



VISUAL STIMULATING 3DIMENSIONAL ART WORKS FOR PERSONAL  
INTERPRETATION



By  
Mr. Wang RAN RAN

A Thesis Submitted in Partial Fulfillment of the Requirements  
for Doctor of Philosophy DESIGN ARTS (INTERNATIONAL PROGRAM)  
Graduate School, Silpakorn University

Academic Year 2022

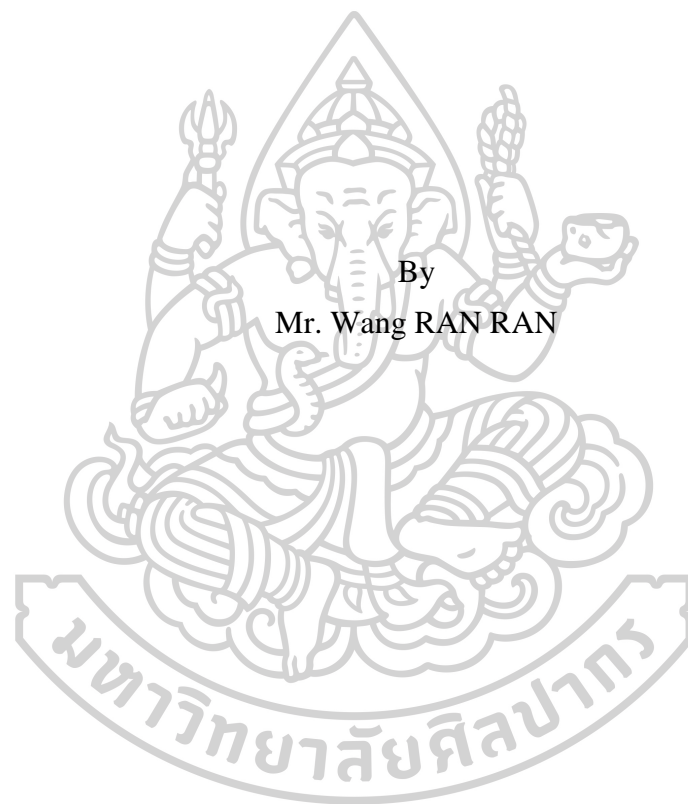
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# Visual Stimulating 3Dimensional Art Works for Personal Interpretation



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By Mr. Wang RAN RAN  
Field of Study DESIGN ARTS (INTERNATIONAL PROGRAM)  
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With the rapid economy's development, daily stress has increased, thus constrained the living standard and decreased people 's spiritual life.

Nowadays, artists pay attention to their own inner understanding of the world in three-dimensional artwork creation, art comes not only from life but beyond life, with a strong humanistic feelings and personal language, whether it is sculpture artwork language techniques, space environment, materials, shape, decorative texture, color, and the use of devices (sound, light, electricity) are for the expression of spiritual and emotional services, as the form of aesthetic sculptural artwork, where itself has an important position that cannot be ignored.

This study is based on the analysis of stimulating 3 dimensional artworks. These art works make people feel happy and relieve from their emotions. The purpose of the study was to transform the tension and use the artworks to relax the mind, change self-perception, change current relationships and improve stressful emotions in life. Creating artwork that suitable for people's relaxation and release their emotions.

In particular, the researcher will study the 3 dimensional artworks that release stressful emotions through a set up of questionnaire, which in addition, two research methods will be used to justify about the attitude, awareness, acceptance, and preference through relevant professional designers and expert interviews, therefore, the survey results and interview results will be analyzed and combined separately to determine the research objectives. These results can provide clearer guidance for artworks creation and selection data to create works that are more suitable for people's happy mood and mental relaxation.

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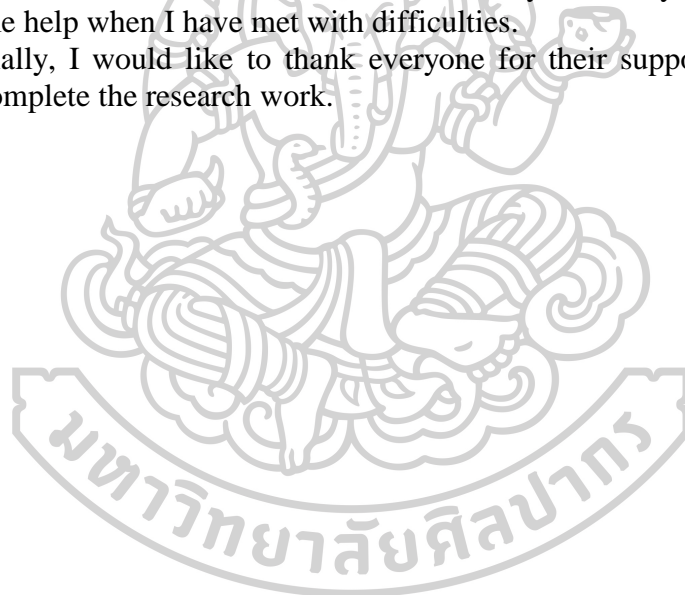
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Mr. Wang RAN RAN

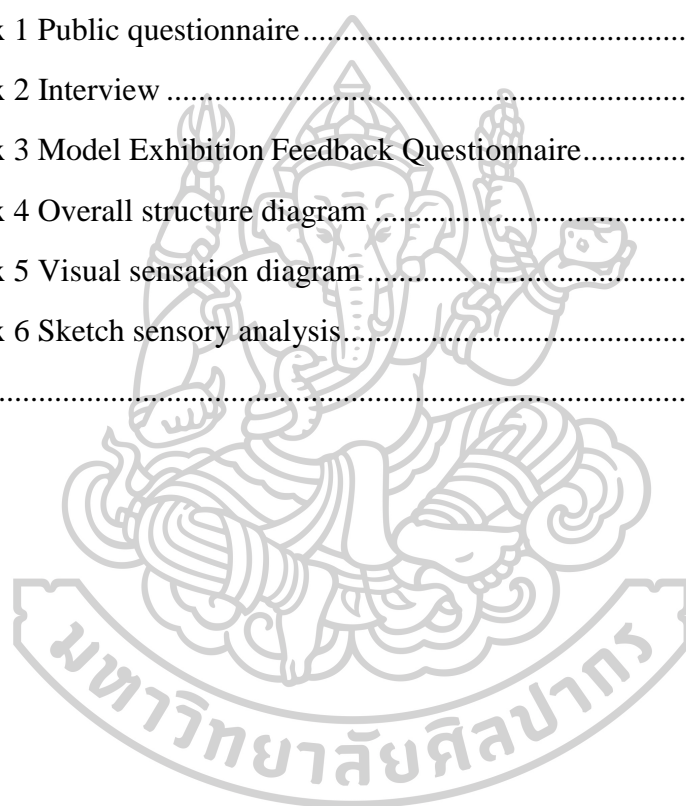


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## **Chapter 01**

### **The development of 3 dimensional artworks**

#### **1.1 Introduction**

Sculpture is a carrier of cultural construction, which not only beautified the environment, but also cultivates people's sentiment and improves their aesthetics with its artistic images. The development and construction of artworks has become an important factor in decorating and enriching the environment as well as expressing emotions. The development of sculpture can increase artistic influence. The shaping of emotional creativity reflects the artist's emotional transmission in social ideology and artistic understanding, and has a certain role in promoting and guiding people's spiritual life. Therefore, the development of 3 dimensional artwork is conducive to promoting the development of cultural industries, as well as improving people's art appreciation and relieving the pressure of people's lives.

The purpose of this study is to examine the data of 3 dimensional artwork in terms of environment, material, shape, decorative texture, color, and installation (sound, light, and electricity), to compose experimental data on the sensory aspects of the artwork and to analyze the data and visual sensory graphics for use in sculpture design. All elements of 3 Dimensional Arts can be developed and utilized in other designs. In terms of research purpose, the aim is to tell stories, collect data for people, transform tensions and use 3 Dimensional Arts to relax the mind. Changing self-perception, to change current relationships and to decrease stressful emotions in life.

As a three-dimensional space art, its definition has a multi-angle visual sensory experience. Different angles present different visual graphics outputs, and the emotions conveyed have a certain richness and associativity.

In addition, with the rapid development of economy, people's life is becoming more and more stressful. The standard of living has increased, as well as the unfulfilled spiritual life. People have increased incidence of stressful emotions, depression, latent depression and depression in their lives.

In the field of sculpture design research, the most important thing for designers and researchers is how to convey emotions and how to make people appreciate, enjoy and relax, and resonate with them emotionally.

Sculptural models are an important part of communicating design, choosing to convey the emotional story of a sculpture to a person. Through the use of sculptural models, the study attempts to tell stories and create awareness in the artwork. In terms of technique, this research hopes to combine hand-made models with scientific techniques to analyze beauty and spiritual narratives by using theories such as Hegelian aesthetics, yin and yang, artistic visual perceptual thinking, and psychoanalysis in the work.

## **1.2 Definition of three-dimensional artwork**

### **(1) What is three-dimensional?**

“Three-dimensional refers to the spatial system composed of a directional vector added to the plane two-dimensional system. Three dimensions are the three axes of the coordinate axis, namely, the x-axis, y-axis and z-axis, where x represents left and right space, y represents front and rear space, and z represents upper and lower spaces (planar rectangular coordinate system cannot be used to understand the direction of space). In practical application, the X-axis is generally used to describe left and right motion, the Z-axis is used to describe up and down motion, and the Y-axis is used to describe front and rear movement, thus forming a human visual three-dimensional sense.

Three dimensions are composed of one-dimensional and two-dimensional. Two-dimensional is, there are only two-way staggering. If a two-dimensional is superimposed with one-dimensional, three-dimensional is obtained. Three-dimensional is three-dimensional, and the front, back, left and right, up and down are only relative to the observation. There is no absolute front, back, right, up and down”. [Baidu online encyclopedia • Newton and Einstein.]

### **(2) What is art?**

“There is no universally agreed definition of the concept of art, and over time, the concept is constantly changing. Under the framework of Marxist theory, art is first and foremost a social phenomenon and social thing. It belongs to the social ideology in the superstructure. It dynamically understands the world in its own unique way. From ancient Greece to the Renaissance, art in the West refers to technology, and in ancient China, art also refers to technology. This technology is a unique form of practical production based on the correct, rational and real knowledge of things. What is commonly known as art now adopts the classification since the 18th century and integrates all categories in the category of "beauty", referring to painting, sculpture, architecture, poetry, music and dance. Looking at the concept of art in history, it can be summarized that art has technical, formal and aesthetic characteristics. From the perspective of the objects involved in art, the main body of artistic creation is the artist, the recipient is people from all levels of society, the objective object of artistic expression is society and nature, and the result of artistic creation activities is artistic works”. [Baidu online encyclopedia • This entry is provided and edited by the teaching and research team of art communication of the Central Academy of Fine Arts.]



### **(3) What is sculpture?**

“Sculpture refers to ornaments and souvenirs carved with certain morals, symbols or pictograms to beautify the environment or be used for commemorative significance. Sculpture is a kind of plastic arts.

Also known as carving, it is a general term for three creative methods: carving, carving and plastic. It refers to the use of various plastic materials (such as gypsum, resin, clay, etc.) or carved and carved hard materials (such as wood, stone, metal, jade, agate, aluminum, fiberglass, sandstone, copper, etc.) to create a visual and touchable artistic image with a certain space to reflect social life and express the artist's aesthetic sense. The art of receiving, aesthetic emotions and aesthetic ideals. By carving and engraving to reduce carved physical material, plastic can achieve the purpose of artistic creation by stacking plastic material materials”. [Baidu online encyclopedia • Lu Xun's "And Jie Ting Miscellaneous Essays II - Confucius in Modern China and Yang Mo "Song of Youth" Part II Chapter 20.]

### **(4) Result**

The difference between three-dimensional art and two-dimensional art is that the two give people different visual effects. Two-dimensional image is a lack of spatial three-dimensional graphics, it presents a flat visual graphics; three-dimensional image not only has a strong three-dimensional visual effect, and can be observed from any angle on the object, to obtain a variety of different appearance of the morphological effect, that is, in three-dimensional space to observe the object can get a closer to the real shape and structure of the intuitive results, can see more than two-dimensional flat image, more rich content, to obtain comprehensive information.

Therefore: three-dimensional refers to the two-dimensional system in the plane and add a direction vector composition of the space system, three-dimensional is composed of one-dimensional and two-dimensional, two-dimensional that there are only two directions of intersection, a two-dimensional and a one-dimensional superposition together to get three-dimensional, three-dimensional has a three-dimensional type, three-dimensional art is more three-dimensional sense of a work of art.

### **1.3 Hypothesis**

This study aims to convey spiritual emotions through three-dimensional artwork design to relieve the stress of life. In addition, the research aims to develop three-dimensional artworks that allow people to release the stress in their minds. However, the goal of the study is not only about the result of new art or aesthetics, because it should convey and persuade people to care more about the things around them, and bring people closer to each other, to animals, and to each other. The hypothesis of this study starts from these steps.

First, this study takes the development of emotional three-dimensional artworks as the object of study. Emotional three-dimensional artworks play a positive attitude towards people in their lives, and at the same time are being integrated into all corners of people's lives and are beginning to have a dialogue with them. Similarly, this study will try to introduce the spatial scale of three-dimensional artwork from the

environmental space, but the goal is to recreate the space and recreate the three-dimensional artwork model to give the viewer a new perception.

Secondly, data will be collected features such as: materials, shapes, decorative textures, colors and installations (sound, light, electricity) to form a catalog (content). The catalog will include elements from nature, culture, and life scenarios, and one can also imagine the space of the collected elements to conceptualize the aesthetics of nature. Conversely, the catalog will collect design elements that can be used in other design fields.

The study justifies the data and applies it as a source in the 3 dimensional artwork model, thus determining the knowledge about Hegelian aesthetics, yin and yang, artistic visual perception, and psychoanalysis. Aesthetics is a cutting-edge exposition of the vast field of beauty, which examines the degree of beauty in a work. Artistic and visual perception, as a visual tool for active graphic exploration, which all are ways to interpret the angles of the composition of a 3 dimensional artwork model. The combination of Hegelian aesthetics, yin and yang, artistic visual perception, and psychoanalysis are exemplar research proposed in this study. How to apply these theories to 3 dimensional artwork model design and storytelling will be a major challenge for this study. This may or may not work, and the purpose of the study is to make assumptive knowledge about the social impacted results.

Finally, the main purpose of this study is to spread spiritual emotions to people and release psychological stress through 3 dimensional artwork models. With the rapid development of economy, people's life pressure is getting bigger and bigger. The relationship between people has become more indifferent, and with the improvement of living standards, people's spiritual life is not satisfied. This leads to limited spiritual support and lower the numbers of suitable place to unwind and relax. For example, in 2019, the emergence of Covid-19 has cast a psychological shadow on people. Until today, Covid-19 has existed without being resolved. The emergence of Covid-19 has had an impact on people's physical and mental health, especially psychologically. On the other hand, there are things we can do in our position as researchers to use our skills and knowledge to get the message out to people.

#### **1.4 Significance of Problem**

At present, people's quality of life is not compatible with modernization and cannot meet the people's growing needs for a better life, such as insufficient public space, alienated interpersonal relationships and weakened cultural memory. The maladjustment of these life experiences will have a greater impact on society and psychology.

But how to create three-dimensional artwork that suit people? How to create emotional Sculpture that relax people? How do environmental spatial variables respond to the development of sculpture design? What are the physiological and psychological relaxing effects of tension? These questions have become hot issues in academic research today, and their significance lies in the questions addressed in this study. This study is dedicated to the development of emotional sculpture in material selection, shape images, concave and convex texture, color, and installation (sound, light, electricity) experiments, and to the emotional transformation through the emotional output of sculpture in the environment.



Three-dimensional artwork can play a role in relieving stress and can be used to enhance people's life sentiments.

Three-dimensional artwork incorporate various perceptible artistic elements, such as sound, light and electricity, in the visual senses. This increases the interactivity of the work.

Three-dimensional artwork interactivity brings people closer to the sculpture.

On the psychological level, artworks can transmit the emotion and meaning expressed by the sculpture itself to the viewer and transform through the viewer's psychological activity to release the inner emotion.

Three-dimensional artwork is not only a purely aesthetic enjoyment, but also a cathartic outlet for the release of artistic and expressive representation.

In general, the development of three-dimensional artwork helps to alleviate social anxiety brought about by rapid social change, gives people something to fall back on, and enhances their social cohesion.

## **1.5 Objective**

1.5.1 To study and analyze the technique and the transformation of visual sensation in three-dimensional artwork.

1.5.2 To design three-dimensional artwork with personal interpretation elements.

1.5.3 To create the three-dimensional artwork prototype to analyze personal interpretation.

## **1.6 Scope of research**

1.6.1 Specific as a simulated space for a research area at the gallery (Gallery of Art and Design, Faculty of Decorative Arts).

1.6.2 Collect data from environment, material, shape, decorative texture, installation (sound, light, electricity), and color.

1.6.3 Analyze the data and parse the context for material selection, shape exploration, texture decoration, installation assembly, and color analysis as a catalog and design element.

1.6.4 Apply knowledge of Hegelian aesthetics, "yin and yang", artistic visual perception, and psychoanalysis to create three-dimensional artwork.

1.6.5 Use three-dimensional artwork to communicate aesthetic sensibilities, release psychological pressure, and transform to people's interpretation.

## **1.7 Research methodology**

The development of three-dimensional artwork is for emotion. The research method is divided into four stages as follows.

### 1.7.1 Data collection

In the study of sculpture, a literature review and field investigation were used. The researcher not only accumulated cases and knowledge of emotional sculpture construction from the literature, but also conducted expert discussion meetings in combination with field interviews with experts. The data obtained from both methods were then organized to obtain the influencing factors and to distill the themes of the cost study.

### 1.7.2 Questionnaire

The researcher conducted a survey of stakeholders through questionnaires and interviews to determine the key points of sculpture design: environment, material, shape, concave and convex texture, color, and installation (sound, light, and electricity) analysis.

### 1.7.3 Data Analysis

The collected data was analyzed and it was found that sculpture has a better effect on human emotion transformation through the combination of environment, material, shape, concave and convex texture, color, and device (sound, light, and electricity) to release tension. All the collected data and research results are integrated and transformed into human emotions to create new sculptures to meet people's spiritual emotions and aesthetic needs, as well as to release stressful emotions.

### 1.7.4 Design Experiment

The three-dimensional artwork design themes collected in this experiment were consistent with the development of the emotional sculpture concept design, and the sculpture design strategies were adjusted on the basis of the experiment respectively. During the experimental design process, the problems in each stage were found, and the feedback was recorded, analyzed, adjusted and summarized.

## 1.8 Result of research

1.8.1 The main reason for the research is to give people a new understanding of three-dimensional artwork and to bring it closer to them. The result of the research is to transform emotions and release psychological stress through three-dimensional artwork.

1.8.2 This study can reflect the hidden art interpretation psychological contradictions of urbanization, leading to a sharp rise in the stress of people's lives. People can relax their inner stress through the emotional transmission of three-dimensional artworks.

1.8.3 The study can also provide information as a catalog for collection and can be extended and applied to the design field and education field.

1.8.4 In terms of the technical field of study, the study can combine six techniques: environment, material, shape, concave and convex texture, color, and installation (sound, light, and electricity). The results of the work can demonstrate the academic disciplines of several fields of design, presenting knowledge at different standards that benefits broad range of people's interests.

### **1.9 Limitation of the research**

The design of the three-dimensional artwork combines various perceptible artistic elements such as literature, music, and art, revealing a three-dimensional artwork that focuses on interactivity and incorporates various technological elements to increase the interactivity with the viewer. Due to the limitations of the scale of the study and the researcher's own professional background, this study does not elaborate on the architecture. At present, three-dimensional artwork has not only aesthetic functions, but also practical functions of architecture, and at the same time, it supports the application of architecture. Three-dimensional artwork enters into life through art forms, merges with the concept of architectural space, and can generate new ideological souls.

2019, due to the Covid-19 pandemic situation. The "zero distance" socialization and quarantine policies associated with Covid-19 have drastically reduced the amount of space available for people to move around. For example, China has a "zero policy" (i.e., zero infections) in place to control the epidemic. The researcher has limited to access to the actual public spaces. The researcher turned out to explore the individual study of Three-dimensional artwork elements and the exploration of Three-dimensional artwork techniques and its analytical processes.

### **1.10 Key words**

From three-dimensional artwork serving the ruler to three-dimensional artwork serving the public now, it has undergone a long evolution, and from the original traditional three-dimensional artwork to the current evolution of contemporary three-dimensional artwork, through the innovation and change, collision and integration of artistic trends. Finally, it forms an emotional, conceptual, thematic and installation art form.

three-dimensional artwork, Visual sensation, Stimulating transformation, Stress release.

“three-dimensional artwork”- In short, people create new and beautiful things in three-dimensional space by means of art objects and art works.

“Visual sensation” - by a visual projection toward the image of the imprints on people's retina, and finally by the retinal nerve to transmit this information to recognition through the brain, which can leave a deep impression on the viewer. this expressive sensation can be shown through the shape, color, etc., directly to the visual senses.

“Stimulating transformation”- as a psychological process, after the exposed and interaction with people or objects, the reflection based on emotion is produced with the change of time and state of affairs.

“Stress release”- through the perception of things, the inner stressful emotions are transformed into the motivation of behavior.

## Chapter 02

### Theories and Literature reviews

This study aims to investigate theories, which can be integrated and applied to the emotional design of three-dimensional artwork. Among them, Hegelian aesthetics, "yin and yang", artistic visual perception, and psychoanalysis are the main directions of the research and are experimented and applied within the works. In addition, this study analyzes case studies in the field of landscape three-dimensional artwork.

#### 2.1 Definition of the beauty of art

"The assumption underlying every philosophy of art is the existence of some common nature present in all the arts." [DeWitt H. Parker, "The Nature of Art," reprinted in E. Vivas and M. Krieger]

The beauty of art is embodied in a "characteristic". To define "beauty", one must focus on the elements that make up this "character". "Character" means that the beauty of art is something that is different from the dull, everyday individual. The individual thing is personalized, so to speak, precisely because it consists of parts of a different nature. We rely on form, physique, movement, posture, grooming, expression, place, color, light and shadow, and contrast of intensity to distinguish things," character. This artistic principle requires that all individual elements both stand out and serve the overall content, becoming an integral part of it, otherwise they are redundant. [Aesthetics; translated from Friedrich Hegel (2016) by Kou Pongcheng].

"An expression has meaning only in the stream of life." The meanings of a concept, such as "art," can best be determined by studying its actual use by ordinary human beings as they go about the business of living. [Norman Malcolm, Ludwig Wittgenstein, 1958].

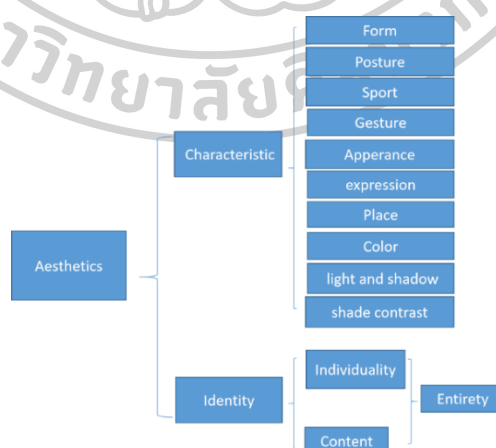


Figure 1 : Overview of art aesthetics. Diagram by researcher,2021

### **2.1.1 How does Hegel's aesthetics reflect the beauty of three-dimensional artwork**

"Science, philosophy and art, are all moving towards the highest purpose of the mind, approaching it and plucking it. We must admit that man is capable of being aware of the existence of his mind, and then of what is produced by it. Art and works of art are projections of the mind; they are sensual things on the outside and the mind on the inside. In this respect, works of art are closer to the mind than nature. One knows oneself from the appearance of sensual things, but also from the other side, from one's own otherness, from one's own opposites. What is externalized remains reduced to the mind. Therefore, art is something that helps one to know the highest purpose of the mind". [Aesthetics; translated from Friedrich Hegel (2016) by Kou Pongcheng].

If we look at the beauty of nature, we may find that it is related to human emotions, just as we see mountains, rivers, snow and ice, and our brain becomes aware of its unconditional beauty. That is because the imagination of the beauty of the natural landscape has been subconsciously burned into our mind. In Hegel's claims, aesthetics, aesthetics does not include the beauty of nature. Because he believed that the beauty of art is higher than the beauty of nature. However, sculpture is a three-dimensional art, which is capable of taking the place of space, and it can further bring the artistic awakening of beauty by cooperating with shape and color. In order for the beauty of sculpture to be better reflected, firstly, the content of the subject must be clear, and secondly, its expression must match the meaning of this content. Therefore, the beauty of three-dimensional artwork is not only related to the environment, but also related to the beauty of things (sculpture form), sculpture in a particular environment and sculpture as one, is more reflective of the beauty of art in environmental space.

### **2.1.2 Analysis of the relationship between artworks and environment**

After the artwork is made, it needs to be translated in terms of emotional expression through the environmental location, so that the audience can receive the message that the art piece conveys to people. When installing three-dimensional artwork in different locations (indoor and outdoor), we need to consider the relationship between people, artworks and environment. The relationship between the three factors includes: the size of the sculpture, the scale of the environment, space, psychological activities, viewing angle, etc.

The formal structure design of the artwork and the surrounding environment should echo each other. The formal structure design of the sculpture ultimately determines the visual effect of the sculpture as a whole, which is also closely related to the surrounding environment. Hegel said: "A statue, a group of statues, a relief, the artist cannot create it without taking into account the place and location where it is to be placed, and has to consider its spatial and material relationship with the surrounding environment. The artist should not first carve the sculpture completely, and then consider where to place it and how to place it, but to think about this in the conception". [Aesthetics; translated from Friedrich Hegel (2016) by Kou Pongcheng]. "The scale of environmental sculpture includes the scale of the space in which the sculpture is located and the scale of the sculptural object itself, as well as



the relationship between the psychological feelings produced by both". [Chen Hui,2007]

Therefore, a reasonable form with appropriate materials, all need to consider the spatial layout and nodes of the environment, in order to make the sculpture and the environmental form a perfect combination and communicate the intended meaning.

The size and volume of a sculpture are not arbitrary, but must be scientifically designed in the context of the specific space in which its location is considered in order to achieve a perfect visual effect. Yoshiharu Ashihara has proposed a modulus of 20 to 25 meters for the design of exterior spaces. According to him, "As for the exterior space, it is clear from the actual walk that every 20-25 meters, either with a repetitive rhythm, a change in material, or a change in ground height, can break the monotony even in a large space, and sometimes it can come alive at once." [Yoshiharu Ashihara by Wang Feng. Sculpture - Environment – Art.2003]. "According to the principles of human vision, the most effective and comfortable distance to observe an objects is the distance two to four times the object's own height, where encompassed comfortable human vision between 26 degrees to 14 degrees angle." [Liu Qingan&Liu Xiulan.2013]

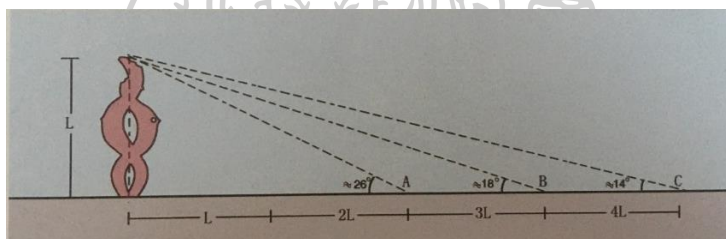


Figure 2 : Scale and volume. Image source from Liu Qingan&Liu Xiulan,2013.

Therefore, the scale of sculpture and environmental space should have a certain proportional relationship to its viewers.

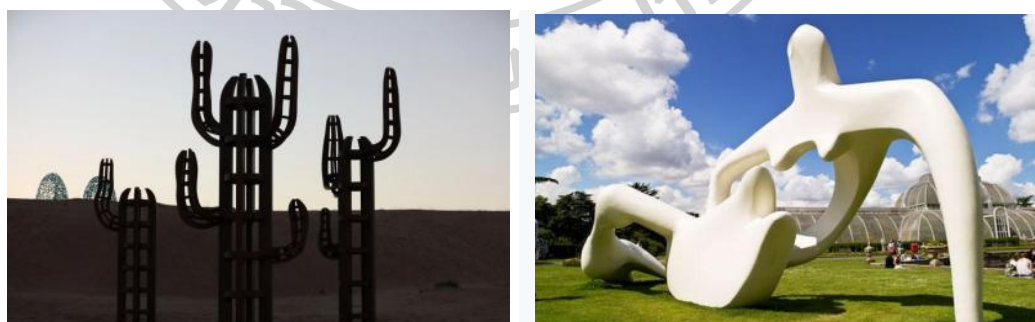


Figure 3 : Sculpture space scale, (on-line)  
<https://image.baidu.com/search/detail>

The theme of the sculpture needs to be in harmony with the humanistic atmosphere of the environment in which it is located, because the sculpture has an edifying function, and while it gives people a beautiful visual enjoyment, it also conveys a certain cultural message. "The meaning of culture is specifically humanization, that is,

the concrete embodiment of the spiritual activity of man plus the sum of creation". [Wang Feng, 2003]

Therefore, the content of sculpture and humanistic environment reflects its harmonious nature.

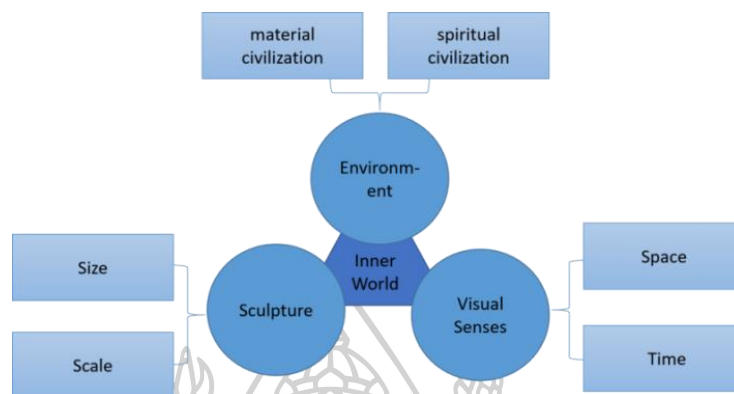


Figure 4 : Sculpture overview diagram, author draw, 2020.

### 2.1.3 How does Hegel's aesthetics reflect the spirituality of sculpture (spirituality is related to materials)

Spirituality is the original purpose of sculpture, which expresses the spiritual idea contained in it rather than the external form itself. Therefore, Hegel said that sculpture, as the ideal representative of classical art, should express objectivity in its content. By objectivity here is meant what is solid, real and indelible, that is, the essence of spirit. At the same time, Hegel adds, "Generally speaking, what sculpture captures is a sense of wonder, that is, the sense of wonder felt when the spirit infuses itself into a completely physical material, shapes this external material into a shape, and recognizes this shape as an image that corresponds to its own inner life." [Aesthetics; translated from Friedrich Hegel (2016) by Kou Pongcheng].

Sculpture is the expression of itself as a spiritual object, one that embodies the self, and the other that expresses the objective things of the self. Sculpture is not bound by volume and gravity, but walks freely on the path of the spirit itself. Sculpture is an object that occupies space, such as stone, wood, metal, etc. It is an art of three-dimensional space.

Therefore, the spirituality of sculpture can be expressed through material materials, and the spirituality of sculptural forms can be mapped through materials.



Figure 5 : Materials diagram, Resources from the author's photos, 2020.

#### 2.1.4 Analysis of sculpture materials

The spirituality of sculpture material is related to vision, and the earliest way of human perception is the tactile way of close viewing. Alois Rieg (1901) points out: "When people perceive the external world, the eye is the most used sensory organ, because the speed of the eye to acquire information is much faster than that of the touch, but the vision only delivers color stimulation, showing the chaotic form of the complex world. The complex world is composed of entities, and the boundary of the entity is the surface of the object, which has "impenetrability", people want to perceive the entity of the object, need to rely on touch to help ", [Alois Rieg, 1901]. "Every time our eyes recognize the real things, they actually give tactile value to the impression of the retina. [Bernard Berenson,1980]. Therefore, the image presented by the retina contains the texture of the material itself as well as the inherent color of the material. It's emotional input.

The material is part of the emotional expression of the sculpture. "The quality a work of art is sui generis because the manner in which general material is rendered transforms it into a substance that fresh and vital." [John Dewey,1934]. The material determines the tactile sensation of the sculpture and the inner emotion of the sculpture's metaphor. The tactile experience of the material is the most intuitive inner feeling that people have when they come into contact with a work of art.

The spirituality of sculptural materials can be conveyed to people's brains by touching their senses. Bernard Berenson used "tactile value" to describe the illusion of three-dimensional space and set it as a necessary condition of figure painting, but it does not affect our research on the tactile sensation of sculpture. On the contrary, as sculpture itself is a three-dimensional space, we need to study not only the vision of sculpture but also the material of sculpture, which not only involves the expression of sculpture language, but also the audience's come to contact with it. When we touch the sculpture, the sculpture also reflect its touches upon our skin.

In the study of the tactile sensation of sculpture materials, researchers not only need to study the perceptual senses, but also need artists to pursue the expression of material language and the actual touch of material. Physical touch can evoke tactile imagination.



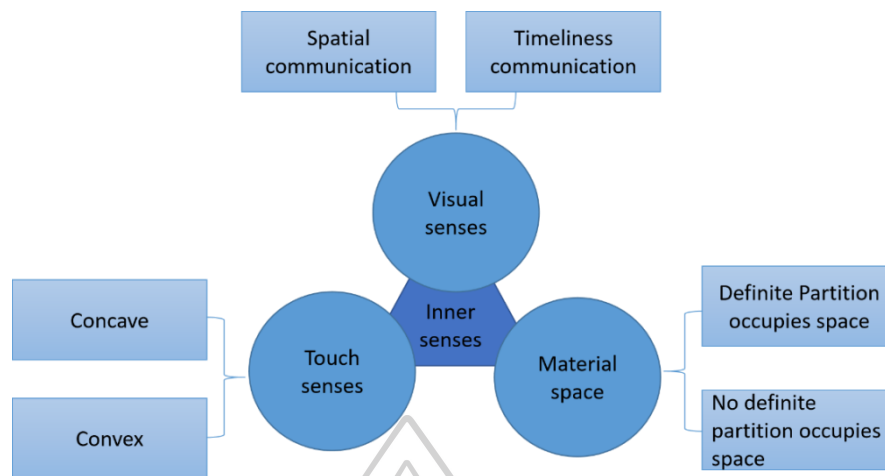


Figure 6: Sculpture material analysis diagram, author draw,2021

## 2.2 "Yin" and "Yang"

The law of "Yin" and "Yang" in Zhouyi refers to the unity of opposites as "Two Yi ", namely "Yin" and "Yang". The ancients thought: "Without Yang, Yin cannot be born, without Yin, Yang cannot be changed." There are mutual dependence, mutual restriction and mutual transformation between Yin and Yang. "Yin Yang "is also a kind of mutual balance. The" Yin Yang" balance is mentioned in the BOOK of Changes, and the overall balance of "Yin Yang "is also reflected in "Die"(揲:die) divination. In the original divination method created by the author of Zhouyi, the probability of the occurrence of a Yang line is 32/64, that is, 1/2, and the probability of the occurrence of a Yin line is also 1/2. This shows that the overall balance of "Yin" and "Yang" is one of the "Yin" and "Yang" in Zhouyi. The theory of "Yin" and "Yang" originated from the ancient classic book of Changes. It is a simple materialist and dialectical thought established by the ancients by looking up at the image and looking over the geography, and is the root of Chinese philosophical theory. "Yin Yang" also has the change rule, mainly manifests in "Yin" "Yang" mutual. [Unknown: Essence of Chinese Classical Literature, 2016]



Figure 7 : "Yin" "Yang", author draw,2020

### 2.2.1 How does "Yin" and "Yang" reflect the texture of sculpture

"Yin and Yang' are an archetype of the unity of opposites in all things. Darkness (yin) and light (yang) work together to form a whole. There is yang in yin and yang in yin, and they are opposites and unity, and cannot be separated. If we compare yin and yang to characters, yin is dark, sad and negative". [David .H.Rosen. (2015) Transforming Depression Healing the Soul through Creativity; translated by Zhang Min, Gao Bin]. Yang is bright, happy, and positive. But if we compare 'yin and yang to the undulating decoration of a sculpture, yin is concave and yang is convex. The symbolic role of darkness and light is reflected through various intrinsic characteristics of the object itself.

