

THE INVENTION OF OIL PAINTING  
THE RISE AND FALL OF RENAISSANCE ART

By Peter Arguimbau

As a youth my father would take me to museums to see great paintings, but nothing like seeing Velasquez's "*Las Meninas*", ("*The Ladies in Waiting*") at the Prado in Madrid. Along with Rembrandt's "*Night Watch*" (at the Rijksmuseum in Amsterdam), the Velasquez masterpiece is arguably the greatest painting in the world.

This large life size tableau of the Spanish court, "*Las Meninas*" merited its own private room at the Prado and lit by natural light by a window, it simulated the lighting in the painting. The King and Queen of Spain are included in the painting as observers with their reflection in a mirror on the back wall as Velasquez, peeking out from behind a large canvas paints his self-portrait with brush in hand. Opposite, the ladies of the court are tended to by dutifully maids. The moment is portrayed with such naturalness, that in the far distance you see a butler stepping into a hallway and in the foreground a German Shepard is lying head up like you are viewing a real moment in the life of the court. To add dimension to this moment, there is a mirror up on the back wall that on looking at it magically allows you to travel in space between the spectators and mingle in the intimacy of the Spanish Court. This was the ultimate illusion in three- dimensionality, a virtual reality. Similarly the magic of the "*Night Watch*" puts you, the viewer, marching in the middle of the action.

How was it that Velasquez and Rembrandt, born at the same time, peasants on opposite ends of the continent came to represent the pinnacle of art in the Golden Age of the Renaissance? What catalyst caused this tremendous enthusiasm in art during the Renaissance? Was there a gimmick, trick of the eye, or an invention that made this possible? To properly understand the major reason for this explosion of art across Europe, you need to look back to the lost and refuted 'invention of oil painting' by Jan van Eyck in 1410.

Part of the entry for Jan van Eyck in Giorgio Vasari's '*Lives of the Artists*' first published in 1550, is as follows:

"While working in Flanders, Johann of Bruges, ...set himself to make a trial of various sorts of colours, and, as one who took delight in alchemy, to prepare many kinds of oil for making varnishes... Now on one occasion, having taken very great pains with the painting of a panel, he gave it a varnish and put it in the sun, as is the custom...."

The said panel opened at the joinings in a ruinous fashion... and so disgusted no less with his varnish than with working in distemper, he began to look for a method of making a varnish that should dry in the shade, without putting his pictures in the sun... he found at length that linseed oil and oil of nuts dried more readily than all the others he had tried. These, then boiled together with other mixtures of his, gave him a varnish that he nay, all the painters in the world had long desired. Afterwards, having made experiments with many other substances, he saw that mixing the colors with those oils gave them a very solid consistency, not only securing the work when dried, from all danger from water, but also making the colour so brilliant as to give it lustre by itself without varnish; and what appeared most marvelous to him was this, that it could be blended infinitely better than distemper... No long time passed before the fame of his invention, spreading not only throughout Flanders but through Italy and many other parts of the world..."

Van Eyck, and his invention were very much the product of a collective intelligence brewing in the Middle Ages, that through alchemy first mixed chemical compound reactions in creating all kinds products that are still in use today. What van Eyck had invented, through experimenting with oil and using the formulations for making glass, soaps and dyes, was a dryer for oils that when ground with pigment dried readily within hours without sunlight. This oil-based technology enabled the manufacture of millions of paintings in the Renaissance at the same time allowing artists to develop a language for the abstract theory in art that produced the great compositions and compelling imagery of this period.

Before the art of painting existed, earth colors were washed and ground for pigments and roots were boiled for dyes. It was only through simple chemical reactions using lye and alum mordents with mineral salts that basic stable colors were produced of deep earth reds, browns from iron oxide, and greens and blues from copper sulfate. The artificial colors, such as cinnabar, a brilliant red, from reacting mercury with lye incorporated compound chemical reactions and were kept secret. The simple recipes were first noted in the 8<sup>th</sup> C *Lucca Manuscript* and improved in the Medieval manuscript by Theophilus 12<sup>th</sup> C MS, '*On Divers Arts: Painting, Glassblowing, and Metalwork*'.

