Elements of Artistic Expression in Photography

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Abstract: *It is our understanding the first photographers were also painters and sought to reproduce the aura of painting in the newly discovered medium. This endeavour meant dealing with technical limitations and also introducing new means of image rendering. What was then considered a nuisance and a physical limitation – the depth of field, we now regard as an element of artistic expression inherent to photography. In this paper I sought to present aspects of these elements of artistic expression common to both mediums – painting and photography from the photographer's perspective.*

Key-words: *photography; painting; visual elements; depth of field; colour; visible radiation spectrum; chromatic contrasts; scharf; flou;*

1. The "DOT" in Photography.

It is quite necessary to comprehend art photography's relationship with the rest of the fine arts, especially with drawing and painting. Even if we cannot actually speak of the artistic element "dot" as in the case of drawing and painting it is a constitutive element of the photographic image, especially argentic photography[2].

The dot in photography represents the celluloid's[3] or a photo sensitive paper granulation. If in the aspects of drawing or painting the dot is rendered on the surface with a conscious act in pre-visualised areas of various quantities and qualities or whether in a spontaneous gesture – in photography granulation is determined by the level of photo-sensitivity of the photographic film. Initially the common drive aimed for higher photo sensitivity, by both photographers and researchers. Technical evolution offered higher light sensitivity which meant faster exposure times with the compromise of larger photosensitive granules – larger dots. This aided the photographer otherwise unable the photograph a dim lit scene. Later, artistic photography, found a truly important element of artistic expression in this "compromise". The level of granulation of photography film is given by the size and concentration of silver –salts in its composition. – The less sensitive to light a film is the denser, more miniscule and uniformly spread the silver-salts granule would be- and the opposite for the films of higher light sensitivity where the granules are larger, non-identical and more arbitrary distributed.

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[2] Hanu Nic ,Să învățăm fotografia de la maeștri I, , pag.63-72.
[3] a tough thermoplastic composed essentially of cellulose nitrate and camphor used a base for layers of photo-sensitive chemicals in photography and motion-picture film

Provided with proper lighting conditions, either natural or artificial, using a low sensitivity film, results in a clear and sharp image with well define contours and shapes and the values of black and white are represented in a rather broad palette. Fig.a   In the case of an image rendered on a high sensitivity film meant for low lighting conditions, where the silver salt granules could be visible with the naked eye – results in an image where shapes would be diffuse and hazy, but more relevant to our element of analysis *the dot* – the greys are represented by the concentration of photo-sensitive granules – *dots*. Fig b
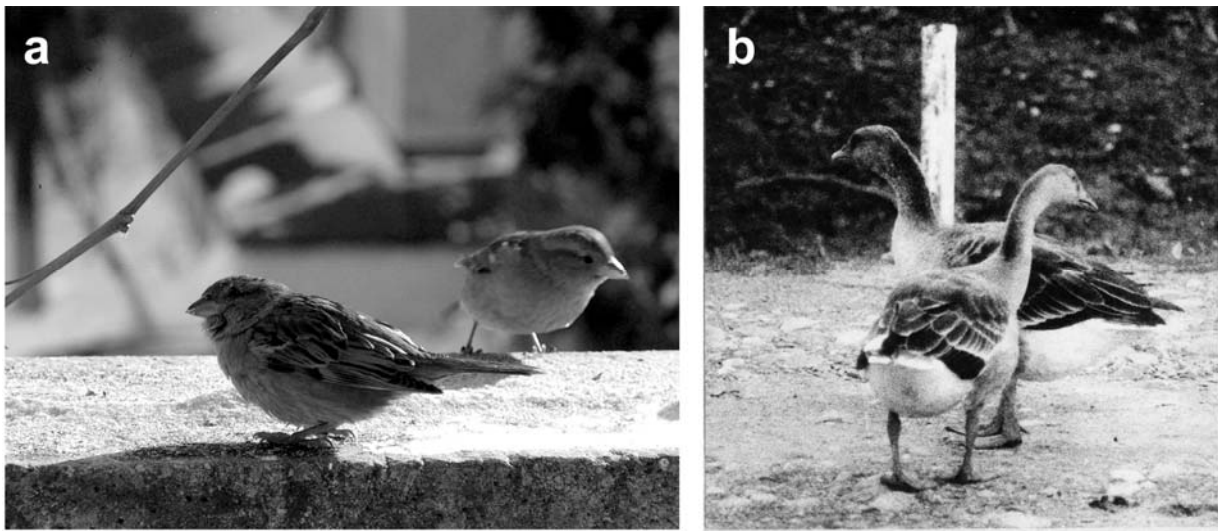

Fig. 1. *I.E of similar subjects rendered on different light sensitivity materials*

