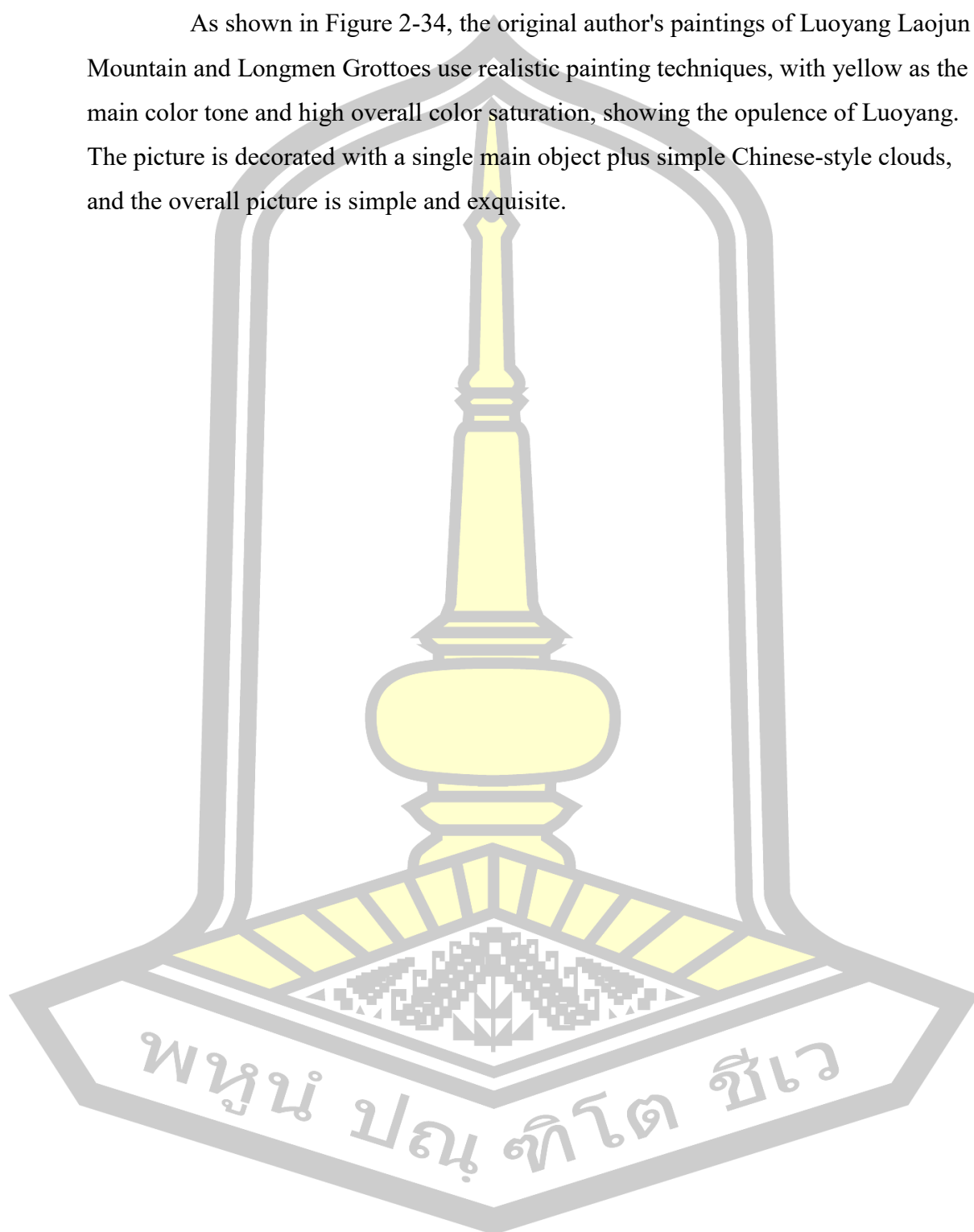
Figure 36 Luoyang Realistic Illustration

As shown in Figure 2.35, the original author added the iconic features of Luoyang, such as the Buddha of Longmen Grottoes, the Hall of Heavenly Fame, the dancers at the night banquet of the Tang Palace, and the peony flowers to the picture. These elements are expressed in the picture according to the expression of spatial narrative, and appear to be vivid images outlining the prosperous cultural image of Luoyang. The main color of the picture is yellow, with red and green as auxiliary colors, and the picture is made more dazzling and colorful with high saturation colors.

Figure 37 Luoyang impression illustration
Source: Little Red Book App

As shown in Figure 2.36, the original author used flower drums as the stage, with musicians playing the piano and dancers performing on the drums, and the chic stage with beautiful scenery and rich peonies stretching out their swaying bodies as the background to make the picture vivid and interesting.

Figure 38 Luoyang ancient style creative illustration
Source: Little Red Book App

2.7 Summary

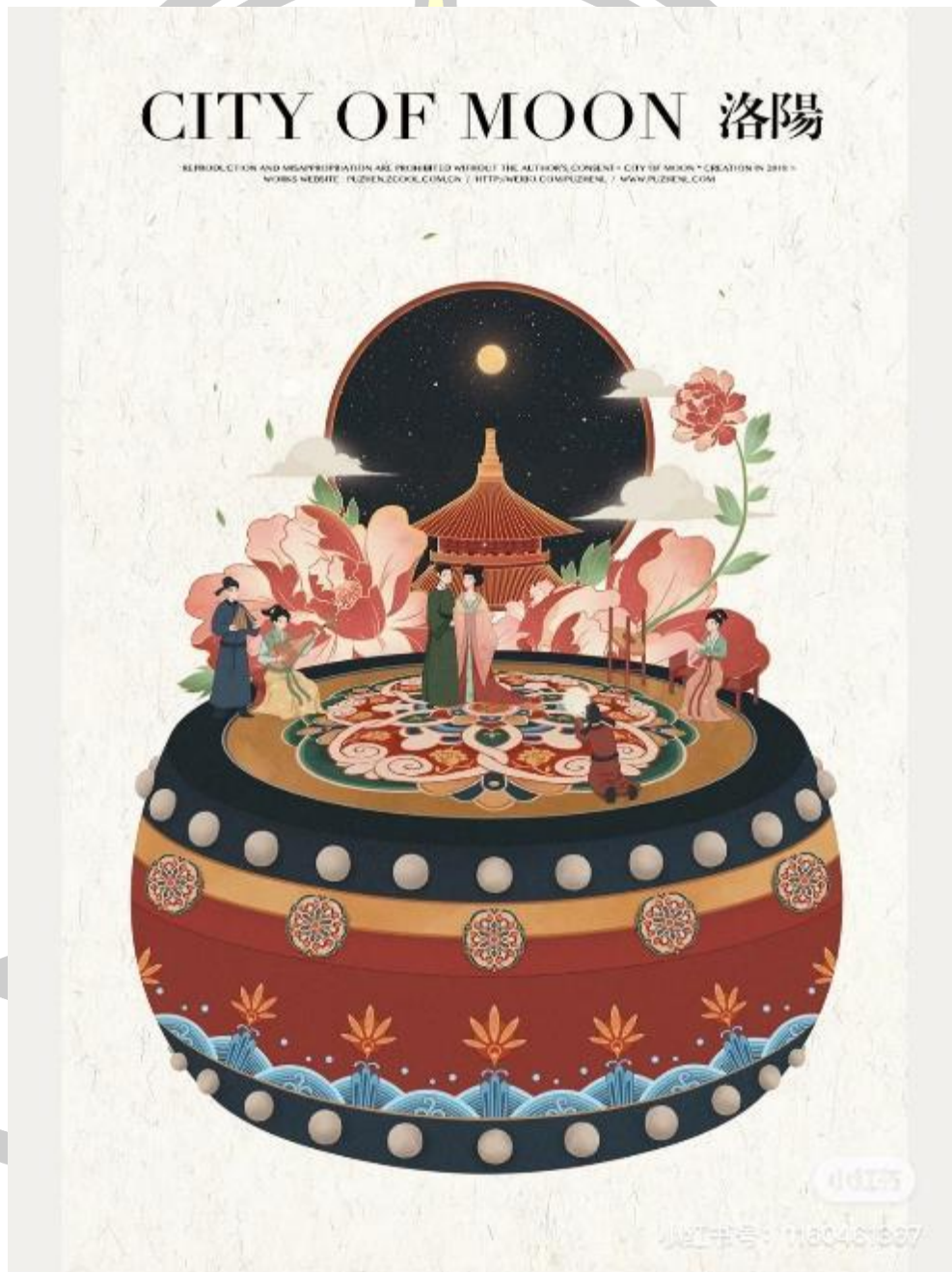This chapter focuses on the visual expression and design principles of dynamic illustration, and provides a comprehensive and systematic analysis and summary of the visual composition and artistic expression of dynamic illustration to provide theoretical support for the creation and application of dynamic illustration. Through the analysis and research of some existing application cases, it is concluded that there are four categories of dynamic illustration, namely: text-based dynamic illustration, expression-based dynamic illustration, theme-based dynamic illustration, and story-based dynamic illustration, and the structure of narrative language is divided into character narrative, time narrative, space narrative, and music narrative. The visual representation of dynamic illustration is expressed through the setting of dynamic effects and the creation of situational space. Through detailed analysis and examples, it is concluded that the visual effect of dynamic illustration should take into account whether the design techniques and skills are properly coordinated. The presentation of motion in dynamic illustration is unfolded in space and time, and it can be said that the existence of time and space is reflected through motion. The movement pattern of elements in dynamic illustration should be expressed according to the principle of cognitive signal in cognitive psychology, so as to make the picture more visually impactful.

Based on the current application status of dynamic illustration and the supporting evidence in various applications, it is concluded that dynamic illustration has the function of entertaining the public, guiding the audience and relieving emotions. Dynamic illustration is beginning to focus on human emotion, reflecting the trend of "human-centered" design. And as dynamic illustration is combined with more and more design forms, dynamic illustration is also deepening its application function. Therefore, dynamic illustration has a very broad market prospect and application value, worthy of our continued exploration.

CHAPTER III

LUOYANG TOURISM CULTURE RESEARCH

This chapter briefly describes the exploration of tourism culture for Luoyang, briefly describes the historical development and cultural values of Luoyang tourism, and analyzes the influence of Luoyang's tourism image and dynamic illustrations on tourism image based on field research observations.

3.1 Overview of Luoyang City and Luoyang Cultural Site

3.1.1 Overview of Luoyang City

Luoyang City is located in the western part of Henan Province, south of the Yellow River, and is situated in the interior of the Luoyang Basin, where the Luo River, the Yi River, the Chanshui River and the Jian River cross each other. Luoyang is named after the northern part of the Luo River and is known as the ancient capital of the 13th dynasty and the cultural mecca of the East. The rich millennium history has left behind rich cultural resources, with a large number of ruins and intangible cultural heritage, especially the Yingtianmen ruins, Longmen Grottoes and peony culture, which are well known at home and abroad.(As shown in Figure 4.1)
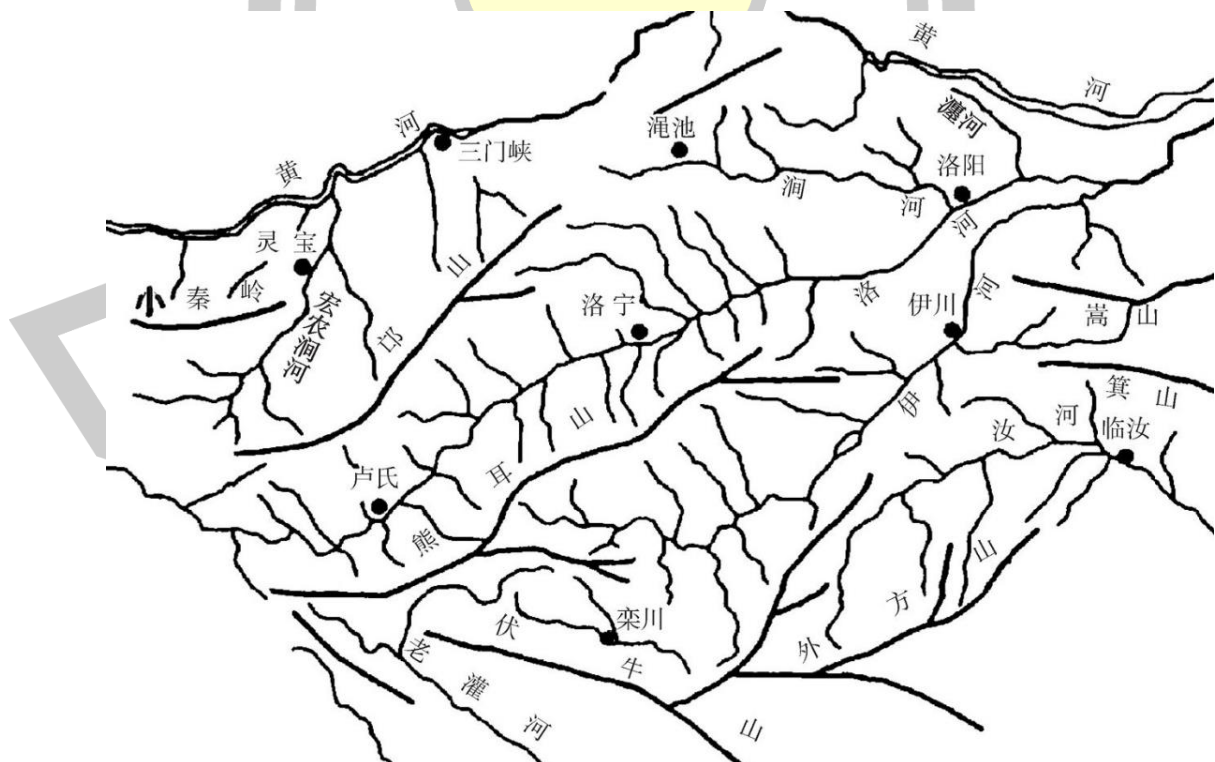
Figure 39 Map of Luoyang

