



Empathize with my Gaze

Live Performance

Topic: Performance, Art, Design Approach, Communication.

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Abstract

Arts can use new fundamental technologies, shedding light on invisible dimensions of the artistic experience. Among these, the creative act is certainly the most hidden aspect. The 'Empathize with my gaze' project aims to deepen the fascinating and magmatic field of artistic perception. This topic has been investigated in previous studies by our research team. For example, by using quantitative assessment methodologies, the relationship between visitors and artwork in different contexts has been accurately analyzed. In this way, it has been possible to examine how a specific pictorial behavior would have brought the observer to follow a certain pathway in the fruition of the artwork. Within the field of Neuro-Aesthetics, this research line encourages scholars to examine further aspects, up to the specific moment of the creative act. In the first phase of this research, the observation of several paintings of Michelangelo Merisi da Caravaggio aims at investigating the ways in which the narrative path of this artist could influence the fruition of his masterpieces[1]. In this phase, the creative act of a contemporary artist is explored with the eye-tracking methodology. The possibility to share the experience of the artistic creation would reduce the physical and metaphorical barrier between the artist and his public. In this way, in fact, the artwork is presented while it is created through the artist's gaze. The method consists of a portable eye-tracker, which can record the eye movements and can draw these movements bringing out the number of gazes, the micro-movements of eyes, the visit count on a specific area of the painting, the number of fixations on a single specific point of the work of art. With wearable eye-trackers, the artist will paint on the spot on a transparent panel. Therefore, the artist will share the creative act and its outcomes with the public. So, the fruition of an artwork is enriched by new dimensions, which are undoubtedly among the most substantial of the whole pictorial creation: the eyesight and the cognitive processes which are linked to it.



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Key words: Eye-tracking, Cognition, Fruition of Art, Neuroaesthetic.

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Empathize with my Gaze

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Live performance: **Francesca Di Martino**

Premise



Arts can use new fundamental technologies, shedding light on invisible dimensions of the artistic experience. Among these, the creative act is certainly the most hidden aspect. The '*Empathize with my gaze*' performance aims to deepen the fascinating and magmatic field of artistic perception. This topic has been investigated in previous studies by our research team. For example, by using quantitative assessment methodologies, the relationship between visitors and artwork in different contexts has been accurately analyzed. In this way, it has been possible to examine how a specific pictorial behavior would have brought the observer to follow a certain pathway in the fruition of the artwork. Within the field of Neuro-Aesthetics, this research line encourages scholars to examine further aspects, up to the specific moment of the creative act. In this work, the creative act of a contemporary artist is explored. The possibility to share the experience of the artistic creation by showing the artist's eye-tracking data would reduce the physical and metaphorical barrier between the artist and his public. In this way, in fact, the artwork is presented while it is created through the artist's gaze. With wearable eye-trackers, the artist will paint on the spot on a transparent panel. Therefore, the artist will share the creative act and its outcomes with the

public. So, the fruition of an artwork is enriched by new dimensions, which are undoubtedly among the most substantial of the whole pictorial creation: the eyesight and the cognitive processes which are linked to it.

Keywords

Eye-tracking, Cognition, Fruition of Art, Neuroaesthetic.

1. Background

1.1 Eye-tracking and Art

The eye-tracking technology has been used in the course of recent studies, and for several years, to understand more scientifically attentional and cognitive processes that guide the experience of artistic enjoyment. Going beyond the role of marketing research support technology, eye-tracking in few years has become a tool for increasingly sophisticated studies on the interaction between observers and artworks in many contexts, many of them ad-hoc built, few others "ecological", where the artwork was observed in its original context.

