

Exploration of Artistic Expression in the Context of the Renaissance from Different Countries: Take Innovations in Painting Techniques as an Example

Shuwan Ren *

School of Arts Administration and Education, Central Academy of Fine Arts, Beijing, China

* Corresponding Author Email: renshuwan.cafa@outlook.com

Abstract. This study investigates the painting techniques of different regions as a representative of urban culture in Italy and the Netherlands during the Renaissance. At this time, the artworks struggled between humanistic and divine worldviews but also manifested regional relatively independent personalities resulting in various economic and cultural contexts. Incorporating evidence from paintings, artists' manuscripts, and other contexts, this paper contrasts painting techniques from two countries concerning ways of seeing the world, renewing suitable materials, and drawing scientifically. These creations are particularly evident throughout the painting's history revealing disparate proportions of city-culture components, including artistic creation, everyday lifestyle, and city value from historical memories. It allows the Renaissance cultural development process to be easily grasped by a direct artistic expression despite space-time barriers. Though the different paths of national artistic development have produced different results, the similar cause and connotation of painting techniques' innovations in the two places reflects the inevitability of history, because art is not an accidental product, but the result of the cultural development of an entire city.

Keywords: Painting techniques; Italian Renaissance; Netherlandish Renaissance; visual culture.

1. Introduction

The art during the Renaissance was similar in character, it embodied the struggle between the humanistic worldview, dominated by human beings, and the divine worldview, dominated by the gods. However, in different geographical and social environments and in the context of the times, different countries manifested their own relatively independent personalities of artistic creation. The most representative places of the European Renaissance are Italy and the Netherlands. The art of painting in these two regions not only has different origins and different painting forms but also has the influence of mutual inheritance and convergence of humanistic ideals.

This article is a comparative study of the painting art of these two places during the Renaissance, based on the similarities and differences between the cultural backgrounds and painting techniques of Italy and the Netherlands. The paper analyses the social and economic foundations of Italian and Netherlandish Renaissance painting and the progressive humanist spirit embodied in the paintings. In addition to this, the paper inspects the manuscript texts of Leonardo da Vinci and specific paintings of the representative painters of the two regions, whose technical innovations cut across space and time. To compare the artistic identities behind the painting techniques in the two regions, the main aspects analyzed in this paper include conceptually the internal "Belief and Value", external "Everyday Lifestyle", creation "Arts and Creation" and the accumulation of "Memories and Tradition" aspects of country's culture [1].

Through comparative research, this paper intends to identify the regional artistic identities behind the different faceted techniques created in the two most important countries during the European Renaissance. In both types, the proportion of elements is typical of each, expecting to provide cases of regional art development paths with realistic reference and application value for subsequent research.

2. Innovative Scientific Painting Techniques in the Italian Renaissance

2.1. Cultural Context

Italy consisted of independent city-states during the Renaissance. This was a place of multiculturalism, inheriting the legacy of the archaeological excavations of Ancient Greece and Ancient Rome [2]. It is also influenced by cultural patterns from Byzantium and Gothic. As the medieval hanging over the Italian sky gradually faded, they used classical forms to promote the spirit of humanism, and various cultures jointly promoted unprecedented artistic prosperity in Italy [3].

One of the most important features of Renaissance painting was the emphasis on technique, and Leonardo da Vinci was one of the leading painters. In his significant achievements in the field of painting, scientific concepts permeated all his works, resulting in an artistic style characterized by rigorous and exquisite composition, profound hints of action design, and a genuine representation of nature. Leonardo's understanding of the structure of the human body through dissection and its application to actual creation has led to an unprecedented breakthrough in the realism of his work.

2.2. Painting Techniques

Italian Renaissance artists were persistently and rigorously exploring the natural phenomena in real and the scientific laws of painting, such as anatomy, perspective, light, and shadow [4]. Until the height of the 16th century, these painting techniques' instructions were gradually mature and universally applied.