Source: Baidu

Luoyang is the source of Chinese civilization, with a developed economy, an open and tolerant culture, and a flourishing literature. It was one of the political, economic and cultural centers of ancient China for a long time. As a famous capital city in ancient China, the Sui-Tang Luoyang City is rich in cultural connotations. Its layout, architectural form and prosperity brought about by the Sui-Tang Grand Canal are valuable sources for the study of ancient Chinese capitals. Based on the high topography of Luoyang in the northwest, Emperor Yang built the palace city and the imperial city here for the reason that the capital city was protected and the imperial city was high above the city to bring people a sense of majesty. The Imperial City consisted of Yao Yi City and Yuan Bi City to the north of the Palace City, East City and Han Jia Cang City to the east of the Palace City, and office offices to the south of the Palace City. The palace city is slightly square, the northern part of the Jiuyuan pond and other gardens, the palace city is the southern gate is Yingtianmen. The outer outline of Luoyang City in the Sui and Tang dynasties had no gate on the west side, and the entire city consisted of 107 lilong, with 29 lilong on the north bank of the Luo River east of the Imperial City and 78 lilong on the south bank. Most of them were 450 meters by 450 meters, while a few were 200 meters by 450 meters. The Sui Tang Luoyang City was located in the East Market and West Market on the south bank and the North City on the north bank for people to trade various goods. （Zhu Shiwei,2003:4）
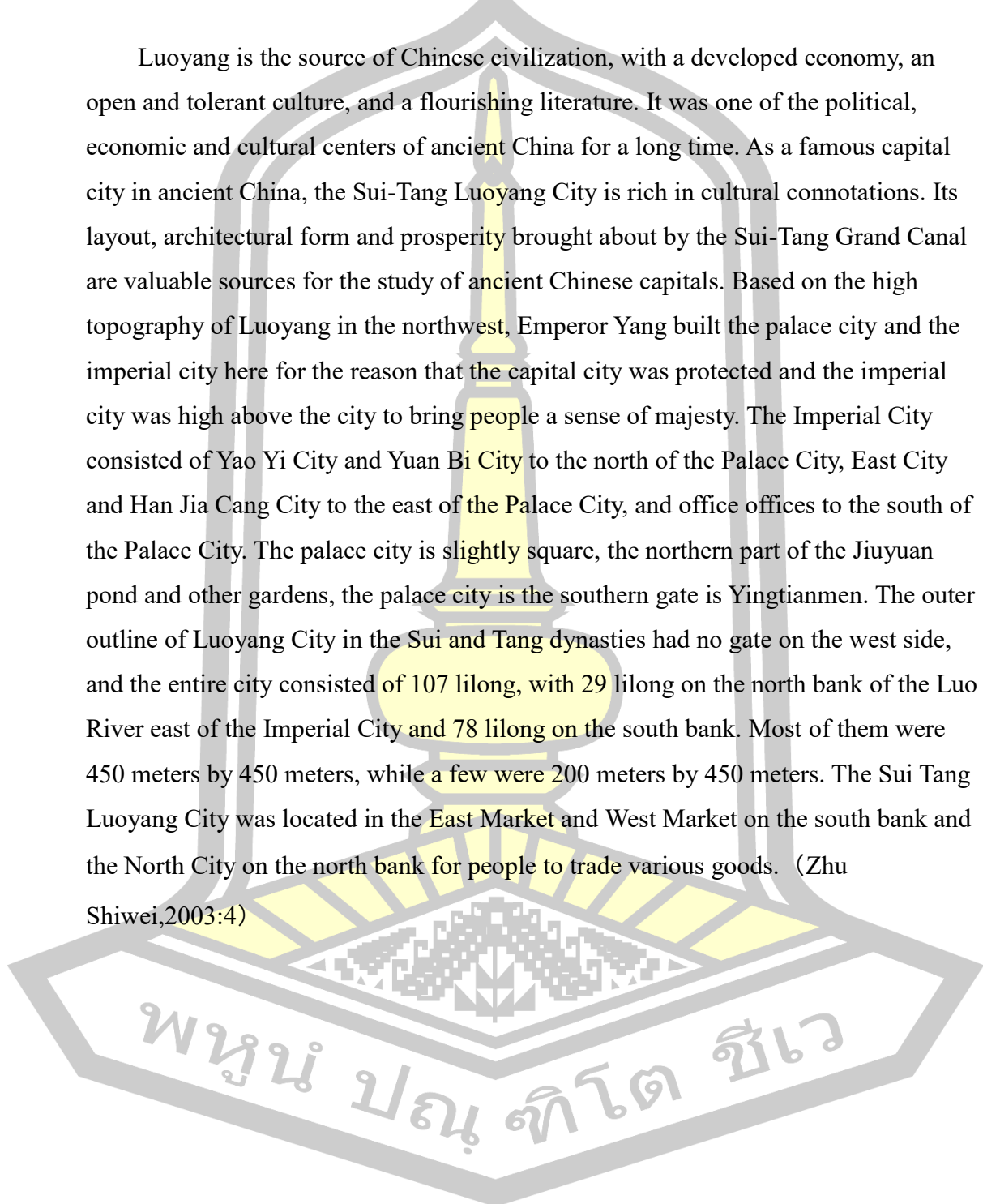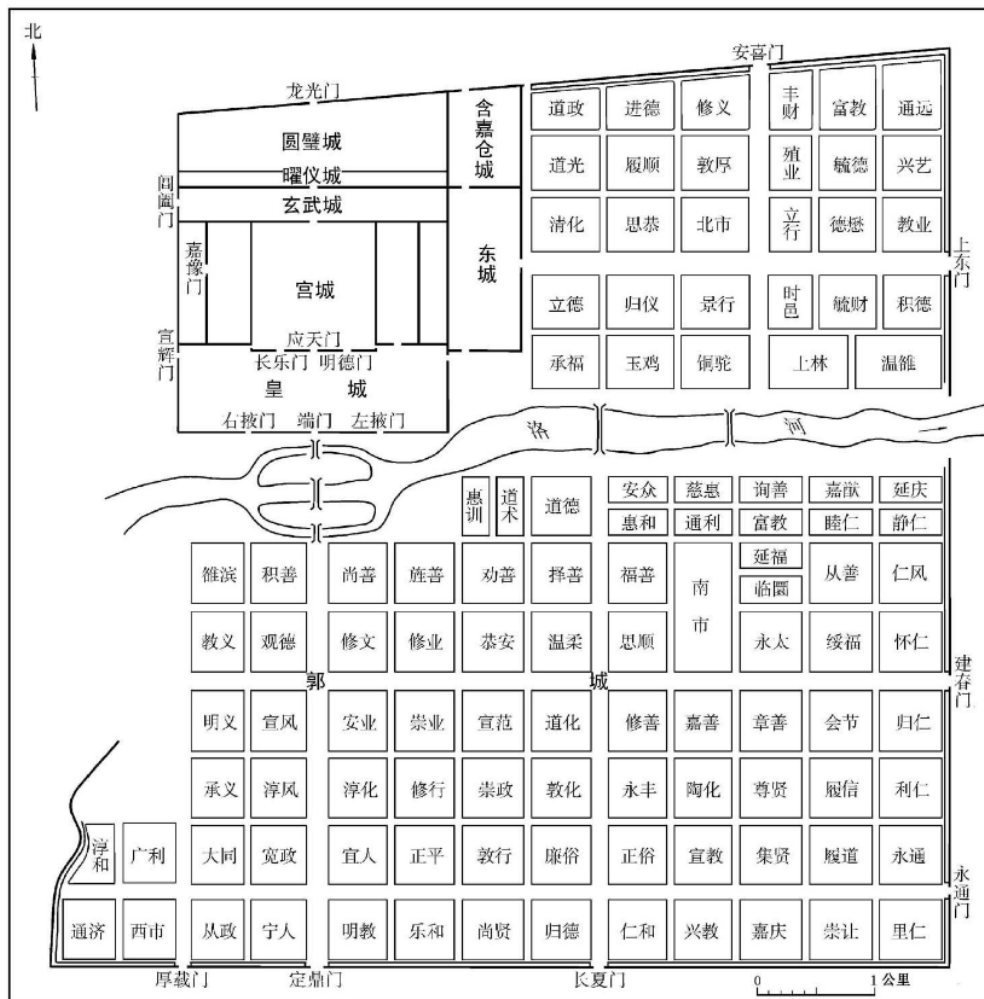
Figure 40 Imperial Capital City of the Sui and Tang Dynasties

Source: Baidu

Luoyang is one of the first national historical and cultural cities identified by the State Council and is an excellent tourist city in China. Tourism has become the engine that drives Luoyang's urban economic development. By 2019, Luoyang received 142 million visitors and the tourism revenue reached 132.102 billion yuan.（Zhu Shiwei,2003:4）

3.1.2 Cultural Value of Luoyang

Urban cultural products, cultural landscapes, architecture and lifestyles are the expression of the city's unique culture. The city is the container of culture and culture is the soul of the city. In the big container of Luoyang, there are rich and

colorful historical and cultural resources. It is the heritage of ancient Chinese civilization and the witness of the city's history. Yingtianmen, as the main gate of the imperial city in the eastern capital of the Tang Dynasty, used to have both practical and cultural functions. Nowadays, the practical function is gone, but it still delivers irreplaceable blood for the sustainable development of Luoyang City, and it is officially these relics and cultures that Luoyang City's historical and cultural resources show their unique value.

The past can be linked to the present through historical and cultural resources, and human beings reflect on and gain experience from the actual history in order to find out what should be the case. As the ancient capital, historical and cultural values are the core of Luoyang's cultural values. From the Mingtang of the Yingtianmen site, we can learn about the turnover and power struggle of the imperial city. From the historical and cultural district of the Old City, we can learn about the city life in different periods. From the Longmen Grottoes and the White Horse Temple heritage, we can learn about the spread and integration of religion in the Chinese land. These historical and cultural resources of Luoyang bring the unique spirituality and historical characteristics of the city.

Not only do they have historical and cultural value, but also artistic value. From Zuo Si's "Sandu Fu" and Su Yi's "Night of the 15th day of the first month" we can appreciate the greatness of literature, from Tang Sancai we can feel the exquisite ancient ceramic art, and from Longmen Grottoes we can appreciate the superb stone carving art. The number and beauty of Luoyang's historical and cultural elements, tangible and intangible cultural heritage bring unique cultural values to Luoyang.

3.1.3 Overview of the Yingtianmen Site

Yingtianmen was the main gate of the south wall of the palace city of the Eastern Capital of Sui and Tang Dynasty and the palace city of the Western Capital of the Northern Song Dynasty, which was built in the first year of the Sui Daye (605) and was called Zetianmen at the end of Sui and the beginning of Tang Dynasty. It was called Yingtian Gate or Shenlong Gate in the Shengtang period: it was repaired by

Tian Renwang in the first year of Emperor Gaozong's Xianqing period and repaired in the second year of Linde, still called Zetian Gate. In the first year of Shen Long of Emperor Zhongzong of Tang Dynasty, the gate was changed to Yingtian Gate to avoid the honorary title of Empress Wu, and was once called Shen Long Gate, and was reopened as Yingtian Gate. In the late Tang Dynasty (Zhaozong Tianyou 2 years) to the Northern Song Dynasty, it was called Wufenglou.

Yingtianmen was an important political stage in the Sui-Tang, Five Dynasties and Northern Song dynasties, and many important activities were held here, such as amnesty, reorganization of the Yuan, and reception of foreign envoys. Although it has been burned and rebuilt, from the investigation and excavation, the rammed earth foundation was built at one time, and the scope and shape of the foundation did not change significantly, and what was destroyed was mainly the building above, and the reconstruction was also carried out on the original foundation.
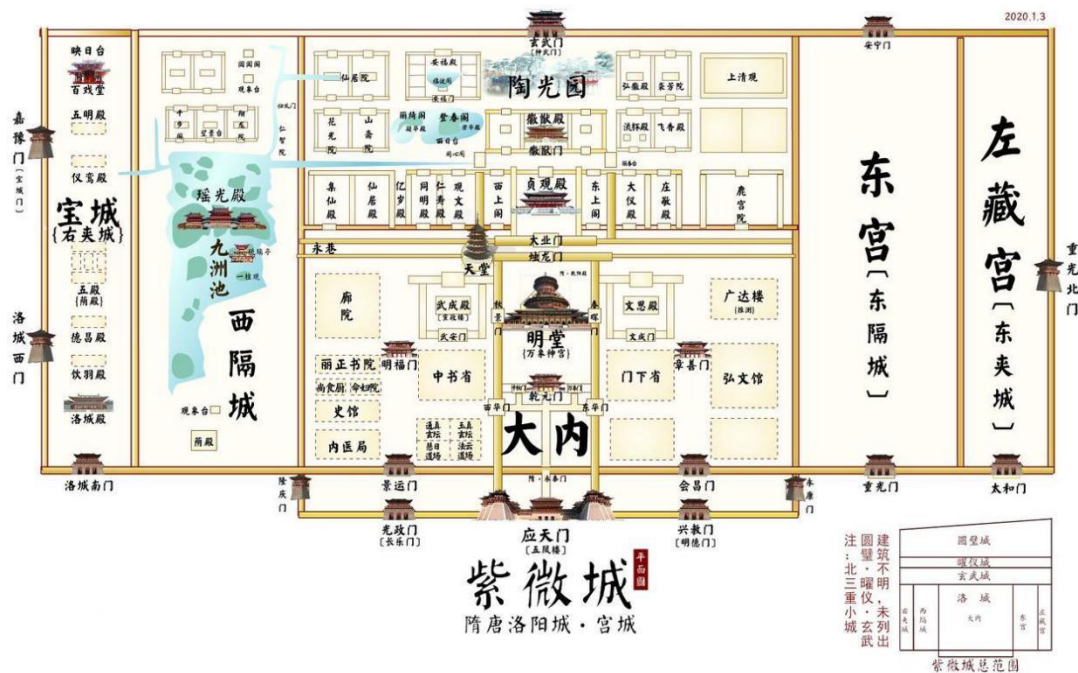

Figure 41 Ziwei City in the Sui and Tang Dynasties

Source: Baidu

Yingtianmen is a huge "concave" shaped building complex integrated by gate tower, douluo and east-west queue tower and the corridor between them, which is 137

meters long from east to west and 36.4 meters high on both sides of the queue, with a height of thirteen floors today. The gate has two views, with the inscription "Ziwei View"; there are five chunglou, resembling five phoenixes, so it is called "five phoenixes"; there are three doorways under the city tower, the middle is the imperial road, left in and right out; there is a two-way three-way queue in front of the gate, symbolizing the royal majesty, with a total of 12 queues on the east and west sides. It is the highest level of ancient city gate establishment and the highest ritual system enjoyed by the Son of Heaven.

Figure 42 Yingtianmen Site

Source: Baidu

Thousands of years later, in 2016, the Yingtianmen site protection and display project began, and in 2019, Yingtianmen was restored as a museum open to the public, becoming a new business card and one of the city images of Luoyang.

3.1.4 Overview of the Mingtang Paradise Site in Luoyang City

The topography of Luoyang is high in the west and low in the east, so the imperial city of Luoyang City Palace was built here. The Ming Hall of Heaven is the core building of the palace city. The Mingtang was a building built for ritual purposes in ancient China, and was one of the many ritual buildings in ancient China. The

original function of the Ming Hall was to worship the gods of heaven, the sun and the moon, but later it was used for many other functions, such as offering sacrifices to the gods of heaven and ancestors, government, pilgrimage, issuance of the new year, building of the palace, internal governance, bed and board, dedication of prisoners, school, retirement, respect for the virtuous, entertainment of archery, propagation of the Way of Heaven, and the five elements. The Ming Hall and its system are a blend of Confucianism, Taoism, Yin and Yang, the Five Elements, the Eight Trigrams, and geomancy, and are a reflection of the convergence of traditional Chinese culture.

It is because of the great symbolic significance of the Ming Hall that great efforts have been made to build it throughout the dynasties. During the Spring and Autumn Period and before, the Ming Hall was a ceremonial and ritual building where the Son of Heaven summoned the vassals to issue decrees and pay homage to the ancestors. Mingtang was built in the later Western Han, Wang Mang, Eastern Han, Cao Wei, Western Jin, Eastern Jin, and Southern Dynasties, and in the Northern Song and Ming and Qing Dynasties. The Ming Hall was not built in the early Sui and Tang dynasties for various reasons, but Wu Zetian took it as a symbol of regime change, challenging the traditional ritual form and giving it a new spiritual image. The Ming Hall, with its special historical mission, became the center of Wu Zetian's political activities and psychological support immediately after its construction.

In 690 A.D., Wu Zetian, the only female emperor in Chinese history, ascended to the throne, changed the name of Tang to Zhou, and established the Wu Zhou regime. The emperor was called "Holy God Emperor" and the capital was set in Luoyang, the "divine capital". Here is the important place for the empress' administration, rituals and life. In the vast Sui-Tang Luoyang City ruins, Mingtang and Paradise are called the core of the "Palace City District" - Ziwei Palace.

In the spring of the third year of the Tang Rui Zong's Chui Gong (687), Wu Zetian forcefully rejected public opinion and dismantled the Qian Yuan Hall (i.e. the Sui Qian Yang Hall) and created the Ming Hall on the site. On the fifth day of the first month of the fourth year of the reign (spring of 688), which lasted for about a year, the hall was completed.

In 695, the fifth year after Wu Zetian became the emperor, Xue Huaiyi, the head of Wu Zetian, set fire to the paradise around Mingtang after he fell out of favor. However, because the Mingtang was too close to the paradise (the archaeological survey showed that the rammed earth foundation between the two was only 16 meters away), "in the night of the first month of the first year of the Emperor's reign, the fire in the paradise extended to the Mingtang, and by early morning, the two halls were destroyed. The destruction of Mingtang Paradise was a great blow to Wu Zetian, but she was not discouraged. In March of 695 AD, Wu Zetian issued another edict to build Mingtang. In March 695, Wu Zetian ordered the construction of Mingtang again, and cast bronze for the Kyushu Tripod and the twelve gods, all of which were one zhang high and placed in their respective directions. In March 696, the new Ming Hall was completed. Since the new Mingtang was dedicated to the Wu clan, it was called the Mingtang of Wu Zhou and was also called the "Tongtian Palace".

However, during the An-shi Rebellion, the Ming Hall was burned twice by rebels and Huihe soldiers, and was completely destroyed in 762 AD. Thus, the Ming Hall, a symbol of the state's fortunes, collapsed in the midst of the war and was reduced to scorched earth and ruins after witnessing the prosperity, decline and changes of the Tang Dynasty.

In terms of volume, Wu's Ming Hall was the greatest building ever built during the Tang Dynasty. Wu Zetian Mingtang is 294 feet tall, or 86.4 meters162, nearly 20 meters taller than the tallest surviving wooden structure, the Yingxian Wooden Pagoda. The scale and complexity of Ming Hall and Paradise exceeded all the palaces in the east and west capitals of the Tang Dynasty. Mingtang and paradise are the tallest wooden buildings built in the Tang Dynasty and are famous large buildings in the Tang Dynasty. They fully demonstrate the high level of architecture in the heyday of the Tang Dynasty. The design and construction of such a huge high-rise building is extremely complicated and difficult. Just from the fact that it was built within eleven months, we can see that the design and construction ability and level of the Tang Dynasty was close to or reached the highest level of the feudal society during the heyday of the state.

