Atis Kampars

A Man Between the Four Corners of the Earth

Abstract

The study *A Man Between the Four Corners of the Earth* outlines, firstly, the role and position of the beholder as a central unit in a spatial area and, secondly, the relevance of the concept of the flat surface of an image in the current practice of image-making. The latter aspect seems important for discussion because of its discrepancy with general knowledge on the spherical character of the surface of celestial objects. As long as there is an attempt to perceive the image as a substitute for real scenery, the conflict between incontestable knowledge and the rational features of an artificial space will trigger substantial arguments on both sides.

The development of the concept of depicted space in Early Renaissance art shows both true scholarly discipline and pragmatism, the validity of which is still undoubted. Accordingly, the flat surface concept of linear perspective should be understood as a rational and conscious decision which was implemented by researchers of the 15th century and recognized by the broadest community of professionals in the centuries that followed. This study offers a classification of the kinds of spatial conceptions as well as the formation of an image based on natural coordinates and the basic principles of observation. The conformity between the subjective origins of perspectival viewing and the rational application of the principles of linear perspective is a phenomenon that substantiates the sovereign existence of an artificial space of an image.

Keywords

image, natural scenery, encompassed space, linear perspective, coordinate axes

Introduction

The purpose of this discourse is to explain and substantiate the rights of a spatial image to remain a sovereign entity constructed in accordance with its own inner rules and capable of supplying the rational intentions of an architect, artist, or designer. This discourse attempts to address the essence of the spatial image as a visual synthesis of the observed and comprehended environment.

Every representation of space is initially a subjective attempt to visually access the environment and react by means of visual expression. The image in this context is an outcome of observation, intention, visual thinking, and individual capabilities to transform them into an artificial yet personalized reality. The ability of the human mind to arrange sensations, to imagine and rationally model relationships of both existing and imaginary things relates to visual thinking in complex categories that significantly exceeds the task of depicting a single, local object and demonstrates greater awareness of the sensations caused by the natural environment. However, conceptions of spatial appearance are not fully conventional – several varieties of depiction may be identified as spatial representation, from accurately depicted objects within an understandable environment (Figure 1) to emotionally alienated geometric structures (Figure 2). Apart from their stylistic differences, both examples share one of the most important spatial characteristics – the decrease in size of depicted objects (flagstones in Vermeer's painting and black squares in Doesburg's painting) in relation to the general scale of the format.

Comprehension of artificially recreated space seems to be one of the most substantial factors of the culture of visualization, indicating the evolution of both individual thinking and the degree of general knowledge of the time. Widespread application of a "systematic space" (Panofsky, 1997) which unifies all represented objects demonstrates a reasonably high degree of human intelligence as such. Input of the creative individual develops from the observation, cognition and representational methods applied during the transformation of

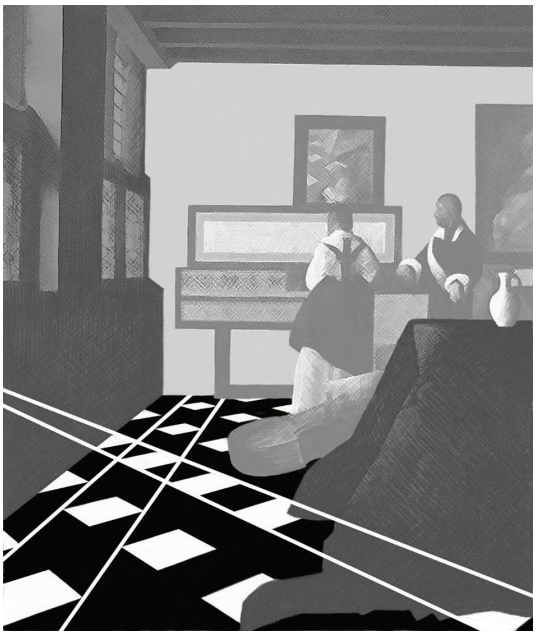

Figure 1. Schematic analysis of Vermeer's "A Lady at the Virginals with a Gentleman" (Riga: Atis Kampars, 2018)

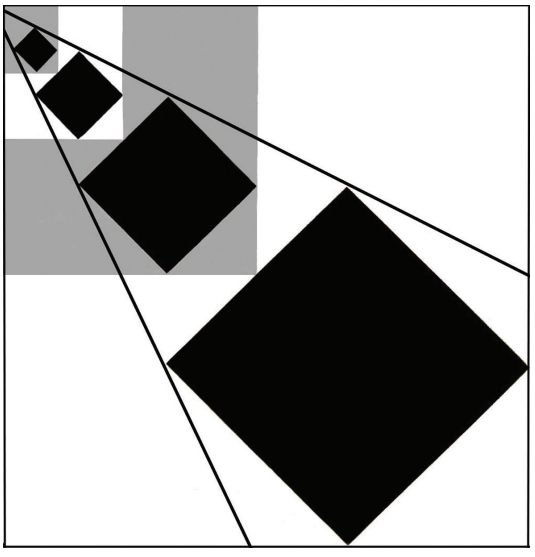

Figure 2. Schematic analysis of Doesburg's "Arithmetic Composition" (Riga: Atis Kampars, 2018)

the observed information into the depiction; the accessible knowledge demonstrates commonly accepted values or the common sense of a society. The interaction of the two demonstrates the way an individual's insight becomes a collective point of view, a new convention.

