Distance in Art or the Art of Distance: the Illusory Search for Depth and its Treatment in the First Landscape Representations

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Abstract

The act of looking at a landscape carries with it an intention. The landscape-image has been a changing aesthetic invention. Between the 14th and 16th centuries, art moved from narrative symbolism to naturalistic iconicity, accepting landscape as a pictorial genre. With the Renaissance, an authentic landscape view began to develop through deductive reasoning and the visual experience of the image, thus surpassing the basic and flat medieval iconography. The Renaissance perspective, as a 'symbolic form', helped to value space as something different from the flat surface on which it is painted, although it was not the only system used to represent the three-dimensional spatiality of the scene, being one more among other possibilities. more perceptive and intuitive. This writing aims to reflect on a diachronic vision on the evolution and development of the illusory concept of distance or remoteness in the figurative representation of the landscape during its initial formulas, understood as a realistic search for the depth generated from the first terms to the backgrounds. Of the pictorial scene –whether real or imagined–. In this trajectory, the importance of the drawing treaties and manuals spread throughout Europe during the 16th and 17th centuries as recipe books or basic principles of said learning stands out. Due to its influence, it is worth highlighting Leonardo's Trattato della Pintura as the first attempt to codify all these resources and devices 'of illusion', and whose validity has still remained valid in the representation of landscape to this day.

Keywords: landscape view, representation of the territory, depth, distance, Art history

Background: state of the art

The pictorial means of representation that express the volume of bodies and spatial depth were formed little by little. It is evident that, if in a representation two bodies have the same real size, if one of them appears smaller it is because it is further away from the viewer. Gibson said that our mind, when scrutinizing reality in search of information, operates with two basic questions: "what is it? And where is it?" [Gibson 1974, p. 25]. For Gombrich, "the innocent eye, almost by definition, cannot perceive size" [Gombrich 1997, p. 254], it needs to conjecture it, that is, form a judgment about its shape and position based on indications or observations. Linear perspective –Albertian– tries to project a unitary space through a figurative plane; it simply responds to the description of infinite mathematical space, but it is devoid of the psychophysiological conception, of the perception [1] of spatiality that has become somatic depth: "when perspective stopped being a technical-mathematical problem, it became an artistic problem." [Panofsky 2003, p. 49]; therefore, the "scientific perspective is not the most adequate basis for naturalism" [Clark 1971, p. 39].

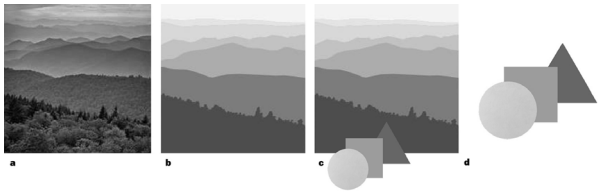

Fig. 1. A. Landscape photographic background with overlapping topographic planes (atmospheric perspective). B. Shots with different lighting and depths in the distance (lightning towards the background). C. Incorporation of figures in the foreground. D. Geometric figures overlapping in proximity (darkening towards the background). Graphic elaboration by the authors.

According to Goethe, the love of landscape passed through the pleasure of "very deep seeing" [1989, p. 57]. Ortega y Gasset stated that, throughout artistic history, "the painter's point of view changed from the near vision to the distant vision, and at the same time, painting, which began with Giotto because it was a bulk painting, became hole painting" [2010, p. 278]. This means that the artist's attention has followed a shift: first he focused on the foreground, on the figures, and then he moved to the background, to the hole, to the emptiness of the scene.
It is then that this fictitious spatial effect on distance contains the same information that is found in the environmental optical sample of the –supposedly– real environment of that landscape. Thus, the artist will look for an equivalent artifice on paper or canvas, which offers an analogy of that subjective sensation of closeness or distance perceived *in situ* on the scene, from the first shots to the last shots and close to the horizon. This substitute will be caused by an accumulation of different sensory impressions related to the different gradations of form, light and color that the eye observes; in the same way that would happen with the control of the relief or foreshortening of bodies [2].
It is obvious, as a first indicator of depth, that the closest objects overlap or project onto the furthest ones. Ching defines this phenomenon of overlaps as "continuity of contours" [Ching 1982, p. 50]; and Gibson, of "eclipsing of forms" [Gibson 1974, p. 60]. Arnheim also analyzes the superposition of figures, calling it "overlap" [Arnheim 1979, p. 141] from whose formal interferences he says he obtains visual delight (fig. 1.d). Every formal representation, a simple drawing that produces a

Fig. 2. Left: Seascape on the theme of The Odyssey: Ulysses' landing at Circe, 1st century B.C.; mural. Right: Country views, Villa Albani, Rome, 1st century A.D.; mural.

volumetric suggestion from a flat surface, "strongly supports its three-dimensionality in evident leaps of clarity. Furthermore, these jumps contribute to generating very pronounced depth variations on a reduced representative surface" [Mariani 2021, p. 67].
The different light scales of the landscape make the distances also appear different to our eyes (fig. 1.a). In the close-ups –proximity–, tradition was established on the invariant of the clarification of what is closest (fig. 1.c). Thus, for example, the sensation of curvature is more evident when the transition from light to dark occurs more quickly, accentuating the relief effect. The gradient of tones –in reality, the precise visualization of the dark that transcends the light– has been commonly used in art to generate the illusion of depth; even in the representations of architecture, such as elevations and sections –gradually darkening the posterior surfaces–. However, in the distance –from the landscape–, that sensation changes and the clearer gradients will be those that indicate the deepest, the last planes already close to the horizon (fig. 1.b).