After the completion of Mingtang, Wu Zetian built a paradise to the north of it to store the great statue, called Tongtian Fudo. The site of the Heavenly Hall is located 155 meters northwest of the Mingtang site, on the west side of the palace axis area. According to the relevant literature, the height of Mingtang was about 90 meters, and according to this calculation, the height of paradise should be at least 150 meters. According to the "Jinzai of the Dynasty", Xue Huaiyi built a 900-foot-tall Buddha statue in the northern part of the Mingtang in the first year of Wuzhou Zensheng, and the nose of the statue alone was like a large boat carrying thousands of draughts, allowing dozens of people to ride together. The whole statue was constructed with a mango and painted with colors. At the same time, Xue Huaiyi also wanted to build a thousand-foot-tall Hall of Merit on the periphery of the Buddha to accommodate the Buddha. But at that time, the Hall of Merit was not yet completed, and only more than seventy feet were built. According to the record of "Yuan Henan Zhi" Volume 4 "Song City Que Monuments", Paradise is in the main hall of Taiji Hall in Luoyang City of Northern Song Dynasty, which is the Qian Yuan Hall of Tang, and "its place is the Daeje of Sui and the Paradise of Tang", so it is known that Paradise is in the former place of Daeje Hall of Sui, which is the Zhenguan Hall of Tang, and it was converted by demolishing the Zhenguan Hall.(Hu Fang,2008:9)
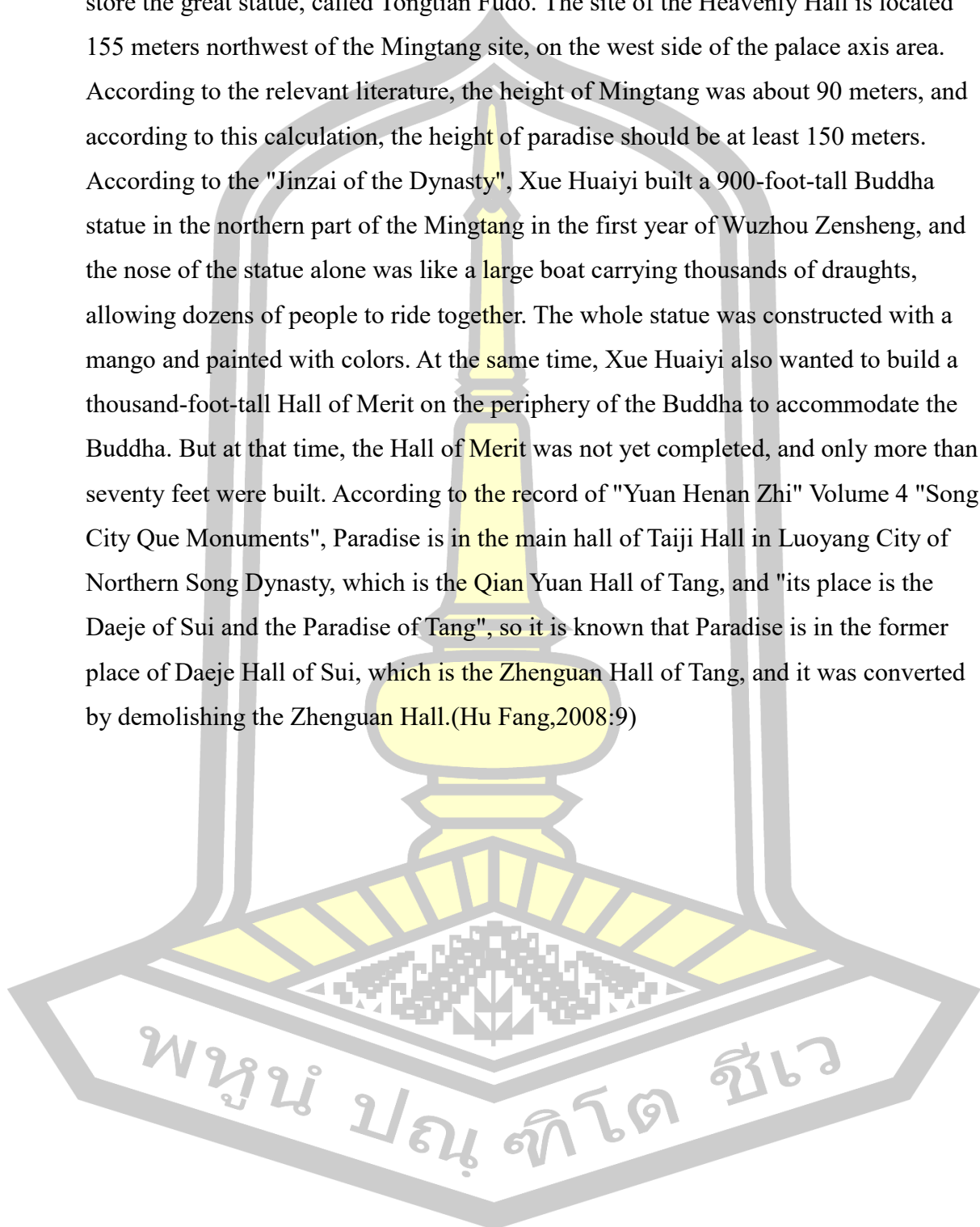
86

Figure 43 Luoyang Paradise

Source: Baidu

Figure 44 Luoyang Hall of Fame

Source: Baidu

3.2 Cultural Image of Luoyang City

3.2.1 Tourism image

Tourism image, also known as tourism place image, since the early 1970s mayo put forward the concept of tourism destination image, many scholars have refined this theory, in summary, tourism place destination image is generally considered to be the tourist's awareness and evaluation of the tourist destination, the synthesis of the awareness of various elements of the tourist place, including social, political, cultural, economic, tourism, etc., is the tourist place in the The overall impression in the tourist's mind. For the study of tourism image is to explore the resources of tourist places, refine the image concept that can fully demonstrate the local historical and cultural heritage and natural scenery, and through visual design, highlight the characteristics to form a distinctive and unique impression in the minds of tourists.

Tourism destination image is divided into three categories, initial image, induced image and composite image. Initial image is the impression of the destination learned through various ways, which is endogenous to the tourist. Induced image is the image that is created by receiving some kind of purposeful advertising and promotional influence. The composite image is a more integrated image of the destination that is formed by the traveler's own sensory intuition and experiential experience after a field trip to the destination, combined with the previous just.

In the 21st century, technological advances have led to changes in the media and disruptive changes in tourism, and the study of tourism image has changed as well, while Internet technology has provided indispensable conditions for the influence of visual arts on tourism image.

Tourism image can be divided into perceptual image and projected image. The perceptual image means that, since perception is influenced by both subjective and objective factors, the culture, education, economic level and social experience of each

person differ from one historical period to another. For the same thing will also produce different ideas, and thus make different decisions. Projected image refers to the destination image that the tourism image supplier (manager or operator) integrates, refines, designs and sublimates multifaceted objective image elements such as local tourism attraction and tourism facilities, and transmits them to tourists (or potential tourists) through various communication media or publicity means.

3.2.1.1 Tourism image in the Internet era

With the advent of the Internet era, travelers are able to access diverse information to learn about tourist places and can plan their own travel itineraries. The integration of tourism and the Internet has led to more and more tourists posting their travel impressions through the Internet, and these messages are the sender's own perceptions and emotions about the tourist destination. Not only individuals, but also companies and governments are joining in the promotion of the Internet, and even some of the tourism services are turning to the Internet. Online tourism services are also able to collect data on tourists' perceptions in their daily operations, so that they can better understand their thoughts and needs, and thus optimize their tourism products and promotions.

3.2.1.2 Tourism in the image-driven phase

Existing research has found that China's tourism industry has gradually shifted its dominance to the tourist, and tourism products are no longer destination-specific, but rather tourism programs, services, and natural and humanistic environments are integrated into the destination image. As the tourist's perception of the tourist destination will be limited, they can only obtain tourist information based on various ways and make judgments to make tourist decisions. In the process of tourism, tourists also form the perceived image of tourist destinations because of their cultural background and upbringing, and influence the subsequent decision. Therefore, in order to continuously improve the image of the current tourist destination in the minds of tourists, we must reasonably configure the elements, maintain a good tourism image, and influence the tourism image in certain ways.

3.2.1.3 Web communication theory

With the development of online media, communication between countries and regions has been facilitated like never before, and the way of cultural communication has been greatly changed as a result. Internet communication has become one of the most important ways of information transmission in today's society. Internet communication has many advantages such as easy retrieval, timely update, fast dissemination, strong interactivity, and spanning the world.

From the theory of communication, tourism destination image is a cultural crossing and communication between different cities, countries and regions in the process of information dissemination. Communication has two-way nature, leaving the audience of communication, one-sided self-image communication is not meaningful. Tourism activities have special characteristics, in the process of tourism destination image communication, the content perceived by tourists will deviate from the content projected by the tourism image shaping party. Based on the two-way characteristics of tourism image communication, this paper not only studies the tourism image perceived by tourists, but also studies the tourism image shaped by visual design, and compares and analyzes the differences between the two, which has the theoretical significance of cross-discipline.

3.2.2 City image

3.2.2.1 City Image Overview

Lewis Mumford proposed that "city image is a subjective impression of a city that is formed through the combined effects of mass media, personal experience, interpersonal communication, memory, and the environment. It is formed through a combination of mass media, personal experience, interpersonal communication, memory, and environment.

In a nutshell, city image consists of three aspects. One is the objective image of the city, which is the form of the city itself, including both the hardware image composed of urban landscape, public infrastructure, and urban

symbols, and the human image composed of government image, citizen quality, and humanistic characteristics.

The second is the virtual image, which is the image in the media, that is, the image presented in front of people's eyes by various media in the form of text, images and other symbols, and people know and touch the city according to these media expressions.

The third is the image of personality, which is the "mental" image of public perception, and is the result of the action of object image and virtual image on individual consciousness. It generally consists of three elements: perception, trust and favorability.

The city image is not determined by a single element, but by the interaction of many elements, so the city image is both subjective and objective. Each city has its own unique natural resources, history and culture, and local customs, forming a unique urban landscape and urban culture, which is the objectivity of the city image. Likewise, city image is also subjective, and everyone will have a subjective impression of the city.

3.2.2.2 City image communication

City image communication is a process in which the main subjects of city image communication, including government, industry, public, media, etc., use various media to interact with the public in order to make the public form a concrete perception and overall evaluation of a city's image.

Lasswell's model of communication is one of the first and most influential models of communication. It was initially published by Harold Lasswell in 1948 It was initially published by Harold Lasswell in 1948 and analyzes communication in terms of five basic questions: "Who?", "Says What?", "In What Channel?", "To Whom?", and "With What Effect?".

Who is the subject of city image communication, which is diversified and generally includes government, enterprises, citizens, news media, etc.

Says what, the content of city image communication, all factors affecting the formation of city image can become the content of city image communication, the physical material in the city, the culture, spirit and personality formed in the process of development of the city, as well as the words and deeds of city residents and government can constitute the content of city image communication.

In Which Channel, the main channels of city image communication include paper media, traditional electronic media and new media. Different communication channels have different characteristics and produce different communication effects.

To Whom is the audience, the audience composition of city image is complex, including both internal and external audiences, internal audiences mainly include local citizens, enterprises, foreign permanent residents, etc. Compared with internal audiences, external audiences show lower participation and higher selectivity in accepting city image. When communicating to external audiences, we should pay attention to city positioning and be prepared for long-term efforts and investment.

With What Effect, the impact of city image has stages, multiple layers and complexity. Drawing on E.M. Rogers' Diffusion of Innovation Theory, city image communication, as a diffusion process, should make use of the advantages of mass media in the early stage of communication, which is rapid, timely, and wide in scope, and after people have a general understanding of the city image, they should mobilize interpersonal communication channels to disseminate more detailed and in-depth information.

3.3 The impact of dynamic illustration design on tourism image

Vision is the most important human sense, and vision contains two levels of meaning. Basic physiological phenomena and psychological phenomena. Physiological phenomena are the basic visual senses. The psychological phenomenon is the cognition and emotion that a person experiences as a result of external signals. These two meanings are intertwined and form the characteristic way of thinking that

is vision. Thus, there is a close relationship between vision and human physiology, psychology and emotions.

3.3.1 Visual and physiological correlations

The brain receives external information from the eyes and then stores it in a certain way and extracts this information when it is stimulated by the same stimulus again. Vision is the perception and understanding of the external world by the eyes, which in turn produces an impression. After receiving the information, the human study is affected by specific physiological factors. The visual impact can leave an irreplaceable impression, for example, some prominent colors will attract visitors and leave a deep impression on the first contact, thus bringing a visually unique experience. For example, red advertising signs, red gives a feeling of enthusiasm, confidence and is a color of abundant energy, and billboards in this color are often used for products whose customer group is young.

3.3.2 Visual-psychological correlation

While receiving information, the brain will be influenced by the subjective cognition of people, from the influence on the psychological and emotional. Therefore, visual design can not only simply show visual feelings, but also pay attention to the relationship between visual and psychological.

Mental activity will have active and passive impression of the difference, active mental activity is mainly expressed in the association, which is a creative thinking activity, is the connotation and extension of a thing to think. Lighting is one of the examples, in the green and white fluorescent lights, people will feel that time passes quickly, while in the warm incandescent light, it will feel that time passes very slowly. Therefore, if simply for the sake of work, it is best to do it under fluorescent lights. Incandescent lights can make people feel that time is long and easily irritable. On the contrary, it is more appropriate to use incandescent lamps and other lighting devices that make you feel warm in the bedroom, which will create a leisurely space of your own.

Peirce divides the relationship between visual symbols and objects into three main types, icon, index and symbol. There is a universal correlation between the three kinds of symbols, so visual art has a reproduction of the objective and a reproduction of the standpoint. Visual design can be used as symbols to reproduce the relationship with the object. This image is more direct compared to other ways, and therefore can produce a characteristic most conducive to the communication of the tourist image of the city.

And in the society of visual design communication, the symbolization of everyday life, the pictorialization of media and the visualization of knowledge are gradually taking over the mainstream. The symbolization of daily life is manifested in the gradual disappearance of the boundary between art and life, some daily objects can also be artworks, and art is gradually becoming popular. Under the symbolization of daily life, the influence of visualization on society and individuals will be far greater than in the past. Not only does beauty become a daily necessity, but the aesthetics of an object will also cause public concern and discussion, and the importance of visual design is increasing day by day. The pictorialization of media has become a cultural phenomenon in modern society, and people's perception of the world has changed in many ways. The focus on visual images in all media will, on the one hand, pose a great challenge to the existing text-based system. On the other hand, it is closer to the truth and thus more accurate and less costly to perceive. Thus, visual design can have a greater impact through the media, especially for the image of cities, which have an inherent advantage in that various elements of the city can be presented visually to enhance their appeal. Knowledge visualization can facilitate the learning and dissemination of knowledge so that knowledge can be transferred from person to person. Because visualized knowledge is more likely to result in sharing, while individual sharing can have a subjective impact, it can lead to deeper discussion (Xiao Jincheng,2018,24)

CHAPTER IV

INNOVATIVE DESIGN OF DYNAMIC ILLUSTRATION WITH LUOYANG TOURISM CULTURE

This chapter explains the design process of dynamic illustration, according to the tourism culture of Luoyang and case study to determine the illustration style, color scheme, based on which six illustration drafts were drawn, after the questionnaire issued to the target group, screened out five. The five selected paintings were further drawn in color, and the two most loved ones were selected again for further drawing, to complete the complete static illustration. 3 experts were invited to analyze the work and give suggestions and evaluation, and the final dynamic illustration design of Luoyang tourism culture was drawn according to the suggestions and data analysis.

4.1 Conceptual design

4.1.1 Analysis of the advantages of dynamic illustration of Luoyang tourism culture

With the continuous development of digital technology, the display medium of illustration works is no longer confined to paper media, mobile media terminals such as cell phones, IPAD and other electronic devices, providing a new stage for the new era of illustration, in the face of the explosion of information brought about by the development of the Internet, it is both easy and difficult to find the image of their choice. Moving is obviously a more trendy choice, as stated in the book "Art and Visual Perception", "Movement is the phenomenon that is most likely to attract strong visual attention." In addition, the method of communication of illustration is gradually shifting to a two-way interactive mode. While the most basic function of illustration is to illustrate textual information with images that stimulate the brain to increase the understanding of words and complement information, dynamic illustration is based on a technological innovation of this function. It builds a deeper level of viewing for the viewer, creating an emotional interaction with the creator while the viewer is immersed in it, and people have their own experience while watching, which inspires the viewer to feel good about the work and pursue a higher level of artistic aesthetics.

