

Notes on Hardware Archaeology & 8-Bit Videogame Modification

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Abstract

This paper theorises 8-bit artistic videogame modification as a critical practice that interrogates the high-speed innovation and hyperrealism that drives informational capitalism. While 8-bit refers specifically to ‘third generation’ game consoles (Atari 7800, Commodore 64, Nintendo Entertainment System, etc.), I use the term in a more general sense to describe an emergent aesthetics based on the experimental hacking of obsolete gaming technologies. By using a range of examples from artists like Paperrad, Cory Arcangel and Collapsicon, a common formal strategy of simulated technological failure is identified as being a unifying technique deployed in order to both foreground mediation and displace interactivity. I suggest that this method opens a critical space through which to contemplate the enforced obsolescence of commodified videogame systems, and is generally suggestive of a more complex field of engagement with digital technologies than the refrain of accelerated hyperrealism (or those economies of retro-gaming, given the distorted features of art-based modification). While it can be assumed that a kind of nostalgic rendering of infancy underscores these works, in the final section I introduce a way of thinking politically about 8-bit modification as the interpenetration of childhood with digital technologies and the disorientation of advanced capitalism.

Task of childhood: to bring the new world into symbolic space.
(Benjamin, 1999, p. 390)

This paper theorises 8-bit artistic videogame modification as a critical practice that interrogates the high-speed innovation and hyperrealism that drives informational capitalism. While 8-bit refers specifically to ‘third generation’ game consoles (Atari 7800, Commodore 64, Nintendo Entertainment System, etc.), I use the term in a more general sense to describe an emergent aesthetics based on the experimental hacking of obsolete gaming technologies. By using a range of examples from artists like Paperrad, Cory Arcangel and Collapsicon, a common formal strategy of simulated technological failure is identified as being a unifying technique deployed in order to both foreground mediation and displace interactivity. I suggest that this method opens a critical space through which to contemplate the enforced obsolescence of commodified videogame systems, and is generally suggestive of a more complex field of engagement with digital technologies than the refrain of accelerated hyperrealism (or those economies of retro-gaming, given the distorted features of art-based modification). While it can be assumed that a kind of nostalgic rendering of infancy underscores these works, in the final section I introduce a way of thinking politically about 8-bit modification as the interpenetration of childhood with digital technologies and the disorientation of advanced capitalism.

Aesthetic Failure

In an essay exploring the formal logic of artist-made videogame mods, new media theorist Alexander Galloway interprets the effacement of active play or *gaming* in these abstract pieces as a characteristic limitation. Analysing pieces by Jodi, Tom Betts, Joan Leandre, Brody Condon and Eddo Stern, the interruption of gameplay is perceived as ‘reactionary’ by lapsing back into older media like animation, video and painting. The movement is, therefore, labelled as politically underdeveloped, due to the absence of those experiential qualities associated with popular new media technologies. A significant aspect of his critique is formulated around the consequences of hacking already existing commercial media either on the level of physics (the game engine) or visual design (graphics): for an authentic aesthetic movement to exist, the production of gamic action must dominate. Accordingly, a manifesto-like series of resolutions is provided, a modernist diagnosis: “artists should create new grammars of action, not simply new grammar of visuality. They should create alternate algorithms. They should reinvent the architectural flow of play and the game’s position in the world, not just its maps and characters” (Galloway, 2006, p. 125). Here, Galloway is critical of artistic mods (‘countergaming’) for not adequately harnessing the action-based features of gaming proper. In his schema, this dimension of processed activity is understood as fundamental to the medium itself, ‘video games are actions’ (p. 2). Part of this definition is strategic, implemented to distinguish games from media like photography and film; another facet is centred on the development of a materialist analysis able to circumvent the excesses of speculative theorisation (‘no more vapour theory’). As such, the broader contextual ground of these artistic interventions is not prioritised: the method is defined against reception, being more consistent with a technical approach dictated by formal analysis. His conclusion, therefore, can be taken as a provocation by identifying a critical impasse for art-based modification; however, the broader rationale of *why* digital artists are ‘missing the point’ is not addressed. The ludic dimension, as a consequence, should be taken as a complex site of tension that impels a further set of questions regarding the limits and limitations of gaming.