Many of the fundamental problems in spatial representation refer to its thematic content – there is always something meaningful to be represented, the objects of interest of the beholder. Space, in turn, can easily be perceived as a void – a distance that separates one object from another. Altogether this provokes the question of the extent to which the spatial features of the existing natural scenery can be transferred to the self-contained space of an image.

Coincidently, while contemplating the issues of spatial representation, I was touched by the powerful and imaginative Old Testament phrase "[...] gather together [...] from the four corners of the earth" (Holy Bible. The Old Testament, 1978). My attempt to better understand the meaning of a "corner of the earth" resulted in a more profound spatial explanation, about the most distant known point or the extremity.

"The word translated "corners" [...] is the Hebrew word, *KANAPH*. *Kanaph* is translated in a variety of ways. However, it generally means extremity. It is translated 'borders' in Numbers 15:38. In Ezekiel 7:2 it is translated 'four corners' and again in Isaiah 11:12 'four corners', Job 37:3 and 38:13 as 'ends'. The Greek equivalent in Revelation 7:1 is *gonia*. The Greek meaning is perhaps more closely related to our modern divisions known as quadrants. *Gonia* literally means angles, or divisions. It is customary to divide a map into quadrants as shown by the four directions." (Morton, 1978)

Apart from the original meaning of the Biblical text, the phrase reveals a surprisingly humanistic approach to space as an environment managed from the centre to its extreme distances by a kind of gravitation of the human will. No less astonishing was the apparent overlap of this vague scholarly concept of the rectangular area with the doctrine of planar perspective. This confusing coexistence of the purely geometric doctrine of perspective and subjective assumptions about space and distances oriented this study towards the anthropocentric origins of spatial perception. Consequently, the title *A Man Between the Four Corners of the Earth* outlines the role and position of the beholder as a central unit in a definite spatial area and the true origins of the spatial organization of an image.

It was my conscious intention to overlay this study with an "orthodox patina", firstly, to stress the importance of the basic natural concepts in spatial representation and, secondly, to demonstrate that the viewpoint of a mere image-maker can also be validated in our century of sophisticated theories and technologies. I feel a genuine necessity to assist in restoring the former prestige of the rational and spatially charged image which involves the elements of planar perspective – once the undeniable favourite of spatial representation and scholarly research. Personal devotion to it shown by professionals on both aesthetic and intellectual grounds since the early 15th century has partially evaporated as a result of the introduction of mechanical image-capture technologies or programmed image-making procedures that require almost no profound intelligent initiative and imagination at this point. Furthermore, a professional reliance on the arranged image on scientific grounds seems to be surpassed by a dominating desire for unlimited self-expression.

Since this discourse is about the rational approach to the art of image-making, there is no need to discuss intuitive forms of depiction of natural scenery such as French impressionist paintings, which I fully admire. It should also be clarified that I intend to analyse only the man-made images generated by natural observation and non-mechanical visualization. I should clarify here that the discourse on spatiality exclusively relates to the most natural form of spatial observation, i.e., standing on the ground. Other forms of observation such as from a position high above the surface are therefore irrelevant. Observation and the record of a light signal made by use of a lens are also not relevant here because this produces imagery according to its own rules determined by the means of optics and not by dynamic interaction between the eye and space.

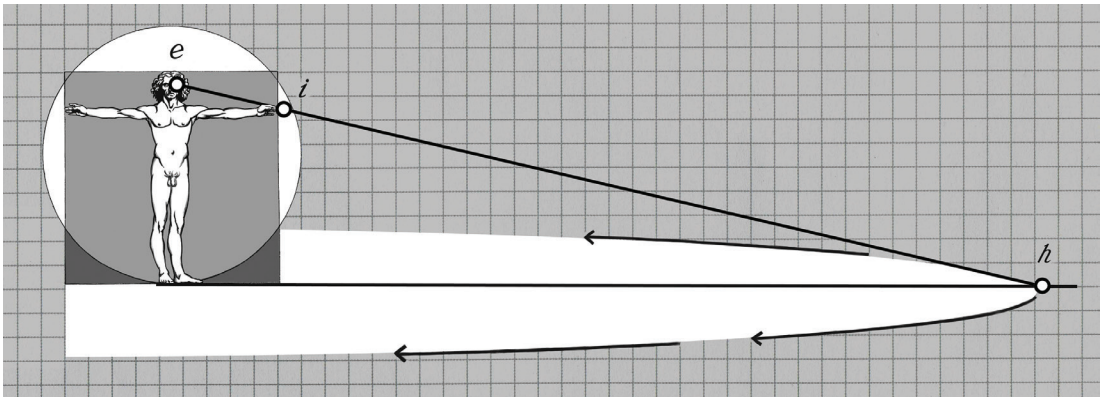

Figure 3. Anthropocentric area of vision (Riga: Atis Kampars, 2018)

