

# Science and Art in The Creation of Adam

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**Abstract.** The Renaissance was an intellectual and cultural movement that took place in Europe from the mid-14th century to the 16th century, and profoundly influenced European intellectual life in the early modern period. Beginning in Italy and spreading to the rest of Europe in the 16th century, its influence is reflected in art, architecture, philosophy, literature, music, anatomy, etc. *The Creation of Adam* is one of the important works of this period. Michelangelo's rigorous judgment of the body on the basis of anatomy, coupled with the use of clairvoyance skills, paints a unique human beauty with a sense of power. Renaissance scholars adopted a humanistic approach in their studies and looked for realism and human emotions in art. Based on *The Creation of Adam*, this article provides a case study and literature analysis of the connection between art and science, especially the embodiment of anatomy in *The Creation of Adam*. This article offers contemporary historians and artists some thoughts on the visual language of science, including how to understand science as a craft or even as an art, understand which works are both scientific and artistic, and how to develop a new visual language for science.

**Keywords:** Renaissance; *The Creation of Adam*; Anatomy; Michelangelo.

## 1. Introduction

The Renaissance originally referred to the revival of classical literature and art. It is a cultural movement that took place between the 14th and 16th centuries, and it involved many subjects, including science, literature and economics, in addition to the arts [1]. How science is used in art, and how art is used in science, became an important topic of this era. *The Creation of Adam* is a work that embodies the connection between art and science, and it involves not only the depiction of the human form, but also the investigation of the human form through anatomical dissection and anatomical research.

Michelangelo fulfilled his requirements as a Renaissance painter when he painted *The Creation of Adam*. The first requirement is that the artist must tell the story effectively and clearly. This includes decoration that fits the theme of the picture, appropriate techniques for depicting man, and appropriate backgrounds. For Michelangelo, the frescoes in the Sistine Chapel were religious subjects that required a deep theological literacy. This meant that the depiction of God and Adam had to be both beautiful and majestic, showing some of the artist's aesthetic qualities. The second requirement is to be faithful to nature. The Renaissance led to an interest in the man himself, and as a result, over the course of the fifteenth century, Italian painting became more and more naturalistic. As artists shift from a more icon-like treatment of the human form in nature to a direct experience based more on the observation of the human body, Michelangelo learned anatomy in order to make the human body he painted more beautiful, and would ask models to pose according to his own requirements. Based on the study of the human body that exists in reality, Michelangelo would also modify nature based on the needs of art to make his work look more infectious. The third requirement is to paint beautifully, and the definition of beauty is much debated, but Michelangelo's thinking about beauty is obvious. That is, it has a sense of power, and it is more three-dimensional. Even in paintings, Michelangelo's human body is sculptural.

In the Renaissance, oil painting, as a medium rose, became more and more naturalistic. Humanism also rose, man, himself was more and more valued, and the status of artists themselves, painting skills, and observation ability was also improved. Artists who want to be faithful to nature need to learn anatomy, and artists try to understand the body from the inside out in order to depict the human body more naturally and know how to perfectly depict the human body, how to make it more ideal, more

interesting and proportionate. Art and science of the Renaissance were closely linked, and in the field of perspective painting, anatomy and the emergence of light and shadow became the three pillars of the field of painting, making painting real [2]. *The Creation of Adam* is one of these works.

This paper will study *The Creation of Adam* and try to explore what is the ideal human beauty of the male and female human bodies, and how the artist can create a more perfect human body like Michelangelo. This article offers contemporary historians and artists some thoughts on the visual language of science, including how to understand science as a craft or even as an art, understand which works are both scientific and artistic, and how to develop a new visual language for science.