Leaving aside the call for ‘radical action’ in artistic game mods, in this paper, I want to extend Galloway’s critical analysis by focussing on the significance of ‘counter-gaming’ in a social-political sense. One aspect of this particular reconsideration is based on thinking through what simulations of *failure* might be capable of achieving against the structures of intelligibility. In other words, by linking those elements of aesthetic mods characterised by ‘crashes,’ error messages, deformed processing and the provocation of technical breakdown to particular settings that inform the development of digital systems. Indeed, it can be argued these illegitimate operations encourage a critical perspective on the arrangement of the medium’s vernacular through the use of ‘misdirection,’ similar to strategies of asignification associated with tactical media production (White, 2006, pp. 85 - 104). That is, the disruption of software interaction ‘twists’ the experience of gameplay “to reveal the underlying construction of the user, the way the program treats data, and the transduction and coding processes of the interface” (Fuller, 2003, p. 23). While such tactical interventions develop out of a long modern tradition of alienating ‘found objects,’ these techniques must also be understood within a context already dictated by and shaped through participatory impulses. Other than the gamic dimension, this refers to an alternate field of playful action, as Tilman Baumgärtel observes: “game art needs to be considered not only in the context of the huge DIY subculture of game enthusiasts, but also that of a wider cultural and hacker movement united by a lack of respect for technological givens” (2006, p. 59). Art-based modification, therefore, exists within an expansive milieu, but as a practice based on interrogating the settings of digital objects by negation. It is precisely through this contrary or agonistic approach to artistic modding that the definitions of play are illuminated, contested and remade (Schneider, 2003). While formal analysis generally associates this activity with sites of technical arrest or stasis, these artworks resonate on their reception in a social milieu. That is to say, the indeterminacy of aesthetic modding can produce effects beyond the gallery, club or the Web when considered from a generic understanding of feedback, change and movement (Massumi, 2003). It is my suggestion that from this perspective, where the communications medium becomes merely one actor within a field of unfolding relations, that an emphasis on gaming as exclusively active or political becomes redundant.

Hardware Archaeology

Only nostalgia for the future allows me the mental space to confront the convergence of digital technologies and cultural production.
(Lunenfeld, 2000, p. 27)

8-bit videogame modification finds a critical hold in the context of technological development and narratives of progress. To identify an *outmoded* digital object is already to presume a kind of teleology to the nature of media, to begin the work of signification, of abstracting positions and demarcations as causal (Massumi, 2003, p. 3). These versions of progressive change (as opposed to processual) shape our treatment of digital systems in a most immediate sense: as platforms are routinely pushed out of circulation, nostalgia is immediately operating at the moment of installation, translating an object’s demise in relation to ‘the cutting edge’ or the latest update. These are the retrospective mechanisms under which software, for example, is divided into formal hierarchies that appear linear and self-constitutive. Moreover, such dynamics are consistent with the valorisation of capital by staging differences in technological speed and “circulating information to some places faster, thereby reinscribing relative delays in movements of information as the source of value” (McKenzie, 2002, p. 160). 8-bit modding, I want to suggest, disrupts these tendencies by