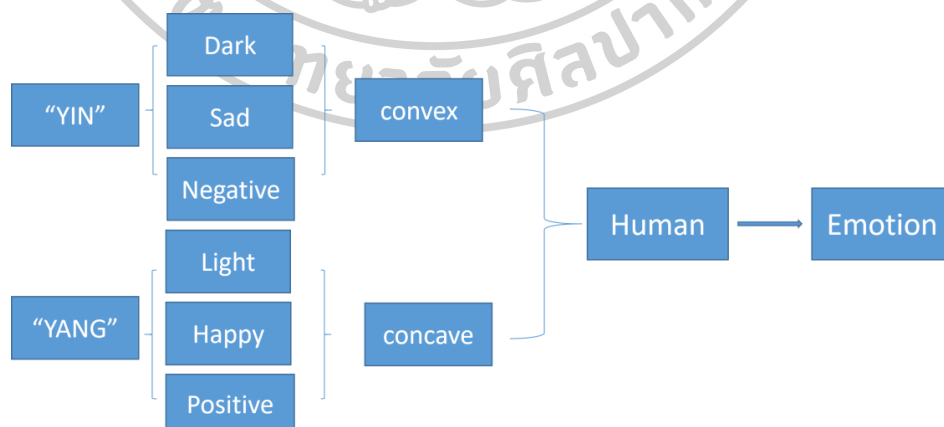


Figure 8 : Sculpture concave and convex diagram, author draw,2020

The texture can be divided into the concave and convex texture of the material itself, or the artificial excavation of the space concave and convex. Artificial texture is an emotional expression of purpose and technical means. "Craft always involves a

distinction between means to and end, each clearly conceived as something distinct from the other but related to it. The term ' means' is loosely applied to things that are used in order to reach the end. [R.G. Collingwood,1938]. "Touching the form with the limbs, one can feel the sensations of hard, soft, sharp, rounded, polished, rough, cold, warm, etc.". [Liu Jilin,2007]. The concave and convex symbolize "yin and yang", which is the embodiment of aesthetic and spiritual emotions, which reflect this intentions.

The sculptural texture of concave and convex can transmit emotional information to the brain through visual and tactile sensations. For example, when one's brain is injured and one's eyes lose the ability to discern things, one needs to touch the sculpture with one's hands, and then the texture can better transmit emotions to the brain through the tactile senses and make emotional judgments.



Figure 9 : Sculpture texture made. Image credit and courtesy of the artist,2013.

### 2.3 Art and Visual Perception

"Art and visual perception state that visual experience is dynamic! What a person or an animal sees is not only that thing, nor its color, shape, movement and size, but above all the interaction of directional tensions. These tensions are not added to these static images by the viewer himself. Rather, it is intrinsic to the nature of any perceptual object and to the size, shape, position, or color that it possesses. Because this property has magnitude and direction, it is described as a psychological "force". [Rudolf Arnheim (2019) Art and Visual Perception; translated by Teng Shouyao]. Artistic perception analyzes sculpture in terms of balance, shape, form, development, space, light, color, movement, power, and expression.

Finally, the sculptural model transmits emotions to the brain, so that people can think and transform them.

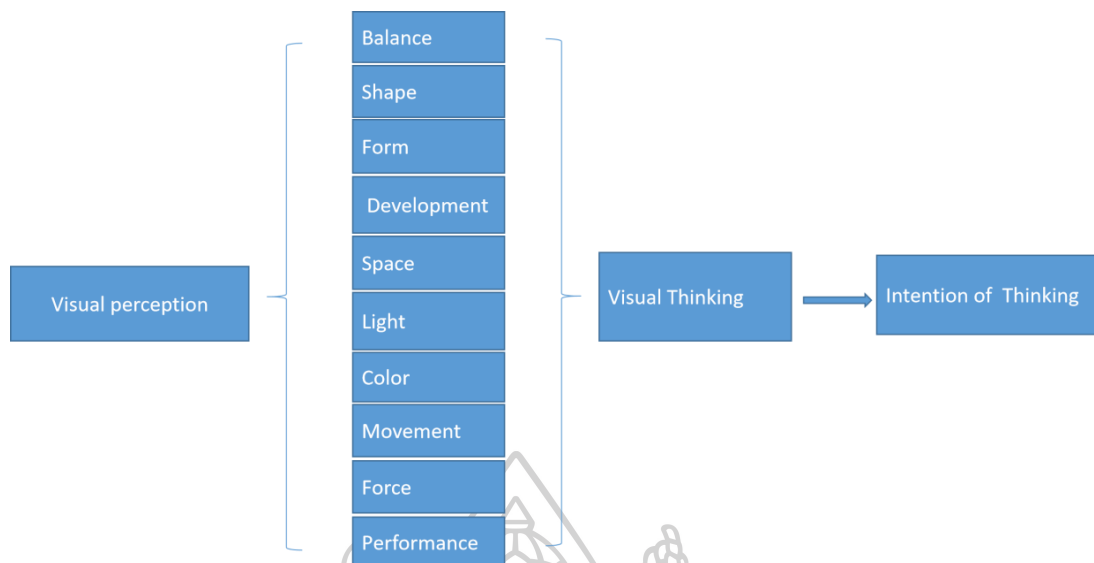


Figure 10 : Artistic visual perception analysis diagram, author draw,2020

### 2.3.1 How does artistic visual perception reflect the graphic elements of sculpture

Art forms need graphics as visual elements to be transmitted to people's brains and stimulate people's emotions to change. "The images we see in modern art are not images of physical reality, but images created by human imagination." [Rudolf Arnheim(2019)Art and Visual Perception ; translated by Teng Shouyao]. We can make the following psychological explanations: first, the intention is to reduce the complexity of the cylinder to the simple verticality of the cube; Second, it intends to transform the complex continuous whole into a whole made up of relatively independent units. Third, it is intended to reduce the many different aspects to just four simple aspects easily grasped by perception -- the reciprocal front, back, and left and right sides: Fourthly, by using this method, the sculptor can concentrate on some relatively closed units of composition at any given moment, without changing his point of observation when observing this one unit.

Figures can be classified into abstract elements and concrete elements.

"Abstract" - Figurative ideology (figurative sculpture), such as geometric form, abstract form.

"Figurative" - The figurative form (figurative sculpture) seen in all things, e.g. figures, animals, plants form or structure.

### 2.3.2 Analyze the sculpture shape

The modeling space refers to the spatial relationship between the sculptural space and the environmental space, between people and objects. Through the sculpture modeling language and people's emotional touch. In the 18th century, William Hogarth recommended the use of parallel lines to illustrate three-dimensional objects: "Those hollow forms, which are made of these parallel lines, look beautiful and extremely eye-catching. In many cases, they are more beautiful than solid works." [William Hogarth. (2017) The Analysis of Beauty; translated by Yang Chengyan].

Researchers can apply hollow forms to the design of sculptural works and use them as part of the emotional expression of the sculpture.

“Sharing in the assumption that art can intrinsically be neither cognitive nor moral, that the value of art lies in form alone.” Therefore, the starting point of all aesthetic systems must be the personal experience of a particular emotion. The objects that inspire this emotion we call artworks. The output of the stylized form of the artwork will cause the visual artwork to convey a particular emotion. This emotion can also be called aesthetic emotion. [Clive Bell,1958]. “Recommended the use of parallel lines to illustrate three-dimensional objects: “those hollow forms, which are made of these parallel lines, look beautiful and extremely eye-catching. In many cases, they are more beautiful than solid works”. [ Hogarth William. 1955]

Thus, the hollow shape of geometric forms allows the view of unobstructed space through the hollow and the perception of unoccupied spatial points.



Figure 11 : The sculpture modeling. Image credit and courtesy of the artist,2019.

"The use of the geometrical dimensions of length, width, and height is sufficient to describe the shape of any solid or the position of anything in relation to anything else at a given moment. If we want to take into account the change of things and their shapes, we should add the dimension of time to the three dimensions, making it four dimension. From a psychological point of view, we can say that although we have been able to move freely in space and time since the beginning of consciousness, the artist's mastery of these dimensions develops step by step according to the distinction." [Rudolf Arnheim(2019)Art and Visual Perception ; translated by Teng Shouyao]. Researchers can apply the contrast between straight line and arc line in geometric form to sculpture design, and take the parallel line and arc degree in sculpture as a part of sculpture emotion expression.

Therefore, the direction and time dimension of sculpture, space and time can be recognized through visual senses.



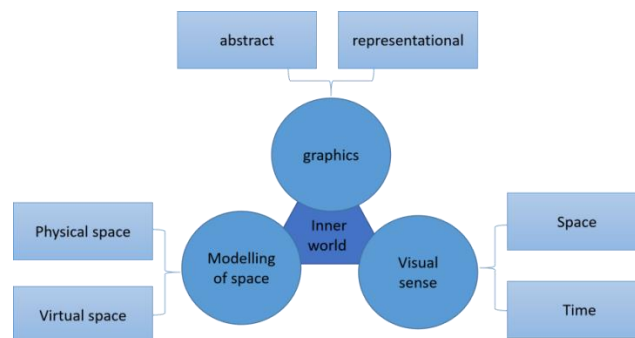


Figure 12 : The sculpture modeling overview diagram, author draw,2020.

### 2.3.3 Analysis of sculpture color

The reasonable application of color in sculpture design can increase the visual impact. "if a man at the same time to watch two same color but different brightness (or luminance is the same but different colors) area (these two areas are collocated, and the area is not too big), is an obvious change: the first is the change of the color saturation, the second is the color of the two juxtaposed area: Color visual composition changes ". [ Michel Eugene Chevreton. Gobelin]. Researchers can compare the color saturation and shade of sculpture and apply it to sculpture design, and take the color saturation and shade of sculpture as a part of sculpture emotion expression. Therefore, the brightness and melancholy of the color is determined by the brightness and purity, especially the purity of the color has a greater impact on the brightness.



Figure 13 : Color diagram, (on-line)

<http://s02.ourgame.com.cn/g1/M00/29/D7/wKgCyVOcKdyJ1dZVAAFdmaNi36E465.jpg>

Reasonable application of color in sculpture design can make sculpture more emotional. "Most people think that the emotional expression of color is by association". Rudolf Arnheim (2019) *Art and Visual Perception*; translated by Teng Shouyao]. Researchers can emotionally sum up the representative meaning of color and apply it to the design of sculpture works as a part of the emotional expression of sculpture.

Color in sculpture space can better reflect the relationship between space and the boundary line of space. "You cannot conceive a colorless line or a colorless space; neither can you conceive a formless relation of colors; the spaces are multi-colored

and so are the boundaries; you cannot imagine a boundary line without any content, or a content without a boundary line. Therefore, color helps to distinguish the forms; it better serves as a visual recognition and catches the eye. Attaching the sculpture to the emotional expression of the emotions conveyed by color. [Clive Bell,1958]

Therefore, through reasonable color language, the sculptor can make the sculpture work convey richer emotional information, effectively convey the creator's creation motivation, so as to achieve a certain spiritual fit with the audience.

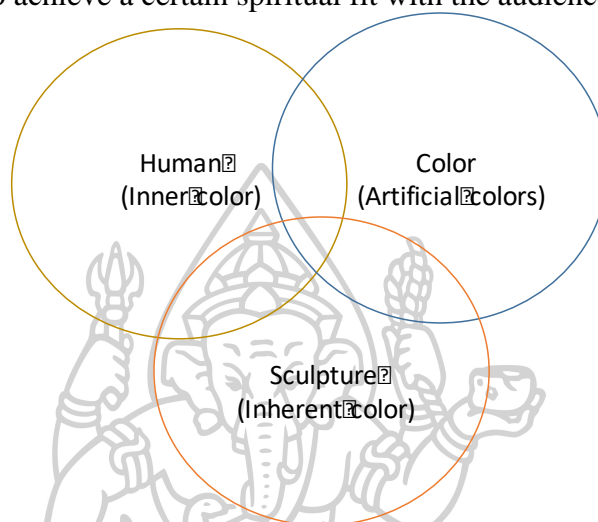


Figure 14 : Color analysis, author draw,2020.

#### 2.3.4 Analysis of sculpture installations

Light is used on the sculpture to give it a strong sense of life. “High rays, sometimes tracing dark borderlines across the surface of an object, cause the unity of the object to split; Sometimes it impishly destroys the familiar shape of objects, and produces a grotesque form that astonishes the eye; Sometimes it excites the senses greatly by creating a sharp contrast between light and shade”. Rudolf Arnheim (2019) *Art and Visual Perception*; translated by Teng Shouyao] Researchers can apply light to sculpture design, and take the light effect in sculpture as a part of sculpture emotion expression.

Therefore, the stimulation performance of light effectively affects the sensory system.

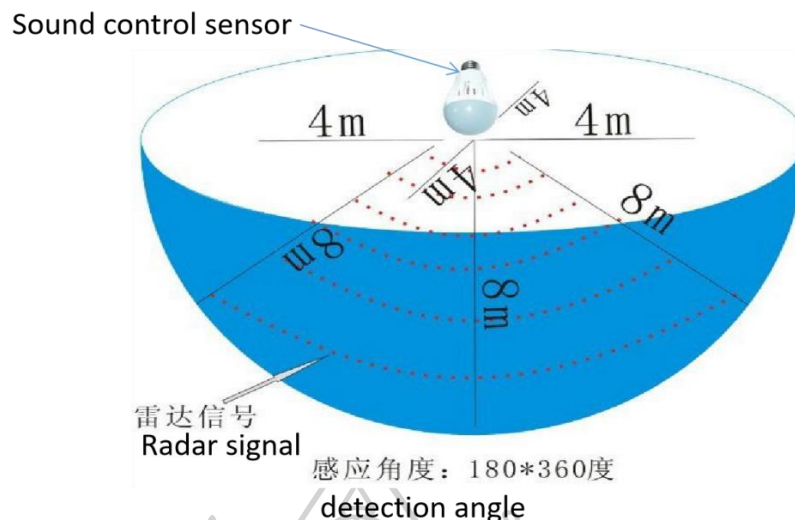


Figure 15 : The sculpture modeling overview diagram, author draw,2021.

The installation of a power system in the sculpture can increase the dynamic recognition of sensory graphics. "the nervous system creates the sensation of continuous movement by integrating the stimuli of each moment in a sequence of movements, but each piece of recorded things is still". [Rudolf Arnheim(2019)Art and Visual Perception ; translated by Teng Shouyao]. Researchers can apply dynamic system to sculpture design and take dynamic rotation of sculpture as a part of sculpture emotion expression.

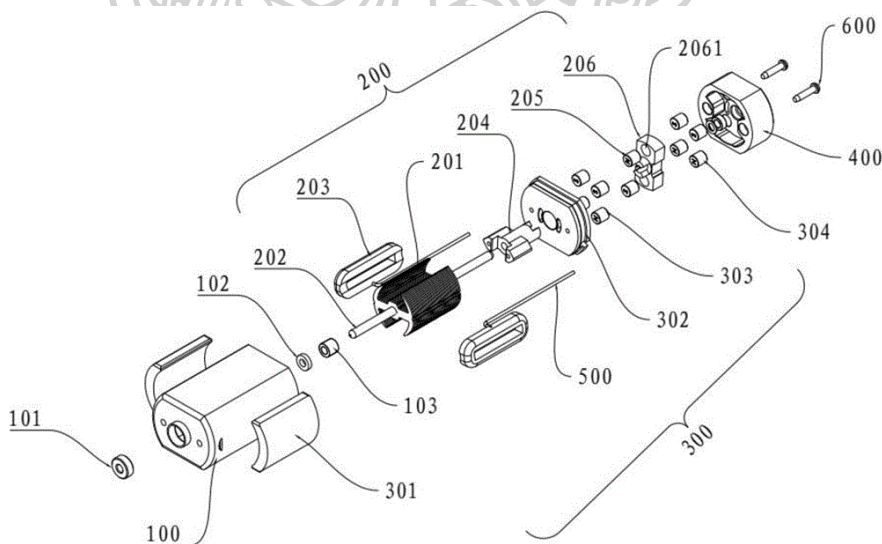


Figure 16 : Dynamical system, author draw,2021.

“In today's society, with its exponential development of intelligent technology, technological intelligence can redefine the architecture, consciousness, expression and aesthetics of the medium of art. Art can provide an emotional balance to the technological world. Sculpture installation can be seen as a kind of "emotional



sculpture", which can fully interact with people and form a kind of game. This interactivity not only increases the relationship between sculpture and people and environment, but also turns the interaction between sculpture and people into a kind of entertainment, which can be called "game". The game here can be interpreted as the interaction between the two, the experience that comes from the interaction. It is the emotional balance brought by the interaction. [Walter Bimmel]. "Art is not passive in its receptivity, but is active in its ability to project at an appropriate distance. [Gombrich, Art and Illusion (M), translated by Lin Xi, Li Benzhen and Fan Jingzhong,2011]

Therefore, kinesthetic shapes are dynamic and have a certain degree of interaction with people. Everything you see or think of is fed back to your brain as a still image.

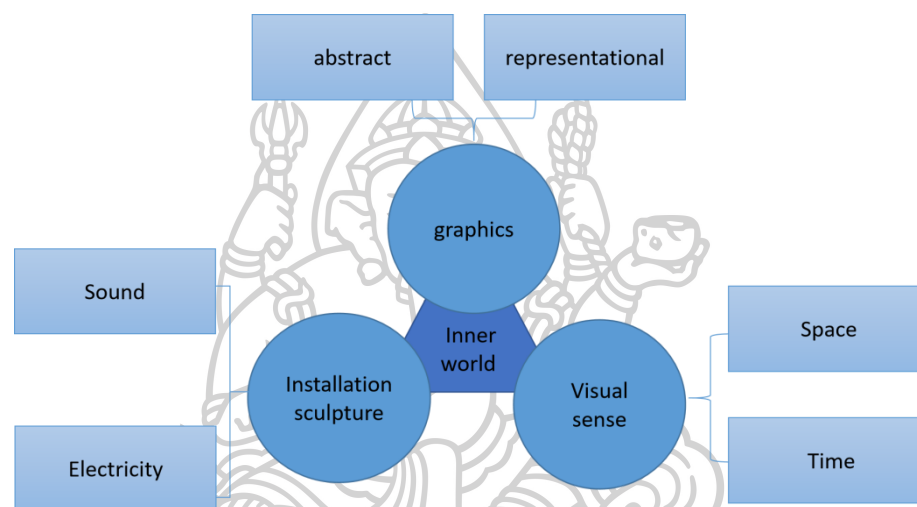


Figure 17 : The sculpture modeling overview diagram, author draw,2021.

## 2.4 Sigmund Freud: Wish-Fulfillment and the Unconscious

“The best-known productions of phantasy have already been met by us; they are called daydreams, and are imaginary gratifications of ambitious, grandiose, erotic wishes, dilating the more extravagantly the more reality admonishes humility and patience. In them is shown unmistakably the essence of imaginary happiness, the return of gratification to a condition in which it is independent of reality's sanction. We know that these daydreams are the kernels and models of night dreams, fundamentally the night dream is nothing but a daydream distorted by the nocturnal form of mental activity and made possible by the nocturnal freedom of instinctual excitations. We are already familiar with the idea that a daydream is not necessarily conscious, that unconscious daydreams also exist.” [Sigmund Freud. translated by Bao Yin Hai (2016) An Introduction Psychoanalysis;]. Therefore, the creation of sculpture should be related to the nature of imagination. The theme of sculpture cannot be separated from the fantasy of daydreaming.

### 2.4.1 Design themes for psychoanalytic sculpture

Sculpture needs a theme when it is created by artists, a theme related to inner fantasy. This theme not only needs to fit the park environment, but also needs to

fulfill the subconscious desire. "This interesting or unconscious property is our last light in the midst of the darkness of depth psychology." [ Sigmund Freud. ranslated by Tu Jiayu, Li Shiman (2016) The Ego and the Id; t] "Dreams are entirely a psychological phenomenon, the fulfillment of an inner longing." [ Sigmund Freud. (2016) The interpretation of dreams; translated by Li Li]. Sigmund Freud pointed out in "Wish-making and Unconscious"; "Phantasy-making and art"; "The Relation of the Poet to Daydreaming"; "Tragic Themes". [Sigmund Freud, 1912, Introductory Lectures on Psychoanalysis]

"Phantasy-making and Art" - Artists can consciously and unconsciously dream through the realization of wishes to meet the realization of wishes of viewers. Every longing is soon transformed into the idea of its fulfillment; there is no doubt that dwelling upon a wish-fulfillment in phantasy brings satisfaction, although the knowledge that it is not reality remains thereby unobscured. In phantasy, therefore, man can continue to enjoy a freedom from the grip of the external world, one which he has long relinquished in actuality.

"The Relation of the Poet to Daydreaming" - Imagination activities in childhood are The initial traces of The realization of wishes. Every child who plays is like an imaginative writer because he can create a world of his own. Wish fulfillment is the biggest driver of fantasy. When we appear to give something up, all we really do is to adopt a substitute. So when the human being grows up and ceases to play he only gives up the connection with real objects instead of playing he then begins to create phantasy. He builds castles in the air and creates what are called daydreams.

"Tragic Themes" - Every poet has in his head more than one motive, more than one impulse, and must admit more than one explanation of motive. Cheerful themes can directly meet the realization of the viewer's wishes. Conversely, the theme of pessimism also has a mapping effect, a million Hamlets in a million people.

"To extract clearly the principles that these techniques follow, one must have a special ability - the ability to recognize the factors associated with them and to separate them from the total phenomenon or overall behavior." [ Rudolph Arnheim (2019) Visual Thinking; translated by Teng Shouyao]

Therefore, every separate phantasy contains the fulfillment of a wish, and improves on unsatisfactory reality.in the innovation and development of sculpture, we need to satisfy the emotion in the expression of sculpture and develop the design theme.

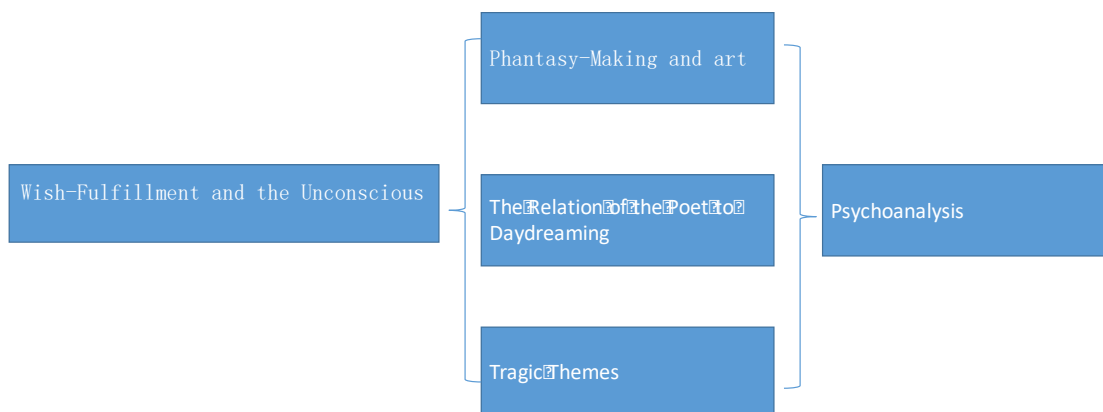


Figure 18 : Psychoanalytic sculpture theme diagram, author draw,2020

## 2.5 How to translate emotions into stress release

In the above mentioned literature, the researcher stated emotions, the purpose of which is to release stress. In combination with six emotional experiments, emotions are transformed into stressful emotions for release. "transferring emotions", i.e., making the subconscious translate into the conscious, removing inhibition, and filling the gaps of memory forgetting". [Sigmund Freud. (2016) *An Introduction Psychoanalysis*; translated by Bao Yin Hai]. "Creativity provides a means of recognizing inner stress and finding symbolic solutions that liberate people from varying degrees of suffering." [David Edward, translated by Huang Binlin and Sun Chuanjie (2016) *Art Therapy*;]

Therefore, "emotional transference" is a common psychological defense mechanism, if a person cannot achieve a definite goal and suffer from adversity, he can replace it with another goal, or through another activity, to make up for the psychological trauma, dispel the inner sorrow and pain, and enhance the confidence and courage to move forward. Thus, psychological anxiety can be solved and psychological stress can be relieved.

## 2.6 Case Study Analysis

### 2.6.1 Case study one

This is the work of sculptor Qin Jigang, "Heaven and Earth, Square and Circle", which uses two hands full of strength to present the composition of the "Taiji Eight Trigrams" in the book of Zhou Yi. The two hands are clasped tightly, full of thick and simple vitality, giving people a social consensus and a statement of life's emotions of unity of will and cooperation.

The sculptor uses the peculiarities of stone to perfection. When it comes to stone, people may think that it is dull, inflexible and relatively lacking in shape, but the artist breaks the heaviness of stone, whether it is in the form of dynamic curves, unbalanced geometric forms, or the texture of the stone surface, making his works modern and dynamic, full of lyrical poetry.

The water texture of the waves is full of the flow of the times from the uneven space, connecting us to the bridge inside, and this dynamic presentation stimulates our inner world.

Visually, it stimulates our brain. When we touch it with our hands, the texture and space texture of the stone will be transmitted to our brain with the contact of our hands, and it will resonate with the artist's emotion.



Figure 19 : "Heaven and Earth, Square and Circle", Qin Jigang  
Image credit and courtesy of the artist, 1998.

### 2.6.2 Case study two

This is the sculptor He E's work "Yellow River Mother", the work to the mother symbolizes the "Yellow River", the baby boy symbolizes the "Chinese people", the Yellow River has nurtured generations of Chinese people. The sculpture has a profound meaning, reflecting the long history and culture of Gansu; in addition, the base of the water ripples and fish texture from the ancient pottery patterns in Gansu. Visually it conquers people's eyes and shocks people's hearts. Giving the sculpture a vivid life, and the expression of the sculptor's inner feelings will become the goal of improving people's spiritual life and emotional transformation.

The color is chosen from the inherent color of the material itself. The reasonable use of color can give the sculpture a richer life connotation, so that the sculpture creator's personality characteristics can be shown, to convey the color of the artist's inner world, so that the sculpture works become more rich in human emotion.



Figure 20 : "Yellow River Mother", He E, (on-line)  
<https://www.nipic.com/show/16545745.html>

### 2.6.3 Case study three

Jing Yumin's work "Snow Dance-2022" is different from the traditional sculpture's typological expression, using aerodynamics combined with the imaginary shape of "snowflake", running in a quiet environmental space, presenting a subtle and lyrical visual experience.

It gives people a poetic association of infinite vitality and passion and romance in the craggy winter. The "snowflake" device is moving and dancing under the action of wind. Like a beautiful jade butterfly, dancing and flying; and like the vast stars in the vault of the sky between the flow.

The use of colorful light, so that the dark night stars flashing, the viewer fully feel the night of the depressed inner gray area, but also through the use of color so that the viewer to achieve emotional resonance.



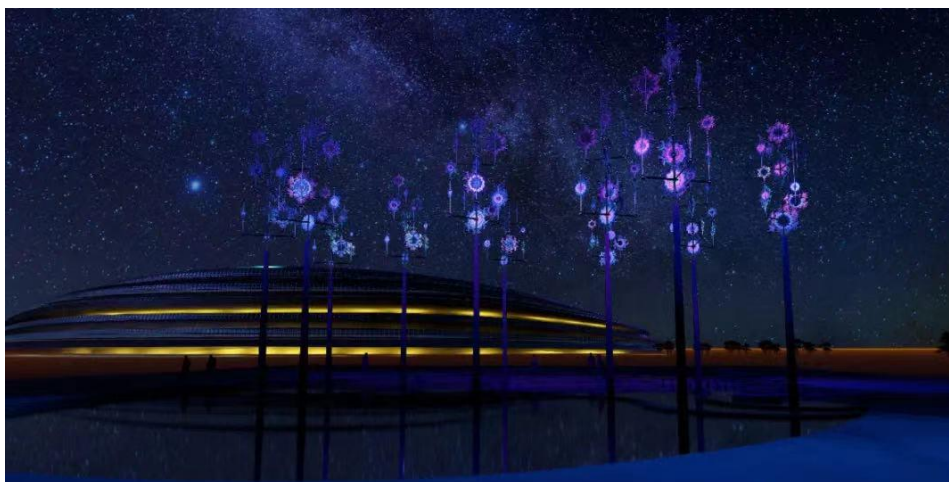


Figure 21 : "Snow Dance-2022", Jing Yumin. Source from Contemporary Urban Art,2022.

### **2.7 Analyze emotional sculptures that release stress (Sculpture installation interactivity)**

The innovation of sculpture cannot be separated from the combination of environment, material, shape, concave and convex texture, color and installation (sound, light and electricity). The integration of these six different emotional expressions can better highlight the integrity of emotional sculpture and have a better effect on the transformation of human emotions to release the pressure of emotions.

The emotion of the sculpture needs to increase the interaction between the sculpture and people, interactivity can make it easier for people to participate in it, immerse themselves in the emotions conveyed by the sculpture. The interactive feature requires the placement of kinetic devices (sound and light) in the sculpture.

The use of light can infuse it with the artistic blood of its creator, bringing light and shadow into the family of new forms of contemporary art. The creator can use light to create a completely independent form to express his or her inner feelings and attitudes, or to combine different artistic themes to create different forms of art.

The use of sound can better transmit sound waves to people's ears, attracting their attention and resonating with them, so that the melody of the sound can be felt even from a distance.

The use of power system can make the sculpture rotate and drive people's body rhythm to dance with the sculpture, to further increase the interactivity of the sculpture.

Art and technology seem to have no direct intersection in the process of human civilization, like two parallel lines, but you have to admit that their relationship seems to have no nodes, but in fact is closely linked. By integrating sculpture with technology and increasing the interactivity of sculpture, we can relieve stress more effectively. It allows people to forget the painful gaps in their memories through the interactivity of the sculpture.

## 2.8 Results or characteristic of three-dimensional artwork

The shape of sculpture affects people's visual system, and different shapes convey different emotions to people. Different shapes present different spatial and temporal dimensions and present different visual imagery to the human senses.

The use of installation (sound, light, electricity) in sculpture can further increase the interactivity between the viewer and the sculpture, and the interaction of light and sound can better bring people closer to the sculpture and the distance between the sculpture and people.

The use of color in sculpture needs to be combined with the sculpture itself to convey the unity of emotion, each color represents a different heart meaning, sculpture emotions need to be consistent with the color emotion.

The research content of the above literature review will serve as the theoretical basis in the experimental process, and guide the practice through the theoretical basis, which mutually proves that sculpture has a certain epochal nature to the transformation of human emotion.

Through literature review, the following 20 influence factors can be obtained from the study of emotional sculpture that relies pressure, which can be used for demonstration in the experimental process of sculpture.

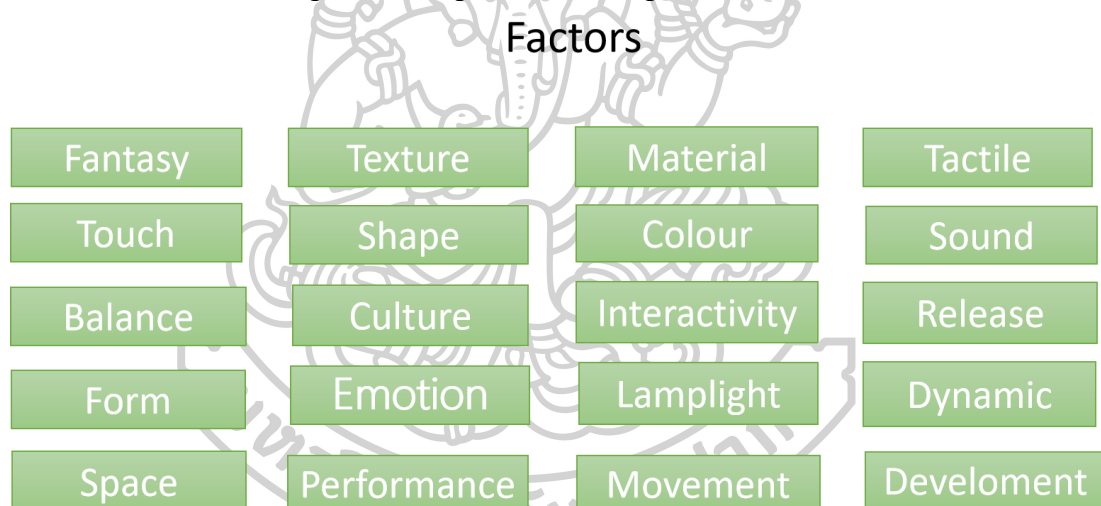


Figure 22 : Impact factor, author draw,2020.

"Balance" – It is a state of distribution that is characteristic of all activities that come to a standstill. A balanced composition, of which the relationship between the elements of shape, direction, and position is so definite that no slight change in these elements is allowed. In this case, the kind of inevitability characteristic of the whole form can also be presented in each of its constituents.

"Shape" –It is the most elementary cognitive activity of determining a thing in a particular position through one's eyes.

"Form" – Form is the visual shape of content, and it is only through external analysis that the shape can be separated from what it represents. Whenever we perceive a shape, we consciously and unconsciously think that it represents something, and is therefore the form of something, and is therefore the form of something,



"Development" – The tendency to generate the simplest shapes dominates all behavior at the lowest physiological and psychological stages of biological development. This tendency to simplify, which is prevalent in grasping and processing visual patterns, also changes with the stage of psychological development.

"Space" – A changeable distance between a visual thing and the eye.

"Light" – gives space a strong sense of life by giving it directional motion. Without light, the eye cannot see any shape, color, space, or movement.

