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Ionad Ealaíne Átha Cliath Theas
South Dublin Arts Centre

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RUA RED
SOUTH DUBLIN ARTS CENTRE
TALLAGHT, DUBLIN 24

01 451 5860
INFO@RUARED.IE
WWW.RUARED.IE

DUBLIN ART AND TECHNOLOGY ASSOCIATION

Comhairle Contae
Átha Cliath Theas
South Dublin County Council

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Hardware hacking and recycling strategies in an age of technological obsolescence

Benjamin Gaulon

Planned obsolescence was first explicitly formulated in the 1920s and 1930s as part of a strategy to promote recurrent consumption [1]. The term "planned obsolescence" already appears in the 1930s, as exemplified by Bernard London's pamphlet of 1932 Ending the Depression Through Planned Obsolescence [2]. In the 1950s, further evidence of this dynamic can found in statements by designers such as Brooks Stevens [3] and retailing experts like Victor Labow [4].

Planned obsolescence may be described as a design strategy that pre-emptively restricts the lifespan of a commercial product, building-in factors intended to promote early replacement (of the object or intrinsic part thereof) before usability is fully exhausted. These built-in factors may be of a technical or material nature, e.g., some inkjet printer manufacturers uses smart chips in their ink cartridges to prevent them from being used after a certain threshold like the number of pages or time. Apple's iPod, iPhones and iPads are manufactured with no user serviceable parts inside, including their batteries. After approximately three years of use, the lithium-polymer battery will no longer work and the device will either need to be professionally serviced or discarded. Sometimes they may comprise a marketing strategy in which the appearance of "new" models within the same product range relegates older models to obsolescence [5].

Planned obsolescence is an especially notable strategy in the consumer technology and personal electronics market, where there is a clear premium on the novelty and iterative development of new generations of the same underlying technologies (e.g., the personal computer and the mobile phone). Darren Blum, a senior industrial engineer at Pentagram Design, which builds portable devices and computers for companies like Hewlitt Packard, says "We joke that we design landfills" [6]. The combination of short term design and marketing strategies and fast consumption behaviours tends to generate a fast increasing amount of electronic waste [7].

A counterpoint to the development of planned obsolescence is evidenced by the work of artists, hobbyists, hackers, activists and sustainability-advocates who explore the latent potential of apparently "obsolete" devices. Early indications of this tendency are in the work of Reed Ghazala [8] who initiated and first conceptualized the practice of "Circuit Bending" in the 1960s which has not been widely documented, studied or theorised [9]. An other emerging practice is the recycling and hardware hacking processes that are driven by necessity by Hackers and Hobbyist in westerns and developing countries [10]. Though driven by entirely different motivations, these practices can inform each other. Furthermore these practices have the potential to make significant contributions into the debate of technological obsolescence.

Hardware hacking as an art practice has emerged very recently, notably in the field of electronic music as the technique of 'circuit bending' where cheap music toys and instruments are modified to create new and unique music instruments. While less prevalent for visual artists, perhaps because it requires more specific skills and knowledge, it is a practice, which has seen a growth in popularity.

While it is a new practice, it's art historical precedents can be traced back to the cybernetic art movement of the 1960s best known through the Jasia Reichardt curated 'Cybernetic Serendipity' exhibition in the ICA in 1968. Key influences would include the installation work of Nam June Paik, the machines of Jean Tinguely and the lesser-known work of French cybernetic artist Nicolas Schöffer.

Examples of artists and artists groups involved in hardware hacking would include the Institute for Applied Autonomy, Peter Vogel, Casey Smith (Junkfunnel Lab), Gebhard Sengmüller, Karl Klomp, Gijs Gieskes, Rosa Menkman, Tom Verbruggen, Jonah Bruker-Cohen & Katherine Moriwaki (Scrapyard Challenge), Ben Castro and Miguel Rodriguez of Basurama, Garnet Hertz, Niklas Roy, Todd Holoubek, Gordan Savicic, Harold Schellinx, Peter Edwards, Martin Diamant, Günter Erhart, Nicolas Collins, Cory Arcangel, Natalie Jeremijenko, Troika, Phil Archer, Michael Golembewski, John Bowers, Julius von Bismarck, Caleb Coppock, Lesley Flanigan, James Houston, Aleks Kolkowski, Alexis Malbert, David Wills, Brian Duffy, Jeff Boynton, Tom Koch, Arcangel Constantini, LoVid, Stefan Jankus, Phillip Stearns, and many more.

New technological developments such as the availability of low cost micro controller boards like Arduino [11] made specifically for artists and designers and the sharing of techniques and information via the Internet have made hardware hacking easier and as a result the popularity of hardware hacking is increasing as an artistic technique.

The significance of this type of artistic practices is clear when one considers the sheer volume of waste electronics being disposed round world. Moore's law dictates that the complexity of computer chips doubles each 18 months. By consequence every year 20 to 50 millions tones of E-waste is generated worldwide [7].

Notes:

[1] It is worth noting that some critics have suggested that the root concept of promoting unnecessary consumption through the premature "wearing-out" of a commodity is already in evidence in the 17th century, pointing to sources such as Discourse on Trade (1690) by Nicolas Barbon in which he argued that, "Fashion or the alteration of dress is a great promoter of trade, because it occasions the expense of cloths before the old ones are worn out".
(See Edwards, 2005, pp.24)

[2] Bernard London, "Ending the Depression Through Planned Obsolescence" (pamphlet), 1932. Reproduced by Adbusters Magazine, "How Consumer Society is Made to Break," available online at <http://www.adbusters.org/category/tags/obsolescence> (Last modified October 20th 2008, last modified October 18th 2009.)

[3] "desire to own something a little newer, a little better, a little sooner than is necessary." Brooks Stevens, Talk at Midland (Minneapolis) in 1954, audio recording available at <http:// www.mam.org/collection/archives/brooks/biography.asp>.

[4] "'These commodities and services must be offered to the consumer with a special urgency. We require not only 'forced draft' consumption, but 'expensive' consumption as well. We need things consumed, burned up, worn out, replaced, and discarded at an ever increasing pace." Victor Lebow, Price Competition in 1955, The New York University Journal of Retailing, Volume XXXI, Number 1, Spring 1955, page 7.

[5] Although the term has wide currency in popular discourse, considered definitions for "planned obsolescence" are not very common although both Vance Packard (The Waste Makers. Simon & Schuster. 1978) and Thomas Frank (The Conquest of Cool: Business Culture, Counterculture, and the Rise of Hip Consumerism, University of Chicago Press, 1997) have attempted to provide these. These definitions tend to focus on the question of consumerism and not specifically about electronic waste..

[6] Companies Slash Warranties, Rendering Gadgets Disposable, Tuesday, July 16, 2002, By Jane Spencer Staff Reporter of The Wall Street Journal

[7] The average lifespan of computers in developed countries has dropped from six years in 1997 to just two years in 2005. Mobile phones have a lifecycle of less than two years in developed countries. 183 million computers were sold worldwide in 2004 - 11.6 percent more than in 2003. 674 million mobile phones were sold worldwide in 2004 - 30 percent more than in 2003. By 2010, there will be 716 million new computers in use. There will be 178 million new computer users in China, 80 million new users in India. The e-waste problem, Background - May 23, 2005. Greenpeace International. http://www.greenpeace.org/international/en/campaigns/toxics/electronics/the-e-waste-problem/

[8] Q. Reed Ghazala, "The Folk Music of Chance Electronics, Circuit-Bending the Modern Coconut," Leonardo Music Journal Vol. 14., MIT Press.

[9] Some interesting work exists such as Zombie Media: Circuit Bending Media Archaeology Into An Art Method Garnet Hertz & Jussi Parikka. July 10th 2010. Vilèm Flusser Theory Award 2010.

[10] Shenzhen – Phone recycling -1 via Techtravels Blog by David Kousemaker.
http://techtravels.wordpress.com/shenzhen-phone-recycling-1/

[11] Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments.
http://www.arduino.cc/

Five Principles of Zombie Media [1]

Garnet Hertz & Jussi Parikka

Zombie media addresses the living deads of media culture. As such, it is clearly related to the earlier calls to investigate "dead media" by Bruce Sterling and others: to map the forgotten, out-of-use, obsolete and judged dysfunctional technologies in order to understand better the nature of media cultural development. And yet, we want to point to a further issue when it comes to abandoned media: the amount of discarded electronic media is not only the excavation ground for quirky media archaeological interests, but one of the biggest threats for ecology in terms of the various toxins they are leaking back to nature. A discarded piece of media technology is never just discarded but part of a wider pattern of circulation that ties obsoleteness to recycling centers, dismantling centres in Asia, markets in Nigeria, and so forth – a whole global political ecology of different sorts where one of the biggest questions is the material toxicity of our electronic media. Media kills nature as they remain as living deads.

Hence, we believe that media archaeology – the media theoretical stance interested in forgotten paths and quirky ideas of past media cultures – needs to become more political, and articulate its relation to design practices more clearly. We are not the only ones that have made that call recently – for instance Timothy Druckrey writes:

"The mere rediscovery of the forgotten, the establishment of oddball paleontologies, of idiosyncratic genealogies, uncertain lineages, the excavation of antique technologies or images, the account of erratic technical developments, are, in themselves, insufficient to the building of a coherent discursive methodology." [2]

We would want to add that in addition to developing discursive methodologies, we need to develop methodologies that are theoretically rich as well as practice-oriented – where ontologies of technical media meet up with innovative ideas concerning design in an ecological context.

As such, the other part of the zombie media call is the work of reappropriation through circuit bending and hardware hacking methodologies – to extend the media archaeological as well as ecosophic interest into design issues. By actively repurposing things considered dead – things you find from your attic, the second hand market, or amongst waste – the zombiefication of media is to address the planned obsolescence of media technologies which is part of their material nature. In reference to contemporary consumer products, planned obsolescence takes many forms. It is not only an ideology, or a discourse, but more accurately takes place on a micropolitical level of design: difficult to replace batteries in personal MP3 audio players, proprietary cables and chargers that are only manufactured for a short period of time, discontinued customer support, or plastic enclosures impossible to open without breaking them. Whether you can open up things – the famous black boxes of media culture characterized by iPhones and iPads – is one of the biggest political and ecological questions facing our media theory and practices too.

As a manifesto, five points of zombie media stand out:

1/

We oppose the idea of dead media. Although death of media may be useful as a tactic to oppose dialog that only focuses on the newness of media, we believe that media never dies. Media may disappear in a popular sense, but it never dies: it decays, rots, reforms, remixes, and gets historicized, reinterpreted and collected. It either stays as a residue in the soil and in the air as concrete dead media, or is reappropriated through artistic, tinkering methodologies.

2/

We oppose planned obsolescence. As one corner stone in the mental ecology of circulation of desires, planned obsolescence maintains ecologically unsupportable death drive that is destroying our milieus of living.

