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POINT AND LINE TO EDUCATION

«The researches which must become the cornerstone of the new science — the science of art — have two goals and proceed out of two necessities: the need for science in general which grows spontaneously out of a non- or extra utilitarian urge to know: the "pure" science, and the need of balance in the creative powers which can be grouped under two schematic heads — intuition and calculation: the "practical" science»[3].

As the title of this piece of writing refers in an obvious way to Wassily Kandinsky's book entitled *Point and Line to Plane*[3], its main area of interest will be some visual aspects of a piece of art. However, there will not be any new approach in analysis of those theoretical issues. Instead, it would be an attempt to arrange in a certain order some observations based on a short-term (but intensive) experience. An opportunity to teach higher education students from two separate departments at the same university (which is Pedagogical University in Krakow) appears to be a great chance to study their approach to some of the most basic aspects of visual creation.

As has just been mentioned, the difference between those two groups might seem to be significant. The first one consists of students from Pedagogical Department's preschool and elementary school education course. They are future — and sometimes present — teachers at kindergartens and primary education classes (four- to nine-year-old children). The other group is from Art Department (digital design course). The first thing that catches a reader's attention is that they have almost nothing in common. Obviously, their education purposes and goals usually does not match. However, there is at least one common aspect of their education — it is necessary for them to develop an ability to recognize and understand numerous formal aspects of an image. It is worth mentioning that both groups work with the examples of works of art, but it usually proceeds in a different way. For «plastic education» students, the pressure is put on their ability to see and describe elements that build an image, and — in the end — use this knowledge as inspiration for them and their pupils in future. Digital design (or more generally — art) students practice with the image itself, trying to decompose it and use its particular elements consciously for their creative purposes. Those mentioned later do it during classes called «visual structures» (its name speaks for itself), which is also a basic subject for

[3] Kandinsky, Wassily. Point and line to plane (original title: Punkt und Linie zu Fläche). Trans. Howard Dearstyne and Hilla Rebay. — New York : The Solomon R. Guggenheim Foundation, 1947 (first edition 1926). — P. 20.

almost all courses connected with art. Whereas those courses differ significantly, their results that come from the chosen area of interest can be compared in some ways.

The further text focuses on two particular aspects: the first (and more extensive) one is an insight into the formal analysis of a work of art, which is performed in a literal way during «plastic education» classes and — from a different point of view — during «visual structures»; the second one are simple examples of exercises that can help students understand the complex issue that is a main topic of this piece of writing. The ability to see and recognize particular elements of the image is not only helpful during the process of making a work of art (in this meaning, it concerns also all activities that end up with a visual object created during art classes), but it assists a future teacher in searching for appropriate inspiration as well. This issue meets with the strategy used during its corresponding classes at Pedagogical (and — partially — Art) Department; one topic is the work of art's analysis. It is a vital part of a general strategy presented in a manual from the *Na ścieżkach wyobraźni* series[4]. In the *Point and Line to Education* text, the only significant change is an addition of a point as one of the most basic visual art elements. The manual's analysis of a work of art covers three main approaches (or layers): what and in what way the piece of art depicts, what elements it consists of and — last, but not least — what value it represents. This piece of writing focuses on the second layer only.

Formal analysis of the work of art

«It should be noted in passing that the revealing of the forgotten knowledge of earlier art epochs can be accomplished only with great effort, but this should decisively eliminate the fear of the "dissection" of art. For, if "dead" precepts lie so deeply buried in living works that they only with great difficulty can be brought to light, then their "injurious" effects are nothing other than the fear which arises from ignorance»[3].