"Color" – The perceptual nature of color in relation to color.

"Movement" – The kinetic system in sculpture, which allows for physical movement, eye movement and perceptual movement. To this, a bodily kinesthetic element is added. The latter can produce kinetic sensations on its own in certain states (e.g., vertigo).

"Force" – Force is not a foreign object imposed on the perceptual object by the subjective action of the viewer, but is an organic part of what the viewer sees.

"Expression" – The expressive visual object can be the medium of art creation.

"Material" – Different materials have different characteristics, forms, colors, specific gravity, etc., processing methods, thematic expression, modeling treatment, production engineering, etc. are influenced by the material.

"Emotion" – In the psychological process, after the contact and interaction with people or objects, the reflection based on emotion with the change of time and state of affairs.

"Release" – The transformation of internal stressful emotions into behavioral motivation through the perception of things.

"Culture" – The background of the city park and the civilization of the city.

"Texture" – The texture or decoration of a sculpture.

"Tactile" – The senses generated by touch.

"Sound" – The sounds and rhythms emitted from the sculpture.

"Interactivity" – the relationship between the sculpture and the human being, the mutual involvement.

"Fantasy" – the imagining beautiful dreams.

## Chapter 03 Methodology and Processes

This section of the study focuses on research methods and processes. This chapter explores the sculptural model's transformation of human emotion and how it is applied and developed into sculptural design along with Hegelian aesthetics, "yin and yang," artistic visual perception, and psychoanalysis. This study uses the materials, shapes, decorative texture, colors, and devices (sound, light, and electricity) of sculpture as information to collect data and provide basic information. This chapter is divided into the following six sections:

Part 01: Research area.

Part 02: Analysis of data collection.

Part 03: Development of sculpture design strategy.

Part 04: Applying theories and principles to the creation of sculpture design.

Part 05: The artwork creation.

Part 06: Analysis emotional awareness

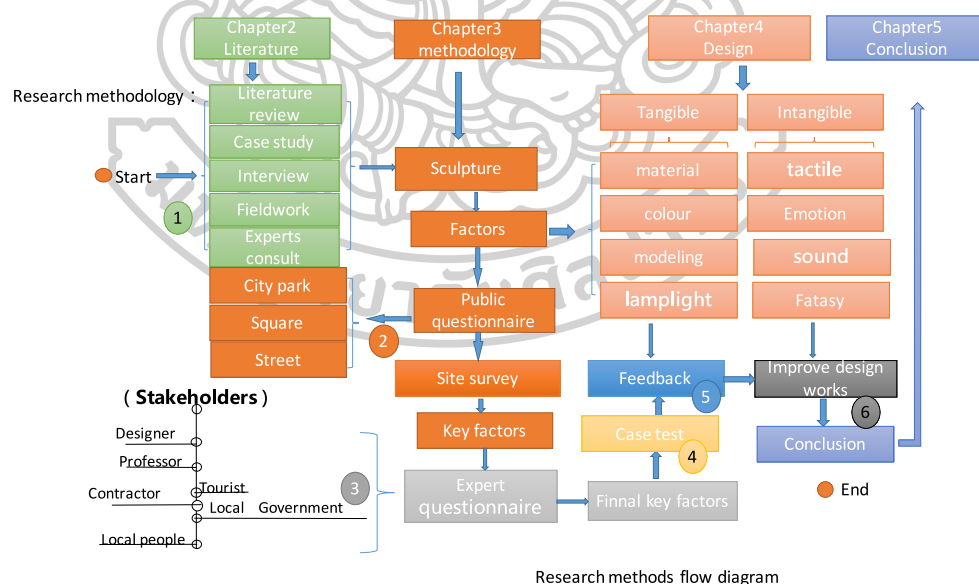


Figure 23 : Research Methodology, author draw, 2020.

### 3.1 The space restriction and limitation

(1) As a result of the Covid-19 pandemic. Countries around the world have implemented "zero distance" socialization and isolation policies, reducing the space available for people to move around.

(2) For the strict control of COVID - 19 outbreak spread, effective control of infection, cut off the route of transmission, to ensure the safety of life and property of the people, in accordance with the law of the People's Republic of China on the prevention and control of infectious diseases "emergency response law of the People's Republic of China" the law of the People's Republic of China on public security administration punishment law, the emergent public health event emergency regulations of the State Council and other related regulations, The following is the announcement concerning China's efforts to strengthen COVID-19 prevention and control:

1. Do not gather and do not go out unless necessary.
2. Cities need to be segregated from each other.
3. Strict exit and entry policies, including country-to-country; city-to-city and residential-to-residential.

Due to the geographical constraints of the epidemic policy, the researcher was unable to access the real space, therefore, the emotional sculpture model was placed in the school art gallery (Gallery of Art and Design. Faculty of Decorative Arts. Silpakorn University) as the output of the sculpture emotion.

### **3.2 Research area and collect data**

#### **3.2.1 Research areas**

In order to study emotional three-dimensional artwork and its related knowledge, this paper uses a phenomenological approach to construct a research method for the basic elements of stress release. The details of the research will be explained in detail in the design of experiments section. The methodology of this study is as follows:

- (1) The literature review uses the deductive, inductive method to study the environment, material, shape, decorative texture, color, and installation (sound, light, and electricity) of emotional sculptures from the perspective of artistry and innovation. Through literature survey and field investigation, the researcher identified the basic elements of sculpture toward three-dimensional artwork creation.
- (2) In the early stage of design and creation, a questionnaire survey was conducted and feedback data was collected from the audience groups. The visual elements that have an impact on the audience will be extracted and used in the creation of the

sculpture toward three-dimensional artwork. (See 3.2 for details of the element extraction method and process)

### **3.2.2 Data collection process**

(1) The researchers used a literature review and field visits as the research methods for the study of landscape sculpture, emotional sculpture and three-dimensional artwork contexts were obtained from existing literature and field research, and then the accumulated information was analyzed and divided into the following sections:

1. Emotional sculpture and spatial environment
2. Suitable materials and textures of emotional sculpture
3. Emotional Stories
4. Contemporary sculpture modeling
5. Color of contemporary sculpture
6. Sculpture installation (sound and light)

(2) The researcher provides knowledge of psychological suitability from case studies to fieldwork (surveys, interviews, and collections) at various institutions. In addition, visitors and local residents will be surveyed through questionnaires and quantitative and qualitative analysis will be conducted to identify factors that influence sculpture and apply them to sculpture design.

(3) The researcher will test and analyze and summarize the sculpture shape, and then analyze all the data collected as the basic knowledge. The data collected will then be analyzed and used as the basis of knowledge to create emotional sculptures.

(4) The design experiment process is the same as the survey data collection in this study, based on the data of the emotional sculpture model and the sculpture experiment creation steps are the same, and the important elements are adjusted for the design experiment and design strategy respectively.

(5) The collected elements were organized into 400 public questionnaires and 15 expert questionnaires, and the key elements were determined using Rough Set Theory (RST), Decision Making Experiment and Evaluation Laboratory (DEMATEL) calculations in turn, and applied to the conceptual design.

(6) Six regional design experiments were conducted and evaluated and modified in chronological order. In order to obtain professional opinions, models were built to

obtain feedback and to evaluate the issues that arose in each phase of the design project. Conclusions and recommendations were made based on the results of the design experiment phase. Then, the revised design was again subjected to an expert questionnaire to determine the final selection of a sculpture suitable for releasing stressful emotions, and the factors obtained were applied in the creation of the sculpture design.

### **3.3 Extraction method of design elements**

As an efficient and convenient research method, the questionnaire method is widely used in sociology, psychology, education, art and other social sciences. In social research, quantitative research from a macro perspective, any form of questionnaire survey cannot be conducted without a clear theoretical framework or rational analytical guidance. It is this theory and the various hypotheses derived from it that provide the basis for the design of some questionnaires for specific purposes.

In questionnaire research, the theoretical basis of questionnaire design and the introduction process is an important basis for readers to evaluate the quality and credibility of the questionnaire. The focus of the description should be the theoretical framework summarized by the researcher through literature analysis. It can be based on the core concepts and theoretical assumptions of the theory, or it can be adjusted or improved according to the research objectives after referring to the scales of others.

#### **Questionnaire process:**

##### **(1) Literature review**

A literature review is conducted on the respondents to sort out and analyze relevant studies and to determine the research objectives.

##### **(2) Questionnaire design**

Based on the literature review, the questionnaire was designed, the theoretical basis of the questionnaire design was sorted out, the questionnaire was designed and modified, and the final questionnaire was determined.

##### **(3) Questionnaire survey**

The sampling method was used to select the survey content.

##### **(4) Analysis of results**

The data from the returned questionnaires were analyzed, and the key elements were determined by rough set theory (RST) and decision making experiment and evaluation laboratory (DEMATEL) calculations.

### (5) Result and discussion

Summarize and explain the results of the study and categorized them to collective information on and three-dimensional artwork.

Table 1 Questionnaire survey process

Serial No	Steps	Process
1	Literature review	Literature review, sorting and analysis of the survey respondents.
2	Questionnaire design	A .Clarify the theoretical basis of the questionnaire design :propose the purpose and theoretical hypothesis. B .Test and revise the questionnaire :test relevant experts, peers or real subjects, evaluate and improve the questionnaire.
3	Questionnaire survey	A .Selection of sampling method :According to the purpose of the survey and the actual situation, select the appropriate sampling method. B .Determination of sample size :Consider the purpose of the survey and the requirements of statistical analysis, as well as the impact of time, money and other factors, and determine a reasonable sample size according to the needs of their own research.
4	Result Analysis	A .Reliability and validity analysis of the questionnaire :In the public questionnaire, rough set theory )RST (and decision test were conducted to test the reliability of the questionnaire, and the validity and key elements of the questionnaire were determined by evaluation laboratory )DEMATEL (calculations. B .Selecting the method of statistical analysis : Selecting the appropriate statistical analysis method according to the purpose of the survey.
5	Result and Discussion	Summarize and interpret the findings.

#### 3.3.1 Quantitative research: public questionnaire

The choice of data collection method in this study was an important decision because questionnaires are a valid method for systematic empirical examination of social



phenomena using statistical, mathematical, or computational techniques. The data in the quantitative, although somewhat variable, provide at least a directional method of measuring statistics.

To make the data results more accurate, participants were informed of the purpose of the survey and the contribution of the findings to the results of this study before the questionnaire was started. They were also informed that the questionnaire was anonymous so that they could fill in the data as objectively as possible. The questionnaire was quantified in terms of evaluation scores on a scale of: very good (5) good (4) General (3) Not good (2) very bad (1), and finally statistics were performed through four stages: data acquisition, data pre-score, data analysis, and analysis report. Two analysis methods, statistical and linear programming, were used to obtain the final influencing factors.

Age:18-70

Sample size:400copies

Group: Students, residents, tourists, workers

Location: Wuhan city, China

(Appendix 1: Public questionnaire)

Finally, the survey was conducted in the context of Wuhan, China, with the possibility of expatriate participants, so both Chinese and English versions of the questionnaire were used. Because people who attended a city parks for relaxation are usually residents of the neighborhood, mainly Chinese city residents, 350 questionnaires were set up in Chinese and 50 questionnaires were set up in English for foreign workers or foreign tourists.

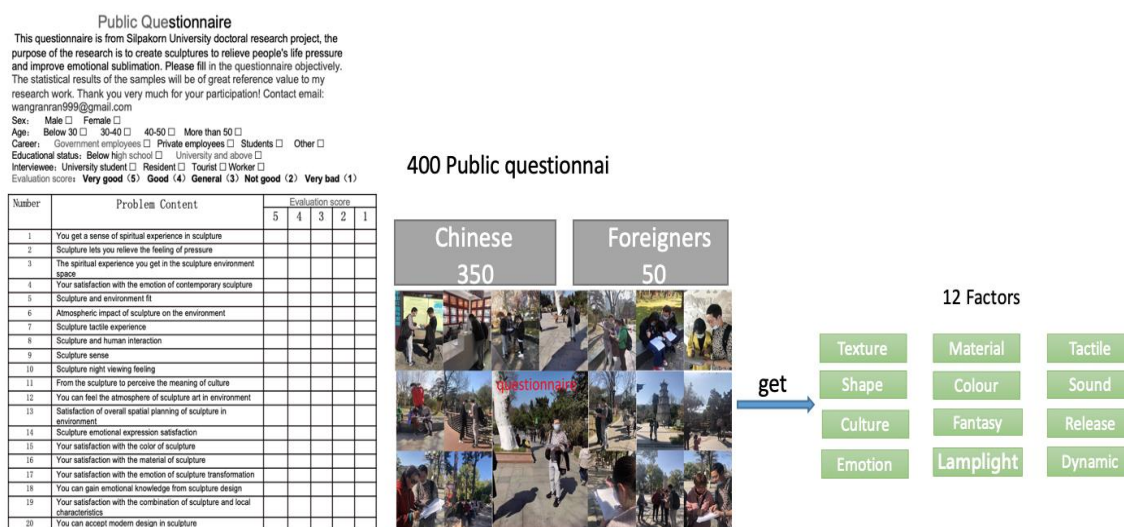


Figure 24 : The survey process of the expert questionnaire, author draw,2021.

By summarizing the data from the public questionnaire, it was possible to identify 12 of the 20 key factors considered to have an influence on sculpture design that were analyzed in the literature review, and then to focus the qualitative study on these 12 key factors.

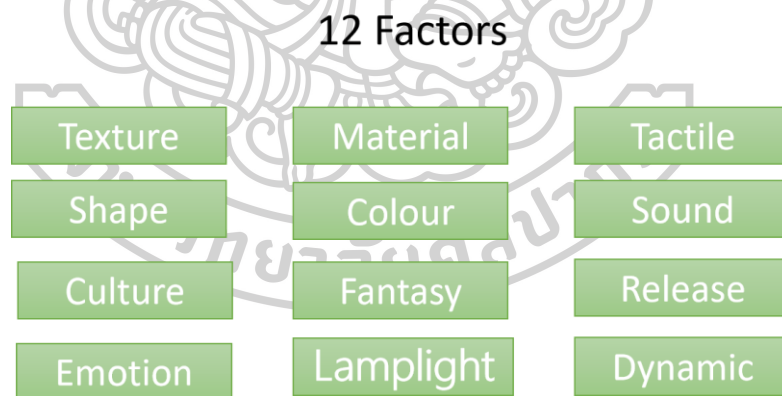


Figure 25 : The key factors extracted from public questionnaire, author draw,2021.

### 3.3.2 Qualitative research: Expert questionnaire and Interview

Qualitative research is a relatively unstructured research method dedicated to in-depth consultation on people's underlying reasoning methods and motivations. Its ultimate goal is to gain a deeper understanding of a topic from an individual's perspective. Qualitative research is exploratory in nature and helps the researcher to understand the details of a topic. In this way, the researcher can formulate a

hypothesis and then gather further information to determine or refute that hypothesis. While qualitative research can provide detailed information about a topic or issue, such research can usually only be used with small groups. In other words, qualitative research can only describe the problem, but it cannot help researchers make decisions or draw conclusions. Qualitative research can take many forms. In this study, the researcher used three methods of qualitative research to collect data.

### **(1) Conducting interviews**

Interviews are conducted to gather in-depth content from one-on-one scenarios that can be used to discover and understand hidden information about the topic.

**Subjects of the interview:** The interviewees included 3 professors, 3 sculptors, 3 aesthetic theorists. (Appendix 2 Interview)

#### **Professor Group**

Professor Qin Jigang. Faculty of Fine Arts, Guangxi University of Arts.

Professor He Zhenhai. Faculty of Fine Arts, Guangxi University of Arts.

Associate Professor Liu Yuhang. Faculty of Fine Arts, Guangxi University of Arts.

#### **Sculptors Group**

Sculptor Huo Pengfei. Faculty of Design Art, Zhengzhou University of Light Industry.

Sculptor Liu Bei. Faculty of Art and Design, Zhoukou Normal College.

Sculptor Zhen Yarei. Faculty of Fine Arts, Hebei Academy of Fine Arts.

#### **Aesthetic Theory Group**

Aesthetician Yang Yi Pu, Art Documentation Management, Taiyuan Museum.

Aesthetician Pan Baixiao, Aesthetics Editor, Guilin Magazine Publishing House.

Aesthetician Yi Guan, Management and restoration of cultural relics, Xinjiang Museum.

**Reasons for selection:** In the field of sculpture, the expression of sculpture can provide basic information from the environment, material, shape, decorative texture, color, and installation (sound, light, and electricity) as information to collect data.

**The setting of the problem:** from the basic principles of sculpture. Reference literature and field research. (See: Expert Questionnaire)

## (2) Expert opinion

Many people will seek expert opinion to understand the specificity of the subject matter.

## (3) Observational research

Observational research involves observing experts and people in their natural environment.

To make the questionnaire clear and valid, open-ended questions are usually in the form of text, which allows participants to provide unique answers and freely express their views on the topic. From the researcher's perspective, these exploratory materials allow the researcher to further identify issues that may have been previously overlooked. In addition, data were analyzed for interrelationships based on key factors extracted from the quantitative study. These data can then be used by researchers to support the specific numbers generated by the findings. These data are often more convincing than numerical averages or percentage figures.

**Target research group:** art experts, sculptors, art and design professors.

Age 25-70

Sample size: 22copies

Research location: Wuhan city, China, Internet

**Questionnaire design:** The purpose of this questionnaire is to explore which factors are essential for the innovative design of sculpture. The purpose of this questionnaire is to explore the relationship and influence between the key factors.

**Evaluation score:** Very good (5) Good (4) General (3) Not good (2) Very bad (1)

Table 2 Expert questionnaire

Project Category	Problem Content	Evaluation score				
		5	4	3	2	1
P1 Tangible Image						
C1 Material	Sensory degree of sculpture material					
C2 Color	Color sense of sculpture					
C3 Lamplight	Lighting effect on sculpture					
C4 Shape	sculpture form satisfaction					
C5 Dynamic	Dynamic effect of sculpture					
P2 Intangible Experience						
C7 Culture	Culture and environment and sculpture fit degree					
C8 Sound	Sound effects of sculptures					
C9 Interactivity	Interactivity effect of sculpture					
C10 Tactile	The touch feeling of sculpture					
C11 Emotion	Transformation of sculptural emotions					
C12 Release	Sculpture to release the emotional pressure of people					

This study focuses on affective sculptural and three-dimensional form innovation, therefore, the emotional transmission of images to people needs to be taken into account. In selecting the respondents, the researcher focused on three groups: experts in art theory, sculptors, and professors of art and design. For respondents from these three different fields, the researchers found that the experts provided very useful professional information, which was also helpful in furthering the research and designing the experiment. The interviewees included four art theory experts, six sculptors, and 12 art and design professors.

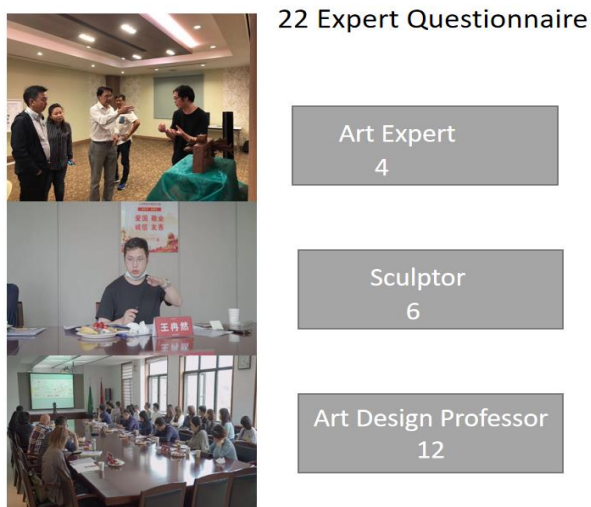


Figure 26 : The survey process of the expert questionnaire, author draw,2021. The analysis of the information from the expert questionnaires and the 12 key factors previously extracted from the public questionnaires allowed the identification of 8 design elements for the sculpture design experiment. Subsequent research and design experiments were based on these design elements selected.

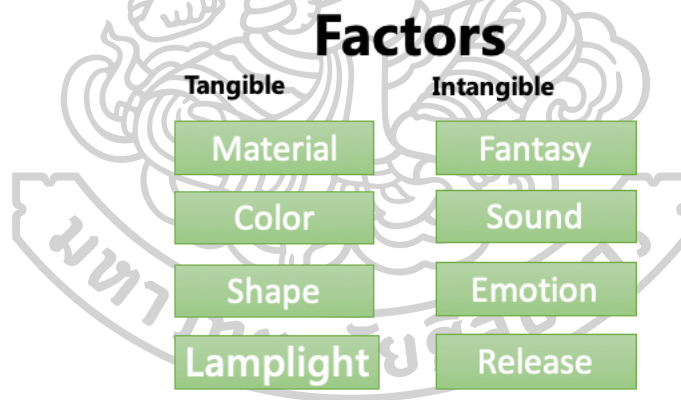


Figure 27 : The key factors extracted from the expert questionnaire, author draw,2021.

### 3.3.3 Analysis of results

On the theme of "the emotions that sculpture and three-dimensional artwork brings to people in environment," eight design elements were identified through quantitative and qualitative research based on statistics and analysis of data. The application of these design elements to the sculpture design and the proportion of influence of each element on the design are the final conclusions reached by the researcher.



The data impact ratios are as follows:

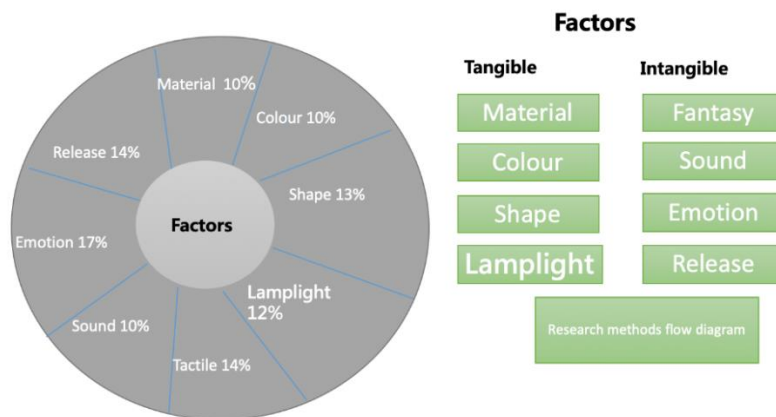


Figure 28 : Proportion of importance of design element, author draw,2021.

### 3.4 Design strategy research and formulation

This is the study of sculptural and artistic emotion of three-dimensional artwork. In the transformation design with emotion as the carrier, the first thing to pay attention to is to study the spiritual emotion (including specific environment, material, graphics, color, texture, sound and light, etc.) that sculpture gives to the viewer and how to transform it into a tangible sculpture model. The second aspect that needs to be considered is how to effectively combine intangible elements such as culture, story, as well as space and time.

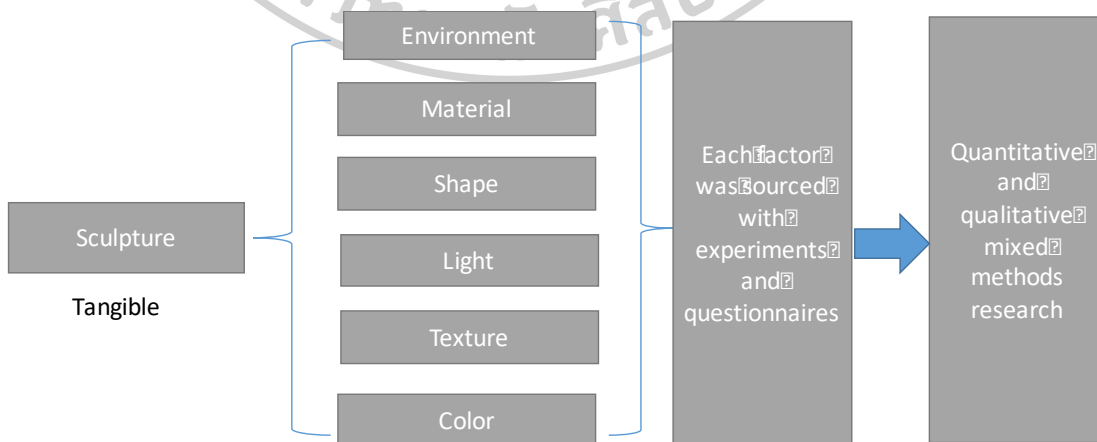


Figure 29 : Sculpture practice research, author draw,2021.

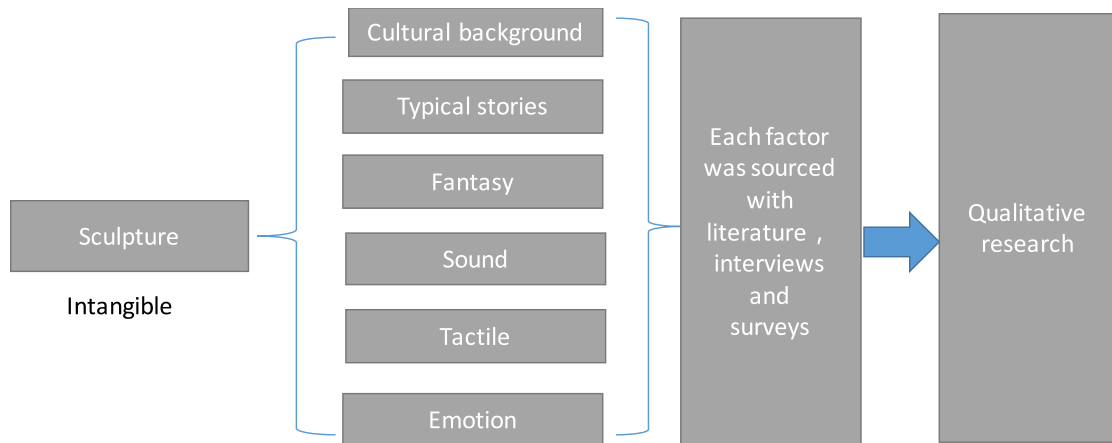


Figure 30 : Sculpture theoretical research, author draw,2021.

Therefore, the design strategy developed for this design includes the intersection of theoretical research and practical experimental design. Through the systematic theoretical study of design elements, their characteristics were extracted and translated into the emotional design of the sculpture.

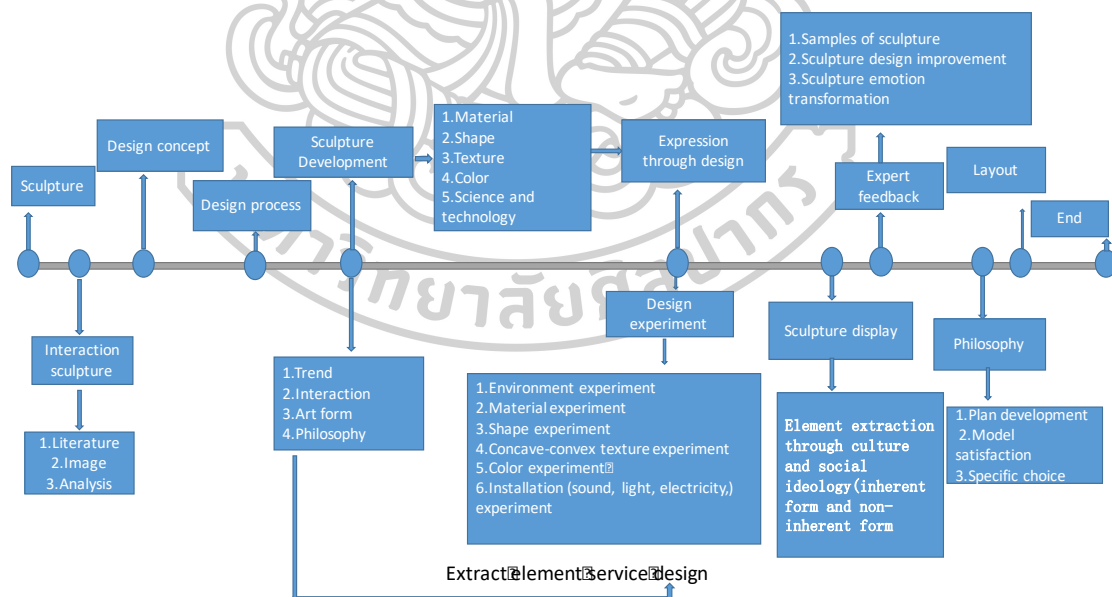


Figure 31 : Design strategy diagram, author draw,2021.

**According to the design strategy, the researcher will conduct the following six design experiments: (see chapter 4 for details)**

- (1) Sculpture specific environment experiment, and create design samples.
- (2) Sculpture material selection experiment and design sample.
- (3) Experiment on sculpture shape and create design samples.
- (4) Experimenting with sculptural texture and creating design samples.
- (5) Experimenting with sculpture color and creating design samples.
- (6) Experiment with sculpture installation (sound and light) and create design samples.

**Experimental research:** aims to test and refute hypotheses and to test theories that appear in the text. In this project, experimental research can be conducted in the form of advice given by experts, literature, fieldwork, interviews, and questionnaires to derive the key factors in the experiment. The key factors are used to create a sculpture model, from which feedback is obtained and the model is modified and improved.

**The purpose of the experiment:** to obtain the design elements of the emotional sculpture model as well as to create the emotional sculpture and three-dimensional artwork.

**Division of the experiment:** environment, material, shape, decorative texture, color, installation (sound, light, electricity) and other tests. (See chapter 4 for details)

**Design sketch and process:** 1. design sketches from things in life scenes and effective data analysis of graphics to get design elements. 2. determine design concepts. 3. experiment with design factors (specific environment, material, graphics, color, texture, sound and light, etc.). 4. Design the emotional transformation of products to people. (see chapter 4 for details)

The material and environment of the sculpture are the essential factors to be considered, and the environment determines the choice of material. For example, the outdoor environment determines the material of the sculpture to be mainly hard material; the indoor environment determines the diversity of sculpture material. Specific material experiments and environmental experiments can be found in chapter 4.



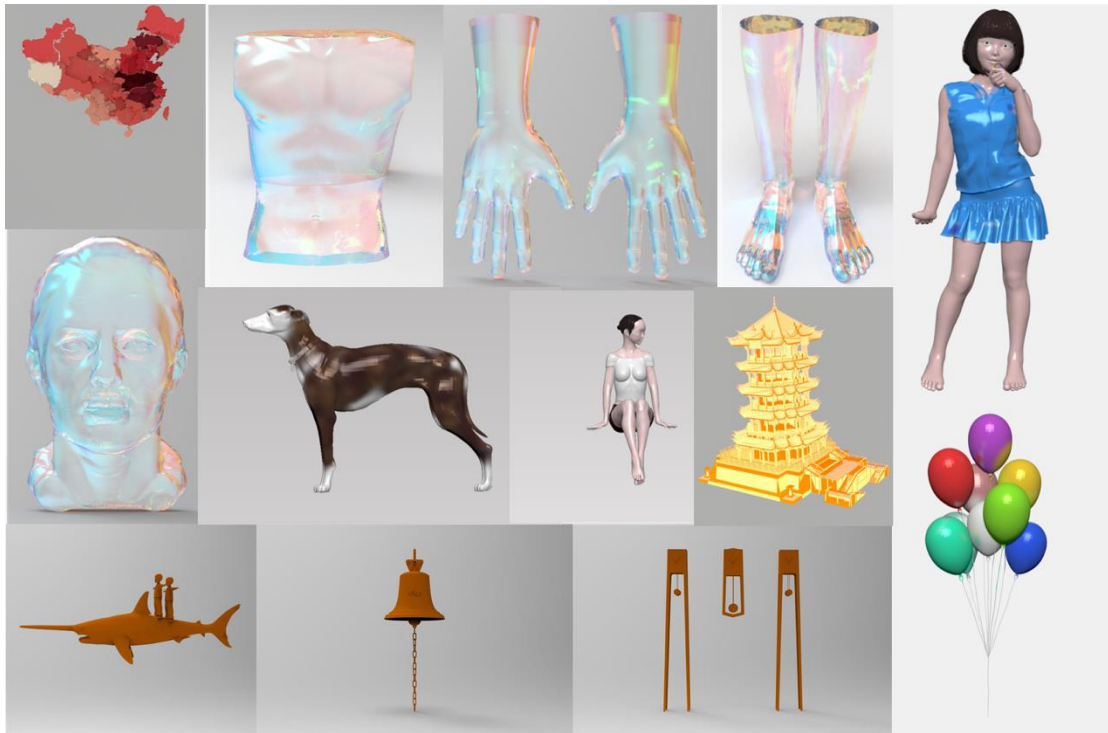


Figure 33 : Design sketches: figurative forms (partial) , author draw,2021.

**Sculpture toward three-dimensional artwork modeling test:** After the design sketch is completed, clay modeling is performed.



Figure 34 : Sculpture modeling test, author draw,2021.



**Texture treatment:** increase the tactile sensation of the sculpture.



Figure 35 : Sculpture texture production, author draw,2021.

**Mold making:** turn the finished model into plaster and resin model and process it into stone or iron model.



Figure 36 : Mold making, author draw,2021.



**Color test:** according to the emotional element of color, give different sculpture models as well as the theme color.



Figure 37 : Color test, author draw,2021.

**Installation test:** the use of sound and light can increase the vitality of sculpture, and the dynamic change of sculptural form can increase the interaction and interest of people. This is the performance of the game, but also the release of emotional stress in the interaction.



Figure 38 : Sound, light, and electricity test installation, author draw,2021.

**Environment:** Due to the spread of the Covid-19 pandemic, the researcher was unable to enter the real space, so the emotional sculpture model was placed in the gallery (Gallery of Art and Design. Faculty of Decorative Arts. Silpakorn University) as an output of sculpted emotions as a way to get feedback.



Figure 39 : Gallery (Gallery of Art and Design. Faculty of Decorative Arts. Silpakorn University) 2022.

**Model exhibition:** to obtain valid feedback on the model and sentiment ratio. (Appendix 3: Model Exhibition Feedback Questionnaire)

Table 3 Emotional sculpture toward three-dimensional artwork in the environment in the proportion of emotions.

Category	Factors	Proportion(%)	Percentage source and feedback questionnaire statistics
Sculpture (Tangible)	environment	65	
	Material	50	
	Shape	50	
	Light	40	
	Texture	43	
	Color	50	
Sculpture (Intangible)	Culture background	60	
	Typical stories	40	
	Fantasy	41	
	Sound	30	
	Tactile	25	
	Emotion	50	

Through the design experiments on sculpture environment, material, shape, texture, and color and installation (sound, light and electricity) analysis, researchers can find design problems, get effective feedback, and make timely adjustments to improve the final design.

After several experiments, the research and development of this design strategy can be used in urban parks for cultural construction, square, street and art therapy transformation, which is conducive to the synchronization of urbanization and people's spiritual life.



## Chapter 04

### Sculpture and three-dimensional artwork experiment processes

#### 4.1 Environmental experiment of sculpture

##### 4.1.1 Limiting factors in environmental research

Due to the Covid-19 pandemic, researchers were unable to enter the real space for detailed analysis of the sculptural environment. However, due to the close relationship between sculpture and environment, the transmission of sculptural toward three-dimensional artwork's emotions requires the output of emotions through the environmental space. Therefore, the researcher entered the general environmental space through the public space (Gallery) to explore it.

