Notes on Glitch

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What follows is the result of an off-and-on confabulation taking place between the authors for over a year—a collaborative attempt to both define and theorize a set of practices that is known by various names: databending, datamoshing, image hacking, and of course glitch art. These "notes" are not intended to be exhaustive or in any sense final, but instead represent a set of loosely organized postulates that others might revise, debate, critique or extend.

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1. Almost invariably, digital imagery greets its beholder in the guise of analog—as a smooth and seamless flow, rather than as discrete digital chunks. A glitch disrupts the data behind a digital representation in such a way that its simulation of analog can no longer remain covert. What otherwise would have been passively received—for instance a video feed, online photograph, or musical recording—now unexpectedly coughs up a tumorous blob of digital distortion. Whether its cause is intentional or accidental, a glitch flamboyantly undoes the communications platforms that we, as subjects of digital culture, both rely on and take for granted.

2. The existence of glitch-based representation depends upon the inability of software to treat a wrong bit of data in anything other than the right way. The word "glitch" in this sense does not solely represent the cause that initiates some failure, but also the output that results when improper data is decoded properly. An isolated problem is encountered and, rather than shutting down, the software prattles on. Stated differently, it is a given program's *failure to fully fail* upon encountering bad data that allows a glitch to appear. The instigation of such defect-driven churning is the crux of the practice known as Glitch Art.

3. Standard dictionaries fail to define the word "glitch" except in relation to analog technology. The first documented usage in English belongs to John Glenn, in reference to voltage modulations encountered during an early manned space flight.[1] Despite being rooted in analog culture, however, there is one aspect of the dictionary definition that both endures in digital glitching and in a strong sense defines it: the momentary or punctiform nature of the initiating impulse. A glitch is a "surge," "a sudden short-lived irregularity in behavior" (*OED*), whose aftereffects are at once shocking and effusive. The garish appearance and obstreperous sound of glitch art betokens its origination in this way: *a tiny variance has triggered major damage*.

4. Although in some cases the production of glitch art may require a great deal of effort, its basic premise is opposite. Glitch art aims at drastic results, derived from seemingly insignificant alterations. One does next-to-nothing and *voilà!*

> "The enemy of art is the absence of limitations."
>
> – Orson Welles[2]

5. Glitch art builds on the history and sensibility of hardware circuit-bending, established by Reed Ghazala in the 1960s. Artists inspired by Ghazala explore the sonic qualities of electronic noise by modding guitar effects pedals and children's electronic toys, by using existing equipment in unanticipated ways, and by building new instruments from electronic detritus. In the late 1990s and early 2000s, digital artists such as Ant Scott and Iman Moradi began to carry this approach over to software-based visuals. The transition to software modification retained the DIY, hands-on sensibility of its hardware equivalent. Instead of short-circuiting a Speak & Spell toy to bring about a disconcerting robotic voice, a glitch artist might open an image file in a text editor, randomly adding or deleting data in order to add digital murk to an overly pristine photo.

6. Software-based approaches to glitch art have taken many forms: photos altered in sound editors, music edited in Photoshop, an album made of data files recorded as sound (*Wrong Application*, 2001), video files edited in text editors, Microsoft Word de- and re-constructed, glitched operating systems (*Satromizer OS* by Ben Syverson and Jon Satrom), glitched fonts (Antonio Roberts's *Dataface*), a glitch programming language (Daniel Temkin's *Entropy*), glitched wikis, as well as a host of tools, from the hands-on *n0tepad* (Jeff Donaldson and Daniel Temkin) to the automated tools written by Anton Marini, which produce glitch-like visuals for live performance. Recent digital hardware experimentation has been equally diverse: rewired Nintendos, short-circuited cameras, broken laptops, and disassembled LCD screens combined with overhead projectors (Jorge Crowe's *2x (Potencia de dos)*). Each of these experiments generates new and unexpected behaviors, the exploration of which extends the glitch aesthetic.

7. Important precursors to glitch include Nam Jan Paik, John Cage, Annie Albers (who painted fractal search patterns before they were discovered), artists associated with New Tendencies such as Hiroshi Kawano (whose 1964 paintings of Markov chains feel intensely glitchy) and other early generative art (when it was most entrenched in blocky pixilation), as well as Max Headroom: the friendly face on the dark mode of '80s cyberpunk, Lou Reed's *Metal Machine Music* (not to mention the long history of noise music), Einstürzende Neubauten, Lis Rhodes (whose *Light Music*, built entirely from analog elements, is almost indistinguishable from some glitch video work), and net.art pioneers who embraced chaos, such as JODI and Netochka Nezvanova.

A more expansive list of proto-glitch artists might include such figures as François Rouan, Andy Warhol, Iannis Xenakis, Ken Jacobs, Gerhard Richter, and Jamie Reid.

