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THE GLITCH AESTHETIC

by

REBECCA JACKSON

Under the Direction of Ted Friedman

ABSTRACT

The miscommunication between sender and receiver during transcoding indexes specific historical moments similarly to analog film's indexical trace. Iconography and glitch art begin to establish glitch's deictic index. The glitch aesthetic exposes societal paranoia by illustrating dependence on the digital and fear of system failure. With the advent of video sharing sites like Youtube and popular cyberfilms, the glitch aesthetic has evolved into a pop culture artifact.

INDEX WORDS: Glitch art, Glitch, Art, Aesthetic, Digital, Digital index, Index, Humanities, Buffer underrun, Error, Errant, TCP/IP, UDP, New media, Film theory, Pop culture, Visual, New media studies, Digital studies, Streaming media, Software studies

THE GLITCH AESTHETIC

by

REBECCA JACKSON

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

in the College of Arts and Sciences

Georgia State University

2011

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Rebecca Jackson
2011

THE GLITCH AESTHETIC

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December 2011

DEDICATION

This thesis is dedicated to a true friend, talented artist, and my favorite person in the world: Luis Sierra.

ACKNOWLEDGEMENTS

Thank you to all the glitch artists who helped me put this thesis together. Without your beautiful work, my argument would be bland and beige. Glitch art not only recycles digital bits of garbage into high art and pop culture artifacts, but it exposes digital (trace) indices thereby juxtaposing the analog world with the digital in a beautiful array of spastic pixelation.

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Introduction

Within the past decade, moving image studies has encountered a paradigm shift regarding (among other things) the aesthetics and indexicality of analog and digital media. I argue that the miscommunication between sender and receiver during transcoding indexes specific historical moments in a parallel groove to analog's filmic fingerprint. The analog filmic index is a physical trace of an historical moment captured through the process of developing film. This thesis will demonstrate that digital artifacts, too, can have indexical relationships to the physical world as it intersects with technological communication infrastructures through transmission and transcoding errors.

In addition to establishing the digital (trace) index, glitches have also created new pop culture artifacts through the glitch aesthetic. At its most basic level, a glitch is the result of miscommunication from sender to receiver during the transcoding of information. Unexpected variations occur during the sending and/or receiving of information altering the intended informational product. These vicissitudes modify and delay the original informational product leaving behind a new, unintended, and unauthored artifact: the glitch.

Glitches index the physical world and break the fourth wall by jolting the spectator from the intended experience. This is important to moving image studies because digital media is so often considered only a procession of simulacra. However, spontaneous glitches that occur during the transcoding of information provide moments in which the physical world pierces virtual worlds and digital media. Glitches are random and chaotic. Glitches are manifestations

of the trickster archetype, creating random pass-ways between two very different worlds.¹ The Internet can no longer be viewed as a personal experience through the private navigation of web pages. Instead, trickster glitches accompany the user, randomly wreaking havoc while reminding our virtual-selves of the physical world. This thesis argues on the side of digital media. I believe glitches pierce the veil of signs associated with digital media while providing a new kind of indexical relationship to the physical world.

This thesis seeks to understand glitch aesthetically and historically. The first chapter provides a taxonomy of glitches, showing how spontaneous glitches harness the energy of errant transcoding and captured glitches recreate those spontaneous glitches. The second chapter provides textual analyses of glitch artists' works while appropriating specific glitch-types to specific pieces of glitch art. My final chapter explores the explosion of pop glitch in popular media like film, television, videogames, and advertisements. Charting the evolution of glitch from event to art object to pop culture artifact, my thesis explores the reasons and ramifications of spontaneous and simulated transcoding errors.

New media technologies have increasingly become integrated into everyday life. As networking and computing technologies improve, errors, too, become increasingly inundated in our daily routines. This thesis explores the agency of error in new media technologies via glitch artifacts. Glitches teeter between the analog and digital universes, jolting spectators from desired content and wreaking havoc on internal and external computing processes. My research analyzes glitch aesthetics in gallery art, film, and pop culture media platforms as it seeks to comprehend the mysterious nature of glitch.

¹ See Hyde. The trickster archetype employs randomness to wreak its havoc. Glitches are similar to the Raven who is a "go-between," a mediator between two worlds. 25.

A New Ecology for the Citizen of a Digital Age is Nick Briz's short film and glitch art piece that examines memory and movement through the construction of a digital microcosm inhabited by the artist, pop culture media clips, and glitch. As I will discuss in my second chapter, glitches result from varying computer errors and assume a panoply of forms. Pinning-down a common characteristic of glitch is extremely challenging. Glitches are far ranging, far reaching, and nearly impossible to capture. However, all glitches share one important characteristic; inherent in every glitch is a traceable index of the analog world.

A New Ecology for the Citizen of a Digital Age

A New Ecology for the Citizen of a Digital Age analyzes the intersection of computation and our occupied spaces. In the video description from his Vimeo page, Briz says, "*A New Ecology...* seeks to reconcile the overwhelming pace of our society's ascent towards a technological singularity."^{2 3} He argues that the piece is meant to question humanity's access and exploration of the digital world.

A New Ecology... begins with a medium close up of Briz as glitches similar to VCR tracking errors sweep over his face. The title screen appears reading, "A New Ecology for the Citizen of the Digital Age by Nick Briz" superimposed over Briz's glitchy head to signal that these glitches are, in fact, purposeful to the exploration of Briz's new ecology. Twenty-five seconds into the four and a quarter minutes piece, Briz places earbuds in his ears as the audio track for

² From *The New Ecology...* video description. <http://vimeo.com/7617527>

³ Technological singularity, coined by SF writer Vernor Vinge, states that, according to Moore's law, technology will eventually progress at a faster rate than human intelligence. Futurists have adopted this concept surmising an inevitable coup d'état in which robots enslave their (human) makers.

A New Ecology... begins with a jumbled mixture of audio clips from Tyra Banks's daytime talk show, *The Tyra Banks Show* (Syndication 2005-2009) interlaced with moments of static. Then Briz places his hands over his eyes as a second set of hands remove the earbuds. With this gesture, Briz is inviting his audience into his mind, his world, his new ecology. Briz plugs in to his new world through the act of unplugging himself. Briz uses an excerpt from Bank's interview with Luke Johnston as glitchy images of screaming politicians, newspaper headlines, and hugging fathers and daughters, accompanied by Banks's voiceover, explode onscreen behind Briz who remains in a medium close up shot.⁴



Figure 1.1 Briz covers his eyes and removes earbuds

⁴ Luke Johnston is the father of Sarah Palin's grandchild, Tripp. He was involved in a highly mediacized scandal in 2008 when he and Palin's daughter, Bristol, announced their pregnancy during Palin's campaign for the vice presidency.



Figure 1.2 Briz blends analog broadcast errors and digital glitches to create a macabre effect as he disintegrates into the background

As Briz places his hands over his eyes and disintegrates into the background imagery, a macabre pixelation effect that blends analog errors and digital glitches takes over the frame transforming it into undulating patterns of varying shades reminiscent of a bad analog broadcast signal. The garbled images of *Tyra* ostensibly melt into imagery of race cars circling a track as an image of *Wolverine* from *X Men* (Bryan Singer, 2000) emerges from within the racecars. This display signifies the speed and power in which the digital age has eclipsed the antedigital era.



Figure 1.3 Racecars merge with Wolverine to create a display of speed and power

Various crackling audio accompanies the video as the imagery shifts to three different examples of people drinking beverages. Briz illustrates our thirst for media and technology by including these three instances of drinking. The repetitive motion of people tilting back beverages to their mouths disintegrates into the same undulating pattern of colorful pixelation and mimicked broadcast errors as pop culture clips seemingly crash into each other. The violent mashup of color heralds a change in the audio track as unintelligible audio clips are exchanged for the uncomfortable hum of static.



Figure 1.4 Repetitive drinking motion

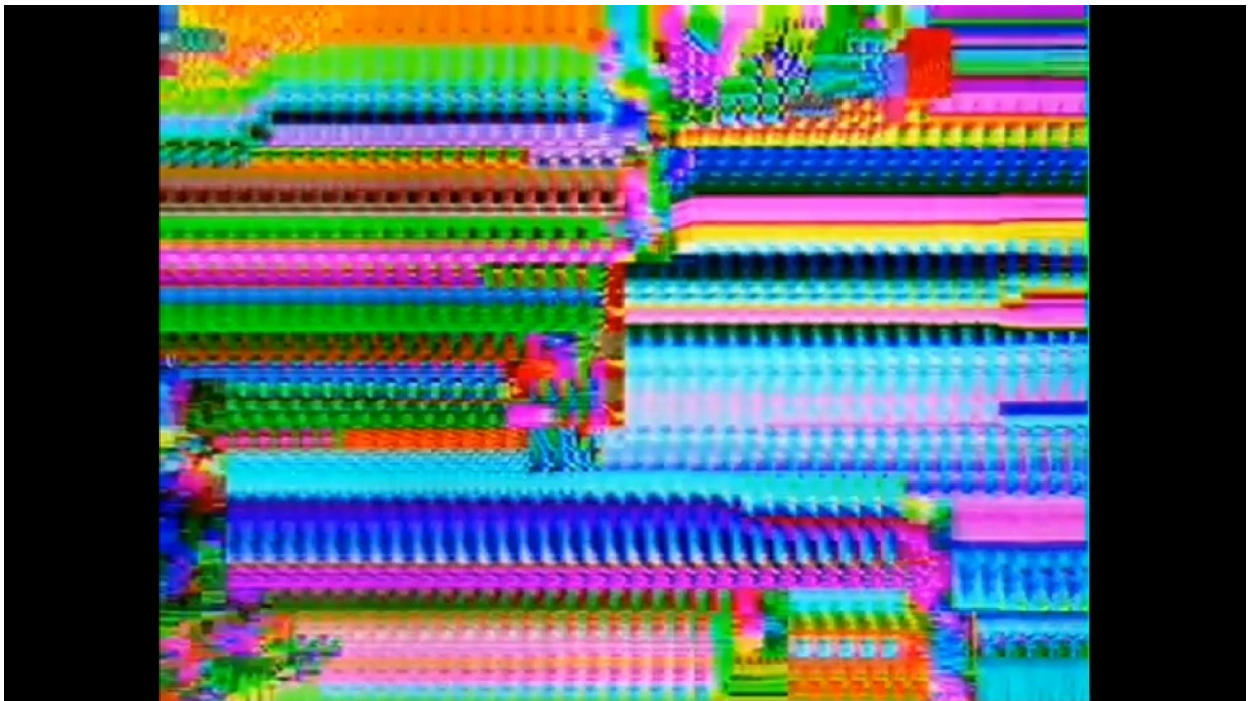


Figure 1.5 Images disintegrate entirely



Figure 1.6 Briz emerges from within the pixelation

Suddenly Briz emerges from within the glitchy pattern. As he unbuttons his shirt, Briz reveals his digital digestion. "David After the Dentist" emerges from his black and white pinstriped shirt. "David After the Dentist" is a popular Youtube video about a young boy's drug-induced amusements following a trip to the dentist. The glitchy background coupled with "David at the Dentist's" visual clarity blurs the lines between reality and fantasy. The content of this particular Youtube meme also presents a bifurcation between reality and fantasy as David questions his surroundings. The previous drinking sequence begins to make sense as Briz uses this meme to illustrate his ingestion of remixed pop culture media clips:

DAVID: Is this real life?

DAVID'S FATHER: Yes, this is real life.

David, then, leans forward and is jettisoned from Briz's torso. Has Briz just birthed "David at the Dentist," or has David exploded from Briz? This curious action is followed by a mixed chorus of

melodic oohs and aahs as patterns of pixelation sweep over the screen. The clarity of the chorus of oohs and aahs heralds Briz's emergence into the new ecology as Briz's eyelids appear amidst the glitch. Through the act of opening his eyes, Briz clears the pixelation revealing his stare like a Cheshire cat's grin.

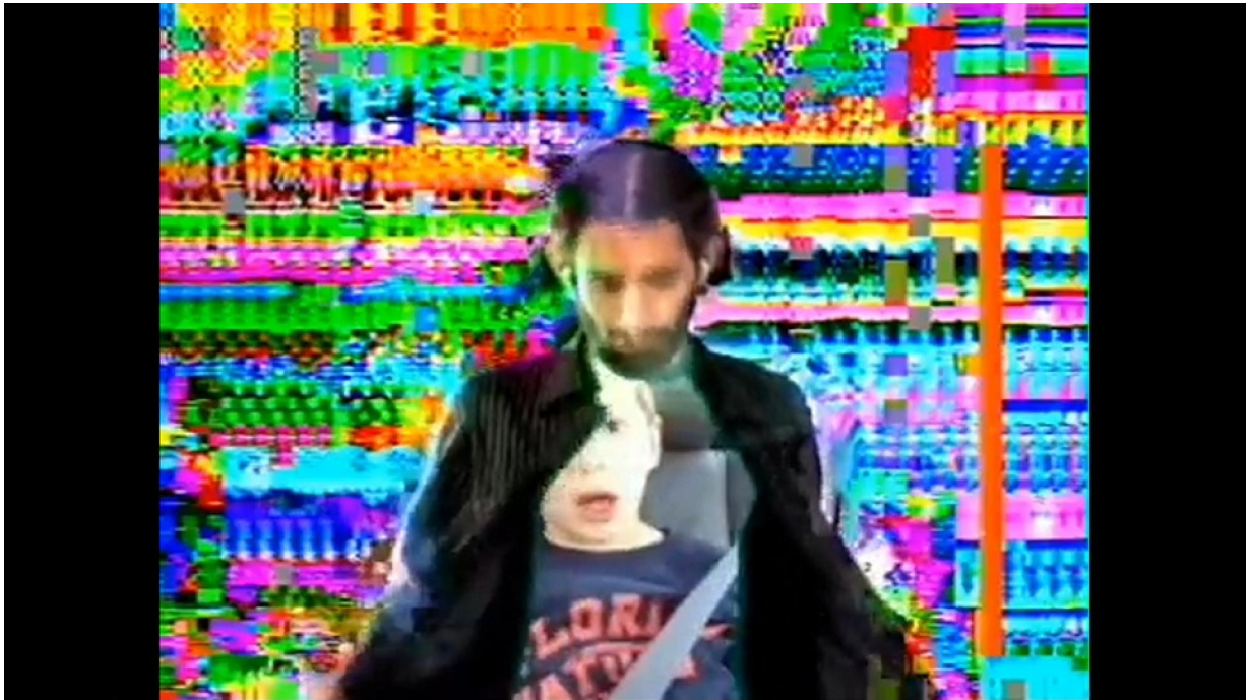


Figure 1.7 Briz unbuttons his shirt to reveal "David and the Dentist"



Figure 1.8 "David at the Dentist" sequence 1 of 6

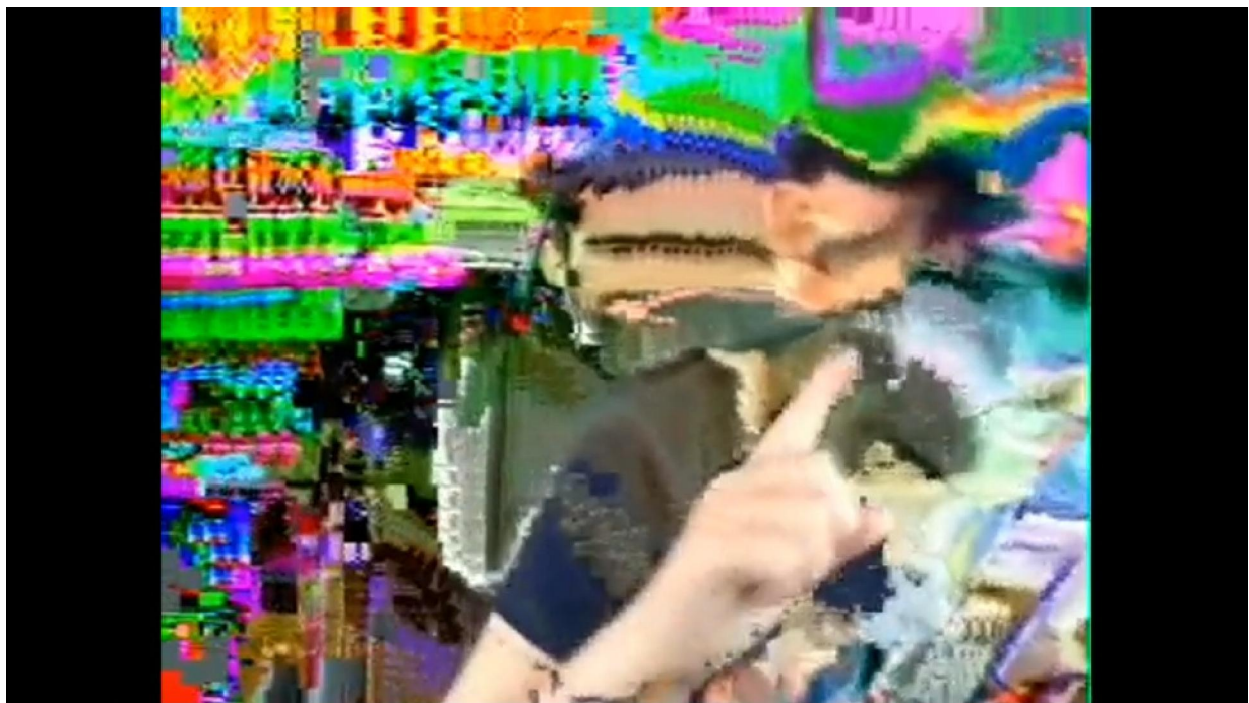


Figure 1.9 "David at the Dentist" sequence 2 of 6

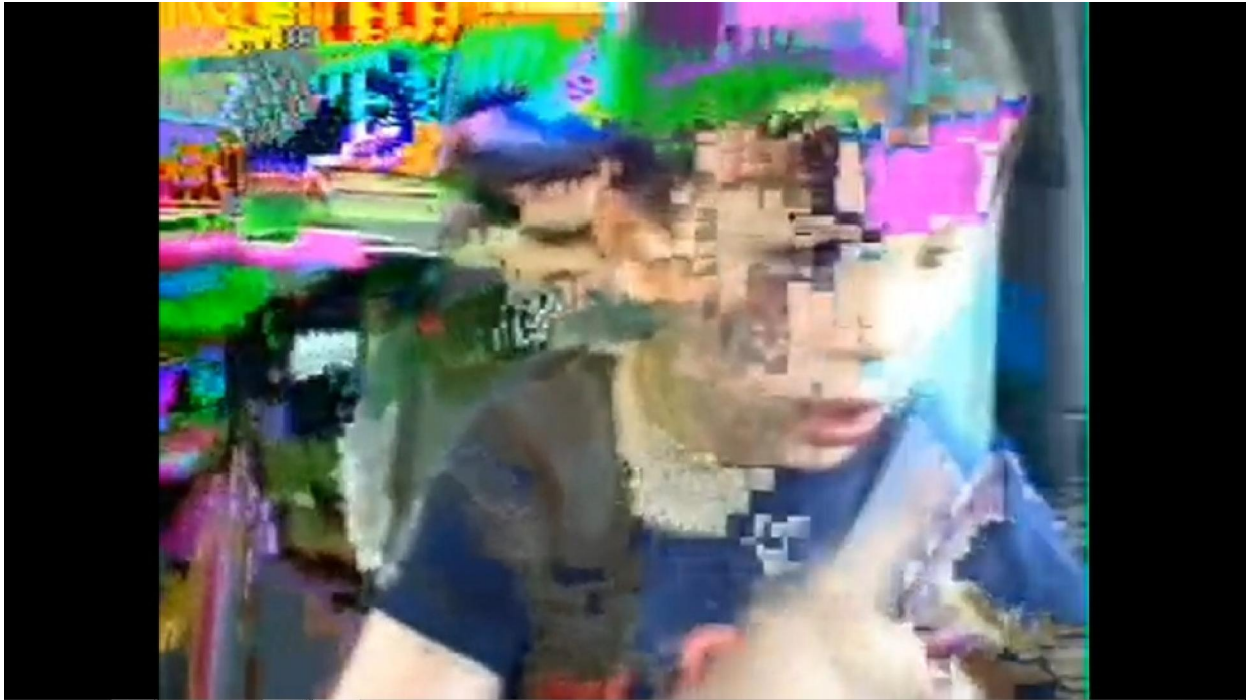


Figure 1.10 "David at the Dentist" sequence 3 of 6



Figure 1.11 "David at the Dentist" sequence 4 of 6

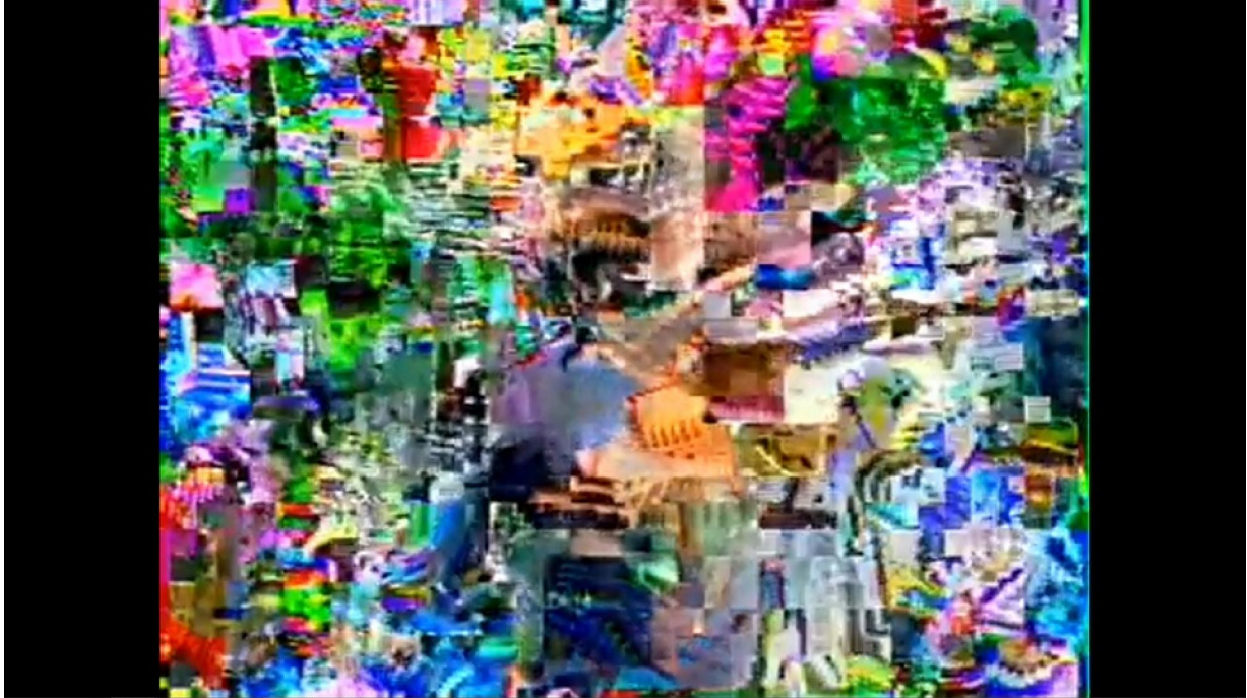


Figure 1.12 "David at the Dentist" sequence 5 of 6



Figure 1.13 "David at the Dentist" sequence 6 of 6

Briz's body then emerges completely constructed of databits and only recognizable through the shape of his body's form. With grand sweeping gestures, Briz wipes the screen