## 2. Introduction of The Creation of Adam

*The Creation of Adam* (painted c. 1508–1512) is a fresco painting by Italian artist Michelangelo, which forms part of the Sistine Chapel's ceiling. It illustrates the Biblical creation narrative from the Book of Genesis in which God gives life to Adam, the first man. The fresco is part of a complex iconographic scheme and is chronologically the fourth in the series of panels depicting episodes from Genesis [3]. In *The Creation of Adam*, God is thinly dressed, twisted and dangling, and his back is covered by an open cloak containing dozens of angels and a young woman (some scholars believe that this is Eve who has not yet been created). *The Creation of Adam* narrates the story effectively and decorously. The artist shows people what is happening in his mind. Michelangelo's methodical composition and perspective skills show the powerful dynamics of the characters in the painting. In addition, the gestures of *The Creation of Adam* figures are significant and represent the artist's personal reflections. Michelangelo weakens the surrounding scenery and highlights the central character. From the point of view of creative elements and stylistic expression, this fresco in the Sistine Chapel represents Michelangelo's pictorial achievements in terms of portrait shaping, structural design, fresco, theme aesthetic display and solemnity. The artist showed extraordinary creativity. He was extremely skillful in painting, mastery of color and had the ability to balance different elements, showing a harmonious solemnity and all of which had a great impact.

Michelangelo's exploration of anatomy was inevitable, in order to fully demonstrate the beauty of the naked human body. He made a rigorous judgment on the bones and muscles of his characters, so that they could have an impact on the surface of the human body. The painting that created Adam contains the study of perspective science and anatomy, especially the beauty of the human body and the detailed depiction of the physiological structure, reflecting Michelangelo's quest for perfect human expression.

## 3. Analysis of The Creation of Adam

### 3.1. Painting Background

In 1500, Michelangelo was summoned to Rome by Pope Juno II, who wanted him to complete an extravagant marble tomb map. The task of painting the papal tomb lasted a long time, but it was completed many years after the date of the construction of the building, and several changes were made to the original design. The Pope decided to entrust him with the task of decorating the ceiling frescoes on top of the Sistine Chapel in Vatican City. The task involved a huge hall whose walls had previously featured murals by big figures like Botticelli and Kilandayo. Michelangelo refused many times, preferring to concentrate on the finishing touches of the tomb. However, in 1508, the papal insistence finally allowed him to accept the heavy task, and he began to plan the depiction of the church dome [5]. The first draft was fairly simple, which led Michelangelo to rethink the whole plan and conceive a series of magnificent and influential maps. It was in order to complete the spectacular picture of the reimagined that Michelangelo spent four full years. The spacious central part of the vault is divided longitudinally into nine architectural frames, within which Michelangelo painted in chronological order the story of the Book of Genesis, from the altar of the church to the bottom of the church.

Different media with different technologies produce different effects, because media affect what humans see, what they make, what they make, and what they use. Artists need to think about how to achieve their goals with the right medium and skills. The painting medium of *The Creation of Adam* was stucco, involving a series of simple compounds. The way frescoes are painted is very demanding for the painter. This method of painting requires perfect preparation and precise timing. Otherwise, the artist will need to rework.

### **3.2. Painting details in The Creation of Adam**

#### **3.2.1 Human Body Details Are Emphasized**

Humanism was the spiritual core of the Renaissance, meaning that people began to acknowledge differences and individuality. Renaissance works differ from golden ground paintings, where all figures share the same face. People's aesthetic sense of themselves arises with the reproduction time of human material production and species, which is called "human beauty" [4]. Due to the attention to humans themselves and the necessity to show the beauty of the human body, the details of the human body become important.

Before painting frescoes, Michelangelo drew hundreds of sketches to determine the person's pose, including the first pose and facial expressions [5]. *The Creation of Adam* began with meticulous sketches in which Adam's muscular figures were distinct, and the lower left and upper right corners were paintings of local shapes. This delicate sketch shows Adam's languid physique, muscular and fleshy. The painting of light and shadow makes the muscles three-dimensional. Michelangelo can also be seen looking for the most beautiful posture, and there are many drafts left behind on the line of the thighs. These sketches all illustrate Michelangelo's deep understanding of muscle structure and his pursuit of the strength and beauty of human muscles.

#### **3.2.2 Painting details and the beauty of the human body**

The improvement of artists' skills and the promotion of their social status also make them begin to draw the beauty of the human body, especially the details of physiological structure based on anatomy. How to create an illusion effect on the ceiling of the building requires the use of a clever precontraction method, also known as "elevation angle perspective", which was called "the most difficult technique in the field of painting" at that time [6]. Only by making good use of this painting technique, combined with a detailed understanding of muscles, Michelangelo can perfectly show the beauty of the muscular structure of the human body. At the same time, Michelangelo also created a fictional architectural background when painting frescoes, giving the viewer of the ground a rich look of sculptural decoration [5].

