

# **Synthetic Pigment: the Innominate Mother of French Impressionism**

Did the development of synthetic pigment contribute  
to the rise of French Impressionism?

IBDP Visual Arts Extended Essay

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# Introduction

This Extended Essay will investigate the cause and effect relationship between the development of synthetic pigment and the rise of French Impressionism. Existing research have identified scientific developments such as the developing understanding of energy, color theory, and photography as causes to the rise of Impressionism, however few research, if at all, has been dedicated to the effect the scientific development of the synthetic pigment have on the rise of French Impressionism. This research aims to investigate the effect that synthetic pigment have on the rise of French Impressionism and extent current understandings regarding Impressionism into new, crucial, and unacknowledged territory. Areas of investigation include the essential elements and characteristics of French Impressionism, what areas French Impressionist artworks stress on, analysis of French art before and after the introduction of synthetic pigment, a brief analysis of how people's view of color changed over the centuries and how the introduction of synthetic pigment contributed to this change. Extending upon these investigations, other areas that will be investigated include how the change of people's view on color led to the rise of Impressionism, a short history of the accessibility of the synthetic pigment, and French Impressionism's cultural environment, including established norms that the Impressionists were following and not following. Sources that will be used are artworks and analysis of artworks (especially Impressionist artworks), art books,

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documentaries, and internet sources such as the website of a museum. This extended essay will be arguing along the lines that Impressionist's stress on color is crucially connected to the invention of the synthetic dye.

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# The Changing Concept of Color and Artist's Relationship with Colors

People have always been interested in colors. From the most primitive cavemen who lived during 15,000 BC to the modern consumer culture (Taylor), color has always been a part of the human daily life, regardless of problems of survival. The introduction of the synthetic dye marked a huge turning point in the history of mankind, where suddenly color became a consumer product instead of being a sign of the upper hierarchy (Paul 42). Just as the Protestant movement changed the meaning of the Bible, this 'Color movement' changed the meaning of color. It encouraged more interpretation of it, and instead of it only being in the touch of the more privileged peoples, this new consumer nature of color helped the colors leak down the social hierarchy, until even the average student can experiment with it (Finlay 23). Due to this disturbance in the pool of creativity that has been almost untouched for centuries, gave rise of an entire new branch of art.

"Color is first and foremost a social phenomenon (Pastoureau 7)". Before color became color, they were just what people see in their eyes, it is social factors that give rise to the concept of color, and social factors (like our need to find a way to communicate and utilize color) make us give different color different names. When the first cavemen walked the earth color was red, brown, and black, seen in the drawings they have marked on the cave walls. Then as more pigments started to be available to them the concept of color became more varied, and as we discover more pigments the concept or the definition of color slowly approached our definition of

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color now.

People in the past possess a view on color very different from those that we have to day. Plato assumed that *prasinon* (leek color) is created by mixing *purron* (flame color) with *melas* (black) (Pastoureau 19). In medieval arts colors were often shown in solid blocks of color with no mixing at all. Combining colors to obtain new colors was essentially very poorly understood, and the lack of the range of colors to be obtained by natural materials limited creativity in the arts. Colors used before the medieval period were either very bright (like the ultramarine blue) or very pale, and since no mixing were done at all, almost solid blocks of color were presented (Paul 91). One example of how people in the past perceive color different from we do is that the Greek and Romans don't seem to have a definite word for the color blue when they do have a definite word for more popular colors (maybe blue was not taken as a color, evidence suggest the Greek words for blue are *glaukos* and *kyaneos*, where the latter probably refers to a mineral (Pastoureau 10)) such as red, black or white. In the Iliad it is discovered that 'out of sixty adjectives describing elements and landscapes...only three are color terms, while those evoking light effect are quite numerous (Pastureau 19),' while in the Roman's view the color blue was simply barbaric and unworthy. This could be the suggestion for the ancient people's strange ignorance of such an abundant color not only present in nature but also present in themselves (the Romans with Hellenistic and Ionic (Taylor) origins possess light eyes (in this case such as blue) with light hair). For the Romans blue is considered a minor color and even barbaric, if used at all blue would be in the background, taking place

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as a minor color. However blue in modern Europe is by far the most favorite color, with popularity exceeding those of red and green, especially striking since red has long been a favored and popular color in the western culture, the Romans even have the Latin word for red (*ruber*) and colored (*coloratus*) as synonyms, and according to *Florentine Dyers' Manual* even until the fifteenth century 'Scarlet is the first and highest and the most important color' humans have (Pastoureau 15).