In this case (Fig.b), as in drawing and painting where the dot is the sole rendering element, greys are practically non-existent, they are however perceived and "understood" subjectively by the viewer. This understanding and perception of greys results from the area and concentration of dots in contrast with the paper's white. As mentioned before these type films were developed for more practical rather than artistic means – though not unlike many other scientific discoveries, throughout time, were reinvented as tools of artistic expression. In some situations these films were used opposite to what they were addressed for. For example a daylight film – with a low light sensitivity, could be used in poor lighting environments to reproduce a nocturnal scene or, for the most part, an eerie atmosphere. Other aspects may undertake rendering of night photography – provided a long exposure time is possible, resulting in a sharp and very well lit environment – well beyond the perception of the human eye. Also high-sensitivity film could be used in daylight (abundant) conditions resulting in what we consider a highly granulated image based on the most basic element of artistic expression – *the dot*.

It is of high importance to mention that in realising such photographs as those mentioned and presented above requires an advanced level of knowledge and skill.

2 The "Depth of Field"

Through Depth of Field we define the portion of Scharf[4] (focus) along an imaginary line starting from the centre of the photographic lens – the photographer's POV[5]. Subsequent of choosing the subject of inters, the photographer is able to choose the amount of clearly visible information along this imaginary line through the DOF[6] manipulation. The depth of field comes as a result of a balanced mixture between time and light. To be more specific, the lens' aperture and the exposure time. The photographer may use the amount of light and exposure time to manipulate de length of the DOF thus rendering a mellower or sharper background or foreground of the intended subject. This could be done gradually as explained in the figure below.
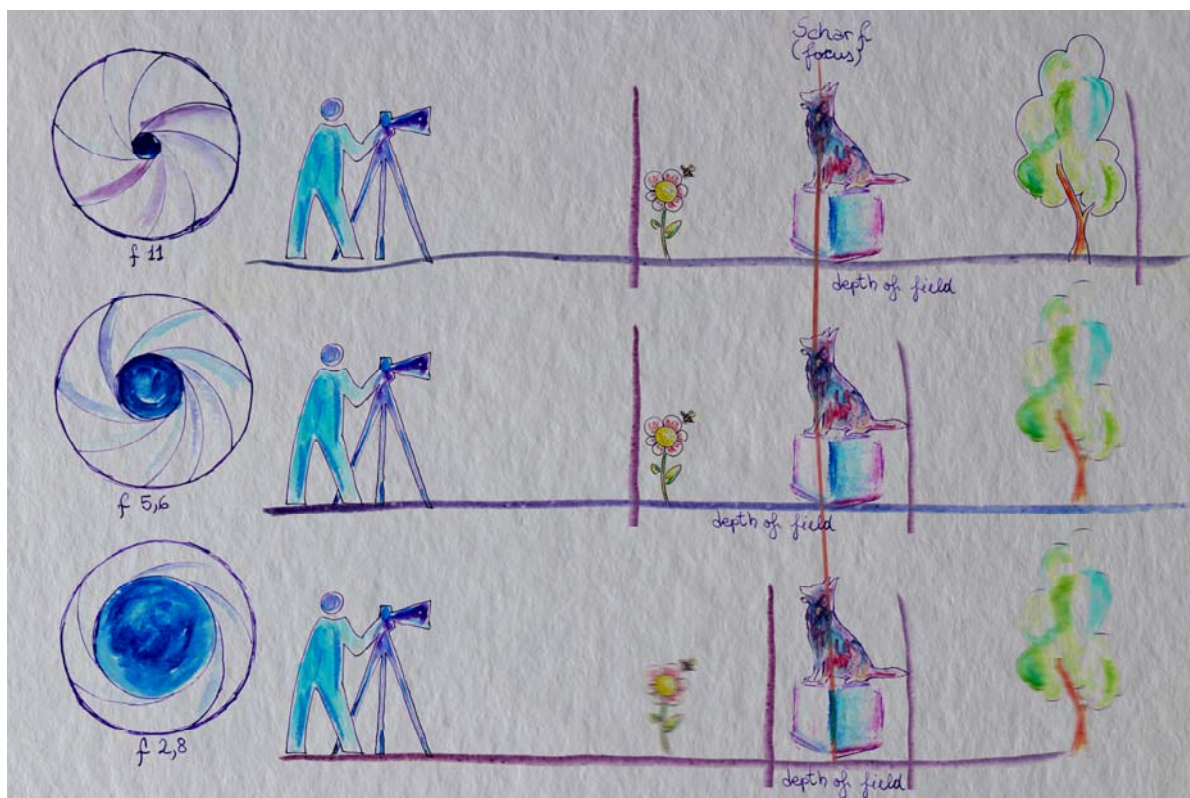

Fig. 2. *Representation of the various approaches with the depth of field.*

Depth of field manipulation gives the photographer the possibility to highlight or to diffuse intended elements of the chosen composition. This procedure has its painting equivalents in techniques such as *sfumato* or *aerial perspective.* In photography or film this procedure is used to evidentiate a certain element or character from the others. Whether in nature or urban landscape we are given the possibility to bring in as a centre of focus the main character from a *sea of people* or bring it out from blending with the environment.

