# The Iconography of Light in Renaissance Painting and its Medieval Heritage

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Abstract: The transformations that occurred towards the end of mature Gothic in western Europe drastically changed the use of light in the arts. With the so-called international Gothic and the Italian Proto-Renaissance, light will change its very form of manifestation, replacing the three-dimensional, environmental use of light as a medium with a two-dimensional representation contained within the painting. Using examples from Fra Angelico, Masaccio, Criveli, Vivarini, Titian or Leonardo da Vinci, we will try to show not only how important light was as an iconographic motif, but also how a certain iconography of light was built within bi-dimensional space.

**Keywords:** Renaissance, light, painting, iconography, Leonardo da Vinci, medieval optics

### The attributes of light during The Renaissance

The aesthetics of the Renaissance primarily aims to resurrect the humanist spirit of European antiquity, an occasion when the works of classical philosophy are re-discussed and brought to the fore. From Pythagoras, to Plato, Aristotle or even Plotinus, ideas are being reviewed, but not necessarily from the perspective of the theologians of Middle Ages. The Platonic or Florentine Academy is one of the new institutions that initiated a new reading of the classics. Ficino's platonic studies, as well as the humanist interest of the family De Medici, have generated series of lectures dedicated to increasing knowledge about Greek and Hellenistic philosophy.

In the introduction I will mention only a few aspects of the Renaissance humanist aesthetics to better contextualize and analyze the artistic practices of the period. My aim is to show the place of light in the thinking of the 14th-16th centuries. The merit of Marsilio Ficino (1433-1494) was to make known the Platonist spirit through a series of translations and studies. His comments on Plato's *Banquet* or Plotinus's *Enneads* offer us the possibility to understand his thinking of beauty and light.

For Ficino beauty was not a matter of form or harmony only, but of what is common to forms, sounds or virtues. Inspired by Plotinus, he considered that beauty is not only a proportion, but can also be contained in simple things. Thus, light was seen as one of the simple things that still give us miraculous pleasure. Ficino also claimed that beauty can be of two types – harmonious or bright, establishing the Neoplatonist idea of beauty as a shining among his contemporaries: <sup>1</sup> "The beauty of the objects is not in shadows, but in clarity and charm, not in the dark mass, but in luminous harmony."

The incorporeal beauty is another idea Ficino is circulating bringing the process of enlightenment to the fore, that is, the intrusion of the brightness of an idea in the matter. It was a continuation of metaphysics in the conception of both art and beauty. If, for Leon Battista Alberti (1404-1472), beauty was only the proportion, the property of the material world that can be recognized by perception<sup>3</sup>, Ficino appreciated the beauty more from the perspective of the late Antiquity and, to some extent, from a medieval perspective. That is why light and brightness will be, for them, the guiding parameters in defining humanist aesthetic values. Light will also play an important role in materializing the antithesis between divinity and the devil, between divine love and fear.<sup>4</sup>

Using Norman Bryson's analysis of stained glass as a transparent medium, which I will briefly describe here, we will try to see what the role of light is in the equation between the discursive and figurative value in the art of Renaissance.

Quoting Edgar de Bryune<sup>5</sup>, Bryson shows us how medieval images, in the Western tradition, were allowed only in the conditions in which they fulfill the function of communicating the Word to the illiterate. Their role has thus become a mediator that makes the Word accessible, an acceptable substitute for reading. The image becomes a sign and acts like a verbal sign. <sup>6</sup>

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<sup>&</sup>lt;sup>1</sup>W. Tatarkiewick, *Istoria esteticii*, vol. III (Estetica Renașterii), transl. Sorin Mărculescu, Meridiane Publishing, Bucharest, 1978, pp. 160-162.

<sup>&</sup>lt;sup>2</sup>M. Ficino, Scrisoare către Giovanni Cavalcanti (Letter to Giovanni Cavalcanti), 1473, apud. W. Tatarkiewick, vol. III, p. 163.

<sup>&</sup>lt;sup>3</sup> His ideas on beauty appear in the Treaty on painting, *De pittura* (1425, *Despre pictură* (*About painting*), *Meridiane*, Bucharest,1980), and in the one about architecture, *De re aedificatoria* (1450-1452).