Wassily Kandinsky's words apply to the theoretical knowledge that — according to him — artists of the past had gained thanks to a process of their education. He suggests that most of it has been lost, but some part of this education remains within art academies (according to him, one of its most crucial examples is... composition). Of course, it is not a place and time to discuss if he was right or wrong. The reason of citing his statement is to justify the work of art's analysis itself. Surely, it is not something that stays in opposition to the «spirit» of art. On the contrary, it

[4] Łapot-Dzierwa, Kinga, Małoszowski, Robert, and Śmigla, Maria. Na ścieżkach wyobraźni. Poradnik nauczyciela. Plastyka. Klasa V. — Warsaw : Wydawnictwo Szkolne i Pedagogiczne, 2013.
[3] Kandinsky, Wassily. Point and line to plane (original title: Punkt und Linie zu Fläche). Trans. Howard Dearstyne and Hilla Rebay. — New York : The Solomon R. Guggenheim Foundation, 1947 (first edition 1926). — P. 19.

helps people interested in it to understand the effect that the piece of art has on its observer.

«The first unavoidable question is, naturally, the question of the art elements, which are the building materials of works of art and which, as such, must be different in every art». Kandinsky says that «we must at the outset distinguish basic elements (...) without which a work in any particular art cannot even come into existence. The other type of elements must be termed secondary elements»[3]. According to Rudolf Arnheim (which appear to be true in general), all visual phenomena are available to us thanks to brightness and colour[1], but — to make the analysis clear — it starts with the recognition of the ***artistic discipline and technique***. It helps students to broaden and consolidate their knowledge of the diversity of the art and to open their eyes to new experience. Despite the importance of explaining to them some small differences between similar techniques, it is sometimes necessary to introduce to them the whole variety of the world of art that they seem not to be aware of. Only after such an opening, it is possible to present the impact that the particular technique has on other visual elements, such as light, colour or line.

The second aspect is — already mentioned — the ***composition***. It covers numerous ways of setting visual elements within the surface or area that «belongs» to the piece of art. From a technical point of view, «a composition is the inwardly purposeful subordination of the individual elements and of the build-up (construction) toward the goal of concrete pictoriality»[3]. It can be also viewed in a slightly different (or profound) way, as «an exact law-abiding organization of the vital forces which, in the form of tensions, are shut up within the elements»[3]. It is because Kandinsky treats all the elements of an «image» as «objective results of the action of the force on the material»[3]. The sum of those forces that bring visual elements to life, creates an object which can be analysed from the structural point of view. As a result, it is possible to recognise main directions that lead the viewer's eyes through the image's surface. What is more, we can «see» the potential of movement or — in opposition — statics of the particular fragment of the composition. Next feature is the arrangement of presentation that indicates the importance of elements. The list of other important aspects of composition are: rhythm (which can be easily illustrated by referring to music), symmetry (especially bilateral) and asymmetry, or the golden mean. During appropriate classes, it appears to be important to explain to students that the certain composition ought to be chosen consciously, and it should not be accidental by no means. In addition, they need to be aware that proper arrangement of picture's elements can affect its viewers much

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[3] Kandinsky, Wassily. Point and line to plane (original title: Punkt und Linie zu Fläche). Trans. Howard Dearstyne and Hilla Rebay. — New York : The Solomon R. Guggenheim Foundation, 1947 (first edition 1926). — P. 20; 37; 92.

[1] Arnheim, Rudolf. Sztuka i Percepcja Wzrokowa: Psychologia Twórczego Oka (original title: Art and Visual Perception: A Psychology of the Creative Eye.). Trans. Jolanta Mach. — Warsaw : Wydawnictwa Artystyczne i Filmowe, 1978. — P. 334.

more. As «the action of the force on the given material brings life into the material, which expresses itself in tensions»[3], they should develop the basic ability to feel them, which takes some time, but can be really rewarding in a future work.

The third aspect of a work of art that needs to be analysed is its ***space***, which enables us to «enter» the picture. Despite the fact that the majority of such works is — literally — flat (with the exception of sculpture, architecture, and other three-dimensional objects), it frequently contains optical illusion of depth. Arnheim illustrates this phenomenon as a continuous relief, in which the areas that exist in different distance from the viewer border each other. Its depth can differ drastically — from shallow to very deep — within the measurably small area of an image[1]. When the composition is less depicting and more simple or abstract, there is a place for the rule of simplicity. It says that the viewer (or — better — his eyes and brain) recognises some elements as three-dimensional when such understanding appears to be less complex than the two-dimensional[1]. From the practical point of view, the issue of space should be accompanied with the lesson on basics of perspective (especially linear and aerial).

