

Semiotics of Glitch Artistic Practice

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Abstract

Glitch art is typically described as a kind, or style, of production error: “accidental” (caused or found) mistakes in the production or translation of a digital work. However, much of glitch is created using intended errors, or even simulations of error, created via reproducible means. The latter defines glitch aesthetics, as distinct from glitch production. This paper explores the semiotics of various types of glitch in the context of a fluctuating artistic practice.

Introduction

Imperfection, mistranslation, misuse, and malfunction remain potent tools for creating artistic meaning. Glitch, traditionally, has been described as a kind, or style, of production error: “accidental” (caused or found) mistakes in the production or translation of an analog source to digital. Glitches blur the distinction between information and noise by investing error with meaning. One or more parts of a digital object, an image for instance, are shifted, flipped, inverted, skewed, warped, ripped, sliced, or otherwise made noisy. A classic example is opening a digital image file in a text editor and then changing some characters before saving the file. When integrated into a work of art, whether deliberately or after-the-fact, these techniques create dense amalgams of intentionality and discovery, collapsing traditional distinctions between medium and data.

“The glitch is the entropic process acting on the data, whereas the artifact is what is produced when that altered data is read.” [1] There has been much experimentation by artists in the manipulation of real and simulated production errors, in efforts to produce meaningful work. Depending on the medium, the predictability governed over raw materials has caused us to reconsider what glitch is, its scope and its future.

Glitch as a Flexible Continuum

Iman Moradi identifies a difference between pure glitch and glitch-alike. [2] Pure glitch is accidental, coincidental, appropriated, found, and real. Glitch-alike is deliberate, planned, created, designed, and artificial.

“Most glitch artists are always, directly or indirectly, trying to answer one question: How much agency should

I provide to my systems of destruction? Their post-utopian strategies aim to identify where the ‘tipping point’ is: When and how can a glitch be found and transition into something new?” [3] Aside from instigating random mechanistic errors, or working directly with the digital file itself, there are techniques for replicating it artificially. Examples include introducing noisy data to functional algorithms or applying these algorithms in unconventional ways. Compositional practice of this nature is rather meant to assist the artist in answering the question, “How do you glitch on purpose?”

With this in mind, I propose two contrasting concepts that can both be called glitch but highlight fundamental differences in approach and mechanization: Glitch Production and Glitch Aesthetics. Glitch Production can be further defined by varying the amount of artistic control and stochasticity involved in creating glitch art.

Glitch Aesthetics

Making errors in a visible system creates a perception that emphasizes the artificiality of representation. Traditionally, the aesthetics of glitch dissolve differences between functionality and dysfunctionality. It interrupts the event and breaks down the expected. “The artist tries to catch something that is the result of an uncertain balance, a shifting, un-catchable, unrealized utopia connected to randomness and idyllic disintegrations.” [4]

In the same article, Nick Briz continues by comparing glitch to cubism by its reduction of natural forms into its basic geometric constituencies. Glitch aesthetics is similar as it exposes a system’s algorithmic processes into an aesthetic form. Glitch art focuses on popular culture by appropriating it via errors occurring in software, video games, images, videos, audio and other forms of data. Artists primarily search the material landscape in order to chance upon, catch, grab and record a glitch, rather than intentionally create them.

Phillip Stearns’ *Year of the Glitch* is a tumblelog documenting images he produced with modified digital cameras and custom software processes. The customization of electronics provides him with endless creative possibilities for the reinterpretation of pixels. “I like thinking about glitch art as being the art of artifacts.” [5] This concept of artifact stretches our definition of

glitch art: “Glitch is a term that for me involves a mistranslation or swapping of actual binary information, and that binary information is a language base. So for me glitch is more language based, whereas an analogue distortion is more medium-based. It’s an inherent quality to the material and a noise that is part of that channel of communication.” [5]

The epistemology of electronic performance has caused a departure from an error-prone glitch. If everything is randomly messed up, time-based glitch art leaves itself in a precarious situation. Most performing artists require at least minimal control over their system, which, in turn, expands the dialectics between imitation or simulation of glitch and the “pure glitch” in its historical form. This reality has led many artists to attempt to create glitch art using a range of tools.

Glitch Production

Category 1 – Chance-based Hacking

At one extreme are techniques of glitch production that are maximally stochastic and over which the artist has minimal control in real time. True circuit bending emphasizes a trial-and-error, lo-fi aesthetic, where often cheap battery-powered sources of circuitry are used, turning ordinary electronic devices into something unexpected. The aleatoric nature of ‘bent’ performance embraces spontaneity and randomness, while emphasis is given on the process of creation, rather than the instruments themselves. A common technique is to break open a ready-made electrical device and compromise the circuitry, often causing shorts. Circuit bending performers have limited control over their esoteric hacks while producing true aleatoric happenings, in a similar aesthetic to some of John Cage’s work.