By capturing the dynamic elements, viewers can deepen their understanding of the images step by step, completing a journey from the eyes to the mind.

As a kind of visual art, illustration has a strong purpose, that is, to effectively convey the textual information and to abstractly visualize the verbal words. It needs to satisfy the portrayal of characters, the expression of lens language, the creation of environmental atmosphere and the recording of time and space span, and incorporates the text at the right time. It enhances the vividness and interestingness of the text part, and also facilitates people to understand the text content from the whole. Dynamic illustration is a sublimation of the traditional static expression form. It categorizes the elements of the picture, chooses the appropriate order of appearance and expression, and adds the consideration of time and space while controlling the picture itself, which not only meets the enhancement of visual impact, but also leads people to the inner association of the picture, achieving a refreshing effect.

The ultimate purpose of reading is to think. In addition to understanding the surface meaning of words, it is necessary to understand the basis of the meaning expressed in the work, and this deeper way of reading requires readers to devote their energy to thinking. This deep reading requires readers to devote their energy to thinking. However, when faced with knowledge that they have never received before, people may feel dull and confused due to insufficient understanding, and with the advent of the "picture reading era", it is easy to be embarrassed by the interrupted text. To a certain extent, illustration can solve some of the problems, and the ability to represent the object as it is can make the text distinctly reflected, so that it can be read with less effort. However, with the development of social and economic development and the continuous improvement of spiritual needs, static images do not give people the growing expectation of stimulation, people are no longer satisfied with static individuals. Dynamic illustration is the inevitable product of the development of the times and technological innovation, and is also the result of changing aesthetic trends. The creators of illustration improve and recreate according to the needs of different groups, changing the communication from single to two-way and enhancing people's interest and reading experience.

Illustration is not the same as the illustration of words, but a form of expression to stimulate the viewer's interest and inner desire through artistic means. In addition to beautifying and decorating, it is also a carrier of emotion and culture. It is a figurative expression of the creator's talent to convey his thoughts, to explore the characteristics of the audience from a unique perspective, and to create a rich creative association with cultural background and values to create an artistic expression for the text. The real charm of dynamic illustration lies in the fact that it uses technical means and the author's personal orientation to create a deeper context, which allows the viewer to feel the author's intention and resonate with it from another dimension. （Zhou Tianyue,2020:152）

Dynamic illustration as a carrier of culture, should carry different regional culture, reflecting different hair cultural origins, Luoyang's many scenic spots, different styles between different attractions, such as the Paradise Hall of Fame and Yingtianmen are two different styles, travelers travel around the country, in different nationalities, different regions, different cultures of scenic spots, dynamic poster design with strong characteristics more impressive. Nowadays, regional culture and tourism are closely integrated, and regional culture gradually becomes the soul of tourism, which is also the meaning of dynamic posters of tourism culture. The reason why people leave their place of residence and usual life is to experience and feel a different cultural atmosphere or living environment. The difference of different regional cultures becomes the main reason to attract tourists, so the dynamic illustration design should also pay attention to people's requirements of "seeking differences". To do a good job in the design of dynamic illustration innovation of Luoyang region.

4.1.2 Design methods

(1) Collecting materials

Go to the local area of Luoyang for investigation and research, refine the cultural characteristics of Luoyang locality, and integrate the local characteristics into the design of dynamic illustration. Review the literature and Internet data related to

Luoyang tourism culture, make targeted visits to observe and collect photos, and organize and analyze the collected data to provide materials for the creation of dynamic illustration design later.

(2) Data collection

Dynamic posters can bring fresh blood for commercial publicity, dynamic posters will be dynamic effects into the static poster screen design to increase the sense of story, not only to maintain the rigorous structure of graphic design, but also to add a more vivid visual effect. Through field research, we collected data and materials, created static illustration design according to the characteristics of Luoyang tourism culture, and gave the first draft to different age groups and people of different status to conduct questionnaire research, and sorted out the suitable static illustration, and made improvement and modification.

(3) Software drawing

Firstly, the static part of the illustration was drawn in layers by photoshop, procreated and other computer software to lay the foundation for the dynamic design later. Secondly, we use AE, Photoshop and other software for dynamic design to break the limitation of time and space of the picture and enhance the fun and visual tension of the picture.

4.1.2 Design principles

(1) Uniformity principle

The series of dynamic illustration design should comply with the principle of unity of visual communication design, to establish a sense of the overall situation, always pay attention to grasp the whole of the work, unified illustration style and tone.

(2) Popularity principle

The principle of generality requires the creator to give priority to grasp the shape of the depicted elements, characters and scenes, and then pursue both the shape and

the spirit on the basis of the shape, and not to be too artistic and abstract in the process of personal expression, so as to facilitate the reader's cognition and empathy.

(3) Humanistic principle

The design of dynamic effect of illustration based on the perception of life makes the picture more affable, generates emotional connection with readers, and leads readers to perceive and think actively with a pleasant and novel visual experience.(Wei Yujie,2021:22)

4.2 Design Positioning

Dynamic illustration is to move and static to show each other, the static beauty of the structure of the poster and the dynamic beauty of the composition of the structure of the comparison between the correlation, the introduction of dynamic illustration in-depth analysis, and dynamic performance in the art design of the processing techniques, is a kind of order and space performance, the analysis of the static and dynamic expression of the illustration, and the audience's emotional memory and image perception, the formation of a dynamic and static The beauty of

The style of Luoyang tourism culture dynamic illustration design I want to show in the style of Chinese style illustration. The illustration layout is arranged, and the corresponding text is sorted out, and finally combined with the preliminary idea and data collection to create.

4.3 Dynamic illustration design inspiration

The combination of culture and creativity improves the added value of the work. Dare to subvert the tradition and enhance the fun, and the history and culture are more grounded. Yingtianmen is the main south gate of Luoyang City - Palace City - Ziwei City in Sui Dynasty, commonly known as Wufenglou. It was first built in the first year of the Sui Daye (605) and was originally named Zetianmen, but was renamed Yingtianmen in the first year of the Shenlong (705) to avoid the taboo of Wu Zetian. It is the longest-used imperial palace in Chinese history and the most used dynasty. It was named after the Purple Palace, which symbolized the residence of the emperor,

and was the most splendid and magnificent palace complex in the world at that time, especially after Wu Zetian had added Mingtang and Paradise, which became the wonder of the world. Covering an area of about 4.2 square kilometers, Ziwei City is known as the "Palace of Ten Thousand Palaces".（Zhu Shiwei,2003:7） With such a magnificent view, it is a must-see attraction for Luoyang tourism.

Figure 45 Night view of Yingtianmen

Source: Photo by the author

As shown in Figure 4-1, the night scene of Yingtianmen is so magnificent that it looks extraordinarily majestic under the backdrop of lights. On the basis of field survey and data analysis, we will innovate and integrate new ideas of modern design to design more innovative and classical art to create dynamic illustration design with local characteristics.

**4.4 Conceptual sketch design**

4.4.1 Sketching

In the sketching stage, the information collected from the preliminary research is organized, and the sketching stage tries to understand and think about the information and materials in hand from different angles. When you really bring yourself into the perspective of a tourist, the world suddenly becomes very simple, as if all the objects in front of you become giant things, and the idea of telling the past through old things comes to life. The majestic Yingtian Gate, the magnificent Paradise Hall of Fame, the ancient buildings and so on, which are the characteristics of Luoyang tourism, are moved back into the picture, and their stories are told in a narrative way that is both imaginative and logical. In order to enhance the sense of illustration series, besides unifying the expression of the picture, it is essential to create unique visual elements and symbols. The design of the picture is the bridge to communicate with the viewer, and to include the unique and simple interest of Luoyang in the author's heart. The sketching process consciously integrates the so-called composition skills and expression techniques, more like a full commitment to the vast river of stars, struggling to capture a shining fragment of the essence of Luoyang tourism, recording the core of the landscape through simple lines.

In the process of creating the series of works, it takes not only imagination but also practice to bring the project to the ground. Based on rough concept sketches, we sorted out the basic elements of static illustrations, summarized them into basic elements of graphic design, such as points, lines and surfaces, and then made simple anticipation plans for the dynamic parts, and so on.

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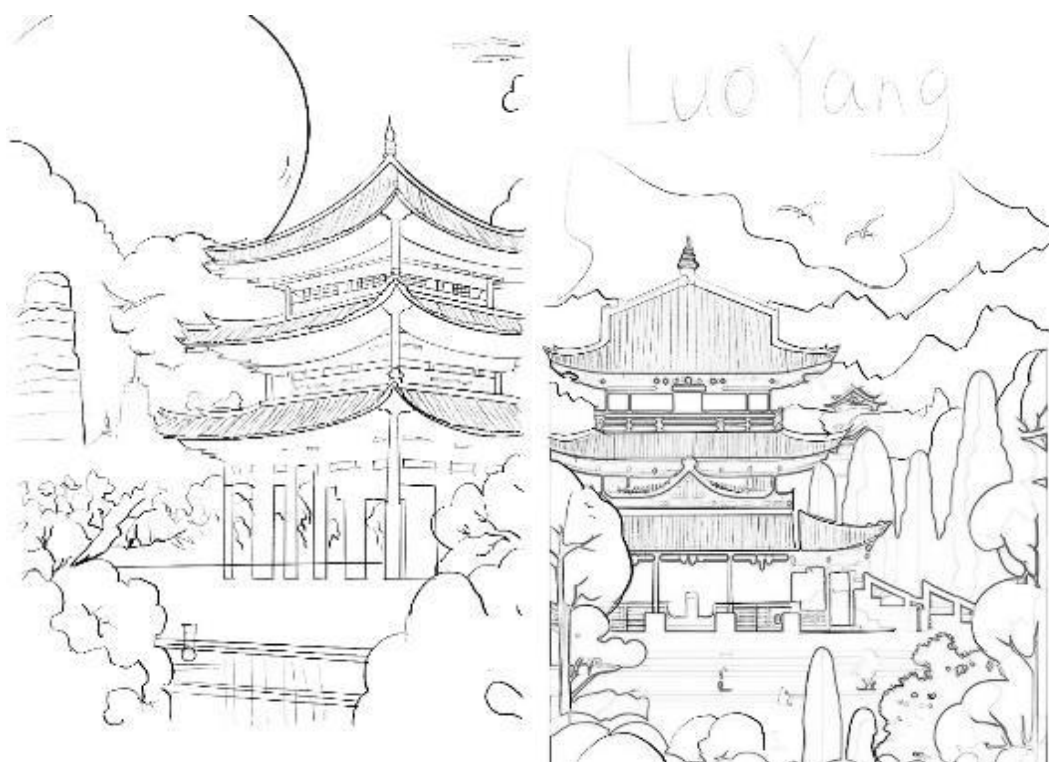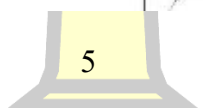
Figure 46 First draft of dynamic illustration design of Luoyang tourism culture

Source: Hand-drawn by the author

As shown in Figure 4-2, the iconic architecture of Luoyang and the landscape scenery are integrated, and six preliminary drafts are completed by innovative design of dynamic illustrations of Luoyang tourism culture, incorporating their own design concepts. The images are composed of dots, lines and surfaces, and the scenes are typeset by imaginary and realistic fusion people to form an interesting and evocative graphic design.

In order to understand the applicability of the first draft to Luoyang tourism culture, a questionnaire was made to investigate the satisfaction value of the draft for men and women of different ages.
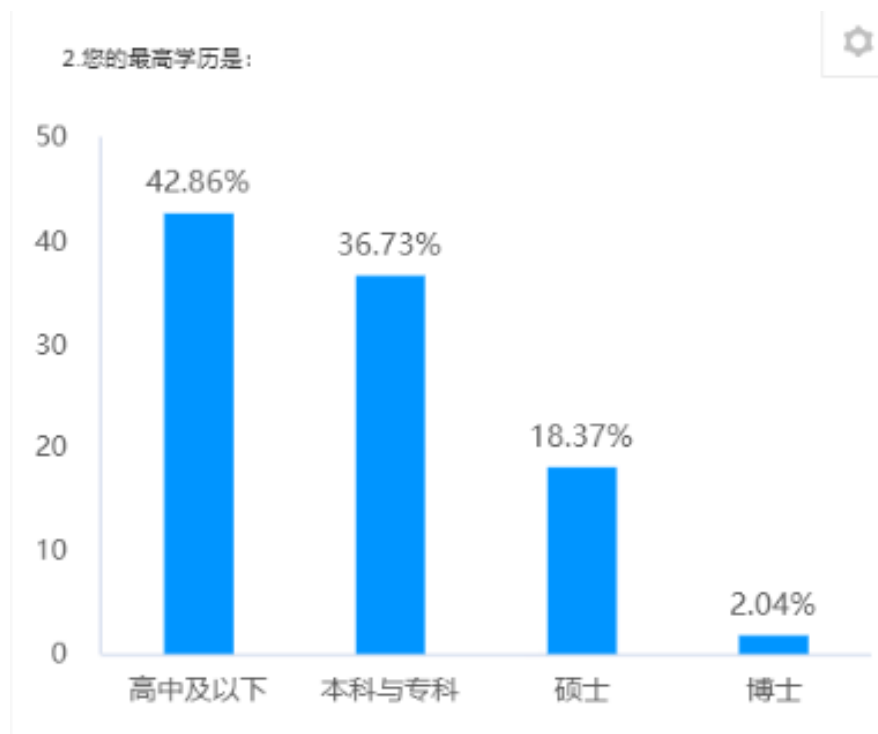
Figure 47 Chart of education ratio: high school and below, bachelor and specialist, master, doctor
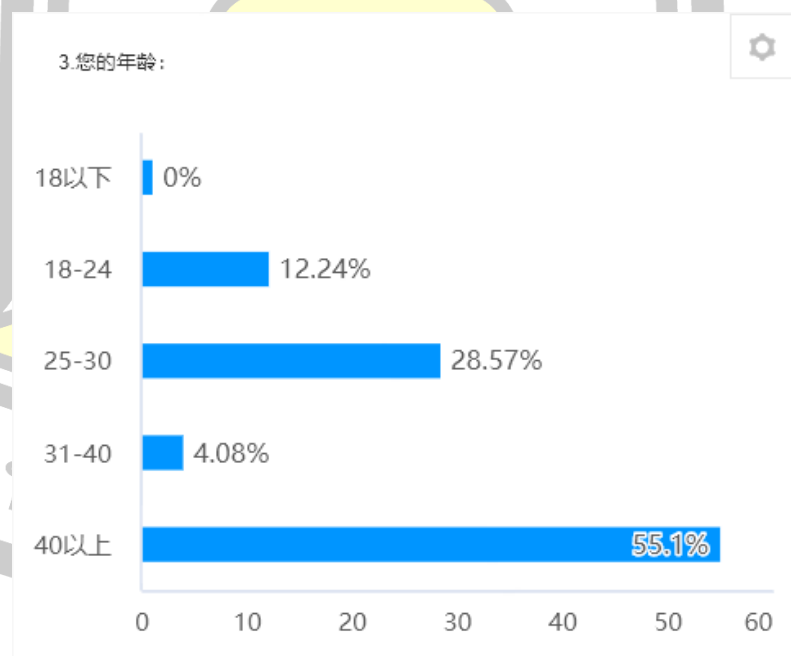
Source: Questionnaire Star App

Figure 48 Age share chart

Source: Questionnaire applet

4.请在以下六幅线稿中选择您喜欢的作品

六号: 51.02%
一号: 69.39%
五号: 42.86%
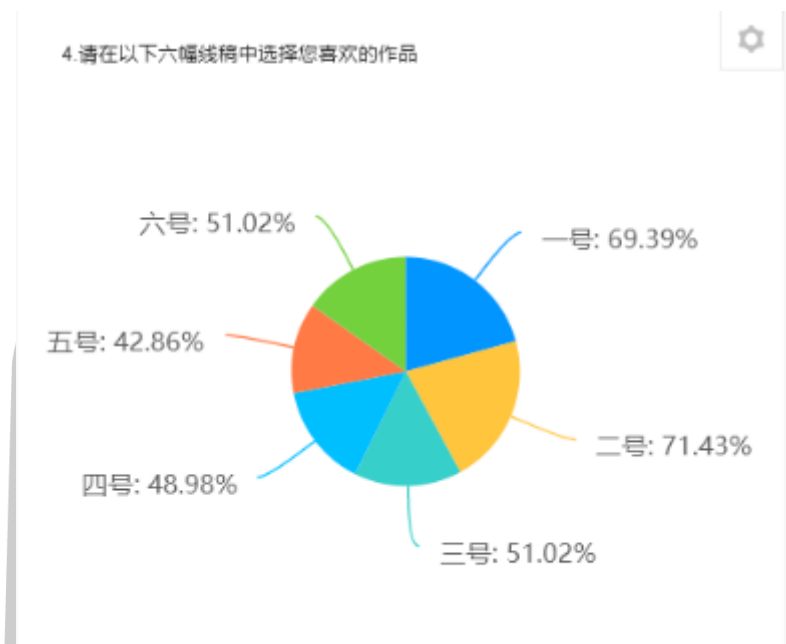二号: 71.43%
四号: 48.98%
三号: 51.02%

Figure 49 Work like
Source: Questionnaire applet

The total number of people who effectively filled out the document survey for this research was 52. From Figure 4-3, we know that 42.86% of the respondents have high school education or below, 36.73% have bachelor's degree or specialist, 18.37% have master's degree, and 2.04% have doctorate.