excavating potentialities out of a discarded past, by recognising the ‘virtual’ and ‘actual’ as being always coexistent, entangled in concrete forms. ‘Hardware Archaeology’ is a term used by Baumgärtel to describe techniques of re-using scrapped technology and explicating the special properties of obsolete settings (2006, p. 63). *Atari Noise* by Arcangel Constantini, for instance, functions in this manner by manipulating the stylistic conventions of recovered gaming consoles. The Atari 2600 (originally a 70s platform) is recast with triggers to become ‘an audiovisual noise pattern generator keyboard’ capable of perpetually spawning distorted imagery unique to the gaming hardware. *Nestune* by Australian artist Collapsicon represents a variation on this theme by adding manual override to a Nintendo Famicom in order to produce corrupted graphics and audio visualisation. Meanwhile, as noteNdo, Jeff Donaldson has taken this concept to a logical conclusion by live VJing on modified NES consoles for club-style performances. While artistic retro-mods like Jodi’s *Jet Set Willy Variations @ 1984* or *gameboy_ultraF_ck* by Corby & Baley use emulators to explore the coding of ancient systems, these examples are distinctive for rendering physical attributes as adaptive and multidimensional. Moreover, to consider ‘playing’ circuitry as the manipulation of preset variables, the specifically performance-based aspects of these mods can be described as allowing a particular kind of virtuosity. Indeed, this aspect has been realised sonically by the genre ‘chiptune,’ where devices like the Nintendo Game Boy are rewritten to operate as electronic musical instruments. From electro-pop to hardcore rave revivalism, artists such as Jeroen Tel, Bubblyfish and Nullsleep exploit the harmonic minimalism of sound chip processing to produce uncanny real-time compositions. While the resultant harsh or ‘micro’ quality invokes digital nostalgia, these technologies also *speak* through a distinct idiom, to paraphrase Bruno Latour, they resemble a technological dialect made ‘strange, exotic, archaic, or mysterious’ by falling out of habitual usage (2005, p. 84).

Writing from another era, Walter Benjamin once wrote on the complex fore-history carried through material objects as a kind of ‘dreamscape.’ Indeed, his *spectral analysis* of the Parisian arcades was premised on a retrieval of the latent potentialities embedded in the concrete form of past commodities, or garbage cast-off by modernity. By implementing various montage-based techniques (cut, sample, modify, remix), the futurity or utopian promise originally associated with these items might be drawn out by an individual and fully realised in the present. In doing so, Benjamin theorised the linear continuum of historical progress could be brought to a standstill, stretched out laterally across a network of time, to reveal the actual experience of modernity in a ‘flash of lightning’ (Benjamin, 1999, p. 463). Teleology could somehow be circumvented, and the assignation of events exploded within the practice of history itself. The result would be a pure dialectical image, a varied constellation that finally made legible the geography of contemporary life as a communicable form. As software critic Matthew Fuller observes, this approach is remarkably appropriate for the accelerated speed of our digital culture, especially by allowing a field of critical engagement to emerge through the enforcement of commercial obsolescence - “as standard software marches onwards with its own feature-panicked elegance it draws a line which in part, describes the space of what is possible and which at the same time allows the impossible or the improper to find itself more easily” (Fuller, 2003, p. 29). This potential for reflection, engendered through an engagement with superficially outmoded technologies, is precisely the impetus of 8-bit modding as a variant of materialist inquiry, still charged with the virtuality of digital or algorithmic culture. The purpose is to awaken a digital object’s agency from a distance, questioning what is to be done in the present with a “sonorous and stinging sense of the possible” (p. 29). To reflect on obsolescence in this manner introduces as a corrective to the progressive drive of information-based economies; presupposing technology as an expression, a generalised modulation between virtual futures and an actualised present.

Digital Infancy

It is infancy, it is the transcendental experience of the difference between language and speech, which first opens the space of history.
(Agamben, 2006, p. 60)

To a certain extent, the emergence of 8-bit is related to the evolution of gaming as a cultural practice in the process of maturation. As Lev Manovich notes, for artistic mods, the medium's vernacular increasingly recalls the influence of cinema for Douglas Gordon or Andy Warhol; with the gallery space operating as therapy couch for screen memories, "spilling bits and pieces of their childhood media archives in public" (2006, p. 214). Even in the production of pixel art from design collectives like eBoy or QuickHoney, a child-like imaginary is conveyed through retro-stylized miniature worlds. From a critical angle, this aspect can appear ambiguous, implying a naively idealistic or wilfully transcendent cultural mindset. Of course, a significant portion of these associations are structured by the idea that these visual grammars have informed childhood memories in the first place. However, as opposed to a reading based purely on nostalgia, this paper argues that 8-bit artists attempt to reconnect with the seriousness of digital infancy through an experience of virtuality as possibilities other than the present state of things. A significant dimension of this playful engagement is the establishment of a singular expression, manifest through an authorial voice as eternal children.