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[4] Scharf – from German meaning sharp, rugged – photographic term referring to image clarity, focus.
[5] P.O.V. – point of view
[6] D.O.F. – depth of field

Here we can gradually choose between the vegetation or buildings vibrate surface and basically spots of colour through fading and interlacing of elements. Thus creating a new centre of interest, a rather psychological centre of interest if the composition dictates otherwise. Certainly here we shall endeavour to find a balance between the centre of interest dictated by the compositional lines and the psychological one resulted from contrasting detailed areas and areas of flou[7].

In the images below we can observe the "portion" of scharf along the imaginary line starting inside the camera lens, as POV, and continuing to infinity. The in focus portion can be seen moving away from us gradually from image 1 to image 4. – starting with the crumpled piece of paper in the foreground and ending with the ceramic block and flowers in the background.
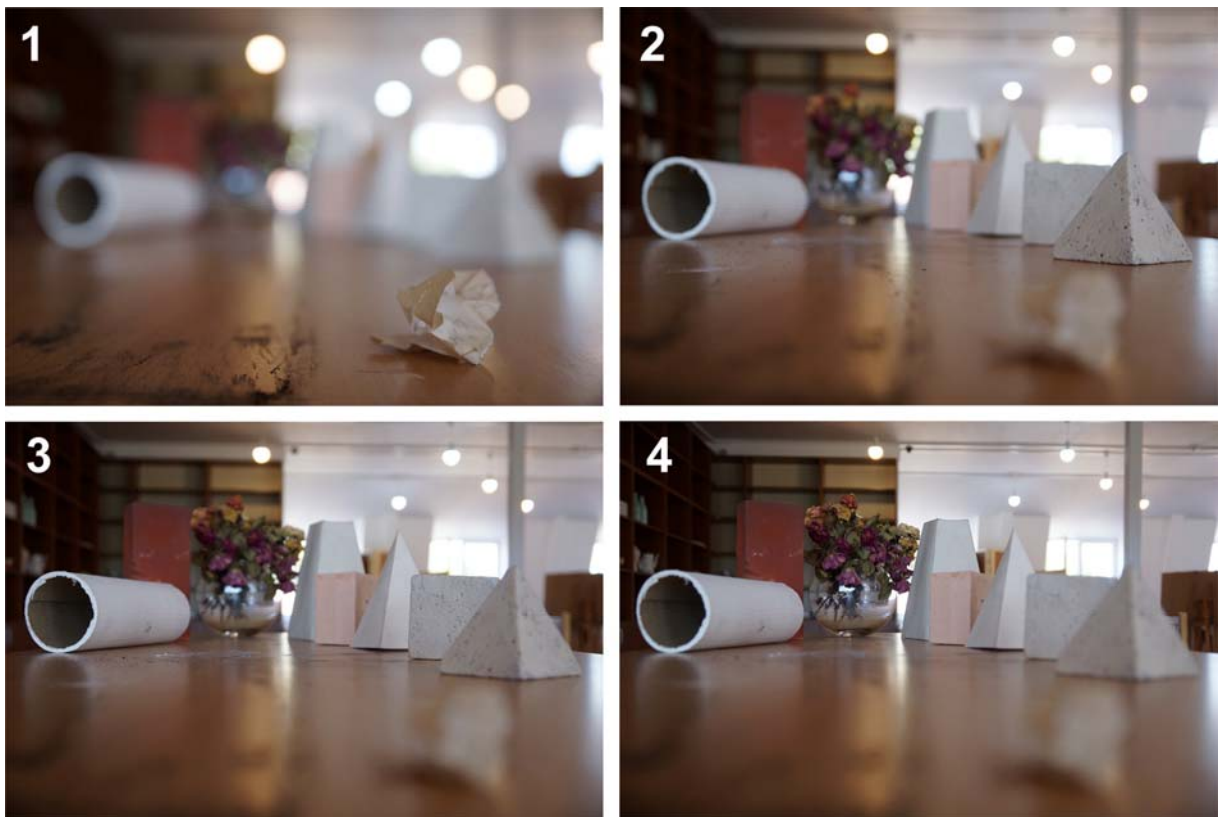

Fig. 3. *I.E of Depth of Field along the point of view line*

3. The "Perspective"

Perspective in photography can be manipulated or forced – though this procedure is quite different from the accepted measuring technique used in drawing and painting. In photography the perspectival field is dictated by what focal distance holds the lens used.

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[7] Flou – from French, about clothing – vaporous; about an image – with imprecise contours, faded; photographic effect that applies evanescence to contours.

