Looking at Ophelia: A comparison of viewing art in the gallery and in the lab

Art could be thought of as a uniquely human trait, as an act of making something special. Those who have the skill to create accurate representations of the world around them, and imbue their chosen media with beauty and truth, have been revered for centuries and their abilities to use and ignore the rules of physics within their work has led to insight into how the brain works. As we understand the processes involved in visual perception has progressed over recent decades, we know relatively little of this inherently human act of viewing art.

The subjective qualities involved in the experience of art have hindered extensive scientific study in this area. The great variability involved in personal experience and the natural environment presents difficulties for researchers attempting to unpick the web of interacting factors involved; a traditional approach of controlling the variables so that only one is altered can be impractical. At the same time, those coming from an arts and humanities perspective may be wary of such a reductionist approach, thus the foundations of our understanding the perception of art has been built slowly. Notably, research conducted by the likes of Ramachandran & Hirstein (1999), Livingston (2002), and Leder et al. (2004) has progressed what we do understand of the perception of art. Perhaps the most well known work is that of Zeki (1999), who has also investigated the connection between neural activity and visual stimuli using fMRI to see areas of brain activation when participants viewed beautiful, neutral or ugly images. Eye tracking – i.e. identifying the point in space at which subjects look at each time – has also become a useful tool within visual perception research. The earliest eye tracking studies in art, by Buswell and Tarkus, showed that the areas of an artwork which hold the most salient information are attended the most, aiding the viewer in completing their tasks, such as being able to answer questions, or gaining the general idea of what is represented within the artwork. Berlyne proposed that the pattern for viewing images was not only based on gathering information but could be also separated into two types: global and specific areas in search for more particular information. Other influences such as the individual differences of the viewer, the familiarity of image and any alterations from what was expected can also change the gaze patterns. As eye movements are related to the information provided within the artwork, it can be extrapolated that they are also related to perceptual processing and cognition.

While we know that task influences how we look at art, it is difficult to assess the purpose or inspiration of an original artwork as none has been made explicitly. From a museum’s point of view the authenticity of an original artwork is key to creating that specific ‘kind of experience.’ With increasingly higher resolution images of artworks being made available to us through the internet, it could however be argued that the details seen within an original can be captured more accurately and in some cases be seen more clearly within their digital counterparts. Museums and art galleries document their collections for posterity but some within that field would argue that these are completely different objects rather than facsimiles (for different perspectives see 22,18,8).

Previous research has suggested that while there is not a significant difference between the cognitive responses made to an original artwork and a digital representation, there is a difference in the affective responses made towards each of these. If these responses differ, could it be that the viewing strategies also differ? Or more simply put, do we look at originals and digital images differently?

After conducting an eye tracking study within Tate Britain using Ophelia by Millais, we decided to compare the eye movements of participants viewing the original painting to those looking at a digital image of the same artwork, to investigate whether these different presentation formats would influence eye movements, and in turn people’s experience. Millais was one of the founding Pre-Raphaelite artists and painted this iconic image of Ophelia in 1851-1852. Depicting the death of the Shakespearean character, this painting holds much symbolism within the details, with each flower representing a different virtue or message, such as the daisies for innocence and the poppy for death, with which the depth of meaning is expanded.
In the study at Tate Britain six participants were guided around the galleries and were asked to look at Millais’ Ophelia for a few minutes, while wearing a mobile eye tracker (ASL MobileEye). In the Lab study eight participants took part and viewed a digital image of Millais’ Ophelia painting (see Figure 1) on a monitor within a booth. The digital reproduction was scaled to fit within 1024 x 768 pixels without cropping or stretching and was shown on a black background. Participants were asked to view the image for 1 minute without any particular task. The participants’ eye movements were recorded using an EyeLink II in remote setting.

Figure 2 shows the typical fixation patterns for participants within the lab and within the art gallery. While figure 2a shows all fixations in the whole 60-second trial, figure 2b only shows the first 30 seconds of this participant’s trial. Due to participants’ freedom to constantly move within the art gallery to approach the artwork and adjust their viewing angle and distance (illustrated with the series of snapshots in figure 2c), showing all fixations in a static image is difficult to represent accurately, thus figure 2b shows a sample of 30 seconds when one participant’s gaze was directed at the painting alone. Yet from these two examples, as well as the data from the other participants, a distinct fixation pattern can be appreciated. For the lab participant, the majority of fixations are clustered over Ophelia’s face and hands, while for the participant at Tate Britain they are mostly over the undergrowth behind Ophelia. The fixation pattern in the lab environment is expected given the evidence from psychophysics experiments showing that attention is focused on faces.14,15,23

Figure 1: Digital reproduction of Millais’ Ophelia.

Figure 2. a: Typical pattern of fixations in the lab experiment. Each fixation is marked with a blue circle. b: Typical pattern of fixations in the gallery. c: Progression of movement while visually exploring Ophelia at Tate Britain. In each panel, the red cross marks the center of fixation.
Moreover, the onset of viewing a digital image directed to get closer and inspect the painting. Artwork where the visitor has been drawn or of details follows a gradual approach to the same in the lab, we just see pixels. And unless one have telescopic vision this analysis contributes to the context in which Ophelia.

In other words, if we zoom into details in the museum, we see the brushstrokes and the texture of the paint, whereas if we do the same in the lab, we just see pixels.
Today with the Internet and the increasing use of digital media, it could be asked what is the point in visiting a museum or gallery to view art? One can access many artworks on the Internet along with the relevant information, but these are all just digital images, representations of the real thing. It could be argued that seeing the genuine piece of art really makes a difference to the experience, and indeed from this study alone, and for at least this one artwork, viewers do look at the original differently than a digital representation. Whether it is the texture and physicality of the artwork itself, the gallery environment or both that directs this wider exploration of the painting, it is clear that through the experience of the original the viewers are looking for more than just the most salient features. While digital images can capture increasingly high detail to the point where the naked eye cannot see, they often lack this propensity to encourage the curiosity of the viewer; thus museums, art galleries and the art and objects they hold, still have the power to enthral their patrons and make us look at the world in a different way.

REFERENCES