

Does CGI Have A Future In Art? And Is It Photorealism?

Essay Topic - The invention of photography in the 19th century brought about the opportunity to create an absolute copy of an image of the physical world. Western painters, until then mainly concerned with “imitating” nature, were forced to reassess their contribution to art. Compare and discuss the advent of photography with the recent phenomena of 3d ‘photorealism’ – Should CGI (Computer Generated Images) aspire ultimately to imitate reality?

Introduction:

Painting was the primary medium available for recording and preserving high fidelity images before the development of photography (Bajac, Wakefield). Even though photography is a superior medium for taking an absolute copy of the physical world, it has not replaced painting. Paint and many other types of "low-tech" media are still in wide spread use today, but their uses have diversified with cultural and philosophical change and the introduction of new types of media such as photography.

Similarly, computer generated images (CGI) offer a medium that can be used to create a copy of the physical world that is superior to photographs with the ability to reproduce the visual effects achieved through traditional artistic media. In addition the ability to rapidly and easily communicate digital images all over the world means that CGI artworks can readily be seen by many people, allowing the artist unparalleled access to their audience. As a result CGI has the potential to impact on painting, photography and art. (Rinder)

If we contrast the history of painting with the history of photography and look beyond the mere technical or physical natures of these media we can see that photography has followed the evolutionary process that occurs with any new visual medium (Gray 1986). If we consider the issues that have surrounded the acceptance of photographs as a valid art form, we must also question whether CGI will be readily accepted as art by both the art world and by the general community (Mueller).

To attempt to answer these questions and the question of the future of CGI and 3D photorealism, we need to review the history of both paint and photography and reflect on their aesthetic evolution over time.

Western Art Pre-photography – A Kaleidoscope View

When we consider the history of art we commonly categorise artworks into periods or schools based on the different styles that they display. The rise and fall of different art movements viewed in isolation appears haphazard, but visual arts historians describe the development, progression and flux that occurs through artistic periods as a mirror for human culture and philosophical ideals. (Coplestone, Freeman)

Examination of the history of western art (Figure 1), prior to the invention of photography, shows that in the lead-up to the 19th century, painting and other artistic media were primarily focused on the exploration of the nature and ambitions of humans, the nature of the world and our place within it (Copplestone).

Many aspects of the nature of humans have been subject artistic exploration from the depiction of religion in medievalism (Figure 3) to the passionate construction of ideals and the search for scientific knowledge that typified the Renaissance (Figure 4). The Renaissance gave way to Baroque, Rococo and Romanticism (Figure 5, 6 & 7) in the search to further illuminate the nature of humans through the expression of emotions and aesthetic soaring ideals. The progression and competition between these artistic movements illustrates that it is the socio-political climate and the changing ideologies prevalent in a civilisation (zeitgeist) that drives these changes. (Copplestone, Freeman)

The growth and development of science was the most profound ideological change within the 18th and 19th century (Copplestone, Wolniewicz *et al*, Freeman, Jameson). Instead of explaining many everyday occurrences through mysticism or religious belief, science became the new method for viewing and interpreting the world (Jameson). Science was also a key contributor to the progress of the industrial revolution, which wrought many changes in human civilisation (Copplestone, Wolniewicz *et al*, Freeman). This burgeoning belief in the new truth, science, enhanced the rise of Realism and Naturalism in art. With Realism and Naturalism, art moved its focus from the subjective and emotional to the objective and measurable like so many other areas of human endeavour in the 19th century. This drive towards objectivity also strengthened the desire for an objective scientific technique to accurately record images, to be able to permanently fix the image created through the camera obscura, independent of the emotional and the subjective and without artistic skill. (Bajac, Wakefield)

Photography – The Objective Scribe

The invention of photography arose from the desire to be able to create an accurate depiction of reality without the requirement for artistic talent (Bajac, Balcome, Wakefield), but in its early days photography still required considerable technical and scientific knowledge and skills (Figure 2). Despite this photography rapidly became a widely used, and relatively inexpensive portrait production method through the establishment of photographers studios (Bajac, Wakefield). Photography was also well utilised as a record keeper in industry and medical research (Bajac). For example Dr Hugh Diamond, a psychiatrist, took photos (Figure 18) of patients at the Surrey County Asylum in an attempt to establish the external symptoms of madness (Bajac).

In its early stages of development photography was dogged with technological issues with many different systems being invented after Daguerre first announced the successful capture of an image in 1839. The spread of photography was limited by these technological constraints, such as the cumbersome *collodion process* which used a glass plate coated with wet chemicals as the negative. These problems were

resolved by George Eastman who developed the Kodak Box Camera and flexible film in 1888. From this date, photography rapidly became a common everyday tool for the general population to record their lives and memories (Bajac, Wakefield).