It is considered that the 50mm focal length lens is closest to the human field of view. The field of view, respectively its perspectival representation in photography, may differ without moving the stationary point of neither the subject nor its size relative to the rest of the composition. This effect can be achieved by using different focal lengths and moving along the before mentioned imaginary line. In the following images we can observe how the subject, in this case the vase and flowers, occupies the same amount of space within the frame; However the surrounding background differs considerably. This is the result of using two lens with different focal lengths, in this case 28mm and 70mm.

Fig. 4. *Example of different focal lengths on the same subject, 28mm and 70mm.*

According to what focal distance it is used in rapport with the exposure time and aperture, perspective may differ considerably – It may perfectly depict reality or it may undertake a flattening effect where planes seem to overlap and distances become imperceptible. In such cases the only elements that simulate the true relations between planes are psychological or of aerial perspective. (Fig.5)

Fig. 5. *Example of different manipulation techniques on the same subject (left).*

In the first image we can observe the above mentioned flattening effect where the depth perception is simulated only by the convergence of the parallel rows of ceiling lights.

4. The "Composition"

Photography follows the same rules as the rest of the bi-dimensional forms of artistic expression. The only difference resides in the inherent nature of photography of reproducing reality in most truthful way. Thus the photographer doesn't have the painters' advantage of choosing and rearranging the visual elements within ones frame. As mentioned before, through perspective and depth of field manipulation, the photographer may only redirect in a certain measure the aspects of reality. In the following images (Fig.6) we may observe how isolating one or another element could change and transform a composition.
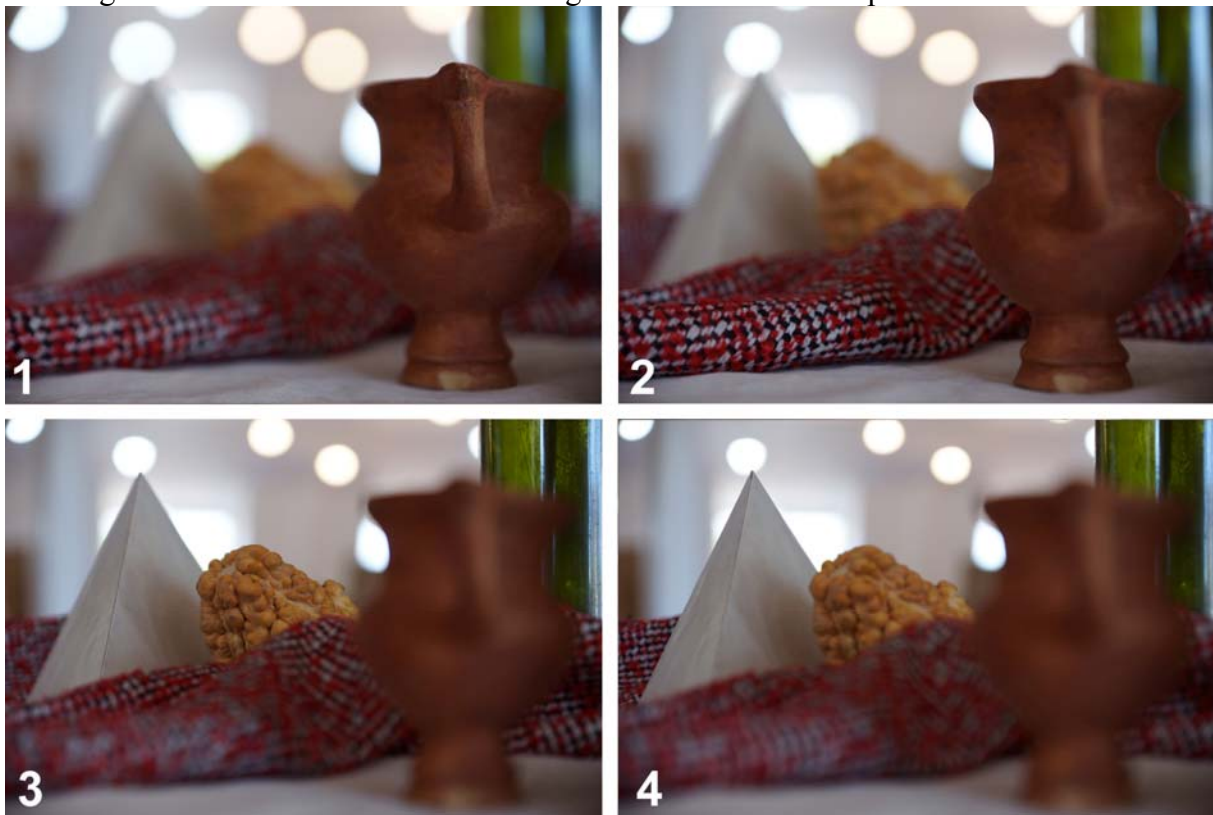

Fig. 6. *usage of the depth of field in rendering different aspects of a composition* .