#### **3.2.3 Composition and arrangement in the work**

Michelangelo's new designs were completed in 1508, and the artist gradually broke away from the constraints of patrons. Michelangelo also abandoned the abstract composition of square and round interweaving in favor of a bolder layout. This also shows that Michelangelo can make the composition completely decide. Not only that, but Michelangelo also created a virtual background for the fresco, giving the ground audience a rich sculptural decorative look and feel. This background integrates the space at the top of the church, including the moon wall, the spanicle, etc., with the rest of the vault, thus painting different scenes in the regional field [5].

### **3.3. Science and technique in The Creation of Adam**

#### **3.3.1 Perspective**

The body of God in the painting has a full rhythm. First of all, the dynamics of the body are very complex, and secondly, Michelangelo used perspective techniques to paint the body. The forward shrinkage method is a clever elevation angle perspective designed to make the viewer feel as if the figure overhead is in three-dimensional space through the distance of the painted content on the vault. In addition, perspective techniques are also used in parts such as the limbs. In *The Creation of Adam*,

people can see God's legs in front of each other, and the knees in front of people use light and shadow and perspective techniques to give people the visual effect of knees bulging. The twisting of God's body and the movement of the left arm requires the support of local perspective techniques.

Michelangelo's decision to try this method of shrinkage was undoubtedly influenced by the unveiling of the fresco of the first half of the vault. Many of the figures on the Sistine zenith are innovative in their posture design, but they feel like they are flat and three-dimensional, as if they were on an upright wall rather than a ceiling overhead.

### 3.3.2 The combination of body painting and anatomy

The interpretation of human body details depends on scientific inquiry, inseparable from anatomy. In the creation of Adam, Michelangelo creates beauty beyond the reality of the human body through a rigorous judgment of the body. At the same time, the painting is remarkably sculptural, with richness even in the shaded parts, meaning that it is these details that create the divine body that contains infinite power.

Michelangelo closely judged the physiological structure of tendons, muscles, bones, etc., and it is estimated that Michelangelo's paintings and sculptures depicted at least eight hundred different physiological structures [7]. Some people think that he distorted the structure of the human body, but in fact, he accurately portrayed the small structural changes of the human body. In addition, in order to better show the beauty of the human body, he recreated the details of the muscles. On the basis of conforming to the physiological structure, Michelangelo will also make some creations, in order to show the strength and beauty of muscles, or contain some artists' intentions and meanings.

*The Creation of Adam* was studied intensively by many art scholars and several anatomists, who pointed to signs of anatomical manifestations contained in the scene. Research suggests that the ribs hidden in Adam's body image may be related to the first group of traditional views of human origins articulated in Jewish Kabbalah [8]. In the theory proposed by Medical Doctor Frank Lynn Meshberger, Michelangelo composed the painting with sufficient knowledge of anatomy in mind [9]. As people can see in the picture, the cloudy structure in the painting where God and his angles occupy resembles the structure of a human brain. God reaches out from the cingulate sulcus, the area of the brain that regulates emotion, sensing and action. Basically, it is where people's brains deal with intellect and creativity. Some scholars have confirmed that Michelangelo's works may be based not only on his knowledge of the case of human anatomy, but also on the artist's knowledge that GR-compliant anatomy shows greater structural efficiency [10]. Although these are all arguments, people can confirm that *The Creation of Adam* is highly related to anatomy. The drawing of human body details in *The Creation of Adam* is also an indispensable part of the research of anatomical history.

### 3.3.3 The painting techniques used in The Creation of Adam

The Sistine ceiling frescoes rewrite reality and seek to depict the three-dimensional human body. Therefore, Michelangelo paid special attention to the precision of the human body structure, emphasizing the sense of space. The main purpose of color in the picture is to express the intrinsic relationship between color and sketching. The rationality that values color is one of the main features of Western Renaissance murals.

