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Artwork (painting-object) + paper: “About a special relationship: abstract art - aesthetics - mathematics ”



Topic:
-abstract painting
-colour studies
-aesthetics

“1to2to3” 2011 [MDF and acrylic colour, size: 1,3m x 0,8m x 0,3m]

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Eye generated art:

This is a constructive art object, which is based on the aesthetic measures of human perception. In true renaissance tradition, the only phase in history that united art and science, this work of art combines empirical studies on “colour aesthetics” with form-based logical developments towards abstract painting. The result is a highly emancipated artwork, which allows the colour itself to generate form, akin to the principles of human perception.

About art and science:

Today mathematics is the language of science. The principles of nature have been non-visible since Maxwell’s research on electro-magnetics (1860). Current to this loss of visual contact to nature, art too seized being solely object-based. With the onset of these developments, art was no longer born entirely out of the visual. Rather, it took on the tendency to be born out of very essence of art as well as out of creative processes of the artist’s subconscious. This is where art and science part ways. The challenge for abstract art today lies in how to translate the “what” so into the “how” that processes and principles of painting itself became relevance.

Aesthetic and colour studies:

The relationship between colours has two important aspects. Firstly the empirical study of the physical characteristics (subtractive mixture) of colour and secondly the “aesthetic field”, i.e. the psychology of cognitive human perception. The artwork is generated from the results of these studies.

References:

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About a special relationship: Abstract painting – Aesthetics – Mathematics

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Abstract:

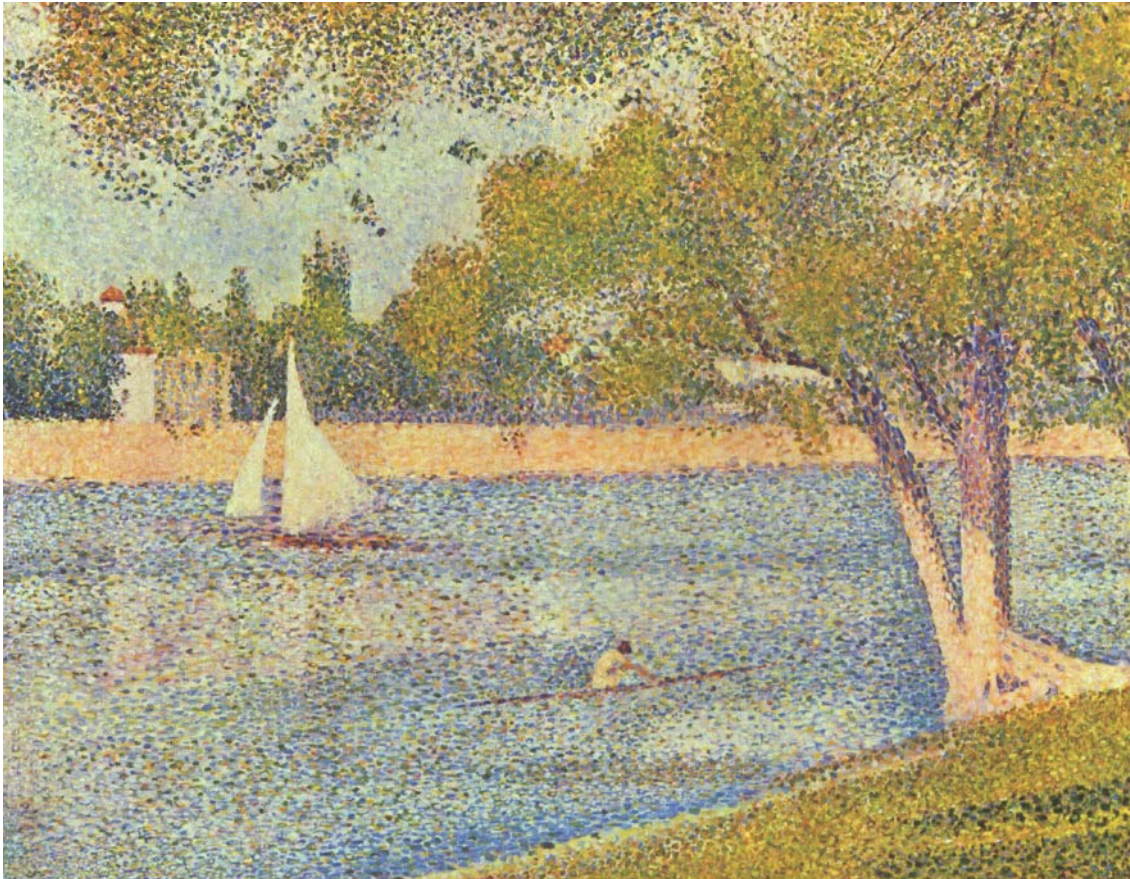
While Renaissance art was still in a position to unite science and art, this is no longer possible. Today, science and art are united in their search for principles in Nature. This search is taking place on a level that is no longer accessible through the human senses, on a level that represents the invisible sphere of Nature. In doing so, the search has overcome a rather naïve perception of reality. But the evolution of the process into this deeper level of perception has not been easy and called for countless new methodologies and models. It also resulted in extensive consequences for art. I will outline the consequences for abstract and conceptual painting and elucidate their specific conditions and meanings. For example, how and why does art become abstract and enter a sphere which is neither grounded in the visible material world nor is immediately tangible? And what about the “question of principle”? This discussion will be followed by a closer look at perception itself, specifically whether a form of inner “sensual regulation” makes it questionable that an abstract work of art is concurrently regarded as a mathematical formula.