From Figure 4-4 we know that the age of 18-24 years old accounted for 12.24%, 25-30 years old accounted for 28.57%, 31-40 years old accounted for 4.08%, and the age of 40 years old and above accounted for 55.1%. It can be seen that the largest number of people aged above 40 years old for tourism, and the target age is about 40 or more.

As shown in Figure 4-5 #1's work favorite is 69.39%, #2's work favorite is 71.43%, #3's work favorite is 51.02%, #4's work favorite is 48.98%, #5's work favorite is 42.86%, and #6's work favorite is 51.02%. According to the fan chart, we can know that No. 1 and No. 2 are the most popular, and No. 4 and No. 5 are less popular.

4.4.2 Color selection

When the viewer enjoys the painting, the color is the fastest way to convey the emotion and the atmosphere that the viewer wants to bring out. The illustrator does not have to stick to the realistic color of the object, and the imagination of color and color matching can grow freely in this extremely inclusive world of illustration. In the dynamic illustrations, the author uses more restrained colors to draw the reader's attention back to the narrative itself, first through simple black, white and gray sketches to determine the color brightness of the picture to open up the sense of hierarchy, and then by selecting the corresponding brightness of the phase saturation of the color to assign color and create the atmosphere.

In the setting of Chinese style illustration, we can also apply the traditional "five elements" color scheme, that is, green, yellow, red, white and black, the ancients also called the five elements the main colors, Xie He once proposed the color scheme of "assigning color to the class", which provides a dynamic ancient style illustration design. In the color scheme, you can choose the gorgeous heavy colors, the black and white of Moism and Taoism, and in the specific design, you can learn from the colors of the faces in ancient Chinese drama, such as red for loyalty and courage, white for treachery, black for steel and straightness, cyan for bravery, yellow for fierceness, green for chivalry and wildness, and gold and silver for demons.

In the art of illustration, color is an extremely important visual language, which is very powerful in the expression of works, and the use of pure color to describe objects has multiple transformations. For example, ink can produce "focus", "thick", "heavy", "light" and "clear "and other different color levels, presenting a diversity of color purity and brightness, to achieve a "fresh and elegant" "ethereal and beautiful" effect, such as the famous illustrator Zhang Rongshan combined digital illustration with ink elements, while For example, the famous illustrator Zhang Rongshan combines digital illustration with ink and wash elements, and creates a dynamic oriental warrior figure with the help of digital software on the basis of rigorousness, which is both lively and free, with ancient style. In addition, in China's classical painting, the application of "line" modeling is also attached great importance, and

simple and refined lines are often used to outline the image, so as to make a high overview of the objective things, through "light", "heavy", "fast" and "fast". ", "fast", "slow", "suppress", "raise" The application of brush strokes such as "pause" and "frustration" presents works of art with an ancient style. Therefore, lines are also very valuable for independent appreciation. In the design of narrative ancient style dynamic illustrations, lines can also be applied to outline the object with dynamic, clean lines, using lines of different lengths and thicknesses to present the sense of space, volume and dynamics of the work, and in the specific design, on the basis of inheriting traditional classical elements, using modern description methods to give new life to the work. To form a unique style of narrative ancient style illustration works. Of course, the Chinese style illustration is still in the primary stage of development, so in the application of color, in addition to the traditional classical color scheme, we can also draw on modern painting style to enrich the color expression of narrative elements.

### 4.4.3 Application of flat illustration

After the preliminary exploration, the simple block surface of flat illustration can effectively convey information, and the expression of line and texture can make up for the single visual experience of the block surface, so this series of works combines flat illustration with line and texture expression, and creates a unique aesthetic image through the orderly combination of the three. The extraction of old objects is to follow this rule of creation, retaining its main morphological features with simple geometric shapes to summarize its shape, using lines to clarify the structure of the object, a small amount of miscellaneous color texture application to the end. In this series of works, there are two images of the same character, one large and one small, both of which are summarized in a flat way and then enriched with details through lines and textures. The difference is that the smaller figure is more line oriented, while the larger figure is more texture oriented. The former is mostly a complete character, and the character costumes are mostly designed according to the needs of the scene, such as life preservers and swimsuits for swimming scenes, short skirts and dancing shoes for dancing scenes, umbrellas and water shoes for raining scenes, etc. The latter is mostly a partial character, and the character costumes are

designed according to the needs of the scene. The latter are mostly partial characters, mostly appearing with their faces and hands, and need to be adjusted according to the layout of the picture (see Figure 21)

4.4.4 Drawing of color drafts

When the creation is carried out methodically and the creation is re-examined, it will be realized that the role played by the dynamic design in the picture is not particularly ideal according to the results of the investigation. On the one hand, the painting content relies too much on the real scene, and the dynamic content is only the dynamic part of the picture in a step-by-step manner, and the subjective and purposeful dynamic design is not able to be well played by the limitation of the real scene. On the other hand, the visual subject is not prominent enough, the sense of series is not obvious enough, and the dynamic design part is more inclined to the role of atmosphere setting, which plays a relatively weak role in the important characteristic of narrative of illustration. In order to make up for the regret of not being able to fully integrate the design language with the emotions of childhood that haunted the author, and to highlight the application of the design language and the expression of narrative content, the author made corresponding adjustments to the content and expression of the series after continuous reflection and experimentation. As shown in Figure 4-6, a large color draft was drawn according to the color scheme of Chinese style.

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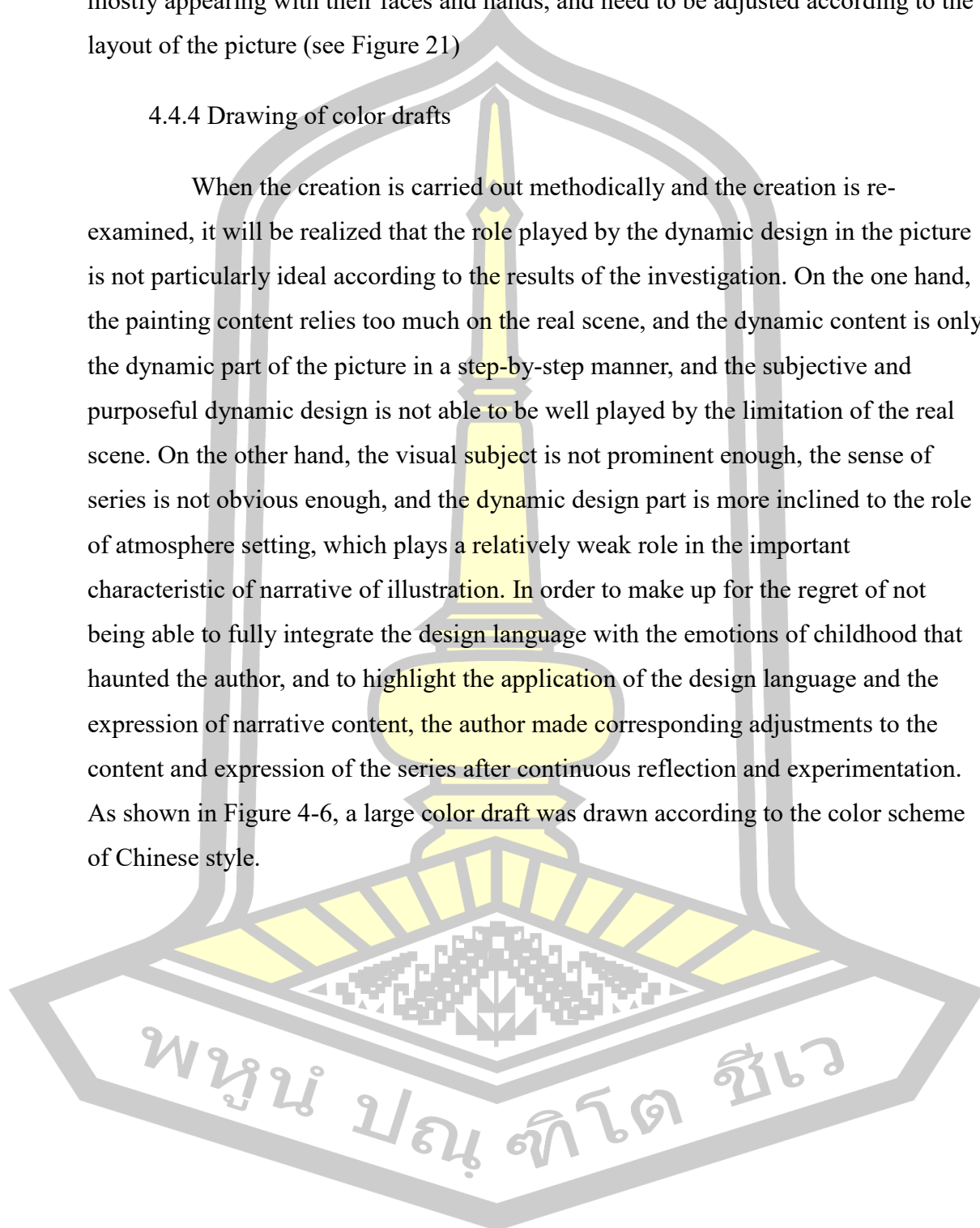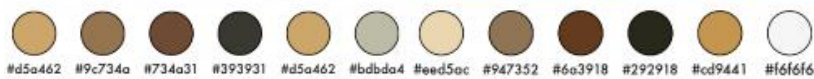
Figure 50 Luoyang tourism culture dynamic graphic design color draft
Source: Hand-drawn by the author

After the opinions collected from the questionnaire, I eliminated the low-scoring one from the draft, modified the illustration according to the harmony of the picture and the rigor of the graphic design, matched the colors, added the text that matched the picture, and deleted some trivial and complicated embellishments to make the picture more harmonious. According to the cultural characteristics of Luoyang tourism, interesting designs were added to the illustration, making the picture more vivid and resonant.

2.您的学历是

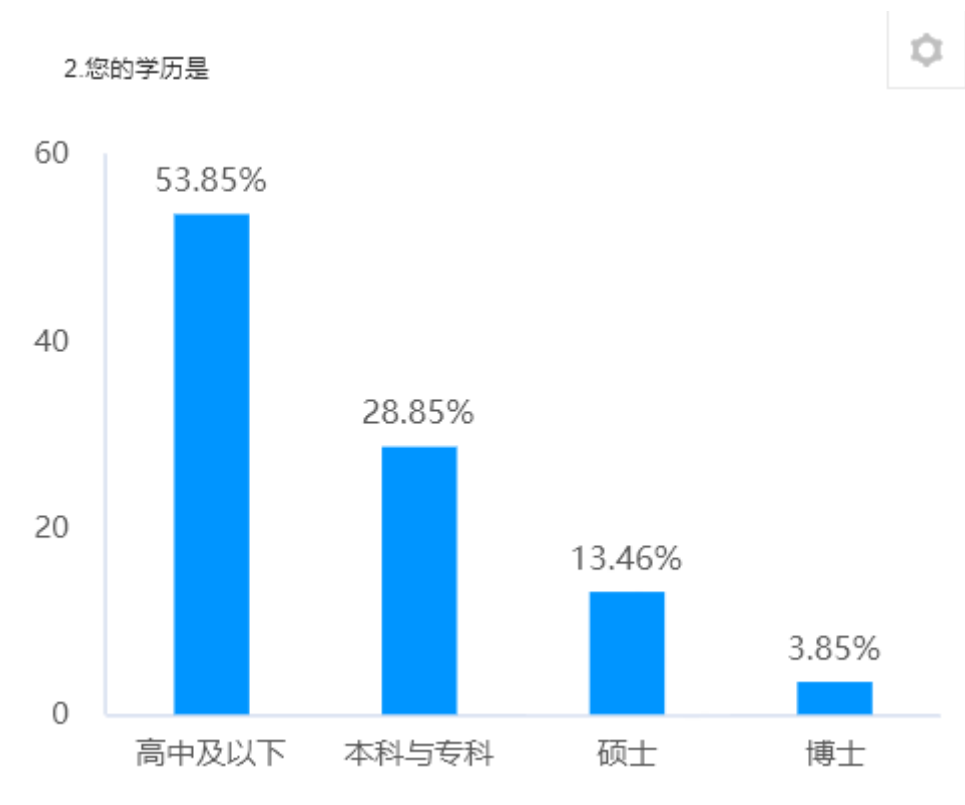**Figure 51 Chart of education ratio: high school and below, bachelor and specialist, master, doctor**
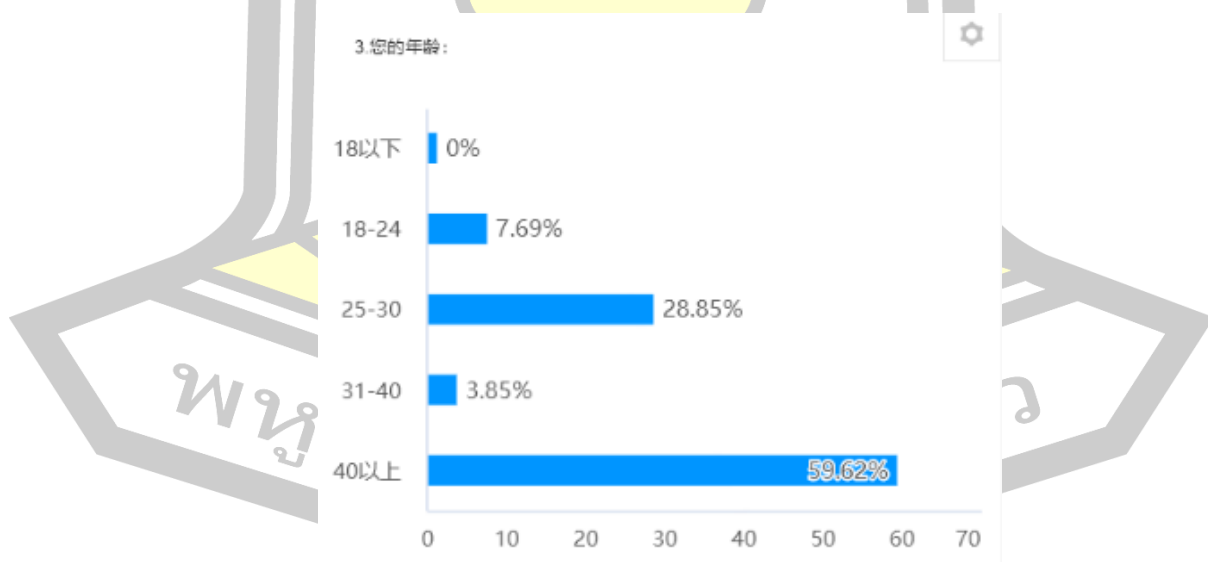
Source: Questionnaire Star App

3.您的年龄：

Figure 52 Age share chart
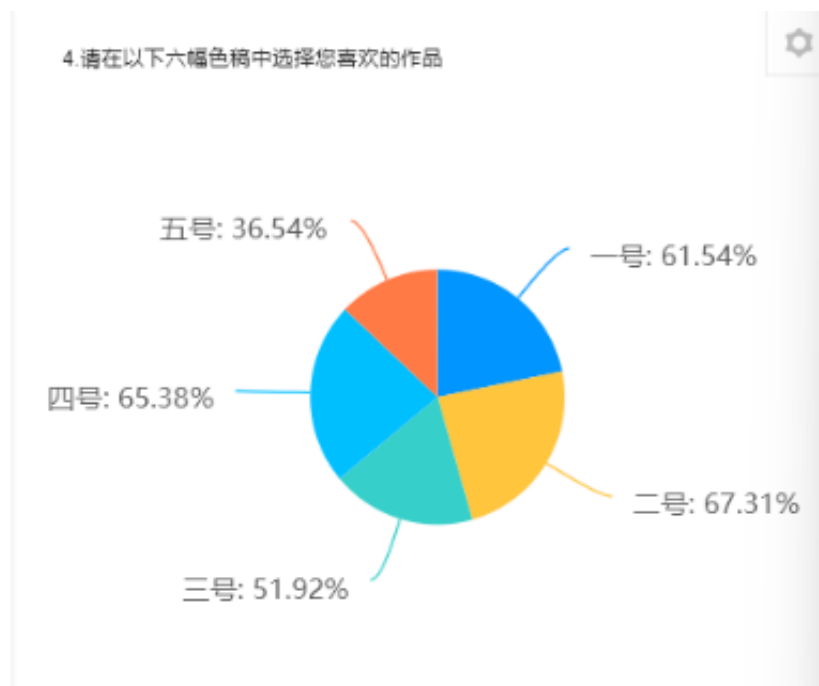
Source: Questionnaire applet

Figure 53 Work Favourites

Source: Questionnaire applet

The total number of people who effectively filled out the document survey for this research was 52. From Figure 4-7, we know that the percentage of high school education and below is 53.85%, the percentage of bachelor and specialist is 28.85%, the percentage of master is 13.46%, and the percentage of doctor is 3.85%.