Also, artists, in caution of wasting paint on experimentation of mixing color, lack the knowledge on how to blend the paint together to achieve the wanted shade (Taylor). Blue only became a real color when it became associated with the Virgin Mary, artists began to portray her robes as blue, and it became the color for purity, for sanctity, and to show that she was the most precious of all (Finlay 46), but in the years before it, it was red and gold that was always associated with the nobility such as church officials (Finlay 85). They still are, but the position of blue is changed ever since. People's changing view of blue is just a part of how color is defined in human history. Color changed from being rigid to free for manipulation (Pastoureau 12), the analysis below will illustrate why color is rigid.

For example, medieval artwork is created to guide people's intellectuals in their worship. People at the time didn't think it was necessary for artworks to be too naturalistic and they are illustrating artworks as if the scene in the artwork is what God would have seen. Described as luminescence, the figures are painted with no shadows (Finlay 37) because (1) God is the light source so the shadow would be behind the figures and (2) God sees no shadows (Finlay 34). Also since God is all

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seeing depth and organization of space would be non-existent for God. So the paintings illustrate how God would see the world in an attempt to help worshipper in their worship.

This is an important point when discussing how synthetic pigments affected French Impressionism, as it was the nature of synthetic pigment that allowed mass experimentation on color mixing. In this way the development of the synthetic pigment contributed to the rise of French Impressionism by laying down an important foundation that allowed the Impressionist artist learn to make their characteristic ‘quick sketches’.

Invented in the first decade of the 18<sup>th</sup> century by German paint manufacturer Johann Jacob Diesbach, *Berliner Blau* (called Prussian blue in English-speaking countries) aroused a fervor for synthetic pigments in the society then (Finlay 87). The druggist kept formula a secret, and it stayed hidden away from the society until 1724, when the English chemist M. D. Woodward reinvented the formula and published his results (Pastoureau 5). The impact was far reaching. Due to its versatile quality, or as described by George Field as “deep and powerful...of vast body and considerable transparency” (Taylor), the pigment spread rapidly throughout the art society, and soon synthetic pigments began to appear all over Europe, and in the 1730s synthetic pigment is mass manufactured (Paul 45). Synthetic pigment is not natural dye made from raw material or minerals. Synthetic pigment is manufactured using chemicals and thus can be mass produced, and mass produced means dropping price and higher accessibility. It is by that time when pigments started to leak down the social



hierarchy, blue is no longer the color for Virgin Mary, as the colors became more and cheaper to produce their social value both declined and inclined. For the middle class as the vibrant colors became more accessible, more awareness towards color is aroused, while for the rich most of the vibrant colors where no longer a sign of wealth and power, and thus not just the most renowned artists, but more people can use colors.

In summary, the characteristics of what made synthetic pigment and natural pigment is listed below:

<b>Natural Pigment</b>	<b>Synthetic Pigment</b>
Made of raw materials found in nature, such as precious stones, gold, plants.	Made of chemicals.
Expensive.	Cheap.
Low accessibility.	High accessibility.
Manufacturing is skilled and time consuming.	Manufacturing is easy and fast.
Narrower range of colors.	Wider range of colors.
Mixing of colors limited.	Mixing of colors easier.