Painting began from a demand for devotional imagery using recipes for 'distemper of colors', from whence tempera painting was derived. Tempera is a flat aqueous technique standardized by Cennino Cennini's manual; '*Libro dell'Arte*', first published in 1398. Artists painted "Illumination" for Bibles on vellum mostly with a gum Arabic binder that left the image shiny or on wooden panels with egg emulsions protected by a shiny oil varnish. As decorations got larger, murals called fresco were invented from innovations of firing glazes in ceramics and glass. Giotto, in particular, advanced the stylistic invention of shadow with cast shadow in frescos in life-size figures, which standardized three- dimensionality into art. However, creating shadow in fresco as well as tempera was extremely tedious and time consuming because each shadow plane had to be crossed hatched over in brown to create the illusion of shadow. Oil paints somewhat alleviated this problem by

painting the shadow plane in one tone. Recipes for oil painting can be found in *'On Divers Arts'*, yet oil paint was slow to dry in the sun. Cimabue was the first painter to use oil and pitch for painting in the 14<sup>th</sup> century.

This all changed with van Eyck's, "invention" in 1410. This invention was as dramatic a change as the projector was to motion film today. Van Eyck's fame spread from Portugal to Naples and every court in Europe soon sought painters familiar with this revolutionary technique. By the end of the 15<sup>th</sup> century, Antonello da Messina, a disciple of van Eyck, brought this valued recipe to Venice. Giovanni Bellini cajoled the recipe from Antonello, where Giorgione, Titian's teacher, ascertained the method at which point Italian art flourish.

Venice would have been the most logical place for the 'invention of oil painting' to have taken place, considering that the Venetian Empire grew out of the reinvention of clear crystal and had established Capitolare de Filaris (Regulation of Glassblowers Guild) dating from 1271. The proprietary nature of this guild restricted the glass works to the island of Murano and prohibited the experimentation with their formulas in other applications such as painting, even threatening anyone caught leaking Venetian glass secrets with assassination. Florence also shared the same safeguards for their invention of complex compound reactions for dyes in making regal fabrics of royal blue and crimson lake. Their textiles became so popular the gold 'Florin' dominated Europe. With this wealth the Florentines began to cultivate a vision of beauty and perfection using art theory with giants like Alberti on perspective and Vitruvius on proportion. Cosimo d'Medici with his new library, and employment of artisans, was bringing the renaissance of Greek Classicism in art, literature and architecture claiming Florence as the birth place of the 'New Renaissance Style'. The Florentines did not get the Flemish formulas until the 16<sup>th</sup> century nor was it the source of their inspiration.

Throughout Europe the Guild of St. Luke was a fraternity for artists, however, the Flemish guilds enforced strict regulations to protect their expertise in the same way the Italian city states had done with textiles and glass. To maintain quality control and safeguard the refinements from van Eyck's invention, these guilds only allowed artists members to purchase painting materials from the apothecary. Over three centuries the Flemish School of Painting matured from van Eyck and the Primitive Schools of Flanders, to the transition of Bruegel Romanticists of the 16<sup>th</sup> century, and finally the Great Antwerp Period of Rubens in the 17<sup>th</sup> century. After van Eyck, the Romantics developed tinted oil mediums for glazing color. The final adaptation for Flemish Technique came with the Antwerp guild of Rubens in creating resonate varnishes that were ground into pigment for painting and at the same time for glazing with transparent films of color. Authorities Ernst van de Wettering, "*Rembrandt the Painter at Work*" and Jacques Maroger, "*Secrets Formulas and Techniques of the Masters*" have concluded the Old Masters used thixotropic paints. The 17<sup>th</sup> century Dutch apothecaries carried this Flemish varnish exclusively enabling the Old Masters to paint as quickly as their inspiration without technical difficulties using opaque paint or transparent colored glazes at the same time. In fact,

there are even records of painting contests where masters were completing paintings in a single day.

With the facility of drying oils solved and the use of transparent and opaque paint, artists began to work on the abstract theory of art. In the advancement of painting there are two inextricable forces at work: the available materials and techniques and the development of abstract stylistic inventions that go hand in hand. These abstract inventions are part of the tools of the language of art that for simplicity's sake defines form as light and shade, divided by core shadow, highlight, shadow, accent, and cast shadow. Distance is outlined by one and two point perspectives that extend to complex aerial and anamorphic perspective. Composition incorporates abstract design or rhythms found in nature like dynamic symmetry or the golden mean. Finally, local color for coloring forms and prismatic color with films of colored glazes for developing the tonal relationships as perceived in nature. This short explanation for creating three dimensional illusion does not compare with the experience the Old Masters portrayed. However, the illusion of manifesting the real using oil paint became the ultimate challenge for painters of the Renaissance in portraiture, still-life, genre, landscape and historical painting.