The Anthropocentric Concept of Spatial Representation

It would be a complicated task to find an image that better exposes the anthropocentric concept of space than Leonardo da Vinci's drawing *Vitruvian man*. This graphical scheme has already provoked a large number of intriguing interpretations, as it does for this study on artificial space. Although the recognized purpose of this schematic drawing was the exploration of proportions of a human body or the "Vitruvius canon" (Elam, 2001), the meaning of a man as a universal measurement may be far broader than the delimitations of its extremities located within the square and circle. The location of a human figure in the centre of the most rudimental geometric shapes determines the potentiality of *outer-directed* (Arnheim, 1988) spatial development towards the larger spatial module. The transition of da Vinci's scheme into the broader area is generated by tracing the projection line (central optical ray) connecting the eye (*e* – eye), the index finger (*i* – index), and the most distant point on a surface (*h* – horizon) (Figure 3). The point of intersection marks the extreme border of the visible area which, in fact, "belongs" to the human sense of sight. So the whole area that lies between the eye and the relative horizon becomes sensorily real and eligible for depiction.

The simple possibility to point with a finger at an object at a great distance is to a certain extent comparable to a tactile sensation. This geometric connection by the imaginary ray defined by Euclid (Gregory, 1997) conceptually connects the observer's eye and the object, establishes a *virtual touch* and makes the visible space virtually accessible. This interconnection is not a phantom since it has some consistency – it may be restored by the beholder as many times as the representation needs, so it is neither an occasional nor irrational instrument of spatial investigation. In this regard, the observation as such is a kind of continuous interaction and relationship between the spatial environment and the individual (Figure 4).

Pointing with a finger to an object of observation usually means directing the sight line (central optical ray) towards something particular in the surrounding area. This particularity factor is also relevant to the relative horizon – the most distant physical limitation of the sight line on the ground. In the context of visual observation, the relative horizon is a true object of attraction. There should always be something meaningful available for representation and the most elementary act of depiction of scenery is the division of the picture plane into two horizontal areas, *above* and *below*. Even a simple horizontally traced line across the picture plane indicates these two spatial opposites and somehow provides the clue of how the image-maker's sight line is directed towards the ground. In visual composition, this is called a *low*, *centred*, or *high* horizon. Thinking in terms of Leon Battista Alberti, a Florentine architect, artist, and outstanding intellectual, the horizon is a *quantity* (Sinisgalli, 2011), or something calculable that is involved in the interplay of concentrated observation and successful reconstruction of a viewed space.

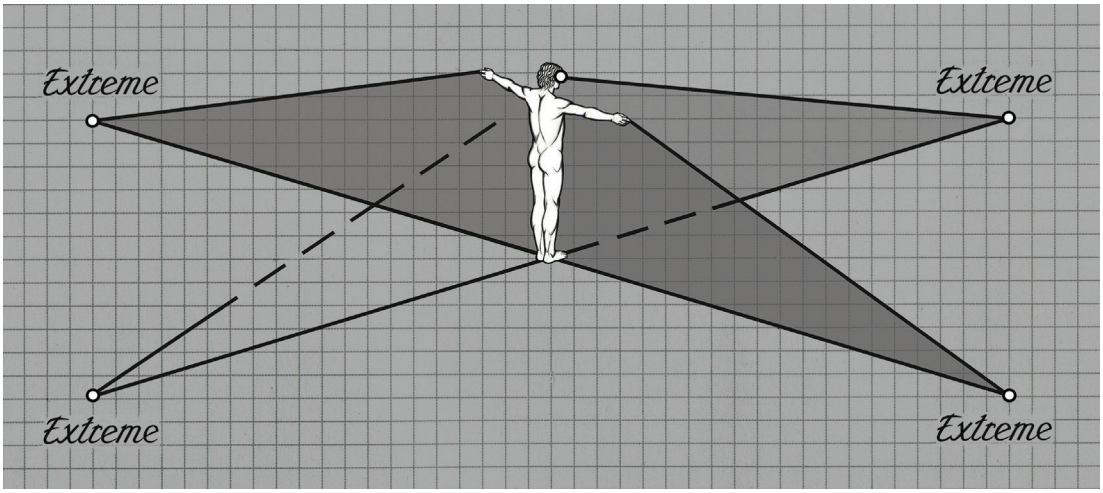

Figure 4. Extreme distances of anthropocentric space (Riga: Atis Kampars, 2018)