clean of colorful patterns exposing a white background of seemingly empty data. As he sweeps the media texts clean, new ones appear over and over again. Briz becomes lost in pixelation. As the digital canvas becomes engrossed with another series of pop culture media clips, Briz reappears; this time synthesized within the image, freely moving among the pop culture media clips. His grand and graceful gestures are markedly different from his prior sweeping gestures. Briz is no longer trying to clear the images from the screen. Instead he begins swaying and dancing within them. Briz's movement is joyous and carefree. Finally, *A New Ecology...* ends with the same, static imagery from the beginning of this piece: a medium close-up of Briz's head, glitches sweeping over his face. He has returned, safe and sound, from his digital bout with new media.

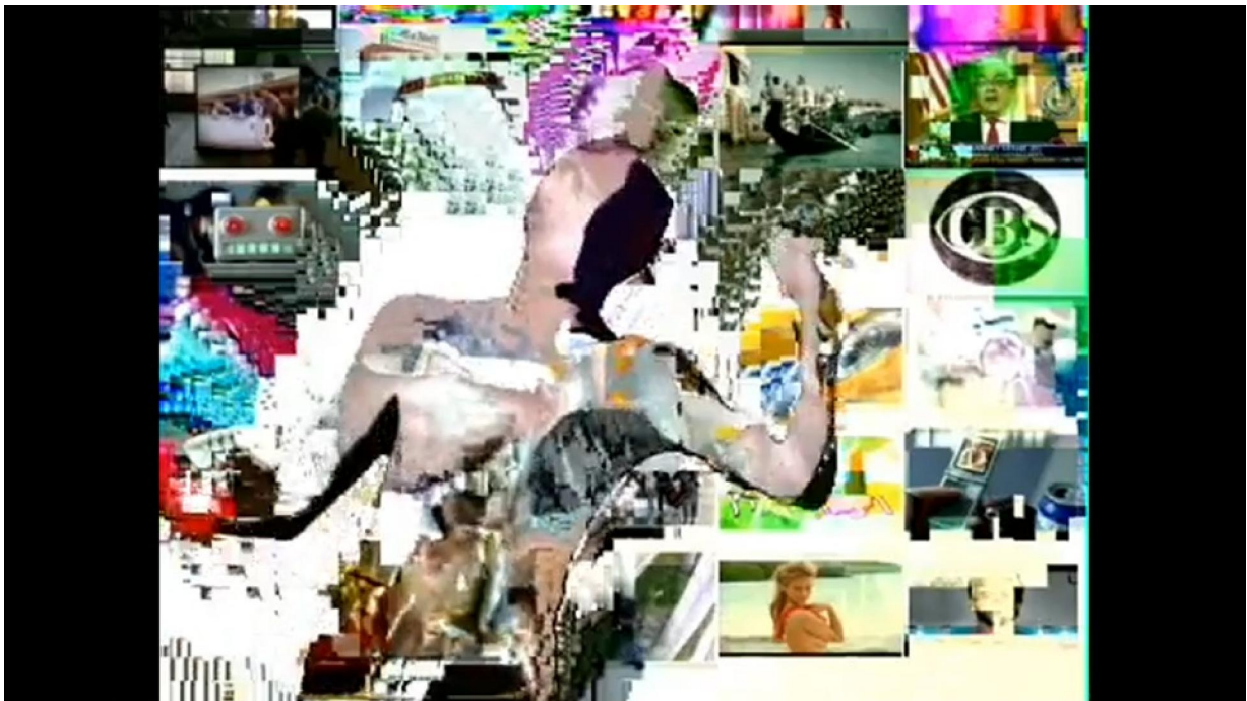


Figure 1.14 Briz emerges as a new citizen comprised entirely of glitchy media clips

The juxtaposition of pop culture media clips and autobiographical imagery creates the new digital habitat in which Briz is free to move about the collection of pop culture media clips

and User Datagram (UDP) errors. The ecosystem Briz forges provides a nesting effect in which different media platforms are imposed on one another.⁵ A veritable mashup of media explodes in digital disruption, but Briz embraces the seemingly broken imagery, rejoicing through dancing motions as *A New Ecology...* encourages us to relish the moments of glitch.

The unfamiliar images created by *A New Ecology...* create a dialogue between pop culture, glitch, and the artist in which assimilation provides the basis for a new ecological interface. Briz's convergence with glitch constructs a new identity for the artist as a digital citizen. His large, sweeping gestures seem to clear the screen for milliseconds before new clips appear. The infiltration of media clips in Briz's piece points to the fecundity of viral media clips and pop culture's voracious appetite for them. *A New Ecology...* illustrates our relationship with new media via movement and memory. Briz chooses his media clips carefully including a rhysonic collection of television, advertising, sports, film, music, and user-generated memes. Scandal, novelty, and pops of color and culture become the foundation for Briz's new ecology.

Briz realizes his new citizenry when he stops trying to wipe the screen clean and adapts to a new pixelated routine moving between and (somehow) within the images. By letting go of his expectations, Briz gains access to the new pixelated world. The rules of the digital universe are accepted and assimilated to allow Briz free range of this world. Briz shrugs off the limits of digital media exploring the new, reinvented pop culture via the new ecology.

Free to move about the media clips in graceful dance-like motions, we can think of his sweeping gestures not as Briz trying to wipe the screen clean, but as Briz trying to embrace his new world. Becoming a digital citizen means foregoing reductive preconceptions of pop culture

⁵ See Mitchell, 401.

media texts as low-brow entertainment commodities and embracing a new culture through new, innovative modes of consuming new media via technological (and aesthetic) upgrades. Merging with glitch, *A New Ecology...* demonstrates the participatory perks of foregoing an analog form for a pixelated persona.

A New Ecology... examines the break between the analog and digital universes while exploring the possibilities of bridging the gap between these two very different worlds. Briz simulates glitch artifacts by creating the conditions necessary for glitch to occur. *A New Ecology...* seemingly signifies Briz's mastery of glitch, however, these are only simulations and not actual glitches. Many of the glitch artists I will discuss in the third chapter simulate glitch as a means for creating artworks. Briz's aesthetic blends artistic genius with technological know-how, a characteristic shared by every glitch artist. Exploring the realm of glitch, for Briz, is as simple as opening his eyes to view it. Briz's new ecology offers a colorful play between movement and memory that challenges the relationship between analog and digital universes while forcing us to rethink our value claims on popular culture.

What is Glitch?

Glitches are not derived solely from digital media, nor are glitches a recent aberration. One story claims that Astronaut John Glenn first coined the term *glitch* to describe, "a spike or change in voltage from an electrical current."⁶ However, some scholars argue that the term is derived from the German word *gleiten* which means to glide, or *glitschig*, a Yiddish word that

⁶ From We Seven, by John Glenn, who said "another term we adopted to describe some of our problems was glitch." He defined the term as "a spike or change in voltage in an electrical circuit which takes place when the circuit suddenly has a new load put on it...A glitch is such a minute change in voltage that no fuse could protect against it." Time Magazine, in 1965, popularized the term further with an article "Glitches Ñ a spaceman's word for irritating disturbances."

means slippery.⁷ The underlying idea of media glitches predate film and television and can be traced back at least as far as the printing press. Perhaps we could say that typographical errors from the printing press are the first forms of analog glitch. In fact, evolution is predicated on glitches within genetic coding.

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. As Hugh S. Manon writes, "To effectuate an analog media catastrophe one needs to bring out the heavy artillery: fire, scissors, sandpaper, a large magnet" (6). Digital glitches, however, spring specifically from errors in sender/receiver communication without the need for physical damage to the medium itself. How do glitches occur? Errors in Internet Protocols account for the majority of Internet glitches. The next section explores Internet Protocols and specific glitches that result for transcoding and transmission errors and how these glitches inflect their indexical states.

Internet Protocols

The Internet functions as easily and smoothly as it does because of a standardized system of protocols. These protocols, Transmissions Control Protocols, Internet Protocols TCP/IP and User Datagram Protocols (UDP) ensure that information and/or datagrams are communicated fluidly between servers. Applications such as email and online banking sites

⁷ See Schultz-Figueroa, 12.

utilize TCP/IP. Streaming sites such as Pandora, Youtube and Netflix rely on UDP to establish a stream on which data flows. By looking closely at how the protocols operate, we can understand the consequences of when they breakdown in glitches.

The Internet Defined

There are five areas of the Internet that users should familiarize themselves with: application support, error and flow control, logical addressing, routing, and name resolution. Application support conducts port specificity and helps users run multiple applications at the same time. Error and flow control simply extends to the level of communication required for data packets to travel to the users' computers; either TCP/IP will be used or User Datagram Protocol will be used to execute the request for data. Logical addressing refers to the IP address in use. Networks rely on these addresses to send and receive data through routing. Routing, as the name suggests, routes data to correct IP addresses. Name recognition allows users to use web site names as Unified Resource Locators (URLs) instead of numbered IP addresses. For example, a large web site like Youtube requires several servers and employs four common IP addresses: 208.65.153.238, 208.65.153.251, 208.65.153.253, and 208.117.236.69. Number recognition enables the users to access Youtube's data with <http://www.youtube.com> as a simplified URL. Various interruptions within the layers result in the majority of Internet glitches. In the next section, I will explore particular glitches resulting from miscommunication between specific TCP/IP layers.

⁸ The error message in bold is a software glitch artifact resulting from Microsoft Word's inability to recognize the url as simple text. Instead, Microsoft Word is designed to treat url addresses as rich text commands. The original text reads Youtube's url [www. Youtube. com](http://www.youtube.com) (I have provided spaces in between the periods to forestall subsequent glitches in this footnote). For the purpose of this thesis, I have decided not to correct this spontaneous glitch artifact.

TCP/IP Protocol: Windmill Glitches⁹

The TCP/IP Suite is a set of Internet protocols designed to unify the process of data transmission. TCP/IP transposes information over networks while ensuring a reliable Internet experience for users. Basically, the Internet uses TCP/IP to relay messages back and forth through the implementation of layers, encapsulation, and a simple communication structure. Starting from the lowest layer, the Data Link Layer operates solely on the user's personal computing level using hardware from the user's computer to send and receive messages from the next level: the Network Level. The Network Level works with the user's Internet Provider (or host) communicating basic commands which the Network Layer communicates to the Transport Layer and on to the Application Layer.

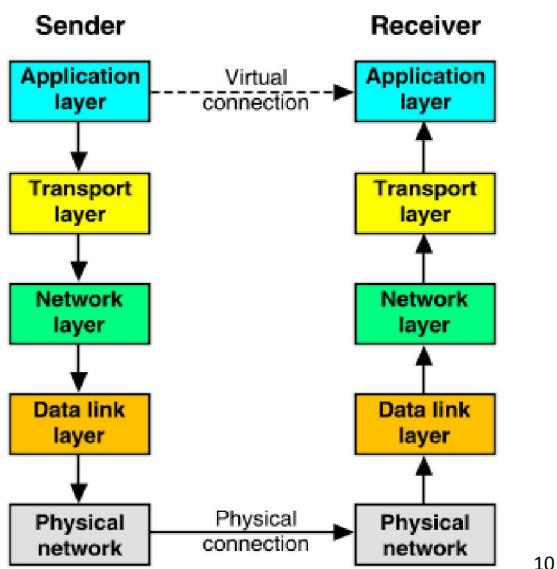


Figure 1.15 Diagram of Internet Protocol Layers

10

The Transport Layer relays information to the Application Layer via connection-oriented communication. By interpreting the connection as a data stream, the transport layer easily

⁹ As explained by Craig Hunt in *TCP/IP Network Administration* (3rd Edition; O'Reilly Networking).

¹⁰ Sender/Receiver communication from *The TCP/IP Protocol Stack*.

http://uw713doc.sco.com/en/NET_tcpip/tcpN.tcpip_stack.html

accesses the Application Layer and delivers components and protocols back to the Internet Layer. The highest layer, the Application Layer, employs protocols at the process-to-process communication level establishing host-to-host connections with the Transport Layer. The Application Layer, as the name suggests, executes and communicates applications and processes.

Host Interruptions contribute to glitches on the Internet level of TCP. Host Interruption glitches can result in browser crashing or elapsed page load times. This form of glitch indexes a variety of complications on the host's end. For example, I recently experienced a Host Interruption glitch during a rain storm. Cable outages in the area eviscerated my home connection. The Host Interruption glitch in this example indexes both cable outages in my area and the rain storm. Like the classical example of wind's indexical trace through the motion of a windmill, the loading icon in my Google Chrome browser's tabs spun around and around. The windmill glitch, illustrated by the revolving loading icon, indexes the inclement weather and Comcast's service interruptions.

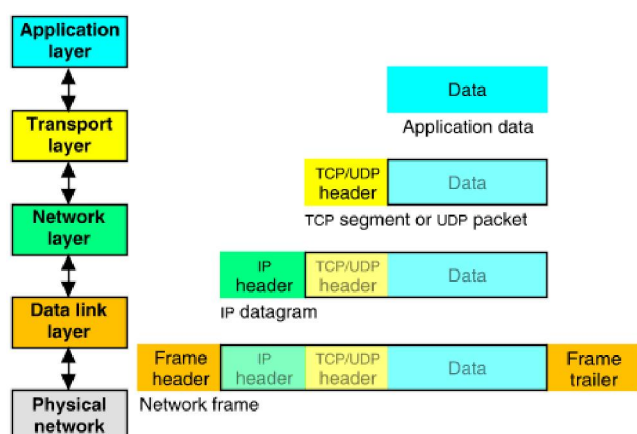


Figure 1.16 Diagram of Internet Protocol Layers as they relate to data

11

¹¹ From *The TCP/IP Protocol Stack*. "Encapsulation/decapsulation of application data within a network stack" shows how each layer adds (or removes) header information to data traveling away from (or toward) the application layer. The process of adding header information is termed "encapsulation"; removing header

UDP: Pixilated Punctums

User Datagram Protocols are preferred when streaming media because they do not require initial set up or buffering. UDP assumes buffering adjustments are made in the application thereby shrugging the overhead in exchange for quicker speeds. UDP offers only the minimal transport service resulting in glitches from dropped or missing data and lags on the stream. Most of the surfing people do on the Internet requires TCP, but when datapackets are requested without the layer of security TCP/IP provides, then UDP is the favorable set of protocols to use.

Netflix, Youtube, and Hulu all rely on UDP to send datapackets to their users. Ineluctably, and quite frequently, data is dropped out of these transmissions. These specific lapses in data transmission are usually buffered by the web site's buffer underrun. The buffer underrun occurs when a buffer used to communicate between two devices is fed with data at a lower speed than the data being read from it. This requires the program or device reading from the buffer to pause its processing while the buffer refills. Glitches in streaming media usually occur on the site's buffer underrun as a result of UDP transmission errors. This leads to a pixilated image in which the visual product is separated into tiny, discrete visual units commonly referred to as pixels. The once cohesive image is literally blown apart as dropped data from the transmission is lost. Additionally, the image might freeze or display movement behind the granulated image. These are the pixilated punctums that invade the cinephilic experience jolting the viewer from the intended product. Serendipitously, UDP glitches have

contributed to a new filmic aesthetic: the glitch aesthetic. The glitch aesthetic is an artistic representation of an indexical moment of miscommunication within the buffer underrun.

Bandwidth Glitch

Bottlenecking is a specific kind of glitch that results from an abundance of data requests on a host's connection. For example, Georgia State University uses a powerful broadband connection to supply its students with a fast, reliable Internet connection. However, when a spike in data requests occur (usually brought on as a result from an increase in students accessing the Internet), Georgia State's broadband width becomes too crowded as the flux in data requests creates a bottleneck effect on the university's network. Bottleneck glitches may occur regardless of which set of Internet Protocols the data requests require.

With bottlenecking, there is simply not enough bandwidth to accommodate the data requests made by users on the network. Users unknowingly unite in overloading the system causing decreased transmission speeds. Glitches associated with bottlenecking index those sending data requests over a crowded host connection. These glitches index the thousands of users trying to access data at the same time. Browsing the Internet may feel like a personal activity because the user personally navigates through web sites. But bottleneck glitches remind us that we are not alone on the network.

The glitches I have described are only a few of the possible glitches existing today. Glitches serve to break the veil of the seamless stream of data we associate with the Internet. Glitches remind the user that web pages, graphic user interfaces, RSS feeds, and streaming media players are just facades that make data easier and more aesthetically pleasing to view. I refer to glitches as pixilated punctums because they jolt the user's experience while leaving

indexical traces of the physical world in their wake. Establishing the digital index is a critical component in breaking the veil of signs associated with digital media. In addition to digital indices, my research explores a new filmic aesthetic derived from digital glitches.

Glitch Art

Glitch art incorporates the visual representation of the miscommunication during the transcoding of data. According to Iman Moradi, the first academic to publish on the topic of glitch aesthetics, there are two forms of glitch art: pure and glitch-alike. Pure glitches occur, as the name suggests, through miscommunication during the transcoding process. Glitch-alike glitches are created by artists. These glitches make-up the majority of glitch art. For the purpose of this thesis, I will restrict using the term pure glitch to describe artworks that incorporate spontaneous glitch. Spontaneous glitch is my term for glitches users experience everyday whether they are constructed into pieces of glitch art or not. Glitch art is not a new form of expression, there are several indicators that point to its inaugural debut in the midst of surrealist and avante garde cinema. Scratching frames on celluloid strips is a primordial form of glitch art. However, with the onset of digital video and web sites which promote mass upload through compression like Youtube, glitch art is quickly becoming a popular mode of expression.

Within the past five years, the glitch art movement seems to be gaining popularity and notoriety. Bravo's reality series, "Work of Art: The Next Great Artist," aired in 2010 with one of its finalists, Miles Mendanhall creating a glitch piece for the series finale, ultimately winning him a cash prize, fame, and a place within the canon of glitch artists. Glitch Art, the first conference dedicated to glitch art debuted October 2010 simultaneously in Chicago and

Amsterdam with rave reviews and participation. During the research of this thesis, the Wikipedia page for glitch art has grown from three additional reference sites to nine.¹²

Although still in its infancy, glitch art is becoming increasingly popular as new artists turn to digital media to explore new modes of expression.

Glitch as a concept has emerged within the last few years. In retrospect, we can trace its prehistory to earlier artistic movements like Dadaism and Surrealism which complicate and expose sender/receiver relationships. Man Ray and Rene Clair were the first to augment film cells by hand, creating effects similar to the glitch aesthetic of today. The films of Stan Brackage expose sender/receiver relationships as his oeuvre consistently interrogates visual perception and meaning. Although the glitch aesthetic in music gained traction in the 1990s, the glitch art movement did not appear in full swing until the 2000s. Since then, glitch art has been on the rise, available across media in oil, sculpture, digital prints, and moving images.