In the images above we observe how the centre of interest changes position according to the area of scharf and the value of positive and negative space and quality contrast suggested by the usage of the depth field.

A rather important aspect in photographic composition resides in the photographer's ability to "think in shapes of colour" – to ignore elements that might unbalance a composition, may they be elements of quality contrast or perspectival lines. – And to compensate any disturbing element with elements of artistic expression inherent to photography. On the same note, it is of great importance to study and try to reproduce the works of the Renaissance masters for a better understanding of composition and the study of light itself.

5. Chromatic Aspects in Photography
5.1 Chromatic Contrasts

"Colour is life; for a world without colours appears to us as dead."
— Johannes Itten[8]

Natural light spectrum – Light, the visible radiation as perceived by the human eye, concentrated in a fascicle decomposes into the spectral colours of the rainbow while passing through a transparent glass prism.

Fig. 7. *Light passing through a transparent glass prism.*

The human eye being rather sensitive to the blue end of the visible light spectrum perceives the primary and spectral colours as follows:

purple – indigo – blue – green – yellow – orange – red

Out of these seven colours, blue, yellow and red are considered primary colours. Primary colours cannot be obtained from mixing two or more colours together. Instead, primary colours represent the basis for the following three binary colours[9]- Green, Orange and Purple.
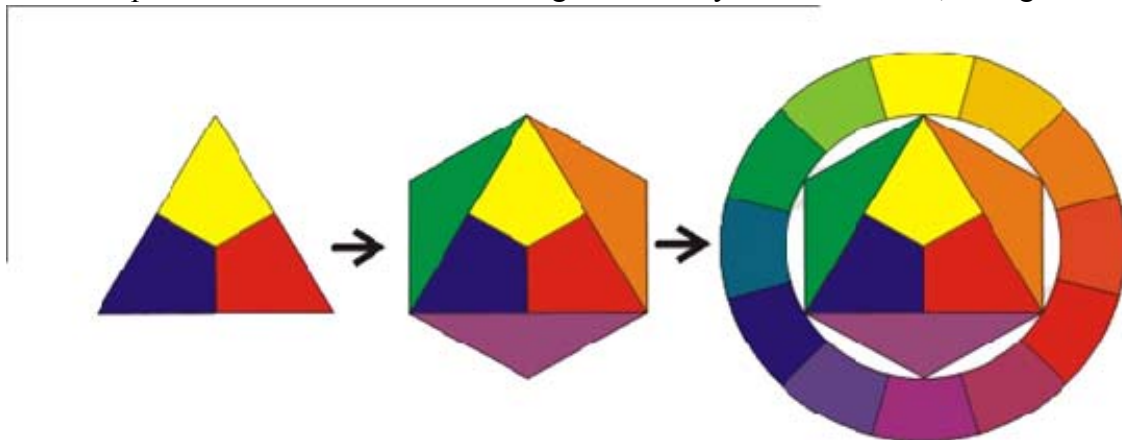

Fig. 8. *Johannes'Itten, Colour Wheel.*

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[8] Johannes Itten (11 November 1888 – 25 March 1967) was a Swiss expressionist painter, designer, teacher, writer and theorist associated with the Bauhaus (*Staatliches Bauhaus*) school.
[9] Binary Colours – are the result of mixing two primary colours. For example: Red +Yellow = Orange

These primary colours stand at the centre of photo and video image capture, transmission, decoding, archiving and retransmission in the television process. In the case of photo and motion picture film, the emulsion that sensitise the celluloid is composed of photo-sensitive elements responsible for each of the primary colours individually. The result is a similar one to serigraphy[10] or other printing processes that involves superimposing layers of primary colours resulting in binary colours and the subordinated tones.

The experiment of light decomposition in spectral colours is a reversible one, so much that concentrating all the spectral colours in a narrow fascicle onto a glass prism will result in in pure white light. Moreover, white light can be re-obtained by combining only two of the spectral lights. Continuing we can observe that in increasing the level of saturation of one of the colours we can obtain the equivalent of what in painting we call coloured greys.