The fourth aspect of a piece of art that has to be analysed is ***light*** that it contains and the effect caused by brightness, with a chiaroscuro as one of the most outstanding features. From a logical point of view it should be the first examined element: it is the source of visual perception. Without light, eyes are unable to see shapes, colours, space or movement. It also affects the viewer psychologically[1]. Light possesses the power of revealing, and as such, it can create an impression of a particular mood. By studying the light, students develop their ability to understand numerous phenomena that surround them.

From the scientific point of view, ***colour*** is «an attribute of things that results from the light they reflect, transmit, or emit in so far as this light causes a visual sensation that depends on its wavelengths»[5]. It is one of the most important and obvious part of any image, including an artwork. As they surround us in everyday life, we are used to recognising, naming and using them, often in a studied way. On the other hand, it is important to remember that it is not possible to be sure if other people perceive colours in the same way as we do. What is worse, the idea of colours seems to be problematic itself when it comes to naming them. It is not just an uncountable amount of tones — there is a structure based on three primary colours and their mixtures[1]. Besides the variety of their culturally accepted names, there are more aspects of this element: saturation, temperature, domination and contrast. While preparing lectures or exercises for digital design students, it is also important to

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[1] Arnheim, Rudolf. Sztuka i Percepcja Wzrokowa: Psychologia Twórczego Oka (original title: Art and Visual Perception: A Psychology of the Creative Eye.). Trans. Jolanta Mach. — Warsaw : Wydawnictwa Artystyczne i Filmowe, 1978. — P. 243; 251; 306; 332–333.

[5] Colour, Dictionary. — http://dictionary.reference.com/browse/colour [date of access: 31.01.2015].

explain them the difference between RGB and CMYK colours, as both of them are in common usage, but they are not interchangeable and serve different purposes.

The ***surface texture*** is a very specific aspect of an artwork, as it can be experienced not only by sight, but also by a sense of touch. It is strongly connected with a plastic technique that was used to create a particular image or object. In general, all physical pieces of art possess some kind of texture, but it differs from absolute smoothness to roughness or even sharpness. As the tactile experience is important to our reception of an object, texture is able to strengthen its expression.

Now, it is high time to introduce three aspects of a work of art that are crucial to understanding it. One of them — which is a point — belongs to Kandinsky's category of the basic art elements. Adrian Frutiger calls it an atom of every piece of plastic art[2]. The two others, line and plane, may be secondary, but — as will be shown — are strongly connected with the first one. Their combination, revealed only by light, create the real body of every single piece of plastic art.

Beginning with a ***point***, it is important to bear in mind its mathematical meaning, but — if we are not going to give geometry lessons, it would be enough to mention about primitive notions, which it belongs to. Now, Kandinsky says that it «may be defined as the smallest elementary form, but this definition is not exact»[3]. This lack of precision comes from inability to express the smallest element in a graphic way. Thankfully, it appears to be helpful to refer to relativity of sizes. When trying to distinguish between a point and a plane, it is useful to visually measure «the relation of the size of the point to the size of the plane, and the relative sizes of the point and of the other forms on this plane»[3]. When we accept the relativity of its size, the next step would be considering the point's shape. If it is not immeasurably small, it has to possess its own external form. In ideal conditions, it would be round, but — as it is impossible (and totally unnecessary) to operate in such situation — «just as in the case of its size, its limits are equally relative. In its material form, the point can assume an unlimited number of shapes»[3]. It is worth mentioning that the point's status of a basic art element means that it can be used to create other elements. It is not uncommon to see points grouped in some ordered way. Adrian Frutiger says that it is hard to find a point staying all alone; it usually accompanies other signs and shapes. What is more, certain scheme of points results in obtaining raster; from that moment, we do not perceive points as separate elements — they become abstract grey surfaces, useful in a role of halftones[2]. From a practical point of view, it is important to mention how to create a point — it «is the result of the initial collision of the tool with the material plane (...). Paper, wood, canvas, stucco, metal — may all serve as

