

The Evolution of Glitch Art from Origin to the Present

Diaa Eldin Tantawy

Associate Professor – Interior Design & Furniture Dept.

Faculty of Applied Arts, Helwan University

diaatantawy@hotmail.com

Amr Hesham Mohamed Emam El Halaby

Senior Interior Designer

ECG Engineering Consultants Group

halaby.jr@gmail.com

Abstract:

This research demonstrates glitch art as an emerging type of digital art. The research starts by defining the terminology of glitch, its origins and the philosophy behind glitch art, then moves on to defining different types of glitches and the different characteristics of glitches and means of glitch production. Also, the research demonstrates the historical background of glitch art and how the idea of embracing imperfection was present in different art forms throughout different historical periods, then moves on to the meantime and how glitch art is present in different types of media. And finally, the research demonstrates notable artists that are correlated to glitch art and some of their works.

Keywords:

Glitch – Glitch Art – Imperfection – Aesthetics of Failure – Digital Art.

Introduction:

The Glitch has been elevated to the prestigious status of having its own genre. However, there have been very few discussions on the practice of creating or capturing visual manifestations of Glitches in today's highly signal perfect media and pixel perfect computer interfaces. This seems paradoxical in relation to earlier trends of discussing qualities of media and is testament to the fact that we are becoming more silent as technology finds its own voice.

The aim is to find out what it is that drives visual glitch artists in their desire to create glitches and to seek an answer to the question, can the glitch be an effective medium in the 'pantheon of art forms? While Glitch Music has experienced a greater amount of exposure, other forms of Glitch Art have remained more obscure. Some have not been conceptualized as art at all. This dissertation aims to address this void and its surrounding issues.

Research Objective:

The research aims to demonstrate how glitch art originated and how it developed throughout the years till the present day, as well as a forecast for its future.

Research Feild:

Digital Arts.

Research Methodology:

- Analytical Discriptive.
- Historical.
- Experimental.

1.1- Definition and Meaning of Glitch:

1.1.1- Definition of Glitch & Glitch Art:

1.1.1.1- Terminology of Glitch:

- A small problem or fault that prevents something from being successful or working as well as it should.
- Cambridge Dictionary (2019)
- In Electronics: A sudden unexpected increase in electrical power, especially one that causes a fault in an electronic system.
- Definition of Glitch (2019)
- In Astronomy: A sudden discontinuity in the rotation of a neutron star.

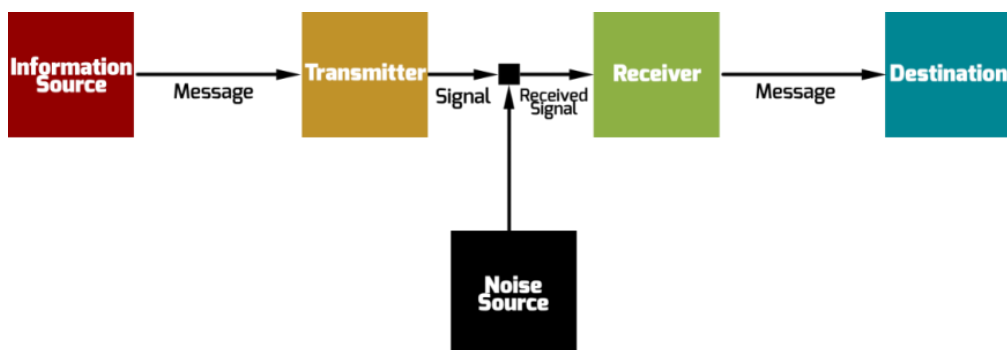


Figure 1- Visualization of the communication model as outlined by Shannon and Weaver (Visualized by researcher)

1.1.1.2- Glitch Art:

It is the aestheticization of digital or analog errors by either corrupting digital code/data, or physically manipulating electronic devices.

However, to go by the dictionary definition of the word “glitch” would be narrowing its scope too much. Even though this field of visual glitch exploration has a small following, the found glitches or the works created are vastly different. Moradi, Iman. (2004)

1.1.2- Philosophy & Manifesto of Glitch Art:

A- The dominant, continuing search for a noiseless channel has been – and will always be – no more than a regrettable, ill-fated dogma.

Acknowledge that although the constant search for complete transparency brings newer, 'better' media, every one of these improved techniques will always possess their own inherent fingerprints of imperfection.

B- Dispute the operating templates of creative practice. Fight genres, interfaces and expectations!

Refuse to stay locked into one medium or between contradictions like real vs. virtual, obsolete vs. up-to-date, open vs. proprietary or digital vs. analog. Surf the vortex of technology, the in-between, the art of artifacts!

C- Get away from the established action scripts and join the avant-garde of the unknown.

Become a nomad of noise artifacts! The static, linear notion of information-transmission can be interrupted on three occasions: during encoding-decoding (compression), feedback or when a glitch (an unexpected break within the flow of technology) occurs. Noise artists must exploit these noise artifacts and explore the new opportunities they provide.

D- Employ bends and breaks as metaphors for différance. Use the glitch as an exoskeleton for progress.

Find catharsis in disintegration ruptures and cracks; manipulate, bend and break any medium towards the point where it becomes something new; create glitch art.

E- Realize that the gospel of glitch art also tells about new standards implemented by corruption.

Not all glitch art is progressive or something new. The popularization and cultivation of the avant-garde of mishaps has become predestined and unavoidable. Be aware of easily reproducible glitch effects automated by software and plug-ins. What is now a glitch will become a fashion.

F- Force the audience to voyage through the acousmatic videoscape.

Create conceptually synesthetic artworks that exploit either visual and aural glitch (or other noise) artifacts at the same time. Employ these noise artifacts as a nebula to shroud the technology and its inner workings and to compel an audience to listen and watch more exhaustively.

G- Rejoice in the critical trans-media aesthetics of glitch artifacts.

Utilize glitches to bring any medium into a critical state of hypertrophy, to (subsequently) criticize its inherent politics.

H- Employ Glitchspeak (as opposed to Newspeak) and study what is outside of knowledge. Glitch theory is what you can just get away with!

Flow cannot be understood without interruption, or function without glitching. This is why glitch studies are necessary. Menkman, Rosa. (2006-2011)

1.2- Main Types of Glitches:

1.2.1- Analog Glitch:

Analog Glitch is a malfunction resulting from older analog devices.