Sculpture plays the role of decorating the environment, and the layout of sculpture should be inseparable from the environment. The design of the sculpture to the final completion should consider the surrounding things.

##### 4.1.2 Analysis of factors considered in environmental studies of sculpture

###### (1) Sculptural layout in environmental planning

Sculpture toward three-dimensional artwork needs to convey the emotion expressed by the artwork through the environment, therefore, the art object should determine its position in the environment. The layout factors are as follows:

1. Sculpture and environment: in short, people create new and beautiful things in three-dimensional space by means of carving and sculpting three-dimensional artwork for people to enjoy, and express their perception of the surrounding environment.
2. The layout of sculpture toward three-dimensional artwork in environmental planning needs to take into account many broad factors, such as layout, type, scale and material, but it should not be too restrictive and fetter the creativity of artists.

**layout:** The position relationship between environmental sculpture and environmental space, i.e. orientation and direction.

**Type:** Thematic, monumental, decorative, functional and display sculptures in different environments.

**Scale:** the ratio between human and sculpture, environment and sculpture, human and environment, the visual perception and spatial volume of the three

**Material:** There are many kinds of materials, according to the emotion and language expressed by the sculpture, choose the material suitable for the environment.



### (2) Relationship between sculpture and the environment as a whole

The design of sculpture toward three-dimensional artwork needs to take into account the totality of the environment, which refers not only to the surrounding environment where the sculpture is placed, but also to the location of the city, history and culture, customs and other factors, as well as the coordination and unity with the public environment.

Table 4 Division of environment

environment	category	factors	summary
The natural environment	Region(City(	Geographical environment	1 .It determines people's psychological and behavioral feelings 2 .Determine the regional character and spirit
		Climatic conditions	
		Religious customs	
		humanities	
Human environment	Humanistic Care and Experience )Sculpture(	Beautify the living space of the citizens	1 .Sculpture works are the artistic shock of the perfect integration of nature and human emotion. 2 .People's psychology is influenced by space environment art
		Satisfied the spiritual needs of the citizens	
		Desire to improve the living environment	

### (3) The role of artwork in the environment

Environmental artwork becomes an important carrier of culture and art in urban space, decorating urban space, forming visual focal points, forming visual fields with surrounding environmental space and architectural space, changing contours in space, cutting space, and playing a condensing and sustaining role in space.

#### (4) Relationship between artwork and environment

The design and placement of various three-dimensional artwork should be compatible with the surrounding public environment. sculpture is required to have a public environment suitable for the existence of artwork.

#### (5) The regional relationship between three-dimensional artwork and the environment

The design of artwork needs to take into account the regional nature of the environment. Different places have different historical backgrounds, economic and cultural levels and living habits, which means that the sculpture design, the expression, materials, techniques, themes and cultural connotations of the sculpture must be combined with the natural and cultural environment of the region, carrying and reflecting the local characteristics, and play its due social functions.

#### (6) The relationship between three-dimensional artwork and environment of the times

The design of artwork needs to take into account the times, after all, the environment of different times, shaping the sculpture works are different. All public art is inseparable from the influence of natural factors, living and breathing, constantly inherited, and this is especially true of the artwork. The three-dimensional artwork has become an important part of the modern living environment, which constitutes the human landscape in the environment.

#### (7) Three-dimensional artwork and Environmental Field

To fully understand and determine the status of human subjects and the two-way interaction between human and public environment, human and information, and to form a positive interaction between artwork, sculpture, human and environment, so as to create a better living space. The relationship between artworks and the environment can be examined in the categories of: reflection, intervention, prompt, metaphor, reconstruction, and symbiosis. However, the progress of human civilization is always based on the harmony with nature. Everything is inspired by nature and the fantasies that arise from it. However, the landscape of a place is the basic expression of the culture of a certain region. Therefore, we should learn to remove the dross and keep



the essence. To make the social life and the real place in harmony, so that the contrast of things finally reaches harmony, unity and integrity.

Table 5 The relationship between sculpture and environment chart. Author drawing,2021.

	Category	Relationship	Common Point
The relationship between three-dimensional artwork and the environment	Set off	Mutual cooperation and mutual adaptation	Coordinate with each other
	Intervention	Together with the scene to form a complete organic unity, that is jointly create a "sense of field."	
	Prompt	Directivity under cultural and historical background	
	Metaphor	Reveals and reflects on the spiritual status of contemporary people or concerns about social problems	
	Reengineering	Sculpture and artwork works exist in real space and complete the meaning of the works for environmental reconstruction.	
	Symbiotic	Sculptural artwork and human behavior are symbiotic in the physical space .In addition to the relationship with the surrounding space, it also have an intimate contact with human behavior.	

#### 4.1.3 Analysis of how three-dimensional artwork intervenes in the actual space

(1) Differences between the creation of environmental artwork and the creation of pure art sculpture

1. Environmental artwork creation is a kind of art that integrates the artist's personal spiritual world with the environmental space and the audience's psychology.

2. The creation of pure sculpture artwork is a form in which artists use sculptural work to express their personal ideas and emotions.

(2) Proportion of perceptual data for sculptural artwork in environment

1. Determining the senses of experience

The location of the sculptural artwork was determined through field surveys of the environment and through the spatial scale of the environment as well as through a questionnaire. The viewing experience of the sculptural artwork in the environmental space can be determined in the form of a questionnaire to determine its important sensory factors. And the feedback of the influencing factors in the questionnaire is calculated.

2. Sensory level of the sculptural artwork in the environment. (Data from questionnaire survey)

- ① Overall planning of the environment
- ② Fit of the sculpture with the environment
- ③ The overall space of the sculpture
- ④ The sense of shape of the sculpture
- ⑤ Interactivity of the sculptures
- ⑥ The sense of night viewing
- ⑦ Modern design elements
- ⑧ Mental stress release

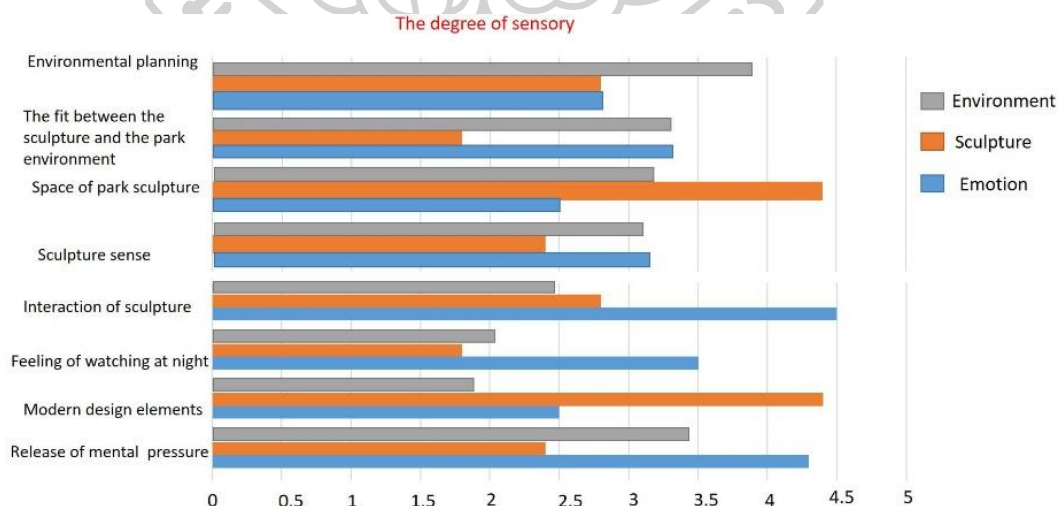
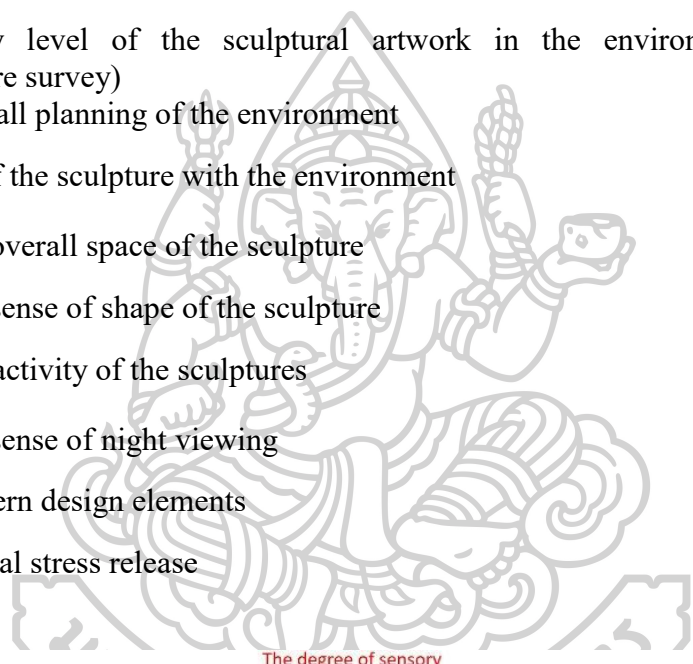












Figure 40 : Sensory diagram, author draw,2020.

#### 4.1.4 Experimental division of 10 three-dimensional artwork

The 10 three-dimensional artworks are divided into two groups of sculptures: static sculptures and dynamic sculptures.

Table 6 Experimental division of 10 sculptures

Static sculpture			
Sculpture	Title	Images	Experimental division
1	“Meditation Space”		Environmental experiment Texture experiment
2	“angels in white --hospital nurses”		Materials experiment
3	“Walking Man”		Shape experiment
4	“Clouds-Girl with Balloon”		Color experiment
5	“Perpetual Calendar -Woman and Dog”		Color experiment
Dynamic sculpture			
Sculpture	Title	Images	Experimental division
1	“peripateticism”		Environmental experiment Materials experiment
2	“Watch -Iron Cow”		Shape experiment
3	“Dreams and Walks –Camel ”		Texture experiment
4	“The Melody of Life”		Installation experiment
5	“Fantasy”		Installation experiment
Notes	See experimental procedure for details		

#### 4.1.5 Analyze the contrast of light and shadow of three-dimensional artwork in the environment

Light and shadow is a way to express the visual effect of the artwork, not only to enhance the visual impact of the sculptural work itself, but also to improve the artistic expression of the three-dimensional artwork. Sculptural work is influenced by light source to produce projection. Light sources irradiated from different angles will produce projections of different shapes in terms of size, shape and proportion, giving sculptures a silhouette effect to increase their stability in the environment.

For example: ① Outdoor sculptural works are influenced by sunlight. The sun rises in the east and sets in the west, and as the time changes, the angle of sunlight exposure changes. Here the researcher can analyze by three time periods: morning, midday and evening: in the morning, midday and evening (Night), the shadow is westward and longest in the morning; the shadow is shortest at noon; the shadow is eastward and longest again in the evening moment; the shadow size in the evening is influenced by the position of the light source.

② When the sculptural work is located indoors (Gallery), the light source is influenced by the light, and the light changes in different positions can be adjusted to reflect the emotions conveyed by the projection itself, according to the emotional purpose the artist wants to achieve.

As a result, the light and shadow of the sculpture will have different graphic effects depending on the position of the light source.

##### (1) Comparison of static sculpture and dynamic sculpture

**1. Static sculpture:** static sculpture in the environment of light and shadow presents a static state. Because the sculpture form is inherently unchanging, the projection of the sculpture is only influenced by the position of the external light source to produce changes.

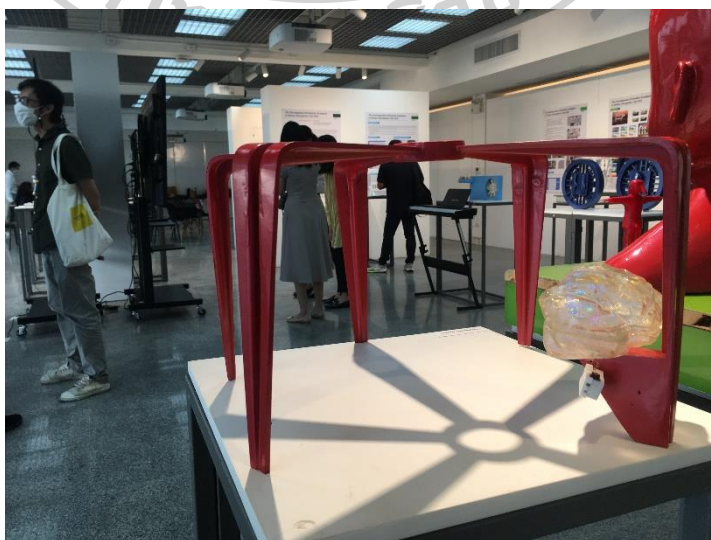


Figure 41 : Static sculpture, author installed 2022.

**2. Dynamic sculpture:** Dynamic sculpture presents dynamic changes in light and shadow in the environment. For example, the sculpture sways in the process of swinging, causing the fish to swing back and forth. The projection is affected by the dynamic changes of the sculpture to produce dynamic graphics. The change of dynamic graphics makes visual association for the audience. Visual association is an important part of expressing emotion.

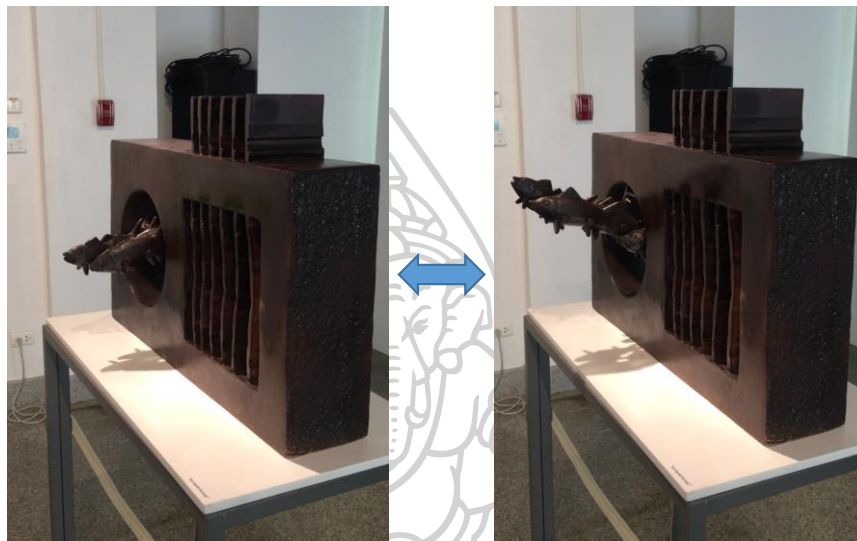


Figure 42 : Dynamic sculpture, author installed 2022.

### (2) Functional analysis of light and shadow

Shadow can create and divide space. A shadow projected onto the surface of something will turn that surface into a plane, into a horizontal, curved or sloping one, thus creating a three-dimensional space around the projected object.

### (3) Result

The light shines on the sculptural work to form a three-dimensional artwork projection. The sculpture projection is mapped onto the ground, adding a color to the ground and giving the light colored ground a few more strokes of heaviness. The sculpture projection adds a sense of heaviness to the sculpture standing on the ground. It gives the sculpture a sense of smoothness in one's senses, just as one needs balance inside. Only when one has mastered the inner balance can one better see the essence of what life gives us, can one release the inner tension, which is the emotion given to us from within, and can regulate the colors of life. The shape depends on the mutual contest between the power possessed by the structure of the stimulus and the power it evokes regarding the traces of people's memories.



**1. Similarity:** the light and shadow images of static and dynamic sculptures are influenced by the position of the light source in the environmental space.

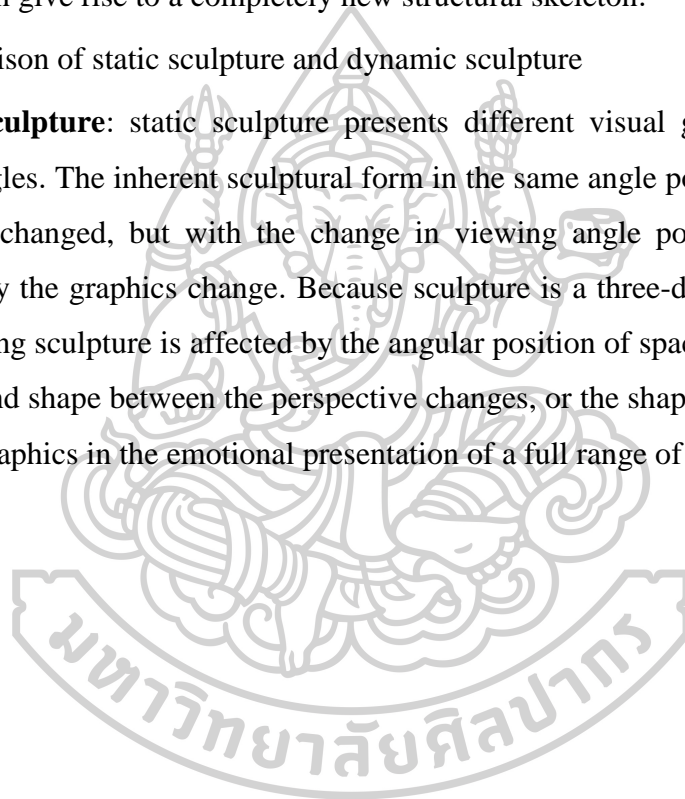
**2. Difference:** dynamic sculpture is also subject to dynamic changes in sculpture to produce gradual (continuous image fluctuations) light and shadow changes.

#### **4.1.6 Analysis of sculptural work viewing angle**

Sculptural artwork forms do not change in shape as one sees them when they remain unchanged. In some cases, however, a mere change in the spatial orientation of things can give rise to a completely new structural skeleton.

(1) Comparison of static sculpture and dynamic sculpture

**1. Static sculpture:** static sculpture presents different visual graphics at different viewing angles. The inherent sculptural form in the same angle position of the viewed graphics unchanged, but with the change in viewing angle position, the sculpture presented by the graphics change. Because sculpture is a three-dimensional space art form, viewing sculpture is affected by the angular position of space. At the same time, the shape and shape between the perspective changes, or the shape between the shade, sculpture graphics in the emotional presentation of a full range of viewing angles.





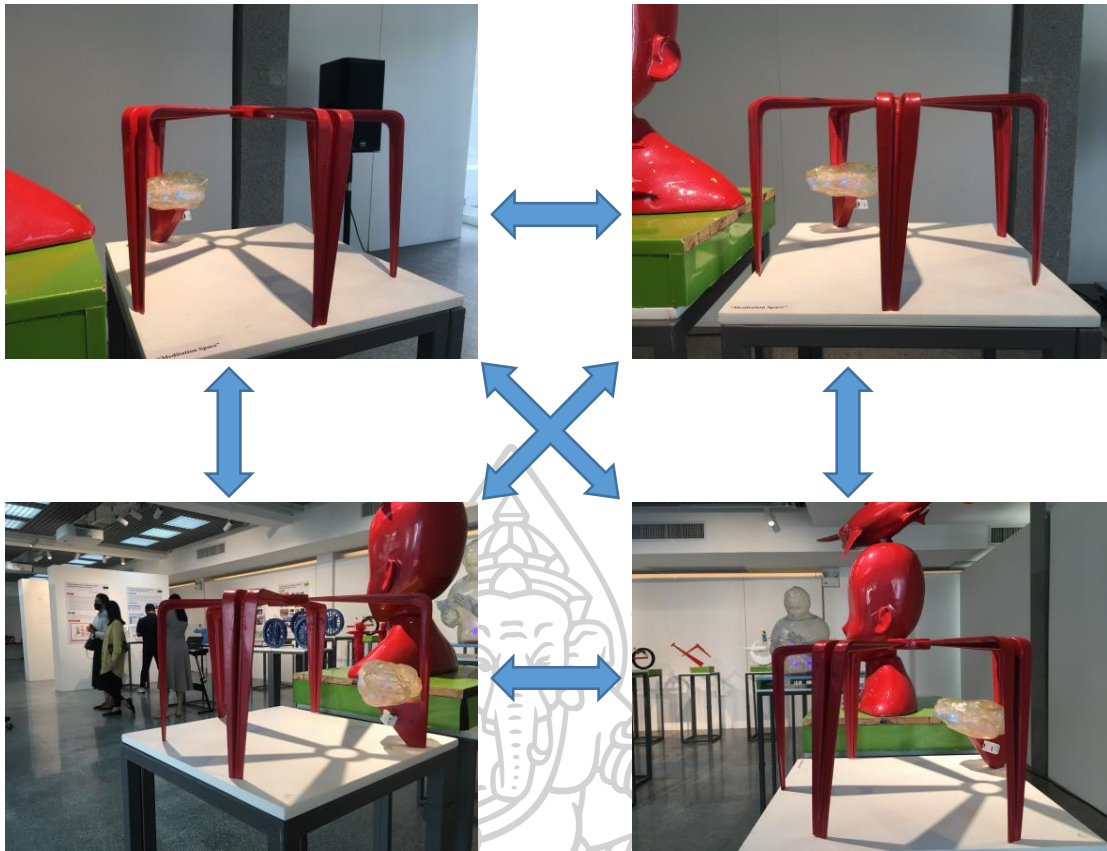


Figure 43 : Static sculpture multi-angle, author installed 2022.

**2. Dynamic sculpture:** In addition to presenting different visual graphics at different viewing angles, dynamic sculpture can also be seen at the same angle of the dynamic part of the sculpture at different moments to produce dynamic graphics (i.e.: the same angle can be viewed to the overall dynamic part of the sculpture, regardless of location, except for the overall picture of the sculpture and the environment).

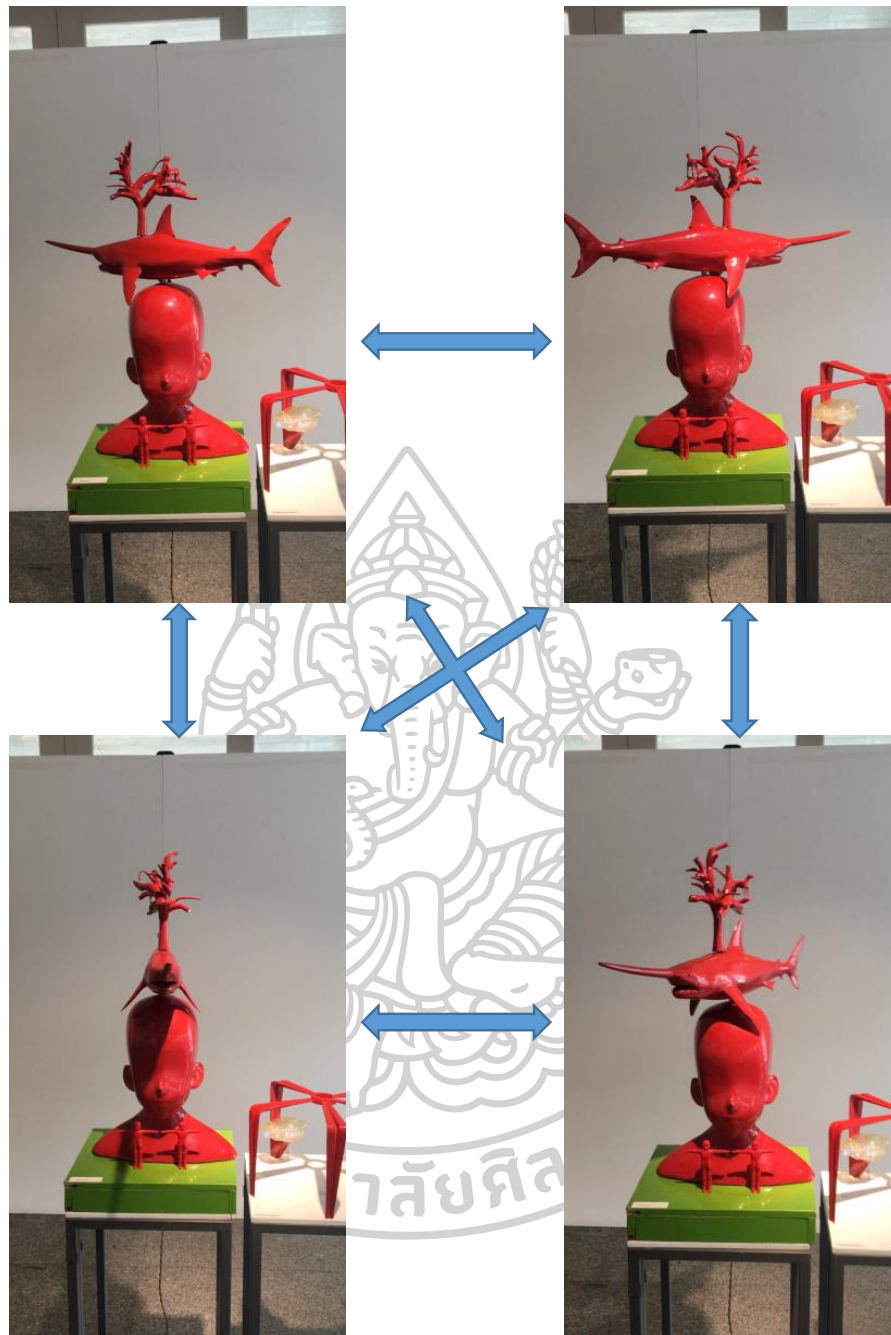


Figure 44 : Dynamic sculpture multi-angle, author installed 2022.

## (2) Functional analysis of the viewing angle

The sculpture presents a multi-dimensional and multi-angle viewing pattern in terms of viewing angle. Different positions of viewing sculptures present graphics that convey different visual experiences. The images presented at different viewing angles are subject to personal emotional factors that create storylines associated with life. Graphic associations intervene with things that individuals have experienced in their lives.

### 1. Static sculpture - static cutting

Static cut, that is: the shading of the sculpture form to part of the environmental space. Static sculptural work in the environment presents a static cut to the surrounding space, static cut by the inherent form of the sculpture in the space of the physical nature of the environment obscured (form to form obscuration) and the perspective of the viewing angle changes.

### 2. Dynamic sculpture - dynamic cutting

Dynamic cutting, the sculptural form and artworks as part of the environment space of continuous movement obscured. Dynamic sculpture in the environment presents dynamic cutting, dynamic cutting by the sculpture inherent form cutting space environment, but also by the sculpture dynamic sculpture in space movement generated by the continuity of mobile space cutting. Dynamic cutting space can contribute to the dynamic continuity of the image presented by the sculpture. For example, you can imagine that the camera is recording a short film, and then the short film will be screened. The playback of the video is a continuous moving image, which produces a continuous image that is captured by the human retina to obtain information. The continuous image produced by a sculpture in motion gives a certain amount of chance and selectivity to the image when capturing graphic information.

### (3) Result

Sculptural artworks present different images from different angles. The emotions conveyed to people by sculpture images are influenced by the position of the viewing angle.

Sculptural artworks not only embellishes the environmental space, but also brings aesthetic interest to people's leisure life. The environment supports the beauty of the sculpture, and the sculpture embellishes the environmental space, and the two cooperate with each other. From this, we can find that every visual experience is placed in an environment composed of space and time, just as the image of a thing is influenced by the things around it. In life, don't let your dreams kidnap your life, don't let the busyness take away your happiness, and let the sunshine in your heart bloom quietly no matter what!

#### **4.1.7 Psychoanalysis of the human, environment and sculptural artwork senses**

Visual experience is dynamic! What a person or an animal sees is not only a static thing, nor its color, shape, movement and size, but above all the interaction between directional tensions; on the contrary, it is dynamic, fluctuating with the size, shape, position or color of the sculpted image and the space of its surroundings, forming different pictures of imagination. Because of this nature of magnitude and direction, it is described as a psychological "force", i.e., imagination and fantasy. Therefore, the relationship between sculptural artwork, environment and people is inseparable. When we create a sculpture, more forms are activated, forming images in different spaces. The shape of this image stimulates the sensory system and the mental information is mapped by the space of the form.

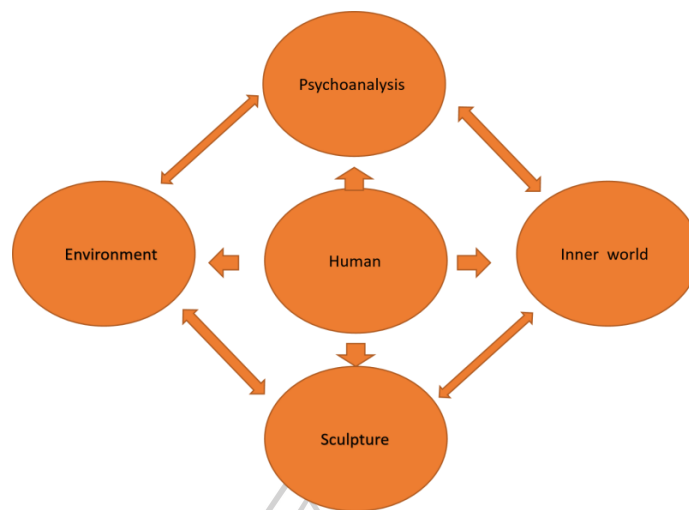


Figure 45: Emotional analysis map. Author drawing,2021.

#### 4.1.8 Experimental exploration of sculpture in the environment

In the creation and design of sculptural work, the sense of scale between the sculpture and the environment must be studied. The size and proportion of the sculpture size should be according to the needs of the environmental space and suitable for the harmony of the overall proportion of the environmental space. Attention should also be paid to the warm and cold colors, light and shadow effects, static and dynamic treatment of the sculpture, grasp the relationship between volume and space, and study the visual effects of multiple angles and distances. At the same time need to take into account the harmony of the environment, after all, sculpture is usually placed outdoors, it is bound to have a relationship with the external environment, and to a certain extent also subject to its constraints. Different places need different planning and design.

The design of three-dimensional artworks cannot be separated from the environment, and the harmony of the environment needs to be taken into account. After all, sculpture is usually placed outdoors, which is bound to have a relationship with the external environment, and is also restricted by it to some extent. Different places require different planning and design.



As people live and work in nature, sculpture three-dimensional artworks is inextricably linked to the natural environment and all public art is inseparable from the influence of natural factors, living and breathing together, and this is particularly true of sculpture. Sculpture has become an important part of the modern living environment, forming an integral part of the human landscape.



Figure 46 : Sculpture and Environment, author installed 2022.

#### 4.1. 9 Environmental research results

The city is the only platform on which a person can fully realize his spiritual, moral and intellectual potential. Whether in the natural space or in the living space, the pursuit of harmony is the noblest passion. Therefore, creative art processes, the artwork itself and environmental factors are taken into consideration. The progress of human civilization is always based on harmony with nature. All inspiration comes from nature and the fantasies that arise from it. However, site landscape is the basic expression of a certain regional culture. Therefore, we should learn to discard the dross and retain the essence. Make social life and real place harmony and harmony, make the contrast of things to achieve harmony, unity, integrity.

The purpose of exploration is to establish a "no distance" between sculpture works in different regions or environments and the audience's direct participation in viewing, touching and communication cycle. Art, however, knows no boundaries and is the spiritual wealth shared by mankind. The birth of a new era, the change of the economic basis of life, followed by the construction of a new culture, the sharp rise of life pressure.

## **4.2 Materials experiment of sculpture**

### **4.2.1 Material Research and Analysis**

#### **A. Sculpture Artwork Materials:**

For a sculptural artwork to have lasting properties, the materials used to make it must be carefully selected. Different materials have different characteristics, shapes, colors, and specific gravity. The way a sculpture is processed, the expression of the subject, the treatment of the form, and the manufacturing process are all influenced by the material. However, different materials are treated in different ways, and artists can use different methods to create sculptural artworks depending on the material.

#### **B. Material Properties Study**

**Stone:** tight structure, high compressive strength; good water resistance; good abrasion resistance; good decorative properties, natural texture, thick texture, giving people a sense of majestic and solemn.

**Wood:** light weight; high strength to weight ratio; good elasticity; impact resistance; rich texture and tone; easy processing.

**Metal:** Good heat resistance, not easy to burn; small property change with temperature change; high mechanical strength; good durability, not easy to age; not easy to be damaged, not easy to stain dust and dirt; good dimensional stability.

**Fiber:** soft texture; poor permeability, easy to burn into small holes in case of fire; microorganisms, mold and other fiber destruction; long exposure to sunlight in the air, material properties are prone to change.

**Ceramic:** no color fading; no water absorption; no deformation, easy to clean; high melting point; high hardness; high wear resistance; oxidation resistance and other advantages.

**Glass:** light transmission; transparent; sound insulation; special properties of thermal insulation.



**Cement:** early high strength; fast setting and hardening; good frost resistance and other advantages.

**Resin:** high precision; good brightness; clear edges and corners; not easy to wear; not easy to scratch; rich color; diverse shape effect; environmental protection and natural advantages.

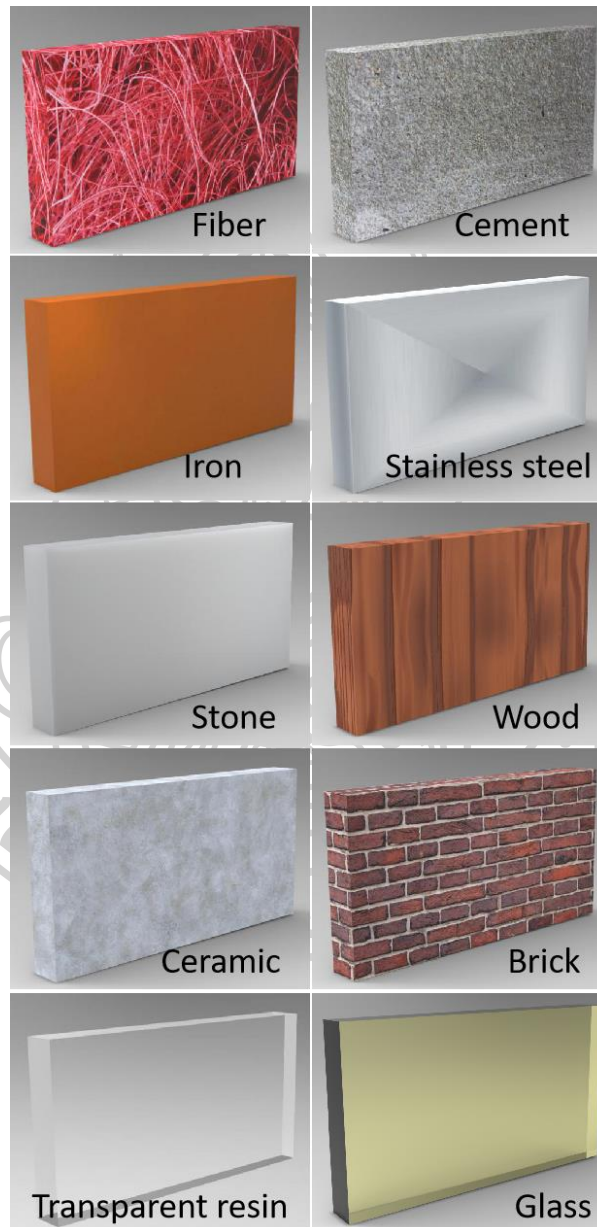


Figure 47: Materials analysis, Author drawing,2021.