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[2] Frutiger, Adrian, and Heiderhof, Horst. Człowiek i Jego Znaki (original title: Der Mensch und seine Zeichen). Trans. Czesława Tomaszewska. — Warsaw : Wydawnictwo Do, Wydawnictwo Optima, 2003. — P. 21.

[3] Kandinsky, Wassily. Point and line to plane (original title: Punkt und Linie zu Fläche). Trans. Howard Dearstyne and Hilla Rebay. — New York : The Solomon R. Guggenheim Foundation, 1947 (first edition 1926). — P. 21; 29–31; 40.

this basic plane. The tool may be pencil, burin, brush, pen, etching-point, etc. The basic plane is impregnated by this first collision»[3]. Taking into account pieces of three-dimensional art, for example architecture or sculpture, «the point results from a cross-section of several planes — it is the termination of an angle in space and, on the other hand, the originating nucleus of these planes which can be guided back to it or can be developed out of it»[3].

A penultimate element building an artistic image or object is a ***line***. With reference to what has just been mentioned, it is possible to define it as «the track made by the moving point»[3]. In opposition to a static point, a line is a product and expression of motion. As that, it is «the greatest antithesis to this pictorial protoelement»[3]. Lines can be straight, curved or angular, sharp or gentle, varying in thickness and much more. They can lead the viewer's eyes in a particular direction, divide a plane into parts and are one of the most important component of a shape. All these examples show vast variety of situations in which a line can be useful, but it also means that their differentiation situates them in a near-opposition — «the angular line is in much closer touch with the plane, and it already carries something plane-like within it. The plane is in the process of creation, and the angular line becomes a bridge»[3].

As a consequence of evolution and our need to watch for threats, food, and so on, the ability to see and recognise shapes is crucial to the survival of our (or every) species. It means that we are biologically prepared to perceive them; it is a result of strengthening of contrast between bordering spots of light combined with a binocular vision. When trying to transfer the view of what we (or «an artist») see onto a plane surface, we create an illusion of three-dimensional space. Using plastic techniques where a line is the most basic component of an image, especially drawing, it is almost inevitable to avoid making outlines — despite the fact that they are not that common in our environment, or — better — they usually do not really exist. It is us who interpret our surrounding in a linear way.

Lastly, there is a ***plane***, which can be both: a surface of an artwork, or a part of this surface, defined by its shape confronted with other shapes that it borders. The pressure will be put here on the second one. As it has been mentioned before, it is connected with a point and a line; the difference between plane and line lies in the relation of their size, but how it is considering a line? Kandinsky says that «the boundaries are indefinite and mobile», because «everything here depends upon proportions»[3]. Frutiger tries to make this relativity more precise and claims that a line that is thicker than a half of its length, loses its dynamic character and becomes a

[3] Kandinsky, Wassily. Point and line to plane (original title: Punkt und Linie zu Fläche). Trans. Howard Dearstyne and Hilla Rebay. — New York : The Solomon R. Guggenheim Foundation, 1947 (first edition 1926). — 57; 69; 81; 90.

static plane[2]. Besides increasing a singular line's volume, it is also possible to obtain a plane by «closing» (or intending to do so) a line by connecting its beginning and its end. «The most unstable and, at the same time, the most stable of planes (...) created» in this manner is the circle[3]. Analogously to density of points creating a plane (raster), also lines are able to do this. It can be a linear raster or chiaroscuro made with numerous strokes of a tool[1].