The analog glitch in film and television is similar to the digital glitch in that it delays and distracts the viewer from the intended visual/audio product. However, the analog glitch is typically an error in the physical medium. Demagnetized videotape, typographical errors, and scratches on film or records produce effects similar to digital glitches. In these instances, physical damage to media results in sender/receiver miscommunications. Jackson, Rebecca. (2011)

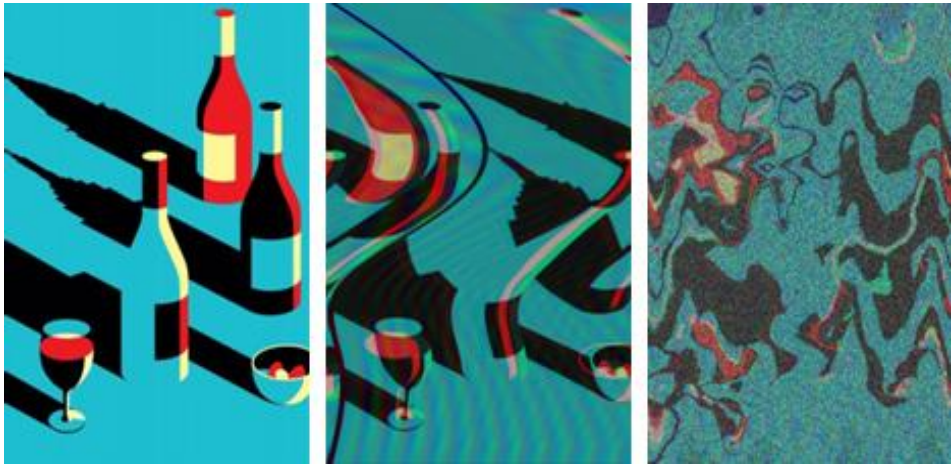


Figure 2- Steps of Analog

1.2.2- Digital Glitch:

Digital Glitch is a malfunction resulting from a digital platform or electronic device. Digital glitches, however, spring specifically from errors in sender/receiver communication without the need for physical damage to the medium itself. Jackson, Rebecca. (2011)



Figure 3 - Steps of Digital Glitching

1.2.3- Pure Glitch:

Pure Glitch is the result of a Malfunction or error.

There is a great deal of scope in the discussion of what can be classed as a Glitch. Primarily, in a theoretical, scientific and non-art sense, a glitch is assumed to be the unexpected result of a malfunction. The word glitch was first recorded in English in 1962, during the American space program, namely in the writings of John Glenn where it was used to “describe the problems” they were having. Glenn then gives the technical sense of the word the astronauts had adopted: “Literally, a glitch is a spike or change in voltage in an electrical current.” So, in a sense the glitch has always been associated with the definition of a problem. It’s a word used to describe the result of a situation when something has gone wrong. Admittedly, it is also a problematic and contradictory area of study. Moradi, Iman. (2004)



Figure 4 - A digital street sign error which is considered to be a pure glitch.

1.2.4- Glitch A-like:

Glitch artists either synthesize glitches in non-digital mediums, or produce and create the environment that is required to invoke a glitch and anticipate one to happen, as. Because of the intrinsic nature of this imagery and its relation to pure glitches, both in terms of process and viewer perception, I felt the need to form a word that adequately describes this artifact’s similarity with actual glitches and presents it as an obviously separate entity. Thus, the term “Glitch-alike” came

about to fulfill this role. Therefore, Glitch-alikes are a collection of digital artifacts that resemble visual aspects of real glitches found in their original habitat.

Note: This dissertation deals with glitches and their ‘visual’ manifestations. From this point, occasionally for the sake of brevity whenever the word ‘glitch’ is mentioned, it refers to both pure glitches and Glitch-alikes. The Glitch is often used as an all-encompassing term to signify mutual qualities of both areas. Moradi, Iman. (2004)

Pure Glitch	Glitch- alike
Accidental	Deliberate
Coincidental	Planned
Appropriated	Created
Found	Designed
Real	Artificial

Figure 5 - Comparison between Pure Glitches & Glitch A-likes

1.3- Glitch Production Methods & Styles:

1.3.1- Production Methods:

There are all kinds of ways to create or exploit a glitch for artistic purposes; not just any computer-based art can be called glitch art. Some processes are much more intentional and labor-intensive than others, making the glitch manipulation itself into something of an art. Some common ways for artists to encounter their glitch include:

1.3.1.1- Data Moshing:

Intentionally distorting media through loss of data during a file compression process (i.e., streaming a video that is slow and pixelated).

Data moshing is the process of manipulating the data of media files in order to achieve visual or auditory effects when the file is decoded. In some cases, the term datamoshing is used to describe this process applied to any type of media file — I like to think it applies solely to video since it results in moving images being moshed together. How to Datamosh Videos with Automation(2019)



Figure 6 - A video datamoshed using the video editor “Avidemux”

1.3.1.2- Databending:

Manipulating data files by opening a file of one type in a program designed to open another file (i.e., opening a jpeg in a text application, opening a video in audio processing software, etc.): Roy, Mallika. (2019)

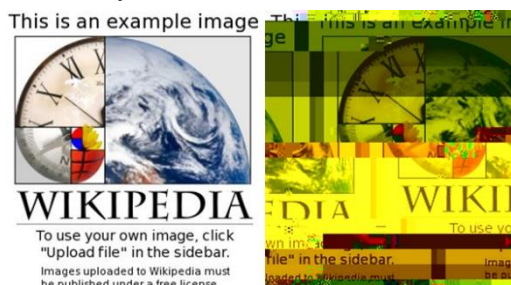


Figure 7 - An image and its databent version, employing visual artifacts

1.3.1.3- Circuit Bending:

Discovered in 1966 by Reed Ghazala, It is re-wiring or altering the circuit within the device.

Circuit bending is the creative, chance-based customization of the circuits within electronic devices such as low voltage, battery-powered guitar effects, children's toys and digital synthesizers to create new musical or visual instruments and sound generators.

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Emphasizing spontaneity and randomness, the techniques of circuit bending have been commonly associated with noise music, though many more conventional contemporary musicians and musical groups have been known to experiment with "bent" instruments. Circuit bending usually involves dismantling the machine and adding components such as switches and potentiometers that alter the circuit.

A kraakdoos or cracklebox is a custom-made instrument, in the form of a noise-making electronic device. It is a small box with six metal contacts on top, which generate various unusual sounds and tones when pressed by the performer's fingers. The human body becomes a part of the circuit and determines the range of sounds possible and different people will generate different results. Ghazala, Reed. (2005)



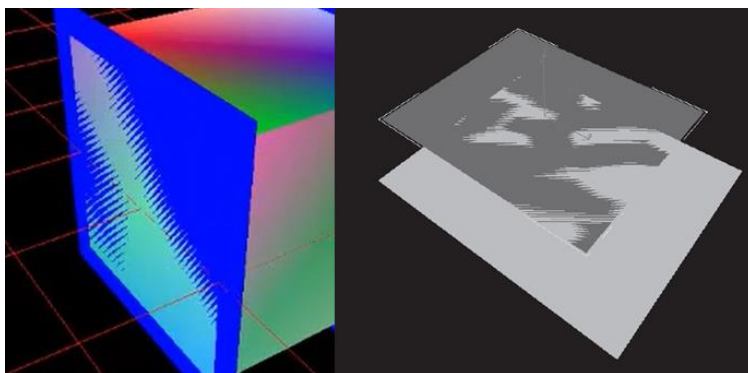
Figure 8 - A kraakdoos, a basic circuit bending instrument

1.3.1.4- Z-fighting:

Weaving multiple competing visual layers together in a way that forms one layer (i.e., flickering texture in a video game)

Z-fighting is a phenomenon in 3D rendering that occurs when two or more coplanar primitives have similar values in the Z-buffer, causing random parts of the primitives to be rendered. This problem is usually caused by floating point round-off errors. Z-fighting is reduced by the use of a higher resolution depth buffer, by W-buffering, or by simply moving the polygons further apart.

Figure 9 - Coplanar Polygons display error appearing in 3D computer software which is known as (Z-fighting)



1.3.1.5- Programmed Applications:

There are many preprogrammed applications that can simulate the effects of digital and analog glitches on still images and video clips.

The following app is a case study on one of the many smartphone applications that serve this specific type of media manipulation:

This application is available on the app market “Google Play Store” that serves all smartphones that run the “Android” software, and it goes under the name “Glitch!”