Category 2 - Input Hypersensitive Glitches

Glitch aesthetics can also be achieved without truly random or stochastic elements. Some systems are extremely sensitive to initial conditions but are, strictly speaking, fully deterministic from input to output. However, as with the first category, the artist exerts little control over the final product. Analog circuit inventions such as the Cracklebox [6] demonstrate the difference between chance error and system control – as the operator interacts with the instrument, the amount of perspiration and conductivity of their skin causes the box to produce radically different sounds. In the traditions of circuit bending, there is no error or system breakdown. Nor is the sound-producing circuit subject to the performer’s control. Rather it shows a predetermined way of sound creation influenced by the unique performer.

Anyone who hears a Cracklebox would describe it as glitch aesthetic. However, the Cracklebox does not incorporate any circuit malfunction, or any stochastic elements. Sounds produced by the box are entirely

deterministic. However, the sounds are exquisitely sensitive – very tiny differences of input create drastically different output. It is a tool with very little artistic control over the final realization but using entirely deterministic means.

Category 3 – Error-prone glitches

Interesting glitches are revealed by unforeseen delays or miscommunications throughout networks. Targeting bandwidth, memory limitations and packet transmission dataflow are all tools for data glitches. These tools are under the control of the system, but introduce small stochastic elements.

Imperfect Transmissions is a work for networked laptops created by Butch Rován. The piece reappropriates the latency, or time delay between the sending and receiving of data, where unpredictable arrival times are translated into unexpectedly complex rhythmic events. [7] Time intervals are recorded between sent and received ping messages. These time intervals are then retransmitted and new delay times are calculated and again sent. This process is continuously repeated as all values are mapped to sound control parameters on each computer. Sound sources for each laptop are predetermined but the overall sonification of network inconsistencies gives rise to unique performances.



Fig 1. *Imperfect Transmissions*, 2010, Butch Rován, live performance image capture of original footage, ©Butch Rován.

Category 4 - Lost in Translation

Another category are techniques that involve no random elements but that afford the artist modest control over the output, or at least the ability in real time to adjust how “glitchy” an artwork will be. For example, misinterpretation within a machine’s data mapping allows an artist to explore the ratio of control versus stochasticity. This method allows a performer almost complete autonomy over performance and is almost entirely predictable to the performer, except for a certain amount of corruption entering and influencing the system. This could be construed as a misrepresentation and gives rise to anomalies in the system mapping.

Misinterpreted data has always been a rich source of glitch. Laetitia Sonami, in her keynote at the New Interfaces for Musical Expression conference describes her own journey from seeking despotic control over her self-made controller instrumentation, the Lady’s Glove, to facilitating the unforeseeable failings of a DIY system

for live performance: “Unpredictability became more and more welcome. Having conceived the lady’s glove originally as a “controller”, the surprises were limited to functional errors, or structural limitations. For instance the bending of one finger forces other muscles to trigger and contribute unintentional events, which in turn shape the performance. These unintentional effects revealed themselves to be crucial to an adaptive performance. The switch from control systems to exploration systems seems to me now inevitable.” [8]



Fig 2. *Lady’s Glove*, 2014, Laetitia Sonami, live performance image capture, ©Laetitia Sonami.

Category 5 - Imitating the Glitch

Finally, artists may simulate glitch production using systems that are maximally deterministic and controllable. Many glitch philosophies concern the *study* of uncontrolled and stochastic glitch with the aim of replicating it “artificially.” For example, performable works are created ahead of time, where the artist laboriously refines each gestural moment, dictating an intricately planned structural flow. Controlled simulation of sabotage can facilitate hegemony of digital representation and the passivity of its subjects.

There are many examples of highly engaging pieces that try to mimic authentic-looking glitch, usually in post-production based upon printed footage. Ryoichi Kurakawa’s glitch graphics and glitch sound takes their source materials almost always from nature. His audiovisual performances are predominantly pre-rendered sessions, where enormous detail is labored over in the software before finally rendering out a printed file ready for playback.



Fig 3. *syn_mod.1*, 2015, Ryoichi Kurakwa, live performance image capture of original footage ©Ryoichi Kurakwa.

