

Open Works, Open Technology: Conceptualizations of a Constructive Post-Digitalism

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History is back - or so claim leftist critics like Aaron Bastani. Political biases aside, the statement is significant and notably referential: we are no longer living in the supposed “end of history” that was infamously described by Francis Fukuyama in 1992. This supposed “end of history” was marked by the global rise of neoliberal capitalism as the dominant, if not effectively exclusive, system of socio-economic structure after the dissolution of the Soviet Union in 1991. To Fukuyama, this newly established condition was thought to have completed the “linear trajectory of history”, hence denoting “the end of history”. For many years, this condition was pervasive, with, as late as 2009, critics like Mark Fisher referring to the condition as “Capitalist Realism” ; or, the social atmosphere by which “it is easier to imagine the end of the world than the end of Capitalism”. The post-historical, Capitalist Realist atmosphere had a profound impact on culture, art, and aesthetics that deeply highlighted various postmodern dialogues. Of such dialogues, deconstruction and discontent ambivalence became commonplace in aesthetic theory and practice. Electronic music, having historically been a strange friend to the wealthy and powerful, was inevitably subjected to the critical aesthetic discourses that arose during this period. The “Post-Digital” musical ethos was one such critical dialogue. Implicitly political and overtly discontent with the rise of (digitised) neoliberal capitalism, the Post-Digital musical ethos denoted a form of music in which “the familiar digital tropes of purity... [were] abandoned in favour of errors, glitches and artefacts” (Andrews 1). As a critical aesthetic dialogue of the “post-historical” age, common understanding of “Post-Digitalism” typically includes reference to deconstructive practice; or, more verbosely put, critical regarding commodity capitalism’s administrative role in creative music technology yet unable to offer critique beyond a vaguely leftist sense of discontentment. With “the return of history”, it is imperative for all critical

dialogues of the “post-historical” age to become constructive in their propositions. As such, despite deconstructive expression at the turn of the century, the Post-Digital musical ontology must undertake a constructive turn in order to expand its critique of (digitised) late-stage capitalism, and, therefore, in order to meaningfully propose alternative conditional formats for society.

Regardless of the previously straightforward description, the term “Post-Digital” is often used with a large deal of opaqueness. Simultaneously a term in new media theory as well as in aesthetics, it broadly denotes an ethos of “critical reflection on [the] digital” that entails “a full awareness of the influence of digital culture and technologies on our modes of perception, cognition and action” (Straino 83-84). In art/music, the term is used to refer to a myriad of genres - “glitch, microwave, DSP, sinecore, and microscopic music” (Cascone 392) - but most importantly refers to “deconstructive audio and visual techniques that allow artists to work beneath the previously impenetrable veil of digital media” (Cascone 392). Both iterations of the term place Post-Digitalism as reactionary in its efforts to understand and subvert “digital culture” and the “veil of digital media”, respectively. Such conceptualizations are expressions of the same thing: “digital culture” and the “veil of digital media” are both ultimately products of what Straino calls the “mass digital society”. Together, the veil of mass digital society is the paradigm by which “digital media is ubiquitous, widespread, accessible, but... often not well understood” (Straino 84). Cascone’s metaphorical “veil of digital media” lies in this popular lack of understanding of digital technology. The techniques of the Post-Digital ontology (using Cascone’s metaphor) seek, then, to “remove” this veil via engagement with governing technical principles of digital technology/media. In other words, expressions of Post-Digitalism can be

understood as an attempt to exploit the mass digital condition (Straino 90) through an engagement with the materiality of technology.

In all cases, the various techniques of the Post-Digital ethos are an attempt to critically confront the mass digital condition and its cultural foundation, neoliberal/late-stage capitalism. This attempt is sought through an ethos of understanding and subversion; however, a rift exists between Cascone's assertion of deconstructive techniques and Straino's implicit dialectic of empowered awareness. Both critical modalities address the problematics of late capitalism's employment of digital media and its subsequent oppressive, manipulative effects through a culture of misunderstanding. Both echo Marx in their recognition that (digital) "science has invaded and transformed human life... through industry; and has prepared human emancipation, although its immediate effect [has been] the furthering of the dehumanization of" humankind (Marx, "Property and Alienation" 27). The proposed rift exists, not in what Post-Digital *is* or in *if* capitalism is to blame for the digital oppression/manipulation of modern society, but, rather, in *what is to be done* about such a condition. This rift creates a conceptual dichotomy between *deconstructive* practices and, what, then, may be called, *constructive* practices.