The spatial extension of the Vitruvian man's scheme shows that it is not only about intimate notions like *here*, but eventually also about essential spatial notions like *there*. The man's body not only generates the projections but also acts as a fully independent system of spatial orientation that includes the six natural coordinates (or spatial orientators) already mentioned by Aristotle: *front* and *back*, *left* and *right*, *up* and *down* (Figure 5). The relationships of axes connecting the opposite elements of every pair correspond to the three-coordinate system of space and no spatial representation can reliably appear without properly showing these elementary natural coordinates. The basic norm of the individual coordinate system is the vertical direction (*up* and *down*), which is determined by the gravitation pull. This universal force of nature imposes the orthogonal position of the other two coordinate axes and so do the spatial abilities of the beholder's body itself, including the potential of individual vision and observational circumstances.

The ability of an individual to interact with the environment or to virtually establish control over an area is limited by his or her visual or tactile senses (the focus on these two kinds of senses is because of their relevance to the means of visual expression). In natural spatial relationships between the individual and the environment the body is embraced by space from all possible directions. The body constitutes a constant centre of a unified volume of space, a purely picturesque concept that was defined by Panofsky (1997) as a "content of a finite vessel". This conception of a separate spatial unit allows us to develop a number of spatial prototypes, from the intimate module to the broader module of space. The degree of a module's finitude is determined by its content and function – to what extent the represented object tends to interact with the surrounding area.

Variety of Spatial Conceptions

The substantial value of represented space is its credibility. There is a temptation to assume that visual credibility is interconnected with the degree of correspondence to the fragment of natural scenery the image seems to represent. It is quite easy to amalgamate one with the other, especially if the depiction reliably reveals the recognizable features of natural scenery. Although the image doubtlessly possesses overall similarities in its content, maintaining certain links with the scenery it has been derived from, it has a number of its own distinctions defined by the media expression and by the cognitive involvement of the image-maker. For example, the perspectival image contains a number of features the natural scenery cannot possess – geometrically developed measurements, scale and a striking degree of accuracy – and vice-versa: no representation can completely represent the amount of visual properties nature has at its disposal. The substantial common feature

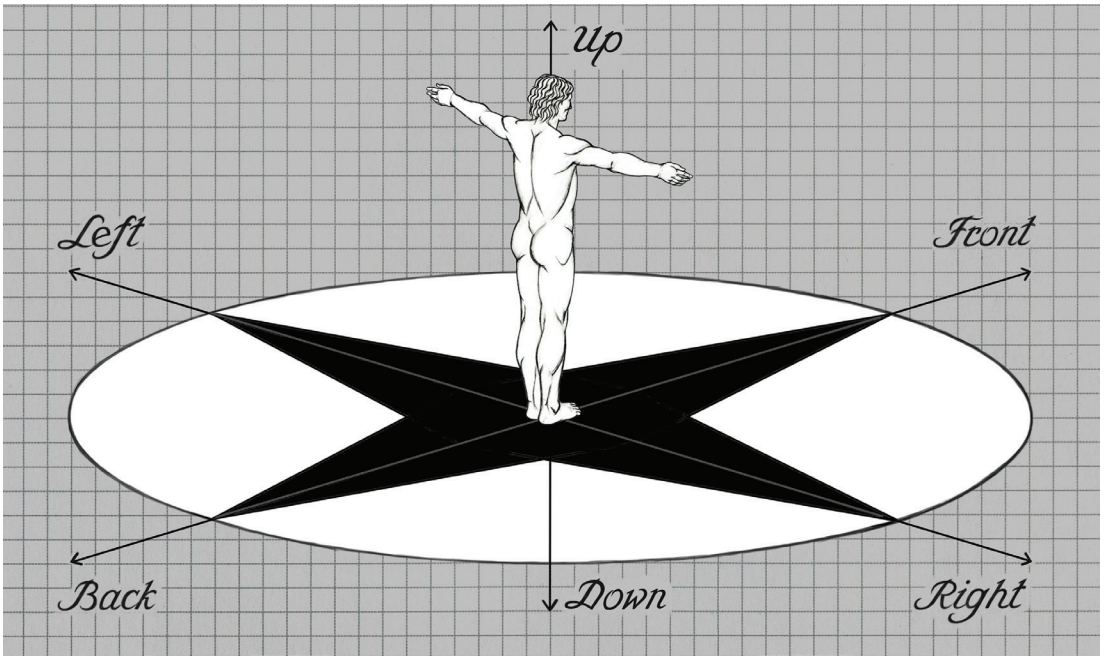

Figure 5. The system of eight natural coordinates (Riga: Atis Kampars, 2018)

between the making of an image and the observation of natural scenery is the continuity of the process – viewing the scenery means perceiving an array of separate "snapshots" made by human vision. Representation is a similar process, involving a continuous confluence of numerous observations with previous knowledge and aesthetic attitudes synthesized by the physical means and methods of representation.