8. Glitch art was not born in any particular location or moment; it was discovered (and continues to be discovered) at a thousand points simultaneously. The nascent glitch artist is seduced by a chance encounter: one witnesses, perhaps for the first time, the momentary failure of a digitally transcoded text—a fractured JPEG image, for instance, or a compressed video file losing traction with itself. The error is perceived as provocative, strange and beautiful. Yet immediately one thinks: what happened to trigger this delightful error, and how could I create such an image on purpose? Although it is possible to have the same reaction to consciously created works labeled as Glitch Art, it seems clear that any appreciation of the form, and any desire to produce it, is rooted in the belief in an originary and pure accident, which the artist seeks to emulate and/or develop and extend.[3]

9. Glitch art is process art: the artist's hand intervening in digital data leaves its mark in the visual essence of the image. The artist's process is not exacting, but an invitation of chaos: one triggers a glitch; one does not create a glitch. The limited amount of control the artist maintains is evident in the resulting image.

10. Glitch practice is surely as much a drive-based oscillation as it is a desire-based quest. Deliberate glitches viewed on screen and on the walls of galleries do not necessarily represent "the goal." Individual works of glitch art may just as well be residues of "the way," i.e. a happenstance by-product of the addictively game-like occultations that typify glitch practice: change, save, view and undo; change, save, view and undo. In such an arrangement, the exhibited image, sound, or video is strictly secondary to the process: a kind of notational proof that the technique in fact worked.

11. For glitch practitioners, the distinction between accidental and purposeful is not irrelevant, but it is also not the most crucial distinction.

12. During the process of its creation, glitch art appears stochastic. It is difficult to foresee which alteration of data will metastasize, which will instantaneously kill the file, and which will have no discernible effect. However, from the point of view of the file, whose "genetic predispositions" are rigid and fixed, there is nothing random about glitching. "Open 57904.jpg >> replace all Q with 9hJ" produces exactly the same results every time. Alternately, we could say that glitch practice is pseudo-aleatory, since results which appear random are in fact entirely reproducible.

13. A paradox: prior to initiating a glitch, one constantly predicts that it will be impossible to predict the outcome. The most provocative glitch art surprises not only its beholder, but also its creator.

14. Another glitch paradox: whereas, as in all artistic practice, it is absolutely possible to refine a set of glitching techniques, the individual glitchwork does not respond well to gradual refinement. To polish, layer, or embellish glitch art is undeniably to move away from its ontology. Moreover, in some cases, to attempt to refine a glitch even slightly would be to render it unreadable, impossible to exhibit.

15. Glitching, like photography, is easy to do and hard to do well. A glitch artist may edit her creations, deciding when an image or video has been sufficiently damaged; but a glitch artist exists in a somewhat arbitrary relation to the patterns and colors she triggers. Glitch art is similar to street photography in this way; the artist's role is not a matter of cause-and-effect, but lies in inviting and reacting to the conditions that allow the art to happen. While it may not necessarily be disingenuous to refer to "a work of glitch," it is certainly uncomfortable, owing both to this roll-of-the-dice aspect of glitch practice and to a palpable uncertainty about where the actual "work" of glitch is being done. The accidental aspect of glitch is one of the reasons there is such a tight-knit glitch art community, sharing and commenting on each others' work: success and genuine newness is rare.

16. Some practitioners of glitch appear as hobbyists or DIY enthusiasts, producing glitch art in their leisure time, enjoying the cyclical repetitions of success and failure, doing and undoing. Because its pleasures are personal, and its approach so intensely manual, glitching at times seems more like a craft than an art. It is surely not a science. There is a pleasurably folksy tedium in glitch production that is akin to whittling, needlepoint, topiary, or polishing a treasured vehicle. Yet the hobby which bears the clearest structural connection to glitch art is fishing. One casts forth the line, not knowing what if anything will be reeled in.

17. At some point along the path of actions that culminates in a work of glitch art, it is inevitable that the artist will contemplate whether their work is succeeding at failing, or failing at failing. For some artists, there is a tendency to post online a Warhol-like series of glitches all based on the same image. This embrace of seriality represents an unconscious striving for what glitch practitioners know full well to be unattainable: *the perfect error*. For instance, one opens the raw code of a PNG image file and searches for the keystone bit of data which, when traded out, will mar the image in the most interesting and unexpected way. One does not achieve the perfect digital error by gradually wearing down the original, or by incrementally educating oneself about time-tested procedures. Rather, glitching is lottery-like: an instantaneous all-or-nothing wager whose guiding principal is at best a kind of intuition and at worst a matter of dumb luck.