The first attempts at distance coding

The art of creating illusion from shading and volumetry is known as "*skiagraphia*" [Gentil 2011, p. 59], a technique already used by Apollodorus of Athens (ca. 180 B.C.-120 B.C.), highly valued and praised in Ancient Greece. The visual effects of depth were already known in the 1st century B.C. in Rome. Their painters were already capable of achieving three-dimensional realism in the figurative scenes on the walls of their villas by varying the same color with different intensities. Thus, the seascapes on themes from *The Odyssey* found in a domus

on Via Graciosa (1st century B.C.), Rome, already reflect a dilettante control of distance, highlighting the one dedicated to the arrival of Ulysses to Circe. Like the murals of the Albani villa (1st century AD), which show a countryside landscape with convincing planes of different depths (fig. 2).
In the paintings of the Middle Ages, the representation of landscape backgrounds was considered frivolous, a simple decorative delight that could distract from the religious understanding of the work. Medieval art was like writing or a language in which the images were the words –*ekphrasis*–. In the 12th century, Saint Francis of Assisi rejoiced in visual sensations for revealing divine creation. The images began to be more figurative than symbolic, paying greater attention to the chromaticism and volumetry of the bodies.
The figures in the foreground and the background of the landscape constituted the same practically neutral plane –coplanar vision– and without relief –generally the image stood out on a monochrome background–, their size considering the function of the symbolic hierarchy that it had in the image. With the naturalistic vision, the landscape signs would become detached from the scene, taking distance and moving away. Artists began to paint what they saw, and what they saw had depth.
Timidly, breaking the medieval flatness, Giotto (1267-1337) in *The Donation of the Cloak* (ca. 1296) abandoned the Byzantine models, replacing the golden backgrounds of sacred art with a natural setting, constituting one of the first attempts to represent a landscape with a certain sensation of reality –its mountains appear relief and verisimilitude–. Thus, years later, Ambrogio Lorenzetti (ca. 1290-1348) in *Effects of Good Government on the Countryside* (ca. 1338) created the first modern landscape in the History of Art with the evident intention of generating true depth, elevating the gaze and reducing the figures in the distance. It was also he who perfected the method of Duccio's ceiling coffers (ca. 1255–1318) in *The Holy Supper* and extrapolated it to the floor in *The Annunciation* (1344) as a pattern of tiles, making it possible to better appreciate from now on the distances of the certain bodies within the scene and generating distance towards the back wall. This successful horizontal checkerboard, understood as a coordinate system, would be repeated in an almost sickening manner by the artists of the *Quattrocento* (fig. 3).

Fig. 3. Top left: Giotto, The Donation of the Cloak (ca. 1296); fresco (270 × 230 cm); Basilica of Saint Francis in Assisi, Assisi. Top right: Ambrosio Lorenzetti, The Annunciation (1344); tempera on panel (127 × 120 cm), National Art Gallery of Siena, Siena. Bottom: Ambrosio Lorenzetti, Effects of good government on the countryside (ca. 1338); cool; Palazzo Publico, Siena.

By improving the naturalistic vision, the narrative of the painting also benefited. The technique of shading –intonation– began to be used in the Early Middle Ages to recede surfaces close to their contours, highlighting the points of greatest luminosity and generating the perception of relief. It is normal that painters used this resource with a certain freedom and little rigor. In *The Annunciation* (ca. 1390) by Maestro della Madonna Straus this license is evident. The light in the painting comes from two sources: the angel is illuminated from the left and the Virgin from the right, but the relief of the scene is produced from this incongruous combination of light. And in *Mary in the Enclosed Garden* (ca. 1410) by the Master of Paradise in Frankfurt, the composition extends the laterality of the wall diagonally to achieve greater spatiality of the garden. All of these works are timid attempts to test new visual experiences about depth (fig. 4).

Fig. 4. Top left: Maestro della Madonna Straus, The Annunciation (ca. 1390); tempera on board (200 × 190 cm); inv. No. 3148, Accademia Gallery, Florence. Top right: Master of Paradise from Frankfurt, The Garden of Paradise (or Mary in the Enclosed Garden) (ca. 1410); mixed technique on board (33.4 × 26.3 cm); Städel Museum, Frankfurt am Main. Bottom left: Master of Boucicaut, Flight into Egypt from Book of Hours (ca. 1408); miniature (fol. 90); Jacquemart-André Museum, Paris. Bottom right: Paolo Uccello, The Annunciation (ca. 1420); gold and tempera on panel (65 × 48 cm); Ashmolean Museum, Oxford.

