An Introduction to the Aesthetic Precognition: Threat or Opportunity for Contemporary Art?

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Abstract This paper presents some findings of an ongoing experiment on the Beauty perception and aesthetic appreciation of the artworks, based for the first time on the use the most popular social network: Facebook. Exploiting the system of “like” and “share”, on which Facebook is based, thousands of artwork images were submitted to a sample of over 10,000 users worldwide. Through the metrics analysis related to the aesthetic preferences expressed by the users, it was observed they are inclined to react the same way towards certain visual stimuli coming from artwork images: specific compositional characteristics of the artworks are able to influence the aesthetic preferences of the viewers towards some artworks rather than others. The steady repetition of aesthetic preferences related to same compositional elements present in the artworks allowed to predict the subsequent aesthetic choices by the viewers towards not yet posted artworks. We identified some of these responsive elements, which would be able to activate the Beauty recognition and the Aesthetic Pleasure in the perceivers. In this way it would be possible to develop an Aesthetic Algorithm able to identify the share of Beauty required to activate the Aesthetic Pleasure, by introducing specific responsive elements in the artworks with the aim of predicting, and also predetermining, the viewers reactions.

Keywords Psychology of Art, Neuroesthetics, Empirical Aesthetics, Perception, Precognition, Facebook

1. Introduction

Is it possible to identify the compositional characteristics of an artwork, that are able to activate the brain areas responsible for the Beauty recognition, inducing the Aesthetic Pleasure in the viewers? Maybe all of us are driven by a specific form of aesthetic determinism when we admire and appreciate an artwork? If we were able to predict the aesthetic preferences of the public towards an artwork, maybe could we talk about Aesthetic Precognition?

According to recent studies in the field of Neuroesthetics, the process of aesthetic appreciation by the perceivers has a neurophysiological basis [1,2]. Comparing the findings of these studies with the Processing Fluency theory of aesthetic pleasure [3], that emphasizes the interaction between the perceiver and an object, focusing on the effects of objective stimulus attributes on perceived Beauty, we hypothesized that Beauty perception and Aesthetic Pleasure of the viewers are predetermined by specific visual characteristics of the artworks. Based on this insight, we analyzed the aesthetic preferences expressed by a wide sample of viewers towards several artwork images posted on Facebook: it was noted that most of viewers reacts the same way in front of precise visual stimuli. The presence of specific compositional elements within the artworks would be able to influence the aesthetic judgment: this would not be subjective and based on inborn or acquired preferences, but resides in the features of the viewed object, that stimulate the Aesthetic Pleasure of the viewer. So the viewer’s brain would be adapted to these hedonically marked features of the artworks.

Here we anticipate some findings of an empirical study, still in progress, that we are conducting in innovative and unconventional way through the use of the most popular social network (Facebook), in order to explore a new field of investigation based on the intersection among Psychology of Perception, Neuroesthetics and Information Technology.

We decided to use Facebook because it is currently the largest site of statistical aggregation in an increasingly connected and technology-driven world, but at the present stage of research we have opted not include numbers, because we are still developing a new methodology of
analysis to reduce the presence of confounding variables and the tendency to follow the majority opinion, refining the mass of big data coming from the social network. Nevertheless, the research seems to indicate a new direction to be followed in the studies of Empirical Aesthetics.

2. Materials and Methods

To get our reference sample, we opened three identical Facebook profiles, on which we posted every day for three years, images depicting many works of Contemporary Art, specifically in the form of sculptures and installations, created through many different artistic techniques by numerous artists from around the world.

The analyzed sample was made up of contacts aggregated to each profile, which have been divided into two clusters, based on the level of their expertise in art: naïve viewers (art untrained), and art experts (artists, curators, critics, gallerists), both of them coming from around the world, to whom thousands of artwork images were submitted with the aim to evaluate personal aesthetic preferences of the viewers, expressed through the “like” and “share” system, typical of Facebook. As all profiles reached the limit of 5,000 personal contacts (imposed by the social network), due to the large number of connection requests coming from new friends attracted by the images, our research has focused on a sample of over 10,000 users worldwide, unaware of being involved into the experiment. In the course of three years, we submitted over 15,000 artwork images (about 15 per day), alternating images in which specific visual characteristics to be analyzed were present, with others images in which those characteristics were absent, in order to identify the aesthetic characteristics of artworks preferred by the viewers. In this regard we have analyzed carefully metrics, analytics and folksonomies provided by the social network, related to the aesthetic preferences of the viewers, that is the quantitative data obtained in terms of “like” and “share” by the users, as well as the user engagement percentages achieved by each artwork image, which expressed rather accurately the aesthetic orientation by the viewers, analyzing and segmenting the visual characteristics of each artwork, identifying the occurrences of specific compositional elements, and comparing them to the peaks of aesthetic preferences determined by the viewers’ choices.