The Glitch Aesthetic

“Video is dead; long live video!” exclaims Laura Marks in “Video’s Body, Analog and Digital” from *Touch*, her study of synaesthesia and multisensory media. Marks argues that digital aesthetics express nostalgia for analog media. She employs a classic definition of analog, “as one that creates an indexical representation of reality” (148) to illustrate how digital media making processes evoke analog filmic aesthetics. Marks is persuasive that digital aesthetic is haunted by a nostalgia for analog media. However, I believe her analysis is incomplete. The digital evokes not only the technological past but its immediate moment of creation and

¹² http://en.wikipedia.org/wiki/Glitch_art

transmission through the digital index: the glitch. There are inevitably moments of unauthored chaos rearing its head each time a viewer streams digital media. Bazin suggested that photography was the only medium to benefit from a lack of an author.¹³ Glitch, too, emerges from an authorless source: computation.

Television programs like "Ghost Hunters International" (Avi Eshed and Jennifer Hutchins) and "Celebrity Ghost Stories" (Julie Insogna and Seth Jarrett) and films like *Ring* (Gore Verbinski, 2002), *Cloverfield* (Matt Reeves, 2008), *District 9* (Neill Blomkamp, 2009), and the *Saw* franchise (Lionsgate, 2004-2010) have utilized glitch aesthetics mainstreaming this previously underground art form while creating an additional layer of suspense within the genre. The horror genre seems specifically adept at conveying glitch as an aesthetic because of the uncertainty and volatility that glitches offer. Horror themed media evoke unsettling and confusing images similarly to avant garde modes of expression.

Glitch aesthetics interrogate perception while reminding viewers of the cinema's veil. *Kane and Lynch 2* (IO Interactive Development, 2010) mimics glitches in jerky surveillance footage intended to create an eerie atmosphere. The appearance of glitch aesthetics in film, television, and videogames confirms its place as a new sensibility.

The Digital Index

Through freeing the photograph from the bonds of subjectivity, Bazin was able to establish a realist aesthetic for cinema through his ontology of the photographic image. The artifact of glitch is in itself the index of glitch. In other words, when a glitch occurs, the visual

¹³ See Bazin, "Ontology," 12.

product left behind indexes the moment of glitch, and, by extension, indexes extenuating circumstances. Peter Wollen was the first theorist to suggest the similarities between Bazin's idea that photographs offer transference of reality and Charles Sanders Peirce's notion of the index.¹⁴ Every photograph indexes a physical, passed experience leaving in its wake an indexical trace of a person, place, or thing that, for a moment, existed in time. Peirce's term 'indexicality' describes the physical relationship between the photograph and that which is represented in the photograph.

Glitches are immutable references to lapses in communication between nature and computer. Glitches leave traceable indices of extenuating circumstances. Glitches index communicational and computational infrastructures and, by extension, external conditions that impact transcoding processes like instances of overcrowded bandwidth and inclement weather. Although spontaneous glitches' index does not bear the likeness of what it represents, as is the case with photography and film, it traces moments of flux. The temporal moments of flux also index their origin. As I will discuss in the following paragraphs, it is a common thought that, because of their numerical substances, digital media cannot produce traceable indices. The saving grace of spontaneous glitch's indexical trace is that it cannot be manipulated through software because it exists and evaporates; it is impossible to duplicate spontaneous glitch. In *The Virtual Life of Film* Rodowick briefly opens up to the possibility of a digital (trace) index:

Transcoding introduces a temporal discontinuity in the recording process, experienced by most of us as shutter lag or other computational indicators of wait time: miniature

¹⁴ From Gunning's "Moving Away..." 30.

clocks and spinning rainbow wheels. These signs are indexes of another sort; they designate the operation of computing cycles, applying algorithms while converting space and time into code. In this process, light does not become temporalized space; it becomes abstract symbolization.¹⁵

Rodowick only emphasizes computational processes, Internet transmission protocols employ a highly technical and complex set of conventions. Rodowick establishes temporal discontinuity through the iconicity of miniature clocks and spinning rainbow wheels, but the underlining glitches behind these icons have no reference. Instead, glitches resulting from transcoding or transmission errors are necessarily indexical representations of computational processes.

Rodowick also hints at a digital index when discussing the images from Abu Ghraib. Through the computational automatism of copying and transmission, Rodowick points to a new cultural relationship to “the history of the present and what it means to occupy *present* time” (146). Although only a fraction of the Abu Ghraib images were released, Rodowick asserts the significance of the estimated 1800+ images points to a new ontology of “photography” derived from computational automatism and algorithms. The exponential proliferation of digital captures and amateur photographers “expand[s] and deepen[s] our relationship to the present” (147). Digital capturing seems consumed with documenting the present instead of exploring the present’s relationship to the past and future. Rodowick seems to accept the role of indices in digital capturing when he suggests, “[l]ess *puncta*¹⁶ and more *stidia* perhaps where their personal and existential force fades their capacity to provoke moral outrage and

¹⁵ See Rodowick, 117-118.

¹⁶ Rodowick is using *puncta* and *index* interchangeably here as he describes the characteristics of digital capturing (digital photography).

debate may grow” (149); digital media is not devoid of meaning, in other words, but its images cannot evoke the historical presence that Barthes famously assigns to analog photography.

Mary Ann Doane interrogates “indexes of another sort” in a special issue of *Differences*. In 2007, *Differences* dedicated an entire issue to the intricacies of indexicality in a digital/post-medium age. Reviewing Pierce’s taxonomy of signs, Doane argues that Pierce’s theory of indexicality is twofold: 1. Index as trace; and 2. Index as shifter (*deixis*). Classical film theory has employed index as trace for the majority of its existence, Doane suggests considering the whole of Pierce’s argument as a way to rethink the index in the digital era.

The deixis derives from shifting words in language like *I*, *now*, and *this*. Deictic indices share a shifting relationship with that which they represent “because their reference is entirely dependent upon the situation of speaking itself and shifts from one implementation to the next.”¹⁷ A foot in sand leaves behind its trace in the footprint, but the pointing finger of deictic indices suggests only *this* or *that* which can change depending on *what* is being referenced. A bullet-hole traces the shape and trajectory of the bullet, but the blind man’s pointing finger in *M* (Fritz Lang, 1931) assures the spectator that the culprit is merely meters away in offscreen space.¹⁸ The *this*, the deixis, the shifting index “points to and verifies an existence,”¹⁹ and, thus, the deixis is saturated in the cinema apparatus by timelessly asking its spectator to—*look at this!*

The spontaneous glitch is not deictic because it has no point of reference other than itself. A spontaneous glitch archetype does not exist and cannot exist. Due to their volatile

¹⁷ See Doane, 136.

¹⁸ Doane describes the scene in depth in “The Indexial...” 138-140.

¹⁹ *Ibid*, 146

nature and infinite visual representations, spontaneous glitches are unrepresentable. This is not the case for glitch art and pop glitch. Artists like Nick Briz and popular media texts are beginning to construct the deictic glitch stylistically. Pop glitch especially employs a deictic index pointing to generalized impressions of how glitches frequently appear. Pop glitch employs a deictic index to represent the unrepresentable.

Delayed data requests and/or streaming media are frequently interrupted by physical elements represented in virtual space by digital artifacts. Accordingly, spontaneous glitch in streaming media lacks iconicity and mimesis. One cannot point or allude to spontaneous glitch; one must see the actual glitch artifact to know that glitch has just occurred. Unlike cinema, glitches do not invite voyeurism; in fact, spontaneous glitch pushes the viewer away jolting him/her from the intended text. The indexicality of spontaneous glitch is not derived from its role as placeholder but as its role as trickster messenger. Perhaps the only similarity between spontaneous glitch and deixis is that each “exhausts itself in its own present” (146). However, spontaneous glitch is often masked by buffering icons. This is how glitch begins to embody the deixis as spinning circles, windmills, or loading gradients. Buffering icons shift and point to spontaneous glitch; they “work to extend and prolong the aura of the indexical authenticity” (142).

Also in the 2007 *Differences* issue, Peter Geimer examines a photo taken by Antonio Beato of the Mameluke graves in Egypt around 1870. The photo documents the citadel towers, the graves, and a curious fly trapped in Beato’s camera. Geimer questions the fly’s existence as a photogram or photograph. Because the fly landed on the photosensitive glass plate coated with collodion, the fly’s indexicality comes into question as a matter circumstance. Is the fly a

part of the scenic photograph, or is the fly standing in front of the photograph? Glitches travel similarly to the fly in Geimer's analysis. In between virtual and physical worlds, glitches access incongruent realms documenting real time in virtual spaces. User Datagram Protocols (UDP), as I will explain in a following section, are used to stream texts like films, television episodes, and webisodes through the transmission of discrete datapackets. UDP glitches interrupt the flow of data in a parallel vein to Beato's fly. Glitches that interrupt streaming texts simultaneously add an additional layer to the text while changing its intended presentation. They are both in the text and between the text and the spectator. Glitches achieve this duality through indexicality and aesthetics. Spontaneous glitches resulting from UDP errors index extenuating circumstances as traceable indices while stylized glitches found in glitch art and popular media activate a new filmic aesthetic that employs a deictic index.

Laura Marks in *Touch* examines the indexical traces electrons leave through their movements. Using a discussion of quantum physics, Marks argues that electrons, indeed, possess indexical capabilities akin to analog's traceability through their transmission and communication processes. Marks argues that electron paramagnetic resonance (EPR) experiments suggest that particles relate to each other through particle measurement in which the wave function is collapsed and particles are charged and separated.²⁰ The charged particles disperse evenly and inversely. For example, if there are four particles spinning upwards in a specific quadrant, then one can predict there will be four particles spinning downwards in the opposing quadrant. This communication between particles reveals indices through collapsing

²⁰ Marks acknowledges the collapse of the wave function when measuring EPR and cites the bifurcation in quantum physics that simultaneously registers electrons as waves and particles. A particle cannot be measured until the wave function is collapsed, 165-166.

their wave functions and measuring their spin directions. A particle does not assume a rotation pattern until a corresponding particle is measured.

Similarly, electrons over a wave produce similar effects. Analyzing *nonlocality*²¹, Marks compares electrons to corks floating on the ocean's waves, "if one electron moves, the paths of the other electrons that are entangled with it on a shared wave will be modified" (167).

Following David Bohm's ideas, Marks asserts that electrons on a wavelength are encoded with wave function; electrons can remember where they came from and are irrefutably linked to each other regardless of distance.

For Marks, these examples establish an indexical relationship between electrons, both as a wave function and as particles²², and matter. Electrons traveling on wavelengths, whether broadcasted or projected, produce indices in electronic images through electrons' wave-particle relationship to color wavelengths. Similarly to Rodowick, however, Marks concludes that digitization breaks the possibility of digital indexicality in two ways: 1. converting information into binary code; and 2. enfolding information in the charge of particles or the length of waves.

However, Marks posits that rogue electrons traveling through cathode tubes may engender unfriendly interfaces.²³ Hinting at glitches in Internet Protocol (IP) transmissions, Marks cites a few possible examples of electron indices through quantum, electronic, hardware, and software levels. Marks's analysis demonstrates a belief in the materiality of virtual objects

²¹ "Quantum theory's principle of nonlocality means that even distant objects affect each other as part of a single system," 167.

²² utilizing David Bohm's theory of *implicate order*, Marks asserts that it is unnecessary to differentiate between electrons as wave and electrons as particles because a particle is implicate in a wave. See Marks, 167.

²³ See Marks *Touch* 190.

at the subatomic level.²⁴ But as we shall see, spontaneous glitches index the physical world of computing and transmission processes without our needing to zoom down to the subatomic level.

Chapter Outline

Chapter 2: Spontaneous Glitch

My first chapter seeks to explore the realm of spontaneous glitch. I define spontaneous glitch as ephemeral errors in transcoding. This chapter will provide a taxonomy of glitches while explaining in detail how and why spontaneous glitches occur. I make the distinction between spontaneous glitches (glitches that occur naturally within the realm of computing) and harvested glitches (glitches that are purposely created or manipulated for artistic causes). The first chapter provides the technical framework on which my argument rests.

Chapter 3: Glitch Art

This chapter will explore glitch art-making processes through the examination of several prominent glitch artists. Who are the grandparents of glitch art? Who are the pioneers of this now popularized art form? How does noise become aesthetic? My third chapter seeks to answer these questions.

Chapter 4: Pop Glitch

The final chapter of my research analyzes the proliferation of the glitch aesthetic in popular media. Beginning with David Cronenberg's *Videodrome* (1981), this chapter provides close readings of instances of the glitch aesthetic in popular media. I will explore a range of

²⁴ Ibid. "Immanence Online" from *Touch* 177-192

media objects such as television shows, video games, and ad campaigns that evoke audience suspense through the implementation of the glitch aesthetic.

Chapter 2: Spontaneous Glitch

Introduction

Spontaneous glitch exists in the exact moment of miscommunication during the transcoding of digital information. These types of glitches can be considered spontaneous because they occur asymptotically and independently. Spontaneous glitches are fleeting and impossible to duplicate. Every spontaneous glitch represents the interaction between our analog world and the digital universe. Disruptions during the breakdown and buildup of digital information may be impacted by real world instances like inclement weather or antiquated connections.

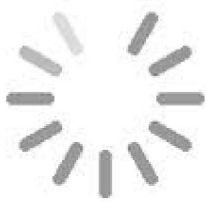
Before we can understand how artists generate and incorporate glitches, we need to understand how glitches function in the spontaneous. This chapter will walk through the technical causes of various glitches and how they are represented to computer users.

We can distinguish between two kinds of spontaneous glitches; those that are recognized by computer software and represented as icons and those that the Operating System (OS) fails to interpret. When an OS recognizes a spontaneous glitch in real time it can interpret the glitch to the user through an icon. When the OS fails to do this, the user gets an unmediated, iconless glitch.

With the success of Apple's Graphic User Interface (GUI) in the 1980s, icons begin to replace text commands as the primary way for computers to convey information to users. Glitches can also be represented through iconography. Using icons to represent glitches is the first step in establishing a deictic index for spontaneous glitch. The spinning windmill icons *point*

to increased lapses in communicational and computational processes. An array of spontaneous glitches can be interpreted by a computer's processor and then represented graphically relaying the glitch to the user. In the next section, I will discuss the semiotics of glitch as icon: Windmill Glitch, Software Glitch, Anticipated .htm Glitch, and Human/Computer Miscommunication Glitch.

Windmill Glitch

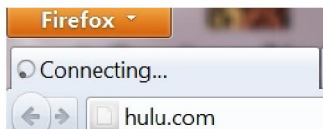
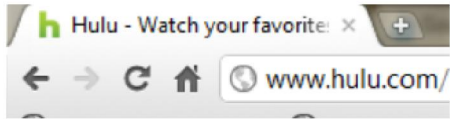


The windmill glitch is a TCP/IP glitch that appears as a cycling circle, rotating hour glass, revolving gradient, or spinning rainbow wheel. These icons index increased load times as servers communicate with applications or during interapplication communication. Internet browsers typically use icons that appear to spin or rotate. However, the icons are in fact not rotating but mimicking the movement through a series of flashing lines along a circular gradient.



Google Chrome uses a rotating blue semi-circle located in the tab at the upper perimeter of the browser's window. The semi-circle moves accordingly with the speed of the connection. For example, if a user is surfing the web at 12 mbps (megabits per second), the

semi-circle will rotate faster than if the user were surfing at 6 mbps. Additionally, as IPs are completed, the semi-circle gains speed ultimately giving way to a web site's personal tab logo. In the example above, the blue semi-circle would eventually be replaced by the green lower-case h of Hulu's logo.

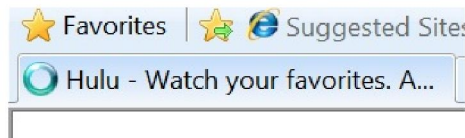


Firefox uses a two stage windmill icon. The first employs a grey circle with a revolving grey dot. As IP commands are completed, the windmill icon transforms into a green rotating gradient.



Firefox also uses a rotating semi-circle, but its version of windmill places a small grey dot on in the center of the highlighted curved line. As IPs are completed, the grey semi-circle

transforms into a green rotating gradient indexing progress in TCP/IP's communication chain.



Internet Explorer uses a similar version of Firefox's rotating dot but its white dot seemingly moves around a blue circle. The digitally glimmering portion of the circle moves in accordance with the progression and completion of IPs; the icon increases its speed as protocols are completed through the various layers.

Spontaneous glitch best represents the concept of a digital (traceable) index because it exists only in direct relation to real world instances. Spontaneous glitches index specific moments in real time in which our analog world disrupts digital processes. The windmill glitch employs a deictic index reminiscent of one of the classical signs of traceable indexicality, the windmill. Charles Sanders Peirce's classic example identifies the wind's indexical trace through the revolutions of the windmill. Similarly, the interruptions during the transmission of IP commands are represented by rotating spheres akin to actual windmills.

The movement of the spinning windmill icon is purposeful in that it appears to be moving even though the user is at a standstill. Although the user cannot navigate during the duration of IP commands, the spinning icon gives the appearance of movement, thus, pacifying users' frustration with slow load times. This effective strategy affords users a better understanding of the progression of TCP/IP despite the recklessness of spontaneous glitch.

Internet protocols are seemingly intuitive in that they appease the users by signaling the progression through the implementation of the spinning windmill icon. Users may not even realize they are interacting with spontaneous glitches through this clever disguise.

Software Glitch



Unlike TCP/IP and UDP transcoding errors, software glitches result as internal transcoding errors. Software glitches usually result when the application executes a command unauthorized/unsupported by the user's operating system (OS). Typically, GUI error messages will appear on the user's screen signaling the software glitch. However, software glitches are not always accompanied by icons. As I will explain, freeze glitches and anticipated .htm glitches can derive from software glitches. A software glitch that employs an icon to inform the user of glitch is deictic, but iconless software glitches leave behind traceable indices through the visual artifacts left behind after the moment of glitch.

Software glitch is perhaps one of the most frustrating glitches. This glitch can wreak havoc on users' hardware and subsequent programs. Viruses and bugs can often produce this type of glitch. Software glitch occurs when incorrect instructions are executed on a server. Since the incongruent code is initially written into the software, we tend to think of these glitches as programming bugs.

I often experience software glitch as applications crash my mobile devices. For example, streaming media through the Hulu+ application frequently causes my iPad to crash. When this occurs, my iPad suddenly ends the television show, film, webisode, or clip I am watching, sending me back to iPad's home screen. Streaming applications, such as Hulu+, Netflix, and Xfinity, often crash on mobile devices such as smart phones and tablets as developers are still working out the kinks associated with debugging new technologies and codecs.²⁵ Recently, I was watching a particularly suspenseful episode of *Battlestar Gallactica* when the Netflix application experienced a software glitch and I was uprooted from the cinephilic experience and chauffeured back to the iPad's home screen. The results from these particular crashes can be infuriating to the user, forcing him/her to restart the application that crashed. This is especially devastating to gamers when a video game crashes without saving their places, or to students who might lose their work due to a document software crash.

Sometimes represented as icons, at other times represented as distorted images, software glitch can strike for a myriad of reasons. As I have previously mentioned, incorrectly written software can cause your computer to react negatively. Also, undetected invalid input data or undetected communication errors can result in software glitches. Perhaps the most common form of software glitch is the computer virus. Viruses are written into execution commands that can begin manually or automatically. Viruses can relay your personal information or completely shut down your system entirely.

²⁵ From "Comcast Bring Streaming Video to the Tablet." <http://mobilebeyond.net/comcast-brings-streaming-video-to-tablet-computers/#.To8vjf6BqU8>



Some of forms of software glitches can be produced by hacking and/or software cracking.

Software glitches derived from hacking can be thought of as quasi harvested glitch or human error glitches because they require a human interference element. Poorly written software or hacked applications begin with the programmers' fingertips. What makes software glitches a separate category from the other human interaction glitches is that software glitches do not require human contact at the point of execution. This aspect makes software glitches especially dangerous because individuals can unknowingly or purposely (as is the case with viruses and hacking) cause detrimental harm to digital devices. Software glitches are like ticking time bombs nested in the inner workings of applications.

Anticipated .htm Glitch



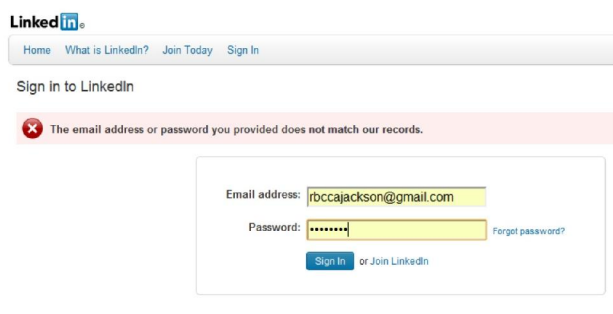
Anticipated .htm glitch is only a quasi glitch. This form of glitch is prompted by software glitch and not an actual software glitch in and of itself. When servers experience frequent, specific glitches, an anticipated .htm page loads to inform the user that the site is experiencing technical difficulties. Usually, the anticipated .htm glitch home page advises users to reload or check back later with the site to view the desired page(s).