3/

We propose a depunctualization of media and the opening, understanding and hacking of concealed or blackboxed systems: whether as consumer products or historical archives.

4/

We propose media archaeology as an artistic methodology that follows in the traditions of appropriation, collage and remixing of materials and archives. Media archaeology has been successful in excavating histories of dead media, forgotten ideas, sidekicks and minor narratives, but now its time to develop it from a textual method into a material methodology that takes into account the political economy of contemporary media culture.

5/

We propose that reuse is an important dynamic of contemporary culture, especially within the context of electronic waste. "If it snaps shut, it shall snap open." We agree in that open and remix culture should be extended to physical artifacts.

Notes

[1] This short essay is a part of our wider project which will be published in Leonardo-journal in 2012: Garnet Hertz and Jussi Parikka, "Zombie Media: Circuit Bending Media Archaeology into an Art Method".

[2] Timothy Druckrey, "Foreword" in Siegfried Zielinski, Deep Time of the Media (Cambridge, MA: The MIT Press, 2006), ix.

The moment(um) of void

Rosa Menkman

The first encounter with a glitch comes hand in hand with a feeling of shock; being lost and in awe. But to find oneself within these ruins is also to experience a feeling of hope: a negative feeling creates space for an intimate, personal experience of a machine (or program), a system showing its formations, inner workings and flaws. These ruins reveal new opportunities, sparks of creative energy, that indicate that something new is about to be created. Questions emerge; what is this utterance, and how was it created? Is it perhaps... a glitch? But once the glitch is named, the moment(um) - the glitch - has passed... and in front of the perceiver's mind-eye, suddenly a new form has emerged.

A glitch is the most puzzling, difficult to define and enchanting noise artifact; it reveals itself to perception as accident, chaos, or laceration and gives a glimpse into normally obfuscated machine language. Rather than creating the illusion of a transparent, well working interface to information, the glitch captures the machine revealing itself. The glitch is a powerful interruption that shifts an object away from its flow and ordinary discourse, towards the ruins of destructed meaning. This concept of flow I emphasize as both a trait within the machine as well as a feature of society as a whole. DeLanda distinguishes between chaotic disconnected flows and stable flows of matter that move in continuous variations, conveying singularities.[1] DeLanda draws here on Deleuze and Guattari, who describe flow in terms of the beliefs and desires that both stimulate and maintain society. They write that what we perceive as flow is something that comes in to existence over long periods of time. Within these periods, conventions are established while deviations tend to become rare occurrences and are often (mis)understood as accidents (or glitches). Although the meaningfulness of every day life might in fact be disclosed within these rare fluctuations (as I have suggested through the theorization of the accident), their impact or relevance is often likely to be ruled out, because of social tendencies to put emphasis on the norm.[2]

Television is arguably the most flow-centric, ideologically 'transparent' media form. In Television: Technology and Cultural Form (1974), Williams describes a viewer frequently caught up in a nonlinear flow of technology and its contents. He emphasizes that the process of this flow seems natural, but it is strictly guided by larger corporations and powers.[3] When a flow breaks, the user witnesses only shreds of the flow through which the message is normally transmitted, as the mechanic functions that are conventionally relied upon are obfuscated. When a supposedly transparent interface is damaged in this way, the viewer is relocated to a void of meaning. Interruptions like these are often perceived as disastrous, threatening and uncanny. Sometimes they create a moment where seemingly anything that could be said about a situation is eliminated from thought or possibility. On other occasions, the metaphorical impact of the unspeakable disaster also brings with it the tendency to think, in terms of extreme differentiations from the norm. Eric Kluitenberg describes how this was for instance the case on September 11, 2001, when the CNN website temporarily went down and a black screen repeatedly interrupted the flow of the television broadcast. He refers to these moments in time as

> the rupture of professional media codes, which signaled complete panic and disarray […], the infinity of possible alternative discourses, of other possible modes of explanation and interpretation.[4]

What is challenged or brought forward in the case of the void is the idea of authorship itself, which, prior to this moment, was seemingly neutralized from media-cultural experience, The convention of "the seamless surface of the networked media spectacle itself, and its illusion of stability"[5] tends to foreclose (we realize belatedly) any sense of authorship whatsoever. In media accidents like these, the void involves the unknown - that which can not be described or planned for. These empty spaces of non-understanding trigger a horror vacui. A fear of voids to which nothing else can be compared and that is beyond all possibilities of calculation, measurement or imitation.[6] However, these terrifying voids also create a form of counter-experience, a negative pleasure that is not so different from the proto-modern, aesthetic conception of the sublime described as early as 1963 in John Dennis's writings on the Alps: contradictory and immense, "delight that is consistent with reason" but yet, "mingled with Horrors, and sometimes almost with despair".[7]

Like this 'nature'-generated sublime, the glitch is an uncanny experience of unforeseen incomprehension. Experiencing a glitch is often like perceiving a stunningly beautiful, brightly colored complex landscape of unexplainable, unfathomable and otherworldly images and data. A glitch represents a loss of control; the computer does the unexpected, it goes beyond the borders of its known and programmed territories. It changes the viewers assumptions about the technologies and its functional conventions (as was for instance the case during the September 11 broadcast), and acts as if it is no longer logical but instead profoundly irrational in its 'behaviour.' The glitch suddenly makes the computer itself appear as unconventionally deep, in contrast to the boring, conventional surface-level behaviours of 'normal' machines. In this way the glitch announces a crazy and dangerous kind of moment(um) instantiated by the machine itself ('Will the computer come back to "normal"?' 'Will data be lost?'). Through the distorted images and behaviours of the machinic output, the viewer is thrown into a more risky realm of image and non-image, meaning and non-meaning, truth and interpretation. The machine no longer behaves in the way the technology was supposed to: the glitching interface, strange sounds and broken behavioral patterns introduces tensions into user intentions; an astonishing image must be somehow negotiated amidst a normally much more boring masquerade of human computer relations.[8] Though at first the viewer reacts with shock and perceives the experience as a loss, the glitch can't be subdued as a solid state of perception. Just as the understanding of a glitch changes once it is named, so does the notion of equilibrium supposedly damaged by the glitch itself. The 'original' experience of rupture moves beyond its sublime moment(um) and vanishes into a realm of new conditions. The glitch has become a new mode; and its previous uncanny encounter has come to register as an ephemeral, personal experience of a machine.

Notes

[1] DeLanda, Manuel. War in the Age of Intelligent Machines. New York: Zone Books, 1991. p. 20

[2] Deleuze, Gilles and Pierre-Félix Guattari. Thousand Plateaus: Capitalism and Schizophrenia. Trans. B. Massumi. London: The Athlone Press, 1988. p. 219

[3] Williams, Raymond. Television: Technology and Cultural Form. Hanover: University Press of New England, 1974.

[4] Kluitenberg, Eric. Delusive Spaces. Essays on Culture, Media and Techno.logy. Rotterdam: NAi Publishers and Amsterdam: Institute of Network Cultures, 2008. p. 357

[5] Kluitenberg, Eric. "Transfiguration of the Avant-Garde / The Negative Dialectics of the Net." 23 Jan 2 002. <http://www.nettime.org/Lists-Archives/nettime-l-0201/msg00104.html>.

[6] Kluitenberg, 2008: p. 333

[7] Barnouw, Jeffrey. The Morality of the Sublime: To John Dennis. Comparative Literature, Vol. 35, No. 1 (Winter, 1983), pp. 21-42 These quotes come from the very first appearance in literature of the concept of the 'sublime' by John Dennis in 1693, in his account of crossing the Alps.

[8] Goriunova, Olga and Alexei Shulgin. "Glitch." In: Matthew Fuller, ed. Software Studies. Massachusetts: MIT Press, 2008. p. 110-119.

Circuit Bending Repurposing The Past

Alessandro Ludovico

If there's any proper "music hacker" he also has to be a "circuit bender". But what really is "circuit bending"? To put it simply it is the process of creating sounds out of toys by making new connections in their electronic circuits. Creating new sounds out of almost nothing is compelling and all the initiates are always busy in experimenting with their cheap and crackling machines.

Who started everything.
The recognized (grand)father of the circuit bending movement is the American Reed Ghazala. His bendings are not only made by plastic toys from the eighties (as it is for most of the people), but also from stuff that's even two decades older. In fact he started in the late sixties after observing a shorted out amplifier emitting sort of "synth" sounds. He asked himself a key question: "if this can happen by accident what can happen by purpose?." So he began to carefully join different internal components of electronic stuff, then adding control through switches and buttons. He dedicated huge amount of time in this practices, reflecting also on the theoretical implication of such a practice. His long experience was explained in a series of articles for the Experimental Musical Instruments quarterly from 1993 to 1999. He had the chance of trying toys from different periods, with different results, and as he noted, circuit bending is more difficult on the most recent sound toys because of the circuit's scale of integration: now most of the time all the sound processing is contained in a single chip.

Repurposing the toys.
Circuit Bending has definitely nothing to do with nostalgia. It's a not a question of reviving forgotten stuff with old-style melodies and then sinking in an ocean of memories. It's much more close to the opposite. It's about cannibalizing this old stuff, building new, funny and bizarre freak toys that sounds like an alien electronic orchestra. It's "hacking" in the most proper meaning, so it is also reusing and, more importantly, repurposing that little machines. Everytime a piece of wire, soldered at either end, a new logic relationship is established in the machine's structure, and the electric-induced soundwaves start to speak a new language. This language is suddenly and randomly invented and so often it's out of the owner's control. Even if sometimes the toys simply blow up after a wrong connection, the process is almost addictive, the benders say. Furthermore every toy is made on its own electronic scheme and there are no common guidelines for them, so every bending has good chances to be unique. After a bend the 'heart' of these diverted toys starts to beat in a different way, liberating an hidden potential. It's a game in which the players are busy with obscure circuits' connections, making alive sounds that are not supposed to be there. It's cheap and it brings the thrill of an exploration and the excitement of a discovery in a new soundscape, with an immediate feedback ("what will happen if I do this?") and a promised uniqueness as a reward. Not bad for just playing around with old toys and a solderer. The generated sounds and noises have a new role, from being an entertainment for kids to being "music". If the shiny handmade analog devices has become the luxury of digital age, circuit bending is the geek's revenge, where the dusty machines resurrect and are put under the limelights. In the annual "Bent – Circuit Bending Music and Art Festival", in New York, the crowd of enthusiast benders gather in the same style of their hacker colleagues. They have pure fun (concerts, performances) but also many technical workshops, for sharing precious knowledge, learned through personal experience, and for thinking at new strategies. Their creations will take part of further experiments, composing studio sessions and future live gig until armies of semi-autonomous Speak and Spell, Furbys and Barbies will take over the stage.