The most interesting parameter considered during the experiment was the total engagement: in the metrics analysis of the preferred artwork images, this parameter represents the amount of all users interactions that each artwork image has been able to generate. It is obtained by the algebraic sum of “like”, “share”, spontaneous comments and posts by the viewers about the posted artwork images on Facebook timeline. In fact, as a user preference may be influenced by the aesthetic preferences of users majority, to analyze only “like” variable may be restrictive and misleading in this research. Therefore, another important research parameter to be considered is the virality of “like” diffusion, that during the investigation has been able to attracting, gathering and polarizing the aesthetic preferences of the viewers towards artwork images that meet some specific visual characteristics, that we have identified as responsive: due to the Facebook algorithm (Edge Rank), the aesthetic preferences of some viewers may affect those of others. For this reason a more appropriate screening is needed.

3. Results

The experiment has confirmed that the viewers, with no significant differences between the expertise of each analyzed cluster (art expert or non-expert) and their specific culture or nationality, were somehow attracted by the same kind of images and by the same combinations of compositional elements (shapes, colors, spatial layout, etc.), reacting the same way to identical aesthetic stimuli: in fact, when we proposed afterwards other different artwork images in accordance with the aesthetic preferences previously given by the viewers, it was possible to predict rather accurately their possible aesthetic choices towards the artworks before these were shown.

Although there was no contextualization of the artworks inside a three-dimensional exhibition space, such as an art gallery or a museum (in fact images were shown in a bi-dimensional mode through the computer screen), anyway the experiment gave back a rather accurate idea of which should be the responsive compositional elements present within the artworks, that would be able to activate the Beauty recognition and stimulate the Aesthetic Pleasure in the perceiver, unlike the Functional Magnetic Resonance Imaging (fMRI), which has allowed only to describe until now the brain modifications in Art viewing and identify the cerebral areas connected to the aesthetic appreciation under the influence of specific visual stimuli [4,5], however without making an in-depth study about the influence of some specific responsive elements present in the artworks, that should be able to activate the perception of Beauty, inducing a specific aesthetic behavior by the public.

Indeed, during the experiment, it was possible to isolate some well-defined categories of compositional elements within the artworks that, when combined in a precise way, should activate the Beauty recognition and drive the aesthetic preferences of perceivers towards artworks that meet such compositional characteristics, so that during the experiment we were able to predict with reasonable accuracy which artworks the public would be preferred. In fact, thousands of artwork images having those identified compositional characteristics were subsequently reproposed several times, and the preferences of the viewers were exactly what we expected, confirming that such compositional items present within the artworks are able to activate the onset mechanisms of Aesthetic Pleasure in the perceiver, stimulating the brain areas connected to the Beauty recognition: they seem to influence the aesthetic preferences of the viewers, inducing specific reactions in the
public. As a countercheck, we proposed several artwork images in which, intentionally, those responsive elements were absent: as expected, the percentages of preferences towards those artworks were very low. This allowed to confirm that certain specific compositional elements inside the artworks play as attractors of Aesthetic Pleasure, enabling the Beauty recognition by the perceivers and the orientation of aesthetic preferences towards an artwork rather than another, bringing about the prediction of a precise aesthetic behavior from the public, contrary to a fully subjective interpretation or judgment about Beauty and aesthetic appreciation. As already noted by the latest research in the field of Neuroesthetics, “human beings are endowed with species-specific mechanisms that resonate in response to certain parameters present in works of art” [6]: keeping in mind the symbolic and evocative appeal of an artwork, and the conditioning exercised by a subjective aesthetic experience, cultural background, personal values, emotions, and by specificity of the individual memories of each perceiver, that certainly could determine a subjective and changeable judgment about the aesthetic Beauty of an artwork, we observed that the Beauty perception was activated more frequently in the presence of specific responsive visual elements present in the artworks, and through our experiment it was possible to identify such compositional items by means of an accurate data gathering related to the occurrence and frequency of their presence within the artworks, and to the aesthetic preferences expressed by the viewers.