<sup>&</sup>lt;sup>4</sup> R. Carnariu, *Visual Composition from a transdisciplinary perspective*, pp. 10-17. Artes Publishing, Iasi, 2020.

<sup>&</sup>lt;sup>5</sup> E.de Bryune, Études d'esthétique médiévale, volumul 1, Slatkine Reprints, Geneva, 1975.

<sup>&</sup>lt;sup>6</sup> N. Bryson, *Word and Image – French Painting of the Ancien Régime*, Cambridge University Press, Cambridge, 1981, p. 1.

Using semiotic instruments, Bryson discusses the two basic components of communication - the graphic or acoustic sign, *the signifier*, and its intelligible form, *the signified*. <sup>7</sup> *The Canterbury window*, for example, gradually loses its value as an object and its material symbolism becomes meaningful. Its role is one of transit, through which the gaze must pass in order to be able to bring to light the true meaning and message. <sup>8</sup>

The image also tends to be more valuable as an anticipation of memory than *in praesentia* - the momentary impact can be intense, but the visual only foreshadows, anticipates what the intellect can understand and contemplate. The subordination of the present experience to future memories, and the dispossession of qualities that do not derive from the illustration of the Word make possible the birth of the idea of servility of the medieval image, regardless of its degree of beauty.<sup>9</sup>

Bryson also works with the notion of temporality in this analysis noting how the image becomes an in-between or interstitial space. It makes a double reference, one to the past, by recalling past scenes and facts in the present, like a memorandum, as well as to the future, when viewers remembering these images will update their meaning.

Analyzing the example of Masaccio's fresco, The payment of the tribute (Brancacci Chappel, The church of Santa Maria del Carmine, Florence) Bryson notes how the figurative value of the image represented exceeds the discursive one, giving the viewer more visual information than it would be necessary to understand the narrative content. A good part of this information is described precisely because of using linear perspective, 10 although this technical representational device, based on a geometric reconstruction of the field of vision, does not reflect the real with a higher accuracy than other types of perspective necessary for speech or narration. Thus, the artist must include an excess of irrelevant information in such spatial representations. 11 It was not necessary to know the exact location of Christ, apostles or soldiers in this composition in order to convey the narrative message of the scene. Thus, the perspective will always determine the painting to include details that are not absolutely necessary for the textual substrate and will allow the painter to hide the speech through figurative elements. 12 For example, the subtle difference between the profane (the figures of the soldiers) and the sacred (the image of Christ), created by the

<sup>&</sup>lt;sup>7</sup> Bryson relates in this analysis to semiotic theories and notions - as they were put forward by Ferdinand de Saussure (*Course in General Linguistics*, 1916) resumed later by Roland Barthes in *Eléments de sémiologie*, Denoël/Gonthier, Paris, 1965 or *Le plaisir du texte*, Éditions du Seuil, Paris, 1973.

<sup>&</sup>lt;sup>8</sup> N. Bryson, *op.cit.*, p. 3.

<sup>&</sup>lt;sup>9</sup> Ibidem

<sup>&</sup>lt;sup>10</sup> N. Bryson, op. cit., pp. 10-11.

<sup>&</sup>lt;sup>11</sup>*Ibidem*, p. 12.

<sup>&</sup>lt;sup>12</sup>*Ibidem*, p. 14.

posture of the faces, is more convincing from the narrative point of view, because the viewer must make an effort to find the discursive shades in a figurative field. The importance of linear perspective also resides from the fact that it brings an undeniable truth of reality in front of the viewer and the persuasive force of this perspective exceeds that of textual truth. <sup>13</sup> The credibility and persuasive quality of linear perspective during Renaissance made the religious art of this period adopt such a technique. <sup>14</sup>

Masaccio, a connoisseur of new solutions for creating spatial illusion, uses more carefully the light in his compositions in comparison with Giotto, for example. The compositional unit results from the fact that he uses one light source. This generates carried shadows, whose role is to amplify the illusion of volumes, masses, and weight. 15 Thus, we observe how the illusionist treatment of the light source functions in the new type of painting. The alternation of light and shadows creates an environment in which we cannot sense the light source, but we can seize its effects on the surrounding objects. Thus, we can talk about a default light source, outside the painting itself, and depending to a certain extent on our sight. Placed in an abstract plan, outside the pictorial space, the light should ideally belong to our plan for positioning and existence. Thus, the pictorial illusion of spatiality in Renaissance painting places the viewer in the same space with the light source - albeit the existence of the latter in the real world remains to be induced from the painting's representational space, existing as an abstract, mental entity for the viewer.