Neural #23

The Aesthetics Of Representation In Circuit Bending

Eduardo Navas

One might wonder what is the concrete definition of "circuit bending." In a way, the name does not completely connect with the actual activity of appropriating sound from pre-existing sources, ranging from electronic toys to hacked radios, or even half-broken generators. When I first heard the term, I thought it referred to strict manipulation of electronic signals. This possible definition hints at a certain purity in sound with specific electronic technology; yet, in 2009 circuit bending is quite the opposite, even if in the beginning it may have had a leaning towards hacking electronic gadgets of all types. At the moment, it is a hybrid practice that appropriates any type of sound, freshly recorded or pre-recorded; re-recorded or significantly manipulated; even erased or retraced–or captured live from the environment in which a performance is taking place to be bent immediately, on the fly.

My most memorable performance of circuit bending took place in Uruguay, on July 28, 2006. I attended a soundtoys event organized by Brian Mackern, one of the first net-artists from the southern cone, active since at least the mid-nineties. Mackern more recently has become a major supporter of sound performances of all types. The performance took place at the French Alliance of Montevideo, where I saw Mackern and a number of other sound artists perform on customized software interfaces. A couple of performers used Max MSP and Jitter, while Mackern presented a series of visual platforms built in Flash that remixed well-known movie clips from Hitchcock and Tarkovsky.

I saw a connection with the aesthetic of sound manipulation often found in circuit bending in these performances; yet, it was the performance of Szkieve (Dimitri della Faille), a Belgian-Canadian Sociologist that left a lingering impression on me. He is obsessed with collecting toys that produce noise in any shape or form with the purpose to use them in circuit bending performances. In fact, that afternoon, before the performance, I was invited by both Mackern and Szkieve to join them on a walk in downtown Montevideo. At the time I knew that Szkieve performed with toys, but did not know exactly how he developed his sets.
That evening Szkieve used a green plastic fish toy which he had bought from a street vendor during our walk. He pulled and released a string from the fish, which then emitted an expected fish-like sound that Szkieve slowly distorted into an echoish abstract noise, somewhat reminiscent of dub. Szkieve then combined the loop with the distorted sample of a toy train that moved on a circular track. The pitch of the train's motion was drastically lowered several notes, turning it into a cacophonous massive bass sound that directly contradicted the petiteness of the actual train. Szkieve also mixed loops from various electronic devices through a mixer. If the audience had not experienced the visual development of the performance, the sound could easily have been mistaken for just another experimental electronic mix, carefully developed in a music studio–rather than from toys found at any corner store.

Szkieve's performance is a good example of how the key to creativity is not so much the ability to produce sound from scratch, or have an advanced skill in performance, but actually to be able to conceptualize the potential of material that may already have a function, or holds particular cultural value. In this sense, circuit bending is a unique link between individuals who believe that all production should be developed and manipulated from scratch, and individuals who are primarily invested in acts of sampling and recombining material, as commonly understood in Remix. Circuit bending exposes how in the end it is not important if something is performed live or looped, or is a mix of the two, but rather whether or not what is performed challenges the audience's perception of the source material. This is true not just for sound and noise performers, but artists in all fields.
I must admit that I often view circuit bending primarily as a performance based medium. My case in point is Szkieve's performance, in which the sound may not be as interesting on its own but in conjunction with its visual development.
However, Circuit bending is becoming more diverse. In 2009 it is closely linked to physical computing and all types of art installations. What is promising about circuit bending is that it can be a medium, as well as a tool: it can include software and hardware, or exclude either one, as long as its only requisite is met: that perception be bent. Most importantly, like Remix, circuit bending can also be an aesthetic, to be cited in literary terms:
The snare of a wet red elastic nylon wire licking the bass-line of grey wooden-nails bound with the blind screams of a last name never to be famous and always worth mentioning; the beat of gracefully scratched hair longer than the history of the will, pushing the finger that struggles to penetrate its own castration; the speed of trust on the Internet, showing off its color as it begins to understand its dependence on truth…

Error, Noise, Glitch

The Art of the Algorithmic Unconscious[1]

Phillip Stearns

This article is a meditation on the underlying substrate (the material) of artworks produced by human/machine collaborations where the uniqueness of the machine is an integral element; the "imaginative" or creative properties of its algorithms are vital in the completion of the artwork. The idea that the machine can function as a collaborator is based on the premise that humans have embedded their thoughts, ideas, and abstract notions into these machines—that they are a kind of funny mirror where we see reflected a distorted image of ourselves is central to the ideas presented within.

Intervention

Somewhere on the far side of the known universe, a wrinkle in the fabric of space-time ripples through empty space, traveling at the speed of light towards what from its perspective appears to be a tiny speck of dust in the vastness of the cosmos. This wrinkle, a highly energize photon, a gamma ray, speeds towards its destination: a lonely blue planet orbiting a tiny yellow star drifting in the void between the arms of a spiral galaxy. The world rushes up before it, and high in the upper atmosphere, our traveller collides with an oxygen molecule. The impact creates a fantastic explosion, echoing the events of the big bang, but on a much smaller scale. Particles are produced from the energy of the impact, translating momentum into matter, exotic matter lasting for the briefest of instants: gluons, quarks, proton and anti-proton pairs, electron and positron pairs, pions, muons, neutrinos, anti-neutrinos, each unique wrinkles in the fabric of space-time. As the particles scatter, the neutrinos and their counter parts leave the scene of the accident unimpeded by normal matter; gluons coalesce into quarks, which coalesce into highly energized protons and neutrons. One of those neutrons ejected from the heart of the subatomic mini-big-bang collides a short time later with a nitrogen atom, jettisoning a proton from the nucleus, resulting in an alchemical transformation of nitrogen into carbon. Particles produced in the micro furnace of the gamma ray collision meet similar alchemical fates, smashing into DNA molecules of the terrestrial beings below, driving random mutations in the evolutionary development of life. Another of those neutrons produced in the original collision tears off at near light speed, penetrating the hull of an aircraft, and slicing into the heart of its navigational computer where it reacts with the nucleus of an atom in the ceramic casing of the core processor. Another cascade of transformations occur, producing a shower of positrons which annihilate electrons in the silicon of the processor itself. This neutralization of electrons is interpreted by the navigational computer as a legitimate piece of information: a bit flipped from zero to one (an alchemy of data?). It doesn't know that the changed information is anomalous, the algorithms responsible for taking in data, processing and analyzing, and ultimately guiding the aircraft, run it through the mill. The aircraft rolls sharply in the night sky and descends into the clouds below.

A Failure of Materials

To err is human and to glitch is machine. Do these two characterizations of behavior parallel one another, is there are a metaphorical relationship between them? If so, can it be hypothesized that there is an innate connection between human and machine which explains this parallel? A possible explanation which may allow for such a connection to be inferred is that a tool or technological object is a projection of human intentions, desires, and ideas onto an object. If the fashioning of a complex tool can be understood as the manifestation of the dreams guiding those desires and intentions into a technological object, then it can be inferred that encoded and inscribed within the physical form of the technological object are the ideas, the bodies of knowledge, and deeper still the cultural values and structures of belief which form a dynamic relationship between a society and its environment (conditions of existence). What follows is an understanding of the glitch as an inevitable feature of technology, the result of imperfect machines building imperfect machines in the pursuit of perfection (from what we can tell, a uniquely human ideal). The glitch, therefore becomes a way of examining the fallibility of what is essentially a human desire for perfection; the pursuit of this goal through infinite improvement and revision, however, implies that perfection is an unobtainable goal.

If a specific tool or technological object fails, it can be agreed that it has encountered some kind of limit—environmental, functional, or otherwise—which has caused it to function short of or outside the scope of its intended utility. Although failure itself is a foreseen consequence of any undertaking (though many unwisely curtail preparatory actions in face the face of its eventuality), the specific outcome of a failure has the potential to breach the limit of what is humanly imaginable. The most catastrophic example in recent memory demonstrating the limits of human imagination is the eruption of "Mt. Fukushima" following the massive magnitude nine Tohoku-Taiheiyou-Oki earthquake and resulting tsunami, which flooded the backup generators at the Fukushima Daiihi nuclear plant, disabling the emergency cooling systems. It was not a question of the magnitude of the earthquake breaching the limits of the conceivable (the seismic activity resulting from the off-shore earthquake did not exceed the Fukushima Daiichi's design limits), but the sequence of events in the wake of the tsunami that followed, which led to the full meltdown of reactors 1, 2, and 3 and the explosion of reactors 1, 3, and 4[2]. The notion of failure is thus a question of limits, both of material: the actual physical substrate, the arrangement of that substrate to represent codified actions, the specific relationships with it environment (its situation); and imagination: the confluence of perception and practical knowledge with insight, interpretation, intention and agency.

As artists working within a much larger tradition of material interrogation, it is important to ask ourselves: "What are the materials we are working with? What role do they have in creating a space where metaphorical relationships can give rise to meaning?" For the time being, we'll overlook the question of meaning along with output media—net art, displays on video monitors, projections, prints, texts, performed actions, etc.—and zero in on the primary material. To do this we will have to set aside materials in the traditional sense, the primary material of the so called "classical" arts—wood, paper, stone, metal, textiles, paint, canvas, photographic paper, film, light, sound, movement (this list is by no means exhaustive). In the established field of digital art, our primary materials may be considered to be data and code. The generalization that I'm making (which may prove to be a dangerous one), is that any art works which utilize digital systems (based on binary logic) in their production involve the generation or acquisition, and processing of numerical information, which is dictated by instruction sets or code (which we will see is indistinguishable from numerical information) contained in programs. The conclusion that is drawn from this, is that digital arts has a "material" which distinguishes it from other disciplines, and any discussion of the material of digital arts (of which glitch art is a sub genre), must include not just the data (as information) and its source but the means by which data that is generated and processed: the code or underlying instructions/algorithms.

Re-imagining Architecture of Error

Assuming that to err is human, is to glitch really the machine equivalent to erring?

Our brains are massively parallel biological interpretive engines built from a diverse array of neurons. They contain roughly 100 billion neurons with somewhere near 1 quadrillion connections between them. Although they can be classified in unique types—according to function, structure, and other parameters—each neuron is completely unique. A single neuron may contain hundreds of synapses, or connections from other neurons, and may also connect to dozens of others. At these synapses, neurotransmitters, or chemical messengers, open or close close ion channels, portals through which ions such as sodium or calcium may pass. Opening and closing these ion channels has the effect of altering the electrical properties of the neuron, which is normally polarized with respect to its surroundings, typically resting at a slightly negative voltage. It is only after sufficient "stimulation" (de-polarization), that the neuron releases neurotransmitters at connections with other neurons. This is a gross simplification of the process—the number of different neurotransmitters and ion channels, together with their effects on different neurons produces myriad ways for "information" to be gathered, processed, analyzed, and stored—but serves to illustrate that computation in the brain is not a simple binary operation. Despite the temptation to look at the computational devices we create as metaphors for the brain, the reality is that they are vastly different in both architecture and function. However, as a consequence of these machines having been built and designed by us, there are detectable fragments of our logic, language, and imagination embedded within.