Part I: A short story “peinture conceptuelle”

Nature moves out of sight – The development from the “what” to the “how” of representation – an elementary sign language – the comment next to the artwork – the principles of perception – seeing in and of itself becomes objectified.

Part II: Aesthetic views

Art as reflection – the laws of visual perception – the mindset of viewing art – geometric forms as signs – abstract art and mathematical formulas



„The Seine at Le Grande Jatte“ by George Seurat [3]

Part I :A short story of “peinture conceptuelle”

This section draws on the main ideas of Arnold Gehlens book “Period-Pictures” [2]

The first conceptual artist was Georges Seurat (1859–1891), who was one of the key representatives of pointillism. His work and thinking represent an excellent example of how an artist becomes interested in the “question of principle”, as well as the mental reasons and historical conditions that lead up to that point. In other words, his story best represents what drives an artist towards “peinture conceptuelle”.

The question first and foremost on any artist’s mind is that of motif, i.e. what should be represented in the picture?

Seurat’s pictures build an important key position between a last throes of realism and

abstraction. His pointillism is still object based on the one hand (you see a landscape), but the essential element is the very way the landscape is represented. It catches everybody's eye that the picture is built up with dots. This in turn directs the observer's attention away from the motif and towards the surface of the canvas and the method in which the paint was applied. In this way, the act of painting itself and the specific way of representation become important. In terms of definition, a painting becomes abstract as soon as natural objects make way for increasingly spiritual "objects".

This shift in observation and interest is linked to a broader cultural change, which also became palpable in science. Some marked scientific findings include:

1857 kinetic theory of gases

1858 cathode rays

1864 Maxwell – electro-magnetic theory

These breakthrough scientific events nonetheless also meant that even science lost visual contact with Nature. At the height of the Renaissance, the only phase in history that successfully united science and arts, science was still conducted on the visual level. The anatomic studies of Leonardo and Durer's studies on proportions of the human body had been scientific studies conducted with the naked eye. With the historic events around Maxwell, the relationship between visual perception and the object that is being scientifically investigated changed fundamentally. The language of mathematics became a basic necessity while its theoretical models became non-visible.

Thus both in art, as well as in science, and almost at the same time, the natural object disappeared from immediate visibility. Concurrently, the increasing urbanisation brought about by the industrial revolution ended what had hitherto been a daily occurrence: seeing Nature.

Consequences of the natural object's disappearance

The visual loss of contact with the natural object led to a deep insecurity. While realist art was still able to claim some measure of scientific identity, this had now changed. Suddenly the eye as organ of reflection had become doubtful. Instead, optical illusion (trompe l'œil) became important and artists began contemplating the relationship between the eye and the surface of the canvas. Seurat was one of the first artists to shift perception away from the natural object and towards the surface of the canvas. From this point onwards, the focus increasingly moved towards the "how" of the painting rather than the "what", as well as the rather subjective manner of interpreting this.

What does an artwork depict when it no longer depicts natural objects?

For Seurat, the process of perception itself became an object of study. It is well known that he first studied the then current theories of perception (Helmholtz) before applying the model of the retina's receptors to the canvas by means of pointillism. A dot symbolises a receptor. The dots are thus to be understood as symbolising the scientific model of visual perception. As a result, the act of perceiving - seeing itself - becomes an integral part of the painting. As a consequence, artists now needed recognisable

symbols to translate the imagined relationship towards the external world into a visually understandable language. In other words, from now on, the challenge was to find the right symbols.