As mentioned in the app description on the app store, it is a photo editing app that allows the user to quickly generate random and real glitch in a given picture without using Photoshop or other computer software.

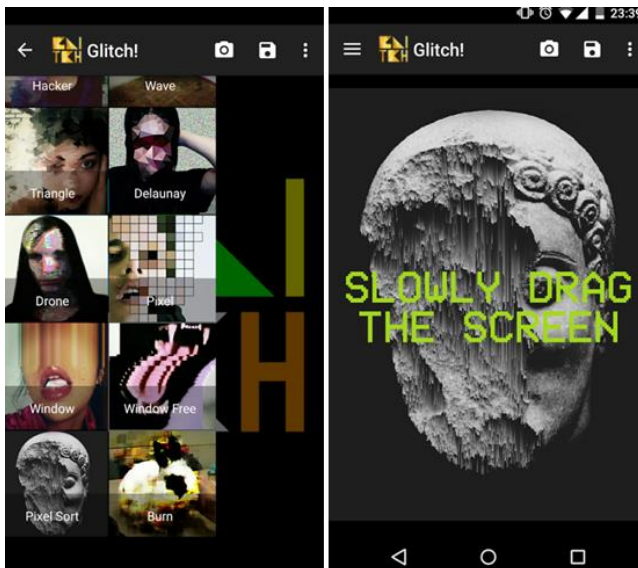


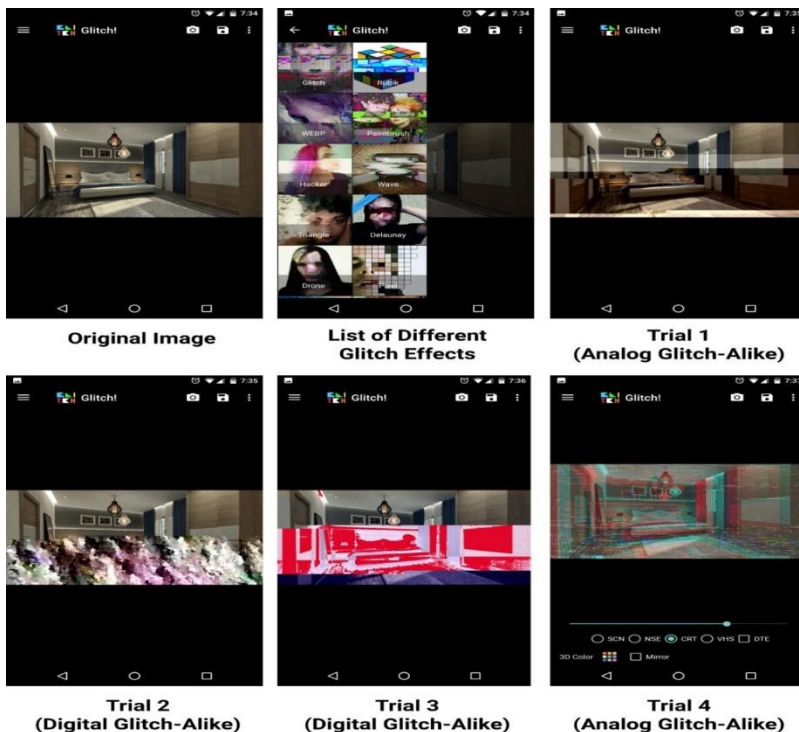
Figure 10 - Screenshots from the smartphone application “Glitch!”

It enables the user to upload photos from the smartphone's camera or gallery, edit them with multiple effects and filters.

It is also mentioned that the application inherits its philosophy from the words of the Italian architect and sculptor Gaetano Pesce "By changing the paradigm, that which standardization views as an error, to the free thinker becomes the unexpected source of a new beauty." **The app is fairly easy to use as mentioned in the steps below:**

- A- Touching the screen on the bottom-left you'll have your original picture.
- B- Swiping on the top-right you'll increase number of errors.
- C- Change resolution and image quality for generate different combination of glitch.
- D- Change different effects such as (VHS scanlines, 3D, Window Lag, Pixel, Wave, Hacker, Triangol).

The following images are examples of generating different glitches for a selected image using the "Glitch!" app.:



1.4- Visual Characteristics of Glitches:

According to Espen Somer Eidea a talented musician and one of the speakers at the Glitch Symposium Norway, Genetic Engineering, "The glitch may not be categorisable" Eide, E. S. (2002). but present-day manifestations of the glitch have distinctly prominent and common features that can be stated here:

1.4.1- Fragmentation:

"All dimensions that are known are present simultaneously"

Sometimes in a glitch everything is broken down either to its individual elements, or parts of the image are shifted and incorrectly translated. If the Glitch-like was replicated on a physical canvas, it would be like tearing up the 'Mona Lisa' and pasting the strips in other areas of the canvas. In the digital domain, this tearing effect is almost always horizontally inclined; due to the way images are read and rendered by computers.

These fragmentations may also result in splinters and sharp contrasts of color between two distinct regions of an image. Fragmentation or segmentation of the original image also relates, to mistranslation. Dramatic tonal changes also affect an image's mood and can be seen as a form of fragmentation.

Fragmentation also has the effect of drawing attention to an otherwise perfect image no matter how subtle or disproportionately small it is in relation to the original undisturbed image. Grieman, A., (1990)

Figure 17 - A glitched image showing "fragmentation" as a characteristic of Glitch Art



1.4.2- Replication/Repetition:

Partial causes for program-based glitches are infinite loops; division by zero's and null pointers. The unanticipated consequences, of such programmatic structures in image delivery may result in visual cloning or repetition.

Because a Glitch effect is unanticipated and sometimes coincidental, any kind of regular repetition appearing in the equation makes it quite complex. Normally we would not expect something coincidental to be visually repetitive in a highly systematic way, especially with razor sharp precision!

This kind of repetition also makes computer glitches ultimately divergent from nature and fractals which use chaotic and "irregular patterning intentionally."

The patterns that computer glitch replication produces can also be likened to a digital 'wallpaper' that screams of the reproducibility of digital art, while maintaining the fact that they are accidental and unique. Palmer, F.,(1972)

1.4.3- Linearity:

In the majority of cases, whenever visual information is being recorded or is transferred from one medium onto another, it is broken down to its individual components. Without going into any level of technical detail those individual components can be pixels, color separation layers, or graphite granules on paper. In some glitches, these elements (pixels) have a tendency to merge with each other in rows to form lines.

Figure 18 - A glitched image showing horizontal linear formations as a visual characteristic of glitches



This interlacing effect seen above, which has come about partly as a result of how image-displaying technology works, accompanies the work of many glitch artists and it is sometimes seen as the hallmark of visual glitch aesthetics.

Undisputedly, there is visual similarity between some glitch imagery and the rectilinear or very distinct line forms of 'op art'. As such, in a way similar to how 'op art' reveals 'how our visual perception can be manipulated', Glitches can be read "as revealing the background processes that go on invisibly during the transmission of digital images..." and indeed show how their "miscalculations contain their own form of visual logic"

1.4.4- Complexity:

As with many things in nature, the most beautiful manmade decorative ornaments are visually quite complex, they follow patterns, have repetition and please the eye with harmonious colors. Likewise, Glitches and Glitch-alikes can be visually quite complex.