The revelation of depth in the Renaissance

In our vision of proximity, the eye and brain associate to establish that the darkest is far away and the lightest is close. The difficulty that the first Renaissance artists encountered was mainly due "to that difference between what they really saw from a certain point, according to the laws of optics, and what they perceived subjectively" [Montes 2008, p. 54]. They "used a background of medium-low lightness and then graduated the outline of the shape on top of it with a pencil or black chalk –usually darker than the background–. Later they refined the illuminated parts with white chalk" [Mariani 2021, p. 66].
Distance began to become evident in the 15th century through the mastery of linear perspective, multiplying the surfaces or planes of representation –near, middle, far–. With it, the elements of the landscape move away. They are no longer "fixed satellites" [Roger 2007, p. 77] arranged around the central icons, forming the second narrative level of the scene. But perspective was never an end in itself, but only a means; As Wölfflin said: "what matters is not the measurement of depth in the represented space, but how that depth has been made effective" [Wölfflin 2002, p.92]. Piero della Francesca (ca. 1412-1492) controlled the perspective method with a superb effect of distance and delicacy of color. Thus, "the space of the landscape scenes begins to take on depth with the help, on the one hand, of the multiplication of the landscape planes and, on the other, with the reduction of the details that are distant" [Roger 2007, p. 77].
According to Panofsky, it was the Master of Boucicaut (active ca. 1390-1430) who discovered atmospheric perspective [3] and the perceptual effects of depth in the landscape, observing that "objects lost part of their substance and color, their contours fading into the distance" [Panofsky 1998, p. 63] by interaction of light and the vividness of color. In the *Flight into Egypt* from *The Book of Hours* (ca. 1408) the sky lightens on the horizon, the meadow becomes vibrant and fades into a light brown against the background; With the indefinition of distant objects, which seem wrapped in fog, a sort of Van Eyckian aerial perspective was obtained. The space was defined on numerous levels, among which there were figures or other elements, increasing the spatiality of the scene and anticipating the later developments of Flemish painting. For Vasari, however, in reference to spatial three-dimensionality, it was Paolo Uccello (1397-1475) who was the first who, in the fresco of *The Annunciation* (ca. 1420), represented "with grace and proportion the wide space and distance" [Vasari 2002, p. 221] (fig. 4).
Regarding the interior spaces, in the fresco of the *Trinity* (ca. 1425), Masaccio (1401-1428) was a pioneer in representing the depth of a unitary space in perspective –of Brunelleschian inspiration– with great verisimilitude. Shortly after, Robert Campin (ca. 1378-1444) achieved a perfect spatial configuration in the *Merode triptych* (ca. 1427), relying on an intuitive frontal perspective and degrading

Fig. 5. Top left: Masaccio, Trinidad (ca. 1425); fresco (667 × 317 cm); Basilica of Santa Maria Novella, Florence. Top right: Jan van Eyck, Virgin of Chancellor Rolin (1435); oil on panel (66 × 62 cm); Louvre Museum, Paris. Bottom: Robert Campin, Merode Triptych (ca. 1427); oil on panel (127 × 64.5 cm); Metropolitan Museum of Art, New York.

the tone of the vertical walls towards the background. The first two panels –especially the central one– are uniformly bathed in a diffuse light that hides its source and models the relief of the volumes; while the third –right– finds the fullness of distance in a balance of chiaroscuro and penumbra, illuminated externally –perfecting the effect in his *Santa Barbara*, 1438–. Of its backgrounds, Clark would write: "they are as clear and crystalline as when we look through a telescope in the opposite direction" [Clark 1971, p. 36].

The artifice was surpassed by Jan van Eyck (ca. 1390-1441) in the *Virgin of Chancellor Rolin* (1435), opening the view of the interior from the bottom and introducing the landscape from the front to expand the depth. However, Dirk Bouts (ca. 1415-1475) and Rogier van der Weyden (1399-1464) –with compositionally similar models: *The Pietà and Saint Luke drawing the Virgin*– clearly used the principle of arrangement by parallel planes, both in the figures and in the scene, obtaining less truthful results (fig. 5).

Artists were mostly content to represent what was far away smaller than what was nearby, painting it in the same way and with the same thoroughness. Everything in these paintings is close-up, that is, everything is painted from close-up: "It seems as if the painter had gone to the distant place where it is and had painted it, close up, far away" [Ortega 2010, p. 279]. Sassetta (ca. 1400-1450) in *The Meeting of Saint Anthony and Saint Paul* (ca. 1440) simply resorted to reducing the size and texture of the elements in the composition to achieve the effect of distance on a diffusely illuminated scene –without

Fig. 6. Top left: Stefano di Giovanni, known as 'Sassetta', The Meeting of Saint Anthony and Saint Paul (ca. 1440); oil on panel (47.5 × 37.5 cm); Samuel H. Kress Collection, National Gallery of Art, Washington. Top center: Giovanni di Paolo, Madonna of Humility (ca. 1442); tempera on board (61.9 × 48.9 cm); Museum of Fine Arts, Boston. Top right: Masaccio, Saint Peter heals the sick with his shadow (ca. 1425); fresh (230 × 162 cm); Brancacci Chapel, Church of Santa Maria del Carmine, Florence. Bottom: Fra Angelico, Annunciation (ca. 1450); fresh (312.5 × 230 cm); Cloister of Saint Mark, Florence.