Every depiction of near and distant objects shows the human ability to perceive and concentrate on specific spatial aspects such as comprehensible distances and logical decreases in sizes of visible objects. This aspect is also relevant to artificially arranged images such as perspective constructions, even though some distinct characteristics of the original scenery may be missing. Representation of a totally empty space with no recognizable objects in it seems an almost impossible task because of the visualization itself – every development of representation contains references to some spatial qualities, such as superimposition, relative scale and also the change of colour contrast. The sheaves of converging perspectival lines provoke thinking about the division of the picture plane into categories of *ground* and *sky* and the geometric grid created by projections on the *ground* would be easily perceived as *flagstones*. Apparently, the perceptibility of space is revealed by its very essential properties, which include the change in size of a recognizable object and superposition (Arnheim, 1988) of near objects over distant objects.

During the Proto-Renaissance and the Early Renaissance the elaboration of credible and systemically perfect representation of space with scaled objects was "the end towards which the invention is directed" and it "should be considered desirable" (Kemp, 1990). A public presentation of the central projection of linear perspective made by Florentine architect Filippo Brunelleschi in 1413 (Kemp, 1990) indicates both the professional and social necessity in the early 15th century of establishing a new visual convention as such and there is no better proof of this than the rapid dissemination of the concept of perspective in artists' professional practice and common acceptance of constructed spatial images after 1413. Since then and throughout the centuries the linear perspective as mathematically calculated spatial relationships became a standard requirement for a classically

educated architect and artist. I assume that the obvious dominance of the principles of perspective became possible not only because of its flawless scientific nature but because it also incorporated direct correspondence with the natural way we view the environment. The convergence of these two opposites is a confusing but happy correlation of mathematics and sensory reactions.

The principal evolutional difference between the precepts of visual space of the Middle Ages and the advanced structures of "spatially unified" imagery of Early Renaissance art is the presence of spatial coordinates, correct use of scale and the arranged angle of observation applied in the latter stylistic formation. No less significant than these intelligible spatial solutions is the profound involvement of theoretical research in the field of visual representation. The reason and necessity for reforming the spatial rules of a picture can be explained in different ways, including the social context of post-Medieval society, and, in particular, the greater awareness of natural processes and thorough studies of objects and the environment. This new way of viewing was inspired, firstly, by the developments in the urban environment and the subsequent necessity to depict regular forms and, secondly, by fresco paintings and decorative sculpture where the spatial structure of the work of art was expected to correlate with the surrounding interior spaces and with a fixed position of observation. Although today we regard perspective as a highly rational and mathematically based principle of spatial representation, the new structural properties of depiction show their relation with natural observation – the presence of a definite position, distance, and arranged angle of viewing – the qualities that characterize the properties of the "new naturalism" (Kemp, 1990) of the Renaissance.

The terms *space* and *spatial* seem commonly understandable when they refer to human sensations of "real scenery". Yet these terms are not that homogeneous in their content when contextualized by the artificial environment of an image – the conception of space may differ with regard to the visible area and the objects it refers to. This reflects the assumption that what we call spatial is, in fact, the likeness of the depiction to the experienced view of natural scenery or well-known objects, our ability to calculate space according to categories such as distances or coordinates or our ability to sense something particularly aerial. This variety of approaches indicates the possibility to define three alternative categories of space:

- *Conceptual space* – the universal, infinite space that surrounds all possible objects and involves distances yet is not completely verifiable by human vision and therefore exists as a scientific axiom;
- *Encompassed space* – the visually perceptible environment actualized by rays of light which may be experienced through vision;
- *Tangible space* – as an environment at a close proximity that can be immediately experienced not only by vision but also by touch.

These terms may not be fully conventional academically; however, they adequately communicate the principal differences between these conceptions – *conceptual space* is the cognitive structure, the existence of which lies in the possibility to be contemplated by the resources of one's mind. The scale of conceptual space is so immense that it should be accepted without any visual proof and thus its existence depends on human intelligence; it exceeds human abilities to completely visually engage with it and the spherical character of the Earth's surface cannot be captured by observation even in the most appropriate circumstances, e.g., when standing on the seashore. The approximately 30-degree angle of visual perception does not allow one to perceive the minor curvature on the horizon line, so there is no rational need to apply the spherical concept to any kind of image, whether perspectival or panoramic. The spherical surface is neither perceptible nor calculable from the viewpoint of the beholder; therefore, *conceptual space* cannot be a subject of visual communication and appears to be a purely impractical concept for an image-maker.