Imitated, or simulated, glitch resembles aspects of real glitches found in their original habitat but are deliberately constructed. Essentially, artists are after the

look and sound of the glitch ethos, not actual untamed errors. “The glitch aesthetic may be rooted in the look of malfunction, but when it comes to actual practice, there’s often not much glitch in glitch art.” [9]

Many performing glitch artists require control over their systems, believing that chance anomalies are not part of their stylistic vocabulary. The difference here is not, as it is sometimes supposed, between deterministic processes and stochastic ones. Rather, the difference lies in the artistic intention. Errors are outside the performer’s control, whether the cause of that shift is deterministic or not, and perhaps are not useful towards defining individual style.

Whether stochastic or deterministic, the process of manipulation will only be reproducible in any meaningful way if the input-output mapping is predictable in real time. This predictability is what I am interested to find in glitch art, as a key to understanding intentionality. What users might perceive as “glitchy” can arise from a normally working function of a program. Sometimes these might originate from technical limitations, such as low image-processing speed or low bandwidth when displaying video. Or visibly pixelating the image by allowing the compression of parts to remain static over different frames when, for instance, the transfer speed drops. And then there are handcrafted systems whose purpose is to create these artifacts in an algorithmic way.

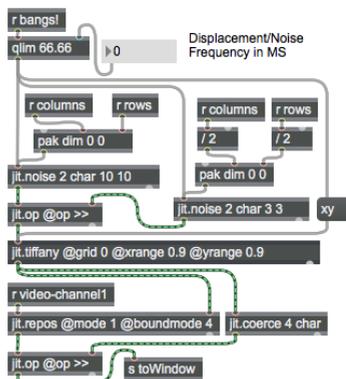


Fig 4. *Glitch Artifact Patch*, 2015, Vade, Griffin Byron, Max 7 patch ©Griffin Byron.

Above is an example of a Max patch influenced heavily by Vade’s template library of patches [10] for glitching movie playback. Scrubbing through frames of the input source video can instigate further glitchery, as in the following additions to the patch.

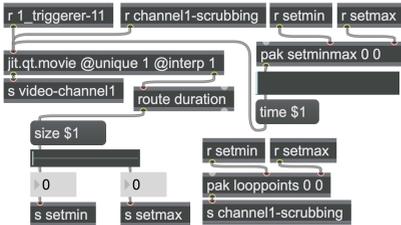


Fig 5. *Glitch Scrubbing Patch*, 2016, Griffin Byron, Max 7 patch, ©Griffin Byron.

Another example of a controlled glitch demonstrates how an audio signal can be used as an input source for manipulating video, as in the below patch.



Fig 6. *Glitch Audiovisual Patch*, 2016, Griffin Byron, Max 7 patch, ©Griffin Byron.

Varying the Control

There is a history in improvisatory performance whereby performer control can be varied in real time. In the context of glitch art, the ability to dictate the amount of control provides a kind of hybrid glitch.

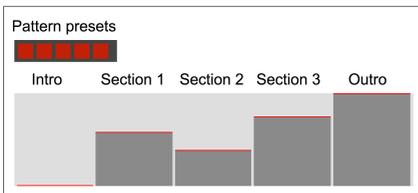


Fig 7. *GUI for introducing a percentage of glitch randomness*, 2016, Griffin Byron, Max 7 patch, ©Griffin Byron.

The above image shows a potential user interface for a performer to add an overall amount of glitch randomness to each section within the whole compositional structure.

The below image demonstrates how glitch engines can be swapped out on-the-fly, allowing randomness to specific modules. These presets can be triggered by MIDI or some other sensor system.

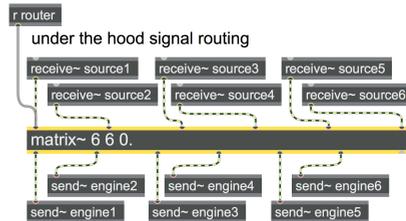
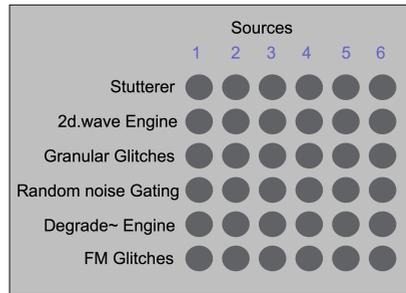


Fig 8. *Routing idea for specific glitch engines*, 2016, Griffin Byron, Max 7 patch, ©Griffin Byron.

Conclusion

This paper has provided a framework for understanding the various pathways artists have undertaken when utilizing techniques for producing glitch. Despite a rich body of work falling under the stochastic glitch category, historically and leading up to today, how to “glitch on purpose” via glitch production can be a much more useful tool.

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