If, in the medieval images and icons, the light was immanent and radiant, an effect usually obtained by employing a bright background, according to Sendler, in Renaissance painting we're used to seeing lights and shadows, irrespective of the fact that the light source is in the interior or in the exterior of the image. Renaissance painting illustrates perfectly the desire to create an illusory space, based on the physical laws of optics, and this illusionism is generated even by the contrast between the shadow and light. Here, the tricky use of light establishes a dialogue between the two parties, the visible and the invisible, which structurally build the image. The light of transfiguration gives way to natural light, and so the image becomes an illusion of the immediate reality, a false reality, a fiction that loses its spiritual character, precisely by this mutation of the role of light.

<sup>&</sup>lt;sup>13</sup>*Ibidem*, p. 20.

<sup>&</sup>lt;sup>14</sup> W. V Dunning, Changing Images of Pictorial Space, Syracuse, 1991, p. 60.

<sup>&</sup>lt;sup>15</sup>Ibidem

<sup>&</sup>lt;sup>16</sup> E. Sendler, *Icoana – Chipul nevăzutului, Elemente de teologie, estetică şi tehnică*, transl. Ioana and Florin Caragiu, Doinişa Teodosia Ilie, Sofia Publishing, Bucharest, 2005, p. 184.
<sup>17</sup>*Ibidem.* 

<sup>&</sup>lt;sup>18</sup>*Ibidem*, p. 193.

# About the form or iconography of light in Renaissance painting

In the following pages we will try to analyze some of the iconographic forms illustrating light in Renaissance painting. Contrary to Sandler, I claim that the value of the symbolism of light is not lost, but rather continued in the two-dimensional plan exploited since the medieval period. If in the Byzantine or Gothic painting the use of background brightness or halos as symbols of the divine world has been intensely exploited, with the Renaissance, an even stronger conventionalization of the representation of light will be called for. Thus, the backlight will be reduced to the shape of solar rays. The replacement of the background with specific elements of nature or of immediate, everyday reality in the spirit of realism has led to the development of new formulas for the representation of the sacred light. The realization and concentration of the divine power that appears visible in the world was achieved by the representation in the form of light rays. Ray light

The representation of light in the circular form of light rays belonged to the antiquity, both to the Egyptian and Oriental, and to the Greco-Roman one. With the revival of the ancient iconographic forms, this type of representation of the rays of light is also resumed. If the shape of the halo, with origins in the representation of Apollo Helios the Sun God, is preserved in Byzantine and Western art, the rays of light will revive with the Renaissance

However, the personified representation of the Sun, surrounded by rays, appears and is maintained in the medieval iconography, either in that of Byzantine influence (*The Dome of the Genesis*, San Marco church, Venice) or in the Western one (the representation of the Sun in the stained-glass windows, dedicated to Christ's life in the Chartres Cathedral, France, around 1150).

The material light is not present in all religious scenes, but especially in those related to the theme of Annunciation Day, the Christ's baptism the Ascension of the Lord or of the Transfiguration. These themes bring to the fore the presence of divine power and light which acts directly upon the characters involved. Thus, the message with the good news of the Angel Gavril is accompanied by the secret presence of the Holy Spirit, conceiving Child Jesus in the belly of the Blessed Mother.

Fra Angelico illustrates, in the composition *Annunciation*, realized between 1430-1432, the act of Annunciation by a few narrative symbols. The artist divides his composition into three vertical zones, two of which are occupied, almost symmetrically by the face of the Blessed Mother and by that of the Annunciation Angel. A third part is a scene separated from the one

of the Annunciation, depicting Adam and Eve driven out of the Garden of Eden.