Encompassed space and *tangible space* correspond to areas of the visible environment and can be visually managed and therefore translated into an image by means of visual expression. They both involve the body of a human being

as their origin (Figure 3). The characteristics of encompassed space need more explicit clarification – it is not only visible but relates to the space "accessible by means of vision". The difference between "visual" and "accessible by vision" is as follows: to call something visual basically means a reference to one's sensations evoked by the perceived light impulses reflected from or transmitted by the objects in an environment. The condition of being accessible by vision refers to the objects and space that are in "visual reach" yet not necessarily actualized by light impulses in the moment; it is about the potential of being visible from the position, location, abilities, and intentions of the beholder. The concept of encompassed space also involves the area behind the beholder which is systemically determined by the *front and back* coordinate axis. The controversy of this statement is in the comparison of already depicted scenery and scenery which could be depicted because it is in visual reach of the image-maker. Although ordinary image-making exclusively shows the part of space in front of the beholder, we should not exclude, for example, the possibility to integrate a mirrored image of space from the back or involvement of the reflected light, or long shadows that fall on the ground from the objects behind. This synthetic nature of depiction is a standard procedure that constitutes the visible "world of objects" (Arnheim, 1974) in front of us.

The Four Corners of an Image

The principles of spatial observation determine the fragmentary character of a representation of space and objects reflecting a small part of the entire natural scenery. In this way, every single representation shows the concentration of the beholder's attention and the attempt to visually refer to a particular visible area, the objects, and distances separating the objects. When processed into an image, the fragment of natural scenery ceases to represent an open and unlimited space and becomes a closed artificial entity charged with objects within its format.

One of the most fundamental properties of a non-panoramic image is its organization around the fixed direction of viewing. Accordingly, the fixed virtual space has its sides defined by a *left and right* coordinate axis (*x*-axis) in a constantly perpendicular position to the sight line (*z*-axis) similarly to the tangent being perpendicular to the radius (Figure 6). All three coordinate axes are mutually perpendicular but the perpendicular disposition of the *x* and *z* axes specifically establishes the preconditions for perception of the rectangular character of the horizontal plane. This is a constant feature of an image as long as we apply the anthropocentric spatial orientators left and right, up and down, and front and back. The rectangular area fixed by natural coordinates constantly follows the sight line, maintaining its orthogonal approach to the visible environment (Figure 7). The doctrine of perspectival representation requires the horizon to be shown in a frontal position to the beholder's sight line (*z*-axis) and the central vanishing point *v* of converging parallel lines marks the most "extreme" distant point on a horizontal surface of an image.

Viewing as such indicates that there should be an object or a cluster of objects that attracts human attention and which should be visually investigated in the visible environment. The general concept of perspective also explains spatial viewing as a projection of the natural scenery on the "projection plane", which is a perpendicular intersection of the optical pyramid. According to this cognition, the virtual format of perceived scenery (its regular external dimensions) is established by the beholder's

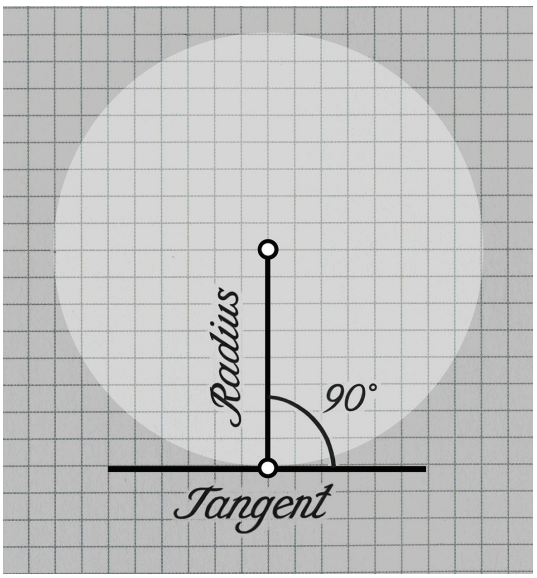

Figure 6. The orthogonal disposition of the tangent and radius (Riga: Atis Kampars, 2018)