The basic building blocks of our present day computing systems are junctions between two pieces of silicon with specially engineered properties. These junctions are used to build transistors, the smallest computational unit from which our most complex computational machines are built. A single processor may contain a billion or more transistors, each functioning as a switch: it is either on or off. Although transistors can be designed to provide a continuously variable output (as in analog electronics), here their function has been limited to provide an unambiguous two-state output. Two benefits of designing a two-state system are that information encoded in a sequence of ons and offs is highly immune to noise, and that Boolean algebra, a system of mathematics represented by true/false logical statements, can be easily build from configurations of transistors functioning as on/off switches.

Microprocessors are collections of vast numbers of transistors configured in such a way that an instruction formed out of a sequence of on and off messages (1s and 0s, or bits) can select commands, which perform certain operations on a data set. Said another way, instructions are arrangements of bits which correspond to certain commands embodied and represented by physical arrangements of transistors. Code then is the arrangement of instructions which form a program. Today, code more closely follows linguistic structures; we use programming languages to instruct computers to perform certain tasks. This development has occurred out of necessity as a string of 1s and 0s representing a set of instructions is difficult for most humans to read and understand at a glance. A solution was to group 4bits (a nibble) together and represent them in a hexadecimal counting system where symbols 0-9 represent zero through nine, and A-F represent 10-16. Machine code is this binary machine language, which appears most commonly in its hexadecimal representation. Upon this is built an assembly language, where instructions and commands in machine code are called using a mnemonic code which resembles actual words. Built on this basic foundation are more complex programming languages: FORTRAN, Pascal, Basic, and C to name only the smallest faction of the many existing languages today. What this means is despite the complexities of today's programming languages, all code refers back to a set of instructions (specific to the processor), which at the level of the machine is simply a set of numbers. Everything done inside the computer is then a mathematical operation represented by two-state (binary) logic, and it is because of the fact that instruction set and data sets are both arrangements of bits that, at the most basic level, code becomes indistinguishable from data—the two can be interchanged at will.

File formats effectively keep information or data and instructions separate and allow us to distinguish between data types. By overriding file formats the potential interchangeability of code and information can be actualized, enabling the production of interesting mis-interpretations or re-imaginings of previously established data sets. A crude example of this process of disregarding formats and protocols is best illustrated by connecting an audio amplifier directly to points on a computer's motherboard while it is performing a set of instructions (do not attempt unless you are willing to sacrifice your computer!). Here data is sonified in a direct one-to-one fashion: a 1 pushes the speaker out and a 0 causes the speaker to return to its resting position. Other possibilities include manually re-wiring an output pin an input pin on a microprocessor, which may result in any number of outcomes (one of which may be converting your computer into a door jam). This manual re-wiring or short circuiting is the hall mark of the practice of circuit bending. By converting data sets from one format to another, it is possible to render instruction sets (program files) as images, images as sound files, sound files as incomprehensible strings of characters, back into images. This practice of data-bending takes advantage of this technique of forced data processing by opening image or video files in text or hexadecimal editors, changing a few characters, and then opening the resulting file in an image viewing program. Rosa Menkman, in her "A Vernacular of File Formats" demonstrates the potential of various data-bending techniques performed on a wide range of file formats[3]. When these transformations are performed using standardized file formats, the results take on the signature noise of the algorithms used in the translation from one format to another. This forced rendering of "unconventional" (altered, corrupted, format inappropriate, or mismatched) data can reveal the architecture of the machine; the grid work of the algorithmic unconscious is revealed.

From Error to Noise

Mis-interpretation from the perspective of machines has no meaning without the context of conventions devised by their human operators. Error is relevant only in the context of an intended purpose. To dive further into the nature of machine error (if we can even call it that anymore), we now turn to the introduction of noise—here taken to be anomalous or undesired data.

The example in the opening paragraph illustrates one natural process capable of introducing noise into a digital system by changing the state of a bit from 0 to 1. Were this to happen in a data set representing a bitmap image, the effect may be as subtle as changing slightly the color of a single pixel, or as drastic as corrupting the file in such a way that it is no longer recognizable as an image file; it's all a matter of what that bit's function is. On the level of code, a change in the instruction set could cause any number of effect ranging from incomprehensible output to the entire system to a grinding halt. What is important here is that errors do not appear to machines as errors at all; all that is really happening are mathematical transformations, numbers acting on numbers via different physical configurations of transistors. Unless a device has been designed to detect and suppress anomalous output, return an error message, the logic gates are perfectly capable of churning out bits as fast as they can be pumped in. Garbage in, garbage out, or so they say.

By designing a system built around two-state logic and numerical representation of information, the effect of interference and noise—random electronic variations introduced by thermal noise—on signal fidelity is minimized. In this sense, digital systems are by design anti-noise. In the shift from analog (or rather physical or chemical) forms of art making—where physical agents operated on physical materials—to digital, the inherent noise of physical material and its impact on signal fidelity is controlled and managed according to algorithms (mathematical operations). Anything that is to be generated or processed by a digital system must be represented in numerical form, even the program generating or processing the data. This does not mean that it is impossible to capture noise or generate a sequence of numbers that appear random, rather that noise becomes represented in sets of discrete values. The random variations that characterize noise become limited by the complexity of the mathematics used to represent or reproduce them.

Hearing Voices in the Noise

Despite the elimination and control of noise in the form of random fluctuations, other forms of noise become inherent features of digital technologies. Encoding continuously variable values in discrete numbers reduces the impact of noise in the form or transmission errors, but introduces its own signature in the form of quantization errors and other artifacts. To reduce the these basic forms of error, we can increase bit depth and sampling rates but this leaves us with a massive amount data. Streaming media over the Internet requires us to transmit digitized signals through a system with limited data rates. A standard audio CD has a data rate of 1411KBps, which theoretically could be streamed one-to-one on today's high-speed Internet connections, but if you wanted to send audio two hours of recordings to a collaborator elsewhere, you'd have to wait two hours for that transfer to complete assuming your ISP isn't lying to you about upload rates (which are as of 2011 still only a fraction of download rates). Video is a whole other beast with data rates of 24MBps for uncompressed SD video and five to size times that rate for HD formats[4]. Streaming this data or transferring it across the Internet today at a one-to-one rate is out of the question.

Lossy compression schemes allow for large volumes of data to be represented by a much smaller amount of data. This is achieved by analyzing a file and removing data that, according to perceptual models, is not perceived by a human viewer. In the case of audio, the spectrum of a signal is analyzed, and based on psycho-acoustic phenomenon such as spectral and temporal masking (appropriate for the average human listener of course), data that represents information that would not be perceived by the listener is removed. This loss of information introduces noise in places where it is likely to be masked by the content so that we are less likely to perceive it. A similar approach is taken with the encoding of image and video files. The overall color palate for a file may be reduced according to its content, patches of very similar tones consisting of hundreds of pixels may be represented as a few overlapping squares of color, and in the case of some video compression schemes, these squares will move according to vectorized paths.

What characterizes these forms of digital noise as opposed to the fine-grained variations of analog noise is that they are highly controlled; noise is only introduced where its impact is minimized, it is suppressed according to very specific algorithms and mathematical formulas. It doesn't appear as noise because it is designed to take on the appearance of the original signal. Ironically, this desire to mitigate the impact of noise can actually amplify its effects. When a digital signal becomes degraded, the algorithms responsible for decoding a data stream and reconstructing the original information produce artifacts that bear little resemblance to the original content. These artifacts—fragmented and disjointed images, scrambled geometric patterns, melting color fields, atonal melodic whistles, bursts of static—bear the marks of the compression/decompression algorithms which operate otherwise undetected, in the background. These signatures are the products of interpretive algorithms designed to discard information based on human limits of perception. Though I would hardly characterize compression artifacts themselves the product of machine-based creative improvisation, by repeatedly compressing a file, compression algorithms begin to produce new forms of content (within their limited vocabulary) which can be interpreted as metaphors for hallucinations, active imagination, creativity. In a strange sense, we have encoded ourselves into the machines, imbuing them with a crude form of imagination or creativity.

A Premature Closing

This appearance of a possible machine creativity, of the machine collaborator has its roots in the dynamic relationship between digital technologies and their human creators. The production of highly complex processors and the instruction sets which govern their operations involves a collaboration between the humans who specify the design requirements and the computer algorithms they've designed to make decisions on how to execute those designs. The problem of compressing billions of transistors into arrangements that utilize the surface area of the silicon wafers out of which they're made is nearly infinitely complex and an incredible challenge for human or computer alone to solve. The necessary collaboration between human and machine enabling the development of more advanced digital technologies is at the core of digital art making practices. As algorithms become a metaphor for human thought encoded in machine language, we are seeding these machines with crude, limited, and highly specific ideas in the form of series of instructions and commands. In light of all this, McLuhan's notion of technology being an extension of ourselves may not be far from the mark[5]; though, far from being autonomous, our machines are dependent upon our survival for theirs. The algorithmic unconscious may not yet be something that we can clearly define or identify, however, we may be able to look at the products of glitch art, circuit bending, and other related forms and identify between their ideas a revised metaphor for ourselves and our relationship to our technology and the environment.

This meditation has focused its attention on the material basis for the digital art making practices, touching upon the numerical systems of representation and the algorithms employed by digital technologies. In much the same way that structuralist film abandoned the conventions of cinema in the pursuit of working with the material essence of the medium of film, glitch art and circuit bending—and other related practice which force digital systems ans algorithms into limit performances—represent a set of practices seeking to work beyond the traditional scope of the software or hardware tools, seeking within them essential characteristics and using effects inherent to the medium to explore new avenues artistic production. It is my hope that this meditation will contribute to the enrichment of the discussion surrounding the work of artists who are working outside of conventional practices, violating not only the physical enclosures of the devices they work with, but the very data structures and architectures of the processors operating within. Through a more refined understanding of the material basis for an artistic practice, it becomes possible to more concisely define the potential conceptual metaphors entailed by the application of specific techniques and how they can be used to compose a situation that produces a physical effect on the viewer which reinforces the production meaning on the subjective level.