Fra Angelo overlaps the chronological plans to bring the idea of redemption and salvation from the ancient sin to the fore. But all is happening in a continuous present, as a metaphor of universal time. The compositional solution found by Fra Angelico is that of a long beam that crosses the structure of the painting in a downward diagonal, thus linking the two temporal planes, as well as the spaces of the sacred and the prophane. Two bright hands send, from the upper-left gold corner, a bunch of strong rays to the head and body of the Blessed Mother. Somewhere near the head of angel Gavril a pigeon walked the path of the rays toward the face of the Blessed Mother. As the rays move away from God's hands these lose intensity and force according to the law of emanation. With a great narrative strength, the artist exposes here all the elements of the represented scene, more than that by using the testamentary quote, he can introduce the divine presence somewhere in an undetermined space and time. The narrativity is continued in the register below, where scenes from the life of the Blessed Mother appear in smaller tapes.

Adoration of the Magi seems to be another theme that brings the idea of divine light and presence to the fore. For the representation of the scene Antonio Vivarini chooses to appeal to the presence of God the Father, the Holy Spirit, and the cohorts of angels (Adoration of the Magi, 1445-1447, Staatliche Museen, Gemäldegalerie, Berlin). The image of the Father and that of the Holy Spirit seems to keep an eye on the whole scene. Placed in a straight line above the Blessed Mother and the Child Jesus, they are represented in the form of an old man and a pigeon respectively, surrounded by golden elliptical shapes and circular rays. Rays detach in relief from the golden elliptical mass, enhancing even mode the idea of materialization of the divine spirit and force. A few finer rays flow from the golden and compact mass, focusing on the Holy Spirit and then passing to the group of the Blessed Mother and the Child.

Another representation of *the Annunciation* also brings us a new representational solution to the motif of the emanation of divine power. In the detail of the polyptych of St. Antony (1478-1485, Galleria Nazionale Dell'Umbria, Perugia), Piero della Francesca realizes an interesting contrast between the rigor with which he builds the architectural framework of the scene, the mathematical precision in the representation of perspective and the shape of light. However, the artist keeps a rigor and an order of the shape, placing the rays in an oval shape. The halos are represented in the same way as circles seen in perspective. The propensity for ordering the perfectly controlled forms, specific to the paintings of Cinquecento, knows a higher precision at Piero della Francesca, where nothing is accidental or circulates

freely within the composition. The light itself follows a default path and cannot exit the limits in which it is designed. Of course, this was valid for this divine light, apart from the natural light, which passed undisturbed in his composition, contributing to the definition of shapes and volumes. However, the divine, materialized, and visible light defines its nature different from the natural light, by this contrast.

Another example is that of the Annunciation created by Carlo Crivelli (*Annunciation with St. Emidius*, 1486, National Gallery, London), where the force of divine light crosses the opaque matter of the wall to penetrate with an ultimate force and precision into the inner space, where Blessed Mother is located. The light comes here from a cloud made up of the golden heads of seraphim, prefigurating only the power of God. The contrast is also present here as a ray of light that opposes the perspective diagonal of the wall. Even more the divine light is opposed to any natural or mathematical law, becoming a counterbalance to the laws of nature.

The representation of the light in such conditions marks a "visual difference", a "visual concentration of sacred", as Victor I. Stoichita also notes, analysing the scene of *Transfiguration* from the altar of the Cathedral of Avila.<sup>19</sup>

With the 16th century, the vision of divine light becomes less rigorous at the formal level. Isolating almost completely the scene of glorification of Holy Trinity (Titian, *The Triumph of the Holy Trinity*, 1551-1554, Museo del Prado, Madrid), Titian uses a much more diffuse light than the one used in the paintings of the previous century. According to Victor I. Stoichita, the three elements with a decisive contribution to the construction of the image are the clouds, the perspective, and the light. They are in a close relationship – the rays of light lead the eye to the vanishing point, like the lines of perspective, represented by the Holy Spirit. The vanishing point is very low, and this allows Titian to lead the eye through the center of the composition to the source of light. The Heavenly sun is replaced by the light of the Trinity, and the clouds come back here with their mediation function, just as they do in the scene of Transfiguration.