# How Impressionists Revolutionized Norms of Art

The Impressionists are a group of artist who revolted against the established norms of the art world. Before them, art followed a set of strict rules which the artist is supposed to follow:

<b>Norms of art-making in France before the Impressionists</b>	<b>Norms of art-making in France for the Impressionists</b>
Art must be naturalistic or idealistic	Have exaggerated effects of light and color
Art must be grand	Does not have to be grand, even have odd compositions and angles of view
Art must be historical, religious, mythological, or formal portraiture	Portrays common scenes of daily life
Paintings should be large, or huge	Paintings are often small
Paintings must take many months or even longer to complete	Paintings often completed in a short period of time
Paintings must be done in the studio (not outdoors “on location”)	Paintings often created outdoors (on-location)
*Artists who did not follow these rules could not have successful careers.	*Whether or not artists followed these rules will not influence the artist’s career

Since their ideologies completely contradicts with the norms of art-making in that time period, they were not accepted by the art society at first, but as time passed more people began to accept them as artists. The Impressionists were experts at using colors

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to guide the viewer's imagination, and thus transforming colors into landscapes and images when close up it is only blurs. The color plays a vital role in this visual effect.

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# French Impressionist's Art: Usage of Color

One of the synthetic pigments the Impressionists used is the Prussian blue, it was used extensively in the arts and was given a 'special veneration (Pastoureau 54),' suggestive of the Impressionists reliance on this single synthetic pigment. Why was it so valued? The synthesized pigment was used widely not simply because it is cheap and abundant in the market, but also because of the properties that it possess. It is known as a 'powerful colorant (Pastoureau 54)' and produced 'strong or translucent tones (Pastoureau 54),' noted especially on how it can color easily. In Impressionists paintings one gets the strongest impression of the vibrant colors the artwork gives off, containing such energy and visual power that the viewer is drawn to the colors of the artwork immediately.

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For an example of blue, let's take a look at Claude Monet's *Impression – Sunrise*, an oil painting he made in 1872.



Claude Monet, *Impression – Sunrise*, 1872, Oil on Canvas, 48 cm × 63 cm

There is an orange sun coming from the horizon, with rays shining on the surface of the body of water. A dark green silhouette of a man on a boat in the center of the body of water. The man in the middle seems to be rowing the boat. More silhouette of boats and ships are in the background. The color of the painting is composed of shades and tints of orange, and shades and tints of green and blue.

This is an abstracted painting, with texture of water shown by the sunlight shining on the water and by the shadows of the water. There is contrast of cold and warm colors between the orange and blue-green. The major focus is put on the orange, which is most intense, and the dark green figure in the middle, which is the darkest.

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We can make a critical hypothesis of what Claude Monet is trying to do. He wants to exaggerate the effect of rising sunlight on the harbor. From the artwork we can see that the two major focus, the sun and the man on the boat, provides a contrast between dark and light that suggest the sun is just rising, and the light is just beginning to light up the harbor. The orange sky is intruding the blue-green shade on the bottom, suggesting how color is changing the harbor. The contrast between the cold and warm color is also suggestive of the rising sun's light and the dark harbor before the sun had risen. The forms and the brush work of the artwork is blurred. So that more focus is put onto the color instead. Now the audience can see more clearly how the colors on the painting interacted with each other. The 2 colors become representations of light and dark thus illustrating light through color.

Monet have exaggerated the effects of light by using 2 colors and by clever manipulation of the tints and shades of that color. Thus we can see how important color in Impressionist arts is. It is the manipulation of colors that allowed the artist to display the effects of light.



Jacques-Louis David, *The Death of Marat*, 1793, Oil painting, 165 cm × 128 cm

In contrast, let's look at a painting made earlier than Monet's *Impression—Sunrise*.

Looking at *The Death of Marat*, we can see there is a man, Marat Jacques, lying in what seems to be a bathtub covered with white blankets and a plank of green cloth covered wood. Behind him is a dark void. Part of the figure is in the dark, while another part in in the light shone from the left.

The artist puts the human figure as the major focus through using lighting effects

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and by contrasting the positive foreground with the negative and dark space in the background. The figure is illustrated with accuracy, mostly through the changing color between a light skin tone and a dark skin tone. There is a visual association between the bath tub and the stand the man is writing on with a coffin and a tomb stone.

