

The Beauty of Iron: Taking the Structure of Iron itself and the Participation of Elements as an Example

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Abstract: Iron is a substance that is connected to human beings all the time. As long as it is related to human beings, its beauty is worth exploring and discussing. Is there any connection or difference between the beauty of iron in aesthetic images and the beauty of iron commonly known as iron in daily life? Through the integration of the nature, structure, and element participation of iron, this paper combines aesthetic judgments from philosophical thinking and then it extends to the cross-layer research of finishing chromatics, material aesthetics research, and the influence of elements on the presentation of images. Establish the role of iron as a unique field of human creation and scientific research and its incommensurable beauty. Looking at iron without instrumental thought will provide us with the mind to discover the new content of this substance, to discover the irreplaceable beauty of iron. It is the key to discovering the origin of the beauty of iron materials, and puts forward some reflections on the beauty philosophy of human participation in materials, matter, and elements.

Keywords: Iron; Iron Element; Ironware; Aesthetics; Aesthetic

1. Introduction

Iron shall be a general term for the iron metal, elements, and their compounds, which are long-lasting materials in human creation activities. The Hittites began to make iron objects in 2500 BC and were the first known civilized people to use iron metal. Artificially smelted iron objects have been unearthed in Gansu during the Majiayao culture in China. All of these indicate that iron metal, as a material, has been discovered by mankind and used as a tool with a deep origin.

The fundamental relationship between iron and humans can be traced back to prehistoric

times. When prehistoric people unintentionally used colored (red) clay as a tool to paint in caves, iron, whether we moderns recognize it or not, has become “ontologically” related to human existence, art, and aesthetics. Whether iron is beautiful or not, human aesthetic activities and aesthetic experience should be earlier than the maturity of iron smelting technology, and whether human beings have made iron an indispensable material in various production and creation activities because of its characteristics of beauty [1].

According to Zhu Guangqian, “beauty” is not the object itself but the image of the object. The image of the object is not a direct reflection of the appearance of the object itself, but the result of some processing through the image, and human beings are the roles using processing. The Hittites, who advocated force and violence, used iron to produce weapons, violence, cold, serious, and intimidating that is the Hittites processed iron. Iron painting in Wuhu, China, utilizes iron wire and iron sheets to forge and weld into painting. The deep, elegant three-dimensional soul of Chinese painting is the iron material in the hands of Wuhu craftsmen [2].

Different regions, times, cultures, and societies have different aesthetics for iron, which is an aesthetic difference brought by the differentiation of social and cultural environments. “The beauty of a man is not self-beautiful but depends on people”, which indicates that to become an aesthetic object, it cannot be separated from people’s active aesthetic activities, and the beauty of things should be guided and created by human beings. The beauty of each material is a manifestation of its uniqueness. Otherwise, why should a certain material be applied according to the aesthetic experience of human beings? The material of the teapot can be porcelain, glass, pottery, silver, jade, or even stone, while the iron pot in the “pot” of the appearance of the image of the unity of the people’s sense of

beauty must be different from the other materials; this is the aesthetic property of the material as the source. The discussion of the beauty of iron is of special significance to the research of material aesthetics and the relationship between human beings and materials [3].

2. Colorful: Iron Structure Combination

The structure of iron is a compound of iron and other elements, which is called the property of iron in the field of scientific research. Few irons exist in nature in a free state, and most of them exist in a compound state. The beauty of iron structure should come from its various states, although its nature has some characteristics and symbols, for the material, it is difficult to show the appearance of intuition; Its state is directly presented in the human intuition, which makes it have the characteristics of beauty is color. Different structures allow iron to appear in five colors: silver, red, yellow, blue, and black, each of which has its origin and presentation [4].

2.1 Pure Iron

Free pure iron (Figure 1) can only be found in meteorites and has a silvery appearance not unlike that of a mountain stone. Silver is not the same as white, silver is the unique color of metal objects, a little biased toward gray and cool colors.

