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Collaborative Innovative Design of Glitch Art and Digital Video Interaction

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Abstract:
The fields of digital art and visual design have undergone significant changes in our history, and these changes have manifested themselves in endless technological and aesthetic contexts. As a result, people have noticed that technology is frequently used in contemporary art and design works, and the advent of digital technology has led to the emergence of new artistic expressions in these works. Based on this, it explores new ways in which glitch art interacts with digital images, analyzes how to combine this artistic expression with the way digital images interact, and how it affects the visual culture of our time.

Keywords:
Digital Image, Visual Design, Glitch Art, Interaction Design

1. Overview of Glitch Art

1.1. The Concept of Glitch Art

The term Glitch Art may be derived from the Yiddish word for "sliding". Regarding the word glitch, it was first mentioned and used by NASA astronaut John Glenn to describe the phenomenon of a signal image transmission error. John Glenn, the first American to circumnavigate the globe outside the atmosphere, explained: "Another term we use to describe some of our problems is glitch." [1] Literally, glitch is a voltage spike or change in current, an extreme, unpredictable, and potentially fatal result. If you spend time on Pinterest or Behance, you know what glitch art looks like. Some professional YouTube bloggers have pages filled with tutorials on how to make glitch art.

At the GLI.TC/H (Global Federation for the Development of Glitch Art) conference in 2011, Chicago-based new media artist Nick Briz tried to connect it with various other expressionist visual forms of the 20th century, including cubism. ism and pop art to historicize it. In his view, glitches, even if deliberately provoked, always hold a degree of chance, at least from a human perspective, and while computer language glitches create seemingly random and chaotic ways of visual-auditory decomposition, at the same time Art is also created in this way. Donnie Scott, a mathematician and artist based in Cambridge, UK, posted on his website an experiment in creating glitch

art and explained the process of making the audiovisual: “It was an unexpected moment in the system, Should draw our attention to the system, which may even lead us to pay attention to aspects of the system that might otherwise be overlooked, glitch art is a moment of intentional exploitation by the artist anytime, anywhere, by reconnecting the visual to the electronic glitch or establishing order. Thought-provoking glitch visuals.” (Note 1)

John Cage was a pioneering artist with outstanding achievements in the field of experimental music. John Cage developed a systematic approach to creating music using elements from the I Ching through serendipitous experimentation. (Note 2) This method of deliberately disrupting the system is no different from that developed by glitch artists [2]. The inherent openness of glitches makes glitch art difficult to define. Although failures can occur strictly in computing systems, most things called failures in the art of failure are not purely informational and only make sense through the overview of the information agents and subordinates involved. Glitch is post-procedural (a kind of interruption of procedural flow), so it is dialectically connected to the media propagation model of information (information source-encoder-channel-decoder-destination), while incorporating contextual interpretation process and create meaning [3].

Kim Casco’s article “The Aesthetics of Failure” provides a brief history of musical glitches and suggests types of accidental computational glitches, including “glitches, bugs, application errors, system crashes, clipping, aliasing, distortion, quantization noise, even from the computer sound card” [4]. For Casco, these failures in digital technology have become material that composers can use in the creative process. In doing so, a number of recent works of art have emerged that constitute a unique “failure aesthetic”. In this artistic practice, meaning is deconstructed and reconstructed. Michel Betanconte, who studies glitch art from a visual arts perspective, links Casco’s type of failure to glitch practice in computer graphics and digital image technology. He sees a historical avant-garde practice that parallels experimental and extended cinema, making visible the materiality of the film and television medium by focusing on the operation and failure of cameras, lenses, film grain, flicker, etc. For Michel, “resolution, compression, artifacts - and all kinds of technical errors in any reproduction technique” can be seen as faulty programs that correspond to Casco’s list. By revealing the importance of digital media, artists can "violate the digital code of the halo”, that is, to expose “the limitless fantasy of self-creation and the ability to create value.” [5]. In other words, using a malfunctioning program risk attracting criticism and becoming a political gesture. In Michelle’s view, critical media practice and fabrication awareness is entirely dependent on how the artist uses the glitch program, or they may simply decide to deal with the glitch for aesthetic reasons.

Note 1: Downey J. Glitch art[J]. Ninth letter, 2002, 118. Downey Scott’s personal website http://www.beflix.com

Note 2: Music of Changes is John Cage’s solo piano piece. It was composed for David Tudor in 1951, and it was Cage’s first random instrumental work. The compositional process involved the use of Chinese Decisions made by the Oracle I Ching are applied to large graphs of sound, duration, dynamics, velocity, and density.