From Figure 4-8 know that the age of 18-24 years old accounted for 7.69%, 25-30 years old age accounted for 28.85%, 31-40 years old age accounted for 3.85%, and over 40 years old age accounted for 59.62%. It can be seen that the tourism has the largest number of people aged above 40 years old, and the target age is about 40 or more.

As shown in Figure 4-9 No. 1's work favorite is 61.54%, No. 2's work favorite is 67.31%, No. 3's work favorite is 51.92%, No. 4's work favorite is 65.38%, and No. 5's work favorite is 36.54%. According to the fan chart, we can know that No. 2 and No. 4 are the most popular and No. 5 is less popular.

4.4.5 Finished illustrations

4.4.5.1 Finalization of the illustrations

According to the questionnaire survey of the large color draft of the illustration, four illustrations with high popularity were selected for further engraving, and the four illustrations were sent to experts in dynamic illustration design to listen to their opinions and ideas to select the best two to complete the design of dynamic effects.

Meng Nan: now working in China Lu Xun Academy of Fine Arts, has been engaged in digital media art design, specializing in dynamic poster design, animation film research.

Wu Haitao: graduated from Henan Normal University College of Fine Arts in 2004, is currently the director of the visual communication design teaching and research department of the College of Art and Design, and the director of Kaifeng Artists' Association. He is now engaged in teaching, design work and art creation of visual communication design. His paintings have been selected and awarded in national and provincial exhibitions for many times.

Zhu Yerong: Teacher of Visual Communication Department of College of Art and Design, graduated from Hunan Normal University, majoring in art and design. Investing in the study of Helo culture, serving the local area while inheriting and promoting traditional culture. Specializes in illustration design research.

The three experts gave their opinions and ideas on illustration design, visual impact and dynamic design, and the two illustrations selected were modified and dynamic effects designed to complete the paintings according to the suggestions.
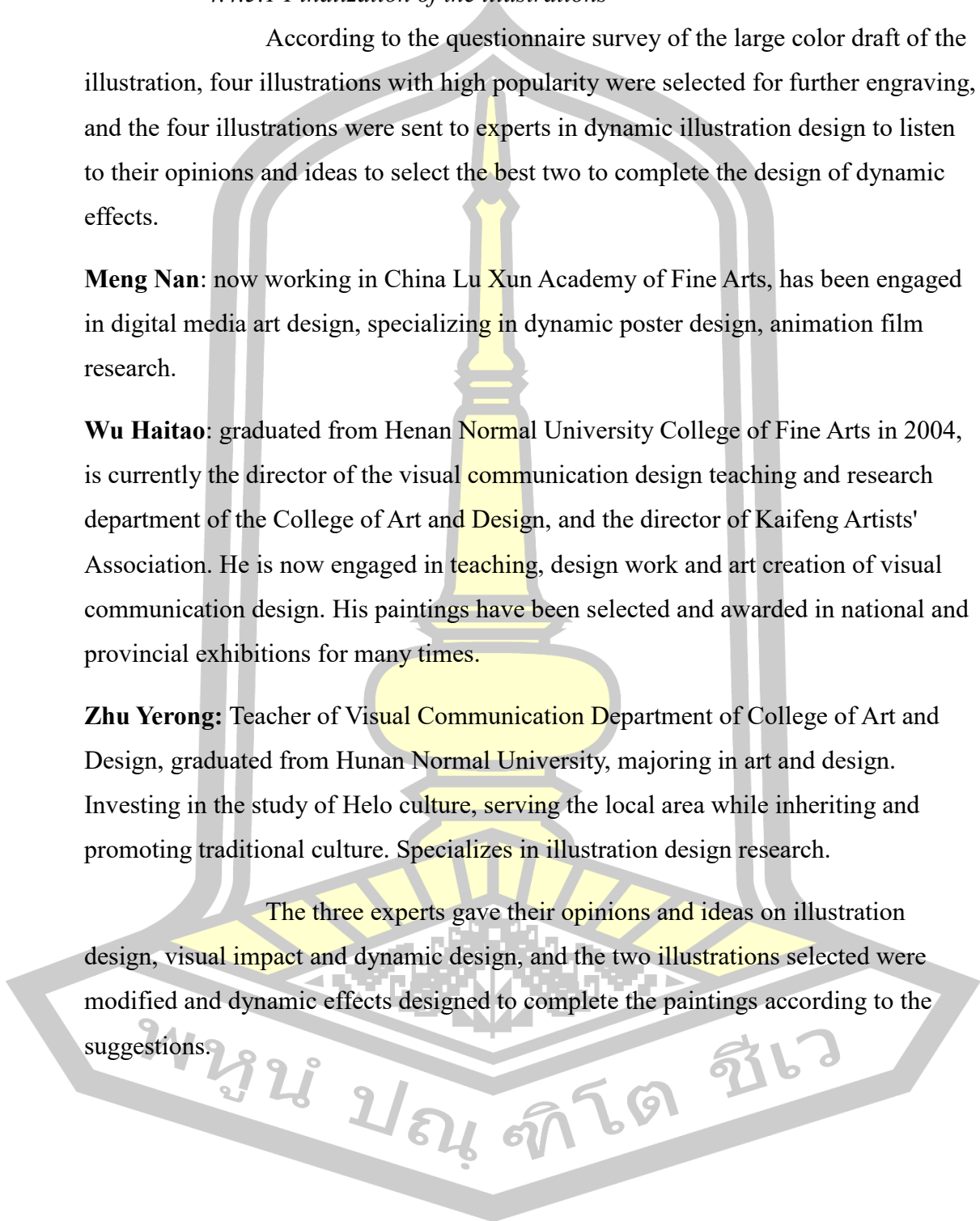
4.4.5.2 Illustration finished draft show

Figure 54 Luoyang tourism culture dynamic graphic design color finished draft

Source: Hand-drawn by the author

As shown in Figure 4-10, the main object of the picture is the Paradise Hall of Fame, and the landscape scenery of Luoyang is used to integrate with the picture to draw an illustration design with Chinese style. The color uses classical Chinese colors

and adds texture by line hair to make the picture more three-dimensional. The colors are enriched as much as possible on the basis of a large color draft, and the landscape elements are arranged interlaced on the foreground layer, the mid-ground layer or the background layer of the picture, echoing the dynamics of the main character and presenting a more complete picture effect.

Figure 55 Luoyang tourism culture dynamic graphic design color finished draft

Source: Hand-drawn by the author

As shown in Figure 4-11, the main object of the picture is Yingtianmen, and the mountain range of Luoyang is used to integrate with the picture to draw an illustration design with the cultural characteristics of Luoyang. The color uses the classical Chinese color red as the main color, and the yellow color with different saturation is used for decoration, and the texture is increased by line hair to make the picture more three-dimensional. On the basis of the color manuscript, the colors are enriched as much as possible, and the people walking in the mountains and plants are staggered on the foreground layer, the mid-ground layer or the background layer of the picture, echoing the dynamics of the main character, presenting a colorful picture effect.

4.5 Dynamic illustration design of Luoyang tourism culture

4.5.1 Initial creative ideas

Illustration is a kind of visual language with literature, what to express and how to express is a problem that every illustration creator has to think about. The design of dynamic effect of illustration not only provides a new expression path for illustration content presentation, but also provides a new carrier for the creator's spirit and emotion. In the creation of dynamic illustration design of Luoyang tourism culture, the harmony of the narrative picture is mainly developed by designing the main building to let the scenery as a companion movement, supplemented by the dynamic design of rich and interesting atmosphere elements to tell a relatively complete and vivid picture, to realize the effective transmission of information, to realize the emotional linkage between the creator and the viewer, and to bring a more vivid effect to the audience visually.

4.5.2 Design scheme production

(1) Atmospheric element design

When the creator learns to use the ambient elements skillfully to create the atmosphere, it can effectively make the readers enter the picture and cause empathy and emotion. The branches and petals sway like the spring breeze, and the petals fall with the wind to make the picture more vivid. In addition, the design of the dynamic

language of the ambient elements, or the portrayal and transformation of the natural movement of objects in life, flowing between the real and the imaginary, is one of the most interesting things in creation. They are arranged on the foreground, middle and background layers of the picture, echoing the main character, and presenting a more complete dynamic effect.

(2) Dynamic illustration finished draft

The dynamic illustration design of Luoyang tourism culture was produced after several revisions and refinements. The poster reflects the interaction between motion and static, and creates the sense of atmosphere of the scene through the dynamic changes of the atmosphere elements. The dynamic effect of the poster is mainly designed through 4 dynamic forms: displacement, rotation, deformation and flashing.
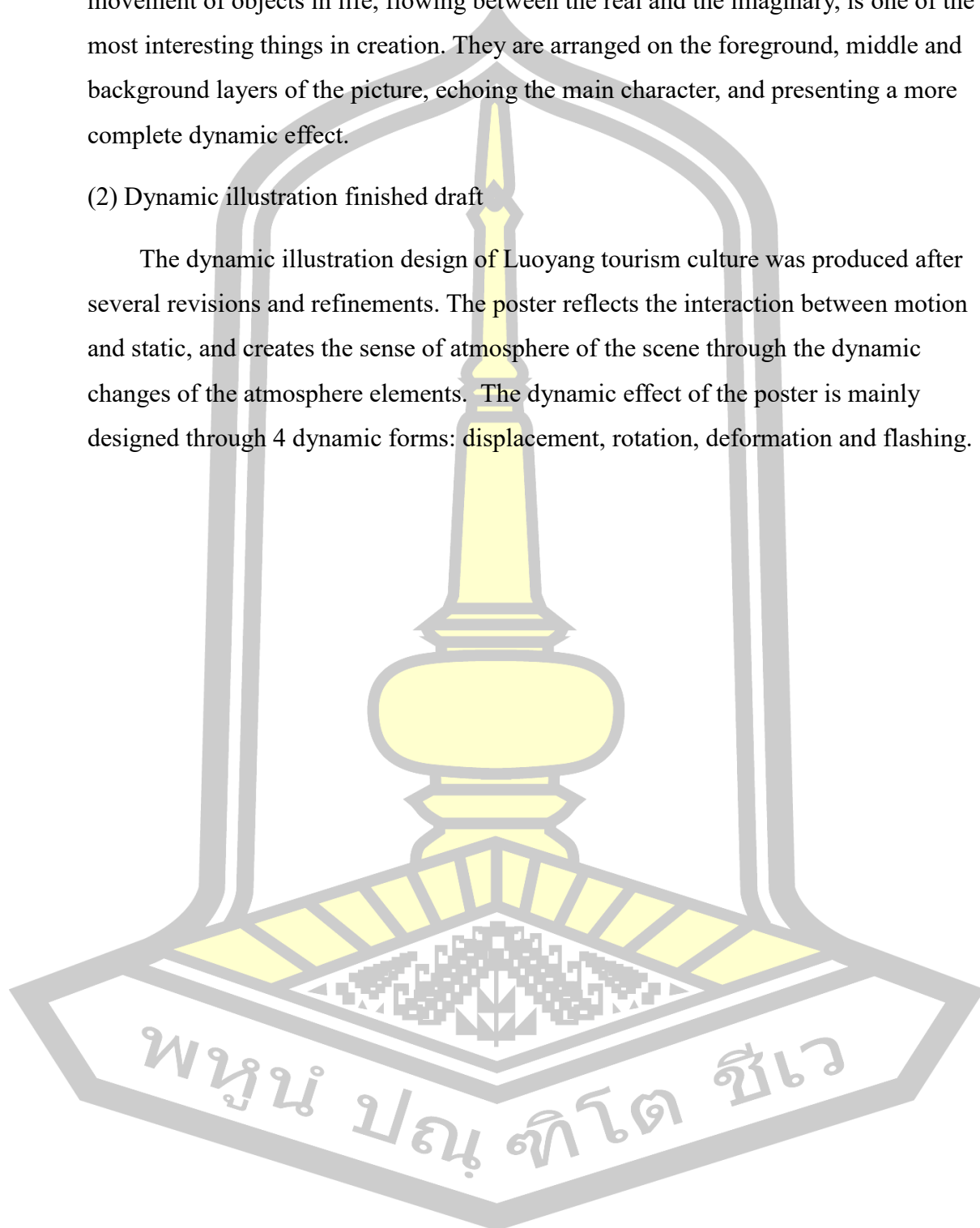
Figure 56 Illustration of the Paradise Hall of Fame (dynamic screenshot)