In the guise of an attention-seeking anomaly, they can also illustrate operational complexity in things we take for granted, such as the operation of transferring a digital file from one location to another on the Internet. During internet data transfer each file has to be broken into packets, addressed individually, sent and resent if any packets are lost, and finally the file has to be reassembled at the receiving end. This process is invisible to us and is quite reliable, yet this operational perfection in everyday technology is taken for granted. When pure glitches happen, they alert us to the presence of processes that can go wrong.

Complexity is sometimes hard to fake in a Glitch-alike, Tristan Spill, a London based freelance commercial artist and video maker says "The following glitches

were from an incomplete mpeg download and an interrupted JPEG image. They are not mannered recreations but actual screen captures. I have no idea how to recreate them.” (Interview with Tristan Spill)



Figure 19 - A glitched screenshot by Tristan Spill showing how complex glitched images can get

Glitches can also surprise us with their complexity. Sometimes changing a few variables affecting a simple design element on computer can cause a crash and a visually pleasing glitch to occur. However, this computer-generated ready-made complexity worries some glitch artists who fear this makes their work easily brandable, or indistinguishable from digital trash.

1.5- The Origins of Glitch:

1.5.1- Kintsugi:

Translated to “golden joinery,” Kintsugi (or Kintsukuroi, which means “golden repair”) is the centuries-old Japanese art of fixing broken pottery with a special lacquer dusted with powdered gold, silver, or platinum. Beautiful seams of gold glint in the cracks of ceramic ware, giving a unique appearance to the piece.

This repair method celebrates each artifact’s unique history by emphasizing its fractures and breaks instead of hiding or disguising them. Kintsugi often makes the repaired piece even more beautiful than the original, revitalizing it with new life. How to Datamosh Videos with Automation(2019)

1.5.1.1- History of Kintsugi:

Kintsugi art dates back to the late 15th century. According to legend, the craft commenced when Japanese shogun Ashikaga Yoshimasa sent a cracked chawan—or tea bowl—back to China to undergo repairs. Upon its return, Yoshimasa was displeased to find that it had been mended with unsightly metal staples. This motivated contemporary craftsmen to find an alternative, aesthetically pleasing method of repair, and Kintsugi was born.

Since its conception, Kintsugi has been heavily influenced by prevalent philosophical ideas. Namely, the practice is related to the Japanese philosophy of Wabi-Sabi, which calls for seeing beauty in the flawed or imperfect. The repair method was also born from the Japanese feeling of “Mottainai”, which expresses regret when something is wasted, as well as “Mushin”, the acceptance of change.



Figure 20 - Repair work on tea bowl with Kintsugi gold lacquer

1.5.1.2- Kintsugi Today:

Many artists and craftspeople today—both in Japan and abroad—continue to keep this ancient tradition alive. English embroidery expert Charlotte Bailey, Japanese artist Tomomi Kamoshita, and Korean creative Yee Sookyung incorporate the practice into their art. How to Datamosh Videos With Automation(2019)

1.5.2- Wabi-Sabi:

1.5.2.1- Definitions:

A- Wabi:

Wabi symbolizes rustic beauty and quietness. It also denotes simplicity and stillness and can apply to both man-made and natural objects. It can also refer to quirks and anomalies in things, a unique one-of-a-kind flaw, for example, which sometimes occurs during the process of production or creation.

B- Sabi:

Sabi refers to things whose beauty can come only with age, indicative of natural processes that result in objects that are irregular, unpretentious, and ambiguous. It refers to the patina, such as a very old bronze statue or copper roof turned green. It also incorporates an appreciation of the cycles of life.

1.5.2.2- Philosophy of Wabi-Sabi:

Wabi-sabi represents a comprehensive Japanese aesthetic focused on the acceptance of impermanence or transience. The phrase, meaning an aesthetic sensibility, comes from two of the key Japanese aesthetic concepts: **wabi** and **sabi**. Their definitions are difficult to explain or translate precisely in Western terms. The aesthetic is sometimes described as one of beauty that is "imperfect, impermanent, and incomplete," according to Leonard Koren in his book *Wabi-Sabi: for Artists, Designers, Poets & Philosophers*. It is a concept derived from the Buddhist assertion of the first noble truth: *Dukkha*, or in Japanese, "Mujyou" (impermanence). According to Koren, wabi-sabi is the most conspicuous and characteristic feature of what we think of as traditional Japanese beauty and it

occupies roughly the same position in the Japanese pantheon of aesthetic values as do the, Greek ideals of beauty and perfection in the West.

The idea of wabi-sabi speaks of a readiness to accept things as they are. This is contrary to Western ideals that emphasize progress and growth as necessary components to daily living. Wabi-sabi's fundamental nature is about process, not final product, about decay and aging, not growth. This concept requires the art of "slowness", a willingness to concentrate on the things that are often overlooked, the imperfections and the marks recording the passing of time. This is the perfect antidote to the invasive, slick, saccharine, corporate style of beauty.



Figure 21 - Zen Garden of Ryōan-ji. It was built during the Higashiyama period.

The clay wall, which is stained by age with subtle brown and orange tones, reflects "sabi" and the rock garden "wabi."

1.5.3- The Avant-garde Art Movement:

The avant-garde are people or works that are experimental, radical, or unorthodox with respect to art, culture, or society. It may be characterized by nontraditional, aesthetic innovation and initial unacceptability, and it may offer a critique of the relationship between producer and consumer.

1.5.3.1- Cubism:

The appreciation of visual glitches goes much back much further than the 1980's - 90's and the 'home computer' retro aesthetic imagery that is often associated with that time.

In visual investigations, a wealth of Glitch-like imagery was found and the notion of the accident in art spanning across decades of the use and misuse of media in artistic practice. I would like to draw attention to the cubist movement. While their works are not commonly thought of as 'glitches' per se, I believe that they were possibly influential in the way we can appreciate a fragmented style being applied to a digital image today.

Pablo Picasso and Georges Braque splintered the visual world not wantonly, but sensuously and beautifully with their new art.

When you look at these paintings, there is a clear sense of a connection that can be drawn between their style and that of glitch art.

Evidently, there could be a history involved behind reasons for glitch appreciation, that relate to what the prodigal artists of the cubist movement or other movements have done and the interesting techniques they have used.

Moradi, Iman. (2004)



Figure 22 - Juan Gris, Man at the Café. Oil on canvas, 128.2 X 88 cm - Philadelphia Museum of Art (1912)

1.5.3.2- Dadaism:

Dada emerged amid the brutality of World War I (1914–18)—a conflict that claimed the lives of eight million military personnel and an estimated equal number of civilians. This unprecedented loss of human life was a result of trench warfare and technological advances in weaponry, communications, and transportation systems.

For the disillusioned artists of the Dada movement, the war merely confirmed the degradation of social structures that led to such violence: corrupt and nationalist politics, repressive social values, and unquestioning conformity of culture and thought. From 1916 until the mid-1920s, artists in Zurich, New York, Cologne, Hanover, and Paris declared an all-out assault against not only on conventional definitions of art, but on rational thought itself. “The beginnings of Dada,” poet Tristan Tzara recalled, “were not the beginnings of art, but of disgust.”



Figure 23 - The climax of Berlin Dada was the International Dada Fair of 1920, the central symbol of which was an effigy of a German officer with the head of a pig that hung from the ceiling.