In 1952, Herbert Read remarked: "Plastic art suffers from its basic illiteracy" [4] This quote highlights another problem in abstract art. The fundamental correlation for language is about the word and its subject matter. Yet if the natural object disappears from art, then art itself becomes speechless. This development began to necessitate explanations of what was depicted. It was clear that a theoretical foundation was needed. This need introduced resorting to explanatory commentary next to artwork. Manifesto, critiques and books were made public by artists from now on. A historic example is Kandinsky's book "Über das Geistige in der Kunst".

"The meaning and legitimacy of the motif on the canvas were no longer discernable, but rather withdrew into the experiences, reflections and theories of the artist through the process of creating." [5]

The increasing focus on the surface of the canvas as opposed to the motif ascribed the surface a new individual quality. The surface itself became a stimulus. From now on, image area, colour and form had their own individual value and worth.. This opened the door for geometrical elements to enter into the works of abstract artists (Kandinsky, Malewitsch and Mondrian). But this development can also be dangerous because of its closeness to banality and decoration, from which artists need to clearly distance themselves..

"This whole venture of a "peinture conceptuelle" is parallel to science in that the centuries-old scientific search for principles, the drive to systems and the fallback onto the elements created a scientific state of awareness which now also co-determines, developments in the arts." [6]

Part II: Aesthetic perspectives

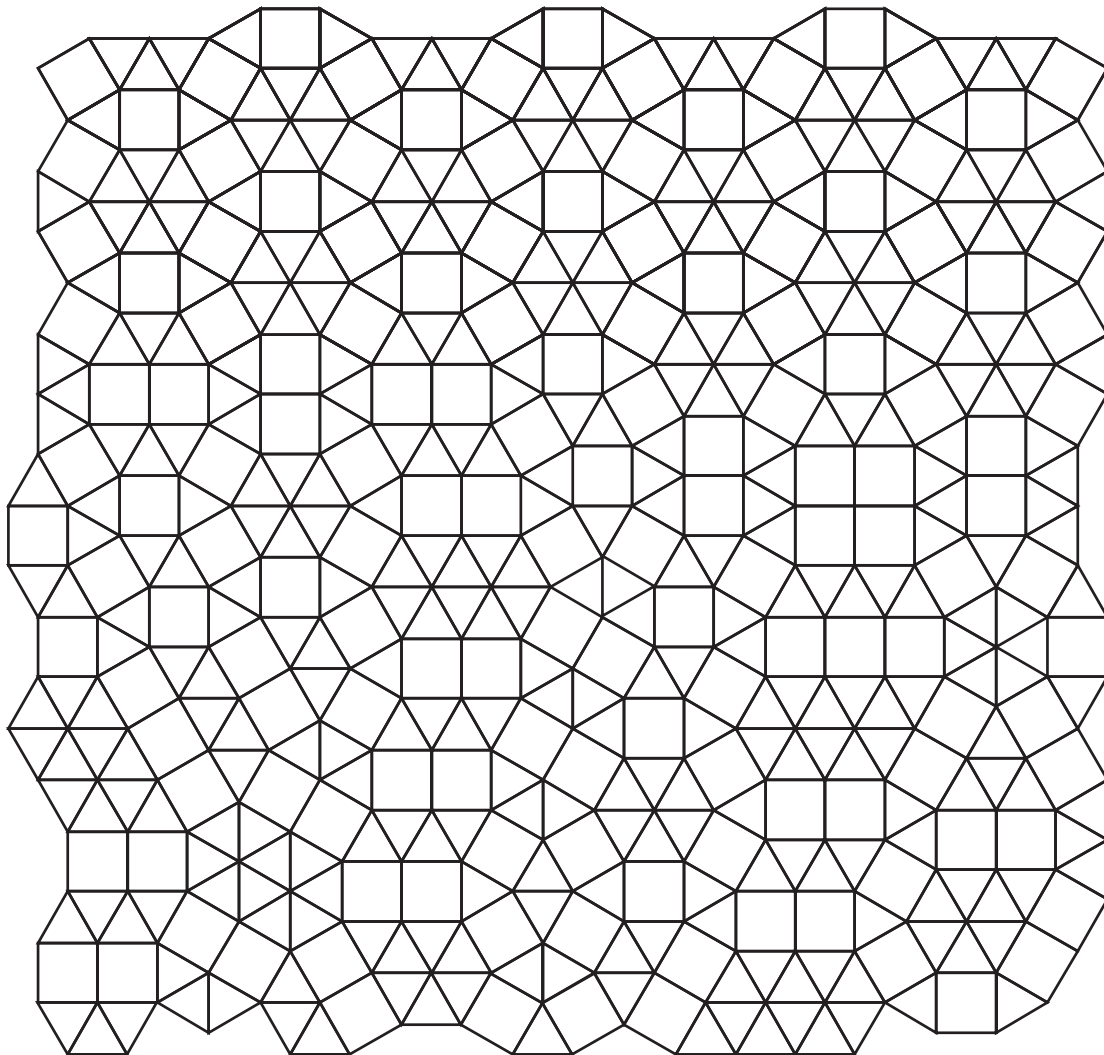
The main question in the second part centres on the different levels of impact of a single work of art. Where exactly do these levels of impact lie if the work of art takes us into a speechless and wordless world, composed only of reduced symbols like colour and form? What can the spectator still identify with?