The restoration of the visual three-dimensional space is a painting expression method that the Renaissance artists devoted themselves to research. In the Treatises on Painting, according to Leonardo, painting is a scientific discipline that examines the colors and forms of objects, as well as their spatial relationships and proportions; painting also gives rise to perspective, which is the scientific study of how light affects vision. Leonardo divided the perspective into three parts, of which the first deals only with the line-drawing of bodies; the second with the toning down of colors as they recede into the distance; the third with the loss of distinctness of bodies at various distances [5].

In *The Last Supper*, for instance, whether it is the dining table in the foreground, the characters in the mid-ground, or the doors, windows, and zenith in the background, all of them embody the absolute rules of perspective, and Jesus, who is at the center of the picture's expression, has cleverly guided the audience's sight with the brightness and saturation of the colors, the movement of the characters and the perspective lines of the buildings.

The first part of the painting technique that Leonardo da Vinci employed in the "Last Supper" was linear perspective, which is a mathematical system that creates the illusion of depth and distance on a flat surface [5]. The artist used a single vanishing point, which is the point where all the parallel lines in the scene converge, to create a sense of harmony and order in the composition. Orthogonal in this painting, which are the diagonal lines that lead to the vanishing point, create a sense of movement and direction in the scene. Furthermore, Leonardo placed the vanishing point behind Jesus' head, which directs the viewer's gaze to him as the central figure of the painting.

The aerial perspective technique is a vivid manifestation of the second and the third part to create a realistic and naturalistic effect. This technique is based on the observation that objects diminish in color, brightness, and detail as they recede into the distance. When depicting distant landscapes in the background, for example, the colors and tones become lighter and less saturated. Leonardo also used contrast to create a sense of light and shadow, as well as to highlight certain elements of the painting. The artwork has bright colors for Jesus' red and blue robes, which contrast with the darker colors of the background and the apostles' clothes. He also used light to create a sense of drama and emotion, as well as to symbolize Jesus' divinity. The light source comes from the windows behind Jesus, illuminating his face and body and casting shadows on the walls and ceiling. The light also creates a halo-like effect around Jesus' head, which suggests his holiness and authority.

However, despite its technical virtuosity, the material in which it is painted becomes the painting's chief regret. Leonardo tried an experimental technique using tempera or oil paint on two layers of dry

preparatory ground. Leonardo experimented with using tempera or oil paints on two layers of dry, prepared ground. As a result of his experimental approach, the pigments did not adhere permanently to the wall, leading to the paintings flaking within a few years. This point is the most substantial interaction between the two regions, Italy and the Netherlands, that is, it concerns the improvement of oil painting techniques by the Netherlandish Renaissance and the development and popularization of its techniques in Italy.

3. Reformation of Painting Techniques in the Netherlandish Renaissance

3.1. Cultural Context

The Renaissance was largely driven by the renewed interest in classical learning and was also the result of rapid economic development. In Europe at that time, the Netherlands' unique seaport location made it an early center of transport and trade in the north, it became a place where capitalist relations of production were in their infancy [6]. In the 15th century, the Netherlands became a place where capitalist relations of production began to flourish, but in the course of time it was occupied by France, Germany, and finally by Spain. The domination of different nationalities, on the one hand, brought the Netherlands into contact with the cultures of different countries, but its political oppression and exploitation also contributed to the awakening of the Netherlands' national consciousness [7]. As a result, there arose a movement for the independence of the Netherlandish nation by the emerging bourgeoisie against feudal rule. It was against this background that the Netherlandish Renaissance took place.

The Netherlands is the place where capitalism sprang up, its art style is not restricted by the strict inheritance of traditional painting themes from ancient Greece and Rome, and the paintings are closer to the folk, focusing on the expression of real life, so the paintings born here will bring people a unique feeling. Unlike Italy, the Netherlands does not have the deep cultural and artistic tradition of Italy. Therefore, the Netherlands' revolution in medieval painting did not infuse the grandiose art forms of Greco-Roman antiquity with elements of realism as in Italy but was realized through the improvement and development of late Gothic art and the positive elements of its spiritual culture.