# A scientific turn: the optical experiments and the *chiaroscuro* of Leonardo da Vinci

With the Renaissance, the natural sciences start to separate from the Church, but also from the Aristotelian philosophy. As we know, the 14th and 15th centuries are experiencing the emergence of a new professional class – artists, architects, cartographers, etc., who were not part of the ecclesiastical or university environments and who were no longer obliged to depend on the

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<sup>&</sup>lt;sup>19</sup> V. I. Stoichiță, Experiența vizionară în arta spaniolă a Secolului de Aur (Visionary experience in the Spanish art of the Golden century), Humanitas, 2012, pp. 39-40.
<sup>20</sup>Ibidem, p. 106.

rigid scholastic tradition. <sup>21</sup> The invention of the pattern by Johannes Gutenberg around 1440 will contribute decisively to the process of secularization of sciences by disseminating information much more quickly. In this context, Leonardo da Vinci the Florentine (1452-1519) will make important contributions not only in the visual arts, but also in the field of mechanics, anatomy, and optics.

A few notions about medieval optics help understand the continuity and discontinuities in the painterly representation of light that will reach an apex with Leonardo. Already in the ninth century Baghdad, which became an important religious, cultural and scientific center of the expanding Arab world, gathered a number of philosophers, physicists or doctors who would systematically study the problem of light and visual perception. Among them will be Al-Kindi (c. 801-866 AD), an Arab philosopher, physician, musician, and mathematician, an ardent supporter of the "visual rays," a continuator of Empedocles' vision, who also went through Euclid's theories. <sup>22</sup> Overall, in his view, the "visual rays" are in the form of small cones, the tip of which touches the eye and which connects our spirit to the outside world, changing the shape of the air in front of us and allowing it to convey the configuration and colors of objects. <sup>23</sup>

In response to this theory, Avicenna (980-1037), an Iranian philosopher and physician, will show that if our eye can see objects underwater, a medium that is significantly different from air due to its density and consistency, then air is not the safe environment in which the visual cones operate. However, he will not completely separate himself from his ancient Greek predecessors. This break will be accomplished by Alhazen (965-1039), whose Treaty will form the basis of new reflections and speculations on the optical phenomenon, which will last another six centuries until Johannes Kepler opens up new ways of approaching the subject. He will no doubt adopt Aristotle's view that light comes from the outside, entering the eye, and not the other way around. Alhazen also brings a whole host of arguments in this regard, including looking at the sun that is harmful to the eyes, the phenomenon of bright images that persist for a few seconds in front of the eyes, and so on. He also introduces the idea of light scattering and recognizes the importance of ambient light for the eye.

Alhazen will fundamentally influence the correct perception of light, as well as the relationship between the viewer and the light source. The latter is no longer a personal one - the eye no longer emits a divine and sacred light by itself, but it is radiated from an external source, and, according to the

<sup>&</sup>lt;sup>21</sup> Th. X. Thuan, *Voyage au cœur de la lumière*, Gallimard, Paris, 2008, p. 60.

<sup>&</sup>lt;sup>22</sup> Th. X. Thuan, Voyage au cœur de la lumière, p. 50.

<sup>&</sup>lt;sup>23</sup> *Ibidem*, pp. 50-51.

<sup>&</sup>lt;sup>24</sup> *Ibidem*, p. 52.

physicist Xuan Thuan, the role of emitter of the eye changes with that of receiver. <sup>25</sup> We consider this theory a radical change that does not go unnoticed within philosophy and theology. In relation to an external source of light, humans enter a process of recognized natural dependence on that source. Recognition of external light as a source of vision thus represents a huge intellectual leap in the history of human thought, and the notion of an external image transmitted through light rays and formed inside the eye is quickly adopted. <sup>26</sup>

Passionate about experimentation, Alhazen tries to prove his optical theory by using an obscure camera with which he projects on a wall a smaller inverted image of a landscape, bright and clear. However, the relationship between the darkroom and the working mechanism of the eye was made only four centuries later by Leonardo da Vinci. <sup>27</sup>

The role of light in people's lives was essential due to aesthetic reasons. Beauty, according to Alhazen, is perceived by the eye. "(...) The light, the first of the visible ones, determines the beauty, which is why the sun, the moon and the stars appear beautiful to us only because of their light. The color also determines the beauty, (...) and the sparkling colors lay in front of the eyes that form of light that is specific to them." <sup>28</sup>

Theories of perception will play a big role in the whole medieval aesthetic. Moreover, they support the idea of association, which will have a fundamental role in knowledge. Alhazen entered the space of Western European thought through Vitelo, who translated and disseminated his writings. <sup>29</sup> The mutation of light outside the human body will represent an important change in terms of man's relationship to the environment in which he lives, but especially the rethinking of light as an entity outside the body.