> "When an artist learns his craft too well he makes slick art."
>
> – Sol LeWitt[4]

18. We tend to think of glitch as a purely digital phenomenon, but nothing could be further from the truth. Glitch is an intersection of analog and digital modes of (re)production. Reveling in the blocky, layered, decomposed underside of digital transcoding, glitch art is an anamorphosis in which digital has been poked by its analog other; it is "digital gone wild" when grazed by an analog fingertip. A taboo has been broken—the artist has blurred or defied what D.N. Rodowick calls "the distinction between transcription and transcoding."[5]

19. Glitch is not inherently a machinic event. Think of a drop of water landing on a circuit board, or of a felt-tip marker adding a single line to a UPC barcode. These are glitch events, and neither is wholly machinic. Moreover, despite the fact that one most often uses a digital interface to glitch a file, this intervention nonetheless comes from the side of analog. The ultimate glitching experiment: choose a media file at random and transcribe its lengthy hex code by hand from the computer screen (error is inevitable). Then delete the file and re-enter the code from the handwritten sheets (more error). Press save. Open the file with the appropriate software: a glitch. Such an experiment lays bare the analog/digital nexus of glitch art.

20. To initiate a glitch is always in some sense *to pluck*. One fingers a bit of data within a vast field just as one might agitate a single banjo string or eradicate a stray eyebrow hair. Faced with a plethora of highly complex and ever-changing digital forms, the glitch artist should likewise be characterized not as diligent or determined, but as *plucky*.

21. At the point we begin using "glitch" to describe analog-on-analog damage, or the digital manipulation of digital files, the term loses potency. A canvas damaged by water, intentionally or accidentally, is not in any obvious way a glitch.[6] A mouse chewing on the cord of an electric printer could produce a glitch, depending on what is output. A digital camera recovered from a washing machine is pregnant with possibility. However, we need to be clear that what is at issue here is not an empirical principle, but an onomatopoetic signifier: *glitch*. The sound of the word sizzles and quickly dies, but in that moment of sizzling something unexpected is being produced.

22. Although it brings together analog and digital modes, glitch is a not at all a refusal of that binary. Glitch is very much a practice situated within digital culture, and with full knowledge of its difference from analog. Glitch is combinatory, but (self-evidently) not a blending or dissolution of the two signal types.

23. An important thing changed when glitch moved to software, as opposed to the hardware circuit-bending which preceded it. To rewire even a cheap, plentiful toy like a Teletubby is to transform it irrevocably—something in the real world is at stake. But software-based glitching has no equivalent. Breaking a file is to create a broken copy, not to transform the original. In this sense, all glitch entails a built-in "undo" operation: the original remains available, at least in theory. For all the destructiveness in glitch art, it is actually simulated dirt, simulated breakage, simulated risk. A deleted De Kooning JPEG is different in character from Rauschenberg's *Erased De Kooning Drawing* (1953). This unanswerability to anything like an authentic, first-generation "original" permits glitch artists to be fearless in their transformations.

24. At the same time, because glitch artists may optionally "save a copy" before making alterations, there is something disturbingly low-stakes about any particular attempt at glitching. One wishes this were not so, since the appearance of glitch is highly untame.

Driven as it is by limitations of all sorts, many of the most agitating examples of Modernist art—works which, in Susan Sontag's terms, "overstrain" the medium[7]—would never have existed with an undo button at their creators' disposal. Indeed the art historian of the future will recognize the rise of unlimited, one-click "undo" as being on par with the most major technological and phenomenological changes in the history of representation.

25. Paul Virilio is often cited in discussions of glitch art; however we need to be clear that glitch art is most often not, strictly speaking, an effort to "[p]enetrate the machine, explode it from the inside, dismantle the system to appropriate it."[8] Real sabotage cannot be undone. Indeed any instance of real sabotage risks spinning out of control to the point of harming the saboteur. In this way, the prevalence of the undo function in glitch practice renders it a kind of pseudo-sabotage. This is not to say that the resultant file—publicly exhibited in some venue—does not disturb, vex, or interrupt the flow of its beholder, and thus work to "dismantle the system." Indeed, despite its simulation of sabotage, glitch art nonetheless loudly announces the hegemony of digital representation and the passivity of its subjects.

26. Like the sniper-protagonist of Peter Bogdanovich's 1968 film *Targets*, the glitch artist takes pot-shots at the digital from a safe distance—methodical and well-rehearsed, yet smirking with a game-like glee. The highly mediated, distanced ease with which it is accomplished is part of the irony of glitch. Another relevant film in this context is Hollis Frampton's *(nostalgia)* (1971), in which the filmmaker burns a series of photographs on a hotplate but notably does not burn the negatives, the drama of destructiveness masking the fact that nothing has really been destroyed.

27. However, despite all of this, in rare instances glitch art does nonetheless engage in irrevocable acts of real sabotage, creating texts whose unmodified originals can neither be reconstituted nor retrieved. The point here is a negative one: while all glitch damage appears irrevocable, very little of it is.