The example above was collected from a frustrating incidence I experienced after the earthquake that affected the east coast in 2011. After the minor shaking, I hoped to tweet the news of the quake to my friends and family on Twitter. However, I was consistently booted-off the site by the anticipated .htm glitch which appeared as the picture posted above. Oddly, I was able to access my account with another computer which leads me to believe that the error was caused by a TCP/IP communication error and not an internal error on Twitter's site.

Twitter's anticipated .htm home page pictures a damaged robot missing its arm. The text reads, "Something is Technically Wrong: thanks for noticing we're going to fix it up and have things back to normal soon." This message notifies the user that Twitter is aware of the

glitch (or of the instance of glitch) while consoling their frustration by assuring the user that they are working to get things “back to normal soon.” The broken robot is an interesting choice of imagery because it identifies the problem as technological while usurping the power of computers for human ability. In other words, the anticipated .htm glitch reflects programmers' proficiency to detect transcoding errors. The anticipated .htm glitch further develops glitch's deictic index as an error message. More than just an icon, the anticipated .htm glitch employs a range of semiotic expression that informs users of a glitch through deictic representation. It is a comforting image because it turns the overbearing technological error into a non-threatening cartoon. This simple design assuages the user's frustration by acknowledging the problem, thanking the user for also noticing by employing a non-threatening cartoon to deliver the message that everything is still ok with the web site and that the site's administrators are already working to solve the problem.

Human/Computer Miscommunication Glitch



Human/Computer Miscommunication (HCM) glitches are as various as IP glitches. However, these glitches originate from human transcoding errors. For example, text-to-speech (TTS) programs transcode text to audio files, but inflections in voice, like regional accents or

speech impediments, can trigger glitches in the software. These glitches can be both traceable and deictic. Citing the example above, a regional accent may leave its trace through the HCM glitch that appears as garbled text or audio, or the HCM glitch may appear as a deictic index through icons.

As mentioned above, software glitch and HCM glitch are closely related. The significant difference between these glitches is that software glitch is executed in the absence of the human who originated the glitch. HCM glitch requires human interaction as the point of origin for this glitch. Nick Briz's *A New Ecology...* is a literal illustration of HCM glitch. Initially, Briz fails to be communicate with his new ecosystem. As he becomes acquainted with his new surroundings, Briz is able to thrive as a new citizen of a digital age. HCM glitches encourage us to keep integrating with the digital world until we reach our desired ends.

In the example pictured above, the dialog box (similar to anticipated .htm glitch) is triggered upon miscommunication such as an incorrectly entered password or user-name. Inevitably, all computer users will experience this form of glitch. HCM glitch best represents the clash between analog and digital worlds as most of these glitches are prompted by errors in human computer communication. One way to think about these glitches is to assume that miscommunication is prompted by human error. This is the case with many HCM glitches, however, it is important to remember that human error is not implicit in software. Using the example above, a TTS program that fails to recognize nuances in users' accents is an error derived from the software and not the users' speech.

Recently, I tried to access my Linked-In account to change my email settings. I entered my account information once, twice, three times before giving up and asking Linked-in to send

it to my email account (causing another email to overflow my already crowded inbox).

Negotiating passwords can be problematic as log-in applications become increasingly sophisticated. Once upon a time it was feasible to use a simple password for all of your online business, but, as identity theft becomes more and more prevalent, log-in applications require more sophisticated passwords. Some registration pages warn new consumers that their passwords should contain a conglomeration of symbols, lowercase letters, uppercase letters, and numbers. Remembering several passwords can be tricky, which is why log-in errors probably account for the majority of Human Error glitches.

HCM glitches can appear in a multitude of ways. As I have stated, log-in error text boxes are a typical output device for these glitches. These boxes signal HCM glitch, but many of HCM glitch artifacts are not as clear. In the TTS example given above, a regional accent or speech impediment may trigger this glitch. It would be impossible for the user to correct this glitch because the problem rests with the programmer/author of the software in question. If the programmer does not account for these types of miscommunication, then what is deemed proper (such as it the case with TTS platforms) is established by the software programmer and not the user. What a programmer considers human error, from the users' point of view, is simply insufficient software. It is important to point to the human element of glitch. It is easy to think of glitch as a digital device independent of human error. The software glitch and human error glitch disprove the commonly held belief that glitches are a direct result of errors in computation independent of human interaction.

Hardware Glitch



Hardware glitch occurs in the components of digital devices. For example, the broken lcd monitor pictured above is malfunctioning because the screen has been cracked. Hardware glitches often unite the analog world with the digital, but unlike the analog/digital pact Briz establishes in *A New Ecology...*, the two worlds often collide in glitching displays and subpar performance.

Hardware glitches range from problems like faulty visual cards to complex issues like damaged RAM which can affect software's ability to run smoothly. Because hardware glitches do not follow a general rule, it is impossible to categorize the multifarious examples of hardware glitch. Typically, though, hardware glitch is a result of faulty hardware in digital devices. Scratches on CDs or DVDs are, perhaps, one of the most basic types of hardware glitch. These minute infractions wreak havoc on the information stored on the disc. Some might even attribute the success of streaming video and mp3 downloads to these tiny marks that are easily made but cause severe damage.

Most of the time, smart phones are wonderful devices. They keep us connected with our virtual spaces and virtual identities while on the go. When the hard drive space in our phones become full or slow, smart phones begin working slower. A hard drive is a rewritable disc that contains your computer's (or smart phone's) computer operating system (OS),

program files, and personal files like documents, mp3s, and pictures. Hard drives consist of a magnetic disc (also called a platter) that is spun at a very high rate. During this spinning process an "arm" is moved up and down across the disk writing patterns of 0's and 1's which form your data. This arm also reads data in the same fashion. The hard drive is the slowest component on a computer/smart phone precisely because it is a moving part. Any device that functions via moving parts is much slower than non-moving devices such as RAM, Processors and Data Buses.

On a trip back home to visit family, I was disheartened (as well as embarrassed) when my smartphone refused to open the photo album of pictures I had recently taken to share with my family. This hardware glitch was derived from a the slow hard drive on my phone. Instead of opening the album, my phone oscillated between images of my homescreen and the album file I was trying to open. The loop created by hardware glitch eventually led to my phone crashing.

When technology does not work as expected frustration ensues. After rebooting my phone, I was hard-pressed to learn that none of my new photos had been stored correctly on my smart phone. Wiping a hard drive clean and reinstalling the OS is one way to rejuvenate a computer/smart phone. Also, restoring default settings to your smart phone can help boost a phone's performance. However, this method is only good for a short while. Eventually, upgrades are required to ensure the performance quality consumers have grown accustomed to getting. Additionally, outdated processors running newer applications can cause problems.

Freeze Glitch



Freeze glitch occurs when the application in use does not support a buffer underrun. The buffer underrun corrects server errors during the transcoding of files. Freeze glitch results in application crashes. Typically, the user must force a shut-down of the application and restart it to access additional features of the application. Briz's *A New Ecology...* employs instances of freeze glitch to convey Briz's own hesitation in penetrating the digital sphere. In Briz's piece, media clips suddenly freeze transforming fluid motion for static, motionless images (see Fig 1.5). Freeze glitches are not recognizable to operating systems. As such, any screen shot taken could potentially be a representation of a Freeze glitch. In this way, a freeze glitch is comparable to a filmic freeze frame in that it disrupts the viewer, jolting them from the plot of the film (the navigation or the experience of an application).

The experience of frozen moving images, whether in the middle of a game of Farmville or watching Truffaut's classic *The 400 Blows*, jolts the user/spectator from the narrative. Freeze glitch mimics the act of film being caught in a projector. However, unlike a freeze frame, freeze glitch is not done on purpose and is executed without an author. Truffaut may have purposely added extra frames to the end of his iconic film to give the illusion of an image frozen in time, but freeze glitch does not rely on human intervention. Freeze glitch occurs independently from the creator. Film requires extra cells to achieve the appearance of a frozen image. Freeze glitches, however, are a result of missing information. Code that has been dropped or left out

can contribute to freeze glitch. The auteurs of the French New Wave employed freeze frame to radically alter the way we see and watch film. The freeze glitch achieves a similar effect but produced without human intervention.

Pixelation Glitch



Pixelation occurs as a direct result from corrupting or compressing image files or video datagrams. Errors resulting from the manipulation of images or UDP transcoding errors distort incomplete image files. Data may be dropped or corrupted resulting in less pixels than needed to display the desired image or video. Most of the glitches mimicked in Briz's *A New Ecology...* evoke this form of spontaneous glitch.

UDP glitch is perhaps the most beautiful and, therefore, the most artistically mimicked glitch in the art world. The images distort into something new, turning our familiar images into something corrupted and complicated (See figure 1.3 and 1.4). Wolverine and racecars become a garbled mess in Briz's piece as images of people drinking morph into odd, swirling blocks of color. If we assume that most glitches are frustrating moments of digital indices, then the UDP glitch may be the least bothersome of all the glitches.

Alongside the digital conversion, cable and network television has adopted digital platforms. Although the picture quality is more vivid and crisp, pixelation occurs readily when a disturbance in the signal is experienced. These interruptions index a variety of complications including rain/wind storms, server errors, and antiquated connections. If you have ever wondered why the clear crisp image you're used to sometimes seemingly begins to come undone, then you're probably experiencing a software glitch with your connection. As the image begins to dissolve into pixels, one of two things may occur: (1) The moving image continues in a pixelated form which is brief and typically resolves itself; (2) The moving image stops altogether and splits into a pixelated image that most likely stops the system and turns the screen into a black, static image.

The disintegration of data in a pixelated image signals corruption and compression as the smooth image transforms into angular and irregular shapes, sometimes static and other times moving, bombarding our sacred viewing space and disrupting narrative. The corruption experienced by pixelation glitch can sometimes induce severe irritation if the media player cannot buffer the intended media object. Unlike analog glitches, digital pixelation glitches only distort our media, they do not crash it. The intended images are still there but because the data is scattered, the images are not available. Perhaps more so than other forms of glitch, pixelation glitch embodies the trickster character with its ability to tease the spectator with reorganized bits and pieces of their desired media text. The image is on the screen and we are viewing the same media file but with dropped data. It can be a confusing, yet, beautiful process.

The juxtaposition of smooth and rough (or pixelated) imagery in a pixelation glitch results in the beauty of this specific type of glitch. In a recent episode of FX's *Louie*, I watched Pamela (Pamela Adlon) give a standing ovation for Louie (Louie C.K.) for a particularly cras joke.²⁶ As she began clapping in admiration of Louie's wit, a burst of yellow pixels shot from her hands towards Louie's pleased expression. Pixelation occurred at the exact moment and area of the screen where Pamela's hands began a clapping motion. Instead of frustration, I felt like the pixelation glitch heightened my experience offering an additional element unforeseen by the episode's director and series creator (Louie C.K.).



Figure 2.15 Still from "Subway, Pamela"

²⁶ "Subway, Pamela." *Louie*. FX Channel. 11 July 2011. OnDemand/Comcast (Television). 13 August 2011.

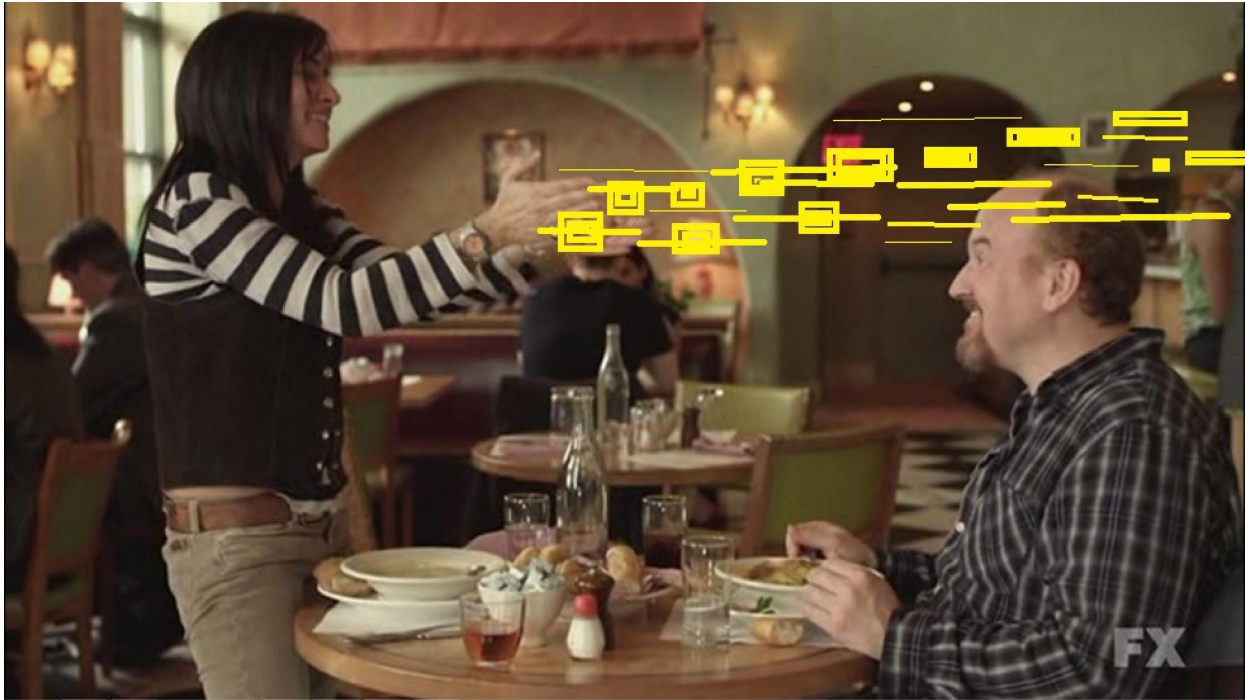


Figure 2.16 Still from "Subway, Pamela" with glitch

With this instance of glitch, I internalized the sudden burst of yellow as a joyous moment, oddly channeling Pamela's elation and amusement over Louie's joke. The phenomenological reaction I experienced from this glitch assures me that these instances of digital transcoding errors can elicit feelings beyond frustration and agitation. Figure 2.16 is a recreated image of the pixelation glitch I experienced watching "Subway, Pamela." This instance of spontaneous glitch occurred during an OnDemand broadcast of *Louie*, and, because I did not have my camera handy, the image flitted away as quickly as it appeared.

Using Microsoft Office's Paint Program, I was able to superimpose yellow pixel-like squares and horizontal lines over a still from the episode. The resulting image is almost identical to the glitch I experienced during the original pixelation glitch. As I will discuss in the following chapter, glitch artists often employ software programs to create art objects.

Conclusion

I have provided a taxonomic approach to spontaneous glitches in an effort to better understand the digital trickster and to identify the differences between some of the most common forms of glitch. This should not be taken as a complete list of spontaneous glitches, but merely a brief introduction to the digital pranksters that invade our digital spaces. Icon and iconless spontaneous glitches are the basic substance for the artworks detailed in the next chapter. As this chapter sought to identify and categorize major types of glitch, the next chapter seeks to identify to the process of transforming pieces of digital garbage into art objects.

How do we begin talking about glitch as art? Especially since the act of capturing glitch is impossible. The visual representation of glitch in fine art is merely a representation, an artifact of the glitch, and not the glitch itself. It is important to distinguish between spontaneous glitches and harvested glitches in this way because harvested glitches are found objects or mimicked in the aesthetic of spontaneous glitch.

Chapter 3: Glitch Art

Introduction

Glitch art is a burgeoning subset of visual art. It is an aesthetic of the digital age: glitch art is cyclical, compressed and corrupted and it is everywhere we turn in our virtual and physical spaces. In many ways, glitch art is a type of found art, but instead of picking through dumpsters or rummaging through thrift stores, glitch artists traverse the inner-workings of computers and software for digital anomalies. Glitch artists attempt to preserve spontaneous glitches through capturing the visual expression of glitch. Spontaneous glitch is an ephemeral experience, but glitch art captures glitches and transforms them into art objects. Iman Moradi distinguishes two forms of glitch art: pure glitch and glitch alike (9). Artists who produce works by storing and exhibiting unhampered visual expressions of glitch are known as pure glitch artists.²⁷ Artists who provoke glitches for artistic ends are known as glitch-alike artists.²⁸ I propose that works that evoke the imagery of glitch should be categorized as glitch aesthetic pieces of art.

Pure glitch pieces paradoxically seek to trap the untrappable. Artists may capture unintended moments of pure glitch and upload it to their web sites, but the actual moment of spontaneous glitch is ephemeral.

Glitch-alike artists create glitches by manipulating hardware and software, otherwise known as databending. Some artists argue that pure glitch pieces are devoid of skill and artistry

²⁷ See Moradi, 9.

²⁸ Ibid.

because they are essentially posting screen-shots and claiming the images as their own. Glitch-alike pieces result through intentional data bending as artists facilitate transcoding errors through software manipulation. Artists may foment glitches by corrupting software with bad commands or through the overuse of feedback loops causing application crashing.

Pure glitch and glitch-alike pieces aestheticize moments of spontaneous or captured glitches, sometimes the process of glitch-art-making is referred to as datamoshing.²⁹ A third form of glitch art reworks glitches by transforming them through painting, sculpture, and/or other media. The glitch aesthetic is the visual interpretation and/or recreation of transcoding errors via glitch. Some artists begin with digitally sound images and create glitch-alike images through a process of corrupting, compressing, and reorganizing visual data.

Glitch art transforms an event into a work of art. Pure glitch and glitch-alike pieces capture moments of spontaneous or captured glitches, but I argue that paintings, sculptures, and any analog/digitally created visual art pieces that invokes the glitch aesthetic fall under the genre of glitch art.

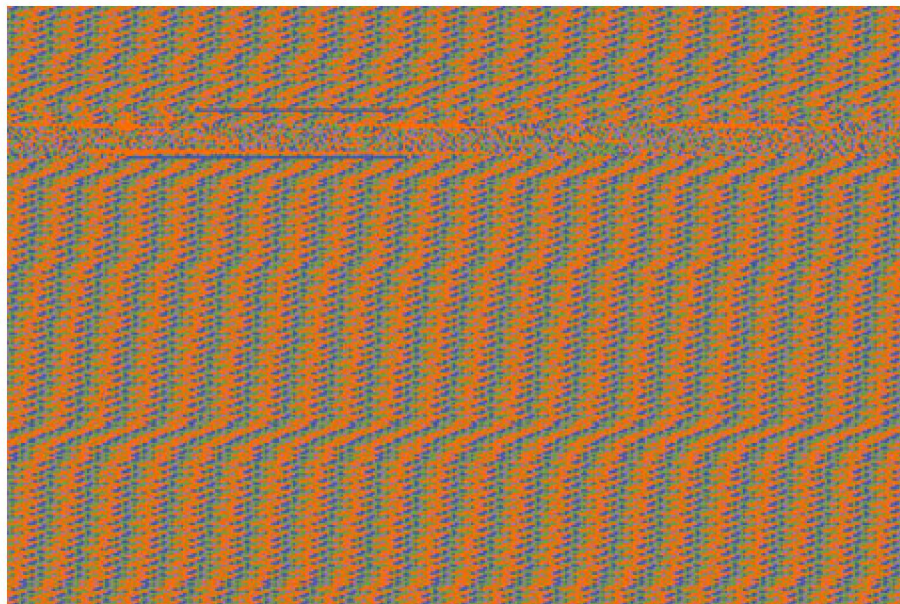
As I will explain in my next chapter, mainstream popular media uses the glitch aesthetic to provoke feelings of helplessness and chaos, but glitch artists expose power over glitch by creating environments in which glitch may exist. These new media artists incite glitch thereby usurping glitch's random and ephemeral power.

Artists Ant Scott, Nick Briz, Jodi, Rosa Menkman, Luis Sierra, and Andy Denzler are among the artists I will analyze in this chapter who transform the event of glitch into pieces of

²⁹ Rosa Menkman, one of the artists discussed in this chapter, provides a tutorial on how to datamosh. Datamoshing specifically refers to file compression. <http://rosa-menkman.blogspot.com/2009/02/how-to-datamoshing-create-compression.html>

glitch art. Each of these artists have carved out a new niche in the evolution of glitch art and glitch aesthetics. Each piece I have chosen invokes a particular specific glitch type, putting glitch art in an essentially radical position because these pieces assume half/human-half/computational authorship. The glitch aesthetic recognizes that glitch has been made the object in artistic inquiry.