Critical confrontation in the Post-Digital musical ontology has primarily been *deconstructive* in practice. Suggested by Kim Cascone's allusion to "deconstructive audio and visual techniques", the practices of this nature (in music) have traditionally included processes like circuit bending, meditations on the temporality of tape-based technology, and CD/Vinyl manipulation. Deconstructive Post-Digital practices also include deliberately overloading computer processors, bit reduction, raw data sonorisation, and the development of specialized software (Andrews 3). These practices are materially deconstructive; even destructive, at times.

In possible evocation of Jacques Derrida's poststructuralist theory of deconstruction, deconstructive audio/visual practices seek to manipulate technology in ways that reveal functionality that is not intended by the producer of the technology in question. In any case, such practices can be read as a critical engagement with the materiality of technology through the foregrounding of its inherent flaws (Andrews 1). In this, the post-enlightenment notion of infinite scientific progress is confronted and critically questioned. Rather than seeking perfection, deconstructive strategies offer a confrontational dialogue regarding the unlikely ontological possibility of "perfection", in general; that of which, more than likely, is an effect of the desire of monopoly capitalism to create absolute marketing narratives.

The deconstructive techniques of Post-Digitalism tend to incur "an aesthetic made up of minuscule stabs of sound, clicks, glitches, buzzes, light airy drones and hisses, mangled ring-modulated tones and grainy clouds of noise/pixels" (Andrews 1). These sounds are popularly known as "the aesthetics of failure". Such aesthetic outcomes may peripherally imply a neo-modernist expanded sonic "reversal of values" (Andrews 6) or the attempt to pursue "expanded sound palette[s]" (C. Kelly 295), but only ever within institutional limits presupposed by post-Cage experimentalism (Andrews 4). Deconstructive Post-Digital musical processes, and their resultant aesthetic outcomes, offer a negative dialectic, of sorts, of mass digital culture without proposition of meaningful alternate musical and social structure. They problematize functions of the mass digital society, question the teleological advancement of technology, and *topically* seek to expand musical aesthetics without *inherently* offering constructive practices by which to proceed. In isolation, the traditional deconstructive techniques of the Post-Digital musical ontology aesthetically take on the historical archetype of the "saboteur" or, at least, they

do nothing to suggest a meaningful alternative to commodity capitalism and, in turn, hollowly accept the “capitalist realist” condition described by critics like Mark Fischer.

Exclusive deconstructive expression leads the Post-Digital musical ethos to be stripped of its critical capacity in its failure to propose critique beyond a vaguely leftist disapproval of commodity capitalism via overly-specific aesthetic commitments. If the Post-Digital glitch aesthetic has truly “forced us to examine our preconceptions of failure and detritus more carefully” as Kim Cascone asserts, then the next (logical) step is to take a constructive turn in one's own practice; a turn that frees the sonic practitioner from aesthetic, procedural, technological, and economic commitments. This implies a constructive narrative: if aesthetic and productive standards have meaningfully been challenged and altered by deconstructive Post-Digitalism, then one's primary concern should become, not (as Rob Young asserts) to “worship the glitch”, but to take its deconstruction as a starting point for constructing one's own, personalized sonic language. Implied alongside this claim is the need to create one's own means of sonic production (instruments, noise makers, software, etc.) through participation in informative, educational practices. If “failure” of both technological and aesthetic origin is no longer a “nonstarter” but rather, a valued event for its educational and expanded sonic potential, then one is free to create their technologies, art, and music without fear of historical/musicological cache. Cascone, despite his standard dialogue of “deconstruction”, implicitly admits this in asserting that “if glitch music is to advance past its initial stage of blind experimentation, new tools must be built with an educational bent in mind” (Cascone 398). Such a claim is fundamentally constructive in proposition, and evokes the dialogue of empowered awareness fundamental to the conception of constructive Post-Digitalism.