As shown in Figure 4.12, birds fly into the picture from the edge and gather around the main object building, bringing the viewer's eyes to the main object to highlight the theme. The leaves sway with the wind and slowly drift down to make the picture more vivid and interesting. With different dynamic effects to create a different atmosphere texture, better reflect the rhythmic balance of the entire dynamic poster.
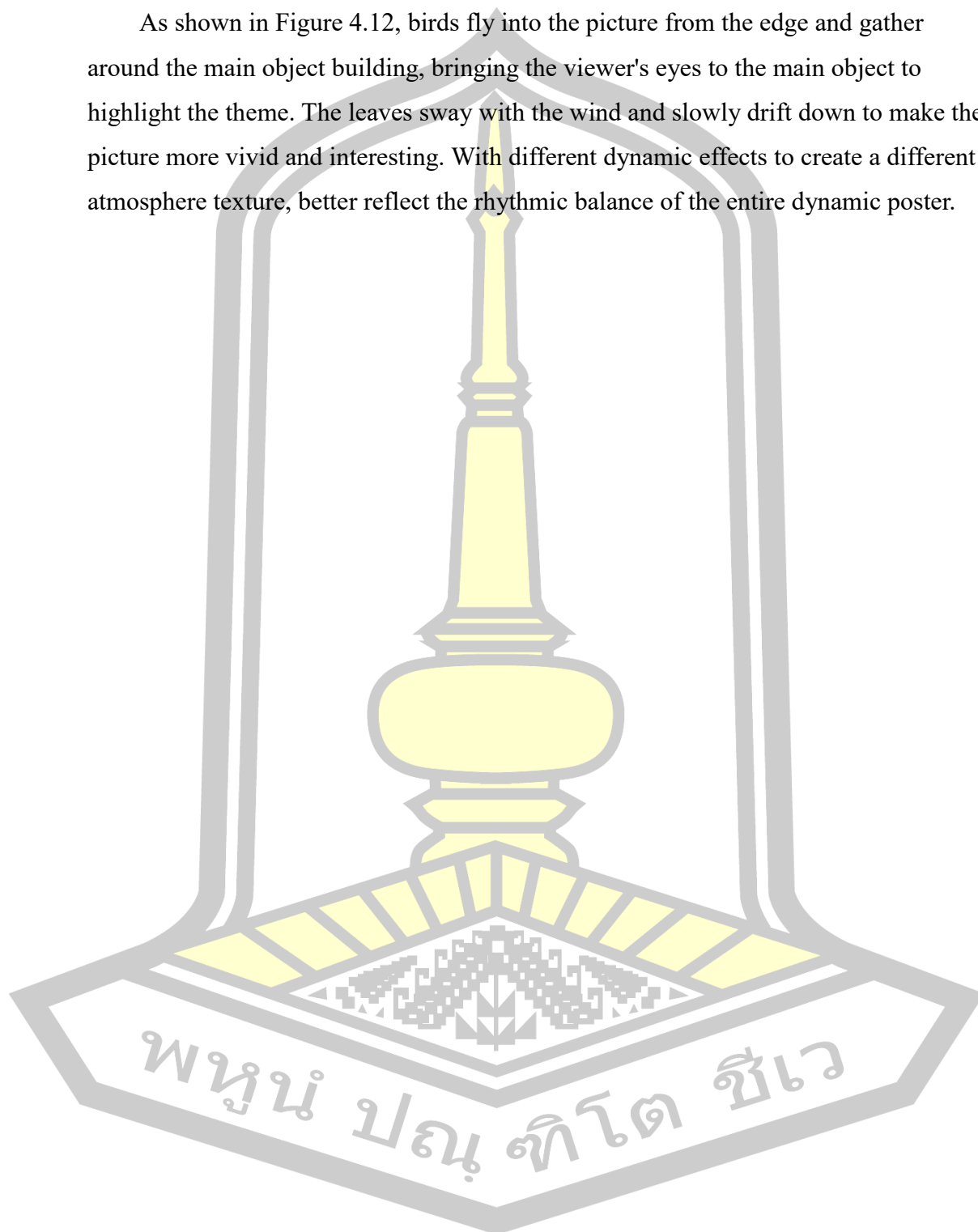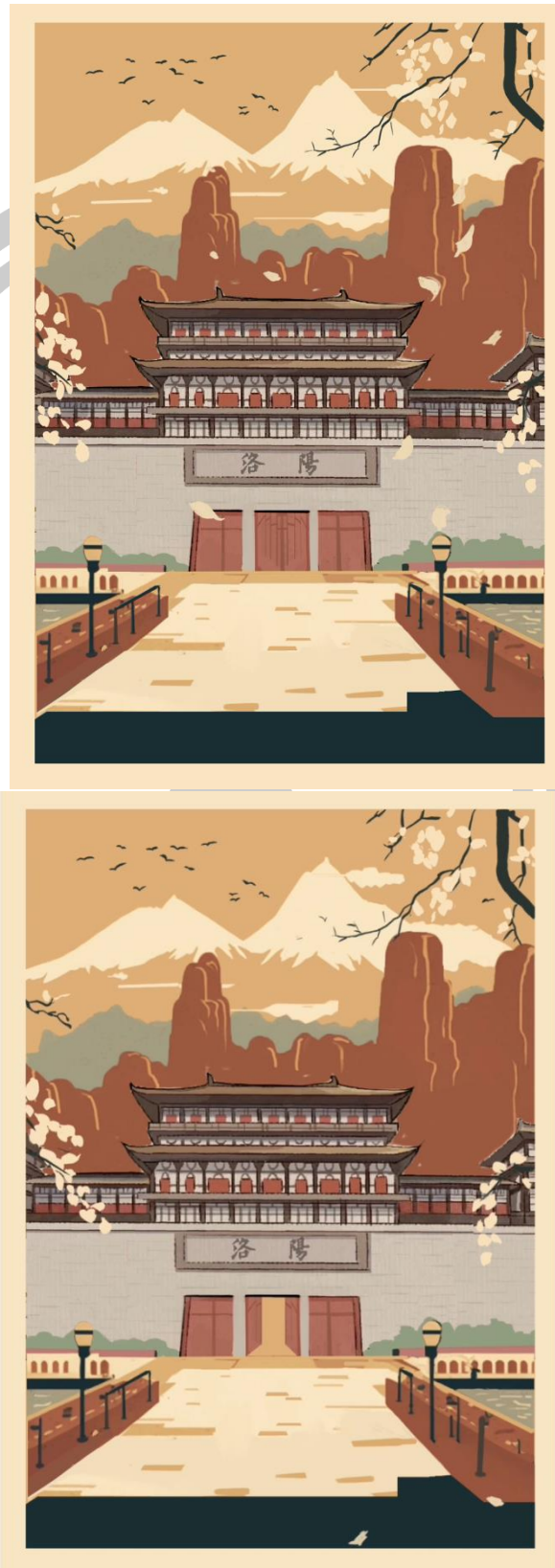
Figure 57 Yingtianmen illustration (dynamic screenshot)
Source: drawn by the author

As shown in Figure 4.13, with the direction of the crowd, the line of sight is highlighted on the Yingtianmen building, spring flowers in full bloom, petals fall slowly with the wind, adding more poetic meaning to the picture, making the picture more vivid and lively, so that people are not yet full of interest in the poster.

Dynamic illustration it is both art and cultural information dissemination carrier, so it is not a single form of visual performance to convey information. Through the basic theories of visual perception, cognitive psychology, emotional design and other support, according to the audience to receive information channels and psychological appeal, from the instinct level, behavior level, reflective level, the dynamic illustration to try to create.

4.5.2 Selecting the medium for dynamic illustration design of Luoyang tourism culture

Dynamic illustrations need to be displayed in a certain medium, considering that dynamic posters are very different from print posters, so the medium of display is also completely different. The storage size of dynamic illustrations is much larger than static illustrations, most of the common dynamic illustrations in 25 frames - 150 frames, each length of about 10 seconds - 20 seconds, which has certain requirements for the network speed, if the network speed is not smooth when playing affects the viewing, then the elaborate design is also in vain. In the exhibition needs to be clear and smooth, which requires a networked computer through the projection technology in the exhibition hall for loop playback, or tablet computer network playback. The dynamic illustration will be made into QR code, and visitors can watch the dynamic illustration of Luoyang tourism culture by sweeping it with WeChat, which is more convenient and suitable for business promotion.

CHAPTER V

CONCLUSION，DISCUSSION AND RECOMMENDATIONS

This chapter briefly elaborates the conclusion, creating two dynamic illustrations by studying dynamic illustration and Luoyang tourism culture analysis. It discusses the differences between the dynamic illustration design of this paper and the previous ones, sees the academic gaps in this paper suggests later scholars to study and explore, and elaborates how the design of this paper should be applied.

5.1 Conclusion

Conclusions in this research The researcher would like to summarize according to the 3 research objectives, consisting of (1) To study and analyze the current situation and design principles of dynamic illustration.(2) To study the cultural characteristics of Luoyang tourism. (3) To design of dynamic illustrations of Luoyang tourism culture. which has the following conclusions:

5.1.1The current situation and design principles of dynamic illustration

By studying the current situation and design principles of dynamic illustration, we analyze and summarize the visual composition and artistic expression of dynamic illustration in a comprehensive and systematic way, and provide theoretical support for the creation and application of dynamic illustration. After collecting, classifying, comparing, studying and summarizing the visual expressions of a large number of applications, the following conclusions are drawn from the study of what dynamic illustration is, what kind of visual effects it presents, from which aspects it is created, how it is applied, the fields of application, the specific functions and the application values.

(1) On the level of visual expression of dynamic illustration, the article elaborates and analyzes the main performance characteristics of dynamic illustration, and concludes that the biggest difference between dynamic illustration and traditional illustration is that its development is more dependent on technical means and the support of communication channels. The visual elements of dynamic illustration are systematically analyzed and illustrated from three aspects: graphics, text and color. It

is concluded that when creating dynamic illustration, it is necessary to consider the expression form of static illustration first, and flexibly use and handle the relationship between graphics, text, color and other visual elements in order to provide support for the artistic expression of dynamic illustration.

(2) On the level of artistic creation of dynamic illustration, through the analysis of some existing application cases, it is concluded that the artistic expression of dynamic illustration is presented through various forms of visual effects such as dynamization, contextualization and plotting. Therefore, dynamic design, spatial design, and temporal design are the three most influential elements for the visual expression of dynamic illustration. Through the detailed analysis and examples of the three elements, it is concluded that the visual effect of dynamic illustration depends on whether the relationship between the three elements is reasonably coordinated, in addition to the appropriateness of the design techniques and skills used. The presentation of motion in dynamic illustration is developed in space and time, and the existence of time and space is reflected through motion. Therefore, the relationship between the three is complementary and indispensable. Therefore, dynamic illustration must reconcile the coordination between the three in order to make the picture more visually impactful.

(3) On the application level of dynamic illustration, through the theories of cognitive psychology, emotional design and empathic design, and combined with the case study of dynamic illustration. Firstly, we analyze and summarize the audio-visual, interactive, and emotional communication forms of dynamic illustration from the instinctive, behavioral, and reflective levels, based on the multi-sensory communication methods of dynamic illustration to the audience. Secondly, the main applications of dynamic illustration are classified and case studies are made. It is concluded that the application of dynamic illustration is not only to see the impact on the visual senses, but also to pursue a comprehensive and multi-faceted psychological and physical experience in order to meet the multiple aesthetic and emotional needs of people.

(4) On the functional level of dynamic illustration, according to the current application status of dynamic illustration and the supporting evidence of various application areas, it is concluded that dynamic illustration has the functions of fun and entertainment, guiding audience, information reinforcement and emotion regulation. Dynamic illustration begins to focus more on human emotional experience, reflecting the trend of "human-centered" design. And as dynamic illustration is combined with more and more design forms, dynamic illustration is also deepening its application function. Therefore, dynamic illustration has a very broad market prospect and application value, and it is worthwhile for us to continue to explore.

5.1.2 Luoyang Tourism Culture Characteristics

Through the study of Luoyang tourism cultural characteristics to understand the history and culture of Luoyang, after the field investigation check, see the majestic Yingtianmen and paradise Hall of Fame, feel the unique charm of the thirteen ancient dynasties of Luoyang. Luoyang, the thousand-year imperial capital and peony flower city, has deep historical heritage and cultural characteristics, and only the characteristics embodied through culture can show its literary nature and not be imitated. Dynamic illustration design with connotation and quality can bring new breakthroughs to tourism development as well as reflect the cultural beauty of scientific tourism and intelligent tourism. Through the change of concept, the exploration of cultural creativity, the design of dynamic illustration, focus on the excavation of Luoyang's deep historical and cultural deposits and unique natural ecological resources, and the integration of cultural creative elements with Luoyang characteristics, in order to develop a dynamic illustration design with strong local characteristics of Luoyang and adapt to meet the market's favorite. When the natural landscape cannot fully present the rich connotation of a city, the humanistic Luoyang, becomes the core competitiveness.

5.1.3 Innovative design of dynamic illustration of Luoyang tourism culture

Through the innovative design of Luoyang tourism culture dynamic illustration design in addition to 6 drafts, through the questionnaire survey screened

out 5, according to the Chinese style illustration has the classical color for coloring, drawing a color draft picture. The result of the questionnaire survey was selected to further complete the static illustration. 52 people voted in total, with 55.1% of people aged 40 and above in first place and 28.57% of people aged 25-30 in second place. A voting method of 5 to 4 was selected, and the 2 completed dynamic illustrations with the highest popularity were screened in the results. Among them, 67.31% of the votes were for the Paradise Hall illustration, which ranked first. The vote rate of Yingtianmen illustration was 65.38%, ranking second. The theme was interpreted through different entry points. While ensuring the integrity of the single illustration as a whole, it also ensures the relevance of multiple illustrations, so that readers can easily experience Luoyang tourism culture from different perspectives and achieve the purpose of spiritual communication and emotional resonance.

We understand that the graphic elements can be shifted in different ways to create a different sense of space. Deformation of graphic elements can achieve unexpected interest. With the addition of a temporal dimension to dynamic illustrations, it is easier to display spatial information and guide the viewer's eyes to highlight key messages.

The process of creating narrative dynamic illustration design improves the knowledge of the design principles of dynamic illustration and provides a deeper learning of the structural balance in graphic design. The journey of dynamic illustration in illustration creation and excellent examples changed the inherent impression of illustration.

Through discussions with the three experts, we chose to view the works through videos, GIFs, and scanning QR codes when designing for dynamic illustration. The development of technology provides more possibilities and new opportunities for art creation, and the adoption of new technologies for improvement and innovation is more conducive to dissemination and adding interest. The use of multiple materials and mediums of display avoids the shortage of innovation, and with the birth of major platforms, the audience has a broader way to understand the charm of Luoyang

5.2 Discussion

The dynamic illustration design of Luoyang tourism culture combines its own advantages and takes the characteristics of rich storyline, diverse visual effects, vivid motion transitions, and progressive emotional experience as the design guide to build the visual tension of dynamic illustration. The illustration is mainly designed around the motion level and rhythm of the dynamic poster, and the composition elements in the illustration are reasonably ordered to make the picture information hierarchy clear and the narrative complete.

The results of this study show that the movement pattern of the elements of dynamic illustration is related to cognitive psychology, and the information will enter the memory system after the control system. The multisensory experience is an improvement of the perceptual system, turning the "viewer" into an "experiencer". The multi-sensory stimulation will also leave a deep impression on the experiencer. The graphic element in dynamic illustration is itself an image symbol in visual design, and is a direct and accurate element in the visual communication design process. The dynamics of graphics can have a variety of transformations in size, shape, color, etc. Throughout the process, the movement of the elements will attract the viewer's attention, and during this time, the viewer's attention will be selectively focused on the elements, and the information collected by the viewer's sight will be designed to be manipulated according to the trajectory of the elements' movement, in order to achieve the Luoyang tourism culture that the dynamic illustration is intended to convey.

5.3 Suggestions

Dynamic illustration is a complex creation process that requires the combination of graphics and text, and the combination of picture and sound to present in order to increase the commercial promotion effect. Combine text and graphics perfectly to design illustrations with a sense of design, balanced images and visual impact. The dynamic illustration design of Luoyang tourism culture adds the concept of time and space to the static poster, so that the original static graphics have a vibrant dynamic

effect. As a new form of propaganda overly dependent on digital media communication, it can only achieve the desired effect on the screen through the movement of graphic elements to visually reflect the sense of space.

Of course, there are still many shortcomings in the process of research, and also face some problems and difficulties, such as there are few works for dynamic illustration research, lack of more systematic theoretical support related to dynamic illustration. At the same time, there are relatively few excellent cases to demonstrate, so the research on this topic may not be rigorous enough. Despite the difficulties, the theories and studies of previous authors have successfully guided a clear research direction. We hope that through this paper's preliminary research, we can provide more reference methods and ideas for other creators in the process of creating methods and applications as well as the follow-up research of dynamic illustration, so that creators can create more dynamic illustration works that meet the aesthetic needs of the public, and thus provide some help for the development and promotion of dynamic illustration.

The transition from traditional illustration to dynamic illustration is a successful step in design. The development of technology has made more and more powerful software and more colorful design forms. The core of illustration design still lies in the promotion of commercial advertising, and we need to keep looking for new ideas to let the art of illustration design continue to develop and progress and create a new era. Luoyang scenic spots can release dynamic illustrations on online social media platforms to trigger discussion on the topic, so that viewers can capture dynamic elements to deepen their understanding of the images step by step and have a deep impression of Luoyang, completing a journey from the eyes to the heart, and generating a strong interest and desire for Luoyang by watching dynamic illustrations