During the Middle Ages, the Netherlands drew on the advanced cultural achievements of neighboring countries and combined them with local artistic developments to produce the unique Netherlandish Renaissance art, which was characterized by the following aspects.

Firstly, it fully embodied urban citizenship. The development of the city and the expansion of the citizenry inevitably led to the emergence of anti-feudal religious ideology among those who came out of the farmhouse, and the citizenry had various strong spiritual desires and requirements [6]. Secondly, there was a lack of scientific and philosophical cooperation in the fine arts compared with Italy, and the ideological foundation of humanism was relatively weak. Thirdly, the tradition inherited from the Netherlandish Renaissance was not Greco-Roman art, but more Gothic art. Fourthly, Netherlandish Renaissance paintings were developed based on small-scale miniature paintings and altarpieces, and although they were more secular, with real and vivid characters and rich details, they lacked the grandeur and ideal realm of the Italian masters.

In objective terms, although the Netherlands achieved less scholarship than Italy during the Renaissance, the Netherlands' contribution to painting technique is crucial to the development of Western art, mainly in terms of Jan van Eyck's innovations in the technique of oil painting and the expansion of pictorial forms.

3.2. Painting Techniques

In 1422, Jan van Eyck was appreciated by a Belgian count who recruited him as a court painter. After 1425, he was at the peak of his career as a court painter, boldly innovating painting techniques. To realize his intention of exploration, Jan van Eyck has always insisted on reflecting all the details of reality like a mirror [8]. Because of this concept, he further studied and improved painting techniques, and made a new attempt in the exploration of painting materials. At that time, it was

impossible for all artists to buy ready-made colors in tubes. They had to make their own pigments. Most of these pigments were made from colored plants or minerals. Although each artist had slightly different methods of making pigments, the blending agent used to prepare the paint before is mainly "egg yolk liquid". This blending medium is easy to obtain, but the disadvantage is that the covering power is not high, and it dries too fast. The method of painting with this blending agent is called tempera. At the same time, because the colors in the Tempera painting process need to be superimposed many times to gradually adjust to the ideal picture state, this indirect painting method also requires a higher level of painting for the painter. If one uses oil instead of "egg liquid", she or he can have more time to blend the colors when painting, and it will be much more direct, calm, and precise. Jan van Eyck adopted the technique of using pigments mixed with linseed and nut oils to capture microscopic detail and subtlety which the previous medium of choice, egg-based tempera, was unable to do so [8]. Oil as a paint conditioner can easily create glossy paints that better matched the artist's intent.

The Ghent Altarpiece, more formally "The Adoration of the Mystic Lamb", was the first prominent oil painting and a precursor of realism. It's Jan van Eyck who is believed to have done most of the work on the 20 images. Apart from the number of component paintings, the polyptych that is based on oil differs from other paintings attributed to Jan van Eyck which used eggs in several ways.

In the open view, oil was used for the figures of Adam and Eve, which is observed with almost scientific accuracy. A distinction between the realistic and the idealized was created. Adam and Eve had more natural skin tones, more expressive facial features, more lifelike hair and body parts, and more moist eyes and lips, while similar-period figures on tempera presented stylized figures, geometric facial features, abstract hair, and body parts. Van Eyck also pays as much attention to the beauty of earthly things as to the religious themes [8]. The clothes and jewels, the nature surrounding the scene, and the churches and landscape in the background are all rendered in outstanding detail. Only oil painting techniques can accomplish this.