To discuss the possibility of *constructive* Post-Digital practice, it becomes necessary to expand the defining practices and aesthetic intentions of Post-Digitalism, in general. John Ferguson and Andrew Brown, in their 2016 article “Fostering A Post-Digital Avant-Garde” (featured in Volume 21 Issue 2 of *Organized Sound*), describe Post-Digitalism (in music) by a “new”, expanded set of practices that include:

- Live electronic music-making;
- Engage[ment] with technical materiality and tool making;
- Celebration [of] uncertainty through improvisation and algorithmic process;
- Openly shared and community oriented practices

All four of the foregoing practices adhere to the goals of the Post-Digital ethos in their promotion of engagement with technical materiality, and in their inclination towards “working behind the veil of digital media”. Where they differ from Cascone’s conceptualization of exclusively deconstructive practices, they evoke Straino’s implications of an empowered awareness. Rather than an exclusively negative, defeated critique of late capitalism’s employment of mass digital power structures, these expanded characteristics - particularly the latter three - offer an affirmation of the negation proposed by deconstructive techniques from which, then, the possibility of *constructive* practice can emerge. Rather than a vaguely leftist critique of commodity capitalism via excessively specific/incidental aesthetic events, the expanded characteristics describe a constructive Post-Digital “awareness” in their promotion of participatory activity. This description is solidified in the allusion to improvisation and (via algorithmic processes) indeterminacy due to their fundamental association with egalitarianism and anti-hierarchical musical power structures. Instead of implying the “saboteur” archetype,

constructive practices seek to “seize the means of production”, so to speak, as they pertain to music technology; that of which, in this case, is technical knowledge regarding the governing technical principles of digital music technology.

Ferguson and Brown’s conceptualization of the Post-Digital avant-garde crucially lacks reference to descriptive aesthetic content and, therefore, suggest that a wide range of musical activity can be considered to be “Post-Digital”. More than anything, constructive Post-Digital practices can be seen as an ethos of reclamatory knowledge and participatory learning that seeks to dismantle the mass digital society - in all its failures and manipulative functionality - and to replace it with a society predicated on understanding, participation, and technical empowerment. Egalitarian conceptualizations of this nature expand the deconstructive practice’s negative dialectical critique of mass digital society in proposing that, not only are the problematics of late capitalism’s employment of digital media/technology real, but that the “way out” is empowered knowledge and social collaboration. In this, constructive Post-Digitalism echoes the sentiments of the emergent field of Critical Future Studies in its assertion that “the deconstructive project of disrupting and dethroning powerful common-sense assumptions baked into dominant discourses... is not sufficient work” and “must be complemented by a reconstructive turn, seeking out”, and proposing, “visions of the future that may otherwise remain on the margins of public culture” (Goode and Godhe 114). Constructive Post-Digitalism proposes a future of society predicated on exploration, egalitarianism, and the free sharing of knowledge through a specific, concrete set of musical practices. While the specifics of alternate systems of social organization are rarely explicitly stated in the Post-Digital musical practice (or publicly by its practitioners) they are implicit in the practices themselves.

Engagement with technical materiality is a feature of Post-Digitalism that is well explored in its deconstructive practices. Most clearly, this practice (in constructive and deconstructive form) denotes an ethos of reuse and appropriation of pre-existent technology/ideas. Constructive Post-Digitalism takes deconstructive material practices as a point of departure and expands them where they are conceptually incomplete. Coercing technology into unintended functionality is, in constructive practice, no longer viewed as an end in and of itself; rather, such practices are viewed as “a move towards a personalisation of established/pre-existing technological methods and processes” (Ferguson and Brown). This expression of constructive Post-Digitalism offers ontological foundations for a continual practice not, as is the case in deconstructive practice, a solely reactionary one. To evoke Critical Future Studies once again, the “personalization approach” seeks to do more than “dethrone common sense assumptions” about the way music technology should function and, instead, posits that a musician should “edit” their tools in the attempt to formulate an intimate understanding of their materiality and governing principles. This practice is proposed as an ongoing dialogue that seeks to confront the interpretive ambiguity of music technology - that of which is traditionally mediated exclusively by the producer - and to leverage personal discovery as creative inspiration (Ferguson and Brown 128). In some ways, this mentality is present in the “Eurorack Community”, with modular synthesizers being valued for their high level of customizability, and difficulty to define by any one particular format of sonic practice. Whether this is a *true* push for a sense of free personalization or, rather, considering the high median price point of modular technology, an illustration of advanced capitalism’s capacity to “subsume” all cultural activity into profit-based organizational structures, is debatable. In any case, the assumption in all of this

is that interacting with the materiality of technology is empowering, educational, and subversive regarding the standard administrative control that music technology companies *typically* attempt to assert over the possibilities of creativity. The proposal does not stop here.