Notes:

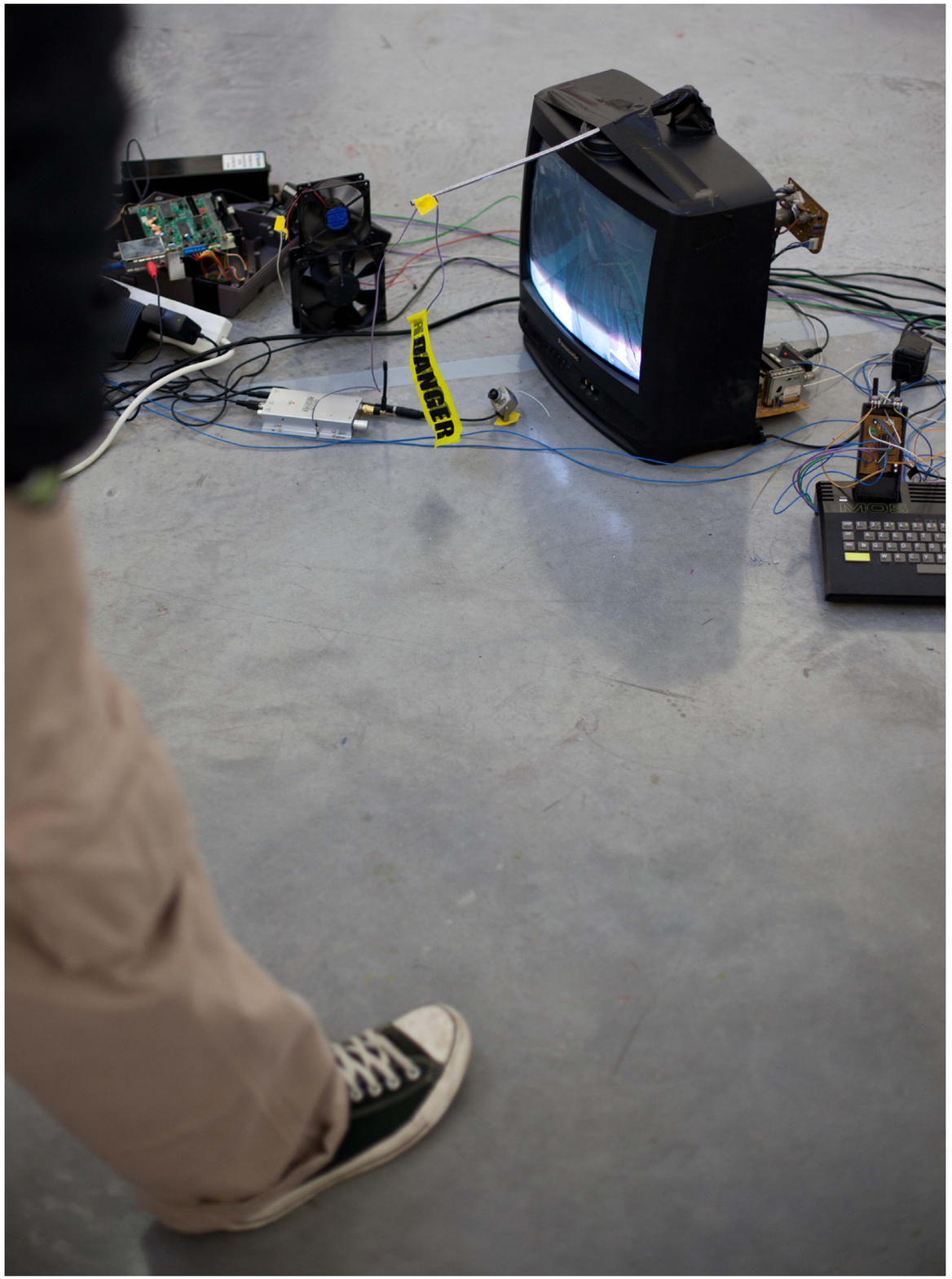
[1] A yet undefined term, algorithmic unconscious appears independently in the writing of Carl Diehl (http://goo.gl/URaZQ) and Matthew Fuller & Andrew Goffey (http://goo.gl/ETX9f)

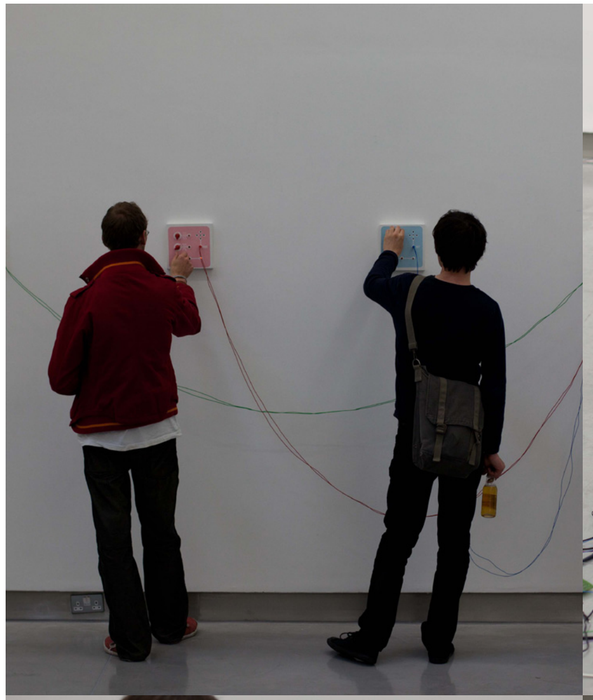
[2] JAIF, Tepco Nuclear Power Plants and Earthquakes. September 2011
retrieved from http://www.world-nuclear.org/info/

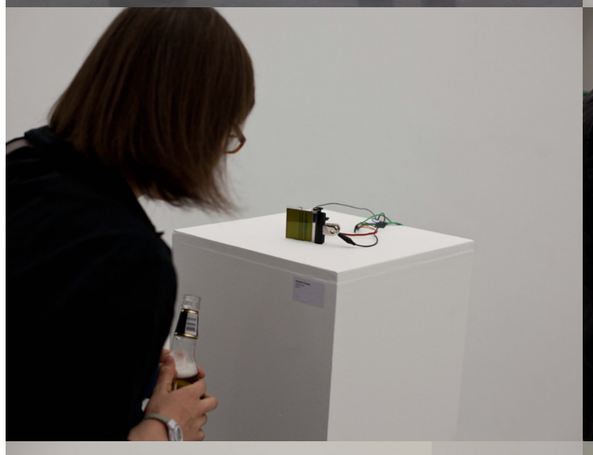
[3]Menkman, Rosa. A Vernacular of File Formats. August 2010.
retrieved from http://rosa-menkman.blogspot.com/

[4] Final Cut Pro 7 User Manual: Data Rates and Storage Devices March 2010
retrieved from http://documentation.apple.com/en/finalcutpro/usermanual/index.html

[5] Marshall McLuhan Understanding Media: The Extensions of Man 1964



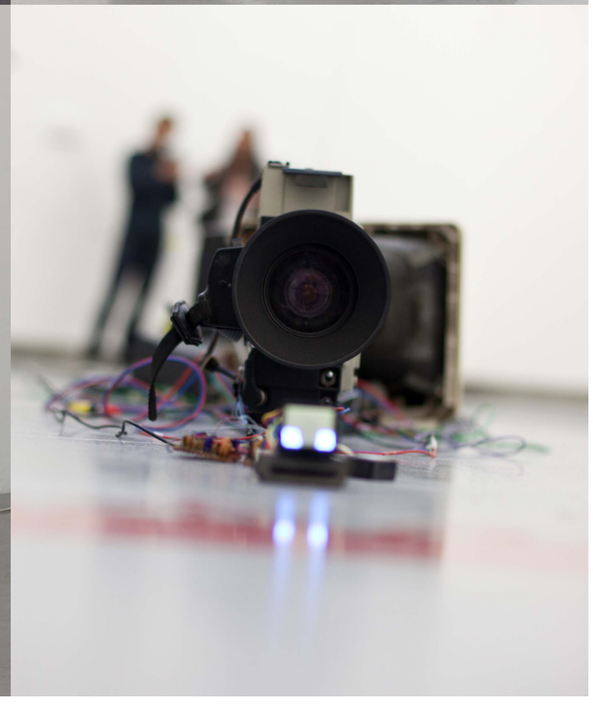








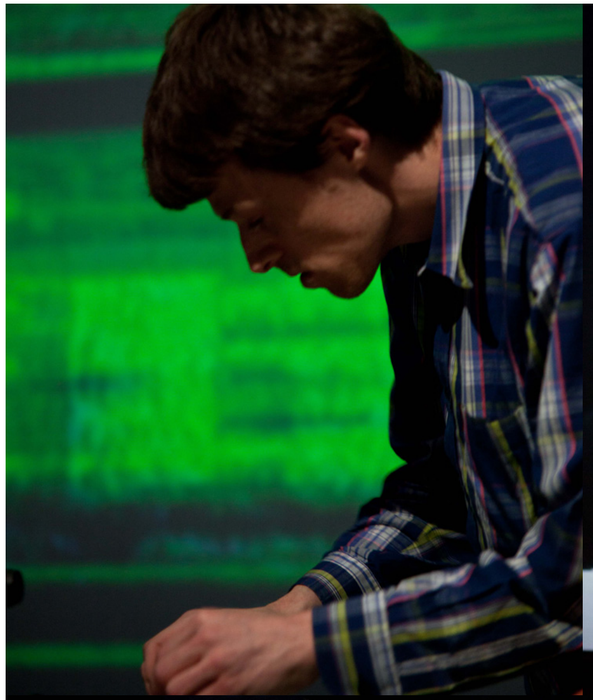


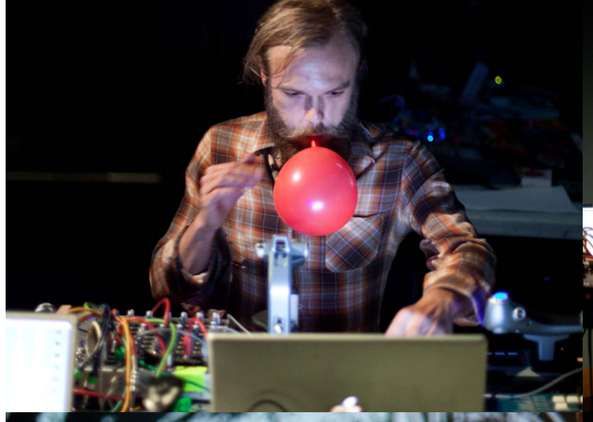






JUNIOR DRUMMER








LoVid

Tali Hinkis and Kyle Lapidus

LoVid is an interdisciplinary artist duo composed of Tali Hinkis and Kyle Lapidus. Our work includes live video installations, sculptures, digital prints, patchworks, media projects, performances, and video recordings. We combine many opposing elements in our work, contrasting hard electronics with soft patchworks, analog and digital, or handmade and machine produced objects. This multidirectional approach is also reflected in the content of our work: romantic and aggressive, wireless and wire-full. We are interested in the ways in which the human body and mind observe, process, and respond to both natural and technological environments, and in the preservation of data, signals, and memory.

486 Shorts

486 Shorts stems from a personal interaction with an ordinarily closed off part of a common machine. By getting inside the black box (the casing of an archaic 486 computer), LoVid reached the physical location where signals are passed. Connections were made on the circuit board of the video card, using wire to produce short circuits, and videos were produced from these short circuits. Recordings made from these shorts were then edited into 486 short clips, each corresponding to one of the physical shorts. (486 Shorts was recorded during a residency at iEAR in 2006. Special thanks to Bart Woodstrup, Douglas Repetto, Chris Jordan, Evan Rappaport, Ranjit Bhatnagar, and Lower East Side Ecology Center. A DVD release of 486 Shorts was published by Analogous Projects.)