These groups of complementary colours/lights are:

red with bluish green

orange with greenish blue

yellow with blue

red with green

purple with greenis yellow

We may observe that the complementary rapport results from combining a binary colour with a primary colour. For example on Johannes Itten's colour wheel we can observe the Magenta –Yellow complementary rapport is the result of combining yellow and the combination of red and blue.
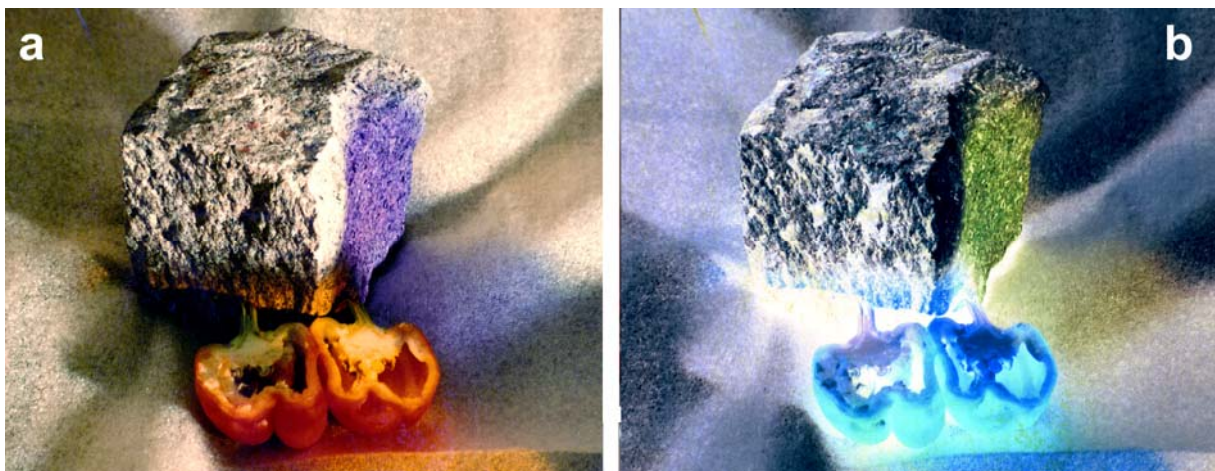

Fig. 9. *Example of the same colour image in positive and negative.*

In the images above (Fig.9) we are able to observe the complementary contrast relationship between the positive (Fig.9a) and the negative (Fig.9b), and the opposite values of black and white.

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[10] Serigraphy or Screen printing is a printing technique whereby a mesh is used to transfer ink onto a substrate, except in areas made impermeable to the ink by a blocking stencil. Different screen meshes are used for different colours

5.2 Complementary Contrast

The complementary colour pairs are composed of two colours one primary and one binary – and they will always be one warm and one cold. Represented diametrically opposed in Johannes Itten's colour wheel, complementary colours have the ability to reciprocally sustain, evidentiate or to nullify each other. The contrasting nature of the complementary colours makes it so that when brought together they strongly differentiate from one another, in doing so they are used to differentiate between planes or any other artistic structure. Paradoxically the result of their combination – the coloured greys give way to a new level of dialog among artistic elements. Moreover as we grey-away from the pure "form" of the colour these grey reflect a state of calmness where shapes and figures interlace. This procedure can be concretised in the representation of Aerial Perspective – may it be in landscape, still life or non-figurative composition.

In photography we encounter this phenomenon as a result of the depth of field manipulation (Fig.3).

As mentioned before, in the case of spectral light, these coloured greys are practically inexistent. Primary or any other coloured lights nullify each other when superimposed, the result being perceived as white light.

5.3 Contrast of the colour itself

Through the contrast of the colour itself we understand bringing next to each other two primary or binary colours in their purest form – on a high level of saturation and brightness. As black and white represent the strongest light and dark contrast the same goes for blue, yellow and red where they represent the highest value of contrast in itself. Gradually this sort of contrast diminishes when we bring together orange, purple, magenta and green. The contrast of colour itself can be further accentuated by adding next to the colour the values of black and white. By associating primary or binary colours with black or white we can observe a rather interesting result: The white seems to eclipse the brightness of colours, "darkening" them; on the other hand black seems to enhance the natural brightness of the adjacent colour brightening it.

This sort of contrast is often seen in folk art, naïve painting and in some artistic currents starting with the end of the 19th century.

5.4 The Light and Dark Contrast – Chiaroscuro

The light and dark contrast is probably the most acute mode of differentiating between artistic elements, planes or compositional structures within a composition. In relation with the light and dark contrast or chiaroscuro from the history of art the most notable references are from the late Renaissance, but also Chinese ideograms or Japanese painting and in some aspects European medieval tapestry.

In European painting of the Renaissance we notice a relative dismissal of the complementary colour contrast in favor of a technique that uses artistic elements more similar to the contrast of the colour itself. We notice here the association of chromatic tones with the values of black and white resulting in what we previously observed as a darkening or brightening of colours.

Fig. 10. *Example of Chiaroscuro – the light and dark contrast[11]*

The perception of the Chiaroscuro effect / the light and dark contrast in tandem with the proposed subject an reinforced by the dynamic lines of composition make it seem that the object or the character of interest to be absorbed in the background, into darkness or in some more dynamical aspects of the chorography to seem to break away from the said darkness towards and beyond the physical constrictions of the frame.

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[11]   photographs from the "Hades and Persephone – a legend about Light and Tenebrae" play, Faculty of Arts, University"Ovidius"of Constanța .