> "Contre le règle générale: ne jamais s'en laisser accroire par *l'image* de la jouissance."
>
> – Roland Barthes[9]

28. Like any technology, digital technology is prone to failure. Indeed, the only thing surprising about those moments at which the digital fails is people's surprise when it happens. However, unlike its predecessors, when digital technology fails, it tends to fail catastrophically. It takes nothing—a fleck of dust, minor condensation—to flummox the digital. Comparatively, to effectuate an analog media catastrophe one needs to bring out the heavy artillery: fire, scissors, sandpaper, a large magnet. When excessively damaged, digital moving images do not bleed; they disintegrate to the point of unreadability. They do not skip, but instead freeze. When they distort, they do not gain pleasing overtones; instead,

having reached a certain amplitude, they "clip," and when they do one literally sees or hears the orthogonal relation between the analog source and its digital reproduction (and to be clear, all signals are analog at their point of origination, as well as at their point of reception, a living body).

29. Glitch art does not "dirty up" a text, but instead undermines its basic structure. Glitch damage is integral, even when its effects manifest at the surface.

30. Code is built in layers, each with a metaphor constructed by the programmers building it, to enact and describe its behavior. The tech blogger Joel Spolsky has described these abstractions as "leaky."[10] They are perched on hidden metaphors beneath—those used by the programmers who created the libraries, other software components, the operating system, etc. Each metaphor tries to be completely descriptive of the code's behavior but the lower levels, with their foreign and seemingly primitive logic, cannot be contained—they leak. The details that are obscured at the lower levels—such as using a two-digit number to store a year which is displayed in four digits—can potentially play havoc with higher level systems, as many feared would happen with the so-called Y2K bug. These hidden layers spill logic upward, sometimes slowly, but often in sudden bursts: a glitch.

31. The aesthetic of the glitch tends toward blockiness, toward crystalline fragmentation. Even an audio glitch creates the impression of edges. As many have noted, this opposes the "bleeding" or "warmth" we perceive in some forms of analog distortion (the famous advantage of tube amplifiers over solid state). This instantaneous fracturing is what glitch artists savor. The image *crazed*. A sound *in shards*.

32. Digital data does not contain its own interpretation; a block of data is a nebulous thing, granted a frame of reference only by the external programs that interpret it. Glitch art is a refusal to submit to this intended interpretation. A JPEG file with extra bytes inserted in the middle is no longer compliant with the JPEG standard. It is not quite a JPEG; it is something else—close enough for image editing programs to decode, but incorrectly, making the non-linear nature of the digital image, which is ordinarily repressed, strikingly apparent.

33. A computer interface, by contrast, is immersive—we cannot help but misperceive skeumorphic user interfaces such as buttons, drop-down menus and browser windows as bearing a real physicality. We do not expect two windows to become entangled or intertwined. When glitches manifest, they are a sudden phenomenological intrusion, a break in the order of logic. The shock comes because when we work with the machine we are contained by it. A glitch ruptures this immersive environment, undercutting the sovereignty of the digital by revealing its pervasiveness.

34. Glitching tends to seek liminal states, i.e. a half-crashed file, or a digital image that our analog fingering has only partly ruined, taking it almost but not quite beyond legibility. As any glitch artist will tell you, it is easy to kill a file. It is considerably more difficult to render a

file undead, suspending it in a state of zombie-like decay. Glitch strives for this in-between zone: partial failure, but also a partial success. Figural representation, to the extent that it appears, must fade, blur or disintegrate. One appreciates the semi-legibility of a glitch representation despite someone's rude attempts to dismantle it. This logic of "almost, but not quite" pervades glitch art, both in the methods of its creation and in its dominant aesthetics. Glitch art can thus be understood as the anxiety-provoking, uncanny underside of the *heimlich* comfort we take in the digital—in its cleanness, familiarity and reliability.

35. At the same time, and in a non-contradictory way, it is possible to view the net effect of the incessant flood of images calling themselves Glitch Art as *relieving* anxiety about computer error. Although glitch artists themselves would not readily admit to a fear of reliance on the digital, their work has an unconscious salving effect on anxiety about computers. The sudden break no longer seems shocking, but comes to contain aesthetic properties that are pleasingly curious. By aestheticizing error, one domesticates it, "owns" it, rendering the prospect of a real collapse familiar and somehow less scary.

36. By the mid-2000s, the signifier "glitch"—in the sense we mean it here—had arrived squarely within mainstream American culture. The longer Glitch Art persists as a nameable aesthetic, the more one tends to conceive of simple analog errors, alphanumeric transpositions, and linguistic mistranslations as glitches. The humor website engrish.com is glitchy owing to the robot-like consistency of its readymade non sequiturs—its highly dependable faultiness. Similarly, when in 2005 a Chicago tattoo artist emblazoned his client's chest with the word "Chi-tonw" (instead of "Chi-town"), the error came to connote "glitch" rather than simple misspelling.[11] The effect was only amplified when the erroneous tattoo was deliberately sought by other Chicagoans, both as a show of solidarity with the mismarked man, and as a kind of fashion trend. The crucial similarity is that fail-based web memes such as these maintain an absolute certitude about their own correctness, even when their output is flagrantly wrong. Engrish.com and "Chi-tonw" are close cousins to glitch because they fail not sporadically or meekly, but repeatedly and with aplomb.