Given this marriage of technique and materials, the exponential manufacture of art in the Golden Age should come as no surprise. Collecting art was a cultural exercise for families from farmers to the wealthy class in creating their legacy. Between 1630 and 1640, it is estimated that a mere 800 Northern Netherlandish artists produced an outstanding 1.2 million paintings. That comes to an average of 150 paintings a year per artist. During his lifetime, Ruben's workshop alone manufactured 15,000 paintings. Then, like a cliff, painting production dropped by one fifth at the end of the 17<sup>th</sup> century as a result of the death of the Old Masters. After Rubens died in 1643, Rembrandt in 1669, their workshops were dispersed and the secret recipes for Flemish Technique was lost.

By the mid-19<sup>th</sup> Century, art production had fallen so dramatically it was labeled a 'mini Dark Age' by authorities. Without Flemish Technique painters were struggling and unable to produce the effects of the past. Through the Royal Academy, the English aristocracy commissioned experts, notably Mary Merrifield and Sir Charles Eastlake, who in the 1840's published volumes investigating the lost techniques. Unable to produce a formula even after years of research, Eastlake denounced Flemish Technique, nailing the coffin closed as to the existence of van Eyck's invention. This act terminated Flemish Technique and Renaissance art.

Coincidentally in 1841, Winsor-Newton started manufacturing tube paint. This industrialization of paint ended up being as transformative to painting as van Eyck's invention. The ease of not having to grind colors with complicated mediums, unleashed hundreds of artists carrying their tubes of color into the fields ready to explore *plein-air* painting. However, the manufacture of tube paints had a myriad of problems that were subsequently

passed on to the artist. Paint for the previous four hundred years had been shiny, consisting of pigment, oil and resin. Resin made the paint shiny, but its presence in the tubes led to the premature hardening of the paint. The manufacturers, of course, simply eliminated the resin, but in doing so, they changed the way that artists painted. Without resin, the paint dried flat, making it impossible to paint luminous shadows, because the nature of shadow is transparent. But rather than reverting back to flat decorative art, painters relearned to paint with this new paint and discovered that by bringing up the chroma level of their palettes, they could simply represent shadow with pinches of flat black, blue, and violet. This, marked the start of Impressionism. Perhaps misleadingly venerated by art historians as 'painters of light', the Impressionists were actually the first to conceptualize art as an impression not as reality. From this point artists began to group and form movements: Pointillists reinterpreted Goethe's 'Color Theory' as 'vibrations of color' using flat hues of color rather than transmitted colored films of light; Cubists deployed muted colors and broken perspective. Within a few decades what started as the conceptualization of shadow redefined the stylistic inventions of the past for new movements and their accompanying doctrines, from Expressionism to Abstract Expressionism.

Between the World Wars, the relationship between painters and paint changed again with the introduction of synthetic polymers – by definition adhesives, not even paint, creating ever greater problems. These new paints have virtually done away with oil paint, selling the art community on acrylic paints and resins. Following this new trend, modern restorers, in avoidance of the complexity of Flemish Technique, have collaborated with industry's paint chemists to choose this new technology. These new restoration practices, using industrial solvents and synthetic resins, have contributed to the ruination of acres of Renaissance art, leaving restorers in denial or scrambling to justify the unintended consequences of this synthetic technology.

In closing, the Renaissance was the greatest period of art in modern times. If oil painting is to become no more than an anomaly and excel, artists have to challenge the myth that Old Master technique is unfounded. As well artists have to reinterpret the abstract theory of Greek and Florentine classism, and taking control of their materials while utilizing Flemish Technique. The Renaissance artists realized transparency was instrumental in producing real illusion and developed a system of colored films for glazing over flat color to create prismatic effects of light. As modern artists learn about the subtle layering of transparent veils of color using Flemish Technique, there is no limit for art, challenging current trends and reaching new heights.

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#### Notes

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