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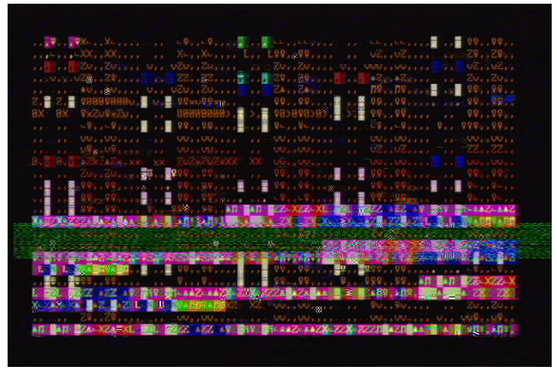
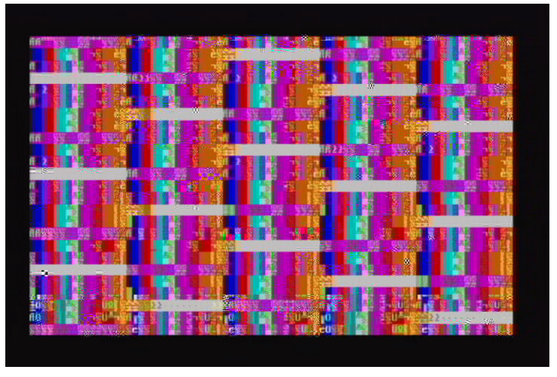
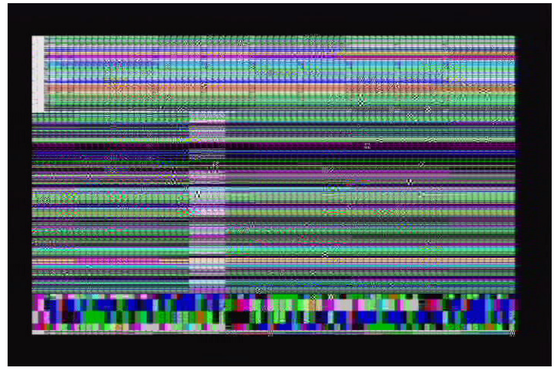
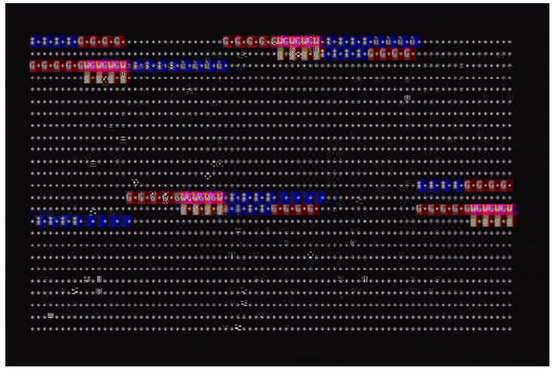
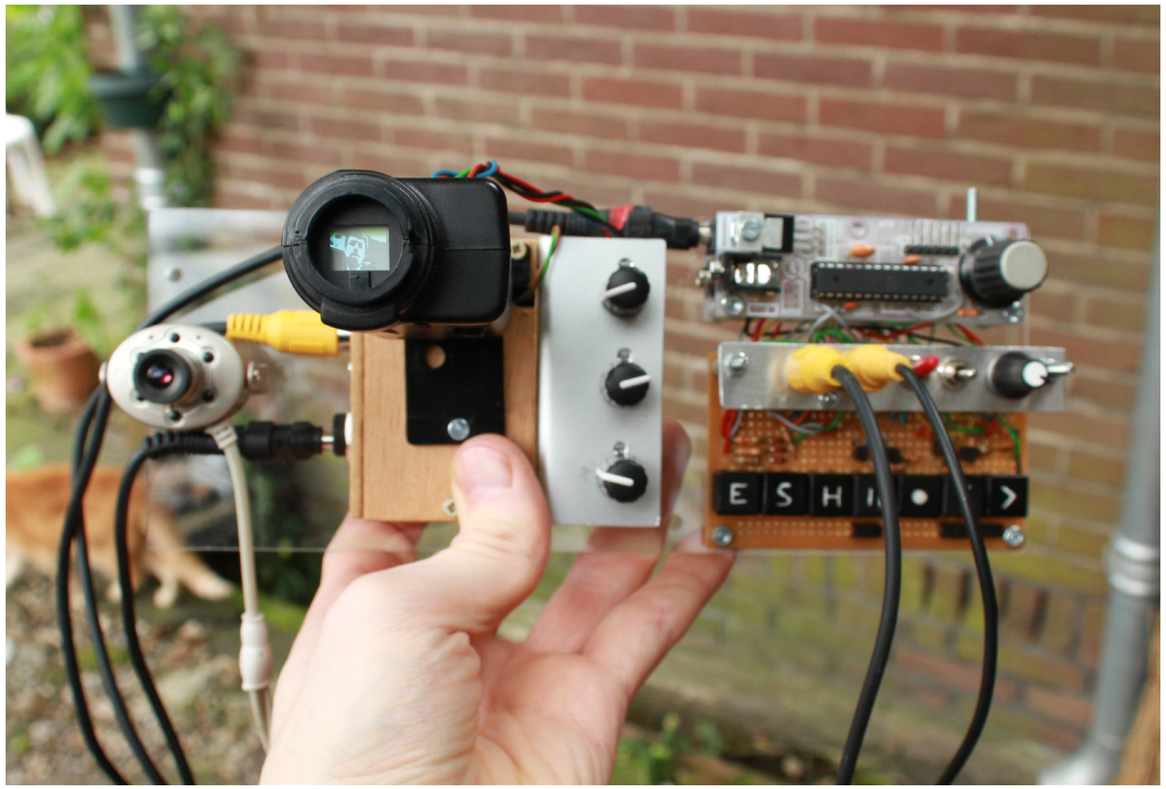










Gijs Gieskes

Re-appropriating tools for new purposes, making inventive hardware projects, such as his Feedback video log, Strobo VJ machine or PCB hand painted circuit board, is what Gijs Gieskes enjoys most.

Artists and makers are re-inventing the design and function of ubiquitous consumer electronics devices by creating hybrid systems and artifacts with extended uses.

Educated as an industrial designer, he now casts Gameboy Bricks in concrete to build a garden path or a spinning photoelectronic acid machine. Gieskes' work and live performances are a fantastic example of where hardware hacking can take you.

HSS3 Hypnotoad

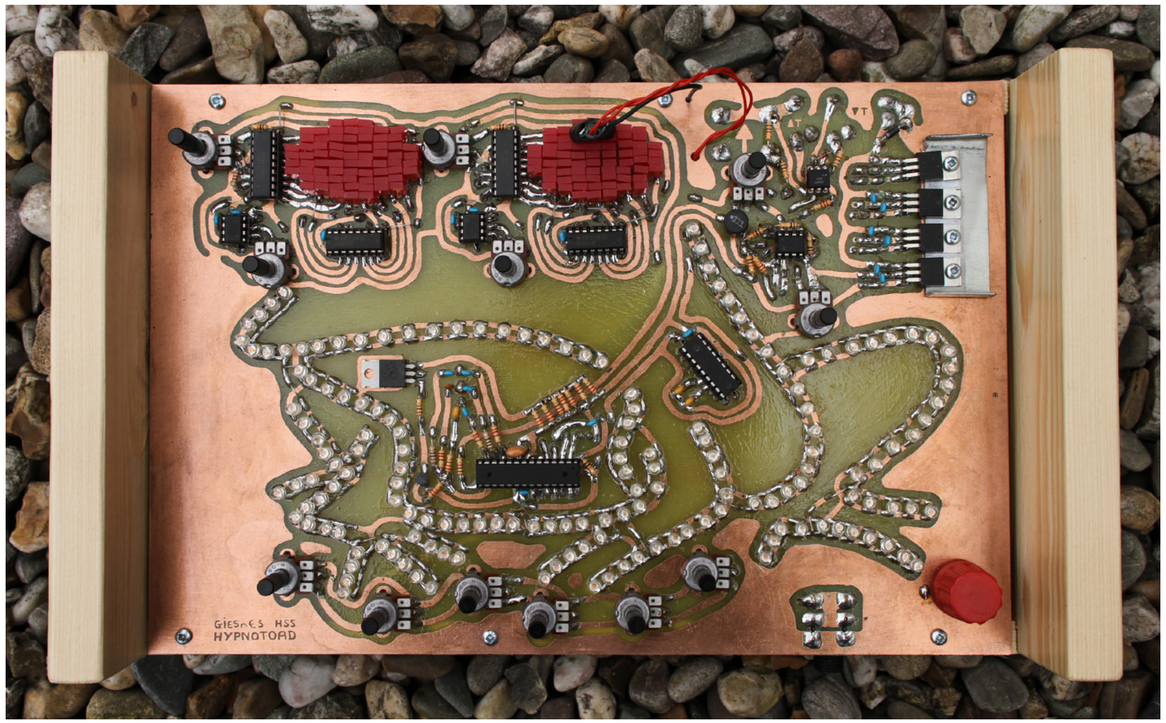
The Hypnotoad is a character from the television series Futurama, it hypnotizes everyone that looks at it, by generating a drone sound and wobbeling it's eyes.

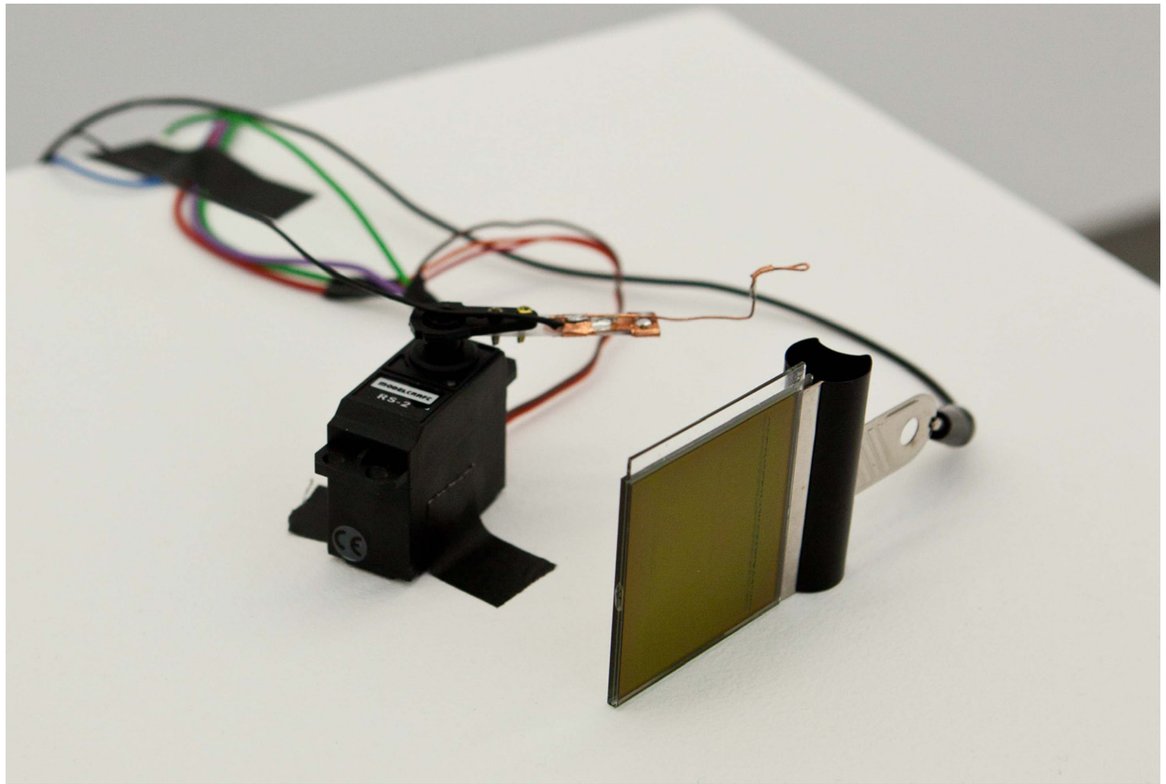
A Youtube user made a video loop of this Hypnotoad, that is about 10 minutes long. The HSS3 Hypnotoad is a hardware version of this Youtube video, that can run forever.