To find answers to these questions, different aspects of aesthetics need to be considered. Specifically, what type of impact does the work of art have on the spectator with respect to mental processes? This will be augmented by examining the process of perception through the lens of psychology before turning to formal aesthetics, which compares the work of art to a mathematical formula.

The shift in perception towards the surface of the canvas represents a specific challenge to the spectator. When looking at an abstract work of art, the spectator observes a visually appealing object without that object depicting anything known. The spectator at once experiences a heightened sense of visual appeal and pleasure as well as a clear sense of deceleration given that the observed image remains hinged in the mute, unseizable world of abstraction. This inner contradiction leads to a heightened state of oscillating attention, which Arnold Gehlen refers to as "perpelexion" [7] . Konrad Fiedler even goes as far as referring to artistic activity as a "self-contained operation of the

cognitive faculty” [8]. The cognitive achievement of an abstract work of art lies precisely within that latent area of visibility, in which language - or any other medium - can no longer be meaningfully used. The artist’s creative hand picks up where the function of the eye, i.e. seeing, ends. In this way, the artist demonstrates the principle of seeing in the painting.

The following section examines this principle. For this purpose, please have a look at the following pattern. You will see something happens automatically during the act of observation. .



[9]

“It is a basic knowledge of the classical “gestalt theory” that perception itself is a dynamic process of generating order” [10]

Wolfgang Metzler refers to the “laws of perception” [11]. These laws relate to the fact that incoming visual impulses are reduced and transformed into electric signals (bits) on retina. From the perspective of cognitive psychology, perception in and of itself is declared as a valued activity. In general, four distinct value-oriented levels can be distinguished within the process of perception:

“1.the basal-sensorial physiological level, which is also found in many animal species; 2. the species-specific genetic human hominid level; 3. the culture-specific and ethnic-oriented semantic level. The fourth level will be discussed later on. .”[12]

According to the theory of evolution, the human organs of perception developed to enable orientation in a greater environment. This means that every organ of perception (1.level) can be regarded as a developed hypothesis about the environment. Countless external data have to be selected and processed in a system-sustaining way by the senses. In this context, the human system of perception constructs the world around it while adhering to the internal laws of data selection and processing.

The term “principle of prägnanz” refers to the fact that the system of human perception resorts to its own type of orderliness. This orderliness is constitutive for the system of perception (2.level). The most important laws in regulating perception are similarity and closeness of form. In addition, the perception of colours is also guided by internal regulations, which assesses the colours, their contrasts, constancy and so on. This links to prejudices within the perceptive system, which occur on a subconscious level. In other words, independent of any cultural pre-determination, the human system of perception includes visual prejudices, and thus welcomes the use of simplified geometrical forms and pithy colouring.

The very act of perception is judgemental and accompanied by a need to identify function. It is as a result of this that all cultures across the globe exhibit a need to use culturally coded symbols as a type of formal language. The cultural-specific meaning of such symbols is generated on the 3.level of the process of perception. At this level, symbols and signs are valued arbitrarily by cultural processes. A drastic example of this is the swastika. In its pre cultural meaning the swastika conjures up a positive connotation (2.level). Yet through its use as a symbol of the Third Reich, its positive connotation was entirely destroyed.

Within increasingly sophisticated societies, there is the additional level of the individual coding of symbols. Yet the more sophisticated a society is, the more the communication-related value of a symbol decreases. This is a fundamental problem in the use of symbols and signs.

As the above discussion shows, the cultural context is necessary to understand symbols. In this context, the western art-system needs to be viewed as a specific space within which specific symbols and signs are used.