"It is known that neutral grey devoid of expressivity, receiving only through other colours life and soul. A grey surface that seems sad, inexpressive, may be changed by modulating the respective grey with other grey tonalities. The other colours could be brightened or darkened with white and black and juxtaposed they form the light and dark contrast."[12]

5.5 The Warm and Cold Contrast

The Spectral colours and their derivates are divided between Cold and Warm colours. The Warm and Cold contrast evidentiates itself through its antithetic aura that emanates from it. Thus we might consider inherent to it the following antithesis: shady-sunny, transparent-opaque, calming-agitating, earthly-aerial, etc. – Warm Colours: yellow-orange, orange, red-orange, red and violet-red. Cold Colours: yellow-green, green, blue-green, blue, blue-magenta and magenta.

Most often in painting, we can observe in various degrees the aerial perspective effect resulted from the warm and cold contrast. Elements, planes or far away objects will gradually receive colder tones in contrast with elements of the foreground dominated by warmer tones.

Fig. 11. *Example of warm and cold contrast in landscape*

"In realizing the most expressive warm-cold contrast, one must know the characteristics and effects of both warm and cold colours. Thus, in a work of art, colours would be as light or as dark as to attenuate as much as possible any other type of contrast. Moreover, one must know the property of a colour to warm or cool when juxtaposed with another colour, that it is why the context of where a colour is placed to produce a warm-cold contrast is justified also in rapport with quality of the colours."[13]

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[12] Constantin P. Culoare, artă, ambient. Ed. Meridiane, București, 1979.
[13] Demetrescu C. Culoare, suflet şi retina, Ed. Meridiane, București, 1979

5.6 The Simultaneous Contrast

The Simultaneous Contrast is rather psychological and physiological phenomenon rather than a conscious applied technique. Here we are observing the formation of an image first inside the human eye and then processed by the brain. Through Simultaneous Contrast we understand the involuntary adding of a colour "inside the eye" to its complementary as seen in the given picture.

"We may the Simultaneous Contrast as being a contrast between two spots of juxtaposed colours produced by the complementary effect. It is an optical simultaneous effect. Brought together colours tend to alter in a specific manner:
   - They tend towards their own complementary
   - They darken or lighten
   - They warm or cool
   - They exalt or neutralize from a chromatic point of view
It would be inappropriate to talk about chromatic harmonization without considering in rapport with the chromatic contrasts, because harmony does not mean the annihilation of contrasts but granting them."[14]

In principle, the viewer demands and offers its own complementary rapport. As mentioned before, we are talking about the ways of perception of the visible radiation – that can be observed in the double image Fig.9 where a colour has its complementary mirrored in its negative.

"For a better understanding of this chromatic impression, let's imagine we have in front o us a circle rendered in a neutral grey sitting on a red surface. Gazing at the grey surface we will notice it will turn a greenish hue, meaning a complementary colour to red. Naturally this colour does not exist in reality being merely an optical illusion created by the eye."[15]

5.7 The Contrast of Quality

By Contrast of Quality we observe the purity grade of a colour in rapport / contrast with coloured greys, values of black and white or even "undiluted" colours but with a lower level of purity. In painting we are we are considering the purity of a pigment when scrutinizing a colour, in photography quality emerges from the level of purity of the spectral colours – their high level of saturation. This type of colours create a point of interest by themselves, the only way to temper them is by association with their respective complementary colour.

Fig. 12. *Example of Contrast of Quality*

[14] Constantin P. – Culoare artă, ambient. Ed. Meridiane, Bucureşti, 1980.
[15] Demetrescu C. Culoare, suflet şi retina, Ed. Meridiane, Bucureşti, 1979

5.7 The Contrast of Quantity

The Contrast of Quantity refers to the compositional surface a colour occupies, in rapport with one or more colours. We may assert that we are dealing with rapport between full and empty, small and big or less and plenty. Obviously these values of comparison differ when dealing with chromatic rapports of different qualities. To find a balance in the case of pure colours we can use Johann Wolfgang von Goethe's[16] colour circle[17].

Yellow	Orange	Red	Magenta	Blue	Green
9	8	6	3	4	6

Therefore, to achieve an equal chromatic balance of quantity between complementary colours, one may use the following formulas:

$$\frac{yellow}{magenta} = \frac{9}{3} = \frac{3}{1} \qquad \frac{orange}{blue} = \frac{8}{4} = \frac{2}{1} \qquad \frac{red}{green} = \frac{6}{6} = \frac{1}{1}$$

"Quite often the intensity of a colour determines the strength of an artwork (a small yet bright portion is more overwhelming than a larger area rendered in a paler tone of colour).

A lighter colour may begin to enter a state of quantity contrast with another of the same intensity if it dominates in surface.