37. At its core, glitch holds a reverence for the *objet trouvé*: the computer error caught in the wild. The Glitch Safari project initiated by Antonio Roberts and Jeff Donaldson is a pool of readymade glitched images found in public terminals and on train station monitors, with their momentary flickering caught at just the right moment.[12] A walk through Times Square reveals comforting instances of broken pixelation in the overwrought signage, points at which the overly commercialized space stumbles on its own complexity. This practice has extended to the collection of error messages themselves—especially those found on screens in public spaces—which are celebrated in their own right by some glitch practitioners, apart from any "glitchy" aesthetic considerations.[13]

38. Some artists minimize their own involvement in the shaping of the image and are interested primarily in setting a glitch in motion and watching it play out; the computer creates the drama of the piece as it works through the bad data. For these artists, there has to

be a plausible vector to explain the creation of the image through means of error, even when that error is artificially induced. The opposite of this, work that feels too deliberate, is dismissed as "glitch-alike": a pejorative term for fake glitch art where the artist has been too purposeful and meticulous in shaping the image.[14] Where this line is drawn differs from one artist to the next, and points to an overlap of different and conflicting interpretations of glitch. A small minority of glitch artists claim that only the glitch readymade is true glitch, dismissing almost all glitch art as fake.

39. A central problem in the Glitch Art community comes from the growing force of artists creating glitch images. The flood of images includes those that maintain a sense of error and randomness, while others are less purist, chasing a certain aesthetic by any means necessary. Viewed collectively, however, the aesthetic becomes the most recognizable aspect of glitch. The effect of seeing so many glitchy images during the 1990s and 2000s is that they have consolidated as style. This long-view cuts against the implicit credo of glitch artists, who at least nominally valorize authentically unplanned chaos, and whose work is presumably antithetical to a feeling of deliberateness and pre-planning. Yet this is not unlike what has happened in many art movements: the Surrealists once used shocking combinations of images to produce a dream-like sensibility, which came to seem increasingly whimsical—more "Surrealist" than surreal.

40. It is troublesome that a process that so unapologetically values error and chance tends to produce predictable visual results. Ben Baker-Smith's project *GlitchBot* parodies this; each day it randomly selects a Creative Commons image and glitches it, submitting the result to Flickr's Glitch Art pool.[15] Some glitch artists counter this banality by pursuing new aesthetics in order to regain a sense of the disruptive, while others return repeatedly to the readymade. But this further aestheticizes the readymade, creating new reasons to extend glitch into unexplored error-territories, as if raw, unaestheticized error were a limited resource. Kim Asendorf's *Extrafile* project addresses this by developing new file formats for the sole purpose of breaking them, revealing unprecedented structural malfunctions and novel patterns of error.[16]

41. Despite the seeming immateriality of digital representation, it would be difficult to deny that some glitch experimentation has a materialist bent: a desire to explore the raw matter that resides both beneath and at the very surface of digital imagery. Perhaps most notably, glitching exposes the hidden differences between file formats. For example, when broken, a JPEG looks very different from a BMP. JPEGs are fragile and changes tend to be traumatic—it is easy to break a JPEG in a way that will make it fail to draw. BMPs are more stable, with the majority of the file used to hold uncompressed pixel data, which can be altered without affecting neighboring pixels. One of the more popular beginner's techniques, *The WordPad Effect*, as documented by Benjamin Berg, will only work on the more stable forms, like BMP.[17] But BMPs are indexed color, with a compact color palette referenced by the pixel data throughout the file. If the palette gets scrambled, dreamy sherbet-colored

images result. Damaged PNG files, on the other hand, often appear as if an underlying reservoir of source-colors had been "wrung out" of the image, spilling from upper left to lower right. Likewise, TIFFs, DCS-formatted EPSs, and each of the other formats have their own characteristics. Once one becomes familiar with these material properties, it is hard to mistake a broken JPEG for a broken BMP, or even an 8-bit color BMP for a 24-bit one. Experimentation reveals what it takes to break each format and how the errors will manifest.