These developmental problems with photography are similar to the technological issues that still plague CGI today. For example in the first stage images had to be created out of text, whilst in the next stage we had to understand and be able to use a complex mix of mathematical and programming skills wish to produce CGI. Now we have a range of sophisticated pre-programmed tools available but they can still be difficult to use due to the sheer complexity of the programs and the lack of user centred design principles being incorporated into the user interface. In addition our work may suffer due to the sameness of the basic elements that exist within the tools. (Johnson, Mueller, Gray)

The Impact Of Photography On Western Art *or Recorder To Artistic Tool – Evolution Of A Medium*

Before we can consider the impact that photography has made on art, we must consider the nature or definition of art. In discussions of this question many authors start with a dictionary definition however all end up at the same point, that there is no single, cut and dried definition of art available in spite of the centuries of discussion and debate (Balcombe, Laurence, Mueller, Dolores, Wakefield, Wolniewicz *et al*). In reviewing some of these discussions it is possible to identify commonalities and to construct the following working definition:

Art should display one or more of the following:
imagination, creativity, originality, meaning, style, self-expression and social context.
Art should contain one or more of the elements of design:
colour, composition, line, form and space.
Art should have aesthetic beauty

(Paraphrased from Mueller and Wolniewicz *et al*)

Before the advent of photography many artists were employed to record images of events or people without any consideration about the artistic outcome of the drawing of painting process. In fact, at this time a good "artistic outcome" was often measured by the accuracy or fidelity of the image compared with the original scene, with no consideration of the originality of the image or the self-expression or style of the artist. As a result, the introduction of photography impacted significantly on the livelihood of these types of artists and led to questions regarding the nature of art and the role of the artist. This led to artistic periods which were not concerned with the literal representation of reality such as, impressionism, expressionism, fauvism and cubism (Figure 8, 9, 10 & 11). (Bajac, Mueller, Wakefield)

Artists readily utilised photography, as they had used its early ancestor the camera obscura, to assist in the quick, permanent collection of images that they could use for later referral at their leisure. They were, and sometimes still are, loathe to allow photography to be defined as art. Photography is still often considered to be a cheat due to the rapidity and mechanical aspects of its production coupled with the perception that the talents or skills required for photography are those of the technician - not the artist. (Bajac, Wakefield)

Much of the modern discussions defining art are actually about differentiating painting and other traditional artistic media from photography. Whilst there are many different ways in which “Art” is defined, one of the enduring ones that arose out of the invention of photography and its impact on painting, is the fact that “Art” was often defined by NOT being photography. “Art” being considered as not being merely mechanical but requiring human emotion and intellect to create. For this reason the acceptance of photography as “Art” in art has been problematic.

Photography has had a significant effect on art, which can be summarised as follows:

- It was an *aide de memoire* for artists. This allowed the artist time to study complex scenes and sometimes reduce portrait sitting times.
- Painting was liberated from its role as the primary image recording method. This allowed artists to really explore the meaning of art and their own creativity.
- It allowed artists and others to view artworks from remote places without the need for travel.
- It became a new artistic medium in it's own right.

(Based on Wakefield)

CGI – Photorealism And The Future

There is high level of criticism targeted at computer generated art (Mueller, Wolniewicz et al, SpecialtyArts.com) . As with photography, many of the CGI images that are currently blithely labelled “art” do not meet the broad definition of art. They may be technically excellent images, photorealistic or they may be visually stunning, but if they can be readily produced by any person with a computer then they are probably not art. If they are an image that does not involve our emotion and intellect then they are also probably not art. This is most clearly stated by Robert Mueller in his article about the nature of visual arts: "There is a vast world of simple reproduction or pure design which, is not art--although very interesting and original."

The evolution of a visual arts media is well illustrated by the history of photography as it transitioned from a passive recorder to a medium with its own aesthetic values. The developments in film are another example of this evolutionary process as detailed by Gray in his essay on the "Aesthetics of Computer Graphics"

" The developments in film from then to now is a casebook example of the evolutionary process of a medium:

At first film had no aesthetics of it's own. It was a passive eye recording the world, a window in time to some past performance in a musical or stage-play. It took some twenty years for film to develop its' own unique aesthetic."

(Gray)

CGI is still in the early stages of its evolution as a visual medium or we could say it is still in its technological infancy. Whilst it is still struggling with proving its ability to produce photorealistic copies of the world, it is an ideal medium for artists to explore the impact of digital technology on our lives. Based on the examples provided by similar technology based visual media, photography and film, CGI is likely to evolve and blossom into an accepted artistic medium in the longer term (Rinder, SpecialtyArts.com, Mueller). In support of this view we should consider some recent

CGI art events. CGI has recently been the centrepiece of three high profile art exhibitions: “BitStreams” (Figure 12) and "Data Dynamics" (Figure 13) at the Whitney Museum of Art in New York and “010101” (Figure 14) at the San Francisco Museum of Modern Art (SFMOMA). Quotations from the curators indicate that there reasons for assembling these exhibitions is there belief that digital media and CGI is a rapidly changing artistic medium which reflects our current digital and communications driven culture (SpecialtyArts.com, Rinder).

The interactivity that can be created with CGI and digital images brings a unique dimension to art. As such the impact of interactivity on artworks is an area of major exploration and experimentation in art today. Some examples of this new area of art are "Tap" (Figure 15), "@Bots" (Figure 16) and "Gammatron".

This review indicates that the question of "***Should CGI aspire ultimately to imitate reality?***" should be rephrased to "Can CGI achieve imitation of reality?" and "Can it then progress beyond this first phase of evolution to develop an aesthetic of it's own?". I believe that the true value of the CGI lies not in its ability to imitate reality, but in its ability to modify imitations of reality and to create new and different realities. It is also uniquely able to provide unprecedented levels of interactivity with artworks. If we consider the use of paint and photography as tools used in the production of images and the development of film aesthetics we can see that the development of CGI aesthetic is the logical maturation route of visual media.

CGI should aspire to create new images, rather than to accept a role where it is merely used to digitally duplicate or replicate reality, just as photography, which was originally invented as an objective recorder to replace artists, has triggered a creative revolution. In closing, photorealism is not enough; CGI can and should aspire to be a visual arts medium in its own right.

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