Constructive Post-Digital practices place far more emphasis on “tool-making” than their deconstructive counterparts do. Though the deconstructive techniques of Post-Digitalism do make use of sonic tool creation as a practice, such engagements are largely limited to software creations designed specifically with the glitch-based aesthetics of failure in mind. Though materially deconstructive practices (circuit bending, CD manipulation, etc.) do qualify as a creation of tools in some sense, they more directly address the previously discussed subversive engagement with technical materiality; that of which is defined by appropriation and reuse. When not bound by specific aesthetic commitments, the constructive creation of sonic tools for music can include a myriad of practices. Outlined by John Ferguson and Andrew Brown, the practice of tool making, as it pertains to Post-Digitalism can include, but is not limited to: custom live coding environments, performance/compositional software designed in Max/MSP or Puredata (or other similar software), and embedded computer (Arduino, Raspberry Pi) based instruments. In all cases, engagements of this nature are implied as “anti-commodification statements” and are meant to subvert “the latent dictations of... throwaway commodity culture” (Ferguson and Brown 129, 134). These practices expand the critiques offered by deconstructive Post-Digital practice by proposing that, while the music technology industry is pervasive in its administered commodity culture, the peripheral benefits of the democratization of technology allow would-be consumers to become much more than creative users. In other words, the capacity of the mass digital society to provide the means one needs to subvert it, by way of the

acquisition of knowledge, is exploited. Rather than intending the deconstruction of technologies created by the mass digital society as a comment regarding its fallibility - and, by extension, the failures of late capitalism - constructive practices extend these criticisms in acknowledging the flaws of both and, instead, proceed by participating in the creation of personal tools with non-universally intended use-values as part of the broader goal of knowledge/awareness.

Regarding both material technical engagement and tool making, fundamentally Post-Digital critiques are being made. Most directly, both, rather obviously, work behind Cascone's proposed veil of digital media. Rather than "suffering on the median of the bell curve of average people who want to do average things" (Cascone "The Failure of Aesthetics"), these practices place individualization/customization of technology in their sights and, in doing so, imply extended economic social critique. The choice to personalize/customize/novelty build the tools of sonic creation offers a critique of "a market that manufactures perceived needs rather than actual needs" (B. Kelly and Farahbakhsh, "Public Sociology and the Democratization of Technology" 43). Where the deconstructive and constructive differ is, again, in *what is to be done* about this condition. Both concur on the problematic fact that the various products of music technology are "definitive object[s] which [are meant to be] consumed in a certain definite manner prescribed in turn by [their] production" (Marx, Production and Consumption 35) but where deconstructive criticism addresses the mass digital condition and coerces its products into unintended aesthetic functionality, constructive criticism proposes alternate conditional formatting predicated on non-commercial, anarchic creation. In this sense, constructive Post-Digitalism more effectively addresses the shortcomings of commodity capitalism, and the technology industry's aptitude for manufacturing "artificial needs" (B. Kelly and Farahbakhsh,

"Public Sociology and the Democratization of Technology", 43), by engaging in a practice that places self-sufficiency and open dialogues of knowledge over blind, uninformed consumerism. Importantly though, constructive inclinations are informed by the "aesthetics of failure", and by their subsequent critiques. The constructive techniques are only valuable, and are not techno-utopian fantasy, because of the dialogues presupposed by deconstructive Post-Digital practice. Constructive techniques (must) fundamentally recognize the unlikely ontological possibility of perfection and the problematic way that late capitalism manipulates the mass digital society, as their value as critical praxis hinges on these dialogues.

The dichotomy between constructive and deconstructive Post-Digital materialism is obscured by the fact that they are not mutually exclusive in terms of practice. The most significant difference between the two lies in the often conflicting dialectic between creative process and aesthetic object. In short, constructive Post-Digital materialism is defined by the former, whereas deconstructive Post-Digital materialism is, as we have seen, excessively committed to the latter. The details of this vagueness is perhaps usefully revealed in consideration of the work of Yasunao Tone. Though Tone is an artist that precedes "Post-Digitalism" by a few generations, his work intersects with the characteristic concepts of both constructive and deconstructive Post-Digital practice in significant way. As a multimedia artist and mainstay in the Japanese wing of the Fluxus movement, Tone's activity began in the 1950s, and has continued well into the digital age. He is most commonly associated with deconstructive CD manipulation - a practice that has resulted in works like his 1991 *Solo for Wounded CD* - but, in recent years, has extended this deconstructive practice to MP3 files and Artificial Intelligence through a process that he calls "deviation" (Sutton 1).