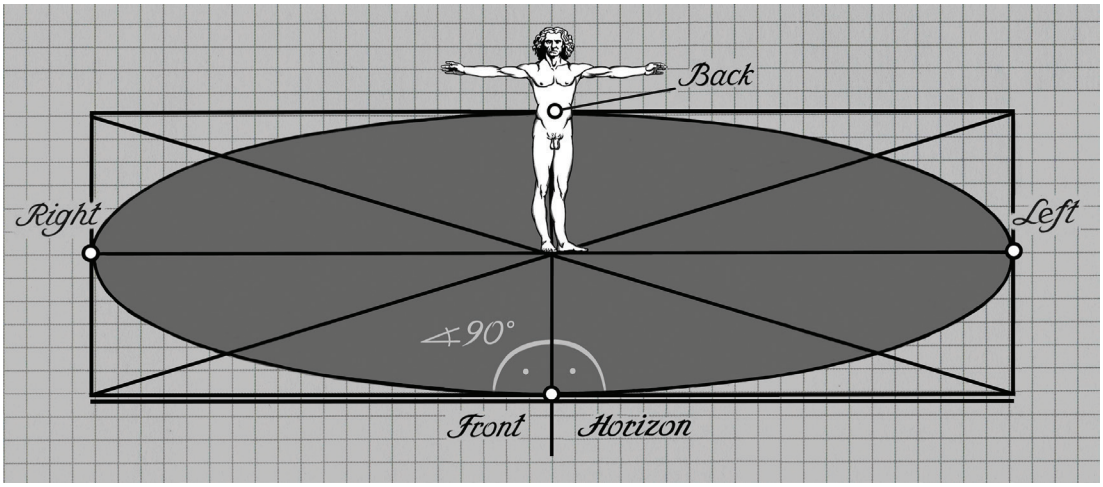

Figure 7. The rectangular area ofencompassed space (Riga: Atis Kampars, 2018)

inquisitiveness about objects and surrounding space. We are mentally able to modify the size or viewing area in relation to the reason for choosing the content – either formal or thematic. This initially subjective origin of the represented fragment of objects-and-space has obvious relevance for the basic principles of linear perspective by sharing the same three preconditions:

1. The concentration of the sight line (central optical axis) at a distinct fixed point at an extreme distance;
2. The estimation of the dimensions of the horizontal plane;
3. The overall organization of an image by horizontal division (the so-called *high*, *central*, or *low* position of the horizon within the format).

I assume that it is important to separate simple seeing from purposeful and methodical observation if we discuss the role of perspective in our spatial perception. Seeing of the visible world is an automatic and unavoidable reaction for every individual with standard capacities of vision. Simple seeing could even be described as semi-conscious scanning of the visible environment without any creative desire, but this state of consciousness does not result in visual perception as recognition of any particular characteristics of objects or space. Observation in turn is about the intellectual involvement of the beholder – concentration and evaluation of the properties of a particular "module" of objects-and-space or the formatted part of scenery. In this regard, the perspective, through its geometric means of visualizing, assists and reflects a truly natural form of looking and perceiving.

"Mechanical" performance in the arts, meaning the use of repetitive methods without any creative involvement from an image-maker, has been criticized for centuries. Application of the doctrine of perspective in image-making is, without a doubt, a kind of mechanical approach with limited possibilities of interpretation. Yet the genesis of the artificial environment of perspective evolves, firstly, from the original sensations of the beholder about his or her location in space and, secondly, from his or her perception of the properties of the investigated object. So the spatial structure of depicted scenery primarily reflects these arbitrary selected prerequisites, providing the framework for technical drawing methods of the science of perspective.

I suppose that the term *scientific* should be used in as broad and flexible a sense as possible, i.e., related to the logical construction of principles of depiction that, firstly, can maintain their systemic unity and, secondly, can provide reasonably good methodical support for the community of practitioners – all kinds of image-makers. The scientific component of depiction, of course, constitutes the method of technical drawing of the geometric grid of converging and intersecting lines of projections of perspective. A no less important scientific aspect is the