From the artwork we can make a critical hypothesis that the artist wants to show the man as holy and also show the loneliness of when Marat Jacques died (Gombrich 485). The artist seems to have put the man in an idealized position, possibly to suggest a 'reference to the entombment of Christ (Harris).' This is an attempt to sanctify the man, but also and reference to a coffin and tomb stone, which people usually relate with darkness, death, and isolation (separation of the living and dead, thus isolation). Aside from knowing this man is assassinated, there are other light effects that the artist is playing with. Especially viewed when up close and directly in front of the painting, one seems to be caught in the moment of his death, only seeing the figure in the foreground, the void in the back a sign of the emptiness that this painting radiates throughout. Though there are light shining on his face, it comes with contrast to the dark background that showed a void in which even light cannot penetrate, suggesting feelings of loneliness. The form of this figure is also clearly shown, this is due to the contrast between light and dark, unlike in Monet's painting where the figures are unclear and so forcing the audience to focus on the color, this painting has a figure with distinct form, the anatomy of the muscles clear because the light and dark colors are tracing how a real human figure would look under a light source.



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We can tell from this typical artwork that though earlier arts do focus on lighting effects, the form is the main concern for the artist, not the light itself. Thus the artist puts many effort into illustrating how the form of the human is with light and dark as a method, not like the Impressionists, who put light and color as their main focus.

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Pierre Auguste Renoir's *Dance at the Moulin de la Galette* is a famous Impressionist painting that is a very strong example of Impressionist techniques and ideologies of making artworks.



Pierre Auguste Renoir, *Dance at the Moulin de la Galette*, 1876, Oil on Canvas, 131 x 175 cm

Renoir's painting is described as "painted in the most unconventional and daring manner (Gombrich 521)," the dark clothes under the shadows morphs into the background in deliberate manipulation of positive and negative space, the faces of people lacking in detail as if blurred by the sunlight and shadows, compared to the other famous artworks in its time such as William - Adolphe Bouguereau *The Birth of Venus*, the detail is admittedly insufficient.



William-Adolphe Bouguereau, *The Birth of Venus*, 1879, Oil on canvas, 218 cm x 300 cm

The pearly painted flesh of *The Birth of Venus*, the clear features on the face, the distinction between every figure is clear and concise, the human figures naturalistic in rendering. The subject of this painting also depicts a very popular mythological

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subject: the birth of Venus, which satisfies contemporary academic requirements of a true artists according to the norms of the time as shown in the graph on Pg. 9. In this painting the lighting is also used to illustrate the form of the figures. This is what the people in France then consider as worthy of an exhibition, not what the Impressionists were offering.

However Renoir's painting is much more than inadequate technical skill. This picture depicting men and women dancing and having fun under the shade, with sunlight shining through the leaves, lack in naturalistic detail, which we can see in the close up image shown below:



Detail views

The brushstroke making up the faces of the figure in the front is muffled, the people dancing at the back slowly turn into indecipherable shapes the further away they are, but somehow there is a comfortable feeling to this painting.

Women in the painting are wearing dresses of various style and colors, the men wearing suits and hats. These people are either dancing or chatting beside tables. The painting is very balanced, as the figures are distributed very evenly so it is visually balanced. But the distribution of light is very uneven. The light is shining down on the lady in pink on the left. The rest of the crowd is chatting or dancing under dappled sunlight, this puts her as an important focus in the light. Another major focus is also present in the lady, who is facing us, in the striped dress at the front that is in the

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dark.



Detail view, Renoir, 1876

The contrast between light and dark is very strong in this painting, especially when the 2 major focus is compared.

Renoir wanted to show young men and women having fun at a comfortable party on a sunny day in the shades. The faces in the front is made unclear, as if covered by shadows. The dappled shades formed by sunlight shining through the trees remind people of a sunny and warm afternoon, the cool brought by the shades seems to remind the viewer of such a comfortable afternoon. The dark background and the people under the shade come into contrast with the light areas, making the viewers focus onto the warm sunlight. The way the artist manipulated light to illustrate dappled sunlight also reminds viewer of a warm afternoon, conveying warmth and comfy to the viewers. The contrast between the light color areas and the dark color areas is characteristic of Impressionist paintings. As we have seen in Renoir's painting, he have illustrated interaction between sunlight and the shades through manipulating the interaction between color (especially intensity) and darkness, so that when the viewers look at the painting the color turns into sunlight. The Impressionists are a group of revolutionaries who revolutionized with illustration of the effects of

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color by turning them directly into an interaction of light and dark. Synthetic pigment played a crucial role in this, as synthetic pigment allowed for the experimentation of color. Furthermore, according to Michel Pastoureau, "...color could fulfill functions in paintings and objects that it had not before. (Pastoureau 119)" Thus the contribution of synthetic pigment to the rise of French Impressionism is allowing artists to gain a better understanding of the way pigments work, and how to transform these pigments into light on the canvas.