The populist, highly agonistic artwork of Cory Arcangel has become canonical for the experimental field of software art, with his style being representative of a shared 8-bit thematic concerning failure, interaction and play. Created through Nintendo cartridge modifications, pieces like *I Shot Andy Warhol*, *Mig-29 and Clouds* and *Super Slow Tetris* convey a deceptive simplicity. They are formed by limited strategies of intervention, created by mobilising the most minor changes or least possible adjustment to pre-existing software, in order to produce radical transformations. *Super Mario Clouds*, for example, effectively erases the entire interactive environment of the original game - the original platforms, characters and items have all vanished - leaving only the background: a series of animated clouds, scrolling forever. For the once dedicated player, the modification operates on an uncanny level by appearing wholly sculptural. As a game, the blue-sky backdrop represented a persistent element of the world that could not be manipulated or changed. After some hardware hacking of the program chip, the audience is now forced to reconcile an image of non-interaction with their own lack of gamific participation.

There are multiple ways of thinking through the materiality of this digital object – *Super Mario Brothers*. Following the logic of political economy, the original Nintendo cartridge appears imbricated in a structural logic of capture by mapping informational feedback or 'gameplay' with an equivalent loop of accumulation. It has been suggested this asynchronous mode of relation, combined with digital repetition as play, allows the rendering of a postmodern consumer (Klein, Dyer-Witheford & de Peuter, 2003, pp. 109 – 127). In other words, the player becomes 'empowered' through states of transformation or consumption as the Nintendo corporation instantiates the force of symbolic capture or socialisation behind their backs. This notion of a kind of digital mirror-phase coincides with the precarious experience of infancy as a semi-permanent condition of everyday life. According to Paolo Virno, for instance, capitalism adopts an infantile mode of operation due to an absence of

traditional customs or routine habits “that might channel praxis as in a riverbed: protecting it from chance” (2005, p. 9). Just as the NES player is trapped in the sphere of repetitious play as consumption, capitalism itself requires ludic iteration to smooth over the shocks of the unforeseeable (ruptures unleashed both by technology and the erosion of social structures). While childhood was once positioned as temporary, the experience now becomes repetitive and permanent, persisting in the foreground through a seemingly irremediable dispute with digital reproduction and flows of capital.

However, there always remains a significant oppositional difference between the puerility of capital and the experience of infancy: “whereas childhood faces the absence of habits through a particular form of ‘eternal return,’ the culture industry presents the nude iteration as a *surrogate* of habits, apes what is lacking, builds a surreptitious and yet binding ‘tradition’” (Virno, 2005, p. 10). In the case of Nintendo, this is most evident in the attachment forged to a commodified ‘super-system’ as a mode of gameplay (Kinder 1991). As opposed to the arrest of repetition found in the search for singular expression, this feedback loop traces a generic frame that prioritises differential reiteration in order to extract value, ‘one more time’ – another console, more sequels, further expansion packs, strategy guides, and so on. In order to counter this looped trajectory, a proper reactivation of childhood is necessary; the exposure to the world as a critical limit, the declaration of a ‘once and for all.’ This pathway is always current within the circuits of reproduction: it is defined as an immanent field that structures a disjunction between the *immediacy* of the social and the potentiality of change. To have had a childhood imposes this possibility as a permanent fracture between the human being and the environment. Consequently, there is a world to which we can belong only because of our distinction from it, a difference or failure to be entirely subsumed by a structure.

From this perspective, the broader significance of the scrolling clouds is based on exposing *Super Mario Brothers* to certain practices that thrive on the latent potentialities that underscore commodified software. This expression attempts to arrest the commercial forces that repeatedly spiral onto the digital object. While the original game was framed by childish repetition, the transformation of the console now advances toward a kind of maturity by making visible an alternate scale of interaction, of archaeology: a processual identity, a singular expression that arises precisely through distinctions between the cast-off debris of the past and an open future.

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