APPENDICES
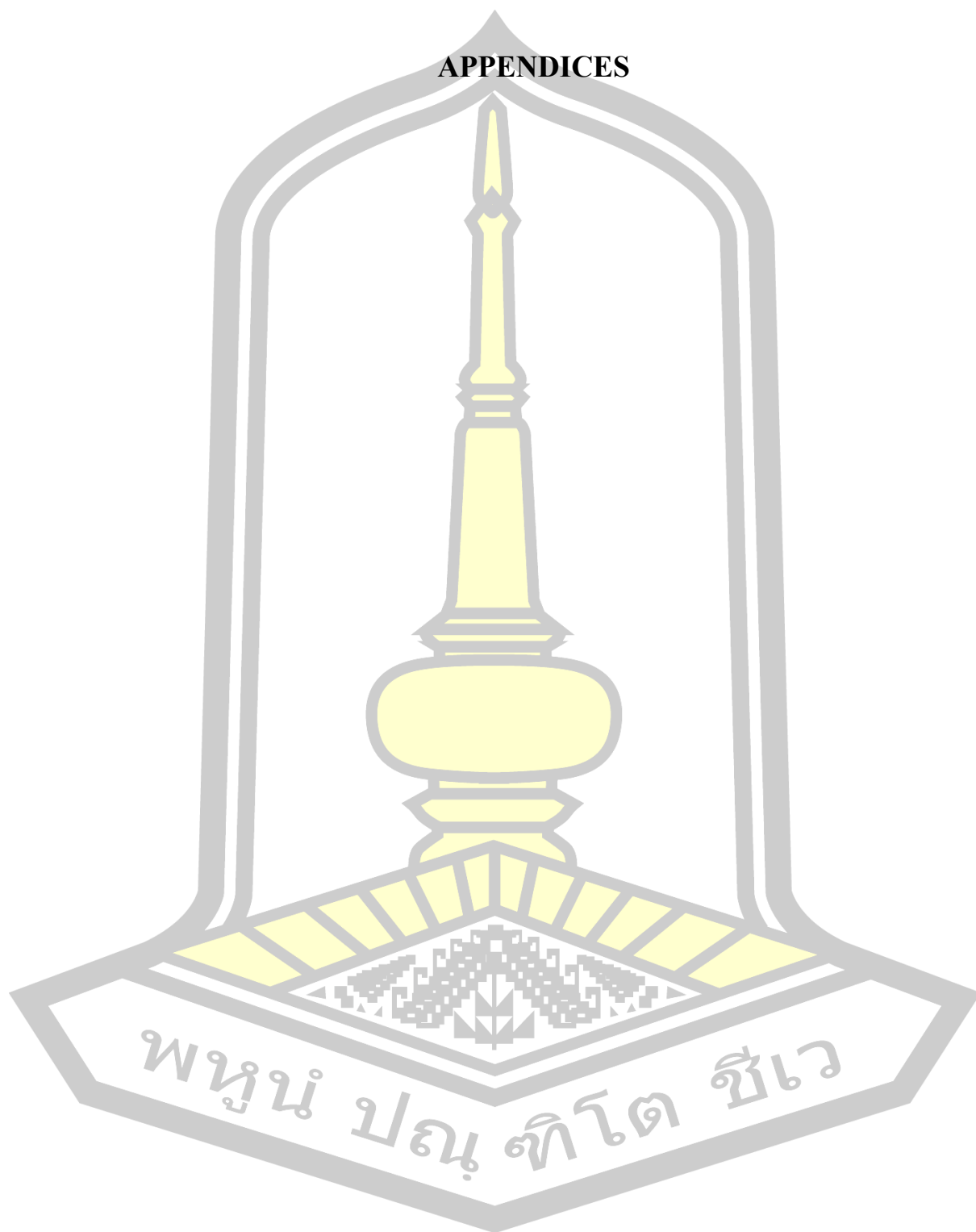
C. Survey Appendix Table

Fieldwork records
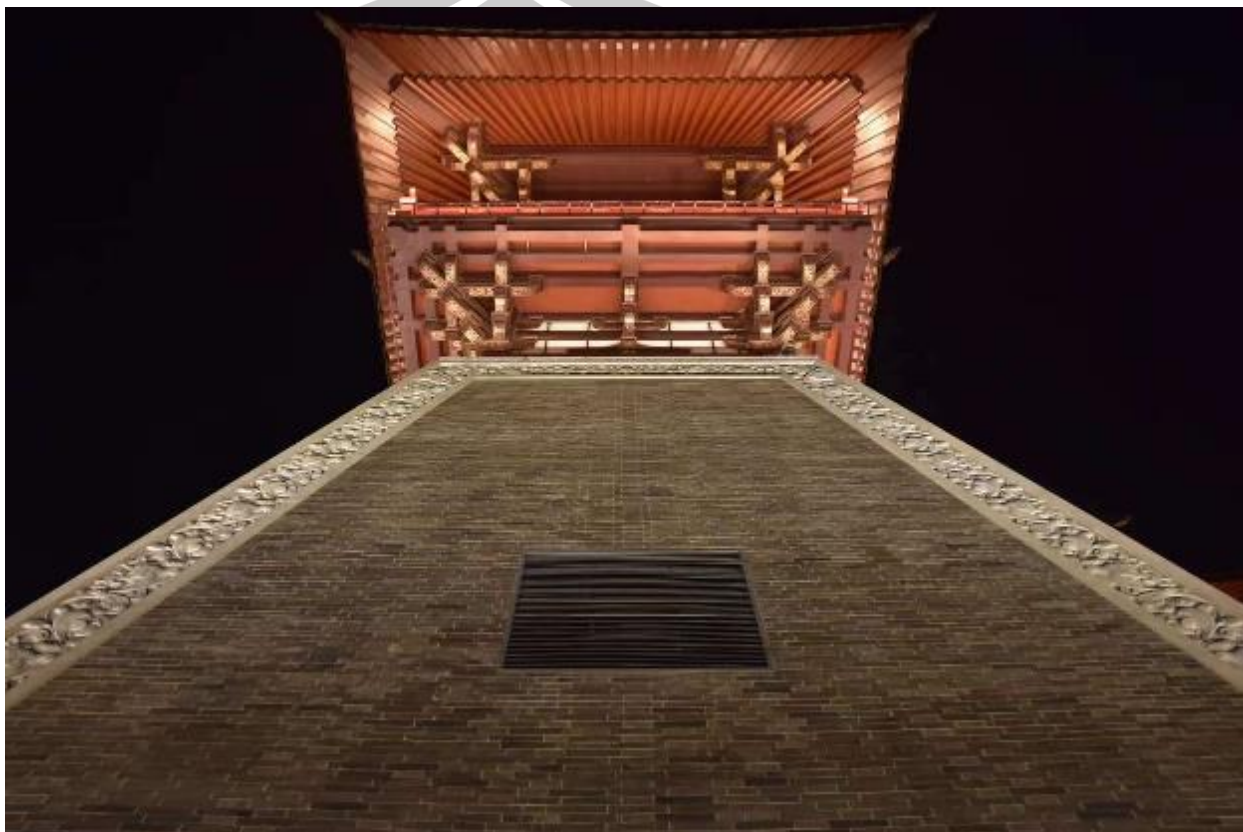
Research Tools

洛阳旅游动态插画色稿满意度调查

*1. 您的性别：

○ 男　　　　○ 女

*2. 您的学历是

○ 高中及以下

○ 本科与专科

○ 硕士

○ 博士

*3. 您的年龄：

○ 18以下

○ 18-24

○ 25-30

○ 31-40

○ 40以上

*4. 请在以下六幅色稿中选择您喜欢的作品【请选择2-4项】

□ 一号

□ 二号

□ 二号

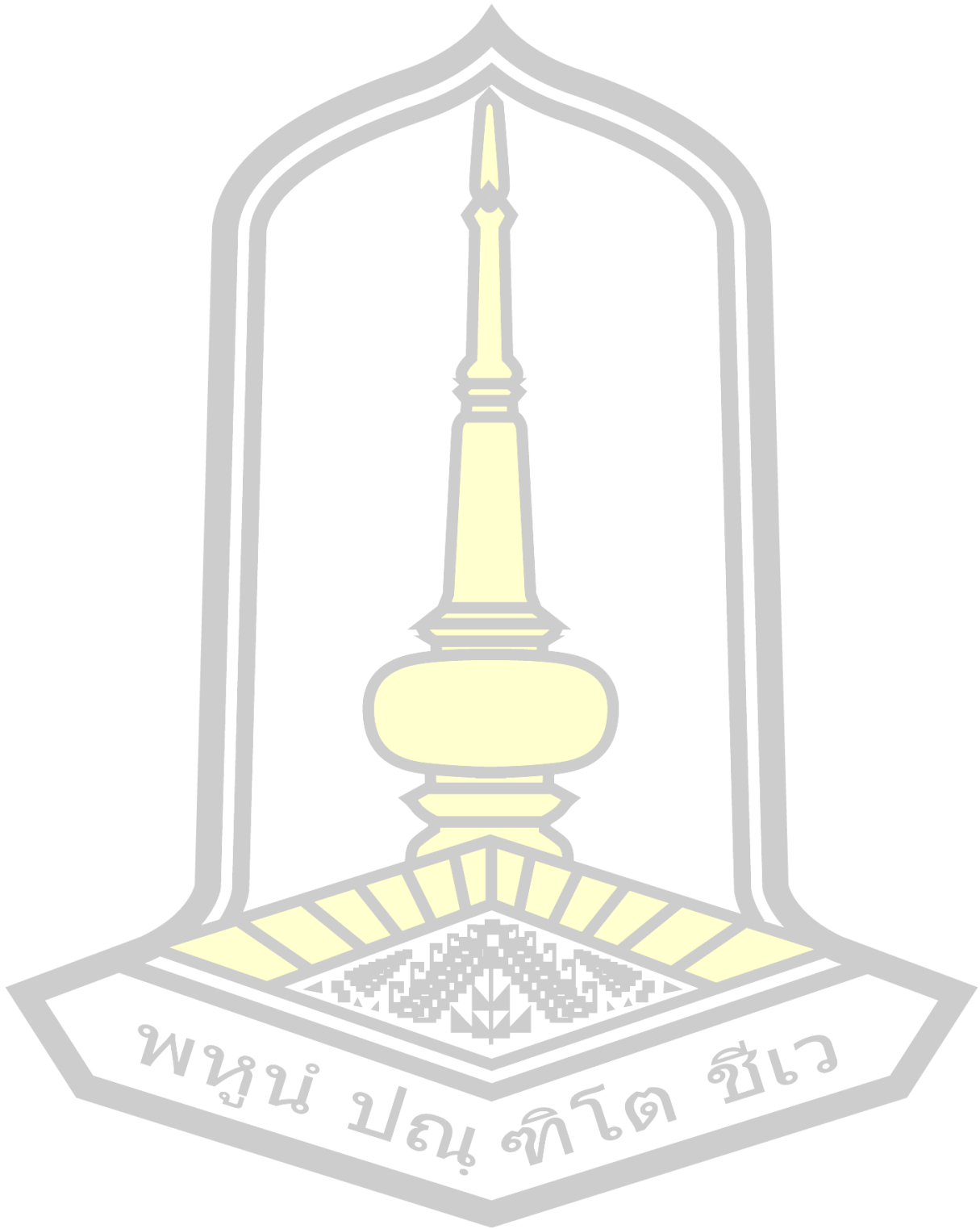□ 三号

□ 四号

□ 五号

提交

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Remaining unused illustrations

The most popular drafts were analyzed and refined by using a questionnaire, and the remaining drafts were eliminated.
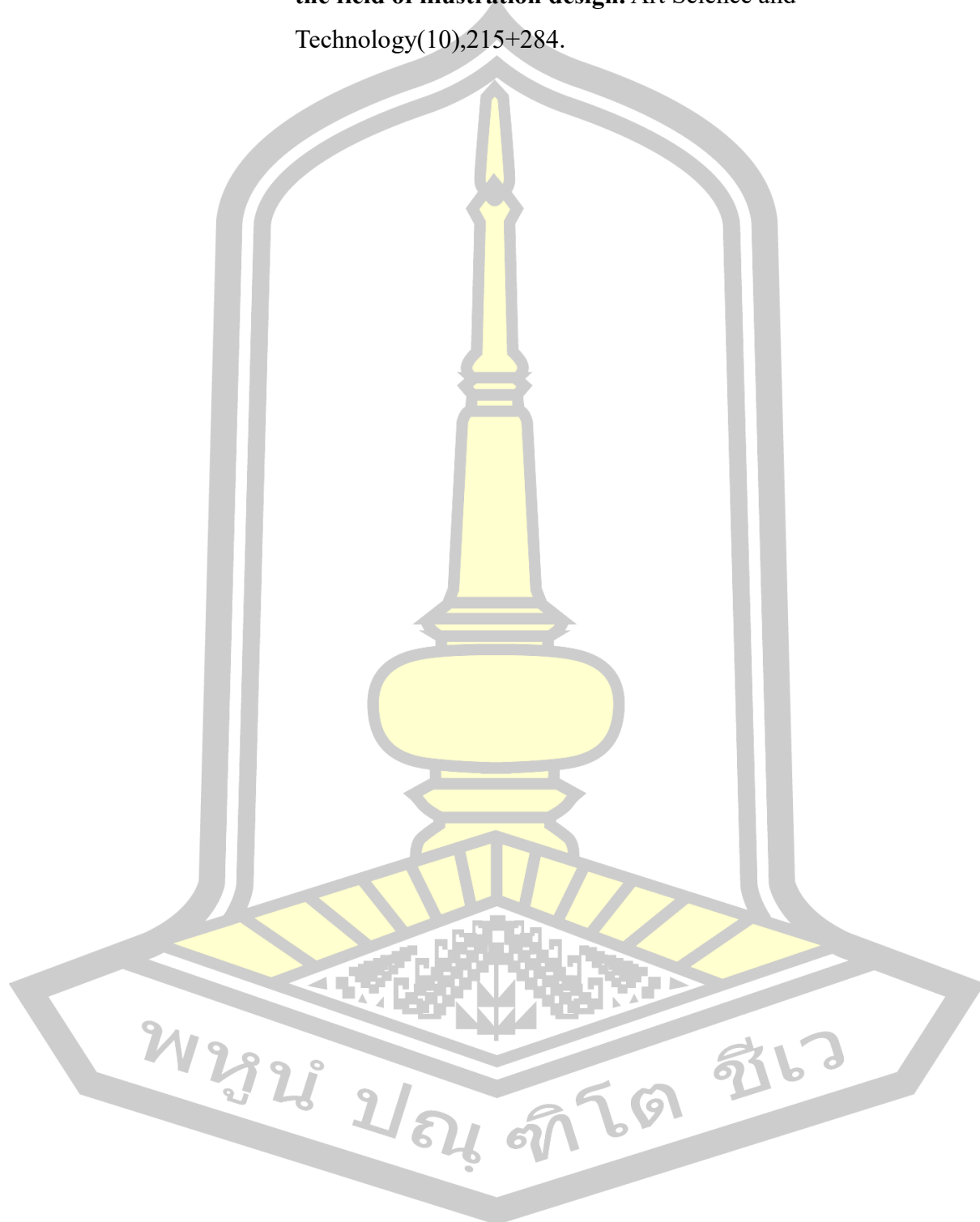
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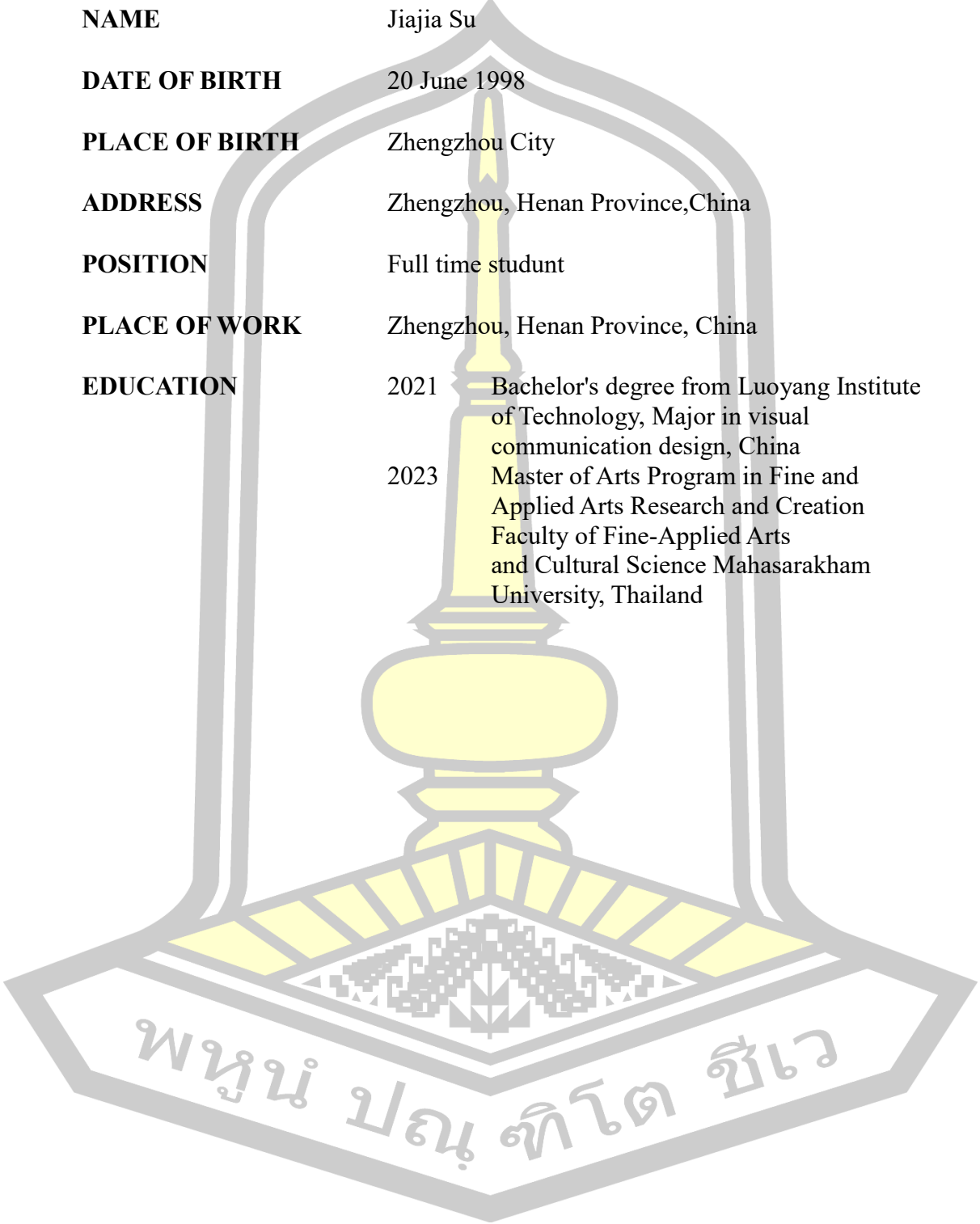
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