According to art historian Till-Holger Borchert, the diagonal light and shadow effects in this painting not only enhance the spatiality of the image but also imply that the light source comes from outside the image boundaries. This is particularly noticeable in the closed-view, back panels of the Altarpiece. The slightly tilted overall orientation and subtle shadow effects suggest the presence of daylight outside the church. To achieve this effect, the artist used new techniques in the handling of both oil paint and transparent glazes. In the Ghent Altarpiece can observe more intricate material handling, marking a substantial departure from medieval painting. The expressions of varied textures are the most salient of these techniques. The way in which diverse materials refract light is a prominent example, for instance, the artist uniquely distinguished between the light falling on the organ pipes and the sunlight falling on the water.

4. Comparison of the Artistic Identity of Italian and Netherlandish

4.1. Memories and Tradition

An important feature of Renaissance painting, both in practice and in theory, is the emphasis on technique, which can be said to be an important turning point in the history of the development of Western painting and even in the history of the development of art as a whole. From metaphysical philosophical discourse to a down-to-earth approach from practice, the emphasis on painting technique was mainly influenced by the emerging civic class's pursuit of realistic interests and the development of natural science. Although they occurred during the same era, the Italian and Netherlandish Renaissance had distinct differences in their historical memory and traditional origins, which led to the development of contrasting painting techniques.

To a large extent, the Italian Renaissance was built on the traditions of ancient Greco-Roman culture. Inheriting the human sense of independence and the spirit of exploration, coupled with the love of classical body art, Italian Renaissance artists held great interest in real natural phenomena, as obsessive and rigorous as scientists. Perspective, anatomy, chiaroscuro, and other scientific laws of

painting were gradually established. By the 16th century Renaissance period, these theories had been developed and generally used. Looking again at the Renaissance in the Netherlands, the Netherlands had a different cultural tradition and national character from Italy, stemming to some extent from different urban environments, including geographic, economic, social, and scientific development. It is worth mentioning that the Netherlands did not have the profound cultural and artistic traditions of Italy. Therefore, the Netherlands' innovation in medieval painting did not infuse the grandiose Greco-Roman art forms of antiquity with elements of realism, as in Italy, instead, constantly improving and developing the late Gothic art and the positive elements of its spiritual culture.

4.2. Belief and Value

Italian painting originated from frescoes, while paintings of the Netherlands Renaissance had their origins in miniature paintings [8]. From Giotto onwards, Italian artists began to pursue a monumental sublime, and mostly recognized the importance of idealization, as Leonardo da Vinci believed that painters should study universal nature and apply the beautiful parts that make up the type of each thing [9]. (Memories and tradition form belief and value which can be seen in figure 1) By doing so, their mind will become like a mirror, reflecting truly all that is before them, and it will become as if it were second nature.

Due to the low and humid terrain of the Netherlands, Gothic churches with multiple windows and long narrow walls were not suitable for large-scale frescoes like those in Italy, which led to the popularity of easel paintings on movable wooden panels in the Netherlands. The miniatures were so meticulous that even this process allowed for portraits to be painted on an area the size of a button. Although the Gothic tradition lost its splendor during the Netherlandish Renaissance, the achievements of Gothic art, such as the emphasis on insights into the interaction between the emotions of the people and the world, and the passion for realistic details of the environment, paved the way for the innovations of the new techniques that followed (The process can be seen in figure 1 “Netherlandish Renaissance Culture Cycle”).

4.3. Everyday Lifestyle

The difference also lies in the strong civic nature of the everyday outlook of Netherlandish painting at the time of the Renaissance and the idealized painting of Italy. Artists in the Netherlands were of a lower social status relative to those in Italy and had not yet reached a conscious awareness of the distinction between artists and craftsmen. The artist's sense of elitism was not so strong, which ensured that the artist maintained a wider, deeper, and more active contact with the craftsmen [10]. This has played a positive role in the popularization and deepening of humanism and the exchange and development of painting techniques. The Netherlandish senses are rougher and thus prioritize content over form and actuality over the appearance of pretense.