42. Glitch art's exposure of the materiality of the digital bears an uncomfortable relation to modernism. Andy Cameron has made the point that video and new media art often engages in the modernist project to "reveal the essence of the medium by exploring it."[18] Born too late for modernism, these new forms have not yet exhausted formal self-reflexivity, which they use alongside postmodernist strategies such as re-appropriation. This has provoked some anxiety for glitch artists and theorists and so is often explained away by emphasizing the differences from the long-resolved Greenbergian agenda. Ed Halter makes this point, likening digital materialism to "an experience of tension between perceiving the form and the content, the graphic and the photographic" in 1970s experimental film: "The very moments that indicate the specificity of the medium occur when that medium starts to break down, to suffer and reveal imperfections. The technology becomes visible through its failures. Glitches and errors constitute evidence of its origins; we see the material through disruption."[19]

43. This materialist aspect is less often associated with the term "glitch" than with "databending," which emphasizes the process rather than the style. "Databending" does not as heavily imply the role of chance in the work as the term "glitch." Rosa Menkman's "A Vernacular of File Formats" catalogs the look of different types of images when broken, inviting the databender to recreate and precisely control the making of such images.[20] This was intended as tool to help get people started glitching, but perhaps it also serves to exhaust the materialist approach—to reduce the breaking of files to the equivalent of Photoshop filters—so that it can be set aside, favoring work that involves more chance and is less concerned with materiality and medium.

44. There is no question that the glitch aesthetic been co-opted by mainstream media. Kanye West's video for "Welcome to Heartbreak" (Nabil Elderkin, 2009) is done in a finely tuned, very slick style, using a glitch technique known as "datamoshing." The artwork that accompanies the soundtrack CD for *The Social Network* (David Fincher, 2010) features glitch stills that would not look out of place in the Flickr Glitch Art pool.[21] When glitched images appear in mainstream motion pictures—for instance the Joker's videos in *The Dark Knight* (Christopher Nolan, 2008), or the camcorder footage in *Cloverfield* (Matt Reeves, 2008)—they are always deployed in the name of authenticity, and never in order to call into question the illusion of (digital) cinema itself. Rare is the feature film in which a glitch goes unexcused by the premise of a film-within-a-film. In mainstream popular culture, glitch is deployed not as a marker of artifice, but as a signifier of raw authenticity. It is a digital version of what

Garrett Stewart—in describing the "painstakingly hand-defaced" faux newsreels of *Citizen Kane*—calls "authentication by disrepair," and in this sense very much a reversion to the analog paradigm.[22]

> "I have heard this record characterized as 'anti-human' and 'anti-emotional.' That it is, in a sense, since it is music made more by tape recorders, amps, speakers, microphones and ring modulators than any set of human hands and emotions. But so what? Almost *all* music today is anti-emotional and made by machines too."
> —Lester Bangs, review of Lou Reed's *Metal Machine Music* [23]

45. In speaking or writing about glitch art's penchant for both authenticity and disrepair, one is always tempted to use the words "fucked up" in place of "damaged," "corrupted," or "failed." The reasons for this perhaps have to do with certain affinities between glitch practice/aesthetics and those of punk subculture, a milieu in which being visually or sonically "fucked up" is a virtue.

46. As years pass, it is easy to forget that the era of analog, especially in the mid to late twentieth century, was the era of *noise reduction*. The time, effort, and expense devoted to lessening (virtually "undoing") noise in recorded sounds and images would be difficult to overestimate. The arrival of the first DAT (Digital Audio Tape) decks around 1987 was a kind of miracle in this regard. "Tape hiss" and distortion were forever banished. Dolby noise reduction systems became irrelevant. Yet today, in the era of high resolution noiselessness, there exists a latent desire for the noise of old. Lo-fi music and photography are part of this perverse impulse to reintroduce noise and, in a related way, so is glitch art. We could say that lo-fi art is a perverse recursion into archaic, noisy and unsupported modes of production, whereas glitch embodies the inappropriate return of laborious and messy analog diddling in the context of the digital era's slick, pixel polishing, drag-and-drop perfectionism.

47. At the beginning of a track on the Dead Kennedys' 1981 EP *In God We Trust, Inc.*, Jello Biafra announces the song's title as follows: "'Nazi Punks Fuck Off' overproduced by Martin Hannett, take four." The jab is directed at the British music producer famous for the ethereal and heavily layered sounds of Joy Division's two major releases. However, the Dead Kennedys are clearly also lashing out at a trend in 1970s and 80s music more broadly. The term "overproduced" was part of the day-to-day vocabulary of post-punk, but it bears mentioning that the term only makes sense in the context of the massive obstacles to audio production in the pre-digital era. The Dead Kennedys not only did not overproduce their albums, mostly recording them live in the studio, but also could never have afforded the time and money to overproduce them if they wanted to.

Today, it makes very little sense to lampoon a digitally-recorded album as overproduced. However a different, recursive, and somehow nostalgic desire has come to replace punks' revulsion at overproduction: a song/album/artist is deemed to be "overly compressed." More than anything, it is the mechanisms of *compression* that glitch art works to sabotage, and in this way recuperates both the aesthetics of lo-fi and the ethos of punk.