#### 4.2.2 Material Analysis Testing

As an artist to be placed in the environment, the first is the environment (outdoor and indoor); the second is the theme expressed by the sculpture. The third is the shape of the material; and finally, the space of the material and the emotional interaction between the work and the person. Because sculpture was affected by the Covid-19 pandemic, the researcher was unable to access the real outdoor environment, so much so that the material emotions of sculpture will be explored from the indoor environmental space. Since the indoor space is not influenced by many external factors of the outdoor environment, the material selection of sculpture only needs to analyze the material in terms of the emotion of the theme expressed by the sculpture, and the specific data are analyzed as follows:

1. In terms of material emotion and material space, it means that material emotion and material occupy a space that is definite partition occupies space (non-transparent material) and not definite partition occupies space (transparent material).

Table 7 Material as emotion and material space state

Molding characteristics	Types of materials	Emotion of material	Partitioned space state
carving	wood	Living, conflicted, noisy	Definite Partition occupies space
	fiber	Soft, delicate	
	Pottery) red brick(	Emotional, bulky	
	stone	Rough, unconstrained, honest, delicate, moist, pure	
shape	cement	Simple, rough, honest	
	Ceramics) red brick(	Simple, straightforward, honest and simple, moist	
	Metal )iron(	profound, vicissitudes of powerful life, luxuriant, clear, lively	
	Metal) stainless steel(	Smooth, mapped	No definite partition occupies space
	glass	Transparent and pure	
	Transparent resin	Modern, transparent, colorful, warm, quiet	

## 2. Material Research Results

From the above, it is easy to see from the table that each material has its own expressive appeal. Among these materials, I have come up with three, namely, transparent resin, stone, and iron, which are suitable for relieving mental stress and enhancing artistic emotion, as the starting point for creating sculptures.

### **4.2.3 Analysis of sculptural artwork theme, material and environment**

There is a line of emotional story in the theme of sculpture creation, and the setting of emotional story is the source and basis for expressing the creation of sculpture emotion. In this study, the creation of emotional sculpture is influenced by the sculpture theme, material, and environmental factors.

#### (1) Sculpture theme and environmental space related

The sculpture theme is influenced by the locality of the environment. For example: regional background, culture, customs, and life-like scenes stories.

#### (2) Environment and material related

The environment determines the nature of the material of the sculpture. For example, the outdoor environment needs to consider the hardness of the material of the sculpture.

#### (3) Thematic expression of emotional sculpture creation is related to material

The creation of emotional sculptures is governed by the material of the sculpture. Different materials in the creation of the theme according to the nature of the material to increase the degree of sculpture on the transmission of emotion. For example, for the expression of historical stories, the nature of the material can be chosen from stone. Stone material can reflect the trace and imprint of historical stories, which is determined by the emotion of the material.

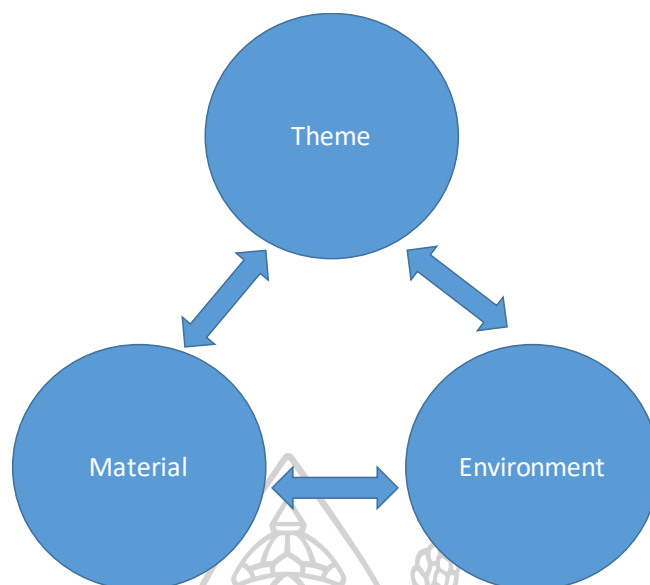







Figure 48 : The relationship between sculpture, material and environment, author draw,2021.

#### 4.2.4 Analyzing the themes and concepts of 10 experimental sculptural artworks




The sculpture theme contains: regional background, culture, customs, life-like scenes stories, etc.



Table 8 Theme and concept analysis

Sculpture	Title	Images	Concept	Theme	Material
1	“Meditation Space”		Stones have an aura, feeding generations of Chinese children; stones have an aura, gathering the unique temperament and aura of the nation ".The great poet Lu You once said, "Flowers can say a lot, but stones cannot be said to be the loveliest!".	Cultural Background	Iron, Resin imitation stone
2	“White Angel”		The spirit of ordinary medical and nursing workers is the humanitarian spirit of fearlessness, dedication and saving lives .Together with the spirit of the Chinese nation, it is the spiritual link that sustains the survival and development of the Chinese nation, the spiritual pillar that supports the survival and development of the Chinese nation, and the spiritual driving force that promotes the prosperity and development of the Chinese nation .For the Chinese nation, enhancing the comprehensive national strength and improving the quality of the Chinese nation is Chinese soul.	Life Scenario Storytelling	Transparent resin

Sculpture	Title	Images	Concept	Theme	Material
3	"Walking Man"		<p>Advocate walking through "stop words", look inward at yourself, improve your inner strength, and convey a positive attitude and life concept .When life closes a door for you, it opens another window for you .Open the window and you will inevitably see a lot of things flooding into your territory, but you will also see a different world than when you closed the window; A lot of things are like this, something to lose will gain!</p> <p>" Walking "is a backpack, a pair of feet, a heart, and courage .</p> <p>"Power "is to find in walking, to give in walking, to release in walking; Step out of the ivory tower, have a look at the colorful world, listen to the voice that touches the heart, and transmit the power of great love.</p>	Life Scenario Storytelling	Resin
4	"The Cloud - The Girl and the Balloon"		<p>In Chinese culture, the cloud is a symbol of nature and a reflection of the state of life" .The clouds move with the wind, following the laws of nature and becoming one with it.</p> <p>The moon is used to create an atmosphere of tranquillity and to bring out a sense of leisure and open-mindedness.</p>	Cultural Background	Resin
5	"Perpetual Calendar - Woman and Dog "		<p>Gregorian Solar Calendar and Chinese Lunar Calendar is the oldest solar calendar in ancient Chinese legends .An annual calendar that records the dates of specific solar and lunar calendars over a certain period of time )e.g . 100 years or more (for easy access by those who need it .The perpetual calendar is just a symbol of the time span.</p> <p>Dogs are very close to people .Studies have shown that dogs are even better at picking up on people's intentions than chimpanzees .Not only that, but dogs are among the most loyal of all domesticated animals, blessed with incredible gifts and selfless love for humans</p>	Historic Stories	Resin



Sculpture	Title	Images	Concept	Theme	Material
6	"peripateticism"		<p>Fish swim freely in the sky, moon, duckweed and grass, looking free and easy .It is a philosophy of life that pursues a freedom of mind and body.</p> <p>The core of the philosophy of life is "no waiting "and "free ."</p> <p>"To be free "is to abolish all spiritual fences, to open the shackles of the mind, to leave behind all worldly desires; to free the heart to wait and be free, and then life can be free .</p> <p>"It is the supreme realm of freedom, where the mind is free to float.</p>	Life Scenario Storytelling	Resin
7	"Watching - Iron Bull		<p>Writing God with form is the embodiment of the beauty of ancient Chinese sculpture modeling language .The "shape "can not only portray the external image and attitude, but also express the creator's state of mind and feelings, so that the work can convey a more profound flavor when facing the public.</p> <p>Cows always work diligently and silently .They only ask themselves how much they have paid and whether they have tried their best to work without asking too much in return .It looks like a negative ox temperament, but it is actually a kind of ox temperament that is worth imitating.</p>	Life Scenario Storytelling	Resin and iron
8	"Dreams and Walks - Camel"		<p>Camel in many animals I am afraid the most qualified with the word tenacious, indomitable, not afraid of hardship, overcome difficulties, unremitting self-improvement, is the consistent character of the camel.</p> <p>Camel is wise, it did not go with the flow, did not take against other animals, but on the dream of the distance .</p> <p>Camels are so tough, they are not born with it, but they have adapted to the extreme environment.</p>		Resin and iron

Sculpture	Title	Images	Concept	Theme	Material
9	"The Melody of Life "		<p>The pursuit of the realm of life by traditional Chinese philosophy can also be described as the pursuit of truth, goodness and beauty by ancient Chinese philosophers . The influence of traditional Chinese philosophy on the reality of life has always been extremely profound, enormous and long-lasting, and it has given life a spiritual enlightenment, motivation, guidance in development and improvement in realm .In contemporary society, traditional Chinese philosophy is still an important spiritual resource for the building of Chinese spiritual civilisation. The piano is like the primary and secondary contradictions . For example, a main melody or main note in the right hand is the primary contradiction, which should be seized; the accompaniment or chord in the left hand is the secondary contradiction, which should be properly dealt with, which is an effective combination of life and melody.</p>	Cultural Background	Integrated Materials
10	“The First Daydreams”		<p>Almost every creation of a writer is a daydreaming journey .Tolstoy once said, "It is the law of the writer to write with an inner vision of the object depicted ".In writing, the writer not only "sees "but also "hears "the character's voice, tone of voice, tone of voice, and even the various sounds of the fantasy world.</p> <p>The German composer Brahms said on more than one occasion that only when he was deep in meditation his musical ideas come to mind uninterruptedly .Artists often actively pursue their daydreams which are full of creativity.</p>	Life Scenario Storytelling	Resin

#### 4.2.5 Sensory Visual and Touch Perception that Mean Psychoanalysis and Artistic Interpretation.

When touching the sculptures made of iron, stone, and transparent resin, one can feel the immense emotions transmitted by the materials, and deep down in one's heart one feels the rhythm of the endless movement of one's own life. When I close my eyes and gently touch the uneven shapes of the chiseled iron, stone, and transparent resin, I feel that these tactile forms, along with the contact of my muscles, seem to have blood flowing to each part of them, connecting them to each other and back to my heart, a cycle of communication that makes me one with the work, creating an inexpressible feeling in my heart. When I open my eyes, my hand separates from the work, the feeling disappears and I am presented with a concrete form, a real space and a distance, and a feeling of separation arises.

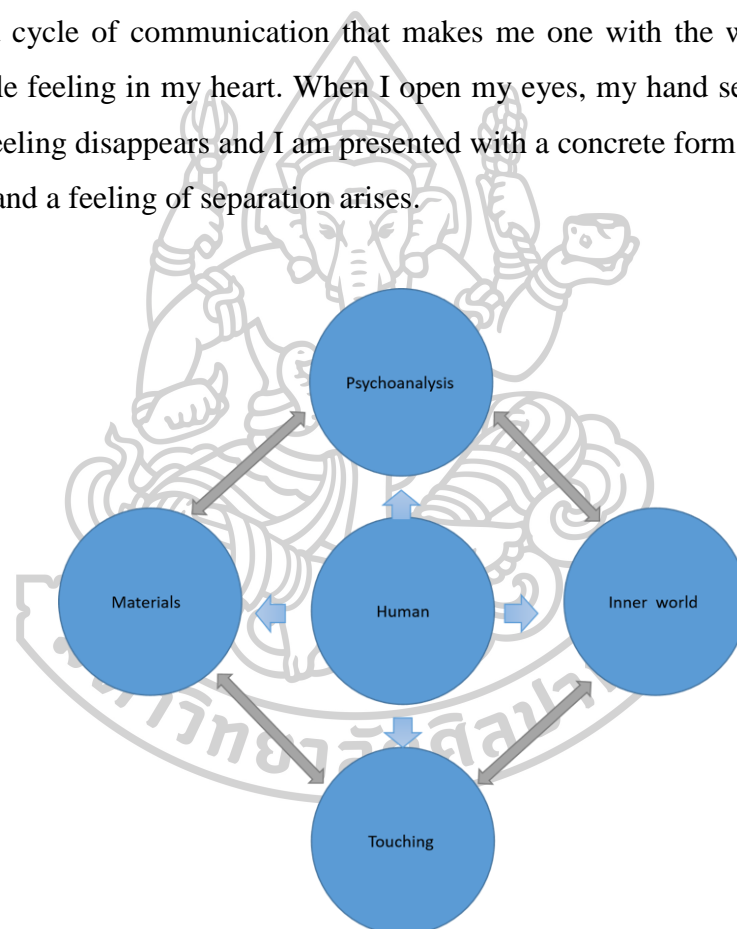


Figure 49 Material psychoanalysis and artistic interpretation, Author drawing,2020.

#### 4.2.6 Analysis of the material emotion of the work " peripateticism "

##### (一) Design ideal

The sculptural artwork is composed of three parts: the square, the aquatic plant, and the fish. The square represents "no square without rules"; the water plant represents upward tenacity; and the fish represents freedom. According to the experimental data,

the combination of these three elements can better express the pursuit of free living space in the constraints of life.

## (二) Elemental material analysis

### (1) Square

Square (i.e., geometric forms are abstract sculptures) as the main body of the sculpture can be made of solid, hard materials, while iron and stone are suitable to reflect the traces of history.

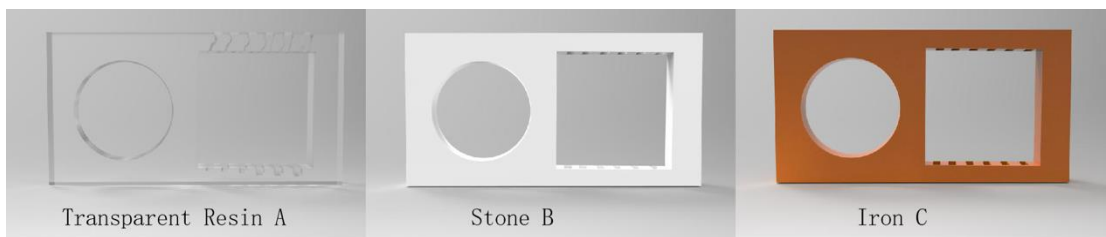


Figure 50: Different Material Modeling, Author design, 2020.

### (2) Water grass

The concave and convex texture of grass (abstract ideology belongs to abstract sculpture) brings a strong life to the space of water, grass and people. As part of the sculpture, the material of the grass will lead to the overall effect of the sculpture due to the color factor and shape factor. Therefore, water plants should be consistent with the material of the main sculpture.



Figure 51: Different Material Modeling, Author design, 2020.

### (3) Fish

The fish (figurative form belongs to figurative sculptural artwork) is another part of the sculptural form. However, considering the freedom of fish in the water, the weakness of stone material and iron, the single color, and the use of kinetic devices, the strong contrast between iron, stone and transparent material, the transparent material can better reflect the image of other materials, therefore, the most suitable for the fish and the rich color effect, the most superior material should be transparent resin.

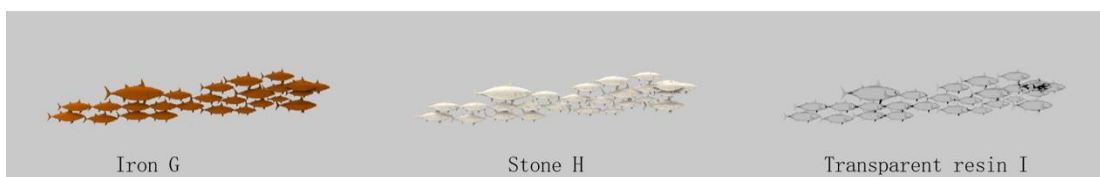


Figure 52: Different Material Modeling, Author design, 2020.

### (三) Overall sensory emotion

The spatial transformation of the relationship between inside and outside: In non-transparent material sculptures, the gap between holes provides the only connection between inside and outside space. At this point, the interior structure is not visually isolated from the exterior, but is better integrated with the exterior form. According to Berenson, a great painter uses form, color, space, movement, and "haptic value" to bring a painting to a "life-enhancing", dynamic, and vibrant reality. In touch and vision, the textures of the materials themselves and the texture of the sculptures are transmitted to the viewer's brain, stimulating the mind to think. The "tactile value" actually reflects the relationship between the work of art, the artist and the viewer.



Figure 53: "peripateticism" iron, transparent resin, author installed 2022.

## 4.2.7 Analysis of the material emotion of the work " White Angel "

### (一) Design ideal

This work takes the city park of Wuhan as the starting point, considering the cultural background of Wuhan and the leisure environment of the city residents, as well as the psychological damage caused by COVID-19 to the city residents.

### (二) Elemental material analysis



### (1) Character

The material of the sculpture is mainly transparent resin, reflecting the immaculate whiteness and dedication of the medical and nursing staff, which reflects the depth and beauty of the space under the refraction of light.



Figure 54: Different Material Modeling. Author design, 2020.

### (2) Map

The map of China is made of translucent resin, which better reflects the spatial layers of light. The visual sense of touch and the spiritual sense of touch are combined into one.

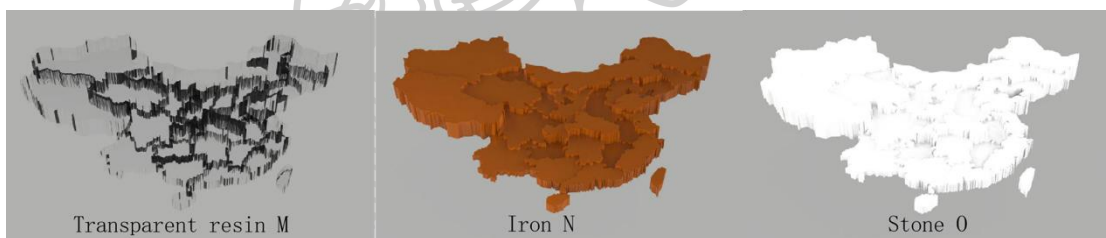


Figure 55: Different Material Modeling, Author design, 2020.

### (3) The Bridge

The bridge is composed of geometric forms, belonging to the category of abstract sculptures, optionally made of iron, which give a sense of simplicity, vicissitudes and depth of emotion. The depth of space is further reflected in the light and projection.

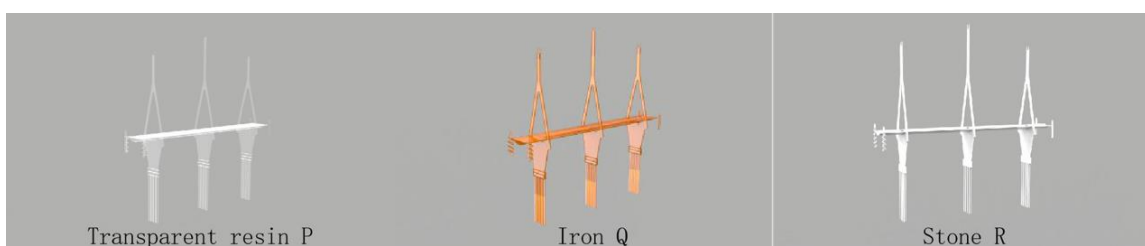


Figure 56 : Different Material Modeling, Author design, 2020.

#### (4) Yellow Crane Tower

The Yellow Crane Tower is a figurative sculpture, available in transparent resin. The depth of reflection in the space can be improved in terms of light and shadow projection.

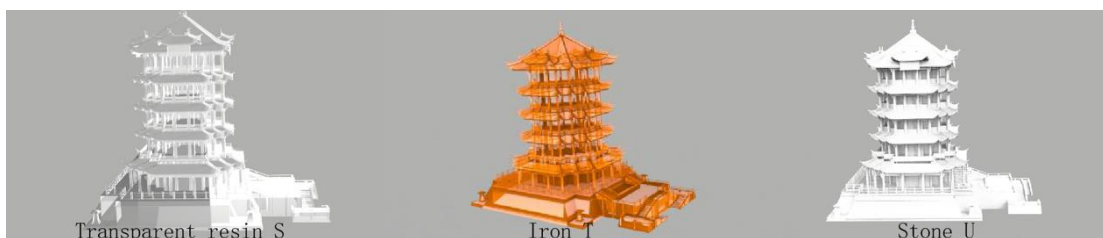


Figure 57: Different Material Modeling, Author design, 2020.

#### (三) Overall sensory emotion

The spatial transformation of the relationship between inside and outside: Transparent resin provides the viewer with more visual information, both from the surface of the sculpture, where it can be reflected back to the brain and transmitted to the body, and from the interior of the sculpture, where it can be reflected back to the sub-information areas and obtained a variety of other information (such as images, built-in objects, etc.). Transparent materials have their own advantages in exploring the connotation and extension of sculptural space from the concept of sculptural space.

Transparent spatial state can map out various landscape graphics and images in the natural landscape through the peculiarities of the material, and the natural landscape images mapped on the sculpture material can be touched by hand.

The transparency of the material has its first effect on space, and is important to the sculpture in three main ways: first, it reshapes the relationship between inside and outside; second, it most notably resolves the direct visual readability of the sculpture's internal and external structures; and finally, it essentially elaborates the spatial intention of the sculpture. That is: the transformation of internal and external spatial relationships; the complete presentation of internal structural relationships; and the essential elaboration of spatial intentions.



Figure 58: “White Angel” stone, transparent resin, author installed 2022.

#### 4.2.8 Result

This study shows that the creative process of sculpture is based on the tactile experience of various materials and is accomplished through direct contact between the hand and the material. It is through this tactile experience that sculpture develops its own artistic language, which includes the choice of materials, the use of techniques, the expression of emotions, and the interpretation of the concepts of time and space.

Table 9 Design a comparison diagram of the experiment

Design work	Emotion factors	Design factors	Similar	Deference
Design experiment.1 Title of work“:peripateticism”	Touch	Technique	Concave-convex	Material temperature
Design experiment.2 Title of work“:White Angel”		Element material	Smooth surface	The iron surface is affected by outdoor rust
		Design	Iron, stone, transparent resin free combination	Material surface mapping

Design work	Emotion factors	Design factors	Similar	Deference
Design experiment.1 Title of work“:peripateticism”	Visual	Technique	Lamplight	Lamplight can be placed inside the transparent material
Design experiment.2 Title of work“:White Angel”		Element material	Multiple visual angle	Viewing distance
		Design	Dynamic installation	Mode of composition
Design experiment.1 Title of work“:peripateticism”	Material space	Technique	Material engraving	Shape
Design experiment.2 Title of work“:White Angel”		Element material	No definite partition occupies space. For example :iron and stone can be dig holes	Definite Partition occupies space
		Design	Penetrability	The inner structure of iron and stone is not visible

### 4.3 Sculptural three-dimensional artwork shape experiment

#### 4.3.1 Sculptural three-dimensional artwork’s shape research and induction

Concept of sculptural modeling: Sculptors use artistic techniques such as carving, cutting, sculpting, polishing, molding, weaving, collaging, gluing, welding, cutting, and inlaying. These methods can be used individually or in combination to create a variety of shapes (combinations of them that unite to produce meaningful forms). Sculptors use different methods and undergo rigorous experimentation to reproduce artistic effects.

#### 4. 3.2 The language of sculptural three-dimensional artwork’s shape

In pure aesthetics we have only to consider our emotion and Its object: for the purposes of aesthetics we have no right, neither there any necessity, to pry behind the object into the state of mind of him who made it.

For a discussion of aesthetics, it need be agreed only that forms arranged and combined according to certain unknown and mysterious laws do move us in a particular way, and that it is the business of an artist so to combine and arrange them that they shall move us.

Shape can express emotions through form, volume, and vision.

### **1. Form**

The language ability of sculpture is the cultivation of shape, and the shape of sculptural entities exists in three-dimensional space. Sculpture is divided into: positive and negative shapes and sculptural contours.

Sculpture positive shape: refers to the sculpture of its own shaping entity, is composed of the image of the entity parts of the sculpture, is the main body of sculpture modeling.

Sculpture negative shape: refers to the negative shape of the sculpture divided, interlaced and surrounded.

Sculpture outline: in the visual range, the overall state of the longer distance. Is a generalization of the basic form of sculpture, is the composition of the sculpture form in the space of the skeleton and composition of the inter-frame.

### **2. Volume**

Sculpture is the art that has space and occupies volume. It is created by specific material and has a three-dimensional image of volume. Three-dimensional modeling is a modeling characteristic, volume is its language characteristics, in space modeling, three-dimensional image to impress the audience, with the volume to speak, volume is a creative physical and chemical activity, a complete human body as a shape, each part of the human body is the shape, and the concave and convex relationship of each part is the body. Sculpture is divided into: physical space, psychological space and visual space.

Physical space is the space where material entities actually exist. Physical space is divided into: physical space and imaginary space.



Physical space: refers to the three-dimensional space occupied by the physical entity of the sculpture.

Virtual space: refers to the transparent structure where the physical entity of sculpture is defined. It must depend on the physical space of sculpture to exist.

Psychological space: be specific measurement space, is the use of sculpture set objective and physical space arrangement, the structure form of processing business and obtain visual artistic conception, it is a kind of spiritual understanding of space, the realization of the sculpture psychological space object sculpture with the principal part of interaction as the condition, is a person, sculpture and the environment interaction and generate a spiritual intention space system.

Savvy space: refers to the spiritual sense and spiritual artistic conception that sculpture gives to people.

Intentional space: the sensory sense of intentional space under the interaction between people, sculpture and environment.

### **3. Visual**

Visual space is the angle from which the form image is presented to the viewer for appreciation. Visual space is divided into: static space and dynamic space.

Static space: it refers to that the sculptor passively accepts the form enclosed by the space and the limited appreciation Angle with the help of the static posture, so that the sculpture space is in a certain space, and the sculpture conveys the space feeling to the viewer.

Dynamic space: it refers to a full range of appreciation angles, a variety of dynamic and vivid form processing, and conveys to the viewer the space feeling full of life and vitality. The dynamic space of sculpture explores the diversity and richness of the form space changes, and with the help of the extension and movement in the dynamic space of modeling as well as the concave and convex processing of the form itself, the space becomes free and vivid, and the vitality contained in sculpture is easily presented.

Table 10 Spatial effects. Author drawing

	project	category	Space	content	Common Point
Shape	form	conformality	Positive space	Sculpture itself to shape the entity	image
		Negative form	Negative space	The sculpture is divided, staggered and surrounded by negative forms.	
		outline	Viewing space distance	The overall state of being at a greater distance within the range of vision.	
	volume	Physical space	Entity space	The three-dimensional space occupied by the physical entity of the sculpture	Measurable, catchable entity
			Virtual space	The porous structure where the physical entity of sculpture is defined must depend on the physical space of sculpture to exist.	
		Psychological space	Savvy space	Visual artistic conception.	No measurable
			Intentional space	It is a kind of spatial system of spiritual intention generated by the interaction of people, sculpture and environment.	
		Visual space	static space	Passively accept the form enclosed by the space and the limited appreciation of the Angle.	catchable entity
			Dynamic space	All -rounds appreciation of the Angle, a variety of dynamic and vivid shape processing.	

### 4.3.3 Elemental Extraction

#### (一) Inherent shape:

inherent material shape: figurative forms (figurative sculptures) that can be seen in everything, example: people, animals, plants. Figurative sculptures are better suited to a material engraving that mean transparent material, to represent the form. The spatial "concreteness" of transparent resin can be achieved by the form, which can also emphasize the space and make it more "concreteness," but the interior of the form should also be perceived.

#### (二) Free form

Free form: abstracted ideology (abstracted sculpture), such as geometric form, abstract form. Abstract sculptures are better suited to carving materials that mean stone, iron.

### 4.3.4 Graphical data analysis

#### (一) inherent shape

##### (1) Fish

Fish, as the representative of freedom, soar in the water carefree, giving people the idea of relaxation, which is the life people aspire to. This fantasy of daydreaming is exactly the sublimation of emotion and relaxation of thought.

(2) Character: The character are based on medical personnel, who give people a sense of security.

(3) Map of China: The map can reflect the country's mountains and rivers.

(4) Bridge: The bridge represents the friendship of the people who love each other.

(5) Yellow Crane Tower: The Yellow Crane Tower is similar to the pagoda of our heart, calm, restrained and emotionally colorful.

##### (6) The bell

In ancient China, bells were believed to have the function of keeping away evil spirits and symbolizing peace and tranquility. The heart of the bell will be connected by telepresence when the wind blows. The bell is like the source of people's heart. It moves because of you and can listen to the heartbeat of each other. When you make a wish, if the bell rings, the angel hears your voice and the wish comes true, just like making a wish in a meteor shower.

##### (7) The pendulum clock

pendulum clocks sometimes describe the left and right of people's will, will fluctuate with environmental factors and psychological factors. Life is like a pendulum, swinging between pain and tiredness, pain and joy, negative and positive.

A means of hypnosis in western medicine. The side to side swing of the pendulum can help us relax the body and relieve stress; It can help us to increase self-

confidence, enhance self-awareness and gain personal growth; It can help us resolve psychological conflicts and treat physical and mental diseases; Can help us enhance memory, improve learning and work efficiency; It can help us get rid of bad habits, correct inappropriate behavior and improve living habits.

(8) The Stone

Stones nourish one's love, enlighten the mind and cleanse the heart.

(9) The Camel

Camels represent resilience and perseverance.

(10) Cactus

The cactus represents the tenacious spiritual character.

(11) Chinese knot

The Chinese knot represents good wishes.

(12) Girl

The little girl is an angel in disguise, innocent and fairy-tale. A fairy tale fable to explain the meaning of the world and of man.

(13) Balloons

Balloon represents an indomitable heart, countless efforts and attempts do not give up, but still strive to move forward to find that belongs to their own dream.

(14) Lollipop

Lollipop represents the meaning of love, a circle of different color sweet color winding together, like love in each person of a variety of different good memories, slowly in the center of the collection, gently into the mouth fine feeling.

(15) Woman

Women represent the inheritance of human matrix, virtuous, mind and dexterity, which is the most basic and ultimate goal for nature.

(16) Dog

Dogs don't need an excuse to jump around and have fun. It's the same with us. When we were young, we were naturally happy to play, and we weren't afraid of what other people might think or think, but we were all happy. Growing up doesn't mean you have to be bored. Most of the time, you have to open up and enjoy the moment to the fullest.

(17) Piano

The melody and rhythm of the piano can suggest certain emotional tendencies in us. Short and dense give a sense of urgency or restlessness, positivity or excitement; not sparse or dense gives a sense of relaxation or moderation, confidence or ease; long lines of atmospheric suction either give a sense of beauty, openness, relief, song, or a sense of gravity, solemnity, composure, stagnation; and so on.

The purity of the piano's sound indicates that your mind is moving in the direction of beauty.

(18) Bottle

Life is like an empty bottle, you can put something in it, but it will always be full, so treasure your time. Love is the same, a person's world is always limited, so we must grasp each sweet.

(19) Colorful light

Colorful lights symbolize harmony and happiness. Modern society more than the Spring Festival, Lantern Festival and other festivals hang, add luster to the festival day, pray for peace. In addition to reflecting modern life, lanterns also contain a lot of

ancient opera and Confucian traditional culture, especially local culture, which is a kind of spiritual relaxation and enjoyment.

(20) Child: The children's faces better reflect the innocence and romantic fantasy.

(21) Fish and Children: The fish represents freedom. Two children are standing on the back of the fish, pursuing happiness and freedom together with the fish.

(22) Trees and Animals: Trees are tenacious, animals are spiritual, and the combination of the two is more affectionate. Trees and animals are inseparable from people's lives, which is a rich emotional relationship between nature and human beings.

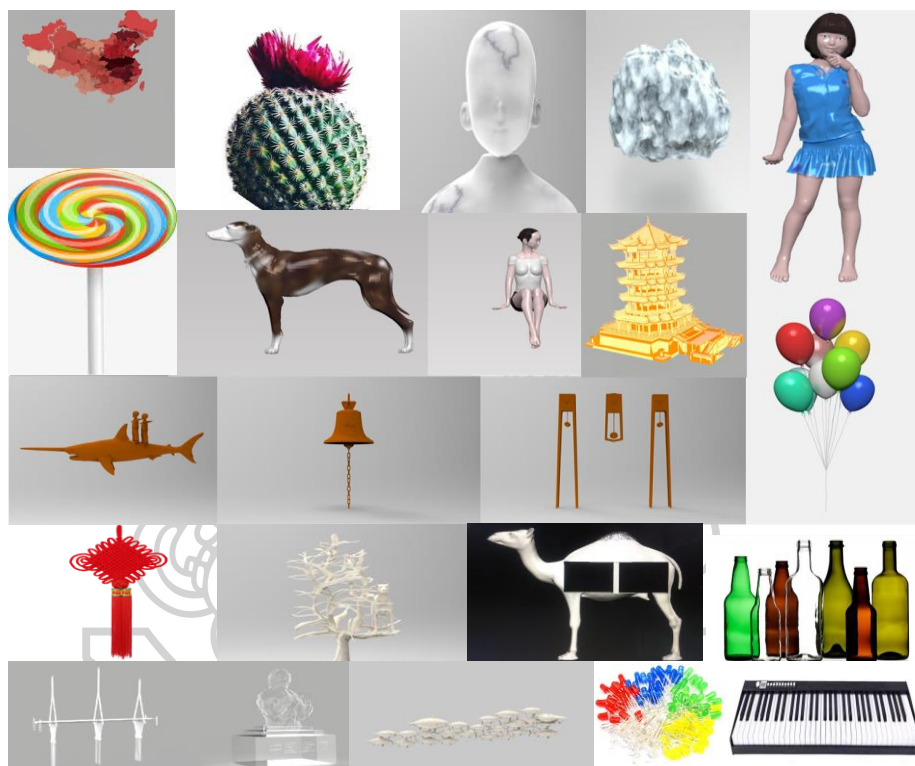


Figure 59: Collection of inherent shape, Author drawing,2020-2021.

## (二) Free form

### (1) Square

The square shape is the most basic form of ancient Chinese urban architecture, which reflects the rules of social life represented by the ethics of the Chinese cultural center. It is the perfect portrayal of the social life that "no square can be made without rules".

### (2) Water grass (abstract)

Water grass represent upward vitality.

### (3) The cow (abstract)



The ox stands for "knowing what to hold on to, doing what to do", "doing what to do and not doing what to do". Cows are quite docile and friendly animals, and both adults and children can get close and socialize with the world.

(4) The cylindrical

Inside and outside the circle is the infinite heaven and earth, the circle of art is within the rules, between the heaven and earth, the circle is full, the heart is full. Inner correct, appearance should have a harmonious attitude, each other easy to get along.

(5) Combination of cylinder and square. Concave square (negative space)

Cones give the impression of a tunnel, a black hole. Everything in the world can be represented by basic geometric figures

(6) The triangle

The triangle is a stable figure, symbolizing captivity, but it becomes a mirror image of the entrance to the universe. It represents rebirth and circulation.

(7) Moon (abstract)

The moon is a symbol of beauty and a carrier of human lovesickness. It holds the thoughts of lovers and expresses people's nostalgia for their hometowns and loved ones and friends. The bright moon hanging high in the sky provokes philosophical thoughts.