The study of the artistic enjoyment by investigating ocular fixations starts from afar. In 1935, Buswell asked 200 participants to look at 55 different types of paintings: his research brought the result that the distribution of the fixations was closely related to information that the scene described [1]. Since then, other major studies have dealt with this topic, particularly in the field of Neuroscience, and were recently classified as part of the so-called Neuroaesthetics. More recently, an analysis of attentional processes and especially the appreciation of artworks using eye tracking devices was carried out at the Museum of Arts of Indianapolis (2011)[2]: the experiment involved the observation of a single artwork, the *Lobby Hotel* of Edward Hopper, for the first time in an ecological context. In 2015, the research group led by F. Babiloni investigated, with the help of an eye-tracking device and a wearable EEG, the appreciation of a large number of paintings by Tiziano Vecellio, during an exhibition held at the Scuderie del Quirinale in Rome [3].

In other studies, the paintings were presented in digital format to the observer equipped with an eye-tracker: these studies brought important results that laid the theoretical foundations for this type of research. Worth to be mentioned in this case are the studies of the research team led by David Massaro from Università Cattolica di Milano [4], as well as the research conducted by Rodrigo Quian Quiroga and Carlos Pedreira, respectively from the University of Leicester and the University of Magdeburg [5].

Our research group started in 2014 a study on the artistic perception of the works of Michelangelo Merisi da Caravaggio using a wearable eye-tracking device in ecological

environment, i.e., watching at the real artworks, possibly in the original context the artwork was conceived for. The analysis to date involved more than 100 people to investigate the pictorial behavior of the seventeenth-century artist that, working as a director, involve the viewers to the extent that most of them perform the same eye scan path on the painting [6].

Starting from the study described above, we used the same tool to communicate the intimate features of the creative act by means of a live artistic performance. This time is the artist that wears the eyetracker, and the audience of the performance can look at what the artist looks at.

1.2 Sharing the experiences

Sharing the experiences of interaction between people and things, as well as between people and people, has been at the center of the new communication methods since a quite long time. Nowadays it is known that the results of the interaction studies are a valuable design support in many fields of scientific knowledge and, finally, also in the field of humanities.

There are many domains in which the techniques of the communication have been applied for sharing the quality of the experience. Among them, one of the most fascinating is undoubtedly cultural heritage.

In this work, we investigate the possibility of using eye-tracking data as the mean by which explaining and communicating the interaction between the artist and the artwork. In this context, we want to understand the ability of expressing the artist interiority using dynamic visualizations of the eye-path.

This same research group has investigated in various experimental occasions the usage of innovative methods for telling the fruition experience of some artworks through the creation of maps of the observers' eye movements, their dynamic reproduction, and their physicalization [7]. These representations have allowed us to share with the other observers the fruition behavior in different forms.

Using the eye-tracking information to communicate the fruition experience has been leveraged also in other major projects, such as the one called *Telling Time* at the National Gallery in London [8]. Using an eye-tracker, the eye-tracks of the gallery visitors were collected and screened out, thus combining at the same time data collection and dissemination, creating an added value since the very beginning of the experimental session.

Besides the oculomotor data, also other psychophysiological metrics have been involved for sharing the fruition experience, such as those used by Ram et al. to represent the behavioral characterization. Data have been modeled to build so-called "Behavioral Landscapes" panels. The use of geographical localization methods and the inclusion of psychological metrics has permitted the creation of three-dimensional information supports

that reflect the changes in the subjects' behavior [9].

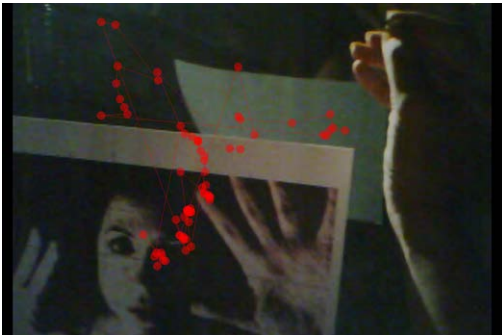
These studies show different dissemination approaches based on psychophysiological data for the fruition experience. In this work, we want to take inspiration from that for sharing this time the experience of the creation act, from the artist to the artwork observers, creating between them a complicity link.