According to chromatics, white is a color full of lies; And silver is full of charm. Through the comparison of the rarity of metallic substances by human beings, it is not difficult to find that silver and gold seem to always be in second class; Not rare enough for gold, not grand enough for gold. This gives silver the charm of modesty; it represents politeness, independence, precision, and wisdom. Pure iron itself is rare, the color of its material adds to the sense of uniqueness, private silver but not silver, intriguing [5].



Figure 1. Image from Baidu Encyclopedia.

2.2 Hematite

In the distribution of iron in the earth's crust,

the content of iron oxide accounts for a large proportion, mainly hematite (Figure 2) and magnetite. Human daily production of iron is extracted through iron compounds, and the appearance of iron oxide does not differ much from that of pure iron, which exists in the form of lumps.



Figure 2. Image from Baidu Encyclopedia

Hematite is red, and the red color itself has gone through a lot of human history of either promoting or discarding it as human groups, societies have changed and developed, and for political reasons [6].

Red is a symbol of blood and comfort for the dead. It is not only the entrust of the sun but also the hope given to mankind by the flame. Color theory believes that red is the origin of all colors, and three-quarters of the color words in the Bible belong to red. Psychology believes that people who love red, personalities are often very enthusiastic, like their physical nature, to bring a sense of heat to the viewer. Here it is necessary to explain the conventional rule that many people define the color red as having a negative connotation, such as irritating, disturbing, etc., because they believe that it provokes bulls. There was indeed an experiment in which a bull was challenged with a red, white, and blue cloth, and it was found that the bull was not only angry at red, but also angry at white and blue. Look at it this way, the argument that what annoys the bull is human behavior is more convincing. Red is because of its strong symbolism so that the audience's eyes can always pay attention to the matador's body [7]. The red color given by iron is the result of wavelengths discerned by the human eye. This is not an accident, nor is it inevitable. This should be the combination of nature's physical existence with human's spirit to produce the uniqueness of materials.

2.3 Iron Sulfide

Iron sulfide (Figure 3), like iron oxide, is a form of iron compound, named pyrite because of its color.

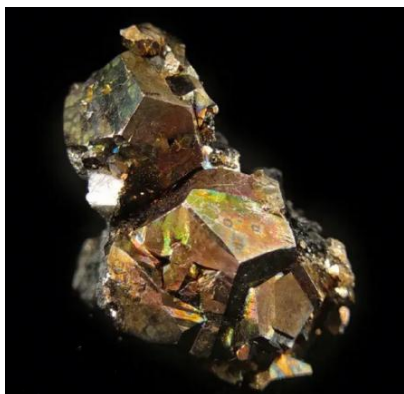


Figure 3. Image from Baidu Encyclopedia.

Yellow is a favorite color in China and the West also thinks that yellow represents China. They even use “yellow” to distinguish Asia from Europe [8].

Eaton believed that the yellow shape is a triangle, and the three intersecting diagonals can be derived from other shapes, such as an unequal quadrilateral; like thought, it can be radiated, dispersed, and derived. Yellow is the color of thought, as clear as itself. Yellow also represents truth. It is the most luminous color, and at the same time, it is prone to qualitative change, just as there is only one truth, yellow mixed with other colors becomes false, and its reason is not good [9].

The connection between iron and yellow means that yellow grafts its truth and thought on iron, which is a sublimation of iron.

2.4 Ferric Ferrocyanide

Ferric ferrocyanide (Figure 4) was accidentally discovered in the 18th century as a fine and very beautiful blue pigment. In the view of science, it is a coordination compound or the earliest coordination compound discovered by humans. Before its name “Prussian blue”, the blue color witnessed a lot of stories.



Figure 4. Image from Baidu Encyclopedia.

A popular question among Western color researchers is whether the Greeks were blind to blue, which has long played no role in social life, religious activities, or artistic creation. The Bible depicts the sea words are not even a direct representation of the “blue”, but similar

to the “deep” meaning of the word [10].