Some of those responsive elements able to activate the Beauty recognition and stimulate the Aesthetic Pleasure in the viewers, which we have identified in the course of the experiment conducted through the use of Facebook, are:

- the black / white contrast (Figure 1);
- specific shapes and their layout or compositional equilibrium;
- the presence of regular geometries (Figure 2);
- specific combinations of bright colors or, on the contrary, a smooth color gradation and soft tones;
- the interaction, correlation, concordance, simplicity, balance, linearity, symmetry and harmony of the compositional elements within the artworks;
- the presence of red color (Figure 3);
- the multiplication or repetition of elements identical to themselves (Figure 4);
- the presence of evanescent, evocative or surreal elements;
- the Golden Ratio or Sectio Aurea, namely the proportion of compositional elements expressed by the value $\Phi=1:0.618$ [7,8];
- the presence of no more than three visual items or defined groups of figurative elements to be decoded;
- the presence of perfect circles, or circular and rounded shapes;
- the miniaturization of the compositional items;
- the specific location of an artwork inside the exhibition space or into the fruition context (such as a gallery, museum, or urban space);
- the importance of light as a function of iconographic grammar and syntax;
- the representation of semantic contrasts or paradoxical juxtaposition (Figure 5);
- a modulated and not too sharp deviation compared to the canonical images of artistic Beauty;
- an unexpected deviation from the rules of spatial perspective, normally reconstructed by the viewer through the rules of perceptual constancy, according to Gestalt Psychology [9];
- the reference to known forms of reality;
- the presence of images that recall dynamism and movement.


Figure 1. Black / white contrast

Richard Serra (1987). 1, 2, 3, 4, 5, 6, 7, 8.

Figure 2. Regular geometries
As recently demonstrated by in-depth investigations conducted through the use of neuroimaging techniques (fMRI), Art viewing stimulates the right hemisphere and prefrontal cortex of the brain [10,11], but we have observed that the above compositional elements are able to induce precise aesthetic behaviours, influencing the aesthetic choices and driving the aesthetic preferences of the viewers towards some artworks rather than others, activating so the Beauty recognition and the Aesthetic Pleasure in the perceivers. We even believe that, if such elements were present all together in a specific display context, and were shown to neurophysiological predisposed individuals, they could be able to cause a perceptive shock or aesthetic breakdown in the perceiver, known as Stendhal syndrome [12,13].

Figure 3. Red color

As argued by E. H. Gombrich[14], the factors that determine the aesthetic experience are inherent in our biological inheritance, even if we are unable to give them a conscious explanation. Towards specific visual stimuli, the aesthetic appreciation seems to activate and resonate in the same way in all the perceivers worldwide [15]: it’s like if the viewer, by admiring an artwork having those specific characteristics, discovered something already known, a kind of immanent principle of Beauty: C. G. Jung[16] called this principle as Archetype. In fact, we have detected the same typology of aesthetic appreciation by the most viewers in both analyzed clusters (expert or non-expert in art) exposed to the submitted artwork images: the systematic and steady repetition of the same aesthetic choices towards certain artwork groups showed that there are some specific compositional elements inside the artworks able to activate the Beauty appreciation and Aesthetic Pleasure in all the perceivers. The responses provided by the viewers towards the above compositional elements appeared to be similar for each individual, so that it was possible to predict the following aesthetic preferences of the public towards not yet submitted artworks. We have defined such phenomenon as Aesthetic Precognition, that is the possibility to predict in advance the aesthetic preferences of a viewer towards an artwork group before this was exhibited, or, for those individuals who learned to recognize the responsive compositional elements of an artwork, that specific ability to identify beforehand the structures of Beauty inside an artwork: in fact, the knowledge of these responsive structures should make possible to foreknow what may be the aesthetic appreciation of a viewer towards an artwork.