2. The “Empathize with my Gaze” performance

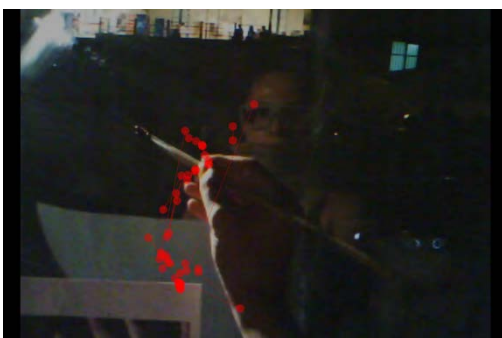


The live performance "Empathize With My Gaze" presented at the Generative Art Conference 2016 has the aim of reducing the barrier between the artist and the audience, through the sharing of the artist's gaze on the artwork during the creative act, so that the audience can appreciate such a fascinating generative moment from a perspective that is nearer to the artist's one.

The live performance involves a painter equipped with a wearable eye-tracker and captured by a camera placed in line with the artist's perspective, i.e., pointing the canvas.



The artist paints on the left side of a special support, made by two equal-sized parts. The left part of the support is a transparent canvas where the artist paints on. The audience can see the results of the artist's painting act from the other side of that transparent sheet. The right part of the support is a screen where the camera's video and the artist's eye-tracker scan-path is projected on, so that the audience can see both the artist's gaze and the ongoing work from the artist's perspective.



The artist's eye movements communicate intimate features of the creative act, and by looking at the artist's scan-paths the audience can participate to these cognitive aspects linked to the *hic et nunc* of that specific creation moment.

The graphic representation of the artist's scan path is rendered through the sequence of the fixation points of the artist on the canvas, determining this way at the end of the performance the sequence of the areas crossed by the artist's gaze.

After the completion of the artwork, several eye-tracking measures are shown for each painting area, reflecting the cognitive processing behind the painting generation: the time to first fixation (i.e., the moment where for the first time the artist has a fixation in the considered area) and the number of fixations, indicating the relevance according to the gaze intensity.

The subject of the painting is a self-portrait of the artist. This is another very intimate communication act, since the artist is going to share with to the audience how she sees herself: this is a further step forward in building an empathic link with the audience, where the artwork is a mean of self-definition towards the audience's eye.

3. Conclusion and future work

The goal of this work is to experiment an art generation performance aimed at reducing the empathy gap between the creator and the observer of an artwork, putting the emphasis on the communication of the creation experience in an innovative manner.

The sharing of the experience in the interaction with artworks described in this work acts on the two dimensions of immanence and transcendence [10]. The performative act, by its nature, describes a dynamic action of communication, going beyond the limits related to the final result.

The final result, the immanent, raises a further meaning resulting from the sharing of the act, by increasing or even changing the perception of the work by the observer.

The spectator, which is the depositary of the subtended message of the artistic operation, becomes even more aware of the creative act and of the intention which led to creation itself, watching through a physical and metaphorical screen that acts like a window on the artist and on his creativity.

At the center of the study is the empathic level, capable of resolving in a moment the deep bond between people and creative act, and to enhance the experience of sharing. The focus thus shifts on the relationship between artist and audience; in this sense the artwork is the means by means of which objectifying such a relationship.

But, as described above, the work is only part of the empathy link construction. The moment of creation shown through the artist's subjective perspective is the secret that is revealed to the participating audience. The artwork will be gradually revealed, through a double perspective, the front and the backstage.

The eye-tracks reveals very personal elements of the artist's creative process. This performance scheme allows to represent the artistic phenomenon in way that is different by the classical scheme defining the aesthetic behavior (user -> artwork <- artist), providing a new point of view in the observation of the works.

Beyond the beauty of the performance act that puts in the center the artist and his public, accomplices of the same creative moment, the work presented in this paper leverages the representation of biometric data in order to improve the empathic level that plays such a

big role in the efficacy of any communication form.

Thanks to the ongoing contamination between scientific and humanities research, eye-tracking is only the first of a plethora of means to be explored for the improvement of the empathic level communication. We plan in the future to use other biometric sensors signals and to set-up experiments for evaluating the best solution from a user experience perspective.

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