Fig. 7. Left: Giovanni Bellini, The Garden Prayer (1459); tempera on panel (127 × 81 cm); National Gallery, London. Center: Andrea Mantenante, Transit of the Virgin (1461); mixed technique on board (54.5 × 42 cm); Prado Museum, Madrid. Right: Geertgen Tot Sint Jans, Saint John the Baptist in the Desert (ca. 1485); oil on panel (42 × 28 cm); Gemäldegalerie, Berlin.

shadows–, raising the horizon to increase the visual field: "as a figure moves away from the foreground, the observer has to raise his eyes, as well as lower them as he approaches him" [Cabezas 2001, p. 320].
Thus, the schematic paintings of Giovanni di Paolo (1398-1482) would already be perfect synthesis of the keys to depth; his *Madonna of Humility* (1442) shows a landscape with crops delimited by a grid of perpendiculars –an axonometric pseudo-perspective template to generate the territory– that move away towards the interior. "The views of the gentle hills of the Italian panels and the backgrounds of the Flemish *madonnas* sought to make the viewer's eye travel from the interior to the exterior to create a contrast between closed space and atmospheric infinity" [Mariani 2021, p. 142].
Throughout the 15th century, cast shadows were of great subtlety, and generations of artists applied them competently to simulate relief; such is the case again of Masaccio, who resorted to his own shadows cast faintly on the ground [18] in the fresco of the Brancacci chapel, *Saint Peter cures the sick with his shadow* (ca. 1425) to facilitate reading space. Also appreciated is the effect of depth caused by the radiant light on the flight of shadows in the capitals of the *Annunciation* (ca. 1450) by Blessed Angelico. Later, the cast shadows became less important; they were even discouraged [4] (fig. 6).
The artists, little by little, were solving the problem of depth, but they gave little interest to the values of setting and light. To achieve the spatial illusion it was necessary, parallel to the development of perspective, to become aware of the environmental qualities of light, color and shadows. Thus, Giovanni Bellini (ca. 1427-1516) in *The Prayer in the Garden* (1459) extended the color by glazing in successive layers to achieve a better effect of distance on a fully illuminated landscape, softening the contours of the mountains, calming the contrasts and simulating "the loss of visual acuity with distance" [Maderuelo 2005, p. 232]; achieving a more truthful perception of ambient light and depth. Perugino also used to progressively reduce contrasts to accentuate the distance; in addition to being a great builder of vast spaces.
The interest in how things are encouraged us to perfect the verism of the perception of the distance from the foreground to the background. In *De pictura*, written around 1435, Leon Battista Alberti (1404-1472) addressed various detailed instructions on how to achieve effects of distance using linear and aerial perspective techniques, recommending that if what was seen had confusing contours, the painting should imitate them as well: "If distant things are painted very finished, they will seem to be close" [Alberti 1827, V.,p.150]. In this way, the painters began to get rid of the recipes when executing the 'far' and, moving away from the *clichés*, they were achieving a greater sensation of depth, dominating the light, the nuances of color and interlocking the nearby elements with the distant ones. Thus, keep in his *Transit of the Virgin* (1461) imposed a preconceived idea on the base plan: a perspective grid –in the manner of Lorenzetti– combined with a non-coinciding double perspective: –interior-chamber and exterior-window– to generate greater distance, losing sight of the landscape. In addition, Geertgen Tot Sint Jans (ca. 1460-1490) in his *Saint John the Baptist in the Desert* (ca. 1485) finally managed to extend the depth of the landscape to almost the entire painting; however, the main character seems like an addition to the scene (fig. 7). Leonardo da Vinci (1452-1519), as a great observer of visual appearances, studied the projection of light on objects, their own and cast shadows, and wrote it down throughout his life in his miscellaneous *Trattato della Pintura* [5], as his first attempt at observation. rational nature. He had to combat the erroneous belief that the shapes of the landscape are shadowed in direct proportion to their distance from the viewer, an idea already collected in the 14th century in Cennino Cennini's manual (ca. 1370 -1437), *Il libro dell'arte* (1390), where they were described multiple techniques and artistic recipes prevailing at that time [6];

among them, referring to obtaining depth, in its chapter LXXXV recommended: "when you have to paint mountains that seem further away, darken the colors a little more, and when you want them to seem closer, use lighter colors" [1998, p. 131].