On the most topical/aesthetic level, these practices are *clearly* deconstructive. Much like the practices described by Cascone's conception of deconstruction, Tone is using popular technology in a subversive way that, ultimately, is meant to reveal alternate, non-intentional aesthetic functionality. Aesthetically speaking, the results are well situated within the foregoing discussion of "the aesthetics of failure", being primarily made up of "glitches [and] cracks" via "unstable systems for sound production" (C. Kelly 227). Despite this, a significant constructive narrative is present in the context and processes of Tone's work that ultimately reveals the capacity for deconstruction and construction to exist in a simultaneous, dialectical process. In all cases, Tone's work should be distinctively read through the ethos of creativity proposed by the larger Fluxus movement; that being constituted by the celebration of the everyday (C. Kelly 234) and the dissolution of "high and low" (Tone 342).

Regarding his use of CD manipulation and MP3 "data-bending", Tone's work "doesn't require any special training" to create and, in the utilization of popular technology, is something that anybody could do (Tone 341-342). This offers a clearly positive dialogue that evokes the "empowered awareness" of constructive Post-Digitalism. Rather than allowing producers of popular technology to dictate conditions of use and aesthetic value, Tone's work with CD and MP3 promotes a general ethos of exploration and provides a critique of the concepts of "high art" and proficient musicianship. For Tone, this is specifically done through deconstructive practice but, nevertheless, promotes an ethos well beyond that of viewing glitches as pure hollow-conceptual aesthetic objects. Extending this narrative to Tone's utilization of Artificial Intelligence in his ongoing indeterminate work, "AI Deviations", one can begin to view Tone's post-Cagean Fluxus ideology as a non-truncated critique of the mass digital society. "AI

Deviations” is an indeterminate work that is predicated on a system that utilizes avatars that “are programmed to be self-reflexive, listening to and learning from past performance to essentially become virtual versions of Tone himself, which he can then collaborate with and manipulate in a live setting” (Sutton 2). Artificial intelligence is typically used in the military, in venture capital-style financial investments, as a social media monitoring tool, and by commodity conglomerates like Amazon. In these cases, its utilization directly contributes to a society predicated on uninformed consumption and neo-imperialist manipulation of emergent technology. Tone’s utilization of AI technology in his creative practice is, regardless of the final “glitchy” aesthetics, inherently an expression of constructive Post-Digitalism. In the context of Tone’s egalitarian dialogue of “anyone can do it”, artificial intelligence is broken out of its standard positioning as a function of the mass digital society and into a technology that can serve creative means via crafty manipulation, and as a confrontation with the “veil” of digital commodity capitalism via the constructive dialectic of critical knowledge. That is, rather than leaving the emergent technology of AI to the aforementioned typical avenues, Tone posits, essentially, that anyone can/should use AI for creative practice, if they so choose.

In all cases, Tone’s work utilizes deconstruction as a means for proposing a *larger constructive dialogue*. His work differs significantly from the pure deconstructive “pop”-Post-Digitalism of Oval, for instance, in his ability to offer wider critical ideologies beyond aesthetic fixation on “the glitch”. In as much, Tone’s work accurately addresses our conception of constructive Post-Digital materialism: an ethos unattached to *intentional* aesthetics but, rather, defined by the critical dialogues implicit in the quest for knowledge within mass digital capitalism. Though Tone’s work adheres to “the aesthetics of failure”, the presence of

productive, extra-musical critical dialogues qualify his work as ultimately constructive. In some sense, one may benefit from viewing “construction” as related to what Duchamp calls the “non-retinal” characteristics of a work/text. Though in the sonic arts we may feel inclined to call this the “non-aural” qualities of a work/text- or the “critical” aspect, as G. Douglas Barrett does in *After Sound* - it is nonetheless the method of critique central to a conception of constructive Post-Digital practice. Aesthetics may well be relevant, but the expanded social dialogue - that is, what the work/text (and its relevant processes) suggest beyond the isolated aesthetic object - should be considered as the predominantly “critical” aspect of the ontology.