The medieval optics starts in the new era under the influence of an important invention, that of the scope, which spread in what is today's Italy around 1280. It is supposed to have been the result of observations and experiments of a Venetian glass blower, who noticed that the objects get bigger when seen through a piece of glass, thicker in the center than on the edges. The scope spread quickly while the scholars were not able to explain this enhancement effect. Some certainly also saw its negative aspects, considering the scope offers a *fraudulent* image of reality. It

When dealing with visual and optical issues, Leonardo also considered this invention. He also knew the camera obscura of Alhazen, discovered several centuries earlier. Using the principle of the *camera* 

<sup>&</sup>lt;sup>25</sup> *Ibidem*, p. 53.

<sup>&</sup>lt;sup>26</sup> *Ibidem*, p. 55.

<sup>&</sup>lt;sup>27</sup> *Ibidem*, p. 56.

<sup>&</sup>lt;sup>28</sup> Alhazen, *Optica* IV, II, 59, apud W. Tatarkiewicz, *cited work*, vol. II, p. 383.

<sup>&</sup>lt;sup>29</sup> W. Tatarkiewicz, *cited work*, vol. II, p. 376.

<sup>&</sup>lt;sup>30</sup>*Ibidem*, p. 61.

<sup>&</sup>lt;sup>31</sup>Ibidem.

*obscura*, where the light enters a box through a narrow, outer slot, allowing exterior images to be projected onto the front wall, but upside down, Leonardo will summarize the two optical devices. For the first time he identifies the eye with the camera obscura, showing how exterior images break through the pupil, are diverted, and focused by the lens of the eye on the optic nerve.<sup>32</sup>

For Leonardo the problem of rendering the objects and their illumination was invariably closely linked to one another: "(related to the painting) the representation of all visible objects shall cover three things – the position of the watching eye, the object watched and the position of the light lightening the object." Although these three variables have been discussed by Leonardo more in the works on optics than in the ones dedicated to art, his knowledge of these phenomena certainly influenced his intentions and the artistic creation, as Zaremba Filipczak tries to demonstrate in the Article *New Light on Mona Lisa: Leonardo's Optical Knowledge and his Choice of Lighting.* Although the position of the light of the position of the position of the position of the light of the position of the light of the position of the light light on the position of the light l

Leonardo considered that the light was of several types. The first type of light was the one that could illuminate the opaque objects, and which is called *direct light*, such as the sunlight coming from a window or candle. The second type of light refers to *diffused light*, which we can sense when the weather is cloudy or foggy, and the last type refers to *discrete light*, which appears immediately after the sunset or before dawn. <sup>35</sup> The light that illuminates opaque objects is also of many types – direct, diffuse, reflected and coming from semi-transparent objects such as paper or canvas, and not as glass or "other diaphanous bodies which produce the same effect as between shaded objects and the light falling over them."

The light is also defined by Leonardo as always associated with shadow, inseparable from it on all the surrounding objects. Since the shadow is the absence of light, caused by the obstruction of light rays to reach an object, it can be stronger than the light because objects can be devoid of their light, and then they are completely absorbed in the dark, whereas the light can never exist without a trace of shadow, however small it may be.<sup>37</sup>

Leonardo further describes the carried light and shadow of the objects, but also the way light is propagated, in a straight line, in the form of straight rays.  $^{38}$ 

<sup>&</sup>lt;sup>32</sup>Ibidem.

<sup>&</sup>lt;sup>33</sup> J. P. Richter, *The Literary Works of Leonardo da Vinci*, London, 1883, no. 115, p.71.

<sup>&</sup>lt;sup>34</sup> Z. Filipczak, New Light on Mona Lisa: Leonardo's Optical Knowledge and his Choice of Lighting, în The Art Bulletin, vol. 59, no. 4, dec. 1977, pp. 518-523.

<sup>&</sup>lt;sup>35</sup> J. P. Richter, *op. cit.*, no. 117, p. 72.

<sup>&</sup>lt;sup>36</sup>*Ibidem*, no. 118, p. 72.

<sup>&</sup>lt;sup>37</sup> *Ibidem*, no. 119, pp. 72-73.