Blue is also affected by its physical nature, the symbolism is very weak, and the relevant colors of traffic instructions are never blue. It is also often linked to geography. It was not until the 12th century that it quickly became a fashionable color, and was even used in portraits of the Virgin Mary [11].

Coincidentally, blue in the East, in China, has the same experience. Before the Tang Dynasty, blue was in the range of “green”, but “green” often not only means blue, but the green of spring, can also represent the black of nothingness. It was not until the Tang Dynasty that blue gradually became a color term [12].

2.5 Magnetite

Magnetite (Figure 5), according to the scientific field named ferroferric oxide. It is of the same origin as iron oxide and is formed by the addition of one more molecule of ferrous oxide. This seemingly easy mixture becomes another substance entirely. The properties of iron tetroxide are different from those of iron oxide, and the colors discussed in this section are even more different.



Figure 5. Image from Baidu Encyclopedia.

Iron tetraoxide is black, and the origin of black is surprisingly the same in China and the West. The Western theory of the Big Bang holds that the universe was black before it was born. The word “black” in Chinese oracle bone inscriptions resembles a person with a dense, opaque sack on his head, symbolizing the brightness of heaven [12].

Later, the importance and use of black in each civilization were determined by their own culture, society, and aesthetics. The black knight of the 13th century in the West did not clearly state its values, that is, it did not represent justice or play evil, and is a mysterious color. Chinese ink painting, through different shades, and different strokes of black to give people different images, is the essence of Chinese painting.

Magnetite, like hematite, can allow humans to

extract iron metals, and can also use chemical science to make other substances.

3. The Appearance of Modeling Intuition: The Application of Iron Metal

Iron metal, is not a strange concept, modern people are almost every day with steel. This seems to be the most direct “beauty” between iron and people. Whether as tools, architectural ornaments, clothing ornaments, installations, or utensils, the discussion of their beauty is not imaginative, convenient for human processing, and can be extended from the function, design, image, and other aspects of the entry point. Human beings have completed a lot of inventions with iron metal. This section chooses two relatively special objects, iron nails and iron paintings in China, to discuss [13].

3.1 Iron Nails

In the late Warring States period, China invented pig iron smelting and casting technology, and most of the iron nails produced were agricultural tools and weapons. Iron nails (Figure 6) because of their more sophisticated, the production is limited by the maturity of technology, and is generally used to assist the construction of houses. Another use is for coffins.



Figure 6. Image from the Official Website of Nanjing Museum.

Iron coffin nails are the artifacts that gradually developed with funeral culture. According to Zhang Yan’s research, coffin nails were first used as ornaments due to the backward production technology, as they were outside the coffins when they were discovered by archaeologists [4]. Later, because of the popularity of iron smelting technology, it gradually began to be used to fix coffins. Many local folk customs have similar sayings that must be fixed with iron nails and iron rings to remember the dead, but there is a lack of research and statistics. The coffin of Bao Zheng, a famous official, was nailed with eight iron rings, which is not a benign meaning according to folklore.

In general, the emergence of iron and iron smelting technology has influenced the development of coffin nails, which is related to social thought and monarch rule. There is no denying that iron is involved in these connections, and may even be the root of the string of connections.

3.2 Iron Painting

Wuhu iron smelting has a long history since the Warring States period has a large-scale iron smelting industry. Wuhu iron painting (Figure 7) is said to be derived from a legend of the ancestor of “Tang Tianchi”, a chance discovery that led to a new beginning of iron and art, and aesthetics.



Figure 7. Image from Chu's Iron Painting in Wuhu.

The origin of iron painting is located in the Ming Dynasty, based on Chinese painting, combined with the exquisite skills of forging artists and tools designed for iron painting. Both the three-dimensional beauty of sculpture and the plane beauty of paper cutting art, knocking with ding-dong sound, clanking bone, and the process called iron bone muscle art for the soul.