Dada's subversive and revolutionary ideals emerged from the activities of a small group of artists and poets in Zurich, eventually cohering into a set of strategies and philosophies adopted by a loose international network of artists aiming to create new forms of visual art, performance, and poetry as well as alternative visions of the world. The artists affiliated with Dada did not share a common style or practice so much as the wish, as expressed by French artist Jean (Hans) Arp, "to destroy the hoaxes of reason and to discover an unreasoned order.

A- The Role of Visual Art in Dada:

For Dada artists, the aesthetic of their work was considered secondary to the ideas it conveyed. "For us, art is not an end in itself," wrote Dada poet Hugo Ball, "but it is an opportunity for the true perception and criticism of the times we live in." Dadaists both embraced and critiqued modernity, imbuing their works with references to the technologies, newspapers, films, and advertisements that increasingly defined contemporary life. Dada, MoMA Learning (2019)

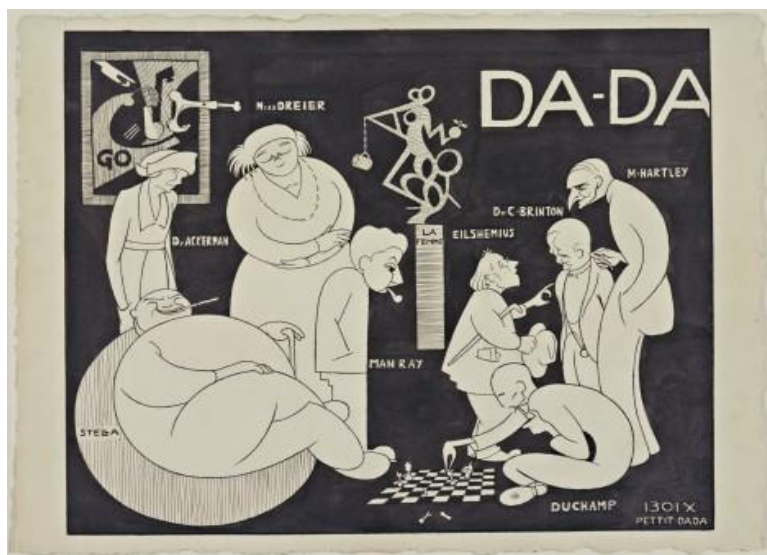


Figure 24 - Richard Boix. *Da-da (New York Dada Group)*. 1921. Ink on paper. (28.6 x 36.8 cm). Katherine S. Dreier Bequest

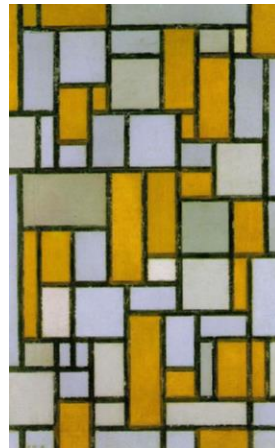
They were also experimental, provocatively re-imagining what art and art making could be. Using unorthodox materials and chance-based procedures, they infused their work with spontaneity and irreverence. Wielding scissors and glue, Dada artists innovated with collage and photomontage. Still others explored games, experimental theater, and performance. A central figure, Marcel Duchamp, declared common, manufactured goods to be “readymade” artworks, radically challenging the notion of a work of art as something beautiful made by a technically skilled artist.

1.5.3.3- De-Stijl & Mondrian’s Imperfections:

Within the lines, strokes, grids and stark geometric forms that Mondrian depicted in his paintings, we see that there are lines on the same painting that vary in terms of stroke and thickness. There are areas where the ink runs and splatters. His stroke could have been perfect but it is not, it is obvious that he deliberately put his own signature in the work by varying elements and disturbing the perfection. In his book ‘On abstract art’ (1997) Briony Fer, refers to a permanent state of differentiation which involves not only “shifts in the disposition of the planes and asymmetric grid” but also in terms of scale.

This subtle controlled variation and imperfection in a perfect work consistently appears in Mondrian’s work and it may have influenced how we see imperfection today. Moradi, Iman. (2004)

Figure 25 - Pieter Mondrian, Composition with Gray and Light Brown (1918); Oil on canvas, 80.2 X 49.9 cm; Museum of Fine Arts, Houston, Texas



1.5.3.4- Surrealism:

Surrealism was an artistic, intellectual, and literary movement led by poet André Breton from 1924 through World War II. The Surrealists sought to overthrow the oppressive rules of modern society by demolishing its backbone of rational thought. To do so, they attempted to tap into the “superior reality” of the subconscious mind. “Completely against the tide,” said Breton, “in a violent reaction against the impoverishment and sterility of thought processes that resulted from centuries of rationalism, we turned toward the marvelous and advocated it unconditionally.”

Figure 26 - Cut-and-pasted gelatin silver prints, cut-and-pasted printed paper, pencil, and pencil frottage on paper, (50.1 x 33.6 cm). Purchase. 2012 Artists Rights Society (ARS), New York/ADAGP, Paris 267.1935



Many of the tenets of Surrealism, including an emphasis on automatism, experimental uses of language, and found objects, had been present to some degree in the Dada movement that preceded it. However, the Surrealists systematized these strategies within the framework of psychologist Sigmund Freud’s theories on dreams and the subconscious mind. In his

1924 Surrealist Manifesto, Breton defined Surrealism as “Psychic automatism in its pure state, by which one proposes to express...the actual functioning of thought...in the absence of any control exercised by reason, exempt from any aesthetic or moral concern.”

A- Dada & Surrealism:

While Dada was decentralized in terms of geography and leadership, the center of Surrealism was Paris, with Breton unequivocally at the helm. While Dada was in many ways an anarchic movement, the Surrealists were known for engaging in collective group actions.

The Surrealist circle was relatively cohesive, but the individuals within it hailed from a variety of nations, and their artistic approaches were similarly diverse. They believed that automatic drawings unlocked the contents of the subconscious mind, while hyper-real landscape paintings conjured the uncanny imagery of dreams. Incongruous combinations of found objects combined in Surrealist assemblages revealed the fraught sexual and psychological forces they believed were hidden just beneath the surface of reality. Surrealism, MoMA Learning (2019)



Figure 27 - René Magritte's "This is not a pipe." The Treachery of Images 1928–29, Los Angeles County Museum of Art

1.5.3.5- Visual Attention in The Avant-garde Art Movement:

Our surroundings give rise to a vast amount of sensory information that is more than our brain can process simultaneously. Selecting the most relevant stimuli in the physical world for processing while filtering out less relevant information allows us to respond quickly to critical environmental changes and achieve behavioral goals more efficiently. This process of information selection is referred to as attention. Attention is commonly categorized into two distinct functions:

A- Bottom-up Attention:

An externally induced process in which information to be processed is selected automatically because of highly noticeable features of stimuli.

B- Top-Down Attention:

An internally induced process in which information is actively sought out in the environment based on voluntarily chosen factors. Katsuki, Fumi. Constantinidis, Christos. (2014)



Figure 28 - For someone who's not a pilot, his visual perception of an aircraft cockpit will be based on bottom-up perception as the person does not have previous knowledge about aircraft instruments.