The Aesthetic Precognition has nothing paranormal or esoteric, because that is connected to neurophysiological and biochemical workings of the brain and to human perception dynamics, according to which the humans realize the Beauty concept, that would be only apparently subjective, and are attracted or fascinated by a given artwork rather than another [17,18]. Probably, the concept of Beauty, that forms and organizes the human perceptional experience relating to the Art, is biologically and genetically predetermined, like if it was inscribed by ever in the human DNA. In our opinion, the process of brain assimilation of prototypical structures of Beauty could be supported by the mirror neurons, that have fixed artwork images introjecting and storing them like a computer memory, through repeated exposures over time.

It may be that, in the course of human evolution, this psychobiological process has helped to build a neuropsychic apparatus of Beauty recognition, a sort of aesthetic memory based on the viewer’s experiences, that corresponds to a specific prototypicality system, supporting the development of brain receptors of Aesthetic Pleasure, that now would be able to react rather automatically and in reflected way to visual stimuli coming from the Art viewing, making predictable the aesthetic reactions by the perceivers: Beauty appreciation would be therefore a selective and hereditary trait of the human evolution [19,20]. But the inheritance of an genetic aesthetic memory is yet to be proven.

The Aesthetic Precognition is basically a specific form of aesthetic determinism, or aesthetic perceptual conditioning, through which the preference of an individual towards an artwork rather than another may be predicted or even predetermined: according to this perspective, it would be possible to know in advance if a viewer will like or not a given artwork, or create some artworks able to activate or induce for sure the Aesthetic Pleasure in the viewers, influencing beforehand the aesthetic appreciation of the public, or driving in a predetermined way their aesthetic preferences towards certain artworks instead of others.

The ability of influence beforehand the aesthetic judgment could give rise to a new form of Aesthetic Cognitivism, based
on the recognition of the behavioral aesthetic reactions from the perceivers.

4. Discussion

For centuries man questioned about the concept of Beauty and its nature, but probably Beauty is just based on the brain neural structures, that can now be explored and analyzed in depth [21-23]: if Neuroesthetics has made possible to identify - through the neuroimaging technologies such as the fMRI - the brain areas activated during the Art viewing process [24,25], the investigation we are still carrying out is allowing to identify the aesthetic orientation of the viewers with respect to specific responsive compositional elements present within the artworks, that seem can stimulate the emergence of Aesthetic Pleasure in the perceivers. This perceptual process was highlighted by the aesthetic preferences of the viewers related to thousands of artworks submitted during the experiment, constantly repeated with respect to specific visual stimuli: to that are certainly connected to psychobiological mechanisms of perception, which have become Beauty-sensitive in the course of human evolution [26-28].

Through the study of those responsive compositional elements present within the artworks, the analysis of aesthetic behaviour experienced by the viewers, and the support of Neuroesthetics, which analyzes the neural mechanisms involved in the aesthetic appreciation, it would be possible to develop an Aesthetic Algorithm able to predict rather accurately the aesthetic preferences of the perceivers towards the artworks, before these are shown, predicting the aesthetic preferences of the viewers. According to this algorithm, an artist could even be able to modulate the share of Beauty to be included within the artwork, with the aim to induce specific reactions and emotions in the viewers [29], by acting on the basis of a Predictive Aesthetics: a sort of planned, premeditated and subliminal aesthetic conditioning, able to influence, orientate, direct and drive the aesthetic preferences of the public, because that relies on the hedonic need of the viewer, and on the induction of Aesthetic Pleasure [30]. The predictive analysis of the artworks’ Beauty, based on the knowledge of compositional elements capable of activating the Beauty recognition and stimulating the Aesthetic Pleasure in the perceivers, might allow the artists to operate according to the Aesthetic Precognition, to such an extent to modify their artistic creativity in order to influence the aesthetic preferences of the viewers. So it would be possible to develop a Precognitive Aesthetics based on the predetermination of aesthetic tastes and preferences of the public towards the artworks, but also to build a specific technique of aesthetic persuasion able to provide the artists with the know-how through which activating the brain areas involved in the Beauty appreciation, and inducing the desired aesthetic reaction in the perceivers: the knowledge of the brain reaction mechanisms towards specific visual stimuli, such as shapes or colours inside the artworks, would allow to condition the aesthetic appreciation and drive the aesthetic preferences of the public in predetermined way.