Leonardo's notes on distance

The Renaissance meant the predominance of naturalistic seeing over symbolist doing. The message would now reside in what the eye could capture. Leonardo warned of the insufficiency of geometry –perspective– to represent the entire phenomenology of perception and carried out numerous studies on atmospheric effects, such as his *Storm in a Valley* (ca. 1506), which, although apparently a landscape, is only a subjective study on cloud formation.
Da Vinci left interesting notes written in his treatise regarding the decrease in bodies and the decrease in color due to the effect of distance [7]. At the outset, he defined linear perspective as: a test "with measurement and by means of visual lines about how much smaller a second object appears with respect to another first" [Da Vinci 1827, V., p. 145]. His belief about the effect of depth was completely opposite to that of Cennini –applied by Sassetta–: "There are many who in a country or open countryside make the figures darker the further they are from sight; which is the opposite" [Da Vinci 1827, V., p. 65], because for him: "the more remote a dark thing is from sight, the clearer it will appear; and, consequently, the closer it approaches, the more obscured it will be" [Da Vinci 1827, V., p. 141].
For Leonardo, the figure of an object is perceived as less exact depending on its greater distance from the observer; That blurring, as the Master of Boucicaut already anticipated, would make it seem more remote [8]. Sight could never, without the help of the different tonal gradations of colors, know the distance between different aligned objects [Da Vinci 1827, V., p. 165]. And he stated that distance attenuated the color tone: "If the same color is placed at various distances and always at the same height, it becomes lighter in proportion to the distance from the eye looking at it" [Da Vinci 1827, V., p. 51]; Thus, the proportion or decrease of the colors is proportional to their distances from the point of view; thus denying Cennini's postulate that dark tones are perceived as further away [Roger 2007, p. 79].
Among his advice, Leonardo recommended not defining too much what is small and what is distant: "the painter should not conclude too much of small parts of those objects that are remote" [Da Vinci 1827, V., p. 137]. This is because the figures that first move out of sight and become confused are the smaller ones. And, although Leonardo did not mention it, the same would happen with the textural value, which evokes the tactile roughness, the grain or the modular arrangement of a material in perspective, making it more difficult to appreciate it from a greater distance [9].
Leonardo also dealt with a more subjective topic, such as the perception of environmental effects such as fog or mist –which he called 'dense air'– on the vision of bodies in the distance, or those caused by excess or lack of light, which affect the forms: "he who has denser air in front of him will seem further away" [Da Vinci 1827, V., p. 138]. He stated that "the first thing that is lost from sight when a shadowy body moves away is its outline," and as the distance increases, "the shadows that divide the parts of the bodies that touch are lost", and so on until that "only a mass of a confusing configuration is perceived" [Da Vinci 1827, V., p. 130], recommending blurring distant elements, enlarging the objects on which it is visually superimposed [Da Vinci 1827, V., p. 146] and coloring with its color the most distant [Da Vinci 1827, V., p. 65].
However, he never attributed this 'blurring' simply to the deficiency of the human eye's acuity in the distance. Already in practice, his landscape studies show his great ability to represent distant objects in a convincing way, using the perspective and tonal gradation techniques exposed in his notebooks; as happens –regardless of whether it is a real or figurative view– in his landscape of the Arno Valley (1473), where Leonardo elevates the land line in the manner of a 'horizon map', contrasting the harsher close-ups and dark, and gradually blurring the details of the scene towards the distance; even by simulating a certain perspective grid on the plots of distant lands (fig. 8).
Leonardo understood light as a determining factor in the image and would dose it precisely over the landscape to avoid strong contrasts. For him, "aerial perspective is the relationship between light and the atmosphere according to its density; from this relationship the spatial visibility of depth is born" [Mariani 2021, p. 112]. He also resorted to the ambiguity of the forms by blurring them

Fig. 8. Top left: Leonardo da Vinci, Storm in a Valley (ca. 1506); sanguine (20 × 15 cm); RL1240gr, Windsor Castle, Royal Library, Berkshire. Top right: Leonardo da Vinci, View of the Arno (1473); pen and ink (19 × 28.5 cm); inv.436E, Uffizi Gallery, Cabinet of Drawings, Florence. Bottom: Raphael Sanzio, first cartoon of the series The Miraculous Fishing (1515); tapestry cardboard on charcoal and multiple sheets mounted on canvas (360 × 400 cm); Royal Collection, on loan to the Victoria and Albert Museum, London.

–*sfumato*– to produce effects of distance through glazing, calling this phenomenon *prospective de'perdimenti*, blurring the color as the distance increased. This can already be seen in the distant mountainous blurs of the *Virgin of the Carnation*, or in those of *La Gioconda*, where he combined both types of representation on the same background. Certainly, the contrast between scientific analysis and its emotional emphasis was what stimulated Leonardo's representation.

Controlling depth through light

The 16th century recognized in principle the planimetric composition of distance, that is, the generation of parallel layers of different gradients. This effect is evident in Raphael Sanzio's (1483-1520) *The Miraculous Fishing* (1515), where the shapes are captured as if in a layer, concatenated as a relief; the figures prevailing as the dominant plane of the painting (fig. 8). In the 17th century, this correlation of layers was broken, replaced by the in-depth look, which forced the viewer to go deeper into the painting, to delve deeper into the landscape as in a unified and continuous movement from the foreground to the last. These ideas are clearly reflected in the chapter 'Surface and depth' of *Kunstgeschichtliche Grundbegriffe*, written by Wölfflin in 1915, who defined the new style as "distorted plane" [Wölfflin 2002, p. 91]. From the Baroque onwards, the flat and the deep will constitute a single element, superimposing themselves as relief and establishing new links towards the background.

Gradually, the old pictorial backgrounds, the 'far ones', took center stage until they swallowed up the foreground. Possibly due to the exaggerated flatness of its topography, Dutch artists were the first to begin to pay attention to environmental effects and the details of distance, encouraging the view to extend to a distant horizon. Dutch art enriched the representation of the effects of reality for scientific purposes, firstly, at the service of cartography in merely descriptive topographic visions –without interest in depth–; while landscape representations, more personal and interpretive, would be more affected by the particular conditions of lighting and setting, as Svetlana Alpers indicated in *The Art of Describing* (1983).

Fig. 9. Left: Hieronymus Bosch, central panel of the triptych of The Hay Wagon (1485); oil on panel (135 × 100 cm); Prado Museum, Madrid. Right: Joachim Patinir, Landscape with Saint Jerome (ca. 1516); oil on panel (91 × 74 cm); Prado Museum, Madrid.