1.2. AI Automation: the Demise of the Visual Arts?

Artists are often at the forefront of their time, reflecting on the culture, politics, and technology of their time. Over the past few decades, audiovisual media and computers have gradually assumed an increasingly important place in this artistic field still

dominated by classical media forms and genres. Today, with the rapid development of artificial intelligence technology, the technology of computer-generated images is more and more widely used. Generative adversarial network (GAN) [6] has attracted attention from academia and business since it was proposed by Ian J. Goodfellow et al. in 2014. With the rapid and in-depth research of GAN in theory and model, it has more in-depth applications in computer vision, natural language processing, human-computer interaction, and other fields, and continues to extend to other fields, especially the field of art. Among them, GAN has achieved great success in image generation. GAN continuously improves the modeling ability under machine learning, and finally achieves high-quality image generation.

The widespread popularity of the Internet has had an unprecedented impact on the visual arts. The public has obtained a large amount of image information through the Internet, and at the same time has more convenient access to art. At first, people were exposed to a visual experience that they had never had before through mobile smart devices, but over time, people were no longer satisfied with the visual impact brought by mobile devices, and gradually began to become numb. If classical media is re-disseminated through the Internet, the details of the works will be compressed. Another key factor that makes visual art gradually lose its impact is the birth and combination of interactive art and immersive experience, both of which are the product of the combination of installation art and electronic technology. This new situation is subversive to the status of classical media. The viewer pays more attention to the interaction between people and works of art, and participates in the creation of art. This concept of integrating people and works of art is contemporary interactive art. The root cause of the trend.

1.3. Aesthetic Analysis of Glitch Art

Paul Virgilio is often quoted in discussions of glitch art, writing: “However, we need to be clear that glitch art is generally not an act of trying to penetrate a machine, or detonate it from within, dismantling the system. to make it.” [7] The real damage is irreparable. In fact, any real sabotage runs the risk of getting out of hand to the point of causing harm to the saboteur. In this case, the popularity of the undo function in fault handling practice makes it a pseudo-break. This is not to say that the resulting public presentation of the resulting document on some occasions will not disturb, annoy, or interrupt the viewer's flow, and therefore will not break the entire presentation system. In fact, despite the fact that glitch art simulates destruction, it still loudly announces the popularity of digital representation [8] These and different examples confirm the fact that without the development of digital information, there is no glitch art, or only Those hallucinations caused by our own sensory deficits. Such contingency does not confuse our common vision with reality itself, so the increasingly digital construction is a key aspect that affects glitch art.

Another idea discussed at the point of origin of glitch art is to destroy the original aesthetic, as there is an undeniably divine aura surrounding the glitch artwork. Taking Wolfenstein 3D (a first-person shooter game) as an example, when using fractal-like technology, the original material in the game is sliced and chopped until nothing is left, only nothing is left. Shaped lines and particle motion. Game author John Carmack asked players to admit to their vandalism. The game authors chose to separate the man-made world from the real world and took their destruction seriously. John Carmack and his colleagues created picture after picture destruction and revolutionized the genre. In the ensuing time, the genre manifested itself as an

anarchic, destabilizing force. These artists strip brands and logos, modifying the style of glitch art until they are unrecognizable. They reveal the trend of glitch art in the digital age under a seemingly solid foundation. (Note 3)

Note 3: Wolfenstein 3D is a first-person shooter game developed by id Software and published by Apogee Software and FormGen. In mid-1991, programmer John Carmack made Hovertank 3D and Catacomb 3-D as prototypes in an attempt to make a fast 3D game engine by restricting gameplay and viewpoint to a single plane. Programmer John Romero suggested remaking the 1981 stealth shooter Castle Wolfenstein into a fast-paced action game after a design meeting prompted the company to switch from family-friendly Keen to more violent themes. He and designer Tom Hall designed the Carmack engine-based game to be fast and violent, unlike other computer games on the market at the time.

2. Analysis of Fault Art Creation in Digital Images

2.1. Processing Works with Video Editing Effects

With the invention of the computer in the 1950s, animation and imagery were incorporated into visual design, and new ways of communicating between them were born. Relevant design includes typography, color, layout, composition and carrier all matters combined with speed, hierarchy, texture, scale changes, sound and noise [9]. Whether in animation or video, the graphic art direction element is older, but still valid in digital media. In the production of animation and video, the visual designer is responsible for its visual concept, graphic form, rhythm, texture, association, meaning, in other words, everything involved in visual communication when using computational techniques. Digital video is very similar, and video artists have the same responsibilities as visual designers [10]. So, at the moment video is a reconfiguration and fusion of the complex concepts that exist between media and art. We can see that this fusion is associated with a large part of the work of art, allowing in this way to infer the themes of ideas expressed by the work and have the effect of expanding the senses.