<sup>&</sup>lt;sup>38</sup>*Ibidem*, no. 130, p. 78.

An interesting fact is that Leonardo knew the adaptation process of the eye pupil, which was not yet spread among the knowledge of his contemporaries. It seems that Leonardo first referred to this phenomenon in 1492, based on his observations: "The eye's pupil expands and contracts according to the brightness or darkness of the objects being viewed and since the expansion and contraction take some time it is possible to look directly from light to dark and from dark to light (...)." <sup>39</sup>

He also noticed that the appearance of the objects is altered by psychological changes in the eye of the viewer. The value of the contrasts and the dimension of the objects is changed, and the view is more sensitive when the eye is adjusted to darkness than when the eye is adjusted to light and "the power of sight is weak".

Taking into account these considerations on the optics and knowledge of light, the complexity of the visual perception, of which Leonardo was aware, we can say, according to Filipczak, that the artist could paint in his workshop adapted to the dark and that the use of poor lighting was made in accordance with his goal of improving the vision in the painting. It seems, according to his own reports, that he recommended that artists check their shadows' accuracy right during work.

Taking as an example the portrait of *Mona Lisa* (1503-1519, Louvre Museum, Paris, France), but also that of other paintings such as *Madonna among the rocks* (1495-1508, National Gallery, London), the scheme of the lighting and colors demonstrates a wide palette in shaded areas, and this leads us to the dimming light he could use in his own workshop while working. Leonardo even offers scientific and aesthetic arguments for the option of poor lighting of the workshop. Using a variety of semi-shades, he could record the structure of the objects more accurately.<sup>41</sup>

The positioning of Mona Lisa in the lodge of a palace, as suggested by the railing behind the portrait, rather than in open light, as used in canons of that time, shows us Leonardo's preference for a particular type of lighting. Moreover, he prefers diffuse light coming from behind the painted face and gives a uniform light to the portrait.

The oblique light thus comes from behind the figure, but also from the left, which makes us think that the position of the light source would be somewhere in the corner of the lodge.<sup>42</sup>

This places the figure in a light that cancels the strong contrasts between bright and shaded areas, creating the possibility of numerous shades that switch from dark to light colors. The sfumato technique was often referred to in the analysis of his works, but it seems that its appearance and

<sup>&</sup>lt;sup>39</sup> J. P. Richter, *op. cit.*, no. 36, p. 23.

<sup>&</sup>lt;sup>40</sup>*Ibidem*, no. 36-39, pp. 23-24.

<sup>&</sup>lt;sup>41</sup> Z. Filipczak, *op. cit.*, p.519.

<sup>&</sup>lt;sup>42</sup> *Ibidem*, p. 520.

development by Leonardo was a natural consequence of his preference for poorly lit areas and objects. We can see the same in the case of the painting *Madonna among the rocks*, whether we bring the Louvre version or the London one into question, where the very positioning of the portrayed group between the walls of a cave gives enough shadow for the application of the formulas preferred by Leonardo. Here, the illumination is responding to the general idea of this portrait interpretation.<sup>43</sup>

His influence on the next generations of painters and the extent of the use of the clear-dark contrast is obvious, but, more than that, light and shadow remain for Leonardo an opportunity to better perceive reality and to render it as true as possible, within the limits of exact science. Unlike the dramatism generated by the brutal use in the Baroque of the light-shade contrast, Leonardo maintains through its sfumato technique a uniformity of the painted elements.

#### **Conclusions**

In the 15th century, light leaves behind some of its theological associations, notably its understanding as a divine emanation, represented by its shining potential through its own natural or artificial diurnal force. Instead, it starts to be manifested as a representational element within the painting, both as a symbol and as a physical entity. Light will thus find *a representational form* and a *function* during the Renaissance.

As an iconographic element or *form*, light will remain a symbolic and conventional representation of the divine power, through the rays emanated from an imaginary center, especially in the Proto-Renaissance painting, where the use of the golden background will persist. Thus, we are talking about a series of iconographic representations that are kept in the same register of significances encountered in the Middle Ages. From light as an image, we gradually move to an image of light.

The move toward a more accurate representation of material reality determines the light to become a *functional* element, an instrument of visual language, used by the painters to obtain the illusion of three-dimensionality, of spatial depth.

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