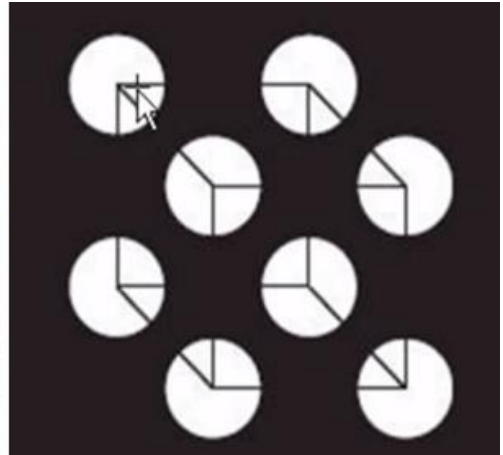


Figure 29 - The cube is recognized although its lines are incomplete, because our visual perception of the cube is based in previous knowledge about the shape of cubes (Top-down) perception.

Each of the previously mentioned Avant-garde movements had an approach for drawing visual attention to their works.

Mainly in all the movements, drawing the attention of the viewer was based on top-down perception as they all tried to express ideas opposite to the reality that we live in, and each of them did it in a different way.

- **Cubism:** Presenting human figures and forms found in reality in a fragmented manner.
- **Dada:** Presenting artworks and visuals with a sarcastic and sometimes provocative approach as a sign of refusing ethical values and social norms.
- **Surrealism:** Expressing the lack of logic and irrational visual ideas in artworks.
- **De-Stijl:** Artworks with asymmetrical grid structures that contains deliberately made imperfections.

1.6- Glitch in The Meantime:

1.6.1- Vaporwave as an Art Movement:

1.6.1.1- Definition:

Vaporwave is originally a micro-genre of electronic music that draws on the corporate sonic ephemera of the 80s and 90s – such as elevator, ad soundtracks, ‘hold’ music and cocktail jazz – to satirize the emptiness of a hyper-capitalist society. Surrealism, MoMA Learning (2019)

1.6.1.2- Concept:

Vaporwave is a play on ‘vaporware’ – a term from the software industry referring to a product that is announced to the public, but never released. The music reflects this soulless techno-corporatism, with accompanying videos that

draw on early internet imagery: glitch graphics, late-90s web design, and cyberpunk aesthetics.

1.6.1.3- Notable Artists & Composers:

Since emerging in 2012, vaporwave has slowly bubbled up to the mainstream via individuals such as US artist and composer Holly Herndon.

Other notable artists associated with vaporwave include US producer James Ferraro, and Brooklyn-based artist Oneohtrix Point Never. Ward, Christian (2019)

1.6.1.4- Vaporwave Beginnings:

In 2010 Oneohtrix Point Never released "Chuck Person's EccoJams Vol. 1", a distorted and strange music album. The album was remarkably different from Lopatin's other work, in that:

- It noticeably followed a steady 4/4 beat, betraying his usual schizophrenic nature.
- All of the tracks were full of pitch-shifted samples of popular 80's music (like Toto's 'Africa', or Michael Jackson's 'Morphine').
- It featured album artwork that featured crude graphical elements of the 80's, resembling the video game "Ecco the Dolphin".
- Suburban teens and young adults began using that album as the bedrock for a new, discerning style of music that would come to be named as vaporwave.

1.6.1.5- Evolution of Vaporwave:

Vaporwave music has gone through 2 waves that are described as follows:

A- 1st Wave:

1. Little to no part of the music produced was original material.
2. It relied heavily on sampling smooth jazz, R&B or retro elevator music.

3. The sampled material was extremely slowed down, chopped and manipulated heavily.
4. Despite the absence of original content, vaporwave has a uniquely distinct sound, and its idiosyncrasy has ironically lent itself original value.
5. The music was usually accompanied by visuals of Greek sculptures and Windows 95 imagery.
6. The genre's most significant albums are Floral Shoppe's Macintosh Plus and Blank Banshee's Blank Banshee 0.



Figure 30 - The album covers for Macintosh Plus's Floral Shoppe (left), Blank Banshee's Blank Banshee 0 (right).

B- 2nd Wave:

1. The British vaporwave producer Hong Kong Express (HKE) came out of nowhere and took the genre to new heights.
2. He dropped the blatant sampling, opting instead to generate his own elevator music soundscapes.
3. Visuals presented a distinct departure from the usual Greek sculptures and Windows 95 imagery.
4. HKE's aesthetic drew heavily from elements of Wong Kar Wai films and 80s Japanese culture. Francis, Sean (2019)



Figure 31 - "2047" album cover by Hong Kong Express

1.6.2- Vjing:

1.6.2.1- Origins of the Term "VJ":

The term Video Jockey (VJ) was popularized by cable channel MTV. The founder of MTV Bob Pittman took the term over to introduce his program hosts.

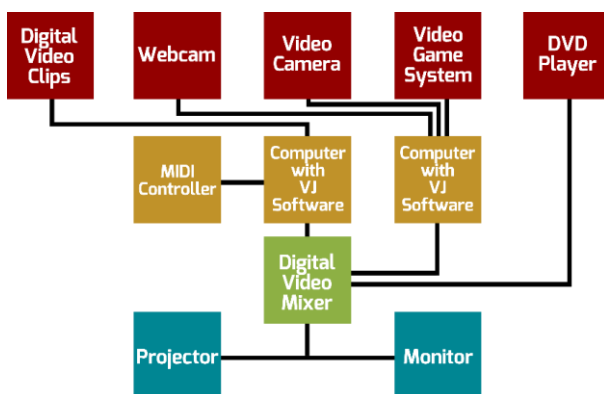
The term had been used for the first time in the 1990s by the staff of the Peppermint Lounge, a popular dance club in New York.

Dekker, Annet. (2002, 2005)

1.6.2.2- Why the Need for a VJ?

It seemed almost necessary to provide images with the music. Electronic music was not interesting enough to look at; there was no band, singer or video clip to entertain the public. But for many VJs, VJing was more than decoration, and it had a lot more to do with the creation of a feeling of fellowship. Dekker, Annet. (2002, 2005)

Figure 32 - A sample setup of how a VJ may set up a digital VJ workflow.



1.6.2.3- What Helped Spreading VJing:

1. Social and political developments such as the student protest at Tiananmen Square in Beijing caused the house and techno scene to spread itself around the world as a social movement in the form of events such as the Love Parade and May Day.
2. The arrival of the internet at the beginning of the 1990s and improved means of communication.
3. The discovery of new technology such as cheaper video cameras and the introduction of the beamer made it possible for VJ performance to assume its present form.
4. The influence of commercial interests created a lot of displeasure among the first generation of VJs.
5. The formation of collectives, where different people with different backgrounds, from filmmakers to computer programmers and graphic designers, worked together on concepts with which to develop new VJing techniques.

1.6.2.4- VJing Styles:

Though the backgrounds of VJs gave little reason to categorize them, the manner of presentation and the formal language seem to divide them in two: a division between club VJs and live installation VJs.

A- Club VJing:

The image material of the club VJ is characterized by found footage, self-made video images, and 3D animations. The overall image is recognizable, and now and then it is interrupted by graphic elements.

Figure 33 - An example for 3D animation VJ visuals, a VJ loop visual entitled "Square Tunnel 3" which is online for sale at the website "motionelements.com"



B- Live VJing:

The images of live VJs are much more abstract, computer generated, and especially non-figurative.