Ant Scott



“Ant”hony Scott is arguably the Grandfather of the glitch art movement and the most famous glitch artist. Pioneering pure glitch pieces since 2002, Scott has co-authored a book with Iman Moradi, *Glitch: Designing Imperfection*, and is still exhibiting pure glitch and glitch-alike images around the world. His work lingers between two types of glitch art: pure glitch and glitch-alike. The images that he captures without provoking are thought of as pure glitch. These

³⁰ *Glitch No. 6* is how the title of this piece appears on Scott's web site, www.beflix.com. However, *Glitch No. 6* appears in *Glitch: Designing Imperfection* as *Make 5 not 4*, 108. For the purpose of this thesis I will use the title *No. 6* as it appears on the artist's web site.

are screen shots taken moments after a spontaneous glitch occurs. Software glitch and hardware glitch provide the basis for the majority of Scott's pure glitch pieces. The images Scott creates through data-bending are glitch-alike pieces.

Scott began experimenting with glitch as a child when his father brought home a calculator from his job. Playing with the calculator by mashing buttons in the off function, Scott noticed odd symbols on the calculator's LCD screen. "I pressed several buttons at once, and odd symbols appeared on the yellow LCD display. I thought that was amazing, and a little scary because I thought I'd broken it." (20). Then, in 1984 Scott wrote a program for his Dragon 32 home computer that displayed memory as colored pixels. The glitch(ing) program Ant wrote in 1984 would become the catalyst for his future work. "I remember thinking just how beautiful it looked. Not glitch as such, but glitch-looking, sort of pixelated and disjointed." (20)

Scott has developed an eye for working with pixelated anomalies, publishing several articles and the book with Moradi on the subject of glitch art and glitch aesthetics. The majority of his work stems from corrupted files on his personal computer. Converting the binary code into pixels to be displayed in a square or rectangular block, Scott's work mimic the size and shape of traditional, square personal computing monitors. Purposely sizing his pieces to mimic the shape of computer monitors offers an interesting approach to viewing his work. When viewed at its proper size, *Glitch No. 6* might scare the unsuspecting viewer into thinking his/her screen has been high-jacked by a spontaneous glitch.

Scott aligns his interest with glitch with his admittedly macabre fascination with disasters (21). Specifically, the Challenger space shuttle explosion and the Chernobyl nuclear reactor explosion struck a strong chord with him as he began questioning the predominance of

software. He realized the fallibility and limitations of software and began wondering why many important functions of human and business life, such as accounting spreadsheets, rely on blatantly imperfect and volatile technology.³¹ Scott's *Glitch* series illustrates the fallibility of computing exposing the dense, complicated structure of personal computing machines. "It's sobering to think that it's precisely this sort of digital mash that an airplane relies upon to stay up in the air" (21).

For example, *Glitch No. 6* is the "visualization of an operating system temporary file" error (129). Scott adjusts the colors of the pure glitch to achieve an "overall nightmarish impression of a post-nuke reality" (21). Scott refers to burnt oranges, acid greens/yellows, and cool blues as "radioactive colors," these tones signify his fascination with nuclear fall-out. Glitch artists in general seem to share Scott's palette. As we will see in the next analyses, these shades begin to signify computer error. The connection Scott draws between burn oranges, acid greens/yellows, and cool blues and radioactivity begins to establish an overarching aesthetic as we begin to think about glitch as art object. *Glitch No. 6* reveals the messiness of computer memory. Through its mesmerizing patterns, *Glitch No. 6* symbolizes the unpredictable and sometimes destructive force of human nature through a metaphor of computational error.

An unintended side effect from viewing *Glitch No. 6* is hallucinogenic movement that ostensibly protrudes from the mash of glitchy patterns. This effect is akin to the optical illusions derived from autostereograms.³² Viewing this piece for several seconds, my focus unhinges as the patterns in Scott's work begin to move in undulating patterns. This mobile agency of *Glitch*

³¹ See Moradi & Scott, 20

³² An autostereogram is a 2D picture constructed of tiny dots that, when viewed carefully, creates a visual illusion of a 3D figure.

No. 8 adds an added layer to the complexity of internal computational processes by engaging my mind through optical illusion. In this instance, *Glitch No. 6* and I merge in to a new fluid and mobile piece of artistic wonder.

Scott's most recent glitch art work involves developing photographs from his Visual Jockey (VJ) software.³³

Recently, I've begun making photographic prints directly from the computer screen, letting glitch animations from my VJ software expose the paper and leave soft analog trails. It's important to me to make these tangible prints, because they're the final statement of my intents. When images are still in the digital domain, they can be endlessly tweaked with powerful software, so in a way they're less valuable because a final decision hasn't been made yet. I think it's more fun to make a final, bad decision than to make no decision at all. (20)

Ant Scott (sometimes referred to as Beflix) is the most widely known and accepted glitch artist in the world. His name is synonymous with the glitch art movement. He considers himself an artist and mathematician and continues making beautiful glitch pieces while residing in the UK.

Nick Briz

³³ VJ can also stand for Video Jockey. In his interview, Scott refers to the software only as VJ software. Both Visual Jockey and Video Jockey software perform similar functions.



Nick Briz's glitch videos are derived from feedback loops, video compression, and manipulating CPUs and visual cards with corrupted information. His pieces burst with mesmerizing patterns. The above image is a still taken from *Binary Quotes*, a five and a third minutes display of Briz in medium close up reciting excerpts from the binary code from the digital video used to make *Binary Quotes*. Similarly to *A New Ecology...*, Briz frames himself, and assumedly records himself, in a medium close up reciting numbers as waves of glitch crackle onscreen. Around a minute and a half into the piece, Briz's image drops from the data as glitches take over canceling the audio track and flooding the screen for nearly two and a half minutes with saturated colors and spastic pixelation. Four minutes into the piece, the medium close up of Briz returns, still reading excerpts from the binary code. However, this time the medium close up contains a mutated version of Briz, marred in glitch and barely recognizable.

The image is haunting because it reminds us of Briz's crisp, youthful appearance in the first minutes of the piece. The latter image of Briz is dilapidated, aged, and frightening; the remnants of his former appearance lurk underneath, it is incredible that both images are from the same video. The transformation Briz undertakes in *Binary Quotes* signals a marked departure from the piece's first instances of autobiographical imagery. This effect spooks its spectators as the familiar face of the artist becomes undone in glitch-alike pixelation.

Unlike *A New Ecology...*, Briz emerges from this piece tired and worn from glitch suffocation. The two and a half minutes of glitch-alike imagery has scarred the hero leaving him nearly unrecognizable. Briz's image eventually disintegrates entirely leaving behind only the glitch-alike. It is not surprising that Briz's next piece, *A New Ecology...*, would express ways for Briz to exist with and within glitch.

Briz's works are created, or forced, glitches further manipulated with image and video editing software. Briz's works closely resemble analog and digital imaging glitches caused by UDP errors, compressions, corruption, buffering, and software malfunctions. Briz recently finished his MFA at The Art Institute of Chicago where he regularly lectures on digital culture and glitch art.

Briz believes that glitch art is similar to experimental film and credits Stan Brackage and Michael Snow for inspiring him to manipulate codecs. For Briz, glitch art is like a digital decollage because it lifts a layer off from the original file one piece (or bit) at a time. Briz considers himself a scholar in addition to an artist, lecturing on glitch at a 2010 conference in Chicago and teaching middle school art classes in visual corruption. In fact, a tutorial for datamoshing can be found at his web site, www.nickbriz.com.

Briz's manipulation of pop culture media clips, swiped Youtube videos, and/or autobiographical images carefully blends the artist's video editing and codec encrypting abilities. Many of Briz's pieces prompt a different reaction from traditional glitch art pieces. Firstly, his work exists simultaneously as digital short films and glitch art files. Secondly, Briz's pieces are accompanied by audio tracks which ostensibly act as soundtracks, but are mash-ups

of several different audio clips that rarely sync to the images presented in his work. Perhaps this is an homage to the pioneers of glitch art, glitch musicians?

In addition to creating glitch art pieces, Briz moonlights as a programmer with software creations like *Mix Master Mickey*, a guide to piracy and video editing meant for children, and *Duck Feed*, a smart phone application that mimics the NES classic *Duck Hunt*. Briz refers to himself as an artists, thinker, and organizer of new media.

Jodi



Jodi is an art collective comprised of Internet artists Joan Heemskerk and Dirk Paesmans operating from Dordrecht, The Netherlands. By databending video game consoles and source code, Jodi's pieces aestheticize video game crashes through a series of looping video game glitches. Jodi uses a keen understanding of computational circuitry to create software glitches. Savvily employing hypertext mark-up (HTML) and javascript language, Jodi uploads their glitch-alike pieces to various encrypted urls. Since 1995, Jodi has been corrupting code through databending consistently finding new and innovative ways to glitch digital objects. Their most recent solo show debuted in September 2011 at the Gentili Apri in Berlin, Germany.

Jodi's pieces utilize nuances from several forms of digital media, but they are most recognized for their contribution to videogame art. Jodi takes screen grabs from old videogames like *Quake* (id Software, 1996), *Wolfenstein 3D* (id Software, 1992), *Jet Set Willy* (Software Projects, 1984), and *Max Payne 2* (Rockstar Games, 2003) and records what happens as the collective play, hack, and/or manipulate codecs to incite and capture glitches. Similarly to Nick Briz, Jodi considers their work as a form of decollage because they delete numbers from code and/or strip encrypted data from software, thus, layer by layer, the original file disintegrates into to a new art object.

Jodi's work with *Quake* traps a player within a cube with swirling black-and-white patterns on the sides. The patterns on the sides of the cube are a result of a glitch in the original programming language. Jodi manipulated this glitch first by discovering a minor error in the game's program and then by additionally stripping numbers from the binary language communicated to the gaming console. This piece is among the first videogame art pieces recognized among glitch art enthusiasts today.³⁴

³⁴ See Broeckman, 197, and Kluszczynski, 217.



Figure 3.4 *Quake Glitch*, 1996.

The *Quake Glitch* is one of the first and most famous video game artwork pieces to date. Jodi first produced this work in 1996 by manipulating Quake's codec producing non-sensical patterns.

Though Jodi shows work internationally, the majority of their glitch art can be found online.³⁵ Visit any one of Jodi's sites and you are likely to find blinking text, skewed lines and imagery, and nonsensical writing. <http://www.untitled-game.org> blinks "untitled game" onscreen for several seconds before posting a graph that reads the results of an apparent match between PC and Apple computers. The "untitled game" pits Apple and PC computers against the other by measuring criteria that only Jodi understands.

Much of Jodi's work mimics anticipated .htm glitches via corrupted urls. For example, <http://404.jodi.org> navigates the user to a specious 404 error page³⁶, but the ostensible error

³⁵ A selection of Jodi's urls: <http://thumbing.org/> (2010); <http://g33con.com> (2009); <http://xxxx.winning-information.com> (2008); <http://webcra.sh> (2008); <http://geogoo.net> (2008); <http://folksomy.net> (2008); <http://my-keywords-are.com> (2008); <http://blogspot.jodi.org> (2007); <http://compositeclub.cc> (2007); <http://maxpaynecheatonly.jodi.org> (2006); <http://geogeo.jodi.org> (2006); <http://jetsetwilly.jodi.org> (2003); <http://www.untitled-game.org> (2002); <http://text.jodi.org> (2002); <http://www.wrongbrowser.com> (2001)

³⁶ A 404 Error page usually indicates that the user's server is not able to find the requested file or web page.

page is the artwork. Clicking on the brightly colored page sends the user to another URL with cryptic designs and so on until the 404 error page resurfaces through a cycle of <a> tags.³⁷ Thus, *http://404.jodi.org* mimics a computer virus high-jacking server processes. Jodi's commentary on computer viruses invites criticism over the futility of user interaction. In the wake of a digital age, according to Lev Manovich, older communication models should expand to include: Sender-Sender's Code-Message-Receiver-Receiver's Code-Channel-Noise ("What is...", 7). Tim Barker explains that this piece turns the Lev Manovich's Sender-Sender's Code-Message-Receiver-Receiver's Code-Channel-Noise³⁸ communication model on its head by rendering the user's interaction with the site meaningless. Yet, this analysis of Jodi's piece is not exactly correct because, through the user's interaction with the purposeful JavaScript and HTML language, Jodi's *www.404.jodi.org* guides the user through the artists' intended cycle. The user is prompted to follow the <a> tags generated by the artists, sending the user on a journey that only appears random and corrupt. The user's interaction, therefore, is not meaningless or without purpose. Instead, the artwork engages users exactly as Jodi intends.

The 404 piece mimics an anticipated .htm glitch through the use of the 404 Server Error page familiar to all Internet browsers. Jodi employs the 404 Error as a mobile, transformative display of glitch art evoking control over server error. Fans of Jodi's work will realize that the convincing and colorful anticipated .htm glitch is, in fact, one of the many corrupted urls used by the duo to elicit confusion and collaboration with the virtual, digital world.

Leo Charney coined the term "empty space" to refer to moments within cinema without present, or moments susceptible to drift. He argued that empty moments facilitated a period,

³⁷ <a> is an HTML tag used to construct hyperlinks

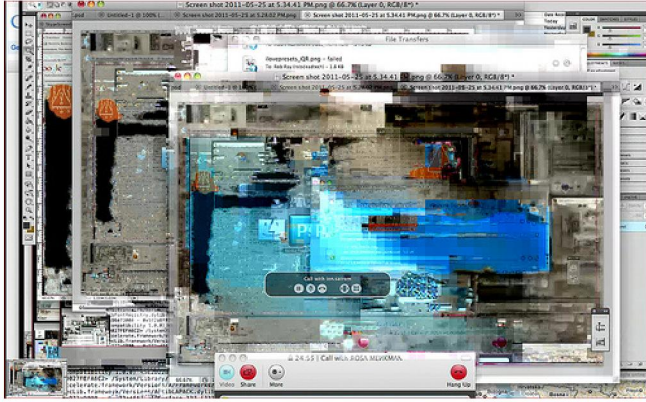
³⁸ Barker reduces Manovich's model to Sender-Software-Message-Software-Receiver

however brief, to recollect and reconnect with the text. The drift felt in these moments is a way in which to experience the present, or as close to the present as one can obtain. Drifting is a period of seemingly unconscious productivity utilizing empty moments to attain a self-awareness otherwise not possible through traditional means.

"The absence of tangible present moments gave rise to a culture of re-presentation in which experience was always already lost, accessible only through retrospective textualization. Re-presentation as a mode of experience took the form of drift, which transfigured empty presence into a new modern epistemology. Drift aimed to re-present the experience of vacancy, the lived sensation of empty moments, the consequence and corollary of empty moments" (Charney 7-8).

Jodi's work symbolizes these empty moments during the brief pauses between navigating their artistic web pages. The art objects created by this collective are simultaneously always and never present because they exist as urls waiting for users to access the material. Until the art object is accessed, Jodi's works lay dormant but oddly still active. Drift occurs as the user navigates through pages. The interstitial components of Jodi's work activates drift as users weave in and out of urls through a series of <a> tags and java script commands.

Rosa Menkman



Rosa Menkman's dedication to glitch art and glitch studies presents her similarly to Nik Briz as academic and artist. She interrogates glitch as event working with pure glitch and glitch-like media and recently published a "dissertation" entitled *Glitch Studies Manifesto* in which she writes "naïve victims of a persistent upgrade culture accept a deluded consumer myth about progression towards a holy grail of perfection" (2). Menkman refers to glitches as "fingerprints of imperfection" not to be ignored but to be celebrated for the advancement of technologies (2).

Menkman's description points to another one of Peirce's classical indices: the fingerprint. The glitch artifact Menkman presents in *A Skype Call with Jon Satron* is the digital fingerprint of a TCP/IP error encapsulated by a freeze glitch (or software glitch) and recycled as an art object. The indexical trace of the communicational (or computational) infrastructure glitch reveals the internal processes of Skype that are never intended for viewing. The traceable index of Menkman's piece, however, is lost upon repurposing the glitch as a glitch art object.

The first instance of this image initially indexed the TCP/IP error which facilitated the glitch artifact, however, the trace disappears as this image is duplicated and refreshed

moving further away from its trace but closer to its deixis. Menkman's use of pure glitch here turns deictic as it begins to point to what freeze glitches or software glitches look like.

Menkman is a graduate student working from Amsterdam, Netherlands. Her first encounter with glitch art actually came from a 2006 Jodi exhibition entitled *World Wide Wrong*.³⁹ Menkman, then a curious master's student at the University of Amsterdam, began studying databending and began fomenting glitches of her own. Menkman considers her glitch-alike aesthetic as a critical manipulation of art in which the aura of glitch is forced into "the realm of audience perception."ⁱ

Menkman's *A Skype Call with Jon Satron* captures software glitches and freeze glitches during an ordinary Skype call. Menkman's piece exposes the seemingly invisible constructs of networking telecommunication. If Satron's image was apparent in the original call, the glitching effect does away with it once and for all through a series of windows nested within one another. Losing the face of her companion, Menkman's GUI achieves multiplicity, taking a life of its own through glitch. It is unclear whether the initial glitch emerges from Skype's software or inter-server transcoding error, but the pure glitch result confronts its audience by unveiling the seamless execution of Skype's functions.

A Skype Call... transforms the act of digitally mediated telecommunication into a sneak-peek inside the innerworkings of the program thereby exposing its fallibility. Akin to Scott's *No. 8*, Menkman's work provides a commentary on our reliance on digital technologies by stripping it of fluid source code. The uprising illustrated by *A Skype Cal...I*, presupposes a world in which obedient applications accentuate human ability. The distance Skype allows us to travel

³⁹ Taken from an interview with Valerie from <http://patternsandpleasure.steim.org/2011/09/27/interview-with-glitch-artist-rosa-menkman/>

provides a super-human ability only possible through subservient technology. This particular piece is an example of pure glitch, but the majority of Menkman's work is saturated in glitch-like processes such as codec manipulation and datamoshing. Her pieces tend to be very mobile, looping captive glitches in succession.

Menkman argues that glitches⁴⁰ exist as a paradox by establishing and perpetuating aesthetic norms while providing a fertile playground for new artistic artifacts to emerge. According to Menkman, "...there will always be a future for Glitch art because within technology there will always appear errors. Personally I hope that Glitch art becomes more conceptual, so that artists become more conceptually engaged. This conceptual engagement should exist in combination with their aesthetic practice."⁴¹ The final glitch artists I will discuss in this chapter deliver on Menkman's hopes for the genre with high concept pieces employing the glitch aesthetic.

Luis Sierra

⁴⁰ Menkman uses the word *noise* instead of glitch to illustrate this point

⁴¹ From a Patterns and Pleasures interview. <http://patternsandpleasure.steim.org/2011/09/27/interview-with-glitch-artist-rosa-menkman/>



Luis Sierra's pieces evoke the glitch aesthetic through the layering of several mediums to create one fluid piece. Sierra prefers working with iconic images like the familiar image of Scarlett O'Hara at the Wilkes' barbecue in *Gone with the Wind*. For Sierra, corrupting iconic images is a way of interrogating our virtual-selves and real life-selves. *The Digital Scarlett*, pictured above, could be the result of a faulty codec, visual card, or UDP error. In fact, Sierra created this image by compressing an .avi file with editing software and painting the digital image in layers of oil paint, vinyl, and wax on a 4'x6' piece of plywood.

Sierra blends classical painting practices with new media art processes. His work is classically executed and highly conceptual. In a recent online journal article, Sierra explains, "The glitch aesthetic plays a key role in my work. I argue that, like glitches, dreams also result from corruption, compression, and the reorganization of memories. Dreams and glitches exist in the breakdown and build-up of information during transcoding. Computation dreams through glitches and these electric dreams resound in pixelated images, spinning pinwheels, and loading icons" (1).

Sierra incorporates various media like wax, wood, and vinyl with traditional oil paint and oil painting techniques. The majority of his works are painted on pieces of plywood. Sierra blends analog media with the glitch aesthetic to create a spooky display of iconic film imagery. Sierra's *Scarlett* is haunted by an icon that no longer exists. Through manipulating a digital film file, Sierra replaces the familiar heroine with a ghostly image of something new. Perhaps we can think of it as Scarlett's ghost? The indexical trace established in Fleming's classic film evaporates into a haunted version of the famous belle. Like Menkman, Sierra converts a traceable index into a deictic one as notions of pixelation begin to take shape in *The Digital Scarlett*. Similarly to Briz's transformation in *Binary Quotes*, the heroine of the piece induces uneasiness in her spectator as our memory of Scarlett's appearance is distorted. Sierra's blending of analog and digital media combined with glitch-alike processes and classical painting techniques results in a beautiful play between memory and error.