Moving on from materiality to social organization: in squaring improvisation and algorithmic practice as central to the Post-Digital musical practice, Ferguson and Brown engage deeper musicological/sociocultural dialogues of the 20th century. In doing so, the influential philosophies of improvisation, indeterminacy (algorithmic music’s “parent class”), and algorithmic/computer-based improvisation are brought into the discussion of the “new” Post-Digital musical practice; into what Ferguson and Brown call “the Post-Digital avant-garde”. If the Post-Digital practice *does* include the “celebration [of] uncertainty through improvisation and algorithmic process”, as Ferguson and Brown assert, then many of the dialogues surrounding these practices have the opportunity to enter the realm of critique offered by the Post-Digital musical practice. Worth noting is that while these dialogues may well be a part of the deconstructive Post-Digital practice, they should be thought of as integral to the notion of constructive Post-Digitalism due to their capacity for offering critical proposition beyond isolated critique. The marriage of Post-Digital materialism with the socio-cultural dialogues

offered by the musical methodologies of improvisation, algorithmic practice, and indeterminacy serves to expand the Post-Digital critical practice into a non-truncated propositional dialogue, through further codification of its characterization by *process*, rather than by specific aesthetics.

Improvisation is ubiquitous to all forms of music. Whether imperative to an idiom or not, improvisation is inseparable from any action of humanity. Poetic accounts like “sit, do nothing: this is improvisation” (Toop 1), and “living itself is an improvisation... an oscillation between involuntary behavior, habits, formulaic variation, determined actions, and responsibilities...” (Toop 16), summarize this notion well. When it is imperative to an idiom - in the case of free improvisation and free jazz, for example - improvised music becomes charged with significant social implications. In the most general terms, “improvised musical performance[s] serve to create - in the midst of hierarchical social relations - a utopian space, a genuinely democratic realm full of cooperation, coexistence, and intersubjective change” (Cox and Warner, *Audio Culture* 251-252). The conditions by which this utopian space serves as a utopia is subjective. In the case of free jazz, this dialogue is “inextricably bound up with the politics of race in the United States”, whereas in the case of European free improvisation, this dialogue is more closely aligned with the proposed egalitarianism of “anarchist and Marxist political theory” (Cox and Warner, *Audio Culture* 252). In all cases, improvisation represents, what David Toop calls, “the dream of freedom”. This sense of freedom serves as part of a larger cultural praxis that “tells us: anything is possible - anything can be changed - now” (Rzewski 271). Like the “aesthetics of failure”, improvised music has the capacity to “make us aware that the surface of rationality that covers this reality may only be an illusion” (Rzewski 270). If we consider “this reality” to be constituted by societal conditions defined by the problematics of the mass digital

society/late-stage capitalism, active political implications are revealed. These implications position improvised music “as a kind of abstract laboratory in which experimental forms of communication can be tried without risk...” (Rzewski 271). Through incidental, diffusely organized musical structure, these practices show egalitarianism in action via association with a politically-associated dialectic of intersubjective, collaborative change. Indeterminate strategies and algorithmic music provide similar cultural dialogues.

“Indeterminacy”, as a musical term, generally describes a set of non-dictative compositional strategies that are most commonly associated with John Cage and his protruding web of influence. Succinctly described by Cage as “the ability of a piece to be performed in substantially different ways” (Pritchett 107), strategies for indeterminacy typically include the usage of graphic notation, instruction/notation with non-specific indication of certain musical characteristics (such as pitch, duration, form, etcetera), text/instruction scores, and other related practices. As a derivative practice, “algorithmic music” is music that uses computer algorithms to define sets of operations, or “rules”, for the control/instantiation of sound (McLean and Dean 5). Related is so called “cybernetic music”, a form of algorithmic music “which is no longer “composed” and rehearsed... [but] emergent from the play of interconnected feedback loops that set a process in motion” (Kayn). In all cases, these practices can generally be termed “indeterminate” for the presence of rules/formats that govern a *method* of creating a work but not in a specific, dictative way. In as much, indeterminate strategies represent “a step back from the role of the composer... as a controller of materials... and as a professional with social prestige” (Toop 187). To Cage, such a step is stately non-egotistical; to practitioners of algorithmic/cybernetic music, this step is often representative of a desire to create “beyond

oneself” (Matthews 503). In either case, the critical narrative being offered is significant: to “step back from the role of the composer” is to step back from commonly held assumptions about the nature of authorship and from the traditional role of the composer as “simply someone who tells other people what to do” (Cage, “A Year From Monday” ix). In doing so, a more collaborative - or, as argued by Simon Yiull, *distributive* - approach to musical creativity is proposed. Regarding algorithmic music, collaborative/distributive practices typically take the form of “open source” tools and free publicization of creative code. In any case, all methods of collaborative/distributive creativity have particularly notable implications in the context of ensemble work and in the context of “culture at large”. These implications are relevant in conversation with improvised music.