(8) Mountain (abstract)

The mountain represents pure natural beauty, but also a poetic work of art.

(9) Cloud (abstract)

"In Buddhism, the word 'cloud' represents infinity, meaning 'limitless', one is many and many is one, infinite and endless.

In Taoism, 'cloud' represents the spirituality of following one's natural nature.

(10) Perpetual calendar

The perpetual calendar represents the cycle of the seasons, with 365 days in each year, and you have to face this time of both light and darkness.

(11) Square box and circles

Square refers to something that should be fixed in principle; circle is the way one does things. The circle is an important spiritual archetype in Chinese culture, which has a very close relationship with the Chinese people's cosmic consciousness and life mood, and is also a factor that we cannot ignore in revealing the secrets of life in Chinese art. The square is the embodiment of the face of the figure in Chinese culture, rigid and upright.

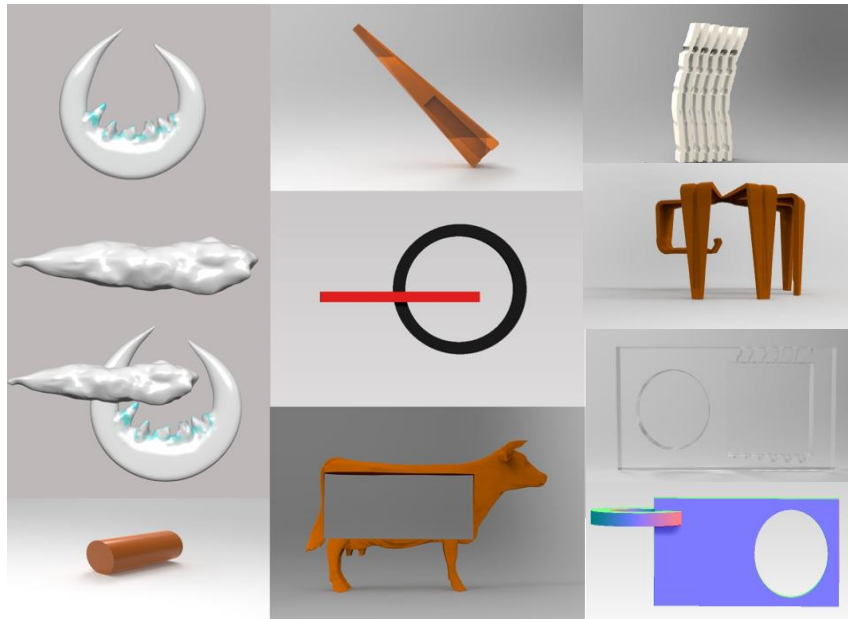


Figure 60: Collection of free form , Author drawing, 2020-2022.

#### 4.3.5 Psychoanalysis shapes the senses

The visual experience is dynamic, not a static image. One sees not only its color, shape, movement and size, but most importantly the symbolic codes that are imaged in the viewer's mind. These codes affect human emotions and can be described as a psychological "force".

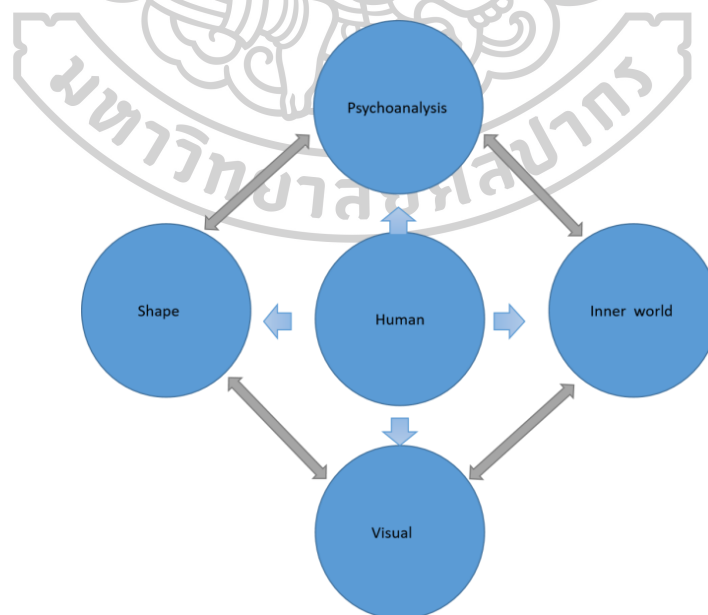


Figure 61: Psychoanalysis relationship to the senses. Author drawing, 2021.

### 4.3.6 Designing experiments one

#### 1. Title of the work "Watching - Iron Bull

#### 2. Concept

Writing abstract meaning to God with form is the embodiment of the beauty of ancient Chinese sculpture modeling language. The "shape" can not only portray the external image and attitude, but also express the creator's state of mind and feelings, so that the work can convey a more profound flavor when facing the public.

Cows always work diligently and silently. They only ask themselves how much they have paid and whether they have tried their best to work without asking too much in return. It looks like a negative ox temperament, but it is actually a kind of ox temperament that is worth imitating.

#### 3. Design ideas

The cow is undemanding, an animal that can communicate with the human mind. The creation takes the ox as the carrier, and the sculpting body is obtained through modeling compression and square cutting. The bells and pendulum are integrated to remind people of the importance of time, and to warn people that they should be as diligent as the ox, never forget their mission, concentrate on their work, and strive for the harvest.

#### 4. Design works

##### A. Elemental Extraction

##### (1) The cow

The ox stands for "knowing what to hold on to, doing what to do", "doing what to do and not doing what to do". Cows are quite docile and friendly animals, and both adults and children can get close and socialize with the world.

##### (2) The bell

In ancient China, bells were believed to have the function of keeping away evil spirits and symbolizing peace and tranquility. The heart of the bell will be connected by telepresence when the wind blows. The bell is like the source of people's heart. It moves because of you and can listen to the heartbeat of each other. When you make a wish, if the bell rings, the angel hears your voice and the wish comes true, just like making a wish in a meteor shower.

##### (3) The pendulum clock

pendulum clocks sometimes describe the left and right of people's will, will fluctuate with environmental factors and psychological factors. Life is like a pendulum, swinging between pain and tiredness, pain and joy, negative and positive.

A means of hypnosis in western medicine. The side to side swing of the pendulum can help us relax the body and relieve stress; It can help us to increase self-confidence, enhance self-awareness and gain personal growth; It can help us resolve psychological conflicts and treat physical and mental diseases; Can help us enhance memory, improve learning and work efficiency; It can help us get rid of bad habits, correct inappropriate behavior and improve living habits.

##### B. Design Process

##### (1) The cow

The shape of the cow is mainly figurative and realistic, combining form compression and geometric square hollow design, which can be seen through the hollow to occupy the space of the landscape.

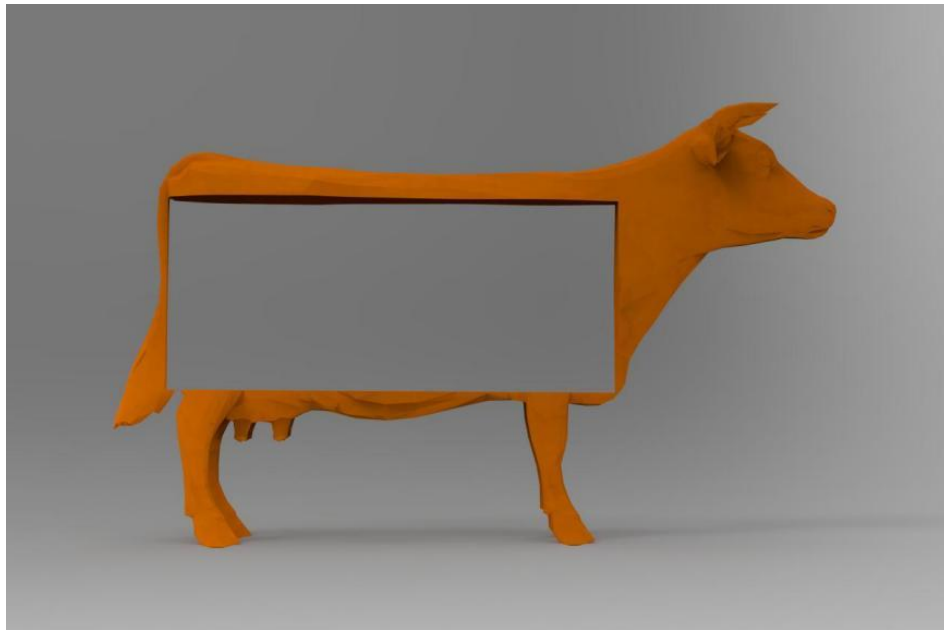


Figure 62: The cow, Author design, 2020.

(2) The bell

The shape of the bell is mainly figurative, which is the social ideology that should be in the society.



Figure 63: The bell, Author design, 2020.

3. The pendulum clock

The shape of the pendulum is mainly geometric, and the installation of the pendulum clock mechanized working principle, namely: non-stop mutual transformation between gravitational potential energy and kinetic energy.



Figure 64: The pendulum clock, Author design, 2020.

### 5. Finished product display



Figure 65: "Watching - Iron Bull, Author installed 2022.

### 6. Design Summary

The recognition of shapes can be based on the infinite number of possible directions they can point and the infinite variations in their position in relation to each other. At this point movement in all directions is already within the grasp of consciousness. The third dimension offers complete freedom: shapes can be extended in any visible direction, and things can be arranged in an infinite variety of ways. No visual imagery can go beyond this third dimension. It is only by using reason to construct it that it is possible to go beyond the scope of this third dimension.



### 4.3.7 Experiment design two

#### 1. Title of Work "Walking Man"

#### 2. concept

Advocate walking through "stop words", look inward at yourself, improve your inner strength, and convey a positive attitude and life concept. When life closes a door for you, it opens another window for you. Open the window and you will inevitably see a lot of things flooding into your territory, but you will also see a different world than when you closed the window; A lot of things are like this, something to lose will gain!

"Walking" is a backpack, a pair of feet, a heart, and courage. "Power" is to find in walking, to give in walking, to release in walking; Step out of the ivory tower, have a look at the colorful world, listen to the voice that touches the heart, and transmit the power of great love.

#### 3. Design idea

Objects were analyzed, broken up, and reassembled in an abstract form, rather than being portrayed from a single form and a single perspective. Abstract shapes combine into walking figures, which are similar to Windows. From different angles can see a beautiful landscape pictures come into view, pointing to the heart, let us understand from a new perspective, with a new perspective to observe things, thinking about problems, will experience different emotions, come to an unusual understanding.

#### 4. Design work

##### A. Element extraction

##### (1) The cylindrical

Inside and outside the circle is the infinite heaven and earth, the circle of art is within the rules, between the heaven and earth, the circle is full, the heart is full. Inner correct, appearance should have a harmonious attitude, each other easy to get along.

##### (2) Combination of cylinder and square

Cones give the impression of a tunnel, a black hole.

##### (3) Concave square (negative space)

Everything in the world can be represented by basic geometric figures

##### B. Design work

##### (1) The cylindrical

Cylindrical modeling is simple, single, high recognition.



Figure 66: cylindrical, Author design, 2020.

(2) Combination of cylinder and concave square (negative space)

The Combination of cylinder and concave square has a clear contrast of space, and the geometric image of the shape is obvious.



Figure 67: Combination of cylinder and concave square, Author design, 2020.

### 5. Finished product display



Figure 68: "Walking Man" , author installed 2022.

### 6. Design Summary

This sculpture forms a system of dimensional circulation. We can imagine that in the three-dimensional world, we find the opening of the four-dimensional space, so we enter from the apex of the cone and fall out from the center of the bottom along the central axis, which is the time axis. Just as we stand outside of the picture, if we stand in the fifth or higher dimension, the three-dimensional us are walking in a four-dimensional trajectory.

#### **4.3.8. Result**

The form based on sculptural artwork must be interpreted by its contents. It cannot force an individual's emotions unless the viewer see what moves their viewing. All aesthetic systems must be based on personal experience, that is, they must be subjective. The form of sculpture helps to explain things and speak of emotions, but it is not only the form that is "beautiful"; only the form that is beautiful does not necessarily move people. For example, pictures that interest us, that we admire, but that do not move us as works of art. The aesthetic emotion of sculpture must be combined with the "beautiful" form and the implied emotion in order for a work of art to move people.

The expression of art works should be related to the expression of human emotions. In the expression of sculpture, we should consider the relationship between the sculpture and human emotion and the environment. When making sculptures, sculptors should form a system of dimensional cycles, just as we stand outside the picture and can see more spatial trajectories.

The purpose of exploration is to mobilize the viewer's visual experience through the object space of the sculpture, so that the human vision can be extended to a deeper and richer space, and the resulting spatial effect should make the sculpture space and the viewer's spirit achieve the unity of opposition and become the centralized embodiment of spiritual materialization.

Therefore, in researcher creation, researcher will use the hollow shape in the sculpture creation, and create sculptures that echo human emotions by combining figurative and abstract forms. This is not only the transmission of visual images, but also the materialization of emotions and the sublimation of moods.

### **4.4 Sculptural three-dimensional artwork texture experiment**

#### **4.4.1 Sculptural artwork texture research and induction**

Materials and textures should fall under the broad category of texture. In a general sense, texture refers to the textural characteristics of an object's surface, which are the same for those with the same characteristics and different for those with different textures. Material needs to be perceived through visual or tactile factors, if the form cannot be felt it cannot be shaped, and without texture there is no visual image. The visual perception of texture is achieved through color and the tactile perception of texture is achieved through the volume of the object. In summary,

texture can be divided into two main categories, namely natural texture and man-made texture. Natural texture is an objective existence, which is abundant in nature and is the source of artistic beauty. Man-made texture, on the other hand, is produced by human effort and is more perfect, more regular and of more practical value than natural texture.

Convexity is a kind of presence, a universal language. It can be further observed, experienced and considered in the textures and constructions of different materials. Where there is concavity, there is convexity, and conversely, where there is convexity, there is concavity. The back of the concave is the convex, and the convex contains a great deal of tension and life. The first time our hand touches a concave or convex texture, an emotion arises that is difficult to put into words, a shiver that leads from the touch to the heart and stimulates the senses. When we touch our hand on the uneven texture, our hand fluctuates with the undulations of the uneven texture. The bumpy texture under the hand seems to be a great force of life, coming from the centre of the bump, expanding from the inside out and breaking free to become an individual life form. The sense of touch resonates with our hearts.

#### **4.4.2 The muscular function of the sculptural artwork**

1. The concave and convex texture of a sculpture can accentuate the theme of the sculpture. Both abstract and figurative sculpture have a theme for creation. The theme of creation determines the direction of creation and the artist's perception of the theme. Convex and concave texture can render the sculpture's theme and become a means of expression.
2. Texture can convey the sculptor's emotions. The uneven texture in a sculpture is the markings left by the artist in the making of the sculpture, which convey the emotions and thoughts of the sculptor at the time.
3. The texture enhances artistic expression and visual impact. A beautiful sculpture always resonates with the viewer.
4. Texture can create a sense of touch. Touching a sculpture is one of the key features of sculptural art. When the finger touches the convex and concave texture of a sculptural artwork, the artist's emotions and the emotional expression of the sculpture are transmitted to the human brain with the touch of the hand and stimulate the human sensory system.

#### **4.4.3 The role of texture in sculptural space**

The sculpture itself is an art of three-dimensional space, and the concave and convex texture not only decorates the sculpture, but also enhances the contrast between the negative space and the positive space in the visual effect of the sculpture. When you touch the sculpture you can feel the tactile imagery of the sculpture's space with your fingers.

#### 4.4.4 Sculptural texture in relation to human emotion

The changing sculptural texture of a sculpture can convey different emotional feelings. The richness of texture can be used to compose images in a special way that evokes our aesthetic emotions. The use of texture in sculpture can evoke a spiritual resonance and a special emotional experience with the sculptor and the sculpture.

#### 4.4.5 Factors to consider for texture

Table 11 Texture factors

	Relationships	Category	Common point
Sculpture texture	Materials	The texture of the material itself	Complementary to each other
		Artificial texture	
	Space	Positive space	
		Negative space	
		Visual space	
	Emotion	Theme emotion	
Artists create emotion			

#### 4.4.6 Psychoanalytic sculptural texture

Gestalt school of psychology holds that human perception exists in the form of "need" and pursues internal balance. Whenever external stimulus appears, it will destroy the internal balance of perception and increase the excitement of perception. The unbalanced pattern of the texture bears such a function, which causes the internal tension of the viewer's psychology. This effective stimulation enhances the emotional experience of the aesthetic subject.



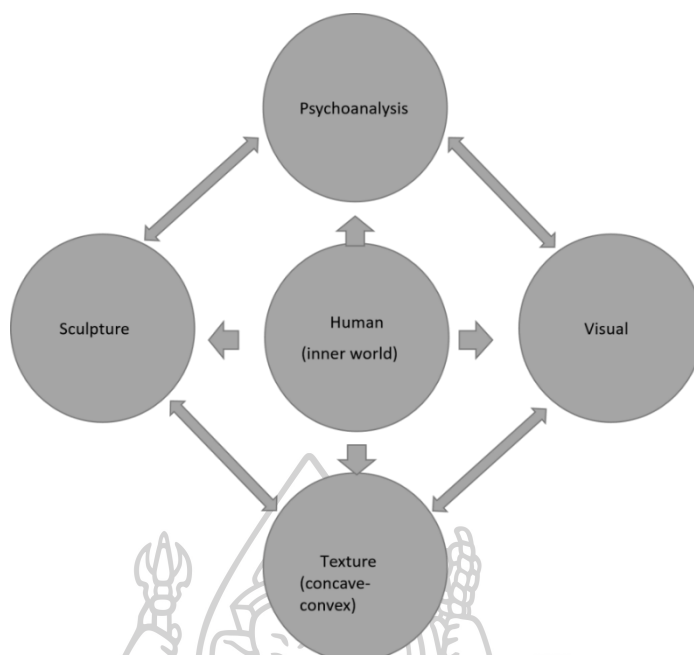


Figure 69: Psychoanalytic sculptural texture, Author drawing, 2020.

#### 4.4.7 Analysis of the texture emotion and improvement of the work "Meditation Space"

##### (一) Elemental texture analysis

##### (1) Stone

The stone adopts uneven texture, and the uneven texture of the stone not only expresses the spatial sensation of the stone in the shape, but also enriches the figurative nature of the stone.

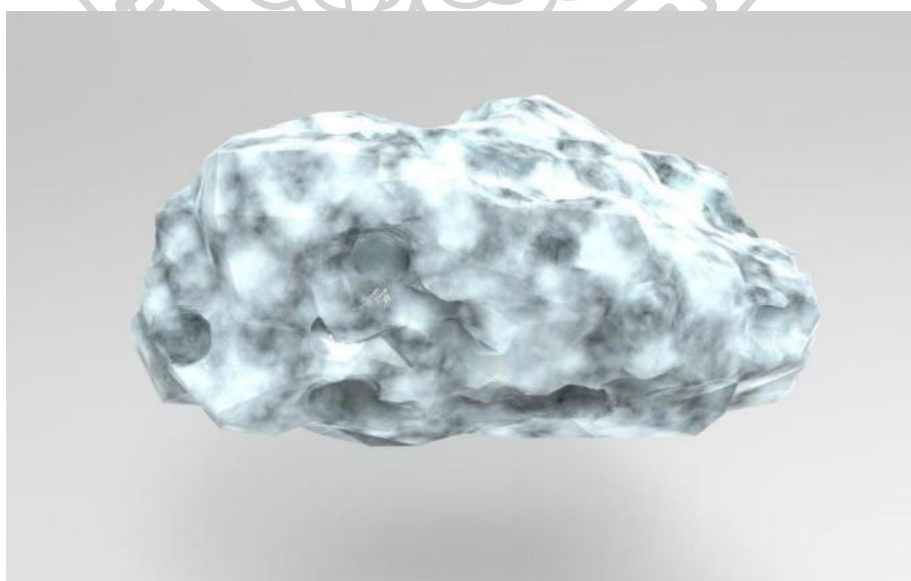


Figure 70: The stone, Author design, 2020.

## (2) The triangle

The triangle interpretation of uses utilized as material's texture inherent in iron, and the roughness of rust makes the surface of the sculpture covered with a thin layer of sand, giving a sense of mystery in the material texture.



Figure 71: The triangle, Author design, 2020.

## (二) Analysis of the material emotion

This sculpture is constructed and combined with geometric forms to form a sculpture that uses stone materials to shape the long history of culture and artificial texture space as an emotional reproduction of touch. The various properties of different materials can be used to reflect different personalities, and the combination of multiple materials can show the relationship between textures and their unique personalities, thus producing a sense of beauty.



Figure 72: Meditation Space, Author simulated installation, 2020.

### (三) Design Improvement

Professor viewpoint served as expert opinion: the sculpture design of the stone hanging is more dangerous, giving a certain sense of oppression and failing to reflect the release of pressure. The researcher has improved the design of the stone hanging part. In the process of improvement: 1. the structural support extends the ground. 2. the stone is placed on a platform. 3. lights and music are built into the stone.



Figure 73: Design improvement, author installed 2022.

#### 4.4.8 Analysis of the texture emotion of the work " Dreams and Walks - Camel"

##### (1) Elemental texture analysis

##### 1. Camel

The camel's shape is mainly concrete and realistic, combined with the form compression and geometric square hollow design, through which you can see the landscape space. The texture is made of polished smooth surface, which makes your heart calm and quiet when you touch it.

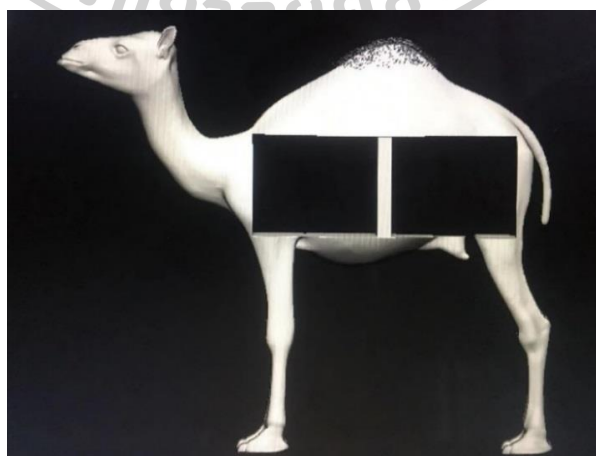


Figure 74: Camel, Author design, 2021.

## 2. Cactus

Cactus itself has a bramble, bumpy texture.



Figure 75: Cactus, Author design, 2021.

## 3. Chinese Knot

Chinese knots use the texture of the material itself. The shape of the Chinese knot itself is hollow, hollow there are concave and convex.



Figure 76: Chinese Knot, Author design, 2021.

### (三) Overall sensory analysis

The presence of a concave surface on the surface of a sculpture absorbs space into the realm of the sculpture. Anything in space may involve two properties, an 'objective thingness' that characterizes its shape, and a 'spatiality' that characterizes its structural pattern in space.



Figure 77: " Dreams and Walks - Camel", author installed 2022.

#### 4.4.9 Design result

The exploration of concave and convex art differs from previous works of art in that it does not focus on the shape, line, form and composition of a particular work, nor does it explore the expression of a major historical event, but in fact explores another form of art that exists alongside visual art, namely the sense of touching concave and convex sculptural artwork. The author hopes that through the touch, exploration and participation of people in convex art, he will call on human beings to pay attention to their own kind, to reveal the essence of human goodness, to release their own stressful emotions, and to understand and communicate with each other in this space of coexistence, to achieve the possibility of no distance. The life of art lies in creation. No historically excellent form can replace the personal opinion of the contemporary artist, nor can it be the driving force behind creation, nor can it be the focus of the artist's perspective.

Different materials have different properties and texture characteristics, so sculptors need to fully grasp the characteristics of various sculptural materials and make use of their own texture characteristics to enrich the language of sculptural artwork expression.

### 4.5 Sculptural color experiment

#### 4.5.1 Sculpture color research and induction

The concept of color in sculpture: in short, one is the inherent color of the material, for example, rust, stone, etc. Secondly, the artificial coloring of the



sculpture, e.g. acrylic, spray paint. The third is that the sculptural artwork changes color due to chemical changes, for example (reaction of chemicals with iron).

#### 1. The usefulness of inherent color in sculptural artwork

Intrinsic colors in sculpture are the colors that sculptors often choose to use in the materials themselves. The natural color of a sculpture can convey the essence of things in a more intuitive way and has an original vitality to the emotion and creativity that it is intended to express.

#### 2. Artificial colors in sculptural artwork

Artificial color is the sculptor is no longer satisfied with the color of the material itself, in order to pursue a new texture, new visual effects and change the original color of the material. The variety of creative concepts and means has greatly enriched the color space of sculpture, with a regenerative vitality and creativity.

#### 3. The usefulness of chemical changes in sculptural artwork

Chemical changes in materials can enhance the effect of the inherent color of the sculpture, making it more pure and visually significance.

In summary, the purpose of color in sculptural work is to give the sculpture its own lustre. Without subjective color, the sculpture's own “yin and yang” images are constantly changing with the light.

#### **4.5.2. The color function of the sculptural artwork**

In the process of sculptural artwork color design, the sculptor can use color to enhance the artistic impact of the surface of the form; secondly, it can fully express the emotion of a certain tone within the creator, so that the viewer can have a spiritual bond with the sculptor.

#### **4.5.3 The role of color in sculptural artwork space**

##### 1. Contrast of shades

The appearance of complementary colors meets the physiological needs of people from the visual point of view. Its opposites make the color phases more distinct and give people a sense of visual naturalness and harmony. Two colors with a complementary relationship will produce a quiet balance in the human eye.

##### 2. Contrast of purity

The contrast of purity gives a sense of relaxed maritime atmosphere. Against a background of low purity colors, the sculpture will appear more flamboyant than it

was, and conversely if the background has a higher purity of color, the purity of the work itself must be increased. Intentionally increasing the purity of the colors will make the work stand out against the more complex background of the building.

### 3. Contrast of luminosity

The clarity of a sculptural artwork exists in contrast to the color of its surroundings. If the difference between the color of the work and the color of the environment is high, the clarity will be high, and if not, the recognition will be low, but the difference in luminosity will also have a greater impact. In the same lightness, a high color feels lighter and a low color heavier, also influenced by lightness, a bright color feels light and a dark color feels heavy.

Color strikes your eyes, touches your brain and brings out your inner emotions. It does not need a third party to communicate human emotions.

The expression of emotion in sculpture can be broadly categorized into two types: one is the expression of color that has a certain degree of historical recognition and is used continuously over a long period of time as a metaphor and symbol of a certain meaningful emotion, and the other is the use of color by the creator of the sculpture to bring about an emotional stimulus that makes the emotional part of the viewer re-invented.

The long term use of color and metaphor makes the recognizable commonality of emotion into a signature emotional subconscious (emotional commonality).

The sculptor uses the emotional stimulus given by the color generation to re-invent the emotional part of the viewer, and this emotional stimulus is wider and more imaginative, as the same color is affected by the subconscious commonality of the color emotion due to the different subjects, especially in terms of education and living environment and age, but as an individual with independent thinking. However, as independent thinkers, we all have a re-creative understanding of the emotion of color.

Modern sculptural artwork color expresses its inner color emotion in a direct way, and often in the most powerful way. In modern sculpture, color gives life and spirit to its essence, making it vibrant. This sense of vitality and emotion is the signal that color is intended to convey.

#### 4.5.4 Factors to consider for color

Table 12 Sculptural three-dimensional artwork color factor

Sculpture color	Relationships	Content	Complement each other
	Environment	Natural Environment	
		Human Environment	
	Materials	Inherent color	
		Artificially Painted	
		Chemical changes	
	Space	Shape Space	
		Visual Space	
	Emotion	Historical symbolic emotions	
		Artists recreate sexual emotions	

#### 4.5.5 The human mind's perception of different colors and the role of medical aids

Table 13 The complementary role of color

Color	Medical assistance	Inner feelings
White	White can reflect all the light, have clean and expansive feeling .The space is relatively hour, white can have adjusting effect to the person of easy get angry, conduce to maintaining blood pressure so normal.	Clean, simple, monotonous
Black	Black has clear heat, calm, stable effect, to excited, be agitated, the patient with insomnia, panic has the effect that restores stable.	Quiet, grave, guilty

<b>Color</b>	<b>Medical assistance</b>	<b>Inner feelings</b>
Gray	Gray is an extremely easygoing color that has the versatility to go with any color .Therefore, when the color combination is not appropriate, you can use gray to harmonize, and there is no impact on health.	Soft, silent, empty
Red	Promotes blood flow, accelerates breathing, refreshes the spirit, stimulates environmental paralysis and depression, and promotes recovery of hypotensive patients	Intense, lively, restless
Pink	Pink is the best interpretation of tenderness .Experimentally, let angry person watch pink, mood can calm down very quickly, because pink can make the adrenal hormone of the person secrete reduce, make mood tends to stabilize thereby . Autism, spirit depressive person might as well often contact pink.	Relaxed, warm and plump
Orange	Promote the circulation of blood, produce vitality, improve the digestive system, induce appetite, stimulate mood, larynx, spleen auxiliary curative effect	Full of life, happiness, health and vitality
Yellow	Moderate stimulation of the nervous system, improve brain function, stabilize mood, appetite, muscle, skin and solar nervous system disorders have certain curative effects	Light, bright, brilliant
Green	Calms nerves, lowers eye pressure, calms emotions, relaxes nerves, suitable for patients with high blood pressure, burns, sore throats and colds	Steady, comfortable and peaceful
Blue	Regulates nerves, calms the mind, relieves muscle tension, relaxes the nerves, lowers blood pressure, and is beneficial for patients with pneumonia, emotional irritability, mental confusion and diseases of the five senses.	Calm, soothing, melancholy
Purple	Relaxes motor nerves, relieves pain, calms pregnant women, and can play a regulatory role in insomnia and mental disorders.	Noble, mysterious, lonely

#### 4.5.6 Psychoanalysis of the Color Senses

Henry Matisse, the modern master of painting, argued that "if form is something spiritual, then color is emotion; first we have to paint form, then we have to nurture God, and we have to introduce color into the spirit." There is no doubt that color itself is a multi-layered expression of emotion, and this aesthetic tendency requires the harmonization of content and form in sculptural artwork. This requires artists to feel the full psychological impact of color in their practical use. [Henry Matisse, (2018) by Liu Miao. An Analysis of the Expression of Self-Emotion in the Creation of Oil Paintings.]

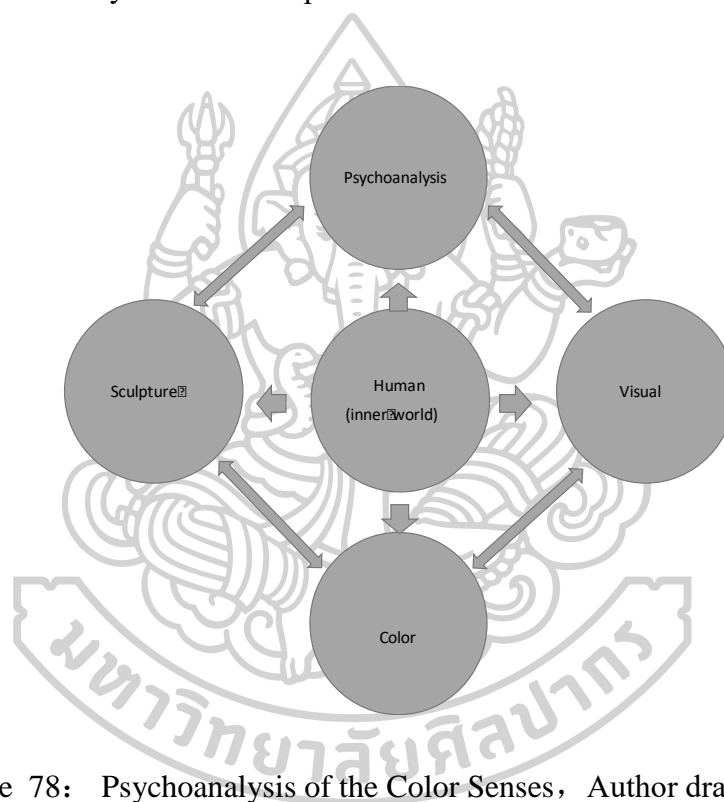


Figure 78: Psychoanalysis of the Color Senses, Author drawing,2021.

#### 4.5.7 Analyze the color of experimental work "The Cloud - The Girl and the Balloon"

##### (一) Design ideas

The little girl is standing on the clouds, holding a balloon and eating a lollipop. When people have the temperament of "clouds", they will not be troubled by the vagaries of the world, they will move with the wind, conform to everything, and blend with everything.

##### (二) Elemental color analysis



### ① Moon

The color of the moon is predominantly white, which reflects all the light and has a clean and expansive feel. When the space is small, white can have a regulating effect on irritable people, which helps to keep blood pressure normal.



Figure 79: The moon, Author design, 2021.

### ② Mountain

The color of the mountain is a bright combination of white and green, with white being clean and green being calming and comfortable, having a calming effect on the nerves, lowering eye pressure, relieving eye strain and improving muscle movement.

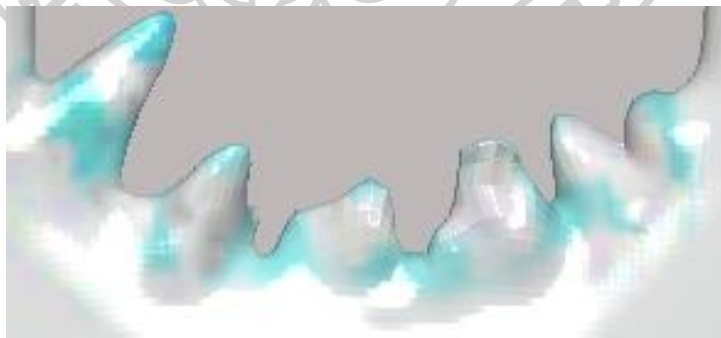


Figure 80: The mountain, Author design, 2021.

### ③ Cloud

The color of the clouds is predominantly white, the blue sky and white clouds are a realistic portrayal of life, white and simple, clean and bright.

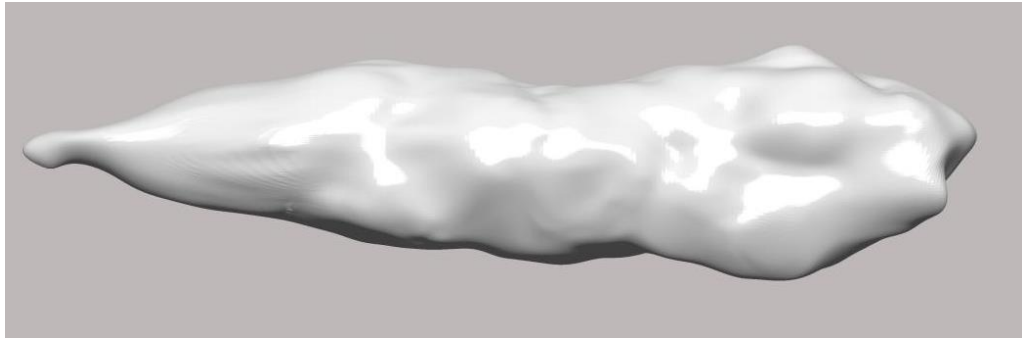


Figure 81: The cloud, Author design, 2021.