GVS1b

The GVS1b is a video sampler, that can be used to sample small clips of composite video and play them back in a grayscale depth of 1.5 bit.

In the exhibition setup there is a viewfinder used as a display, and a small security camera that films the person operating the GVS1b so the person can sample itself.





/ Recyclism

aka Benjamin Gaulon

Benjamin Gaulon is a researcher, artist and has a broad experience of acting as art consultant, public and conference speaker and art college lecturer. His work focuses on planned obsolescence, consumerism and disposable society. He has previously released work under the name “recyclism”.

He is currently leading Data 2.0 (Dublin Art and Technology Association), he co-founded the IMOCA (Irish Museum of Contemporary) Art in 2007 and is lecturer at the National College of Art and Design in Dublin.

Since 2005 he has been leading workshops and giving lectures in Europe and US about e-waste and hardware Hacking / Recycling. Workshop participants explore the potential of obsolete technologies in a creative way and find new strategies for e-waste recycling.

His research seeks to establish an inter-disciplinary practice and collaborations by creating bridges between art, science and activism, and by doing so, shifting the boundaries between art, engineering and sustainable strategies.

/ AbstracTris

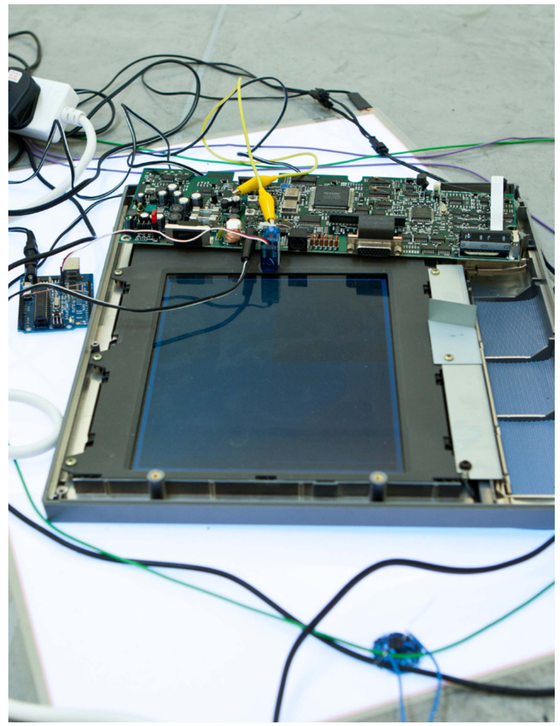
Gameboy Screen, 9v Battery, Relay, Arduino, Servo.

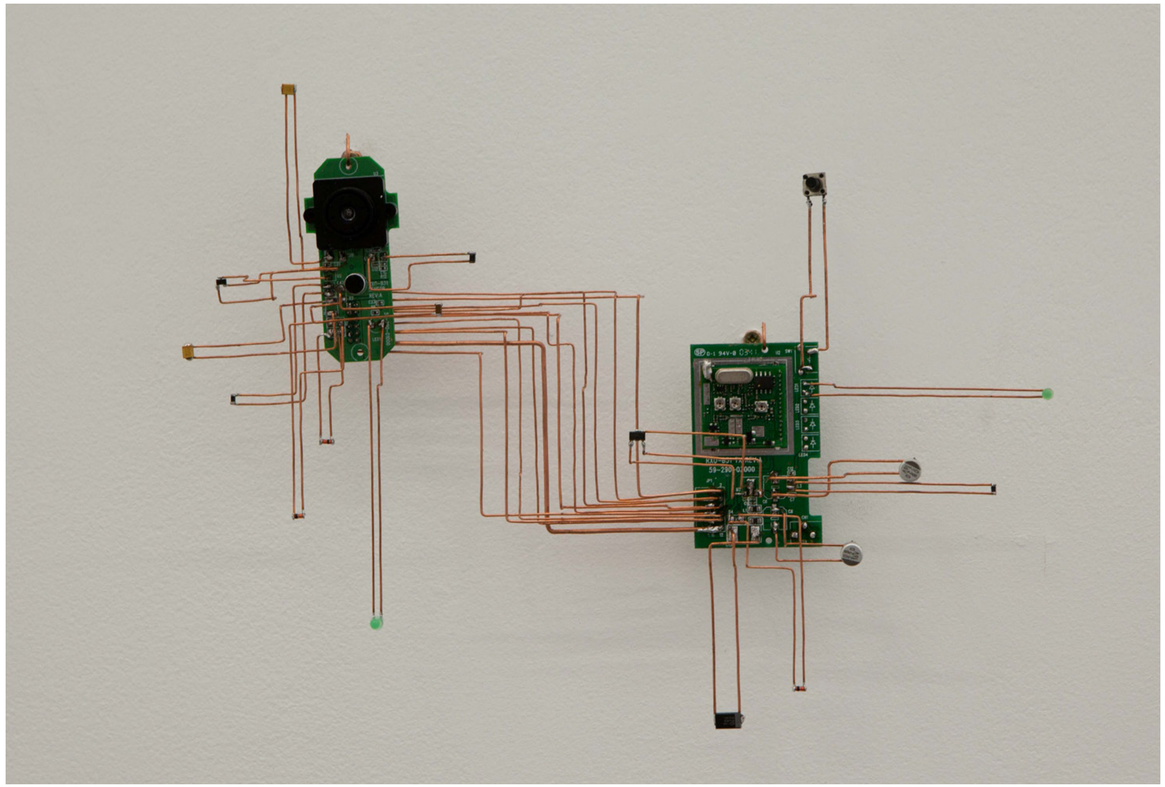
AbstracTris is a LoTech generative pixel art device. The pixel are directly controlled by applying voltage to the side pins of the GameBoy LCD screen.

/ Corrupt

This single-channel video is the collection of uploaded images on corrupt.recyclism.com since 2005. The video of 1:11:45 minutes includes 107,175 corrupted images uploaded by thousands of different people from 2005 to 2011. Each image uploaded and corrupted at corrupt.recyclism.com is unique - an individual story. However, once those 107,175 corrupted images are combined what emerges is a story, in a way, of the entire internet. This video was made with the Corruptimator™ by Brian Solon.

Corruptimator™ is a bunch of Bash shell scripts loosely cobbled together in an attempt to simplify and automate the process of assembling a movie from five years’ worth of images generated by CORRUPT™.





/ MNK

aka Karl Klomp

In his research Karl Klomp focusses on live audiovisual expressions and interfacing. His work shows a fascination for glitch-art, hyperkinetic audio visuals and glitch grabbing. He deals with video circuit bending, frame grabbing, hardware interfacing, and max programming.

He also makes video hardware tools for other artists, and regularly gives audio/video circuit bending workshops, often in collabaration with Gijs Gieskes. He is theater technician for Toneelgroep Amsterdam.

Together with Tom Verbruggen (a.k.a. Toktek) he performs as VJ MNK and plays live AV-performances (toktek vs mnk).

/ MNL CAM

The Minimal Camera is an object consisting out of an electronic circuit and hard coper wires. A consumer wireless camera is decomposed and modified with coper wires to enhance the feeling of complexity and fragility. By expanding the components of the circuit with coper wires the electronic circuit becomes more tangible and understandable. Nothing on the original circuit board is added or omitted. The original was found at flee market.

/ AV5-ERROR

The AV5-ERROR is a circuit bend video mixer which glitches live video input on audio signal. There are two busses that are circuit bend separately and react to audio input from a microphone or line audio signal. The video RAM chips inside are extent with wires and can be selected on the extension box. With the potentiometer on the extension box the amount of audio can be adjust making the effect heavier or less reactive to audio.

This mixer is often used in live situations because of his stability in video sync. Circuit bending video always deals with the sync information in the video signal. This mixer is glitching the image before the sync signal so will always send out correct video signal to a projector.

Karl Klomp sells AV5E to artist, musicians and other people how need live video distortions. He's the only company in the world that sells broken devices.

TokTek

aka Tom Vebrugen

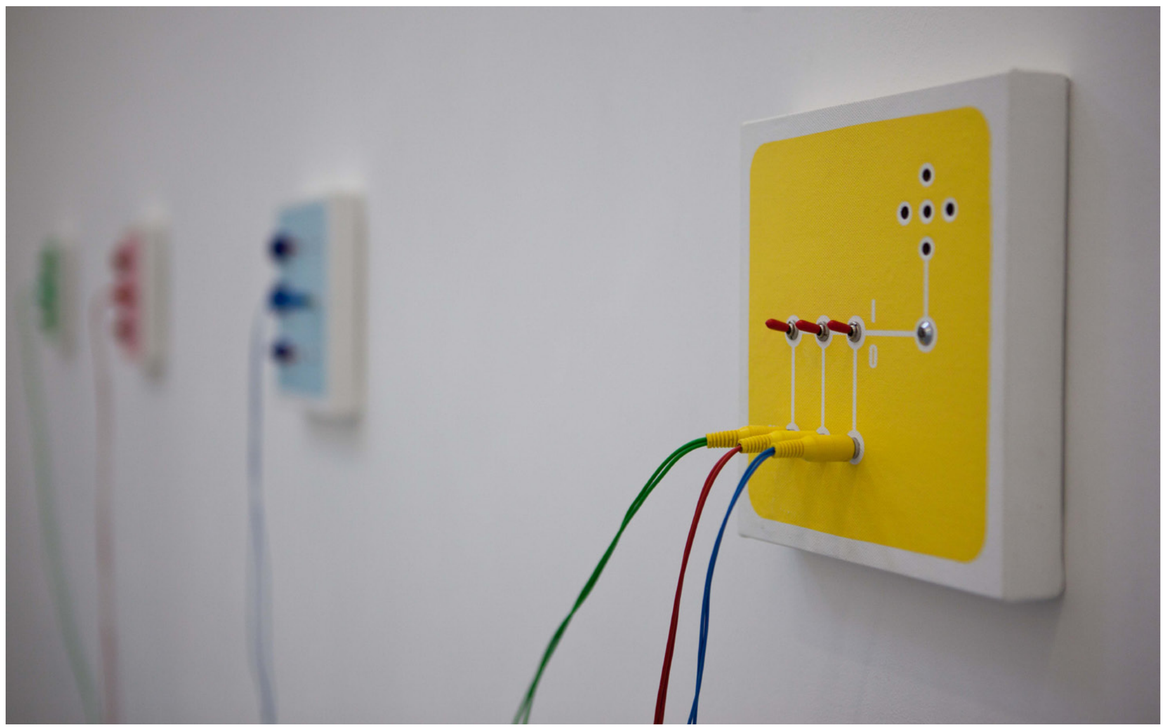
TokTek is a Dutch artist who designs and deconstructs his own electronic instruments, giving his music a unique character and allowing him to improvise live on stage with the help of a joystick - the central piece in his live equipment.