When involving ensemble work, improvisation/indeterminate musical strategies tend to take an egalitarian/collective form that reflects a “large-scale” dream of freedom. Hierarchical relationships are typically avoided, with practitioners avoiding “instruction or critique of peers” as well as discussion of personal opinions regarding the musicianship of collaborating musicians (Banerji 6). These trends highlight free/indeterminate music’s capacity for encouraging free experimentation outside of standard categorical caches in music. Such a capacity invokes comments made throughout free/indeterminate music, from Ornette Coleman’s insistence for musicians “to be themselves” (Coleman 254) to John Cage’s desire to “let things be themselves” to the Scratch Orchestra’s inclusion of “non-musicians” in embrace of the post-Fluxus “anyone can do it” ethos (Cardew 10). These notions are generally intended as “statements on the utopian ideal of equality in action” (Morris 102), and as a model of how “Goldmanian” anarchy could work in action (Kostelanetz 264). Ultimately, these narratives are definitively *constructive*.

Though they may be deconstructive regarding musical traditionalism, their explicit demonstration of productive, active alternatives to musical creation/hierarchical social relationships are *constructive* regarding narratives in the wider critical cultural lens. In short, it is no longer “easier to imagine the end of the world than the end of capitalism” (Fisher 1) because, albeit on a small scale, a productive confrontational alternative exists. Reiterating the “dream of freedom”, such alternatives achieve the status of “emancipatory politics” for their ability to reveal contingencies within perceived naturalness (Fischer 17) of the hierarchical, ego-driven endeavor that is typically thought to be categorically inseparable from “human nature”.

The relevancy of the dialogues of improvisation and indeterminate practice to the critiques proposed by constructive Post-Digitalism extends well beyond a purely music-related methodological relevance. The observably anti-hierarchical, egalitarian assertions of both pertain to the final “new” qualifying characteristic of Post-Digital practice: “openly shared and community oriented practices”. Ferguson and Brown’s reference to this characteristic as a qualifier of their conception of the “Post-Digital Avant-Garde” completes an ideological transition away from the exclusively negative assertions of deconstructive Post-Digital practice and into the conception of constructive Post-Digitalism.

The formats of egalitarianism, shared power structure, and diffuse creativity that are found in improvised/indeterminate music run in direct parallel to the various implicit ethos of the open source, shared knowledge-based computer music practice. As outlined by Daniel Belgrad in “Improvisation, Democracy, and Feedback”, the social implications offered by improvisation are conceptual precursors to the modern collaborative computer networking creations mediated by wikis and other similar technology (296). This lineage is dually

highlighted by Simon Yuill in his assertion that the diffuse centers of creativity practiced by ensembles like the Scratch Orchestra and the Sun Ra Arkestra are direct ancestors of FLOSS-related (Free/Libre and Open Source Software) computer music practice (3-4). Where the asserted “ancestral practices” are of primary relevance to *musical* methodologies, the incurred computer music practices are relevant to educational methodologies, as well. That is, the choice to adhere to “openly shared and community oriented practices”, as they exist in the shared practices of constructive Post-Digitalism, implies more than just a format for the creation of music and its technologies but, also, a new format for the nature of the protrusion knowledge, in general.

A “wiki” is “a website or database developed collaboratively by a community of users” that allows “any user to add and edit content” (Lexico). Wikipedia is an especially popular example. Online encyclopedias aside, wikis tend to be used in “code-centric” artistic and commercial practice via resources like Github; that of which allows users to freely share, edit, and collaboratively contribute to code that may be used for anything from electronic music to personal finance. So-called “FLOSS”-related practices fall within the larger “wiki” ethos, those being a code based practice in which the primary mode of production is predicated on “the continual re-writing of code” that results in the “presentation of... work as an open-ended mutable” object (Yuill 1). Importantly, this object is made freely available for reproduction and manipulation by others (Yuill 1).