④ Girl

The colors for little girls are mainly bright and colorful, little girls are naive, a variety of bright colors can better reflect the children's innocence, livelihood, color is the most real fairy tale dream of children.

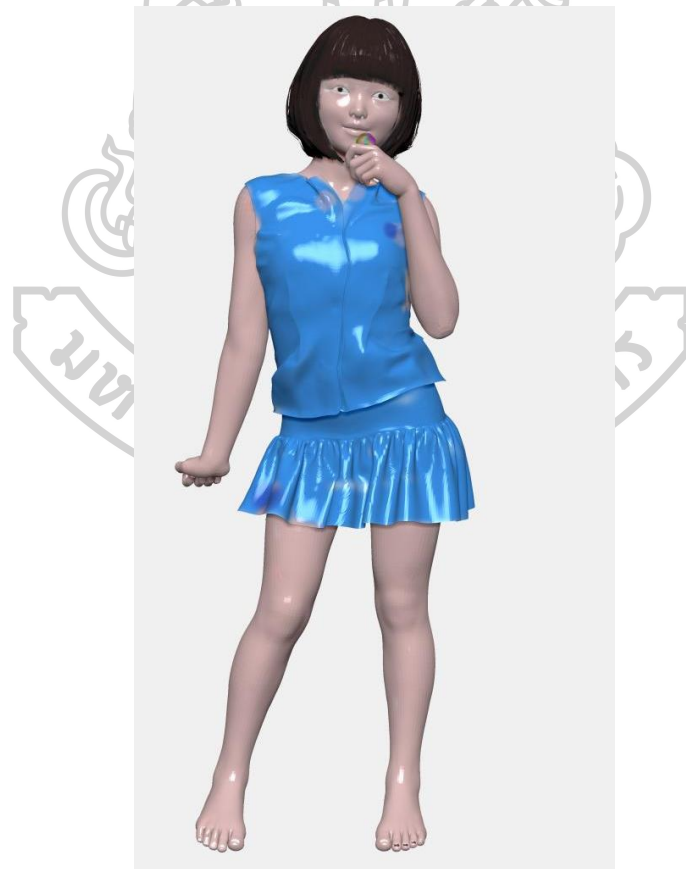


Figure 82: Girl, Author design, 2021.

### ⑤ Balloons

The colors of the balloons are mainly red, orange, yellow, green, blue and purple, and the inherent colors of the balloons themselves are generally the seven colors. Each color represents a joy. The colors are flamboyant and full of life.

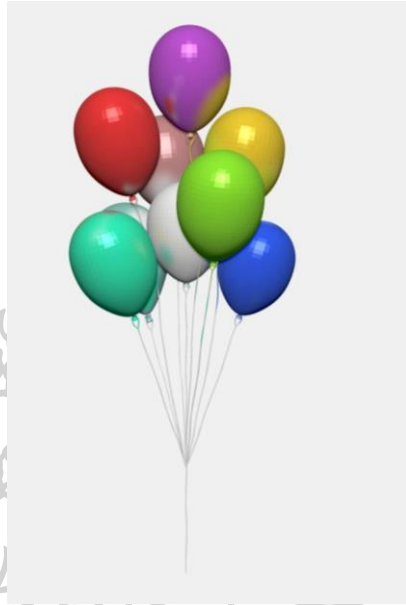


Figure 83: Balloons, Author design, 2021.

### ⑥ Lollipop

The colors of the lollipop are mainly red, flower and blue, red is lively and warm; yellow is light and bright; blue is soothing.



Figure 84: Lollipop, Author design, 2021.

### (三) Overall sensory analysis

The brightness and purity of the color of a sculpture has a direct impact on the emotional connotations expressed in the sculpture, with bright and happy mental and emotional presentations requiring high purity and high brightness colors.

Quiet, gentle, melancholic works require low lightness and purity.

The color of modern sculpture also depends on the brightness and purity of the sculpture, although purity sometimes plays less of an expressive role and more of a role in the brightness of the color. When a sculpture expresses power, tension, perseverance and other themes, the color is usually chosen for its high purity and brightness. The combination of warm and cold tones is also used to show the spirit of the work.



Figure 85: "The Cloud - The Girl and the Balloon", Author installed 2022.

#### 4.5.8 Analyze the color of experimental work " Perpetual calendar - Woman and dog"

##### (一) Design ideas

Woman and Dog, this work uses the perpetual calendar model frame as the main structure of the sculpture to reflect the long span of time. The conversation between the woman and the dog forms a permanent companionship. Over time, let people understand that they are not alone. It is not a person, no matter the family, friendship or animal, so as to tell people whether between people and things, between people, people and animals should communicate with each other.

## (二) Elemental color analysis

### ① Perpetual calendar

The colors of the perpetual calendar are mainly black and red. Kandinsky has linked red at a 90 degree angle to black at a 180 degree angle, right angles and flat angles all have a sense of stability and balance, so you can see that black and red have the same psychological stability. Moreover, black has the strongest sense of weight of any color in terms of the color and temperature of the light it absorbs. Red is bright, highly saturated, smooth and non-jumpy, with a sense of stability.

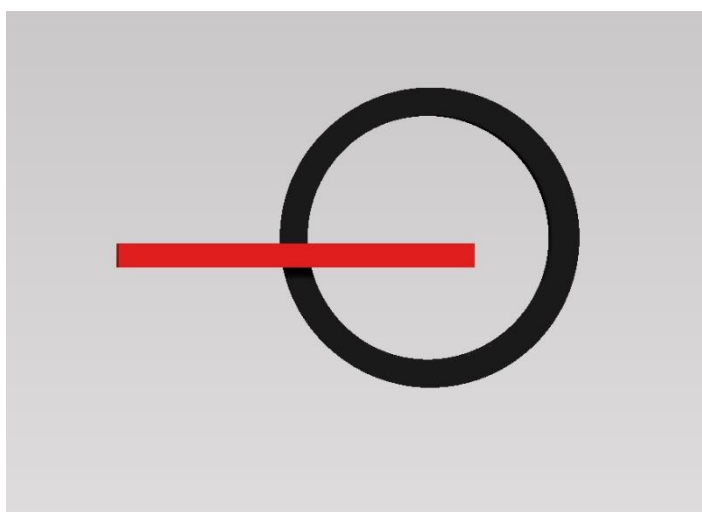


Figure 86: perpetual calendar, Author design, 2021.

### ② Woman

The woman's skin tone is dominated by the inherent color of the figure, and the dress is colored mainly in white and black artificially. Black and white belong to the contrast between shades of color, light and dark, and represent the Yin and Yang poles of the color world. The Tai Chi pattern is a circular form of black and white to express the eternal movement of the universe. The abstract expressiveness and mystery that black and white possesses seems to transcend any depth of color. Black and white are polar opposites, yet at times we feel that there is an uncanny commonality between them.



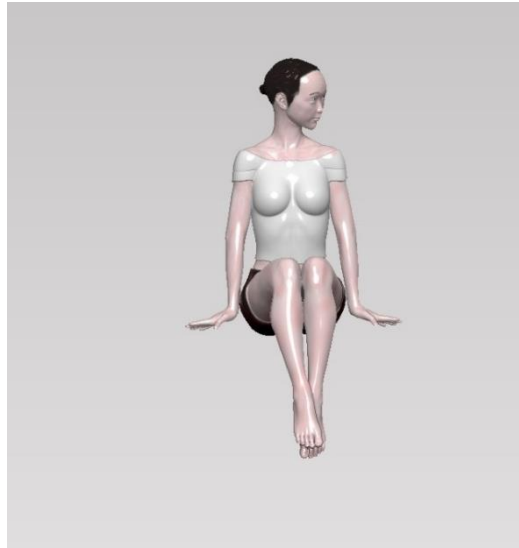


Figure 87: Woman, Author design, 2021.

### ③ Dog

Dogs are predominantly brown and white, with contrasting shades of light and dark. The contrast of shades and gradations of color can bring out the inner world of emotions in people. The subtlety and purity of white and the solidity and humour of brown reflect the inner emotions of human beings. The different materials and colors give the sculptures their power and charm.



Figure 88: Dog, Author design, 2021.

### (四) Overall sensory analysis

When the nature of the material itself can clearly or better convey the author's point of view, the original color of the material is used directly. If there is a part of the material's own qualities that does not correspond to the feelings conveyed by the

author or does not release all of the author's feelings, it may depend on the sculptor's conception of the work. However, if the material and the color are combined in an organic way, the quality of the work can be better enhanced, the artistic concept better conveyed and the viewer can be better led to an emotional resonance. The choice of color can be tailored to the emotions expressed in the work.

However, the rational use of color in sculpture enriches the sculptor's expressive language and adds new vitality and individuality to the sculpture to reflect the distinctive spirit of the times in a modern living environment, while maximizing the psychological requirements of the viewer with richer visual effects and emotional colors.



Figure 89: "The Cloud - The Girl and the Balloon", author installed 2022.

#### 4.5.9 Research result

Modern sculptors, artist, or designers are to create a harmonious unity between their works and the environment as well as with their works themselves, to create a harmonious beauty of unity and change in the dynamic process of color. The color beauty of urban sculpture is embodied in form and content. Through the color beauty of sculpture works to reflect the beauty of the mental state of the work. A good sculpture is not an independent individual of color. It is an artist's feeling of the natural environment, the sublimation of the beauty of natural color, and the loudest and most beautiful note in the symphony of the city. Good sculptural artwork can give

people a strong sense of color pleasure. In the design of modern sculpture, the law of color beauty should be properly used, and the corresponding color configuration should be carried out because of time, place, event and person. Strive to explore the harmonious law of color, master the regional customs, the pulse of The Times, the sculpture works and architecture and environment as a harmonious whole, highlight their own style under the premise of harmony and unity, give full play to the value of personality, and strive to play the role of sculpture in urban construction.

Expand the application space of color in the sculpture, so that the sculpture itself becomes colorful, however, as one of the landscaping of the city,

Not exist independently, and the style and color of the whole city is harmonious, so in the sculpture in the use of color to use colorific contrast law meticulously, let sculpture in the full display itself unique charm of space at the same time, and the overall environment to form a new harmonious relationship, the city's landscaping to add color.

Color in modern sculpture creation has a sense of both sight cannot be ignored, the realization of texture and color complement each other, is a typical use of modern sculpture color. In sculpture creation, color coating is directly applied to sculpture, and the color of the material itself is completely covered, so that the material itself only becomes a filler. This artificial color makes the sculpture more distinctive personality, and the sculptor can arbitrarily control the weight, hardness and hardness of the sculpture. The re-creation of artificial colors enhances the expressive force of sculpture works on artists' thoughts and emotions.

#### **4.6 Sculptural artwork installation experiment**

##### **4.6.1 Sculptural artwork installation research and induction**

Installation art refers to the selection of elements that fit the artistic concept and the underlying emotional attitude of the creator's work, and the selection of a specific spatial and temporal environment in which they can be associated, and the rational use, reshaping and recombination of various elements that fit the creator's artistic expression, in order to create a new form of art and culture with a higher dimension. A comprehensive form of art display in which "a specific spatial and temporal

environment + the elements of the work + the emotional attitude to be expressed" is installation art.

Sculptural artwork is produced by sculptors using artistic techniques such as carving, faceting, carving, grinding, shaping, weaving, collaging, gluing, welding, cutting and inlaying. These methods can be used singly or in combination with each other to construct a rich variety of forms. Sculptors adopt different methods and experiment rigorously in order to reproduce artistic effects.

Thus, we can conclude that a sculptural artwork installation is a work of art in which the finished product or the subject of the artist's creation is fused with the finished product, assembled, and combined with sound and light.

#### **4.6.2. The relationship between the composition of the sculptural artwork installation**

##### **1. The relationship between the sculptural installation and the environment**

Installation sculpture needs an appropriate environment to express its subject matter and interactive behaviour with people, and the environment needs installation sculpture to decorate and beautify the space.

##### **2. The relationship between sculpture and installation (sound, light and electricity)**

Sculptural artwork and installation is to constitute a part of the sculpture art, broadly speaking, is not anything of real substance in difference, but now that art can delimit sculpture and installation into two groups, suggests that there are both similarities and differences between the two, so sculpture and installation is complementary to each other, oppose each other each other. The most important thing for sculpture is the three-dimensional expression of space, which reflects the essence of art in a three-dimensional sense. In comparison, the installation is like a component element of sculpture, and its existence is a part of sculpture, which can make the sculpture express more clearly. When sound, light and electricity are integrated into the sculpture, the interaction between sculpture and people can be increased. For installation art, its artistic effect is presented by sculpture, but with the help of sculpture to create an artistic atmosphere of beauty.

### 3. The relationship between sculptural artwork installations and people.

The interaction between sculptural devices (sound, light, electricity) and human body language can bring people closer to the sculpture and convey emotions better through interactivity.

Table 14 *Factors to consider for installation sculpture*

	Relationships	Content	Common Point
Installation sculpture	Environment	Spatial Scale	Increase interactivity, shorten the distance between people, people and things, people and nature
	Sound	Rhythm and Rhyme	
	Light )Lamp)	Visual Impact	
	Electricity)Motors(	Running speed	
	People	Emotional interactivity	

#### 4.6.3. The effects of sound, light and electricity on sculpture

**Light:** sculptures are affected by the colorful light, and the refraction and reflection of the light produce a changing effect on the sculptural artwork. The surface of the sculpture can also be made very smooth, using the reflectivity of the material itself to the light, the blue sky, white clouds and green grass in the surrounding environment, using the dazzling colors of nature to make the static sculpture form a wonderful movement.

**Sound:** The visual element works aesthetically and acoustically, transforming sound waves into physical form and bringing sound to life visually, thus creating an emotional and uplifting experience that highlights sound as a visual effect.

**Electricity:** Making sculpture move, a product of the industrial age. The outstanding feature of kinetic sculpture is that it combines art and science, art and technology, bringing the dimension of time into the realm of sculpture, thus increasing its appeal

and mobilising the audience to appreciate it. kinetic sculpture can add movement and vibrancy to an urban public space, making it more dynamic.

#### 4.6.4 The interactive nature of psychoanalytic sculptural artwork installations

Viewer can not only see the colors, shapes, lighting and size of the model. It is also possible to see the dynamic rotation of the sculpture and to participate in the rotation of the sculpture and interact with it. The so-called interaction is in fact the migration and release of inner emotions.

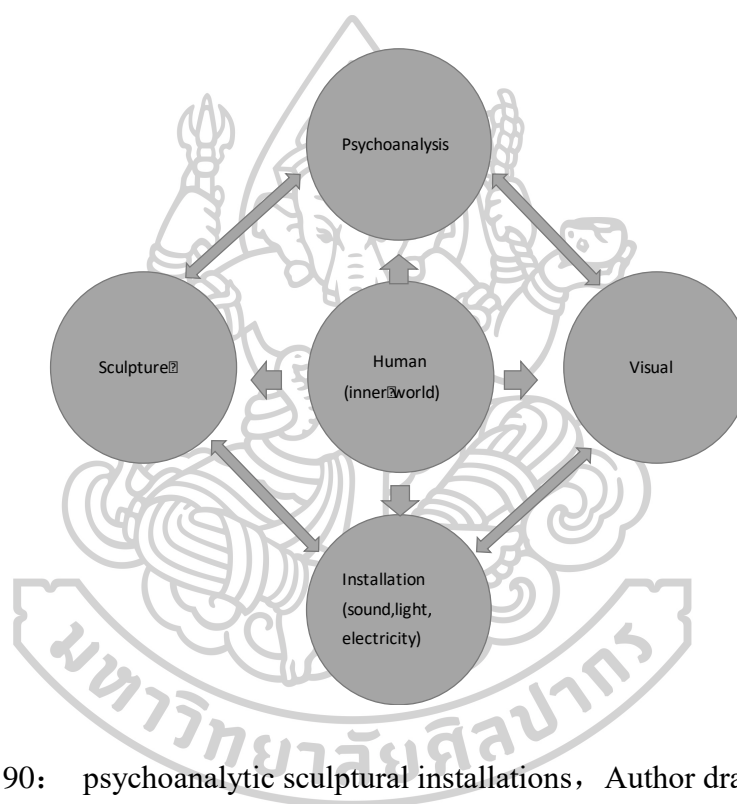


Figure 90: psychoanalytic sculptural installations, Author drawing, 2021.

#### 4.6.5 Designing experiments one

##### 1. Title of the work " The Melody of Life "

##### 2. Concept

The pursuit of the realm of life by traditional Chinese philosophy can also be described as the pursuit of truth, goodness and beauty by ancient Chinese philosophers. The influence of traditional Chinese philosophy on the reality of life has always been extremely profound, enormous and long-lasting, and it has given life a spiritual enlightenment, motivation, guidance in development and improvement in



realm. In contemporary society, traditional Chinese philosophy is still an important spiritual resource for the building of Chinese spiritual civilization.

The piano is like the primary and secondary contradictions. For example, a main melody or main note in the right hand is the primary contradiction, which should be seized; the accompaniment or chord in the left hand is the secondary contradiction, which should be properly dealt with, which is an effective combination of life and melody.

### **3. Design ideas**

Music resonates with our emotions the most, so this approach is the most effective. We cannot live without music, music interpretation of our world colorful. In the author's opinion, the most exciting music is the piano. The voice of the piano is directly integrated into the sculpture, and the light is connected in the sculpture. Along with the notes of the piano keyboard, the light will change colors. The viewer can participate and interact with the sculpture.

### **4. Design works**

#### **A. Elemental Extraction**

##### **(1) Square box and circles**

Square refers to something that should be fixed in principle; circle is the way one does things. The circle is an important spiritual archetype in Chinese culture, which has a very close relationship with the Chinese people's cosmic consciousness and life mood, and is also a factor that we cannot ignore in revealing the secrets of life in Chinese art. The square is the embodiment of the face of the figure in Chinese culture, rigid and upright.

##### **(2) Piano**

The melody and rhythm of the piano can suggest certain emotional tendencies in us. Short and dense give a sense of urgency or restlessness, positivity or excitement; not sparse or dense gives a sense of relaxation or moderation, confidence or ease; long lines of atmospheric suction either give a sense of beauty, openness, relief, song, or a sense of gravity, solemnity, composure, stagnation; and so on.

The purity of the piano's sound indicates that your mind is moving in the direction of beauty.

### (3) Bottle

Life is like an empty bottle, you can put something in it, but it will always be full, so treasure your time. Love is the same, a person's world is always limited, so we must grasp each sweet.

### (4) Colorful light

Colorful lights symbolize harmony and happiness. Modern society more than the Spring Festival, Lantern Festival and other festivals hang, add luster to the festival day, pray for peace. In addition to reflecting modern life, lanterns also contain a lot of ancient opera and Confucian traditional culture, especially local culture, which is a kind of spiritual relaxation and enjoyment.

## B. Design Process

### (1) Square box and circles

The direction of the circuit is placed in the square box, and the glass bottle is placed in the ring.

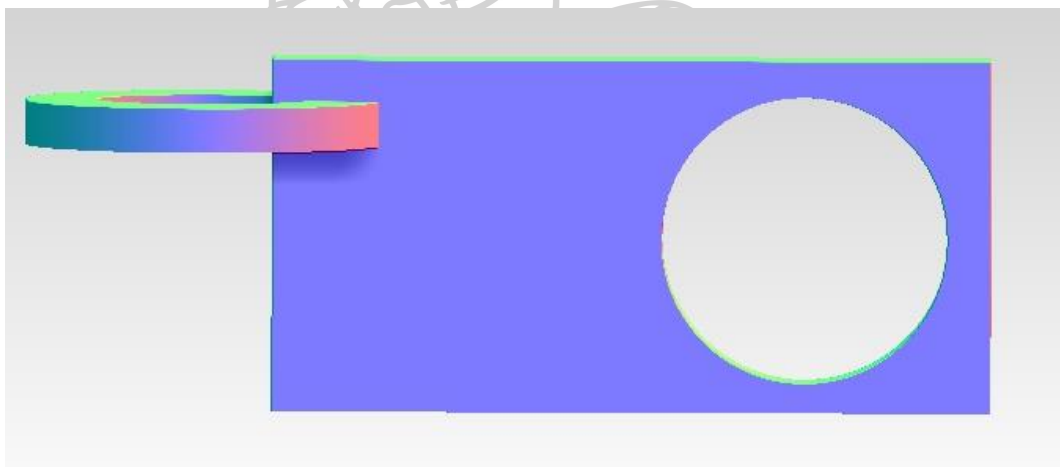


Figure 91: Square box and circles, Author design, 2021.

### (2) Piano

The power line and LED lamp bead are welded in the piano circuit board, and the resistance is welded on each key of the piano and the touch key of the power line is arranged.



Figure 92: Piano, Resources from the author's photos, 2021.

### (3) Bottle

LED beads of different colors were placed in each glass bottle. When each piano key is played, the corresponding glass bottle lights up.



Figure 93: The bottle, Author design, 2021.

### (4) Colorful light

The color of the light emitted in the colored lamp is the same as the color in the glass bottle in which the lamp beads are placed. The color of the beads, when illuminated, increases the visual perception of the glass bottle.



Figure 94: Colorful light. Resources from the author's photos,2021

## 5. Finished product display

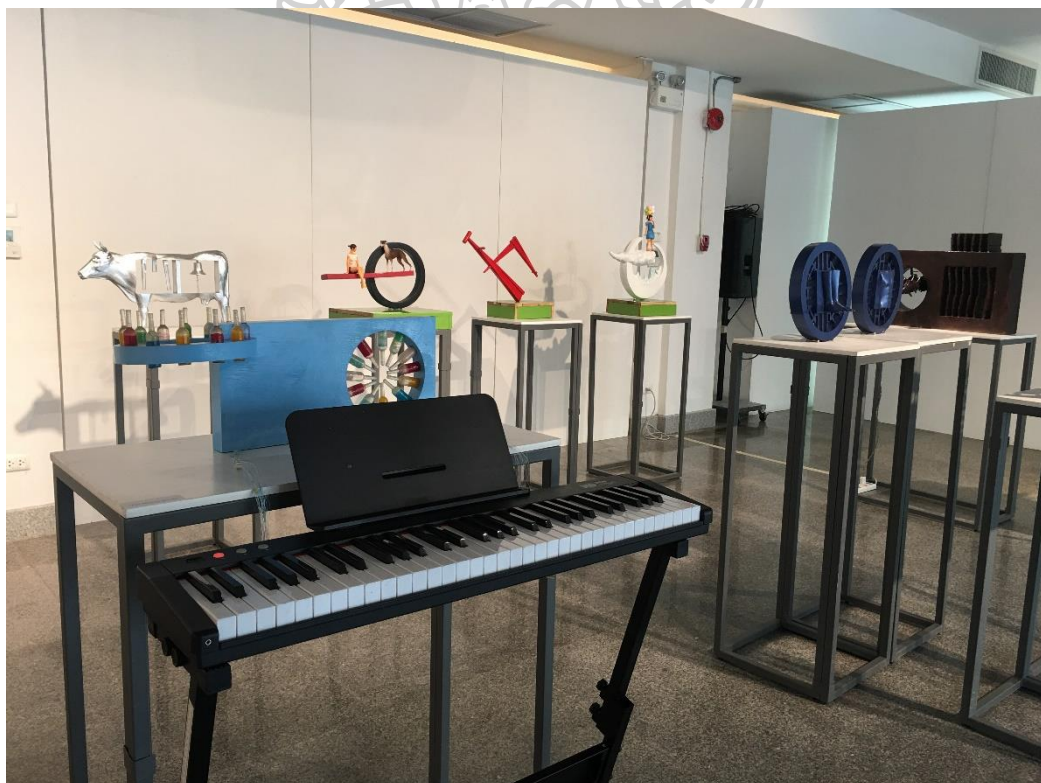


Figure 95: " The Melody of Life ", Author installation, 2022.

## 6. Design Summary

The expression of conceptual art manifests itself appeared in two ways: its artistic expression evolves from a creative concept into a concrete whole process that allows the viewer to follow the thoughts of the creator; and secondly, it guides the viewer's perspective of appreciation through acoustics, images or concrete objects, allowing him or her to participate in the designated artwork itself. The language of art is the medium of articulation for conceptual art, which begins with a form of presentation that is closely linked to language, which is used in statements and repeated.

### 4.6.6 Design Experiment two

#### 1. Title of work: "The First Daydreams"

#### 2. Concept

Almost every creation of a writer is a daydreaming journey. Tolstoy once said, "It is the law of the writer to write with an inner vision of the object depicted." In writing, the writer not only "sees" but also "hears" the character's voice, tone of voice, tone of voice, and even the various sounds of the fantasy world. [Tolstoy; (1999) by Liu Yamei. Light and Fresh, Emotionally Languid - Reading 'The Color of the Willow is Like a Dream']

The German composer Brahms said on more than one occasion that only when he was deep in meditation his musical ideas come to mind uninterruptedly. Artists often actively pursue their daydreams which are full of creativity.

#### 3. Design ideal

The work is based on the dream world, which is recreated through the fantasy of dreams, allowing people to search for their original innocence in a relaxed state.

#### 4. Design work

##### A. Elemental Extraction

- (1) Child: The children's faces better reflect the innocence and romantic fantasy.
- (2) Fish and Children: The fish represents freedom. Two children are standing on the back of the fish, pursuing happiness and freedom together with the fish.
- (3) Trees and Animals: Trees are tenacious, animals are spiritual, and the combination of the two is more affectionate. Trees and animals are inseparable from people's lives, which is a rich emotional relationship between nature and human beings.

##### B. Design Process



### (1) Child

The head of the child is a figurative object with an electric motor inside the child.

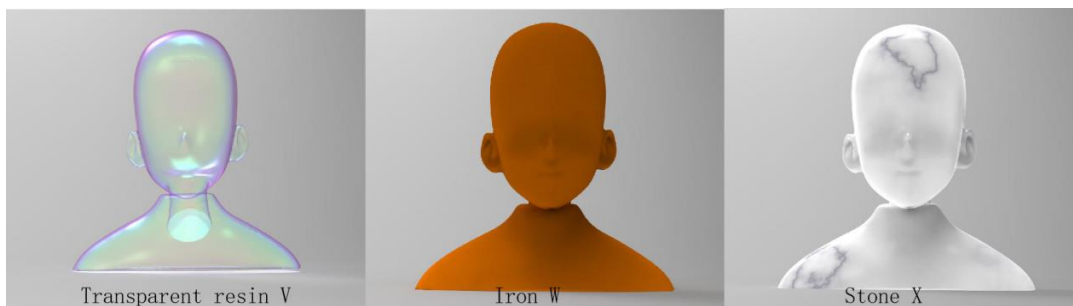


Figure 96: Child. Author design, 2020.

### (2) Fish

Both the fish and the child are figurative objects. Driven by the power system, it causes the frequency of operation of the fish and the standing child to change as the power level changes. The viewer's visual sense of touch and mental sense of touch merge into one.

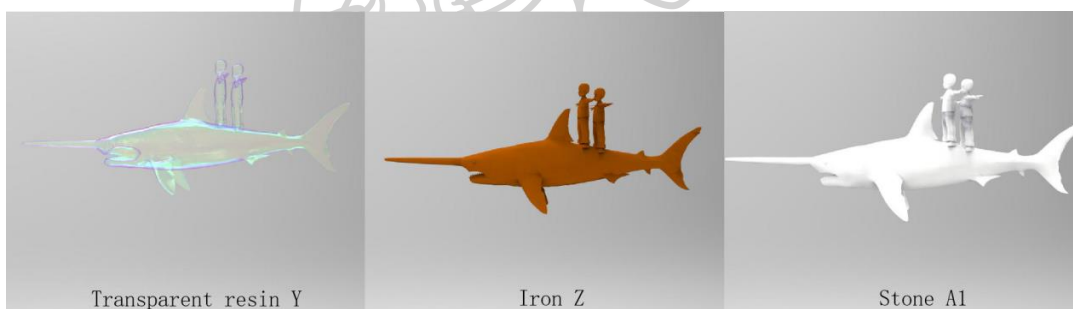


Figure 97: Fish. Author design, 2020.

### (3) Trees and Animals

Trees and animals are also figurative models, where fish and children move on the same principle, controlled by a kinetic system.



Figure 98: Trees and Animals. Author design, 2020.



## 5. Finished Product Display



Figure 99: “The First Daydreams”. Author installation, 2022.

### 6. Design Summary

Many artists borrow the expression of installation art to attach their inner creative thoughts and emotional expression to it, which is perhaps the unique display feature of installation art, giving the appreciative audience a new multi-faceted and special perspective to appreciate the work. The zero-distance and multi-angle contact with the works on display provokes the viewer to think and feel something about the works themselves.

#### 4.6.7 Research result

Installation sculptural artwork has not only incorporated sound and light systems in technology, but has also brought about innovation in its own form and concept of creation. In recent years, the use of new technologies such as multimedia, new

modelling technologies (e.g. 3d printing) and interactive art has also led to a qualitative change in the face of sculpture. However, the interactive nature of sculptural artwork installations is to give the viewer an artistic experience.

#### 4.7 Overall analysis and application of the experiment

The results of this study are aimed at analyzing the creation of models with emotional sculptures to release people's stressful emotions, and the importance of the environmental space as a vehicle for obtaining design improvements, feedback, and evaluation of the output of the emotional sculptures cannot be ignored. Due to the effects of the Covid-19 pandemic, the researcher was unable to access the real space. Therefore, the researcher selected the school art gallery as the environmental space to enter the universal environment for an experimental study to evaluate the emotional sculpture. The knowledge found can then be applied to other public space areas, such as urban parks. It can also be used in the field of design education. Inspiring research methods for students.



Figure 100: Next environmental study rendered installation. Author collective work, 2020-2021.

## **Chapter 05**

### **Conclusion of the research**

To investigate sculptural artwork design combined with emotional stress release, this study explores the environment, materials, shapes, concave and convex textures, colors, and installations (sound, light, and electricity) of sculpture. This study also analyzes the interaction between graphic and artistic elements and people, as well as the aesthetic value and spiritual transformation of living symbols. The researcher has reviewed a large amount of information on the emotions of sculpture, combined with the concept of contemporary sculpture, to distill the emotional elements of sculpture for the spiritual transformation of people. (Appendix 4: Overall structure diagram)

#### **5.1 Conclusion**

In this study, the researchers explored six factors, including the sculpture's fit with the environment factor, material, shape, intaglio texture, color and installation (sound, light, electricity), and designed experiments on possible factors for people's mental and emotional transformation. (Appendix 5: Visual sensation diagram)

First of all, contemporary sculpture needs to consider emotional themes, refine and decompose, reconstruct, abstract and geometricize the forms of emotional thematic elements to form new geometric shapes, and apply geometric shapes to sculptures in the form of sculpture models according to different sculpture themes. This is to convey the artistic beauty and spiritual beauty of contemporary sculpture.

The formal beauty of sculpture is further resonated with people's emotions in environment through the transformation of sculptural models.

In the image transformation project of sculpture, the final spiritual emotion, concept and artistic style are effectively decomposed and reconstructed into geometric images, living symbols and figurative elements, forming an emotional expression that can be used in contemporary sculpture, presenting a new stylistic style. The aim of this study is to distil new elements of sculpture design that can be emotionally transformed. (Appendix 6 Sketch sensory analysis)

In the sculpture experiment. Firstly, the 10 sculptures were divided into two groups: dynamic sculptures and static sculptures. Secondly, the sculptures explored the emotions of the two groups of sculptures under different experimental factors.

In the design, for the transformation of human emotions, we need to consider the degree of fit between the sculpture and the environment; the texture of the material and the texture of the bumpy texture to give people a tactile imagination; the shape of the graphics to give people a reverie and the installation to bring people interactivity; the color presentation to give people a visual experience. These experimental parts are combined with the concept of sculpture in the creation of sculpture. While conveying the analysis of the beauty of the sculpture, it also conveys the emotional resonance between the sculptural artwork and the audience.

Table 15 Factors combination

Sculptural artwork Form	Factors	Combination
	Environment	
	Material	
	Shape	
	Convex and concave texture	
	Color	
	Installation )sound, light and electricity(,	

Urbanization reflects a boom in the fields of culture, technology, music and sculptural artwork. It is because of this modernization that the value of emotional three-dimensional artwork in public space has been recognized. This study uses sculpture design as a medium to explore new perspectives on the transformation of sculpture and people's emotions in order to offer relaxation and release psychological stress.

In addition, sculptural artwork space is further investigated in this study. It also analyses the environmental space, the modeling space, the concave and convex space, the interactive space, the visual space, the imaginary space and the emotional space of people, and proposes a multi-angle and all-round mental analysis framework in visual thinking. The future task is to continue to expand the knowledge of space on the basis of art theory, which may further promote the construction of urban park sculpture and enhance the interaction between sculpture and park, park and people, and people and sculpture.

Secondly, the sculpture is analyzed from the perspective of life scenes. Scenes from people's living environments can be combined with sculpture design to become figurative elements in sculpture design. This figuration can be combined with abstraction to extend the design and develop sculptural products around the city. For example, a little girl flying a kite or a man walking his dog; these structures can be transformed into the structural design of a sculpture, on the basis of which the researcher will consider further research and experimentation in sculpture design.

The combination of sculpture with human emotion and modern sculptural aesthetics has led to new and innovative possibilities. From the point of view of human emotions, the increasing number of people suffering from psychological problems due to the stresses of life and work has become a worldwide topic of discussion for design practitioners. Many researchers around the world are looking for solutions to psychological problems and are making various artistic self-healing approaches to this problem. Research needs to be closely integrated with practice. A multi-perspective approach brings possibilities. The task of finally solving this problem may need to be taken further in the future.



In general, the development of sculpture need to take into account the psychological problems of people. People's psychological issues cannot be ignored.

### **5.1.1. Feedback suggestions for emotional sculptural artwork**

The overall emotional expression of the sculpture follows the emotional setting of the sculpture theme, and the sculpture is divided into two groups: static sculpture and dynamic sculpture.

The static sculpture follows the principles of traditional sculpture in terms of design elements. From thematicity to experimental choices and data analysis in design ideas. The sculpture "Meditation Space" was designed to improve the installation and design form of the stone due to the visual crisis caused by the hanging of the stone.

Dynamic sculpture follows all the design principles of static sculpture, but mainly reflects the interactive nature of the sculpture installation. The installation technology of sculpture applies the innovation of modern science and technology. In the environmental space, the distance between people and people and between people and sculptures is brought closer. Dynamic sculpture is more effective in transmitting emotions in environmental space. In future research, it is recommended that researchers use more computer systems and programming in sculpture to make it intelligent.

### **5.1.2. Exploring the emotions of two groups of sculptures (static and dynamic)**

Dynamic sculpture is very different from static sculpture in terms of characteristics. The spirituality of installation sculpture makes dynamic sculpture break away from the mechanical and lifeless solid structure, as if it is imbued with a certain life state, and then constantly transforms and changes between the two.