48. If digital transcoding seeks always to reconstitute itself in a proper way, then glitch is an instance in which *analog punks digital*. Glitch upsets the proper; it is a gesture of non-compliance, a hostile refusal to use software correctly, a technologized form of squatting. Often license agreements are broken and software that sits on our computers, but is not really ours, becomes ours. Punk metaphors of discharge and noise, as well as liberation are operative here: the glitch artist anarchically interjects random data, thus "freeing" code so that it may revert to its natural form.

49. Glitch has embraced the open-source mentality of sharing knowledge, which is rooted in the DIY tradition of punk. When a glitch artist refuses to reveal how work was made, it not only raises a question of whether it is "really" glitch—as opposed to a Photoshopped simulation—but also whether the artist is selfishly hiding their technique in a refusal to contribute to the collective knowledge. This all reflects an anxiety over authenticity and the underlying politics of glitch—something not strictly defined, but which favors cooperation and community over the proprietary motivations of any individual *auteur*.

50. It is more than amusing that a t-shirt appeared at the 2010 GLI.TC/H conference bearing the statement "Glitchs not dead" [sic].[24] This homage by UCNV to the fleeting history of punk is highly appropriate, while at the same time referencing the longstanding debate about whether glitch, both as an aesthetic and a well-defined set of practices, is in fact "over," its aesthetic fully co-opted by mainstream design.

51. As with the banalization of punk throughout the 1980s and 1990s, it is distressing to see glitch co-opted in popular music, television advertisements, and so on. At the same time (and very much unlike punk), no matter how much it appears in popular culture, glitch never seems to inch any closer to the art world's mainstream. Could it be that this marginalization—this lack of presence in brick-and-mortar galleries—correlates directly with the glitch artist's profound ceding of control, her dependence on the machine to rain down stunning images, and her relegation to the role of mere trigger-puller? Whereas glitch art is visually and aurally consumable, it is deemed unworthy as a consumer product in a capitalist exchange because it is suspected to have involved very little work. An artist does not develop a glitch; rather, it drops into their lap. Rounding to the nearest whole number, we could say that glitch is 0% inspiration *and* 0% perspiration—an unacceptable scenario in capitalist terms. (At the very least, we can agree that glitch labor frequently approaches zero, especially in comparison to other analog and digital forms.) To this, we say with a punk snarl: *hell yes!* What dooms glitch to obscurity—its autodidacticism, virtually cost-free production, and wanton proliferation—is precisely what makes it righteous.

> "[A] drive, as it were, turns failure into triumph—in it, the very failure to reach its goal, the repetition of this failure, the endless circulation around the object, generates a satisfaction of its own."
>
> —Slavoj Žižek[25]

52. It is important not to overlook what, *pace* Lacan, we might call the symptomatic "et cetera" of glitch art—the fact that it cannot help but keep repeating, even to the point of a kind of drone. No matter how many times we see a glitched JPEG file, there seems to be no counter-impulse to stop posting them. Glitch art is profligate, refusing to keep itself in check, and in many cases failing to edit itself. The key, however, is to see this "et cetera" not as loopy or indiscriminate, but as positively central to glitch ontology. To glitch is to repeat. The greatest weapon glitch art holds in its war against digital hegemony is not ingenuity, but a goalless repetition which seems to mutate of its own accord, using the very processes of digital transcoding against themselves.

53. Repetition can be disruptive, and in two very different ways. On the one hand, there is the violence of the battering ram, which gradually weakens the obstacle against which it hammers. On the other hand, there is the passive aggression of sequences, which, in some pointed or high-profile way, inertly refuse to vary. In this second sense, glitch practice takes place not on the order of desire, but on the order of *pulsion*, drive, and therein lies its radical potential.

54. Refusing to cease to repeat, glitch serves as a persistent reminder that the perfection-oriented goals and desires of mainstream digital media are all too easily fucked up. However, far from an unfortunate side-effect, this inertia—this irrepressible compulsion to *keep on glitchin'*—constitutes glitch art's real force. Were it to lack this disturbing potential for sameness, the disruptiveness of glitch would be strangely diminished, perhaps fatally so.

55. The digital era has brought about the overly-Photoshopped image. Sharpening effects are used to provide false crispness, while lens-correction algorithms are employed to neutralize shooting angle variation, thus bringing an aloof, antiseptic quality to photography. The digital era has also brought the CGI blockbuster, with its suffocatingly pristine landscapes, incessant undulating "camera" movements, and hyper-detailed surfaces. Glitch is the farthest one can get from such imagery, re-infecting that which technological advancement has made sterile. To do so once would be a shocking gesture of defiance, but also a gesture easily forgotten, displaced by some other new shock. To do so compulsively, over more than a decade, is something else entirely.