Figure 34 - An example for abstract VJ visuals, a VJ loop visual entitled "Lovely Red" which is online for sale at the website "limeartgroup.com"

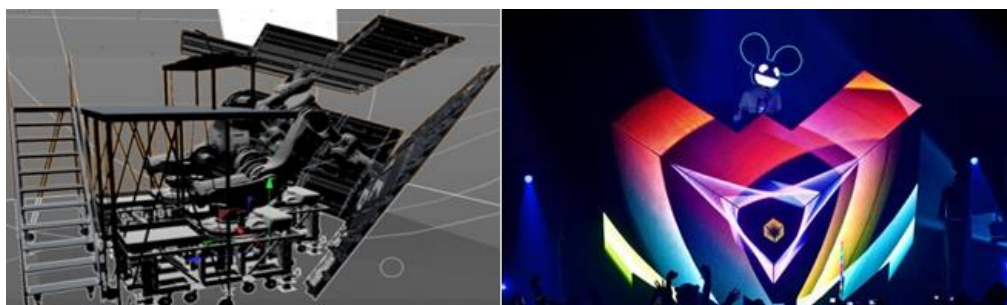


Figure 35 - The musician "Deadmau5" VJing in his performance "Cube" as an example of how complicated a VJ setup can get.

The Future of VJing:

The expectation of most VJs is that the VJ no longer will perform the whole process by himself. The formation of the VJ collectives starting in the mid-1990s seems to point clearly in that direction, as does the emergence of festivals for image and sound, such as Sonic Acts or Photonic, for example. The focus at such festivals is on the collaboration between image and sound and the creation of a “total immersive environment. With it, VJing seems to disappear from the clubs and to shift to festivals, special locations, and even back to the theater.

The innovations within VJing as a movement will most likely take place on platforms other than the clubs in the future in order to be able to experiment further such as:

- Art, public spaces and festivals.
- The commercial sector of video clips.
- Areas yet to be identified.

1.7- Glitch Applications:

1.7.1- Music:

1.7.1.1- Glitch & Glitch Hop:

A- The Emergence of Glitch Music:

In the 1990s, the Internet has helped spawn a new movement in digital music.

One of the main reasons for this movement was that Techno music became very predictable, formulaic genre serving a more or less aesthetically homogeneous market of DJs and dance music amateurs. This gave a chance for some DJs to expand their music into new areas.

This new music movement is not academically based, and the composers involved are mainly self-taught. Music journalists occupy themselves inventing names for it, and some have already taken root “glitch”, “microwave”, “DSP”, “sinecore”, and “microscopic music”. This genre is referred to as “post-digital” because the revolutionary period of the digital information age has surely passed. Cascone, Kim. (2000)

B- The Aesthetics of Failure:

“It is failure that guides evolution; perfection offers no incentive for improvement.” -Colson Whitehead (1999)

The “post-digital” aesthetic was developed in part as a result of the immersive experience of working in new environments full of technical failures of digital technology: glitches, bugs, application errors, system crashes, clipping, distortion, quantization noise, and even the noise floor of computer sound cards are the raw materials composers seek to incorporate into their music.

“Failure” has become a prominent aesthetic in many of the arts in the late 20th century, reminding us that our control of technology is an illusion, and revealing digital tools to be only as perfect, precise, and efficient as the humans who build them. New techniques are often discovered by accident or by the failure of an intended technique or experiment.

When visual artists first shifted their focus from foreground to background (for instance, from portraiture to landscape painting), it helped to expand their perceptual boundaries, enabling them to capture the background's enigmatic character.

The basic composition of "background" is comprised of data we filter out to focus on our immediate surroundings. The data hidden in our perceptual "blind spot" contains worlds waiting to be explored, if we choose to shift our focus there. Today's digital technology enables artists to explore new territories for content by capturing and examining the area beyond the boundary of "normal" functions and uses of software.

In this new music, the tools themselves have become the instruments, and the resulting sound is born of their use in ways unintended by their designers, which are commonly referred to as sound "mangling" or "crunching". Cascone, Kim. (2000)

C- Glitch Musicians' Examples and their Experiments:

The German project "Oval" was experimenting with CD skipping techniques and helped to create a new tendril of glitch-one of slow-moving slabs of dense, flitting textures.

Another German group, which called itself "Mouse on Mars", injected this glitch aesthetic into a more danceable framework, resulting in gritty low-fidelity rhythmic layers warping in and out of one another.

From the mid-1990s forward, the glitch aesthetic appeared in various sub-genres, including "drum n bass", "drill n bass", and "TripHop". Artists such as "Aphex Twin", "LTJ Bukem", 'Omni Trio", "Wagon Christ", and "Goldie" were experimenting with all sorts of manipulation in the digital domain.

D- Glitch Music Tools:

Most of the tools being used today have a layer of abstraction that enables artists to explore without demanding excessive technical knowledge. Tools like "Reaktor", "MaxiMSP", "MetaSynth", "Audiomulch", "Crusher-X", and "Sound

Hack” are used with little care or regard for the technical details of DSP (Digital Signal Processor) theory, and more as an aesthetic wandering through the sounds that these modern tools can create. Cascone, Kim. (2000)

1.7.2- Glitch Artists:

1.7.2.1- Iman Moradi (Shay Moradi):

Iman Moradi, Also Known as Shay Moradi is an interaction designer and producer.

As stated by his Personal LinkedIn profile, Iman earned a Bachelor of Arts (BA) in multimedia design in 2004 from the department of Creative Technologies at The University of Huddersfield. He continued to earn an MA degree at the same university in 2005 from the department of Architecture, which covered interaction design, Creative Code and focused on innovative digital product design with a number of highly elective strands.

Figure 36 – Portrait of Iman Moradi



Iman has a single published book entitled “Designing Imperfection” which was the first book that documented the leading proponents of Glitch Art and Design. He originated the book's concept, found a publisher and brought together over 100 artists to collaborate on this hardbound coffee table book which enjoyed a spot-on Amazon's Graphic Design Bestsellers.

- 1- In the meantime, Iman is a director at 'Running in the Halls', which is an independent multidisciplinary design and development studio founded in 2009. It specializes in multi-platform app creation, physical interfaces and web applications as well interactive installations. Interview with Iman Moradi



Figure 37 - "Hayek" by Iman Moradi - 2003



Figure 38 - "Examiner's Delight" by Iman Moradi - 2004

1.7.2.2- Kim Cascone:

Kim Cascone, born in 1955, is an American composer of electronic music who is known for his releases in the ambient, industrial and electro-acoustic genre on his own record label, Silent Records.

In academic writing, Cascone is known for his paper *The Aesthetics of Failure*, which outlined the use of digital glitches and systemic failure in the creation of post-digital and laptop music. He is also on the Advisory Board of the academic sound journal *Interference* based in Dublin, Ireland.

In 2016 Cascone rebooted his record label Silent Records and is digitally distributed by The Orchard. In 2016 Cascone became the Music Director for The Silent Channel on SomaFM an online streaming radio station that features the Silent Records catalog. Demers, Joanna. (2010)

Figure 39 – Portrait of Kim Cascone



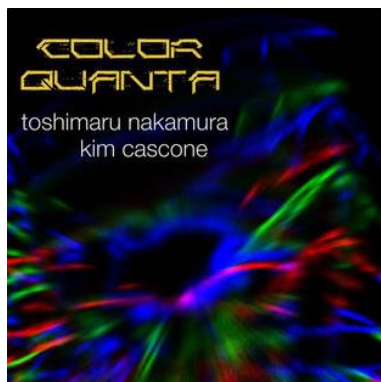


Figure 40 - The album art of “Color Quanta”, an electronic music album by Kim Cascone released in 2016.