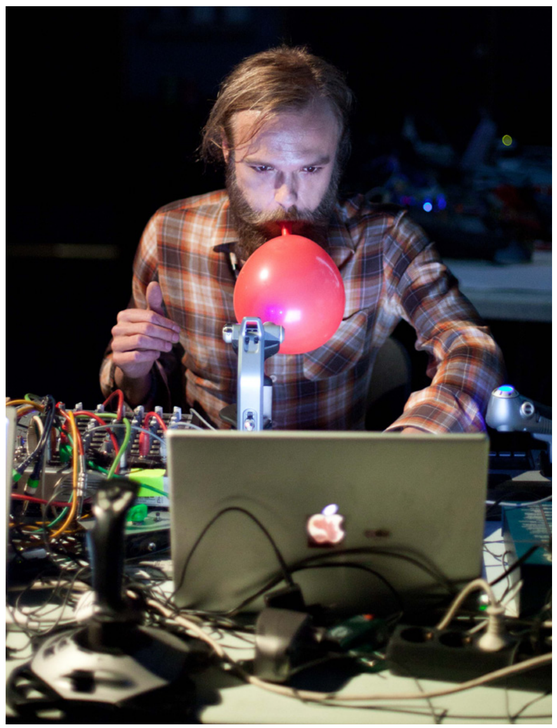
Behind TokTek stands musician and visual artist Tom Verbruggen, who aside from building his own instruments is an improviser: synths, toys and computer become instruments. His eclectic electronic style has been described as illogical hardware bending, where the outcome creates dramatic live compositions, which break down into delicate and tender sound moments.

In one of his incarnations, he performs with VJ MNK (Karl Klomp) - a video artist that hacks/bends video equipment like videomixers.

Crackle-canvas

A Crackle-canvas is a painting that produces sound. it contains a circuitboard, speaker, knobs, switches, wood and canvas. Each one makes sounds by itself but can be connected thrue cables (patched) with other Crackle-canvasses. This way the paintings start to react on eachother. Each patch creates a different sound and drawing of cables on the wall or in the space the paintings are presented.





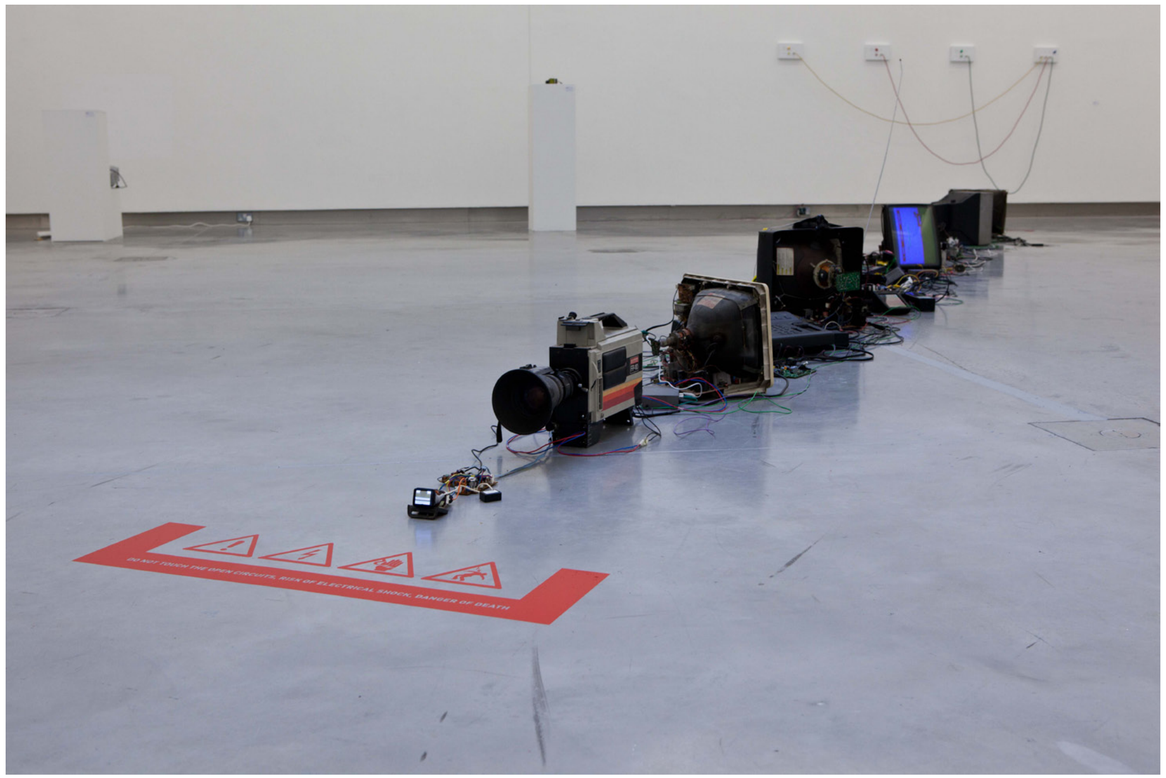
/ Rosa Menkman

Every technology possess its own inherent accidents.

ROSSA MENKMAN is a Dutch visualist who focuses on visual artifacts created by accidents in digital media. The visuals she makes are the result of glitches, compressions, feedback and other forms of noise. Although many people perceive these accidents as negative experiences, Rosa emphasizes their positive consequences.

By combining both her practical as well as her academic background, she merges her abstract pieces within a grand theory artifacts (a glitch studies). Besides the creation of a formal “Vernacular of File Formats”, within her static work, she also creates (narrative) work in her Acousmatic Videoscapes. In these Videoscapes she strives to connect both sound and video artifacts conceptually, technically and sometimes narratively.

- **/ A Vernacular of File Formats**
  RAW, JPG 2000, JPG, PNG, BMP, PSD, TIFF, GIF, TARGA
- **/ Collapse of PAL**
- **/ Together in my Freezer**
- **/ Radio Dada**
- **/ Compression**
- **/ Performative Fail**
- **/ Eastern Fire Swim**



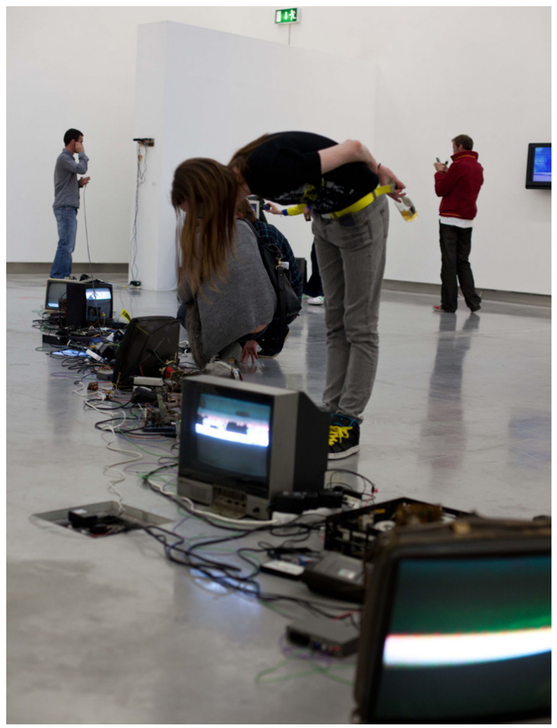
ReFunct Media 2.0

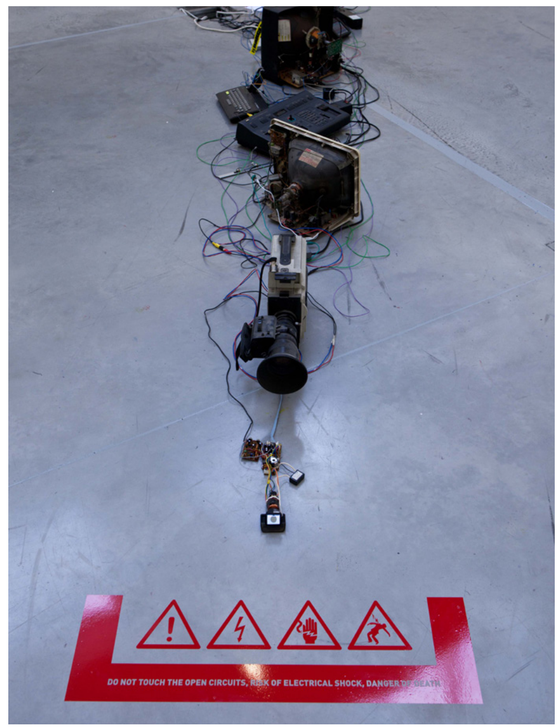
Karl Klomp / Benjamin Gaulon / Gijs Gieskes

In the “Practice of Everyday Life” Michel de Certeau investigates the ways in which users-commonly assumed to be passive and guided by established rules-operate. He asserts: “This goal will be achieved if everyday practices, “ways of operating” or doing things, no longer appear as merely obscure background of social activity, and if a body of theoretical questions, methods, categories, and perspectives, by penetrating this obscurity, make it possible to articulate them.”

“ReFunct Media” is a multimedia installation that (re)uses numerous “obsolete” electronic devices (digital and analogue media players and receivers). Those devices are hacked, misused and combined into a large and complex chain of elements. To use an ecological analogy they “interact” in different symbiotic relationships such as mutualism, parasitism and commensalism.

Voluntarily complex and unstable, “ReFunct Media” isn’t proposing answers to the questions raised by e-waste, planned obsolescence and sustainable design strategies. Rather, as an installation it experiments and explores unchallenged possibilities of ‘obsolete’ electronic and digital media technologies and our relationship with technologies and consumption.





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