In conclusion this type of contrast, in order to obtain balanced and a chromatic harmony, needs to consider both the spread and brightness of a colour."[18]

6. Colour Temperature

Colour temperature is measured in Kelvin degrees and quantifies the tight emitted by a incandescent object or flame. For example the heating coil of a space heater or the flame of a torch lamp changes colour in accordance with its temperature. Starting with a reddish colour at lower temperatures a flame undergoes colour changes as it reaches its highest point of burning – going through orange, yellow to blue and finally white. In photo and video image capturing we measure the colour temperature to adapt the instruments and the photo-receptive element to the surrounding lighting conditions. In analog photography, manufacturers used to provide two types of film, adapted for indoor oriented towards incandescent light and outside lighting conditions oriented to reproduce natural light. The films sensitivity towards one or more colours of the spectrum varied from one manufacturer to another –capturing colder or warmer colour tones, warmer or colder whites and blacks resided with the photographer's choice and approach.

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[16] (28 August 1749 – 22 March 1832) was a German writer and statesman. His works include novels, epic and lyric poetry, prose and verse dramas, memoirs, an autobiography, literary and aesthetic criticism, and treatises on botany, anatomy, and colour.

[17] Johann W. von Goethe, Theory of Colours; Printed by W. Clowes and Sons, Stanford Street. London, 1840

[18] Mihăilescu, D. – Limbajul culorilor și formelor, Ed. Științifică, București, 1980

Light, the visible radiation, may have different colours according to the source whether artificial or natural – the Sun. Depending on the time of day and weather conditions the Sun's light will differ considerably , as we may observe in the chart below.
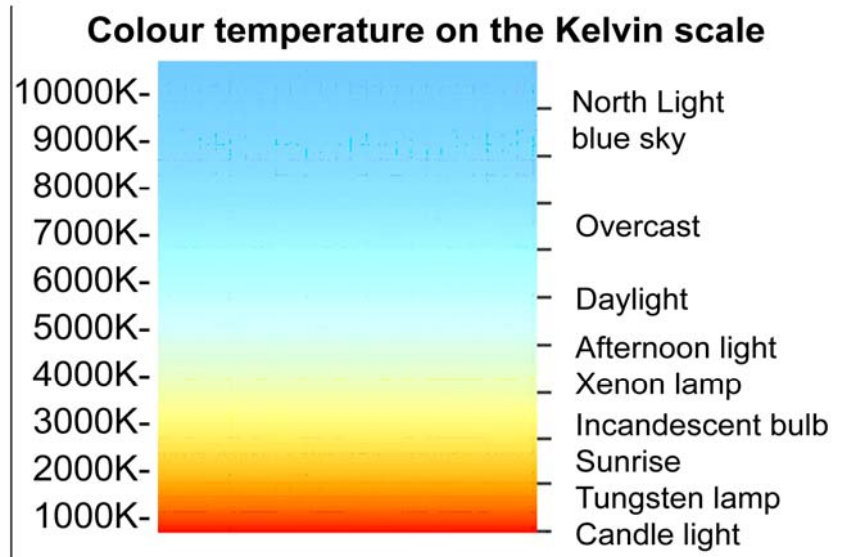

Fig. 13. *Example colour temperature and source, on the Kelvin scale*[19]

In capturing a digital photo or video image we have possibility to compensate the variable spectre of light through a procedure called "white balance" – its name denotes a search for balance between chromatic dominances. What is sought is the pure white untarnished by the effects of light wavelength and temperature as seen in the chart above. The correct assertion of pure white determines the proper hues of any other colour or values of black and white. Pure white becomes a subjective concept determined by the absence of ambient chromatic and light pollution.

7. Saturation

Saturation represents the level of purity and quantity of a given spectral colour in rapport with white light or the level of intensity on which this colour is projected or reflected. The level of colour saturation is marked with "1" for maximum and "0" for null.

Fig. 14. *Example colour saturation, from 1 to 0.*

Even though all spectral colours hold the maximum coefficient of 1, yellow is perceived being less saturated than the rest – this aspect falls under the human perception, oriented to the blue side of the spectrum, and not of the nature of the colour itself.

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[19] The Kelvin scale is named after the Belfast-born, Glasgow University engineer and physicist William Thomson, 1st Baron Kelvin (1824–1907).

7. Conclusion

Human aspiration towards discovery and research, all over the world, transforms in a sort of being that endures over the centuries and continues to inspire generations after generations of artists. This immortal being makes it so that visionaries from Africa, Asia and Europe to sought to understand light and discover with their experiments with the camera obscura. Their mission seems a noble one endeavouring in finding immortality for such an ephemeral element as light.

On the other hand technological short comings led to remarkable results. For example a photograph of a village rendered buildings and people naturally yet the sky was blank, devoid of texture , that led to double exposure and photomontage which paved the way to digital photo-manipulation of today.

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