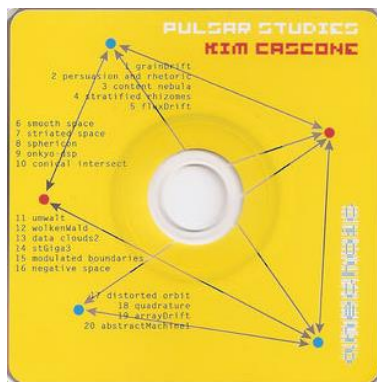


Figure 41 - The album art of “Pulsar Studies”, an electronic music album by Kim Cascone released in 2016.

1.7.2.3- Rosa Menkman:

Rosa Menkman, born 1983, is a Dutch art theorist, curator, glitch artist and visual artist specializing in glitch art and resolution theory. Menkman has curated several international exhibitions of other artists' work. Menkman investigates video compression, feedback, and glitches, using her exploration to generate works



Figure 42 – Portrait of Rosa Menkman

such as *The Collapse of PAL* (2011),

in which Menkman acknowledges the end of Phase Alternating Line—an analogue video programming structure. This is the digital version of a live av-performance first done on national Danish television. Francis, Sean (2019)

In 2011, Menkman published *Network Notebook #04: “The Glitch Moment(um)”*. This book uses information theory to propose an understanding

of "glitch art" as a particular genre of contemporary art. She argues that the glitch shifts between being an artifact and a process.

She also wrote "A Vernacular of File Formats" and the Glitch Studies Manifesto in the same year. The manifesto was awarded 'best practice' by Virtueel Platform, then sector institute for e-culture in the Netherlands.

The publication of "The Glitch Moment(um)" coincided with the "GLI.TC/H" festival, organized by Menkman in collaboration with American artists Nick Briz and Jon Satrom. The first "GLI.TC/H" festival in 2010 (Chicago) was followed by a second and third edition in 2011 (Chicago, Amsterdam, Birmingham) and 2012 (Chicago).

In 2015 Menkman opened the institutions of Resolution Disputes at Transfer Gallery in New York. In October 2015, one of the works in the show, DCT, referencing Discrete Cosine Transform was awarded 1st prize at the Crypto Design Challenge hosted by MOTI.

Her "Vernacular of File Formats" piece has attained "cult status". It was translated to polish (together with Glitch Studies Manifesto), commented and republished in "Glitch art is dead" exhibition in 2016. Francis, Sean (2019)

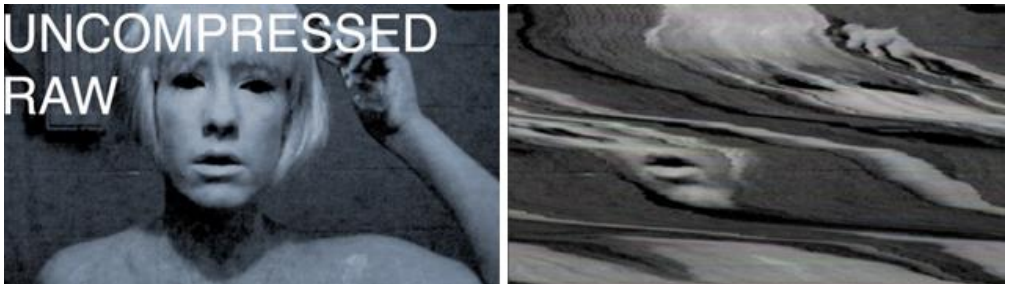


Figure 43, 44 - A digital glitch trial by Menkman, where the original image (left) was opened by "Microsoft Word" and saved as a text format. The text was edited manually by adding and deleting some characters resulting in abrupt discolorations, and image general image shifts (right).

Source: Rosa Menkman - A Vernacular of File Formats – A Guide to Databend Compression Design - 2010

1.7.2.4- Nick Briz:

Nick Briz is a new-media artist, educator and organizer based in Chicago, IL. His work focuses on digital culture by investigating the promises and perils of living in an increasingly digital and networked world. He is an active participant in various online communities and conversations including glitch art, net art, remix culture, digital rights, Internet ecology and digital literacy.



Figure 45 – Portrait of Nick Briz

His work has been exhibited internationally at major festivals such as FILE Media Arts Festival in Rio de Janeiro, Brazil and the Images Festival in Toronto Canada, as well as major cultural institutions such as the Museum of Moving Image in New York City, the Museo De Arte Contemporaneo de Caracas, Venezuela and the Museum of Contemporary Art Chicago, the Tate Exchange in London, among others. His work has been reviewed and discussed in international print publications and online platforms such as Neural Magazine (Bari, Italy), Rhizome.org (NYC) and Furtherfield (London) which are among the most influential in the field of New Media Art, as well as in traditional news outlets such as the Boston Globe, El Mundo (Spain), El Espectador (Colombia), and in an array of art and design publications including VICE, Fast Company, Art Slant and Complex.



Figure 46 - "Kinetic Portraits" – 2016.

The "eMerge Americas" conference partnered with Nick Briz to create an experiential installation for their EXPO's jumbotron highlighting one of the conference's central themes: "connect", the networking opportunities that draw so many participants to the event. The installation uses a Kinect depth sensor to create real-time 3D stylized portraits.

He is Adjunct Associate Professor at the School of the Art Institute of Chicago as well as the Chief Creative Director of the digital agency Branger_Briz, a collective of artists, strategists, educators and programmers specializing in conceiving and developing custom innovative digital projects for a wide range of clients. As an organizer he has been invited to curate events at various international galleries and conferences, he co-founded and ran an international New Media Art conference called GLI.TC/H (2010-2012), co-ran an experimental performance series in Chicago called NO-MEDIA (2012-2016), and is currently co-organizing a lecture series called "d.r.e.a.m." (data rules everything around me). Menkman, Rosa (2019)

Results & Findings:

- 1- Glitch Art is the aestheticization of digital or analog errors by either corrupting digital code/data, or physically manipulating electronic devices.
- 2- Glitches can be categorized into analog & digital glitches, or pure glitches & glitch a-likes.
- 3- Data moshing, databending, circuit bending and z-fighting are methods that produce pure glitches, while programmed glitch applications will produce glitch a-likes.
- 4- Glitches are visually characterized by fragmentation, repetition, linearity, and complexity.
- 5- The origins of the philosophy of Glitch Art can be traced back to Kintsugi, an art that emerged in the 15th century.
- 6- Cubism, Dadaism, surrealism & De-stijl also share some philosophies with Glitch Art.
- 7- Vaporwave is originally a micro-genre of electronic music that draws on the corporate sonic ephemera of the 80s and 90s – such as elevator, ad soundtracks, ‘hold’ music and cocktail jazz – to satirize the emptiness of a hyper-capitalist society.
- 8- The term Video Jockey (VJ) was popularized by cable channel MTV. The founder of MTV Bob Pittman took the term over to introduce his program hosts.
- 9- The "post-digital" aesthetic was developed in part as a result of the immersive experience of working in new environments full of technical failures of digital technology.
- 10- “Failure” has become a prominent aesthetic in many of the arts in the late 20th century, reminding us that our control of technology is an illusion, and revealing digital tools to be only as perfect, precise, and efficient as the humans who build them.

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Interviews:

- 22- Interview with Iman Moradi

- 23- Interview with Nick Briz, Website: "nickbriz.com/bio.html"
- 24- Interview with Tristan Spill of <https://tspill.com> by Iman Mouradi