For this reason, the process of artistic creativity, unaffected expression of spontaneous emotions, could turn into a specific ability to catch in a intentional way the aesthetic preferences of the public, activating the desired reactions by the viewers: so the artist’s work would turn into aesthetic predetermination, by creating pieces of art predestined to be beautiful.

Indeed, founding a Predictive Aesthetics might be someway dangerous: the possibility of making a deliberate and artificial Beauty building, and the ability to attract and condition successfully the aesthetic preferences and choises of the public, based on the foreknowledge of the responsive compositional elements inside the artworks, responsible for the activation of Aesthetic Pleasure, might become a new artistry or an effective technique, strategically learned and implemented by the artists with the aim to influence the aesthetic judgment of the viewers, inducing an aesthetic premeditation able to inhibit and affect the creative freedom, and bringing about a leveling and standardization of the
artistic production on a steady beauty, a sort of white noise that could stifle the spontaneous expression of artistic creativity. In fact, the creative inspiration or impetus that drive the artist might be affected and conditioned beforehand: through the foreknowledge of the brain activation mechanisms of Aesthetic Pleasure, an artist could become the creator of a conscious, intentional and premeditated aesthetics, depriving the artwork of its status of autonomous set of meanings, susceptible to subjective interpretation by each individual.

The Aesthetic Precognition could be certainly an interesting research perspective from a scientific point of view, because it is situated at the intersection between Experimental Psychology and Empirical Aesthetics, but this new search field could upset the dynamics of valuing the artworks, giving more importance to the aesthetic judgement of the public rather than the art experts: public might be influenced in premeditated way by the artists through Aesthetic Precognition techniques, and this would revolutionize at last the Art Market. In fact, the possibility of establishing a Precognitive Aesthetics might be dangerous for the current Art System: the predictive formula of the artwork Beauty could influence not only the aesthetic judgment of the public, but also the artists’ work. An artistic talent might be built on the precognition of the aesthetic preferences of the public: thanks to the knowledge of compositional elements capable of influencing the activation mechanisms of Aesthetic Pleasure, an artist could be able to create ever-beautiful artworks in order to satisfy and gratify the aesthetic tastes of the public all the time [31]. For this reason the Aesthetic Precognition could influence the creative freedom, inducing the artist to create artworks according to these predictive criteria.

Through the Aesthetic Precognition an artist could suit perfectly the tastes of the public, predetermining and anticipating the aesthetic choices of the viewers, with the aim to reach an universal and absolute Beauty. This Beauty-centric process of valuing an artwork might be able to claim a different market value for the artworks, or even change the value assigned so far. In fact, the creation of a new market value for an artwork, based exclusively on its real Beauty, recognized and accepted by all (not only by art experts), besides to modify the creative processes of artistic work, could revolutionize also the current conventional rules of valuing the artworks, and the evaluation criteria implemented by the art influencers, such as critics, curators, art dealers or gallery owners, who manage the Art Market nowadays, not always corresponding to aesthetic criteria.

5. Conclusions

The Aesthetic Precognition can certainly pose a threat to Creativity, which through the foreknowledge of techniques of stimulation of the Aesthetic Pleasure could be influenced, conditioned and distorted, making artists less spontaneous and free: Creativity might be reduced to a mere operation of behavioral marketing aimed to capture the public favor, with a result of determining a precise orientation of artists’ work. But, on the contrary, Aesthetic Precognition could also represent an opportunity to improve the understanding of the Art fruition dynamics, getting a better awareness of the human creative potentials.

Our investigation has not been completed yet, but it is only at the beginning: next step will be to identify the Aesthetic Algorithm able to describe in mathematical terms the process of Beauty recognition, the aesthetic appreciation dynamics, and the mechanisms of activation of the Aesthetic Pleasure in the perceivers: this algorithm could support the development of a psychological theory of aesthetic behavior, connected on one hand to the neurophysiological operational mechanisms of human brain, on the other to the cognitive processes, without neglecting the role played by the individual unconscious.

REFERENCES