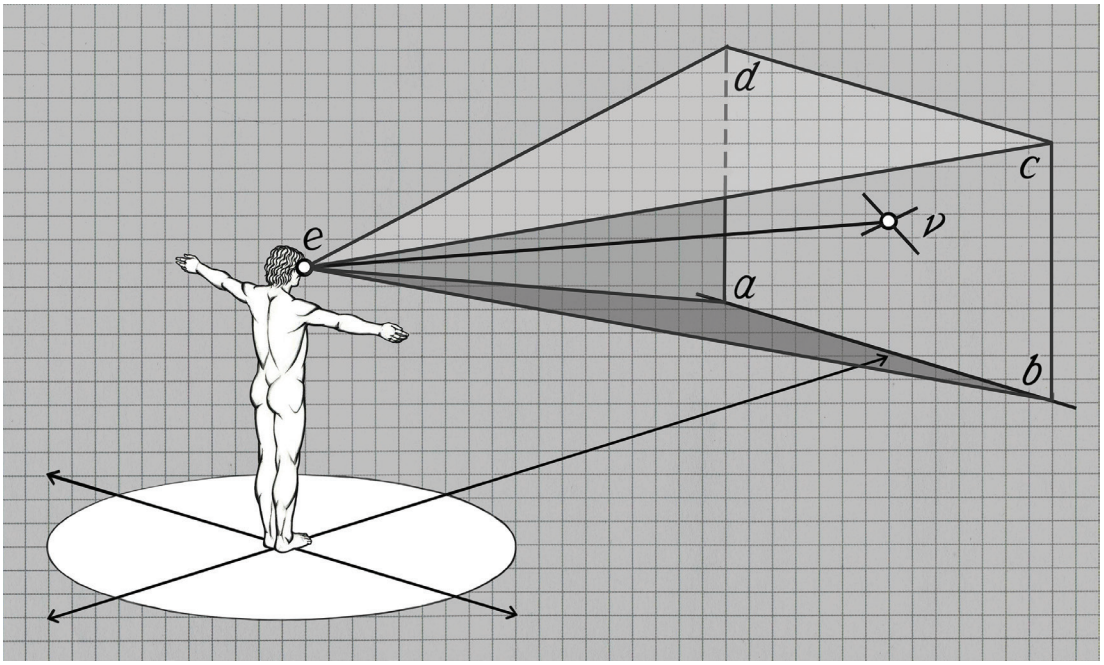

Figure 8. The formatted part of space is marked by the rectangle "abcd" with the central vanishing point "v" at its centre (Riga: Atis Kampars, 2018)

method of observation in which, following Alberti's original expression, "vision takes place by means of a pyramid of rays" (Sinisgalli, 2011). Appearance of a potential image is not a coincidence but rather a result of goal-directed observation since "the base of the pyramid is the surface seen" (Sinisgalli, 2011) (Figure 8). Alberti's concept of an *optical pyramid* is truly important because it explains the procedure of shaping the dimensions of the image frame, the viewing itself, and is, in fact, rooted in simple practical methods of image-making.

Alberti's optical pyramid induces the geometric principles at the earliest stage of image-making and substantiates the subsequent application of methods of perspective. Geometry appears as an organic element of viewing; moreover, the geometric shape of the pyramid channels the viewed image to the beholder's eye and obviously supports the perception of space by introducing the "extreme borders" of the accessible visual space. Still, it does not compromise the spatial position and role of the beholder in perceiving the module of objects-and-space.

The meaning of the concept of linear or planar perspective in the representation of space and spatial objects is still valid in our day; however, there are reasonable counter-arguments as well. The critical remarks are addressed not only to the deformations of the regularity of shapes in the periphery of the perspective's plane but to the principal axiom of the whole concept that the represented surface is flat instead of spherical. It would be incorrect to blame thinkers of the Early Renaissance for ignorance – conceptions of the solar system were still in the developmental stage and the fundamental work *De revolutionibus orbium coelestium* by Nicolaus Copernicus was published only in 1543. It is also worth mentioning that Columbus substantiated his plan to reach India to the King of Spain by presenting maps which he obtained from the Florentine cosmographer Paolo dal Pozzo Toscanelli, who knew the architect Brunelleschi and also collaborated with Leon Battista Alberti (Kelly-Gadol, 1998).

A significant part of the concept of perspective reflects the need of architects, artists and designers for a kind of universal and efficient means at hand for the rational construction of space and scale. Although a part of linear

perspective may seem too "mechanical", and it cannot embrace the whole range of cases of visualization, the efficiency of the principles of perspective cannot be challenged, at least in the context of creating rational, calculable space. I am convinced that the flat surface concept of linear perspective elaborated during the 15th century was a rational and conscious decision made by professionals and researchers that reasonably improved the ability to understand spatial relationships of objects and correctly apply the methods of spatial depiction. Disregarding the fact that the convex character of the planet's surface was apparently recognized, the continuous and serious developments of the principles of perspective in the following centuries prove the rational meaning of the flat surface concept.

Conclusions

I consider myself a moderate sceptic of the planar perspective, especially because of its systemic inability to avoid peripheral distortions, but the formal elegance of its geometric grid is undeniable, especially in combination with the approach of representing the compound of objects-and-space that reflects truly spatial sensations. I should note that the spatial representation system of perspective clearly corresponds to the concept of *four-corner space* in four fundamental aspects:

- It treats the horizontal surface as a principally flat plane;
- The depiction of space and scale is based on the transformations of rectangular shapes;
- The whole depiction reflects the rectangular shape of the surrounding environment;
- The depicted scenery indicates its evolution from the human being in its centre.

I should add that the term *four-corner Earth* is, of course, a metaphor, but it also describes the anthropocentric origin of viewing the environment, allowing the perception of space as a comfortable and controllable spatial configuration. This aspect is, in fact, very important for an image-maker who feels obliged to create a truthful and usable depiction of natural scenery. Although the image directly exploits only the frontal direction, a complex of natural sensations that there should be something potentially accessible to our left, right and back is involved as well when we find ourselves in an open space.

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