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# **Impressionism and Industrialization: How Synthetic Pigment helped Artist Adapt to a Quicker Life**

For social factors, the invention of the synthetic pigment is part of the Industrial Revolution, where cities in France is continually becoming more industrialized towards the end of the 18th century. Booming cities, rushing people, the sound of transportation all led to a faster pace of life than before. This is the environment that the impressionists were living in. Due to the industrial revolution people's lives became very fast paced, and artists also changed with this landscape. Instead of sitting down and drawing slowly, artists like the Impressionists were influenced by their environment and instead began to paint with speed. Also, in 19<sup>th</sup> century France, because synthetic pigments can be mixed easily, artists can create different colors of paint very fast, allowing them to paint with speed. Impressionism stresses color and not on details is a result of this fast pace painting and color mixing, and the widespread, cheap, and easily accessed synthetic pigment helped with the realization of the ability of color to express landscape. Partly due to scientific research related to color theory during the Industrial Revolution artists realized that visions in the eye is due to the different combination of color rather than shapes of forms, and this helped with the revolution of painting very detailed images (shapes and forms) into letting the eye morph the colors into a realistic landscape. Now, images are no longer a result of shapes and forms, but as a result of color.

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# Conclusion

Due to the introduction of synthetic pigment into society, colors became much cheaper than before. Due to this, the older cultural constraints on color--such as certain color were only meant for certain people because color was related closely with social status, religious symbolism, and the European definition of color--started to breakdown as colors became more accessible to the general public, losing its value as a sign of wealth and status. Unlike before where sometimes pigments are even more expensive than gold and how even gold itself is used as a pigment, now because colors are cheaper and more accessible, artists are now also free to experiment with color. Also due to the mass distribution of pigments, color became a major part of the artists' objectives, playing a new role as a formal quality and not just a tool used for other intentions. Synthetic pigment, combined with the Industrial Revolution, spurts the development of Impressionism a faster pace of art-making in France as artists are influenced by the faster pace of life brought by the Industrial Revolution. This extended essay has shown that the appearance of synthetic pigment has given artists many opportunities to discover what they could not with natural paint, and through analyzing the artworks this essay have concluded a characteristic of French Impressionists that depends on the invention of synthetic pigment.

This investigation have analyzed how synthetic pigment contributed to the rise of French Impressionism, however it did not go far into Impressionist art-making techniques. Though this investigation did analyze colors and how they are used in



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Impressionist artworks to achieve the wanted effect, the results of the investigation would improve if experiments were made on how to use color to attain the effect Impressionist artworks give. Primary sources could be used to improve the result and increase the reliability of the investigation. Primary sources might include investigation on factories that make synthetic pigment, analysis of artworks viewed in person that cannot be obtained if I am not in front of the artwork, even making pigments using raw materials. Since Impressionist artworks are analyzed, the conclusion that this investigation arrived to is reliable, however, the number of Impressionist artworks analyzed may not be enough.

Further investigation could be on what effect does color bring for Impressionist artworks, and the investigation could include a compare and contrast between the same artwork, except that one version is black and white. This could help the investigator better analyze what color does for an Impressionist artwork. By analyzing how Impressionist artist built upon old norms of art-making to create their own style of art, artists could take inspiration from this to improve their own artwork from existing norms. Artists could also take from this investigation knowledge on how to use color to create effects of light and to create interesting abstractions that is sophisticated in a way that the abstraction is naturalistic in the rendering of light, such as using complementary colors to create a contrast between light and dark.

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## Image Credits

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Pierre Auguste Renoir, Dance at the Moulin de la Galette, 1876, Oil on Canvas, 131 x 175 cm, Gombrich E.H., *The Story of Art*, Phaidon, 1995

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