In addition to the aforementioned Campin, Hieronymus Bosch (1453-1516) stood out for his sophisticated use of color in the distance, as shown in the central panel of the triptych of *The Hay Cart* (1485). The more vibrant colors in the foreground contrast with the softer tones in the distance to create the effect of depth, arranging an overlay of elements that guides the eye through the scene to the background. All shapes, whether close or far, are represented with a high level of detail, ensuring that distance does not diminish visual clarity, along with the use of unrealistic scales; a challenge to the coherence of Leonardo's perception.
Joachim Patinir (ca. 1485-1524) was another great builder of deep extensions [10]. Based on a progressive use of color ranges, very similar to the "stratification by layers" [Wölfflin 2002, p. 100] of Hieronymus Bosch, it would accentuate the feeling of distance over its large spaces. This chromatic perspective was characterized by the progressive 'cooling' of the tones: with a predominance of browns and browns in the foregrounds, in the lower part of his paintings; as he moved away, the landscape began to take on the color green; and, in the distant areas, it was the color blue that predominated and gained intensity –a quality already appreciated by Leonardo [11]–. The space follows one another in a calm and clear gradation.
Thus, in *Landscape with Saint Jerome* (ca. 1516), Joachim Patinir widened the veduta until it fit the dimensions of the painting, having difficulty integrating the characters into these deep and inhospitable landscapes. Its horizon line was located in the highest area of the painting, which allowed it to represent a wider and more distant space. Above this line, he used to paint part of the sky with a bright white that caused a spatial continuity, suggesting, intentionally or not, the curvature of the Earth. On the other hand, whatever the distance, the details were represented with the same thoroughness and the figures appeared to be artificially cut out and pasted on the background (fig. 9).
Painters such as Albrecht Altdorfer (ca. 1480-1538) in *The Battle between Alexander and Issus* (1529) also developed vast aerial panoramas, even following a color code similar to Patinir. Some, like Pieter Brueghel (1525-1569), whose landscape of *The Flight into Egypt* (1563) was already a perfect synthesis of the keys to Leonardo's depth, imitated the remoteness effect of Jacob Grimmer (ca. 1525-1590) and Herri Met de Bles (ca. 1500-1558). In *The Harvest* (1568), Brueghel raised

Fig. 10. Top left: Albrecht Altdorfer, detail from The Battle of Alexander and Issos (1529); oil on panel (158 × 120 cm); Alte Pinakothek, Munich. Top right: Pieter Brueghel, The Flight into Egypt (1563); oil on panel (55.6 × 31.1 cm); Courtauld Institute of Art, London. Bottom left: Pieter Brueghel, The Harvest (1568); oil on panel (161 × 118 cm); Metropolitan Museum of Art, New York. Bottom right: Hans Bolt, View over the River Scheldt (1578); oil and tempera (74.5 × 46.5 cm); Los Angeles Country of Art, California.

the point of view and drastically reduced the size of the figures; He no longer had a series of planes in front of him, but rather his perception of the distance became unique, fluid and homogeneous. Also under the influence of Brueghel, Hans Bol (1534-1593) brought the topographical view closer to painting, expanding the visuals with a great impact on depth, as can be seen in his *View over the River Scheldt* (1578) (fig. 10).
The Dutch made landscape a pictorial matter: "the most revolutionary genre" [Gombrich 2000, p. 108]. The careful lighting effects definitively distanced the landscape from the topography. An erudite landscape was created, with restricted tones and greater atmospheric treatment, heir to Adam Elsheimer's (1578-1610) views such as *The Aurora*, (ca. 1606): stormy skies, mists, sunsets…
In the case of Rembrandt (1606-1669), it was typical of many of his works illuminate –or rather dazzle– with a certain drama some area of the composition painted on a dark background, as in *Stone Bridge*, (ca. 1639), to give the sensation of the degree of distance [12]. This effect would be masterfully translated by Philips Koninck (ca. 1619-1688) in *River Landscape* (1664), who,

Fig. 11. Top left: Adam Elsheimer, The Dawn (ca. 1606); oil on copper (22.5 × 17 cm); Herzog Anton Ulrich-Museum, Brunswick. Top right: Rembrandt van Rijn, The Stone Bridge (ca. 1639); oil on panel (42.5 × 29.5 cm); Rijsmuseum, Amsterdam. Bottom left: Hercules Seghers, Landscape with Rocks (1633); oil (97 × 53 cm); Uffizi Gallery, Florence. Bottom left: Philips Koninck, River Landscape (1664); oil (121 × 95 cm); Museum Boijmans Van Beuningen, Rotterdam.

assimilating the lessons on distance from Hercules Seghers (*Landscape with Rocks*, 1633), brought the flat, vast and extensive panorama to perfection (fig. 11).
Flemish artists "replaced interest in the subject with representation as an end in itself" [Sutton 1994, p. 52] and overcame the control of distance –like the Italian Renaissance the perspective domain–. They realized that light had its own qualities. But to generate the relief they did not start from contrast –like the Caravaggists– but rather they modeled depth in an avant-garde attitude: representing the global appearance of a correctly illuminated scene, and thus generated landscapes that constantly varied depending on the different atmospheric conditions or the time of day, with special interest in the treatment of the skies.
Jacob van Ruisdael (1628-1682) in his *View of Haarlem with Bleaching Fields* (ca. 1665) arranged the landscape in unevenly illuminated horizontal bands; This does not mean that it will be a picture of the previous system of stratification by planes, since "the succession of stripes has more force than each one of them" [Wölfflin 2002, p. 92]. They are exalted clarities that reveal the influence of Rembrandt and cannot be understood unless integrated into the spatial totality of the landscape.