The powerful imagery in *The Digital Scarlett* comes from the infiltration of the glitch aesthetic over the iconic barbeque scene in *Gone with the Wind* (Fleming, 1939). The image of Scarlett, sitting with an eager group of beaux at the Wilkes' annual barbeque is supplanted with a glitch version of the infamous Southern belle surrounded by patterns of pixelation. The focus of this work centers on Scarlett's face, this seems to be the starting point of the image's unraveling. Similar to Briz's eyes in *A New Ecology*, Scarlett's grin mimics a Cheshire cat's grin as the images around it disintegrate into unrecognizable pixelated forms. Only Scarlett's smile is apparent, the outlying details of her dress, hat, and suitors evaporate into the implemented glitch aesthetic. Sierra's work creates a dialogue between icon and referent in which the symbol is skewed through digital conversion. *The Digital Scarlett* creates a paradox in which the power

of the image is derived from stripping the power from the icon. We see Scarlett in the painting, but the accompanying glitch aesthetic reveals a haunted version of her. Like Briz, Scarlett is marred in glitch, haunted by our memory of her which can only exist now as an adulterated version of the original.

His latest series, *Conversations*, explores the tensions created by juxtaposing analog and digital media. Manipulating stills from *The Wizard of Oz* and bridging the distance between digital and analog material, as well as real and virtual bodies, Sierra's paintings are uniquely disturbing due to the compression and corruption engendered by the analog and digital media he uses. Sierra exposes the estrangement between digital and analog media while exposing the complex relationship between our Real Life and virtual selves.⁴²

Andy Denzler



⁴² What cyborg anthropologist, Amber Case would refer to as our first and second selves expanding on Sherry Turkle's original concept of *second self*.

Andy Denzler's works teeter between realism and abstraction. Utilizing classic painting techniques and new media art processes, Denzler's style interrogates the spaces between fiction and reality. Many of his pieces include homages to iconic films like *One Flew Over the Cuckoo's Nest* (Milos Forman, 1975) and *The Birds* (Alfred Hitchcock, 1963).

Denzler considers his pieces "Motion Paintings" and divides his oeuvre into four categories: Portraits, History Paintings, Figures and Landscapes, and Urban Figures.^{43 44} Utilizing a glitch aesthetic that mimics freeze glitch, Denzler's pieces create a stylistic hybrid between Photorealism, Abstract Expressionism, and Glitch Aesthetic.

Denzler's oil paintings invoke nostalgia for analog technology through the artistic recreation of analog glitches via cathode ray tube errors. As I discussed in the introduction, digital theorists like Laura Marks and Hugh Manon argue that digital aesthetics often create nostalgia for outdated media. Denzler's paintings illustrate this argument by recalling the days of cathode ray television (CRT) errors. Yet, the glitch aesthetic Denzler employs is not solely an analog-glitch-alike-aesthetic. Recycling these digitally constructed images into analog oil paintings, Denzler's work exposes digitally rendered errors akin to cracked LCD monitors or corrupted visual cards.

Similarly to Sierra, Denzler stylizes his images using photo editing software and then paints the images using oil paint on canvas. Taking it a step further, Denzler uses his personal digital photographs as base images and then manipulates them with software. Painting in layers, Denzler creates his pieces by fusing a realist aesthetic with abstract expressionism and

⁴³ From an interview with *Russia One* <http://www.tvkultura.ru/news.html?id=424366&cid=46>

⁴⁴ The images used in this chapter are from Denzler's most recent collection, *Dissonance and Contemplation*, 2011. These paintings definitely belong to the (artist's self-proclaimed) fourth category, Urban Figures.

the glitch aesthetic. This combination interrogates the bond between media and memory.⁴⁵

Similarly to Sierra's *Scarlett*, Denzler's subjects begin to morph as they are lifted from their original text and infused with glitch. Denzler's blend of nature images set against manmade urban dwellings mimics his process of mashing personal digital photos against his photo editing software skill set.

Denzler's *The Deer, The Sheep, and the Three Companions* creates irony through the juxtaposition of nature and urban imagery. The setting of this painting appears to be in a graffiti-laced garage as each of *the three companions* engage unusual elements within the painting's mise-en-scène. The woman in the background appears to be watching a deer, the man in the middleground watches over a sleeping or deceased lamb, and the man in the foreground appears to be contemplating whether or not to dive into the empty, cement pool. The fact that these images are taken from Denzler's personal digital photographs belies their engagement in the curious universe of the painting.

The instances of nature present in the animals' forms create a bizarre display of the natural and technological as Denzler superimposes the glitch aesthetic over his figures. Denzler appears to disrupt the natural world with the glitch aesthetic. Perhaps this is an homage to glitch as a trickster, invading the digital world with analog moments of disruption. The deictic index in Denzler's work points to software glitch and freeze glitches. Through the glitch aesthetic lens, Denzler confronts the analog/digital binary by mashing his real life photos with digital constructs. The result of this mash-up creates a necessary distance in which the spectator may experience the complexities of the digital through an analog medium.

⁴⁵ See Shanken, 55.

Conclusion

In retrospect we can appreciate Dadaists' and Futurists' works like Marcel Duchamp's *Nude Descending a Staircase No. 2* or Carlo Carra's *The Red Horsemen* as proto-glitch masterpieces. In a February 2011 interview with Iman Moradi, Mathias Janssen says, "When Duchamp made his painting he left the traces from the person going down the stairs on the canvas. A similar visual effect could be experienced when you have a corrupt graphic card which is not erasing the traces from the moving object on the screen" (Janssen, 1). A glitch like this would be considered a hardware glitch. Artists can provoke hardware and software glitches by creating the environment in which glitch arises. These artists seek to tame the glitch beast by subverting its chaotic power into controlled glitch-alike images.

Recently the legitimacy of glitch art has come into question as scholars and artists alike employ concepts like the *digital shock* and *vision machine* to illustrate the perplexities of digital aesthetics. Hervé Fisher describes *digital shock* as a restructuring of meaning brought about by the convergence of technology, the military, the arts, media, and the economy. According to Fisher, the more technology advances the more humans regress into what he calls neo-primitivism. The *digital shock* of living in a techno-saturated world has altered our abilities to think, create, and transact in meaningful ways.

If we conclude then that digital media corrode humanity, then we are refusing the hope for reconciliation between the analog and digital worlds. Fisher pessimistically expands on his concept writing, "the aesthetic invention that the digital arts indulge in is no longer convincing; the new language of the electronic aesthetic has not taken clear enough shape" (105). Fisher

surmises that art is in crisis because there are no iconic glitch artists; "we need the Mozarts, Bob Dylans, Erik Saties, Gustave Apollinaires, Antonin Artuads, Marcel Carnes, and Jean Renoirs of the digital arts" (105). However, the artists presented in this chapter refute Fisher's reductive claim by continuing to challenge digital artistry. These artists are more than just aesthetic practitioners; they are visionaries, activists, and champions of the new (digital) world. Digital arts buck notions of traditional artistic curation by sharing their works freely in the digital sphere. All of the artistic works presented in this chapter are available on the Internet for all to see. Glitch art has no need for *rockstars*, *icons*, and *auteurs* because its power is disseminated through critical engagement online.

In *The Accident of Art*, Paul Virilio reworks his concept of the vision machine citing digital technology as a filter which reconstructs our vision of the world. Virilio redefines his term the vision machine to fit contemporary technology describing video as a *substitution* he writes:

Digital technology is a filter that is going to modify perception by means of a generalized morphing, and this is real time... we are faced with *the failure of the analogical in favor of calculation and numerology of the image*. Every sensation is going to be digitized or digitalized. We are faced with the reconstruction of the phenomenology of perception according to the machine. The vision machine is not simply the camera that replaces Monet's eye... now it's a machine that is reconstructing sensations pixel by pixel (65-66).

Benjamin Schultz-Figueroa argues that the digital version of Virilio's contemporary vision machine offers its viewers "a mathematically *reconstructed* audio-visual sensation as opposed to a mechanically *reflected* one" found in analog filmmaking. Instead of passively accepting presentations of the world, glitch art offers its audience a reconstituted presentation of the

world. This reconstruction cultivates an audience that no longer responds to representations but presentations. For Virilio, this paradigm shift signals humanity's descent into what he calls "newspeak of the eye" which references the malleability of digital imaging (61).⁴⁶ For Virilio, the content of digital imaging is less important than the underlining algorithms that construct the "newspeak of the eye."

Academic associations like the International Digital Media and Arts Association and New Media Caucus, exhibitions like *Open_Source_Art_Hack* at the New Museum of Contemporary Art in New York and *I love you - Computer_Viren_Hacker_Kultur* at the Museum for Applied Art in Frankfurt, Germany and festivals like Ars Electronica and Gli.tc/h create the spaces needed to discuss and mobilize Glitch Art as a movement for privacy and data protection and open source applications. The champions of digital humanities are succeeding through the marriage of humanities and "S"cience in which artists (and scientists alike) blend the boundaries between the two fields to propel and perpetuate the explorations of new media possibilities in spite of what others consider as *newspeak*. This mobilization has ultimately led to the glitch aesthetic's assimilation into mainstream media making processes. Tracking the evolution of captured glitch, I follow the glitch aesthetic to its most logical next stop: Hollywood.

⁴⁶ A reference to George Orwell's *1984*

Chapter 4: Pop Glitch

Introduction

Glitch has quickly worked its way from transcoding error to art object and aesthetic to mainstream special effects trick. Mainstream media platforms such as film, television, videogames, and television commercials have increasingly engaged the glitch aesthetic ostensibly hoping to create a techno-panic reaction from the audience it engages. What makes an artistic aesthetic transform into a popular culture artifact?

From cult classics to mainstream media to advertising campaigns, this chapter explores how we make sense of glitch through pop glitch. Utilized in horror and suspense themed media, the glitch aesthetic is realized through cult classics like *Videodrome* (David Cronenberg, 1983) and *Ghost in the Machine* (Rachel Talalay, 1992). Then enters mainstream media through texts like *The Ring* (Gore Verbinski, 2002) Youtube, *Battlestar Galactica* (Syfy, 2004-2009), *Work of Art* (Bravo, 2010), and *Kane and Lynch 2* (IO Interactive, 2010). Currently, pop glitch's reach extends to commerciality through ad campaigns like Verizon's Droid TV commercials. Pop glitch paradoxically signifies user control over a seemingly uncontrollable digital artifact: the glitch.

This chapter focuses on the distance between spontaneous glitch as an event and pop glitch as a Hollywood aesthetic. The visceral reaction to spontaneous glitch and glitch aesthetic in media are very different. Spontaneous glitches tend to aggravate users causing frustrating lapses in desired digital information. Pop glitch seeks to terrify spectators by provoking simulated system crashes. How does the exploitation of the glitch aesthetic engender feelings of technophobic panic?

It is unlikely that people are afraid of glitches, no one assumes an evil monster is chasing them when email providers' home pages fail to load or when applications crash smartphones, so why do mainstream media makers assume the employment of glitch aesthetics will induce fear and terror in their participating audiences? David Cronenberg's *Videodrome* offers reasons why pop glitch capitalizes on this contradiction.

Videodrome



David Cronenberg's 1983 classic *Videodrome* invokes the glitch aesthetic for the first time in popular media. Cronenberg seeks to instill uneasiness in viewers through his protagonist's, Max Renn's (James Woods), quest for "something that will break through, something tough." Because glitch allows the analog world to break through the digital, Max's search can be interpreted as a quest for balance between what Amber Case identifies as our first self and second self.⁴⁷ Max is earnestly trying to negotiate his first self, or real life self, with his second self, a tele-mediated self.

⁴⁷ Case is obviously inspired by Sherry Turkle's 1984 *Second Self*. This notion of first and second selves is expanded upon by Amber Case in a January 2011 TED talk. http://www.ted.com/talks/amber_case_we_are_all_cyborgs_now.html

Videodrome administers the first dose of glitching images from the hallucination machine. After viewing Videodrome, a mysterious TV channel that broadcasts snuff, Max begins experiencing hallucinations. He is approached by an optometrist, business man, and maker of Videodrome, Barry Convex (Les Carlson), who promises to help with his condition. Luring Max to his optometry office, appropriately named Spectacular Optical, Convex confesses that Spectacular Optical is the company running Videodrome. Convex hopes to record Max's hallucinations with his hallucination machine. As Max plugs-in to the device, pop glitch emerges for the first time as his analog world is converted into 8-bit digital data. The distortion between reality and the digital version of reality in *Videodrome* heralds the emergence of pop glitch.

Figure 4.2 illustrates the only instance of literal glitch in the film. As the hallucination machine converts analog data into a digital image, the room begins to form through the collection of pixels. This instance of hardware glitch renders Convex's office a messy array of pixelated data. The act of hallucination creates a parallel between Scott's *Glitch No. 8* and Cronenberg's *Videodrome*.

The effect created by this filmic special effect is akin to Ant Scott's *Glitch No. 8* because it exposes the inner-workings of the machine. Additionally, the hallucinogenic phenomenon discussed in the previous chapter resounds in Convex's hallucination machine as the machine induces hallucination in its users. Exposing the complicated structures inherent in computational processes coupled with the hallucinogenic effects of a digitized world, *Videodrome* and *Glitch No. 8* establish a viable connection between Glitch Art and pop glitch.



Figure 4.2 The hallucination machine booting-up

Figure 4.3 employs the pop glitch in full force, although narratively it is not a glitch but compression from the analog reality to the 8-bit world. Max sees his hands not as a glitchy image but as an 8-bit rendering of the world through the mechanics of the hallucination machine. The technology of the early 1980s only had the visual capabilities to render data as blocky, pixelated figures. The image of Max's hands is not constructed from a computer error but it still evokes the glitch aesthetic through the digital distortion of the analog world.



Figure 4.3 Max holds his digitally constructed hands up to the vision field of the hallucination machine.

Figure 4.4 presents Niki Brand's (Deborah Harry) transition from 8-bit virtual representation to full blown fantasy; Max's desire converts Niki's 8-bit image into a smooth analog form. The pop glitch is utilized here to construct Max's fantasy, transitioning from the glitchy image the hallucination machine's composite of Niki to a more comfortable analog form as Max delves into his second self through Videodrome.



Figure 4.4 Niki's image is converted from an 8-bit format to a smooth hallucination

The second self's desire for preservation is too much for Max to handle and he succumbs to the power of the digital, literally sucked into the machine. The space between analog and digital represented by glitch is tumultuous and enchanting. Max is unable to fight his second self's urges to remain in a virtual state. Ultimately, Max surrenders his first self to live within the Videdrome. With his last words, "long-live the new flesh," Max exchanges an analog life for a digital persona.

Ghost in the Machine

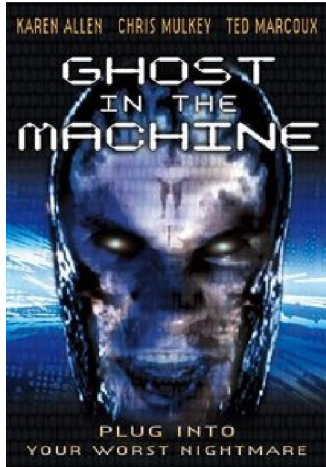


Figure 4.5 *Ghost in the Machine* (Rachel Talalay, 1993)

Technophobic Pop Glitch

Ghost in the Machine is a horror film that tells the story of a mother's plight with the "address book killer." Terry Munroe's (Karen Allen) address book is mysteriously missing after a brush with Karl Hopkins (Ted Marcoux). A computer retail store employee by day and serial killer by night, Karl, aka "The Address Book Killer," suffers a car accident one stormy night on the way to his next victim's house. At the hospital, Karl dies from a freak accident while undergoing an MRI but his consciousness is downloaded into the hospital's networking system, DATANET. He continues his murderous rampage through the "tubes" of other DATANET networked computers. Assisted by her computer-enthusiast son Josh (Wil Horneff) and DATANET specialist Bram Walker (Chris Mulkey), Terry is able to defeat Karl by trapping him in a particle accelerator, thus (illogically) separating his atoms and obliterating "The Address Book Killer" for good.

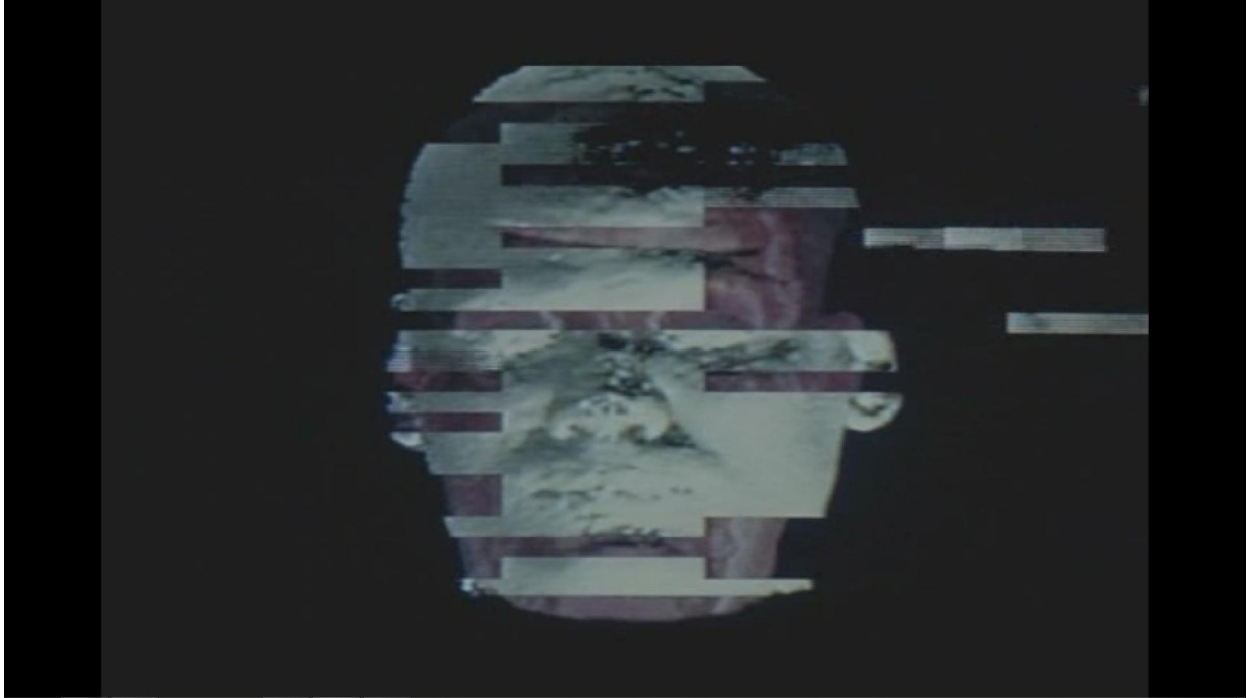


Figure 4.6 Karl's post-mortem image first appears on the MRI technician's computer monitor

Koestler's *Ghost in the Machine* argues that the development of the human brain builds off of earlier, primordial brain structures. These earlier structures act like *ghosts in the machine* and possess tendencies to encourage people to forego logic for violent acts (Koestler, 44-76). Koestler argues that these lingering structures are capable of overpowering higher logical functions and are responsible for destructive forces like hate, violence, and anger. It is through this understanding that the premise of the film gains traction despite its clumsy use of technical terms and the improbability of a killer computer^{48 49}.

At the height of the film, Karl surges out of DATANET into a physical form constructed of datapackets. The *ghost in the machine* no longer resides in the machine, but crosses over the threshold of the analog world to devour analog bodies. Menkman's *A Skype Call with Jon Satron* illustrates this effect by revealing the internal processes of Skype and the glitch that destroyed

⁴⁸ killer computer is an homage to Caetlin Allott-Benson's "killer tape" discussed in the following paragraphs.

⁴⁹ Ryle Gilbert. *The Concept of Mind*. The University of Chicago Press: Chicago, 1984, p 11

her face-to-face call. We can think of spontaneous glitch's ascent to pop culture in the same way. Spontaneous glitch, mimicked by the glitch aesthetic and executed by pop glitch, foregoes its ethereal quality, finding embodiment in the pop culture artifact.



Figure 4.7 Karl surges from the digital world back into the analog

Figure 4.8 invokes the inverse of Nick Briz's *A New Ecology for the Digital Citizen*, Talalay fuses her monster's digital image with the analog world. Karl is now a *digital citizen* of the *analog* world, the tension created by this anomaly exudes a technophobic attitude as the killer computer exists only to murder its victims through the tubes of what is ostensibly the Internet.⁵⁰

⁵⁰ DATANET is a thinly cloaked reference to the then infant world wide web.



Figure 4.8 Karl emerges from the digital constructed from datapackets

Figure 4.9 is a point of view shot from Karl's perspective. We can ascertain that this is how the killer computer sees the world as he chases Terry from the particle accelerator's control station sinisterly whispering, "I wanna taste your pain. I want to feel your ribs crack as I suck the breath from your lungs." At this point, we can see that Karl is the glitch. Karl inhabits both analog and digital spheres simultaneously which is why he cannot see analog Terry but desires her analog body nonetheless.