The creation of Music Video reflects the diversity of sight and sound, creating a new form of narrative: audio-visual interaction. Audio-visual interaction is often non-linear, fragmented, juxtaposed or mixed with flat effects. It was popularized with the advent of music videos, so for many years it was also synonymous with music videos. The main means of communication that contributes to the popularization of music videos is through the Music Television Network (MTV) [11], but today, music videos, commercials, mobile music software, etc. are not uncommon. Artists use glitch art for the introductory film through MV, and the editing and production methods of the end credits are also popular in today's music video works.

As you can see, both digital art and computer technology are striving to merge works created in both fields and produce new results, so there is a wide range of linguistics, aesthetics, techniques and tools in production and work. Whether it is the possibilities that arise in the field of art and design, or other fields that those possibilities involve, such as science, technology, communication, etc. In this conceptual context, the boundaries of art and design are increasingly blurring and moving towards a hybrid discipline. Aesthetics and technology are at the heart of contemporary pieces that combine digital glitches and visual design. The most widely used digital image is currently the main form of expression for this aesthetic effect [11]. Through glitch art, the application of digital imaging and computer technology to music video creation has profoundly influenced the visual culture of our time.

2.2. The Birth of Video Interactive Works

Interactive video art in new media art is a new form of artistic expression that combines video, projection, and interactive technology, which not only brings sensory satisfaction, but also mobilizes human interaction, realizing the interaction between viewers and images. People are no longer satisfied with traditional art forms, and the rapid development of society and technology presents works of art with interactive forms and is welcomed by the public. In fact, Duchamp's work "Rotating Relief" created in the first half of the 20th century already has a sense of interaction. Since 2015, Japanese new media art group TeamLab has cooperated with famous Perth galleries. The business model of "art + technology + business" has been applied to new media exhibitions with great success. When the interactive technology gradually matures, a large number of interactive video works are presented, bringing people a new way of viewing works, breaking the previous viewing method of people standing in front of traditional works. Under the traditional viewing method, there is a certain distance between the work and the audience. What the audience sees is based on their own imagination, and more is the spiritual communication with the work. Interactive video works require the audience to participate, and the sense of substitution is stronger, so that the audience can participate in the experience and interaction while watching, which also enhances the attraction of the work to the audience. The audience's participation in the experience and interaction not only brings fresh feelings to themselves, but also contributes to the integrity of the work. With the enrichment of technical means, the development of interactive video art has become more and more diversified, and the audience also pays more attention to the interest of the works and the fun of their own interaction in the works.

3. The Expressive Feasibility of Glitch Art in Interactive Images

Interactive video works require the audience to mobilize all the senses they can mobilize to participate in the work, and the audience's body language is an important element in the creation of art works. Video works have undergone great changes from static photos to dynamic images, from plane display to space display. However, compared to simply watching and feeling when viewing traditional video works, interactive video works make use of the audience. The audience not only has an interactive relationship with the work but is also one of the creators of the work. The interactive experimental work "Hertz" makes rational use of the space, and the audience interacts with the work in the space: movements such as body shaking, and jumping have brought different changes to the work. When the recognition speed of the machine cannot keep up with the interactive state of the experiencer, it often brings another kind of beauty to the image - the beauty of malfunction, so that the space is skillfully used at this time. Currently, the work has an inseparable and close relationship with the audience and space, and the work is no longer a simple work. When the image is projected on the wall, on the floor, or on an LED screen, the viewing method changes accordingly. The audience can not only communicate with the works spiritually, but also use body language to interact with the works. The experience brought by the interaction to the audience is very different from the experience of watching traditional video works.

To sum up, glitch art comes from the times, develops with the times, and affects the times. At the same time, digital images gradually got rid of the shackles of traditional media, followed the progress of the times and the development of science and technology, and gradually highlighted their interactivity. In-depth research on the

relationship between glitch art and digital image interaction can not only form a corresponding aesthetic theory, promote the continuous upgrading and innovation of glitch art visual effects and concepts, but also promote the development of glitch art in the practice of digital image interaction from the perspective of application. Create better interactive art works of glitch images.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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