Fig. 12. Top left: Jacob van Ruisdael, View of Harlem with Bleaching Fields (ca. 1665); oil (62 × 55.5 cm); Royal Picture Gallery Mauritshuis, The Hague. Top right: Jacob van Ruysdael, Bentheim Castle (ca. 1650); oil (68 × 54 cm); Rijsmuseum, Amsterdam. Bottom: Meindert Hobbema, The Way of Middelharnis (1689); oil (141 × 103 cm); National Gallery, London.

The Baroque brought the point of view closer, shortening the perspective and increasing the dimensions of the objects in the foreground. This sudden approach caused an intentional sequence of depth. Ruisdael also used this excessive effect in *Bentheim Castle* (ca. 1650-1682), enlarging the stone forms of the foreground –the close– to emphasize, in a visual leap of immediate contrast, the hill in the background and its building –the far–. And when Meindert Hobbema (1638-1709) in *The Road to Middelharnis* (1689) turned the road into a projection of vertical poplars into the landscape, entering the painting, the progress of looking in depth occurred again. The matter itself was already a matter of depth (fig. 12).
As a master of lighting conditions and depth, Claude Gellé (1600-1682), called Lorrain, had the idea of

painting *Cleopatra's Landing in Tarsus* (1643) with all the sun and the effects of the misty shadow, projecting its luminous halo over the around. The light diffuses from the background of the painting and, when expanded, is enough on its own to create the sensation of depth, blurring the contours and degrading the colors to create the pictorial space. Generally, Lorrain arranged the composition in successive planes, where the shapes gradually blurred until they were lost in the ambient luminosity, producing a sensation of almost infinite distance where the gaze is lost. This masterful effect of natural light on the waters was highly appreciated, since this almost blinding front lighting acts as a focalizing element that brings the background closer to the foreground; culmination of the perceptive artifices of distance. The representation of the landscape "will never again be natural, but rather supernatural" [Roger 2007, p. 13].
Lorrain's treatment of depth would be imitated in the future by artists of the stature of William Turner (1775-1851), as seen in *Caernarvon Castle* (1799), who, as a final twist, dissolved the deepest spaces, ceasing to be even perceptible, accentuating its emotional meaning with color; the representation entering a completely indefinite and almost infinite luminous space; reflected in his masterful *Aosta Valley* (1837), which recalls Leonardo's tragic atmospheric effects (fig. 13).
The culmination of this atmospheric perspective would in the future be the impressionist paintings of Claude Monet (1840-1926), who in his views of the British Parliament blurs the contours of the building on the vaporousness of the fog, reflecting a cluster of spatial perceptual sensations at any time of the day, and which they manifest different degrees of remoteness depending on the different lighting and environmental conditions; In some the building appears closer and more defined, while in others it almost seems to dilute and move away from the viewer imbued by the density of the London fog (*London* series, *The Parliament*, 1900-1905).

Conclusions

Depth is an illusion, a harmonious appearance that allows the scene to be observed with a pleasant sensation of verisimilitude, from which some figures hide parts of others, and a decreasing effect of sizes and textures –of

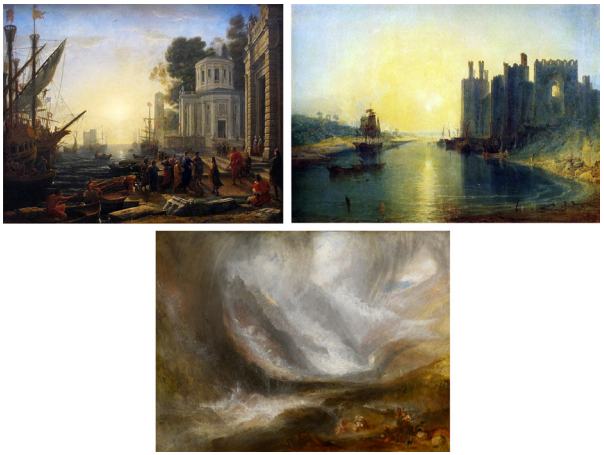

Fig. 13. Top left: Claude Lorrain, Cleopatra's Landing in Tarsus (1643); oil (147 × 117 cm); Louvre Museum, Paris. Top right: William Turner, Caernarvon Castle (1799); watercolor (82.5 × 57 cm); Yale University Art Gallery, New Haven, Connecticut. Bottom: William Turner, Aosta Valley: Snowstorm (1837); oil (122 × 91 cm); Art Institute, Chicago.