The colors of the Sistine ceiling frescoes are strongly contrasted, and the Sistine ceiling frescoes are contrasted with different layers of dark green, gray-green and light green compared with earth red, lilac and red to form a cold and warm contrast. The robe worn by God is a space of white and cinnabar red gradient depths, with distinct layers. At the same time, using the principle of optics, under the sunlight, the clothes in this part of the sky have a reflective effect. The color is mainly light pink and white, and God's hands are pushed upward, showing God's infinite strength and wisdom. The lines of the Sistine murals are hidden in the realism of color, highlighting the light and shadow effect of the object, the three-dimensional sense of the character, and the natural reflection of the color under the light. The use of light and shade, color, or implicit interpretation of another painting language in the object.

In addition to the above painting techniques, the decorative patterns of ceiling paintings are all painted in the style of architectural structures, in line with the principles of Renaissance monumental painting. These decorative motifs enrich the architectural form of the dome and wall, clarify the architectural structure of the dome and wall, and strengthen the perceptibility of the shape of the dome and wall. In Sistine's zenith painting, the viewer must look up and admire, and the figures thus create a sense of height, in order to highlight the sanctity of the image of God. Michelangelo used light and shadow, perspective and other painting methods to create a three-dimensional fresco, the imposing picture puts people in the biblical story, the sense of sublime penetrates the heart, and makes people instantly humble and awake.

#### 4. Influence

The art and science contained in *The Creation of Adam* had a lasting impact, influencing artists who explored what the ideal human beauty of the male and female bodies was, and more on how to create a more perfect human body like Michelangelo. In science, the anatomical knowledge contained in *The Creation of Adam* is meaningful to the study of the history of anatomy and is also a manifestation of the importance humanism attaches to the man himself. In the field of combining science and art, this article leads a new generation of artists to explore how the science of art produces objects that are useful on the one hand but beautiful at the same time, and how practicality and beauty interact and reinforce each other. In this way, contemporary visual science can develop a new scientific visual language, artists and scholars can treat science as a craft or even an art.

#### 5. Conclusion

*The Creation of Adam* shows the connection with anatomy. Without this connection, Michelangelo can hardly show the beauty of the tense human body even by using perspective. However, the poses of the characters are complicated, and they are drawn on the basis of a deep understanding of the human body structure. The characters in the murals give viewers a sense of power that can be touched. This painting shows a perfect perspective and understanding of muscular anatomy, and the artist's amazing talent left a deep impression on everyone. Michelangelo's subjective artistic creation of the interaction and change of human muscles exaggerated the expression effect, containing some artists' intentions and meanings, while maintaining the consistency with visual comfort, instead of depicting the human body in a rigid way.

#### References

- [1] Zhang, Y. Brief analysis on artistic form of the Renaissance period and the baroque period. Proceedings of the 2016 International Conference on Economy, Management and Education Technology, 2016.
- [2] Jinsong Li. On the Scientific Spirit of Renaissance Art. (eds.) Proceedings of 2015 International Conference on Management Science, Education Technology, Arts, Social Science and Economics ATLANTIS PRESS. (MSETASSE 2015), 2015: 615-618.
- [3] Salcman, M. The creation of Adam by Michelangelo Buonarroti (1475–1564). *Neurosurgery*, 2006. 59(6).
- [4] Clark, K. J., Thomas, Xu, X., Wu, T., & Clark, K. J. Tuomasiku Ben. Beijing daxue chubanshe = Peking University Press. 2011.
- [5] King, R. Michelangelo & the pope's ceiling. Bloomsbury. 2014.
- [6] Giorgio Vasari, Vasari on technique (Mineola, NY: Dover Publications, 2012, 216.
- [7] James Elkins, "Michelangelo and the Human Form: His Knowledge and Use of Anatomy," *Art History* 7, no. 2 (June 1984): 177.
- [8] Campos, D. A hidden rib found in Michelangelo Buonarroti's fresco *the creation of Adam*. *Clinical Anatomy*, 2019, 32(5), 648–653.

- [9] Frank Lynn Meshberger. An Interpretation of Michelangelo's Creation of Adam Based on Neuroanatomy. *JAMA: The Journal of the American Medical Association*, 1990 (14).
- [10] de Campos, D., Malysz, T., Bonatto-Costa, J. A., Pereira Jotz, G., Pinto de Oliveira Junior, L., & Oxley da Rocha, A. More than a neuroanatomical representation in *the creation of Adam* by Michelangelo Buonarroti, a representation of the *golden ratio*. *Clinical Anatomy*, 2015. 28(6), 702–705.