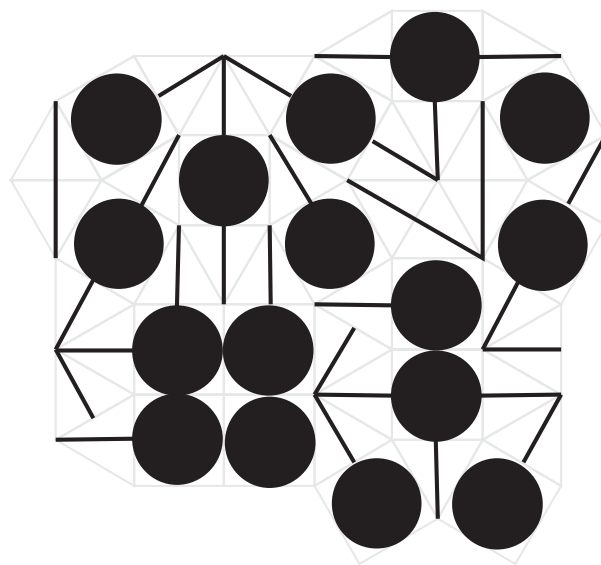
In the western culture, museums are regarded as special protected areas with their own histories of significance. How do we enter a museum? What kind of mindset do we have? A text about “evolutionary aesthetics” by Karl Eibel generally points out two different mindsets of the human being.

“During the functional mode all conduct is rendered in real-time: the functional mode is essential for both survival and reproduction. The organisational mode by contrast is like an idle state of our adaptation. During the organisational mode the organism is learning and exercising.”[13]

That means information processing and inner impulses for action are decoupled. The organisational mode seems to be the biological foundation for the enjoyment of art and

the artists' work. Because of this many people speak about a mode of "play", whereby the laws of gestalt and principles of perception in the world of art can be enjoyed freely and light-heartedly. Kant refers to this as "uninterested pleasure".

"Mathematics is merely one specific way of world-creation, which starts with the counting of objects and the isolating of geometrical forms and which ends with modern physical theories (quantum physics, cosmology)." Yet mathematics in combination with arts lends "structure and form to the experienced reality notwithstanding the fact that these aspects cannot be experienced by the human senses. Rather, they are models that are injected into the experience. . In short: the descriptions or models are transformed into a reality that can be experienced." [14]



[15]

Triangle (line) = 1 = white = (day) light = electricity
Square (circle) = 0 = black = (night) darkness = non electricity

Geometrical forms as symbols

Fundamentally, geometric, constructive and elementary symbol or sign languages lean towards scientific models and principles. A mathematical vocabulary of forms and signs continues in this tradition and thus seems to be an ideal tool for planning the composition of a painting.

Nearing the end, there is a need to return to the question of what exactly an abstract work of art is able to represent. The previous section highlighted a specific identification with the internal processing of data, and an anthropogenic disposition towards the enjoyment of art. . This section aims to shed light on the types of symbols that an abstract work of art depicts.

For this purpose, "formal aesthetics" by Lambert Wiesing will be used together with a phenomenological perspective towards abstract art. Such a perspective emphasizes

the artwork's character value, as well as its referential character.

The particularities of elementary symbol or sign language lie in the fact that it is both non-verbal and non-cultural. As a result, a certain "openness" exists towards the symbol itself. In other words, the classical phenomenological assignment of two possibilities of reference to a symbol is not enough to make up an abstract work of art. In the classical phenomenological tradition, the artwork would have to clearly reference another object or another sign. Yet this is not the case. There is no object anymore because of the represented principles of perception and there is no distinct reference to another symbol. To overcome this dilemma, Charles William Morris (1901-1979) developed his theory of signs. He compares an abstract artwork to a mathematical formula as a special character due to its self-referential character.

"The formula itself is part of that which it symbolises as a whole."[16]

This represents a status of semantic uncertainty, given that there is neither no reference nor is there a distinct one. A mathematical formula works with variables and its essential aspect centres on the relationship between the mathematical elements. It functions by placing a priority upon the variable and their relationship to each other and emphasize the relationship rather than the individual variables.

"The human eye owns a large treasure of formulas, which are used to process information it receives. In this way, it generates perception which is pleasing as long as the input has been processed in its entirety by any of the formulas."[17]

In conclusion, an abstract painting works like a mathematical formula. It refers to an imaginary and a relational space. It acts as concretely sensuous embodiment of a difficult-to-imagine principle. The invisible levels of seeing become visible in this way. The work of art becomes a visual depiction of sensual logic.

As artist I am interested in researching, working and understanding this "sensual logic". At the end it becomes a question of attitude towards yourself.

To keep in touch and updated on this work in progress, visit my blog at www.prhs2011.blogspot.com I look forward to hearing from you.

References

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