relationships– is produced towards the line of horizon. It is, therefore, an effective perception device [13], since it makes it easier to capture certain formal invariants in such a way that, if the perspective were poorly constructed, it would help us intuitively interpret its spatial arrangement; and also recognition, because, in a certain way, knowing is representing, and we see what we are capable of recognizing.
Conquering depth to create a full figurative space was not an easy task; it was founded on the "primacy of doing" [Montes 1992, p. 58]; it is the story of a "cultural acquisition" [Milani 2015, p. 56]: a slow assimilation of graphic conventions –formulas, schemes and techniques on the representation of distance– in which underlies that certain idea of progress described by Gombrich in *Art and Illusion*. We would have to overcome simple perspective vision and focus our attention on the scientific observation of looking into the distance to reach the true landscape.
Multiple experiments, hours of observation, advice, successive generations of artists and a great tradition were necessary to discover and perfect the realism of depth, always breaking the conventions established up

to that moment with other more effective resources, until replacing the medieval coplanar vision by the planes of different gradients and, later, by the concept of deep centrality.
In this evolution, we must highlight the importance of drawing manuals and treatises, such as Leonardo's, spread throughout Europe during the 16th and 17th centuries. Its success derives from the belief that correct visual perception had to be accompanied by some basic principles –tradition– since only when you have the formulas can you improve and adjust the results. This method of learning by confrontation between perception and technique has been in use for more than five centuries, and even today remains valid for the figurative representation of the landscape.
In this career, the control of lighting was clearly important, since until well into the 15th century, painters, when giving color to the figurative space, behaved as if light were everywhere and did not come from specific sources. Until artists, little by little, realized that if you controlled the light you controlled the depth. Lighting always helped to contrast environments, mark locations and distinguish volumes.
Leonardo's aerial perspective would be the greatest visual achievement in this search to capture remoteness in landscape representation. The sensation of distance or closeness, always under the guidelines, first of perspective during the Renaissance and, later, under the control of light and its atmospheric variations in the Baroque, provided relevant information about the scene and its figures. Said illusionistic artifice, therefore, must be graphically captured with precision through certain intonation and lighting effects that cause the interruption of the different tonal, textural or chromatic gradations in the elements of the landscape. In a way, it would be like the game of trying to "find the stain on the window that could be mistaken for a house in the distance if we look at it from a certain point" [Gombrich 1997, p. 255].
In summary, the search for the illusion of depth and its correct codification in the representation of the landscape was a struggle to subdue the schemes, habits or conventions that every artist uses in his task, that is: to subdue the "graphic invariants" [Montes 1992 , p. 39] to others of perception and interpretation –'recoding'– that are more credible and accurate, thus acquiring progress in their visual representation.
As Wölfflin stated: "every painting owes more to other paintings than to direct observation". Thus, all these advances would open the future path of the great landscape masters such as Pousin, Gainsborough, Constable, Corot, Turner, Friedrich, Bierstadt, Cezanne, Monet and many others [14].

Notes

[1] However, "perception ignores the concept of the infinite" [Panofsky 2003, p. 13].

[2] So pertinently related in the article by Montes: "Looking like the relief and leaving the wall what is not" [Montes 2008, pp. 483-512].

[3] For Leonardo there was another perspective, the so-called 'aerial', in reference to the environment of the scene and its influence on the representation of the landscape and the perception of distance: "because by the variety of the air the various distances can be known of various objects" [Da Vinci 1827, V., p 76]. To differentiate it from linear perspective, some authors also use the term 'atmospheric perspective', referring to the different light gradations and tonal contrasts of the landscape.

[4] Leonardo spoke about it in the *Codex Urbinas*, ending up giving little importance to the cast shadow.

[5] Leonardo's treatise is a compendium of writings recorded in his notebooks under the general title: "On painting". The manuscripts were begun in Milan while da Vinci was in the service of Ludovico Sforza –between 1482 and 1499– and were substantially worked on during the last 25 years of the artist's life. The first edition was published in France in 1632. It was printed in abbreviated form in French and Italian as *Trattato della pittura* by Raffaelo du Fresne, in 1651. After Melzi's version was rediscovered in the Vatican Library, the treatise was published already in its modern form in 1817.

[6] Although Leonardo does not directly mention Cennini, it is likely that the techniques described in the treatise were known by the workshops and art schools of his time, indirectly influencing his training.

[7] Distance in relation to perspective, which for Leonardo "has three main parts: the first deals with the decrease in the size of objects at various distances: the second deals with the decrease in their colors, and the third of the obscuration and confusion of contours that occurs to figures seen from various distances" [Da Vinci 1827, V., p. 158].

[8] Leonardo said that "concluded and defined objects must be close, and confused and undone objects must be very far away" [Da Vinci 1827, V., p. 34]. Ching verifies this postulate by stating that the sensation of depth requires "a well-marked contrast between limits and contours, scrupulously defined in the foreground, to move

on to more nebulous forms in the last terms, dissipating their edges or profiles, with a weak continuous line, discontinuous or dotted" [Ching 1982, p. 73].

[9] This reduction of the distant object would be for Ruskin like a "shadow abstraction" [Ruskin 2012, p. 109].

[10] According to Wölfflin, Patinir is the first in northern painting who, "with clarity and serenity unknown until then, makes the landscape extend into the background" [Wölfflin 2002, p. 100].

[11] Leonardo already in his treatise on painting relates the distance of the last planes in the landscape with the color blue through a kind of translation of the environment –air– that surrounds it: "the one that is most remote must be somewhat bluish; and whoever has to see further will be done with more blue" [Da Vinci 1827, V., p. 76].

[12] As happens in its interiors, such as *The Supper at Emmaus* (1628) or in *Monk Reading* (1661). For Rembrandt, distance is enveloping, not a relief carved into the darkness, as it would be for Caravaggio.

[13] In relation to perceiving something, what our mind tries to discover is "what that object is and where it is" [Montes 1992, p. 41].

[14] All images used in this article have been taken from *Wikimedia Commons* and are freely accessible.

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