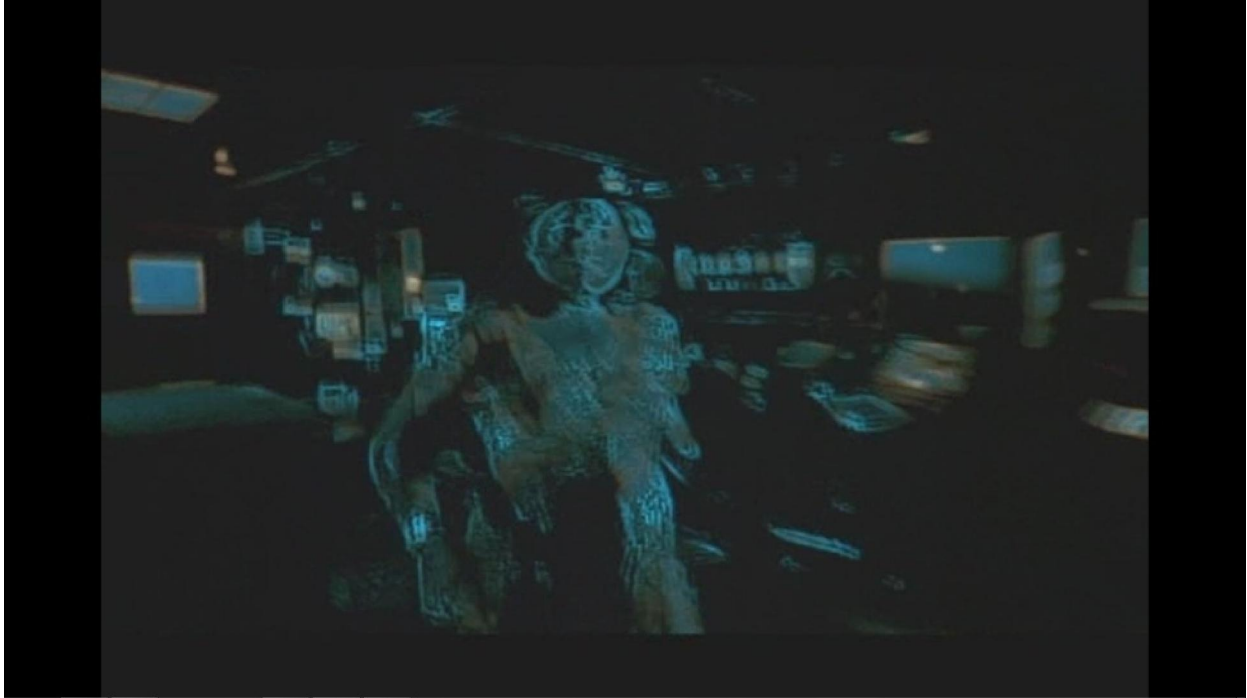


Figure 4.9 Still taken from Karl's point of view, the analog world only exists as a digital composite of reorganized information

Luckily, Bram designs a virus to chase Karl into the particle accelerator and, together with Terry and Josh, the trio coax the killer computer to his ultimate demise. Karl is subdued through human ingenuity, however, the reliance on technological savvy allows the humans to outwit the killing computer.

The Ring



The Ring, Gore Verbinski's 2002 remake of acclaimed Japanese horror film, *Ringu* (Hideo Nakata, 1999), holds a significant place in the timeline of pop glitch. *The Ring* seeks to horrify its audience through a technological monster: the killing videotape (Benson-Allott, 2).⁵¹ The footage contained on the monster tape mimics glitches associated with analog glitch: demagnetized videotape, CRT television static, tracking errors.

The Ring is the story of Rachel's (Naomi Watts) mission to save her son from death upon viewing the monster tape. While investigating her niece's mysterious death, Rachel uncovers a videotape in the cabin where her deceased niece first watched it. The strange tape contains a sequence of disturbing, glitching images.

The videotape is supposedly haunted. According to legend, whoever watches the tape will die exactly seven days after viewing the strange material. Rachel unwittingly exposes her son to the images on the videotape. She then employs the help of her A/V specialist ex-boyfriend, Noah (Martin Henderson), in an attempt to her son's death. The climax of the film comes as the film's ghost Samsara (Daveigh Chase) crawls through the television set into Noah's studio scaring him to death. Escaping the seven day curse, Rachel realizes the secret to survival comes from making a copy of the tape and distributing it to another victim.

⁵¹ Caetlin Benson-Allott authored this term for the monster tape in "Before you die, you see *The Ring*"

The monster tape is a curious object. On the one hand its glitches are analog glitches that appear as demagnetized tape, tracking errors, and CRT static, on the other hand every copy of the tape is produced identically which is a quality of digital copies. Noah explains the tape's mysterious qualities:

“When you record a tape, the makeup of the tracks is like a signature for whatever did the recording, like a camcorder, VCR, whatever. So the control track can tell us where it came from. But to not have one... I mean, that's like being born without fingerprints.”

Caetlin Benott-Allott clarifies that a videotape's control track simply communicates the speed to which the VCR should scan the tape. “According to Noah, Samara's tape either has no origins (was never recorded, does not exist) or is capable of obscuring its origins” (Benson-Allott, 5).

Although the videotape embodies an analog medium, *The Ring's* plot revolves around the idea that the tape can be copied with perfect clarity. Perfect duplication is only achieved through digital reproduction processes, thus the videotape exists as a digitally constructed object on an analog medium. The videotape uses a similar methodology as employed by artists previously discussed in the preceding chapter. Luis Sierra's and Andy Denzler's work share the anomalous qualities of the killer videotape. The analog tape that functions as a digital medium recalls Sierra's and Denzler's work because it resembles these artists' digitally constructed but analogically executed artworks.

The glitches in Figure 4.11 emphasize the ghostliness of the image similarly to Sierra's *The Digital Scarlett*. *The Ring's* pop glitch aesthetic and Sierra's execution of the glitch aesthetic

evoked similar feelings of uneasiness through image distortion. These glitches instill a spookiness within the image as both Sierra's Scarlett and *The Ring's* Samara are accompanied by additional, glitchy bodies. Like Sierra's Scarlett, the videotape is haunted by an image that does not exist anymore. Samara is digitally reconstructed, permeating the physical world only through murderous bouts with unsuspecting spectators. The specious tracking errors in figure 4.11 that distort Samara's image are the same errors employed by Briz in *A New Ecology...* to convey an immersion into another realm. Glitch art and pop glitch have taken different paths, but the overlap between these subjects cannot be denied. The technological know-how employed by glitch artists are the same employed by cinematographers and film and television editors. Both seek to startle their spectators through haunting displays of empty, or altered, imagery derived from comfortable, familiar referents.



Figure 4.11 The killer tape conveys digitally constructed glitches on an analog format similarly to artists Luis Sierra and Andy Denzler.

The popularity of *The Ring* coupled with its sequel, *The Ring 2* (Hideo Nakata, 2005), and the subsequent emergence of Youtube in 2005 distribute pop glitch on a massive scale. The contribution of the *The Ring* is not so much an aesthetic one as it is iconic. The film spreads pop glitch, and, coupled with the success of Youtube, these texts combine to create awareness and affinity for the glitch aesthetic thus transforming it to full-blown pop culture artifact. Glitch's deictic index arrives with the killer videotape. The haunting sequence on the tape signals familiar, logical imagery but leaves instead crackled audio and flickering images. Later texts like *Battlestar Gallactica* will harness glitch's deictic index to convey a post-apocalyptic world devoured by humanoids.

Youtube



Figure 4.12 Youtube screen capture while streaming

The Ring

Youtube

Est. February 14, 2005

Officially released November 2005

Pop Glitch Catalyst

Youtube's popularity grew at an exponential rate throughout late 2005 and into 2006 making it the first truly successful global video sharing site in the world.⁵² Users logged in to view copyrighted material and user-made content such as fanvids, original short films, and tutorials. My focus on Youtube's rise rests in the copyrighted material illegally uploaded on the massive site which, as I stated in the first chapter, uses four enormous servers to disseminate its material globally. For the first time, users were allowed free access to privileged content; anyone with a highspeed Internet connection could stream films, television episodes, music videos and sports games at no cost. The compression rate Youtube used in 2005 to 2006 unintentionally spread the glitch aesthetic by limiting videos to a specific allotment databits. Enforced compression rates coupled with lags or surges in bandwidth created a global venue for UDP errors under the guise of free, streaming media. The spontaneous glitch imposed on the films, tv shows, and other media familiarized pixelation and freeze glitch on a massive scale.

⁵² Szabo, Gabor and Huberman, Bernardo A.. "Predicting the Popularity of Online Content." *Working Paper Series*. Social Science Research Network. 4 November 4, 2008. Web. 11 October 2011. <http://ssrn.com/full=1295610>.

UDP errors saturated the web site's media player as highspeed Internet customers enjoyed free access to copyrighted material. Issues of compression quality have been examined in recent years, but one study stands out as a solid quantitative measure of the lay person's ability to assess streaming videos' compression qualities.



Figure 4.13 Compression encourages pixelation glitch as evidenced by this screen-capture of Youtube's media player.

In a 2010 study of computational models of visual aesthetic appeal, A. K. Moorthy et. al examine the aesthetic appeal of compression in consumer videos.⁵³ The study collected data from 33 participants each of whom evaluated 160 consumer videos available on Youtube using

⁵³ A. K. Moorthy, P. Obrador and N. Oliver, "Towards Computational Models of Visual Aesthetic Appeal of Consumer Videos." In Proceeding of the European Conference and Computer Vision (ECCV). September 2010. Web. 5 Septemeber 2011.

https://webspace.utexas.edu/akm798/research/akm_eccv_sep10.pdf

a scale of -2 (Very bad) to 2 (Very good). Their research concludes that users, with an accuracy reading of 78%, were able to correctly determine videos' high/low aesthetic qualities (13). In other words, Youtube users have become skilled at recognizing the qualities of compression in streaming videos. Video compression has become naturalized as access to high speed Internet connections spread. It is only logical to assume, then, that the mass reception of compressed videos via popular sites, not limited to but especially Youtube, have exposed pixelation and freeze glitches to a global audience.

Battlestar Galactica



Figure 4.14 Pop glitch over The Hybrid's face

Battlestar Galactica (Syfy 2004-2009)

Spontaneous Glitch over Pop Glitch

Battlestar Galactica (BSG) is the reimagined series about human genocide at the hands of manmade machines and the human survivors' quest for a new beginning on Earth. Cylons (a backronym of Cybernetic Lifeform Node) have evolved from their mechanic, steel bodies into humanoids so convincing that they can fool even the most stringent medical tests. Based on a 1970's science fiction television show with the same name (*Battlestar Galactica*, Glen A. Larson, 1978-1979), BSG invokes pop glitch on the Cylons' battleships.

The Cylon battleships are controlled by The Hybrid (Tiffany Lyndall-Knight), a seemingly female human immersed in a pool of life-sustaining-goo and plugged into wires that act as the control deck of the ship. According to the other Cylons, The Hybrid, who only speaks in illogical rantings, has seen the face of God which has subsequently driven her mad, thusly explaining her gibberish. The pop glitch enters the aesthetics of BSG through The Hybrid's interface, panels of red, glitchy surfaces. The humanoid Cylons access The Hybrid's mainframe by placing their hands through a watery, red, glitchy interface.

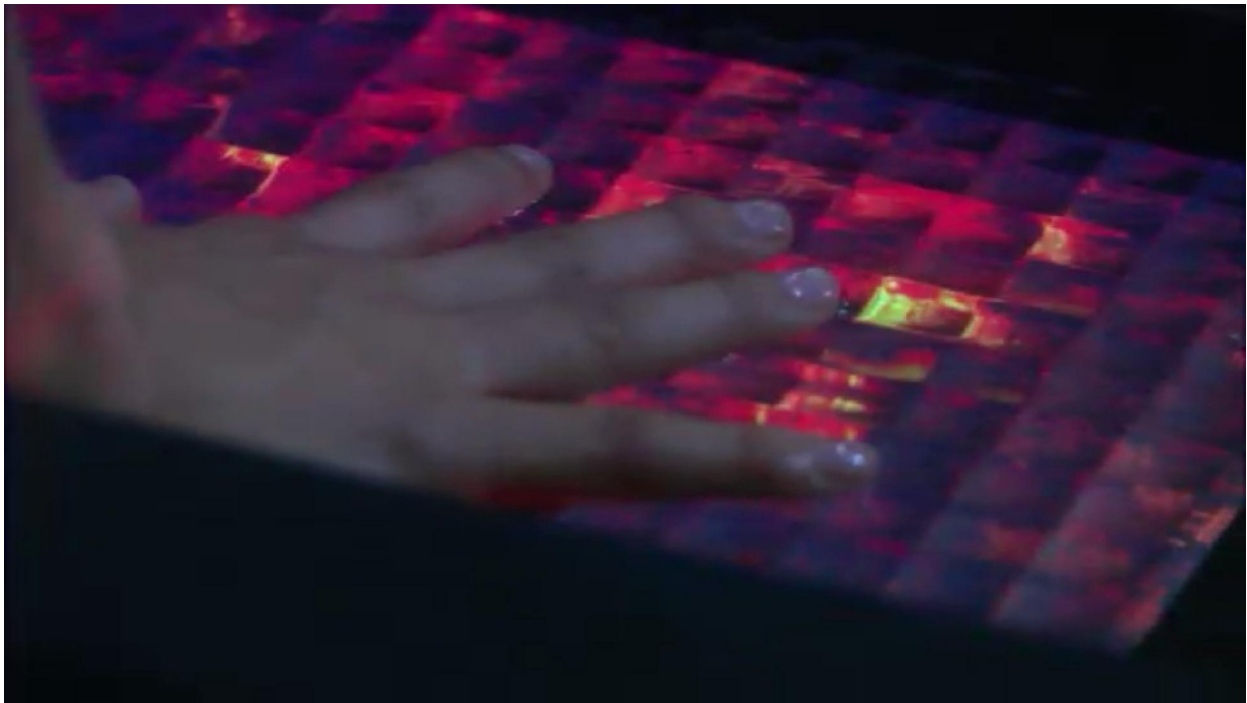


Figure 4.15 Cylons access The Hybrid via watery, pixelated interface

This action (pictured above) allows the Cylons to interact with The Hybrid. The pop glitches utilized here are then projected onto the Cylon humanoids (and human visitors) as projected reflections of the ships' processor-like walls, interfaces, and/or from The Hybrid.



Figure 4.16 Pop glitch projection

I came to know this series through instant streaming on Netflix. Using Netflix's Silverlight Media Player, my experience with this series offers an additional layer of semiotic interpretation as Silverlight experienced glitches in real time at the exact moments of pop glitch within episodes. The still below comes from an episode in BSG's final season, "Faith."⁵⁴ The convergence of spontaneous glitch and pop glitch mimicks the overarching narrative of BSG, in which manmade technology goes awry. Of course, the price we pay for UDP errors is obviously not tantamount to human genocide, but Silverlight is invariably bombarded with sudden surges in bandwidth resulting in the decomposition of the streaming image. Like Frankenstein's monster, UDP glitches are the technological monsters we cannot control. They wreak havoc on our streaming media devices as well as our digital machines. These *ghosts in the machine*

⁵⁴ "Faith." *Battle Star Galactica*. Syfy Channel. Netflix. Web. 12 October 2011. <http://www.netflix.com>.

manifest themselves as blocky pixelated, sometimes static and at other times mobile, images disrupting our cinephilic experiences and invading our virtual sanctuaries.

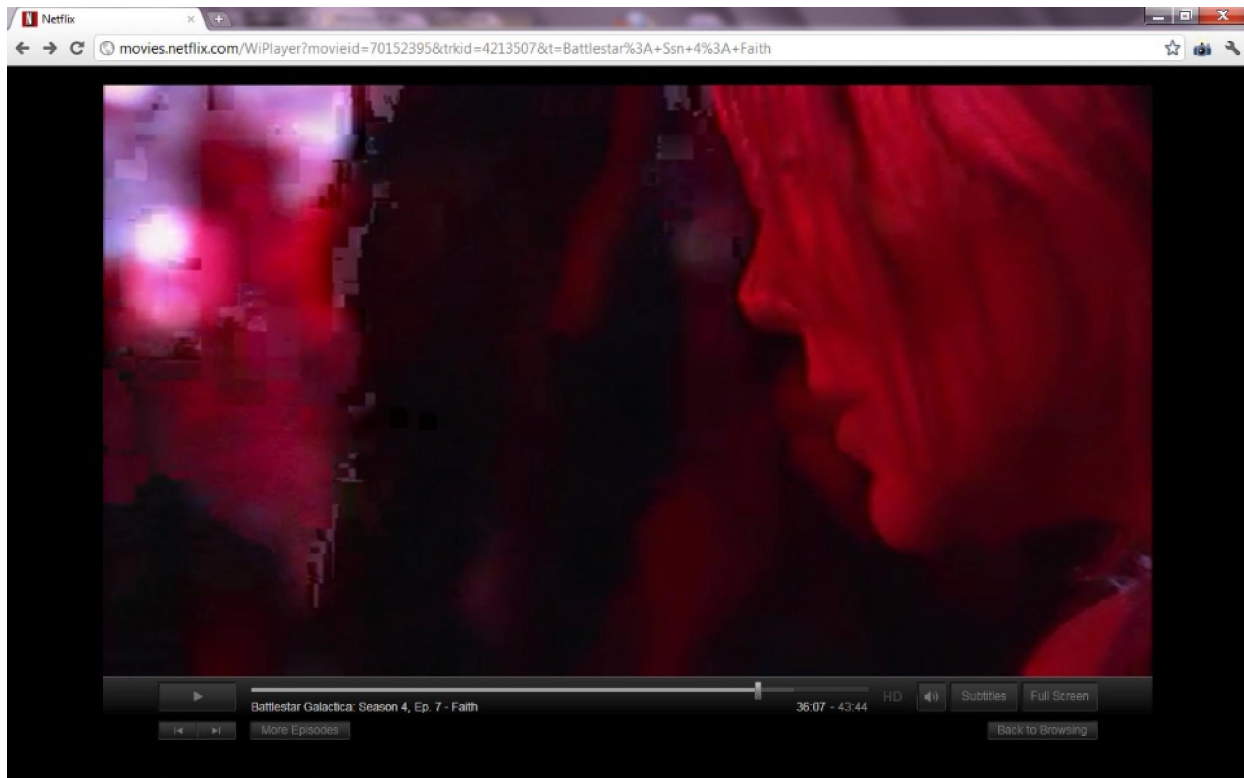


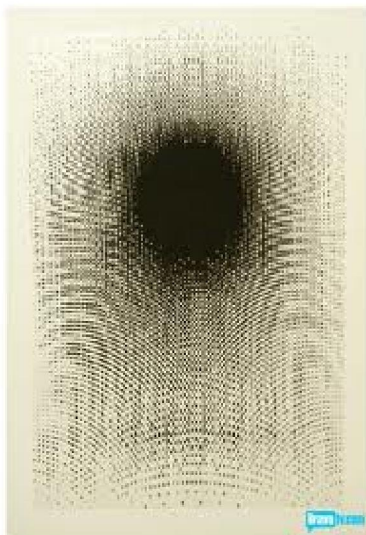
Figure 4.17 Convergence of pop glitch and spontaneous glitch

Figure 4.17 illustrates a pixelation glitch as a result of UDP error activating Silverlight's buffering mechanism as a means to correct the pixelated image. UDP errors, as described in my introduction, result from lapses in bandwidth which cause media players to drop data from the streaming datapackets. These errors activate Silverlight's buffering mechanism to reorganize and redistribute the visual information. The buffer zone exists in the interim of bandwidth shifts. The techno-term for this is buffer underrun or buffer underflow. The buffer underflow occurs when a buffer used to communicate between two devices is fed with data at a lower speed than the data being read from it. It creeps-up unaware of its devious, although

unintentional, ability to shock the viewer into reality, jolting the suspension of disbelief to a hard end, and invading the sacred space between art and audience. The buffer underflow can intercept one's attention for a few moments or snatch one's viewing experience entirely. As clips, movies, or television shows are not designed to be interrupted by disturbances in bandwidth, the buffer underflow can have startling effects on texts. Whether moments, minutes, or marathons, the buffer underflow lurks behind the veil of streaming media, sneaking up on the unsuspecting audience.

Unlike a glitch, which acts as a sudden, complete failure of the system, the buffer zone repairs itself automatically with the probability of occurring again as bandwidth is interrupted. Each buffering sequence is a moment of renewal, but a glitch is a failure within the system. The glitch is static and permanent. The buffer underflow is mobile and transformative.

Work of Art (Season 1)



Bravo's "Work of Art: The Next Great Artist" is an American reality competition television series that eliminates its contestants week after week based on a series of artistic challenges. The first season of the show was judged by China Chow, who also hosts the show, Jerry Saltz, Jeanne Greenberg Rohatyn, and Bill Powers, the winner received a solo exhibition at the Brooklyn Museum and a cash prize of \$100,000.



Figure 4.19 Mendenhall's series of glitch-alike images

Work of Art finalist Miles Mendenhall created several glitch pieces by manipulating photos taken from his cellular phone. Inspired by an elderly group of down-and-out drifters stationed at a White Castle in his hometown of Lakeville, MN, Mendenhall began capturing images of the group with his flip-phone by shooting the fast food restaurant's security camera monitor. The images pictured above are augmented digital photos of, to paraphrase Mendenhall, "an alcoholic, homeless man." Mendenhall manipulated the area of the photo that depicted the "alcoholic, homeless man['s]" eye.