56. What makes good glitch art good is that, amidst a seemingly endless flood of images, it maintains a sense of the wilderness within the computer.

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Notes

1. John Glenn, *Into Orbit* (London: Cassell, 1962), 86.
2. Jason E. Squire, *The Movie Business Book* (New York: Fireside, 2004), 54.
3. This impulse to reproduce error can be seen in the work of Thomas Ruff, Jessica Eaton and others who work outside of glitch art per se but engage with glitch practices from other perspectives.
4. Sol LeWitt, "Sentences on Conceptual Art," *0-9* (January 1969): 4; reprinted in *Art-Language* 1 (1969): 11-13; and in Ursula Meyer, *Conceptual Art* (New York: Penguin, 1972), 174-75.
5. David N. Rodowick, *The Virtual Life of Film* (Cambridge: Harvard University Press, 2007), 125.
6. We are here arguing against Tim Barker's contention that Franz Erhard Walther's accidentally drenched collage was a form of glitch "not [. . .] confined to the realm of the digital." Tim Barker, "Aesthetics of the Error: Media Art, the Machine, the Unforeseen, and the Errant," in Mark Nunes, ed., *Error: Glitch, Noise, and Jam in New Media Cultures* (New York: Continuum, 2011), 45-6.
7. Susan Sontag, *Against Interpretation and Other Essays* (New York: Picador, 2001), 287.
8. Sylvère Lotringer and Paul Virilio, *The Accident of Art* (New York: Semiotext(e), 2005), 74.
9. Roland Barthes, *Le plaisir du texte* (Paris: Éditions du Seuil, 1973), 42.
10. Joel Spolsky, "The Law of Leaky Abstractions," *Joel on Software*, last modified November 11, 2002, http://www.joelonsoftware.com/articles/LeakyAbstractions.html.
11. The now-commonplace leetspeak term "teh" and the UK-based clothing brand *fcuk* carry similarly glitchy connotations.
12. Jeff Donaldson, "Glitch Safari," *Vimeo* group, accessed October 31, 2011, http://vimeo.com/groups/glitchsafari; Jeff Donaldson and Antonio Roberts, "Glitch Safari," *Flickr* group, accessed October 31, 2011, http://www.flickr.com/groups/glitchsafari.

13. Darko Fritz, in his *Internet Error Messages* project, recreated HTTP error messages with large-scale horticultural installations consisting of hundreds of "pixels" made from flowers or cacti. Darko Fritz, "Projects," *darko fritz propaganda*, accessed October 31, 2011, http://darkofritz.net/projects.html.
14. Iman Moradi, "Gltch Aesthetics" (B.A. honors dissertation, University of Huddersfield, 2004), 10-11.
15. Ben Baker-Smith, "GlitchBot," *Bit_Synthesis*, accessed October 31, 2011, http://bitsynthesis.com/glitchbot/.
16. Kim Asendorf, *ExtraFile for OS X*, accessed October 31, 2011, http://extrafile.org/.
17. Benjamin Berg, "Databending Images in WordPad," *stallio!'s way* (blog), July 12, 2005, http://blog.animalswithinanimals.com/2005/07/databending-images-in-wordpad.html.
18. Andy Cameron, "Dinner with Myron Or: Rereading Artificial Reality 2: Reflections on Interface and Art," in *aRt&D: Research and Development in Art*, eds. Joke Brouwer, et al. (Rotterdam: V2_NAi Publishers, 2005), 40-56; cited in Katja Kwastek, "Myron did it first" (presentation, Rewire Conference, Liverpool, UK, September 28-30, 2011).
19. Ed Halter, "The Matter of Electronics," *Vague Terrain*, last modified February 3, 2010, http://vagueterrain.net/content/2010/02/matter-electronics.
20. Rosa Menkman, "A Vernacular of File Formats," *Sunshine in My Throat* (blog), August 2010, http://rosa-menkman.blogspot.com/2010/08/vernacular-of-file-formats-2-workshop.html.
21. Graphic designer Rob Sheridan notes that he glitched the images to avoid doing the intricate Photoshop work that would have been required to mimic a glitchy aesthetic. Rob Sheridan, "*The Social Network* Soundtrack Art," *robsheridan.com*, accessed October 31, 2011, http://rob-sheridan.com/TSN/.
22. Garrett Stewart, *Framed Time: Toward a Postfilmic Cinema* (Chicago: University of Chicago Press, 2007), 51.
23. Lester Bangs, "The Greatest Album Ever Made," in *Psychotic Reactions and Carburetor Dung* (New York: Alfred A. Knopf, 1987), 196.
24. "Glitch Gallery Opening," *GLI.TC/H*, accessed October 31, 2011, http://gli.tc/h/gallery.html.
25. Slavoj Žižek, *The Parallax View*, (Cambridge: MIT Press, 2006), 63.