Getting to the point

«Aside from its scientific value, which depends upon an exact examination of the individual art elements, the analysis of the art elements forms a bridge to the inner pulsation of a work of art»[3].

The limited volume of this piece of writing makes it impossible to focus on the mentioned issues in a more profound way, but there is still some place to exploit. As it has been announced in the first part, it is a time to describe examples of tasks that students can perform in order to understand some aspects of a visual analysis of an artwork.

Because it is important for a future teachers to have self-confidence and believe in their abilities, they should be accustomed with the most basic plastic techniques, especially drawing and painting. It does not mean that they should pretend to be artists themselves. Basics of drawing or painting can be taught to nearly anyone, as it is an ability similar to other manual activities. So, the first step is to encourage a non-art student to take a role of an observer. She will have to forget what she knows about an object (items joined in a still nature, a friend's face) and try to transfer its image onto the piece of paper with a pencil. This is the first lesson and it covers numerous aspects of visual analysis itself. Thanks to observation of light, they see solids and colours, but the results of their work are flat, monochromatic lines and planes. It could be the end of a task, but it is usually better to emphasise the effect by adding something more. Its continuation might be a plane analysis of their own work. Using black and white newspapers, they could try to make a twin composition, where every piece of rectangular paper is covered with different tones of gray. As the newspaper usually offers limited diversity of plane tones, it is necessary to use blocks of text as well. In this exercise, they serve as an equivalent of raster. The main difficulty comes from the need to interpret different levels of brightness and darkness of their previous image by using limited materials with a necessity to keep original shapes.

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[2] Frutiger, Adrian, and Heiderhof, Horst. Człowiek i Jego Znaki (original title: Der Mensch und seine Zeichen). Trans. Czesława Tomaszewska. — Warsaw : Wydawnictwo Do, Wydawnictwo Optima, 2003. — P. 64.

[1] Arnheim, Rudolf. Sztuka i Percepcja Wzrokowa: Psychologia Twórczego Oka (original title: Art and Visual Perception: A Psychology of the Creative Eye.). Trans. Jolanta Mach. — Warsaw : Wydawnictwa Artystyczne i Filmowe, 1978. — P. 224.

[3] Kandinsky, Wassily. Point and line to plane (original title: Punkt und Linie zu Fläche). Trans. Howard Dearstyne and Hilla Rebay. — New York : The Solomon R. Guggenheim Foundation, 1947 (first edition 1926). — P. 17.

The task for the Digital Design students needs to be different, as their main goal is to work in a digital environment. The first example is a linear analysis and synthesis of a chosen art image (usually non-abstract). Beginning with the necessity of studying the artwork's structure, finding the most important directions, areas and divisions, they obtain a visual record of forces that rule over the particular image. Initially, the process of analysis results in a great number of straight and curved lines. Then, it is time to decide which lines are the most important for the composition, and which are just making a mess. In the end, some of lines remain untouched, the chosen ones are made bold, and the rest of them is erased. During this part, it is acceptable to change location of some lines slightly, in order to produce a clearer image. Analogously to the previous case, there is a second step of this task. Students are asked to create a purely linear composition with a set of strict rules that describe what is allowed and forbidden. The basis of this work is a result of the first exercise. They have to cover the area with new lines that not only would emphasize some of the existing and weaken others, but — sometimes — could create an impression of perspective or depth as well. It is possible (and useful) to begin every one of these exercises with traditional tools: pencils, rulers, callipers and a calque.

Exercises mentioned above are ones of the most fundamental examples of work with an image. They are based on the analysis of different kinds of work of art, but have many things in common. Out of them, the most important one is opportunity to get inside the image and perceive it not as a story told by someone, but as a coherent set of simple elements that build a structure of every visible thing. As a result, the practical knowledge of how to perform such an analysis prove to be extremely useful in many areas connected with creation of a plastic object or image.

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5. Colour, Dictionary. — http://dictionary.reference.com/browse/colour [date of access: 31.01.2015].