Work of Art is an odd juxtaposition of high art and low-art reality television show. The inclusion of Mendenhall's glitch pieces in a TV show like *Work of Art* signals an odd mash-up of glitch-alike art object broadcast as pop culture artifact. Judges lauded Mendenhall's courage for attempting something "daring and new." Clearly the show's judges were not acquainted with already internationally respected glitch artists like Ant Scott and Jodi. Despite the judges methodological approval, Mendenhall's pieces were subsequently criticized for appearing unfinished. "It looks like we've caught him, and I hate to say this, in a work in progress. It's like we're on a scavenger hunt but we never get the payoff" remarked guest judge and celebrity photographer, David LaChapelle. Ultimately, Mendenhall did not win the reality TV competition, but his contribution, though mischaracterized as daring and new, sparks an interesting conversation between glitch-alike artworks and pop glitch.

The glitchification of the homeless man in Mendenhall's pure glitch pieces may deliver a pathos to its viewers. However, the glitch-alike abstractions taken from Mendenhall's camera-phone do not reveal the complex computing or networking processes that Scott's and Menkman's works detail. Instead, the digital photo taken of the homeless man, as captured by the White Castle's surveillance footage, exploits the man's image in a superficial manner that values novel processes over context. Mendenhall's exploration of glitch art-making endeavors reduce the homeless man's existence down to a handful of pixels.

Critics of the show disparage Mendenhall's exploitative images arguing, "It could have been the basis of something profound" (Teti, 1). The humanity of the homeless man is lost in the pixelated image of the captured surveillance as one commenter notes:

His "White Castle" project shows he has learned nothing about art or humanity through this process. In the end, his "tribute" to a man whose final moments he unwittingly (allegedly) captured effectively transformed this individual into a bar-code -- a nothing. Rather than attempting to use the work to restore a sense of humanity to this senseless death, Miles consciously or unconsciously reveled in the obliteration of this nameless individual.⁵⁵

Kane and Lynch 2



Kayne and Lynch 2 adopts pop glitch in its eerie surveillance footage used to document the torture of Lynch's partner Kayne and his girlfriend Xie. The glitchy surveillance footage mimics analog CRT systems' errors and contains pixelation. The illogical mix of simultaneous analog and digital glitching creates an unsettling effect.

The game's most interesting feature is the omnipresent, mysterious third party capturing Kane and Lynch's misadventures with a digital camera. The entire game is presented

⁵⁵ Comment by Llyod Dobbs in response to Teti's review of *Work of Art's* season finale, "The Big Show."
<http://www.avclub.com/articles/the-big-show,43931/>

to players through this new stylistic approach to conveying game narrative. We know that pop glitch is at play and not a problem with the gaming console because the ammunition gage, pictured at the bottom right corner of figure 4.21 is clearly marked even though it is clearly in a pixelated area of the screen. The games narrative explains the glitch in figure 4.21 by causing Kane and the mysterious cameraman to slip in a puddle of water on the tile floor.

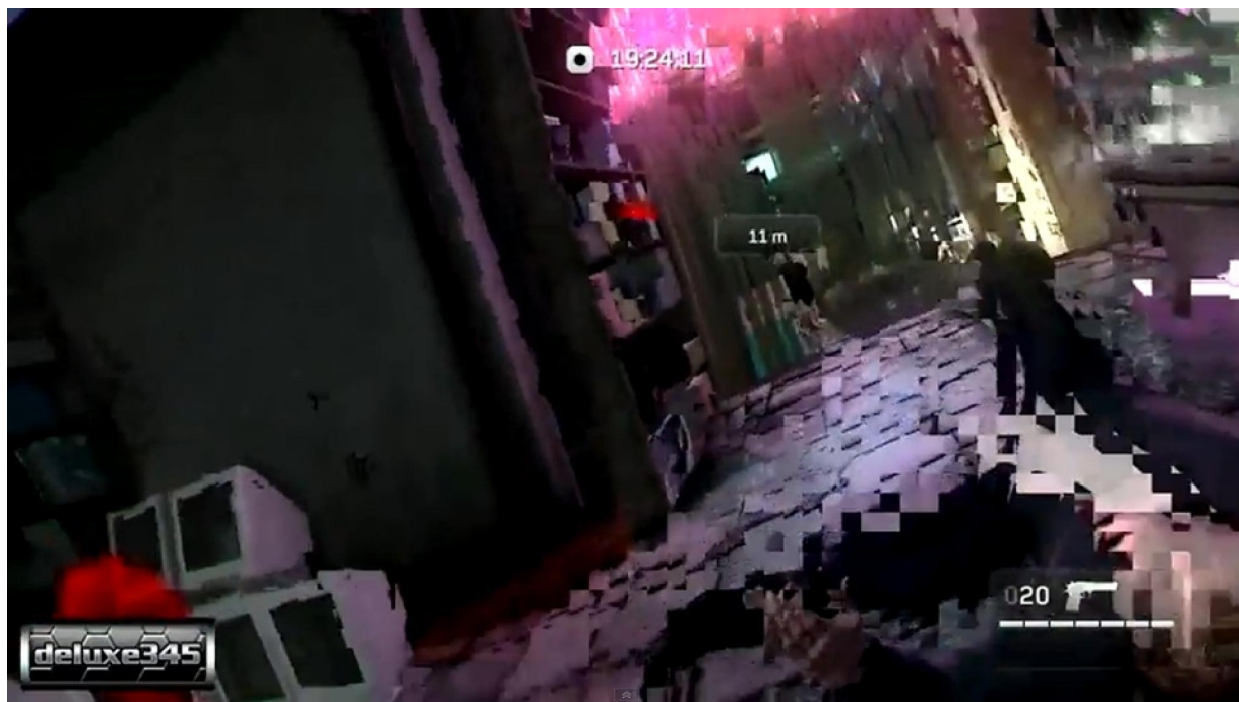


Figure 4.21 Pop glitch in omnipresent digital camera in *Kane and Lynch 2*

This pop glitch utilized in *Kane and Lynch 2* conveys an omnipresent digital eye that never stops filming and inexplicably manages to dodge the fusillade of oncoming fire. We know that Kane and Lynch are being followed by an invisible cameraman by the frequent specks of blood that spatter over the screen. The mysterious cameraman is never explicitly identified in the game. Fans suspect that the digital rendering of the game's world is a construct of Kane's imagination, which makes sense in that Kane typically follow Lynch's lead. However, this explanation is problematic because it does not explain how or why the footage continues when

Kane enters the frame. Discussion boards conclude that this effect can be explained by Kane's frequent schizophrenic hallucinations.⁵⁶

Given the frequency of videogame crashes, the pop glitch employed in *Kane and Lynch 2* expresses a mastery of videogame programming. It is unlikely that earlier videogames would employ this aesthetic because gamers would most likely interpret the imposed glitch aesthetic as an active, spontaneous glitch within the gaming console. The naturalization of digital technologies affords a self reflexivity to occur within videogame texts. Naturalization of digital technologies leads us to a postdigital world in which we are able to negotiate digital aesthetics. Christiane Paul uses the term in *Digital Art* to describe what she sees as a post digital line of flight in glitch aesthetics observing that, "the notion of postdigital is emerging as a term that describes the creative exploration of our relationship to the computer age as we move into a time of global remixing, intertwined economies, population certainty and planetary limits" (65). In other words, postdigital means an era, after the digital transition, in which we take digital technologies for granted. It seems ironic that the videogames would harken back upon the glitches of its infancy. Yet, contemporary gamers are savvy enough to interpret the pop glitch aesthetic as a stylistic embellishment and not a transcoding error within the game's code or gaming console. Living in a postdigital age allows artists, programmers, and new media users to explore the possibilities of digital aesthetics through a wider range of effects and display.

Verizon's Droid Ad Campaign

⁵⁶ "The Symbolism, Art, and Drama of Kane and Lynch." February 2011.
<http://forums.eidosgames.com/showthread.php?s=f1e8bb33098fc37922106c0e0ebde1cb&t=98191&page=2>



The "Human" Droid commercial features a robotic arm's search for the meaning and application of *human*. The commercial employs pop glitch at its beginning and end as crisp imagery becomes increasingly pixelated and eventually dissolves into static, then as robotic arms experiment with the device, illustrated in figure 4.23.

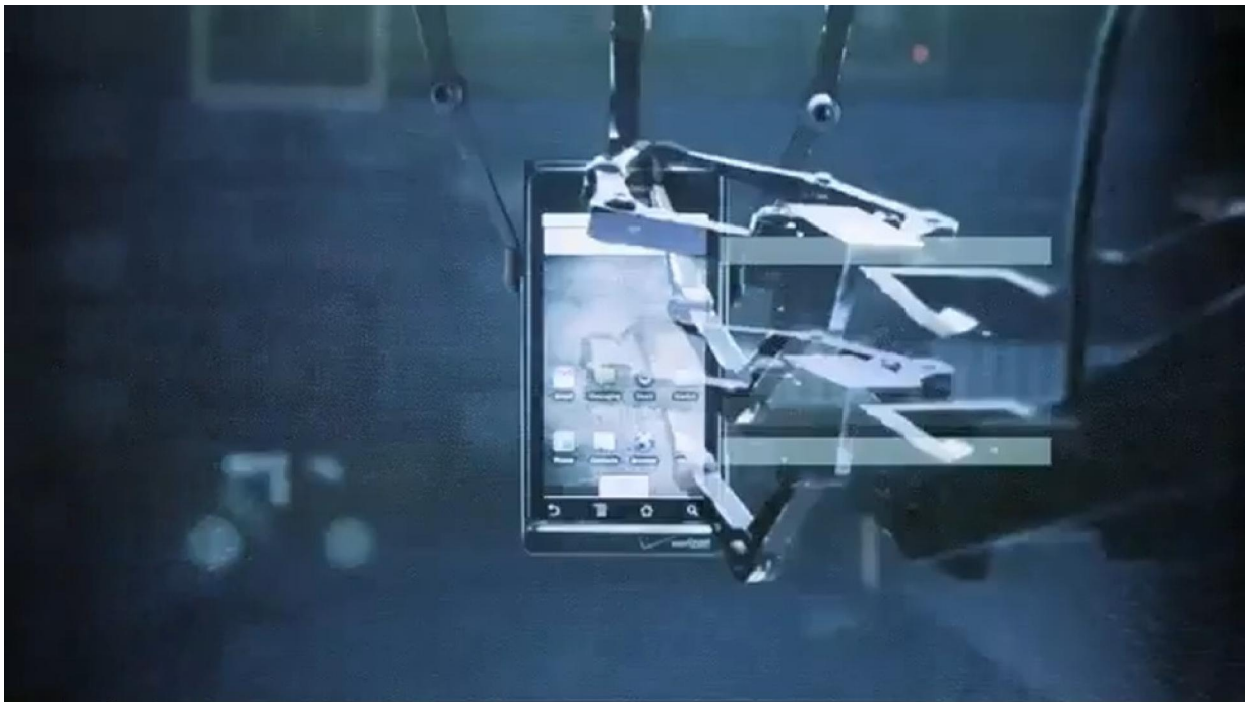


Figure 4.23 Pop glitch mimicking pixelation glitch

The most recent Droid commercials promise users control over the mechanical and technological with the mastering of their latest device, Droid Bionic. The tag line for this device reads, "Made by machines to rule all machines." Pop glitch takes an interesting turn promising technological domination at our fingertips.

The Droid Bionic commercial entitled "Arena" features a leather-clad heroine in an arena fighting what appears to be a Cylon-like robot warrior. As she defeats cybernetic warrior after cybernetic warrior, the heroine gleans what can be interpreted as the warriors' best parts, an HDMI input here, a dual core processor there. Finally, after she places all of these "found" parts on an ancient-looking altar, the Droid Bionic appears, crafted from the best parts of cybernetic robots.



Figure 4.24 Heroine defeats cybernetic robot and gathers robotic pieces from cybernetic victims

The Droid Bionic controls all other machines. Finally, humankind is armed with the technology and physical strength to take on our manmade monsters. Instead of running from the technology, as is the case with *BSG* and *Ghost in the Machine*, human dominance over machine comes to us ironically through another technological device: the smart phone. The pop glitch emerges as an empowering plot device used to signal the demise of the killing computers that have evolved dangerously close to the point of technological singularity. Biotechnological

themes encoded in the heroine's plight suggest that our future is marked by technological progress as we dominate glitching, inferior machines.

Verizon's Droid ads continue to feature pop glitch in television and print advertisements. The pop glitch utilized in this ad campaign signals pop glitch's total immersion into popular culture. Available in print, video, radio, and digital media, pop glitch has reached maturity as media featuring pop glitch become increasingly mundane.

Conclusion

The glitch holds its power through the perpetuation of its secret origins. Like the killing tape in *The Ring*, the glitch is mysterious because its origins are easily obscured or hidden from users. For Benson-Allott, the killer videotape is reminiscent of the Lacanian death's head or stain. "The stain appears to its viewer as an unexpected reminder of her own mortality, which means that, as an interpellation, it requires neither narrative nor logic to achieve its effect, since it is precisely the uncontextualizable finality of death that gives the stain its power" (Benson-Allott, 9-10). I propose that pop glitch, too, conjures the stain in a similar vein as Benson-Allott's killer tape. Pop glitch artifacts remind viewers of their immanent mortal demise through the unraveling of familiar and logical images. Always uncontextualizable, pop glitch exists through interpellation of system failure or digital death in popular media. "These horrors are terrible precisely because they are inexplicable, because they are fears we cannot verbalize or recognize that have been shunted off into narratives where we can look at them and experience their gazes as the horrors of the movie, not the horrors with us" (Benson-Allott, 11).

Chapter 5: Conclusions

As our world becomes increasingly networked, how we conduct business, exchange ideas, entertain ourselves, and participate in politics relies upon dependable flows of information. This thesis provides a topology of glitch and explores the aesthetics of the errant, tracing the evolution of glitch aesthetics from underground art movement and genre to inculcation as pop culture artifact.

Charles Sanders Peirce argued that errors propel the development of knowledge because they engender doubt. Thus, errors act as self-correcting means of epistemological endeavors. Though Peirce maintains a belief in an absolute truth, he persists that knowledge advances as the result of the collective actions of a "community of inquirers" engaged in partial approximations at truth. Mark Nunes writes:

"We see this idea as early as 1870, when Peirce conducted a series of experiments on errors in multiple, relative measurements for the U.S. Coast Survey in an attempt to advance a "Theory of Errors of Observation." In later essays such as "Fallibilism, Continuity and Evolution," Peirce maintains what he calls as Doctrine of Fallibilism, insisting that while an absolute answer to an inquiry exists at a theoretical level, at any given moment, answers are always partial, incomplete, and, in short, fraught with error. What advances knowledge then is not authority and certainty, but rather doubt. Unlike an Enlightenment view of error as a failure to recognize the truth, error serves a purpose in patterns of order" (10).

The glitch embodies this notion of error symbolically through the evolution of computing processes and (quite literally) through aesthetics derived from these transcoding errors. Nunes concludes by accepting errors not as an irritating, negative force but as vibrant signs towards a truth that can "transcend the misteps of human execution" (11). Additionally, errors afford opportunities to receive data beyond hypotheses. Surely, no one pursues mistakes as an end, but errors offer digression; whether these digressions are fruitful or superfluous, are up for individual interpretation.

Pop glitch has most recently shifted from special effects trick meant to induce fear and/or anxiety in its audiences to the empowering means to control machines, as evidenced by Verizon's Arena commercial. For so long, terror and anxiety plagued cyberfilms through the promise of technological specificity, but as Eric Faden writes, "Although cyberfilms often fall under the science fiction genre, some cyberfilms attempt to "rejuvenate" other already established genres. For instance, *The Net* as chase/thriller, *Ghost in the Machine* as horror, *Jumpin' Jack Flash* as screwball comedy, and *Electric Dreams* as romantic comedy" (89). Pop glitch resounds in a myriad of genres. Nickelodeon's hit show *iCarly* is about a group of middle-school-aged children and their successful web show. Pop glitch is utilized as a colorful break in between scenes. Instead of a traditional cross-fade in which one scene seamlessly dissolves into the next, *iCarly* employs a pop glitch pixelated cross-fade.



Figure 5.1 *iCarly* end of scene screen shot

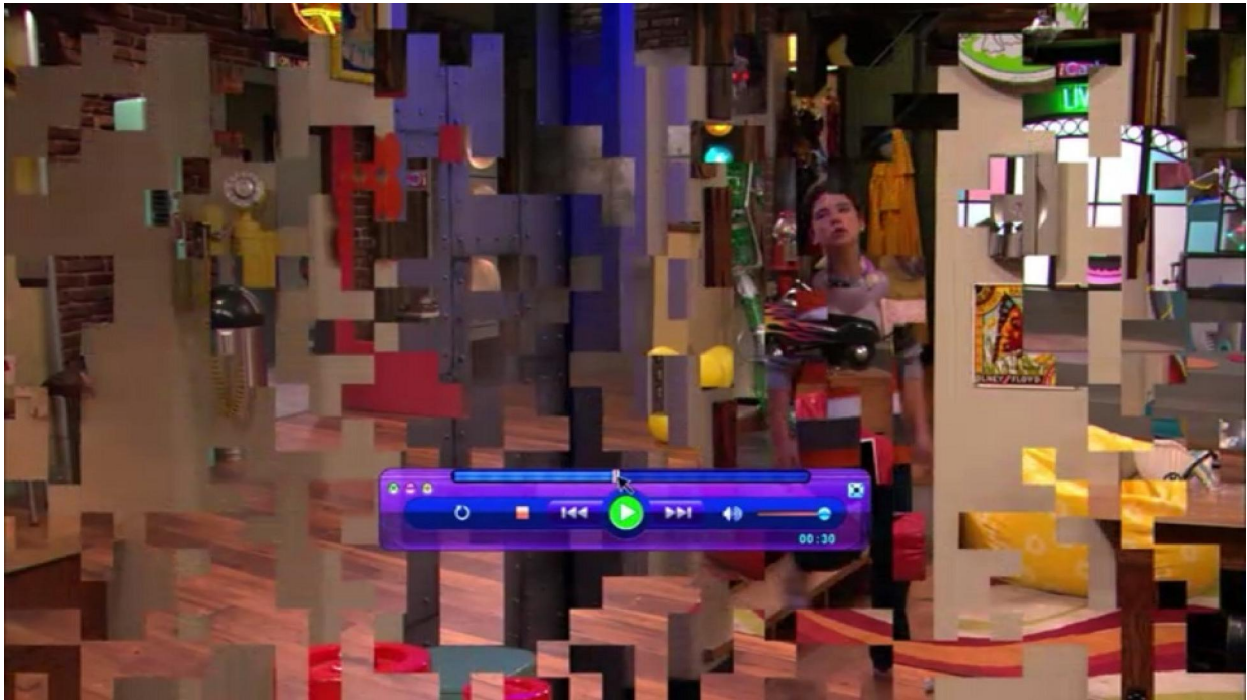


Figure 5.2 Pop glitch used as editing device, using pixelation as a cross-fade.



Figure 5.3 *iCarly* beginning of scene screen capture

Newer, friendlier versions of the initially horrifying pop glitch emerge in pop culture due to the inevitable naturalization and inculcation of computer and networking technologies. Once a harbinger of doom and destruction, pop glitch divests its technophobic robe for more amiable apparel. Do these *Caspers in the machine*⁵⁷ signal a new era for glitch aesthetics? Surely, the advent of friendly pop glitch heralds an expansion of pop glitch as an aesthetic (and now editing) device, but how else might we assimilate pop glitch into everyday life?

As our world shifts to a technocentric, media-saturated society, changes in how we conduct business, construct history, report news, and access knowledge shift towards fragmented, schizophrenic collections of data. The digital revolution appears to us not as a systematic narrative of analog/digital convergence, but through the bits and pieces of

⁵⁷ Casper, The Friendly Ghost. The children's cartoon created by Seymour Reit and Joe Oriolo, produced by Famous Studios in 1945.

datapackets we internalize (159). In my first chapter, I described a phenomenological response to a Pixelation glitch experienced during an OnDemand broadcast of FX's *Louie*. If glitches can affect our minds and phenomenological responses, then can we in-turn absorb the principles of glitch modifying its accoutrement and espouse it through real world applications? Soundbites delivered through Twitter provide seemingly abridged versions of events and opinions, but are these 140 character message the entire story? In a post-digital era, one can explore new modes of knowledge gathering through pop glitch.

Every glitch has an explainable origin; they are not mysterious, ethereal apparitions but historical moments that exist simultaneously in the digital and analog realms. By its very nature, the glitch closes the gap between digital and analog, glitch artists then seek to expose and interrogate the space between them, and pop glitch transforms them into postmodern pieces of digital engagement. Through the act, aesthetic, and artifact of glitch, humanity makes sense naturalized digital practices in a post-digital world.

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