4.4. Arts and Creation

These painting techniques are directly reflected in Renaissance artistic creations. The scientifically minded techniques pursued by the Italian Renaissance demonstrated realism in the content of the paintings and idealism in the aesthetics. While the Netherlandish Renaissance painting techniques focused on the continuous improvement of tangible materials, it could also more adequately reflect the local civic nature, pay attention to the details of the depiction, and convey the inner world of the characters (Value and lifestyle inspire the creation that can be seen in figure 1).

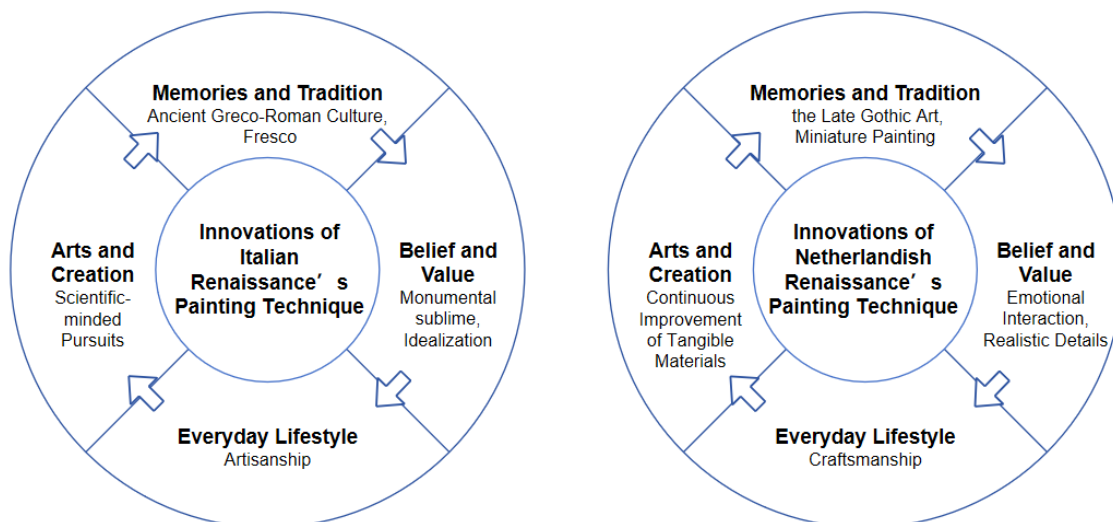


Fig 1. Artistic identity behind the Italian and Netherlandish Renaissance painting technique creation (Italian & Netherlandish Renaissance Culture Cycle)

After three centuries of development, the Italian Renaissance created a scientific approach to painting, established a new norm of classical painting, and produced many talented masters, resulting in a significant number of classic paintings and rich art theories. During the Renaissance, with the emergence of capitalism, the expansion of cities, and the changes in citizens' lifestyles, the desire to escape the confinement of religion and seek out a new cultural life intensified in the Netherlands. The paintings of that era embodied the aesthetic inclination of the emerging citizen class. [6]. At the same time, due to the large number of cities in the Netherlands, the dense distribution, and the high demand for paintings, there was a large team of painters, and the achievements of their works are not to be underestimated.

5. Conclusion

The different paths of national artistic development have produced different results. The Netherlands has less history and culture left, but it has been renewed and created for daily life, and it is easier to make changes in physical materials first; Italy starts from the way of seeing the world and revolutionizes the technique of thinking and expression. The proportions of the constituent elements of the regional cultures are different, but each region is actively renewing and changing in response to the opportunities of the times. Although there are many differences in Renaissance paintings between the two regions, the cause and meaning behind the adoption of new painting techniques are similar. Economic development leads to the germination of capitalism and the formation of a new core class with its own aesthetic values. Furthermore, as with the Renaissance of other European countries, the spirit of humanism pervades both the Italian and Netherlandish Renaissance. This reflects the inevitability of history because art is not an accidental production, but the result of the cultural development of an entire city.

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