#### **(一) Static sculpture**

Static sculpture is a static and unchanging form that visually relies on the inherent shape, material, bumpy texture, and color of the sculpture itself to convey sculptural emotions. The interactivity of sculpture relies on human activity; people are the moving subjects and sculpture is the static object.

**Material:** The creation of sculpture on the theme needs to further reflect the emotional expression through the material. The choice of material plays a functional role in the theme of the sculpture. In addition, the transparent resin penetrates the space and increases the aesthetics of the sculpture's built-in spatial structure.

**Modeling:** The three-dimensional form of the sculpture acts on the visual plane graphics and sensory three-dimensional space level of the sculpture to its own shape to convey different sensory experience. Multi-angle viewing requires people to change their own angular position to view the sculpture from different angles to form a graphic transmission to the sensory imagination.

**Texture:** First, the sculpture texture reflects the spatiality of the sculpture in terms of modeling. Secondly, the inherent texture of different materials itself is different in touch, so much so that the emotions are different.

**Color:** Color gives the sculpture a sense of volume and space. Sculpture is three-dimensional space. Color can better reflect the sense of space on the sculpture modeling.

## (二) Dynamic sculpture

Dynamic sculpture is a mobile and versatile form, which visually relies not only on the inherent shape, material, texture, color and other factors of the sculpture itself, but also on the interactive experience of the sculpture brought by the kinetic device to convey the emotion of the sculpture. The interactive experience occurs simultaneously between sculpture and people. There is no distinction between subject and object between sculpture and people.

In addition to the material, shape, texture, color and other emotions contained in static sculpture, dynamic sculpture is more expressed in the installation of sculpture, and the emotion of installation sculpture is reflected in the interaction between sculpture and people, and sculpture plays an active role in interaction.

(1) "Interactivity" is the main characteristic of kinetic sculpture. In the artist's view, a dynamic sculpture is not self-regulating, and its subjectivity is ultimately reflected in the "interaction" between the work and the audience. The artist has already considered the aesthetic stereotypes of the audience before the creation of traditional sculpture, so the audience is passive and deaf in the process of receiving the work, while the work is active and self-regulating. The major difference with static sculpture is that the audience should be an important part of the work, and the meaning of the work is realized in the process of "interaction" between the audience and the work. For example, the sculpture "Melody of Life" combines sound and light in the same sculpture, and its light color and sound change randomly according to people's playing activities on the piano. In addition, the sculpture "The First Daydreams" has an effect on the "movement" of the sculpture, regardless of the viewer's state, whether at rest or moving. Obviously, the viewer becomes an extremely important factor in the process of making the work meaningful.

(2) The kinetic sculptures further expand the form of static sculpture, organically combining the art forms of installation and architecture, and emphasizing the "theatrical" relationship between the works and their surroundings. In the installation sculptures, we can see the structuralist tradition that originated from Constructivism. For example, in the sculpture "peripateticism", the artist gives the work an inner order and structure through organic forms. In another work, "Watching - Iron Bull," in addition to the free movement of the pendulum, the sound generated by the interaction of the bell with the public, and the concave and convex texture of the geometric forms, the overall appearance of the work complements its surroundings and activates the single, static structure formed by the surrounding objects. It activates the single, static space formed by the surrounding objects and gives it vitality.

(3) The installation sculptures are representative of the use of sound and light, especially in the richness and diversity of visual expression of the works.

(4) The researcher effectively used a variety of colorful lighting, which allowed the sculptures to produce a multitude of fascinating projected images on the ceiling, floor,



and walls of the gallery. As the light constantly changes, the resulting variety of dizzying shadows and light infuses the space with a dreamlike feeling.

(5) In the movement of the sculpture " Dreams and Walks - Camel ", natural wind replaces the usual reliance on "electricity". For the artist, the "kinetic sculpture" relying on natural wind becomes very pure and reinforces the cultural concept behind the work, which emphasizes the integration of sculpture and nature, and thus explores the "unity of heaven and man" cultural concept of Oriental people in a broader cultural context. The cultural concept of "unity of heaven and man" in the East is explored in a broader cultural context. Therefore, in terms of the dynamic expression of the sculpture, " Dreams and Walks - Camel " is more in line with the aesthetic concept of the Orient.

Generally speaking, the biggest difference from static sculpture is that the researcher especially emphasizes the expression of the "humanistic" concept behind the "movement". This is reflected in the pursuit of "interaction" between sculpture and people, making the participation of the audience an essential part of the meaning of the work; on the other hand, it is an effort to dissolve the distance between elite art and popular art since the modernist stage, trying to make the sculptures visually better and formally richer, more interesting and more playful, so that viewers to accept them with pleasure. Obviously, the meaning of kinetic sculpture takes effect in the interaction with the viewer. Secondly, the researcher attaches importance to the interdependence between the works and the surrounding environment and public space, highlighting the "theatrical" environmental atmosphere.

### **5.1.3. Exploring individual experiments into the next space research**

The researcher used the expansion of emotion as three-dimensional artwork as a motivation. Experimental data analysis was conducted on the material emotion of the sculptural artwork, shape graphics, concave and convex texture, color, and installation, and through environmental space experiments (due to the Covid-19 pandemic, the researcher was unable to enter the real space. Therefore, the researcher chose the school art gallery as the environmental space to enter the environmental space experiment to evaluate the emotional sculptural artwork) to effectively reach output and obtain the emotional evaluation and feedback on the design experiment for the emotional sculpture artwork. The researcher's work almost effectively absorbs the linguistic expressions of static sculpture and dynamic installation art, together with the researcher's analysis of the emotional data of materials, shapes, texture, and colors and the use of new technologies, which makes the emotional sculpture completely break the boundaries of traditional sculpture forms.

The result of this research is to create emotional sculpture artwork models to release people's inner stressful emotions. The environmental space has an important significance and role as the output, in design improvement, and feedback of the resultant emotional sculpture, and evaluation. Sculpture to realize its value needs to be carried through the environment. Therefore, the best environmental space is the outdoor public space. The researcher will eventually selected to apply the knowledge found in the sculptural artwork model to other public space areas such as urban parks,

urban squares, urban pedestrian streets and other public spaces for additional work furthering environmental space study.

#### **5.1.4. Combining modern sculpture aesthetics**

The combination of modern sculptural aesthetics is conducive to an independent design style, and the system may be valuable in the international design phase. In the design of emotional sculptures artwork, researchers should refine the sculptural forms based on life, scenery, emotions and various art and social sciences story and themes (Note: the chapter 2, theme analysis), and apply them to sculpture design to increase people's aesthetic interest and cultivate valuable sentimental factors beneficial to society

The construction of sculptural elements brings about a variety of emotional analysis, which requires modern design to incorporate fantasy and real-life beauty as emotional elements, and to carry out emotional thematic innovation.

In order to avoid superficiality and repetition, the designer must pay attention to the continuity of the design concept. In other words, according to the cultural background of the region, the analysis of human emotions and the distillation of life scenarios, designers can change the traditional conceptual sculptural elements to create new creative design works that reflect contemporary social issues and meet the aesthetic problems of the audience.

#### **5.1.5. Research the art philosophy of sculptural artwork from the perspective of aesthetics**

The art philosophy of urban sculpture is examined from an aesthetic perspective. Based on Hegel's context, aesthetics is called 'the philosophy of art'. Art has never left the realm of the sensuous. The outer expression is artistic imagery and intuition, the inner expression is emotional, fictional and imaginative. Ideas and imagination, content and form, rationality and sensibility, truth and goodness, solidity and individuality, and a range of other ideas and emotions are all fully expressed sensually, while the sensual image perfectly embodies the rational content and artistic expression.

Art, with its unique image and emotional characteristics, preserves the most original and direct experience of our relationship with the world. At the same time, art preserves the original connection between man and the world. As a result, the world we live in will not be reduced to a completely abstract and dull logical world.

The concept of "art philosophy" is fully reflected in emotional sculpture. With the development of technology and the ease of information technology, the artistic and aesthetic process of emotional sculpture can be transmitted to all corners of the world through the Internet. In the creation of emotional sculpture, materials, shapes, concave and convex textures, devices (sound, light and electricity), colors and the emotional relationship between people are all tapped. It has a profound impact on people's minds as well as on the aesthetics of art.

Beautiful things always give people the enjoyment of beauty and visual experience, and the philosophical concept of artistic beauty is combined with emotion to form the sculpture art philosophy. By transforming the philosophy of sculpture into an intangible spiritual consciousness and introducing it into the creation of sculpture, the sculptor is able to sublimate the meaning of his own work, which is also a true embodiment of beauty and a guide to the public aesthetics.

#### **5.1.6 Research the philosophy of sculptural artwork from the perspective of emotion**

The art philosophy of emotional sculpture is examined from the perspective of 'yin and yang'. The Chinese idea of the unity of heaven and man has its own origins and historical relationships. As early as the eleventh century before the park, the ancient Chinese book Zhou Yi described the idea of the unity of heaven and man: "The sun and the moon can shine for a long time, and the four seasons can change for a long time. ...and the feelings of all things in heaven and earth can be seen by observing their constancy", which suggests that man and nature are harmoniously integrated and that the true feelings of all things in heaven and earth are also eternal. Convexity and concavity are a kind of balance, an inner balance, but also a holistic balance in which all things are united. Convexity corresponds to "yin and yang", and "yin and yang" correspond to the sun and the moon.

As the materialized form of human emotion, concave texture represents sadness and negativity. Convex represents happiness and positivity; "Concave and convex"(Note: chapter 2 "Yin, Yang") implies the corresponding factors of human psychology. "Concave and convex" can make people feel tactile imagination when they touch the sculpture up close.

It represents the Chinese people's simple philosophy of transcending reality and pursuing the ideal, and the desire for a better life is the cultural meaning of the Chinese people's unity with heaven and man.

The artistic philosophy of urban sculpture is analyzed from the perspective of visual perception. Based on Rudolf Arnheim's argument that visual experience is dynamic, the pursuit of sculpture in terms of shape, color and material is more a matter of sensory imagination and psychological 'force'. This psychological 'force' is related to the visual perception of sculpture, which generates visual imagery.

According to the Gestalt school of psychology, the 'form' of the perceived object is not the nature of the object itself, but a perceptual whole with a high level of organization, in which the 'interaction' between the psyche and the object activates a pattern of isomorphic tensions that give rise to aesthetic perception. This 'mind-object syncretism' thus gives the visual object its aesthetic meaning and.

Thus, perceptual activity should be seen as a creative activity of the mind. Even in sensory terms, perception can replace what is called 'understanding' in rational thought. This artistic thinking can rise to the level of the human sensory imagination giving rise to a philosophy of the mind.

The visual thinking of artistic perception combined with psychology is a theoretical guide for sculpture in the design of forms and shapes. Conversely, the practice of sculpture in modelling can test the emotional output of the artistic senses in combination with psychology. This dialectical materialist idea will be verified.

From the point of view of psychoanalysis to investigate the artistic philosophy of emotional sculpture. The central idea of Freud's theory: human psychology is the result of conflict and satisfaction of instinctive drive. Freud's theory of emotion is derived from his theory of instinct and change. In recent years, as therapists have tried to understand desires and fears -- a large part of understanding the individual human being is really understanding the deepest desires and anxieties associated with them -- by understanding and evaluating people's emotional world, counselors have been able to gain insight into individual cases. Rather than finding out that the person's biological instincts were frustrated or over satisfied at that early stage of life.

In fact, the Fulfillment of desire is the Fulfillment of dreams. Freud pointed out in wish-fulfillment and Unconscious that the spiritual realm of illusion was also recovered from the erosion of the principle of reality. We have come across the most famous works of illusion, which are called daydreams. It is the imaginative fulfillment of ambitious, grand, erotic desires, and the more exaggerated the expansion, the more reality admonishes us to be strong and patient. The nature of imagination is clearly shown in them. Like any other man with an insatiable desire, he withdrew from reality, diverting all his interests, and all his sexuality, to the desire to create himself in his fantasy life.

Artists in particular are often partially inhibited by neurosis. It is likely that their constitutions have a powerful capacity for sublimation and some variability in the repression that determines conflict. But the artist found his way back to reality: he wasn't the only one with an illusory life; The middle world of illusion is recognized by universal human consent. If we can find a certain activity in ourselves, or in people like us, that is in every way akin to creating imaginative work! Sculpture must have more than one motive, and there must be more impulses.

However, daydreaming is a continuation of the game, and each individual fantasy contains the fulfillment of a wish and ameliorates an unsatisfactory reality. According to the sex, character and circumstances of the creator, the desire to push people is different.

Freud's spiritual theory focuses more on individual spiritual freedom and human dignity, and is closer to the essence of human nature. It is more in line with the spiritual emotions of modern people. His theory of spirituality is the cornerstone of the analysis of emotions in contemporary art. Spirituality is the world of the self, the unity of freedom and necessity, the highest level of the entire art system, the real emotions that people perceive when they create and view artworks.

Emotion refers to the deepest level of the mind or the level of the archetype. When an individual's emotion erupts, whether it is anger, rage or sadness, it is because the core

of the individual's being has been touched. The result of this touching is an inner eruption of emotion - like a volcano erupting in fiery, hot lava.

The type of emotional arousal is specific to each individual, so that when they talk about themselves, even if it is a related subject, they present different facial, verbal and physical expressions. Understanding the connection between emotions and specific events is therefore key to understanding someone's personality.

It is often possible to assess emotions subjectively: if emotions are contagious, it is easy to gain insight into the emotional activity of the other person by putting ourselves in their shoes and understanding their emotional reactions.

We usually look at cognitive, emotional, behavioral and perceptual aspects to determine whether a visitor is normal or not, but it is important to understand the origin of the emotion and what it represents.

In this research design, the researchers used emotional analysis as the basis for the design. By analyzing the emotions of the sculpture in terms of space, material, form, texture, color and installation (sound, light and electricity), and by integrating these emotions into the design, the interaction between the sculpture and people is increased, in order to achieve the emotional meaning of the sculpture for people and to relieve their psychological stress.

## **5.2 The future research contribution**

In an era of economic globalization and cultural pluralism, it is an important issue to balance the relationship between emotion and contemporary design as various designs and creative works in the sculptural artwork industry collide and merge in this cultural context.

First, a future study analysis on the potential of sculptural artwork to transform people's spirituality and emotions through its proper environment, materials, shapes, concave and convex texture, installations (sound, light and electricity) and colors selection. In addition, by extracting emotional elements and incorporating them into the sculptural artwork design, an analysis is made not only from a psychological point of view, but also from a psychoanalytical point of view, as well as an analysis of beauty.

An experiment combining modern aesthetics, "yin and yang", artistic<sup>[1]</sup>visual perception, and psychoanalysis can be a possibility. The experimental process design to focus on further analysis and transformation, to enhance the effect of the viewer's inner emotional transformation, which eventually result in the creation of a series of sculptural artworks. This research approach also hope to hold further exhibitions to modify and improve the creative design process, serving as a case study for other researchers who are interested in related research on how to integrate with artistic self-healing in contemporary sculptural artwork design.

Lastly, a study to create a new design approach in urban park sculptural artwork in any country, as a holistic thinking design combining environment, materials, shapes,



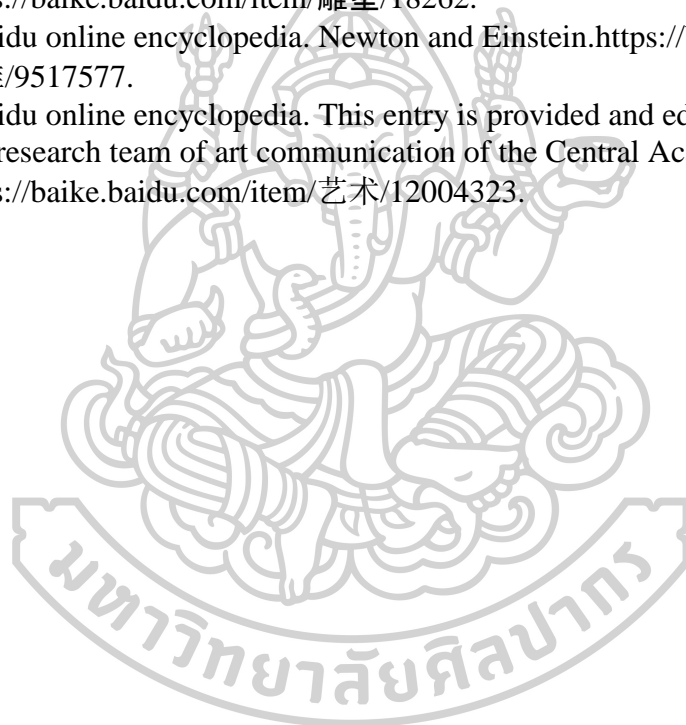
concave and convex texture, installations<sup>[L]</sup><sub>SEP</sub>(sound, light and electricity), colors, art forms and traditional craftsmanship will be a valuable project. The development of emotional and sculptural artwork can be achieved with international promotion and addition influences, depending on the purpose of each future project.



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## Appendix



## Appendix 1 Public questionnaire

### Public Questionnaire

This questionnaire is from Silpakorn University doctoral research project, the purpose of the research is to create sculptures to relieve people's life pressure and improve emotional sublimation. Please fill in the questionnaire objectively. The statistical results of the samples will be of great reference value to my research work. Thank you very much for your participation! Contact email: wangranran999@gmail.com

Sex: Male  Female

Age: Below 30  30-40  40-50  More than 50

Career: Government employees  Private employees  Students  Other

Educational status: Below high school  University and above

Interviewee: University student  Resident  Tourist  Worker

Evaluation score: Very good (5) Good (4) General (3) Not good (2) Very bad (1)

Number	Problem Content	Evaluation score				
1	You get a sense of spiritual experience in sculpture					
2	Sculpture lets you relieve the feeling of pressure					
3	The spiritual experience you get in the sculpture environment space					
4	Your satisfaction with the emotion of contemporary sculpture					
5	Sculpture and environment fit					
6	Atmospheric impact of sculpture on the environment					
7	Sculpture tactile experience					
8	Sculpture and human interaction					
9	Sculpture sense					
10	Sculpture night viewing feeling					
11	From the sculpture to perceive the meaning of culture					
12	You can feel the atmosphere of sculpture art in environment					
13	Satisfaction of overall spatial planning of sculpture in environment					
14	Sculpture emotional expression satisfaction					
15	Your satisfaction with the color of sculpture					
16	Your satisfaction with the material of sculpture					
17	Your satisfaction with the emotion of sculpture transformation					
18	You can gain emotional knowledge from sculpture design					
19	Your satisfaction with the combination of sculpture and local characteristics					
20	You can accept modern design in sculpture					



## Appendix 2

### Interview

Serial No	Question	Answer	Interviewer
1	Do I need to consider the cultural context to create sculptures in the environment?	Considering the cultural background is definitely a good idea .The creation of sculpture needs cultural background as support. Consider from the aesthetic point of view :the creation of sculpture needs to extract relevant elements from the cultural background.	Qin Jigang He Zhenhai Liu Yuhang Huo Pengfei Liu Bei Zhen Yalei Yang Yipu Pan Baixiao Guan Yi
2	How do you see the relationship between sculpture and the environment?	Sculpture and the environment are unified, a good sculpture should consider the relationship between sculpture and the environment before production. sculpture and environment are in harmony with each other	Qin Jigang He Zhenhai Liu Yuhang Huo Pengfei Liu Bei Zhen Yalei Yang Yipu Pan Baixiao Guan Yi
3	What kind of sculptures do you think are helpful for people to release stress?	For the sculpture to achieve the release of stress, it is necessary to consider the storyline of the sculpture, and then it is the expression of emotions in terms of modeling images, colors, materials, etc.	Qin Jigang He Zhenhai Huo Pengfei Liu Bei Zhen Yalei Pan Baixiao Guan Yi
4	How do you feel about the storyline of the sculpture?	Sculpture needs a storyline .The storyline allows the sculpture to better express the theme. Sculpture has the language of expression of sculpture .When expressing the theme, sculpture should set a concept, exactly set a storyline, simple and easy to understand to use the language of sculpture to express the message to be conveyed.	Qin Jigang He Zhenhai Liu Yuhang Huo Pengfei Liu Bei Yang Yipu Pan Baixiao
5	How do you think the materials for the sculpture should be selected?	Outdoor sculptures need to consider hard materials whenever possible. Indoor sculpture materials can be diversified. The material of the sculpture can be chosen according to the environmental factors and the theme to express the appropriate emotion.	Qin Jigang He Zhenhai Liu Yuhang Huo Pengfei Liu Bei Zhen Yalei Yang Yipu Guan Yi
6	How do you see the sculpture shape?	Considering from the sculptor's point of view, the shape of the sculpture is quite important, and the shape determines the sculpture's imagination space from different angles in not space.	Qin Jigang He Zhenhai Huo Pengfei Liu Bei Zhen Yalei Yang Yipu Pan Baixiao

Serial No	Question	Answer	Interviewer
7	How do you think about sculptural texture?	Sculptural texture is the imagination of touch, which can increase the intimate distance between people and sculpture.	Qin Jigang He Zhenhai Liu Yuhang Huo Pengfei Liu Bei Zhen Yalei Yang Yipu Pan Baixiao Guan Yi
8	How do you think about sculptural colors?	Sculpture color determines the attractiveness and vitality of the sculpture.	Qin Jigang He Zhenhai Huo Pengfei Pan Baixiao Guan Yi
9	How do you feel about sculptural installations sound and light?	The sculpture installation sound and light is conducive to increasing the interaction between people and sculpture, and the use of sound and light in sculpture can better transform the pressure release.	Qin Jigang He Zhenhai Liu Yuhang Huo Pengfei Liu Bei Zhen Yalei Yang Yipu Pan Baixiao Guan Yi
10	How do you see the relationship between sculpture and emotion?	The expression of sculpture and the transmission of emotion are inseparable as a whole. Emotion is the key that sculpture transmits to people's innermost being. It touches the heart to the point of emotional resonance.	Qin Jigang He Zhenhai Liu Yuhang Huo Pengfei Liu Bei Zhen Yalei Yang Yipu Pan Baixiao Guan Yi
The interviews provided greater clarity on the design influences on the sculpture in terms of design.			

### Appendix 3 Model Exhibition Feedback Questionnaire

#### Model feedback of the sculpture

This questionnaire is from Silpakorn University doctoral research project, the purpose of the research is to create sculptures to relieve people's life pressure and improve emotional sublimation. Please fill in the questionnaire objectively. The statistical results of the samples will be of great reference value to my research work. Thank you very much for your participation! Contact email: wangranran999@gmail.com

Sex: Male  Female

Age: Below 30  30-40  40-50  More than 50

Career: Government employees  Private employees  Students  Other

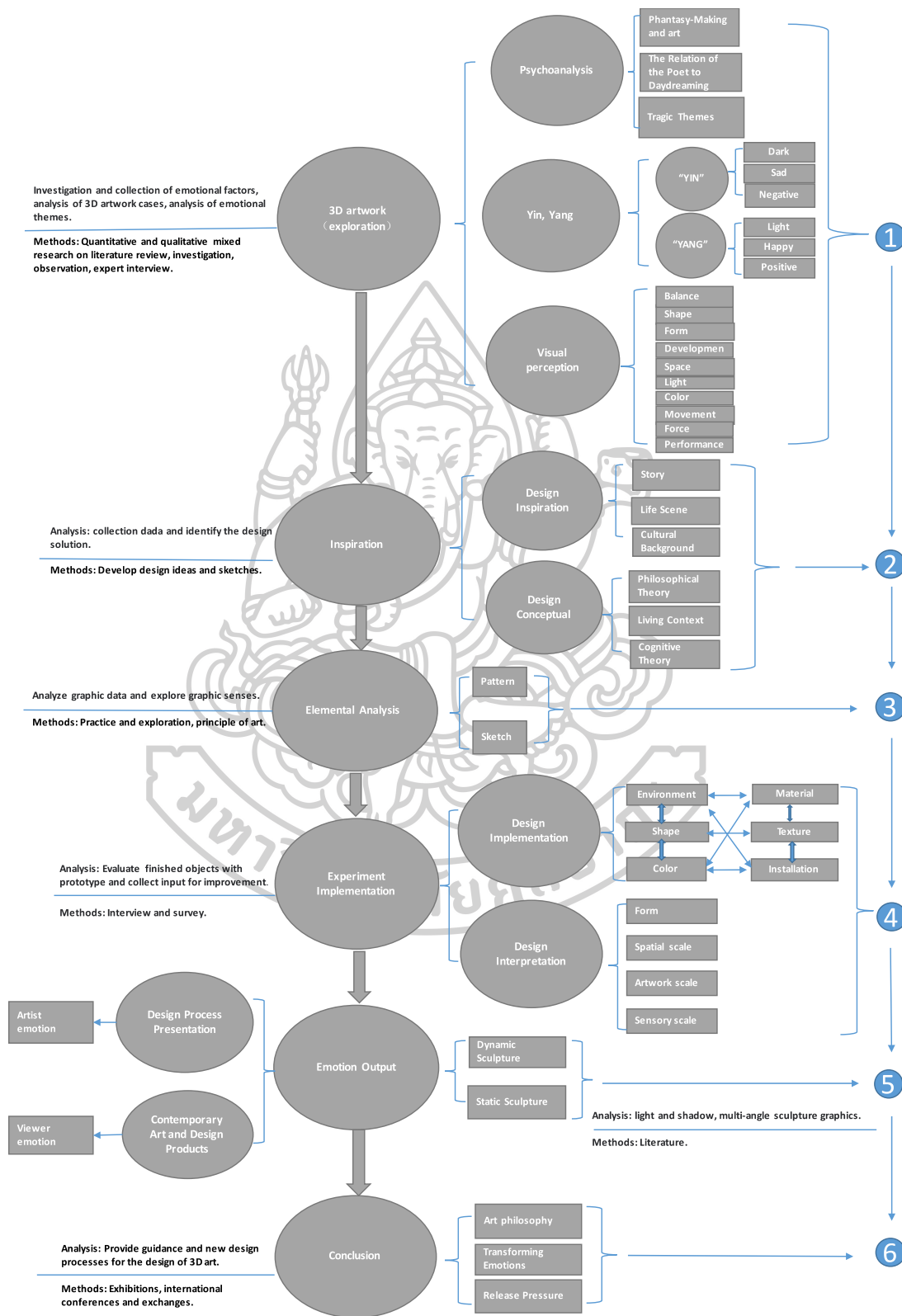
Educational status: Below high school  University and above

Interviewee: Expert  University student  Resident  Tourist  Worker

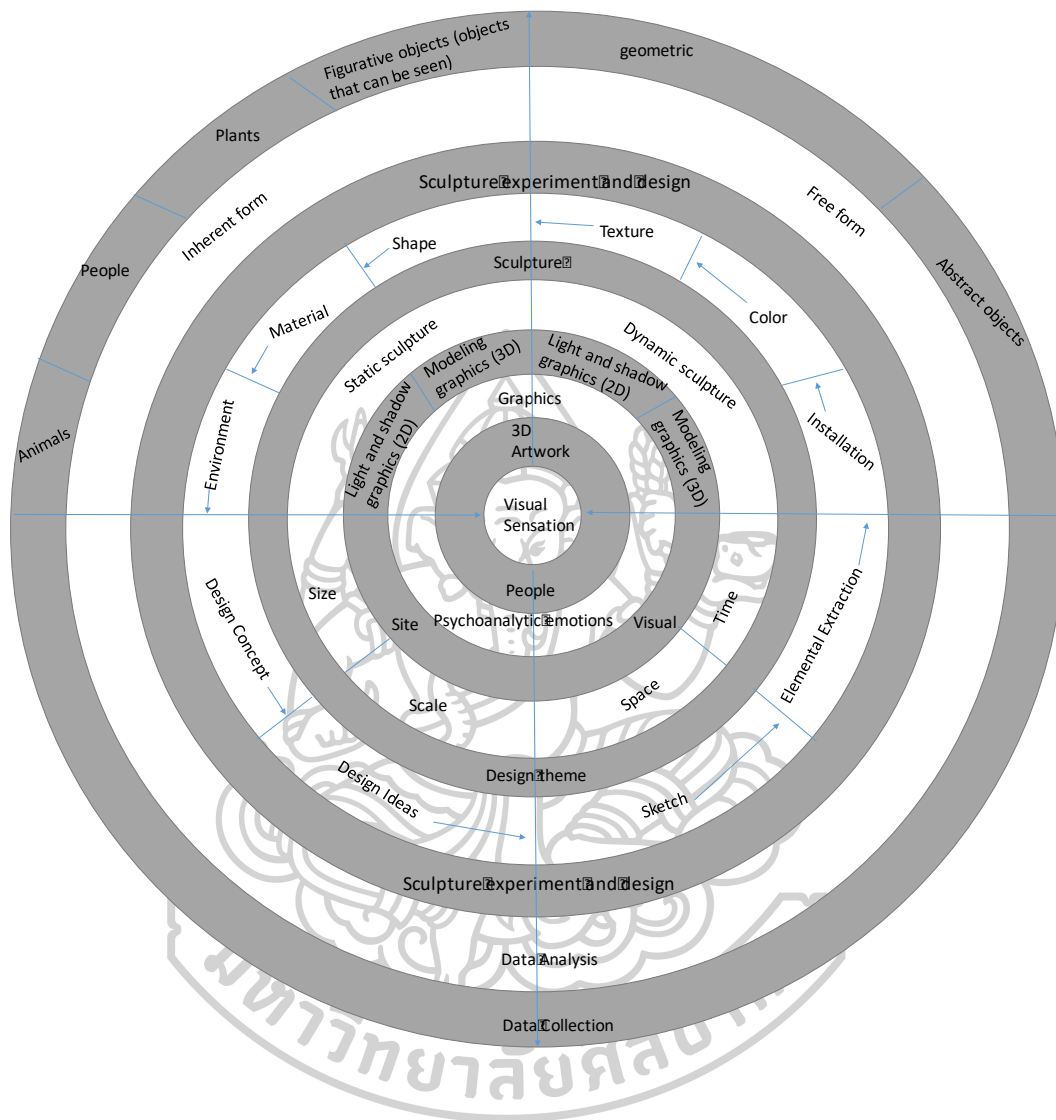
Evaluation score: Very good (5) Good (4) General (3) Not good (2) Very bad (1)

Number	Problem Content	Evaluation score				
1	The spiritual experience you get in the sculpture model					
2	Sculpture allows you to relieve the sense of stress					
3	The emotional story of sculpture					
4	Your satisfaction with the sculpture model					
5	Sculpture and environment fit					
6	The influence of sculpture on the atmosphere of the environment					
7	Sculpture tactile experience					
8	Sculpture and human interaction					
9	Your satisfaction with the sculpture material					
10	Sculpture night viewing feeling					
11	From the sculpture to perceive the meaning of culture					
12	Sculpture emotional expression satisfaction					
13	Your satisfaction with the color of sculpture					
14	Your satisfaction with the material of sculpture					
15	You can gain emotional knowledge from sculpture					
16	You can accept modern design in sculpture					























### Appendix 4 Overall structure diagram
























### Appendix 5 Visual sensation diagram



## Appendix 6 Sketch sensory analysis

Sketch	Title	Images	Pattern	Visual sensory	Overall conclusion of the artwork and visual senses
1	"Meditation Space"		 	Stones nourish one's love, enlighten the mind and cleanse the heart. The triangle :rebirth and circulation.	artificial texture space as an emotional reproduction of touch .The various properties of different materials can be used to reflect different personalities, and the combination of multiple materials can show the relationship between textures and their unique personalities, thus producing a sense of beauty.
2	"White Angel "		   	Medical and nursing personnel: give people a sense of security. Bridge :friendship Tower :calm, restrained Map :reflect the country's mountains and rivers.	Transparent spatial state can map out various landscape graphics and images in the natural landscape through the peculiarities of the material.
3	"Walking Man"		 	The cylindrical :inner correct, appearance should have a harmonious attitude, each other easy to get along. Combination of cylinder and square: give the impression of a tunnel, a black hole.	We can imagine that in the three-dimensional world, we find the opening of the four-dimensional space, so we enter from the apex of the cone and fall out from the center of the bottom along the central axis, which is the time axis.
4	"The Cloud The Girl and the Balloon"		     	Girl :innocent and fairy-tale. Balloons :an indomitable heart Lollipop :the meaning of love Cloudy:1-In Buddhism, the word 'cloud' represents infinity. 2 In Taoism, 'cloud' represents the spirituality of following one's natural nature. Moon :beauty and a carrier of human lovesickness. Mountain :pure natural beauty.	The brightness and purity of the color of a sculpture has a direct impact on the emotional connotations expressed in the sculpture, with bright and happy mental and emotional presentations requiring high purity and high brightness colors.
5	"Perpetual Calendar - Woman and Dog"		  	Women :the inheritance of human matrix, virtuous, mind and dexterity. Dog :Friendship and loyalty The perpetual calendar :the cycle of the seasons, with 365 days in each year, and you have to face this time of both light and darkness.	the rational use of color in sculpture enriches the sculptor's expressive language and adds new vitality and individuality to the sculpture to reflect the distinctive spirit of the times in a modern living environment, while maximizing the psychological requirements of the viewer with richer visual effects and emotional colors.



Sketch	Title	Images	Pattern	Visual sensory	Overall conclusion of the artwork and visual senses
6	"peripateticism"			Square: form of ancient Chinese urban architecture.	In touch and vision, the textures of the materials themselves and the texture of the sculptures are transmitted to the viewer's brain, stimulating the mind to think.
				Water grass :upward vitality.	
				Fish :freedom	
7	"Watching Iron Bull"			The cow :docility and friendliness.	The third dimension offers complete freedom :shapes can be extended in any visible direction, and things can be arranged in an infinite variety of ways.
				The pendulum clock :describe the left and right of people's will, will fluctuate with environmental factors and psychological factors.	
				Bell :peace and tranquility	
8	"Dreams and Walks -Camel"			Camels :resilience and perseverance.	The presence of a concave surface on the surface of a sculpture absorbs space into the realm of the sculpture .Anything in space may involve two properties, an 'objective thingness' that characteristics its shape, and a 'spatiality' that characteristics its structural pattern in space.
				Cactus :the tenacious spiritual character.	
				Chinese knot :good wishes.	
9	"The Melody of Life"			Square box and circles :The square symbolizes the principle of being a person and the circle symbolizes the way of doing things.	The language of art is the medium of articulation for conceptual art, which begins with a form of presentation that is closely linked to language, which is used in statements and repeated.
				Piano :The melody and rhythm of the piano can suggest certain emotional tendencies in us.	
				Colorful light : harmony and happiness.	
				Bottle :Life is like an empty bottle, you can put something in it, but it will always be full, so treasure your time.	
10	"The First Daydreams"			Child :Children's faces better reflect the innocence and romantic fantasy.	the appreciative audience a new multi-faceted and special perspective to appreciate the work :The zero-distance and multi-angle contact with the works on display provokes the viewer to think and feel something about the works themselves.
				Fish and Children :freedom.	
				Trees and Animals :Trees are tenacious, animals are spiritual, and the combination of the two is more affectionate.	

## VITA

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