Temporarily throw away the image thinking to look at iron painting, it is also a unique creation of human beings, human understanding of iron metal materials has long been trapped in instrumental thinking, which should be abandoned and forgotten in aesthetics. The appearance of iron painting can make people rethink the beauty of iron: Do tools also have beauty? Or is there beauty in a material that can only be used as a tool?

4. Modification and Alignment: The Beauty of Iron Participation

Ceramic and glass, two substances that change their physical properties through fire, are typical examples of the creation of bright. They are also directly related to iron, known as fire, and all three were created by fire. This

paper holds that fire is undoubtedly inevitable, which is the prerequisite for the figurative, physical, and aesthetic qualities of the three. However, because of the participation of iron, through its modification of ceramics and glass, it has changed and even determined the classification and division of human beings for ceramics and glass.

Whether iron is in the ceramic process or the glass process, there is a uniform belonging to the “colorant”, indicating that the addition of different degrees of iron-containing substances will make the color of the two different. After scientific experiments and research, it was found that iron in the two plays a role in the correction of light refraction, according to the number of iron elements to allow human eyes to capture different wavelengths.

Iron will make glass produce a beautiful green, blue-green; in the Roman period glass workers began to dig its secrets. In ceramics, combining different clay materials in the fire-burning method can get blue, yellow, black, white (except iron), red a variety of colors. Craftsmanship is not the subject of this article; again, two of the more unusual surviving art curiosities have been chosen for discussion in this section.

4.1 Flying Celadon

Appearing in Longquan, a treasure land rich in celadon, Flying Celadon (Figure 8) was originally a process error and firing defect, which was caused by the accumulation of iron elements in the clay and glaze; After being spread to Japan, it was sought after by the local culture and aesthetic.



Figure 8. Image from the Official Website of the Personal Library

In the feudal ceramic process requirements, ceramic functional requirements, and ceramic image thinking from three angles of celadon, this “iron spot” must be avoided. However, as discussed in this article, and from an aesthetic

perspective, “iron spot” is a gift of nature combined with human processing through a certain purposeless purposefulness, adding materials and precious cases to ceramic art and modern ceramic art. This is another unique involvement of iron in aesthetic imagery.

4.2 Roman Empire Glassware

The origins of glass art do not date back to the Roman period, nor did Roman craftsmen crack the process of making glass color (Figure 9). At the beginning of the rise of the glass process, through cultural and technological limitations, the civilizations that produced glass were all focused on pure, colorless, near-transparent glass as the best of the best.



Figure 9. Image from Baidu Encyclopedia.

The Romans, in particular, promoted the emergence of the process of producing transparent glass by finding and screening cleaner raw materials and using previously unused compound raw materials for production. Today’s scientific conditions are sufficient; it is easily known that the removal of the so-called color agent (iron) can greatly increase the production efficiency of transparent glass. The Romans obviously did not understand this, but they more or less got to the point through their practice. It was iron that induced them to think fundamental relationship between iron and human survival needs, spiritual needs, and aesthetic needs.

5. Peroration

Iron is undoubtedly beautiful as a material that gets along with humans day and night. The title of this article comes from a thought exchange with my tutor about iron-glazed porcelain (Lu Shan Decorated Ware), which triggered my deep thinking about the nature and beauty of materials. What is beauty? Is the beauty in art the same as the aesthetics we usually talk about? All these questions have prompted me to start thinking about the title of this article.

It seems that no one has studied the beauty of iron before, or maybe I did not find it. I can only start from the nature of iron and analyze it one by one in the hope of elucidating the essential beauty of iron. Collect a large number of cross-layer and extended-layer data related to the topic to combine their practice in creation, and then express relevant views.

There are many shortcomings in this paper, for example, there are a variety of bright ores with beautiful colors due to the participation of iron, and there is no mention of my case in practice. So I hope to give researchers interested in relevant topics of this article a clear reference and a warning.

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