Within the larger computer music practice, SuperCollider is a particularly popular example of a “FLOSS” program. Authored originally by James McCartney in 1996 as “an audio server, programming language, and IDE for sound synthesis and algorithmic composition”

(SuperCollider), SuperCollider is a 100% free and entirely open source musical program. In as much, the program can be downloaded and utilized for free - under the conditions of the GNU General Public License - and its “source code” can be freely downloaded and edited by a community of users. The latter feature has caused the program to be “maintained and developed by an active and enthusiastic community” (SuperCollider). This function importantly allows users to “see how things work under the hood”, and to develop their own features/tools within the program using C++. Such tools are freely shared (through resources like Github), and creators tend to be encouraging regarding the “free use” of the tools that they create. This mindset is present in large portions of the computer programming community - “creative” computer programming included - with “outright stealing” being “an accepted part of programming culture” (Schuette 6). This ethos, implicit in wiki-based creative developments and in “FLOSS”-based musical practices, is echoed in the general “maker movement”; that of which is an extension of the “DIY ethos” that consists of (mostly) non-commercial practitioners of 3-D printing, instrument design, DIY electronics, and general craftspeople who prefer designing and building over blind consumption (Morozov 6). In all cases, these practices are significant for their adherence to the educational and informative bent that is central to the constructive Post-Digital musical critique. Simply put, they reflect “a renewed interest in making with technology, rather than simply using and consuming it” (Ferguson and Brown 136). More than a “rugged-individualist” search for knowledge, this interest seeks to share, inform, and support other current and potential practitioners in their own practices. Significant, constructive political critique is clear in this characteristic of the larger constructive ontology.

Most significantly, an alternate format for the nature of the protrusion knowledge is proposed within the open, free, and supportive formats of intellectual/informational organization that are found in creative computer programming. Proposals of this nature suggest an open format for the protrusion of knowledge/resources that is, undoubtedly, at odds with standard conceptions of “owned knowledge” that are native to modern digital capitalism. Within this condition, the notions of possessive authorship and “pay-to-learn” educational structure are directly confronted. Take, for example, the inclination towards free, open source software found in SuperCollider. Despite the program’s original singular authorship, an ongoingly singular-possessive authorship is subverted entirely in its capacity to be “maintained and developed by an active and enthusiastic community”, as we have recently discussed. Rather than the initial author, James McCartney, exercising an administrative, profit-motivated control over access to the powerful program, it is shared freely, and its governing technical infrastructure is accessible for open, collaborative modification. In comparison to other pieces of creative computer music technology, the implications are significant. The constructive ethos of empowered awareness and participatory activity is implicitly encouraged in programs like SuperCollider (and, also, in environments like Max/MSP, Puredata, Arduino, and others, for those keeping score) in, rather than hiding functionality in pursuit of a material commodity form, its ability to encourage users to learn, support each other, and even productive “struggle”, conceptually speaking, in pursuit of their creative practice.

On many levels, these trends are atypical and, frankly, politically “radical”. Considering the continual rise in cost of access to knowledge and resource(s) - often in the form of for-profit academics, mass digital capital, and excessively “mystified” creative technology - a community

oriented practice like the “open stealing” of creative computer programming implies a vaguely anarcho-Marxist air of egalitarianism. Users are not “charged to learn” but, rather, are able to engage in a community that freely shares knowledge and resources in the form of information, data, and creative code. In turn, the same users are able to freely discover their own perceptions/resources of a creative practice that are then shared, reiterated, and reimagined in a continual, constructive dialectical loop with others. Considering again that the increasingly immaterial objects of knowledge and resource are gated by economic problematics that are recursively engaged with the “the mass digital society”, the constructive dialectic is revealed as one that is subversive and empowering in spite of the deliberate gated confusion imposed by digital late stage capitalism. In other words, evoking James Bridle, the “New Dark Age” of mass digital capitalism can only be meaningfully ended through an egalitarian , inclusive digital practice that values freedom of education/information over “authorship-as-ownership” based profit structures.

The constructive Post-Digital musical ethos seeks to expand the critiques of deconstructive Post-Digitalism beyond purely negative dialectics. In particular, the critique of (digitised) late-stage capitalism is expanded, and meaningful propositions of alternative conditional formats for society are provided within the constructive Post-Digital practice. As we have seen, the constructivist Post-Digital dialectic is reliant upon the dialogues opened by their deconstructive counter-parts and, importantly, extend them beyond the negative, forlorn “dead-ends” of postmodern, Capitalist Realist aesthetics. Perhaps most significantly, constructive practice expands the definition of “Post-Digital” practice into the realm of non-exclusively-aural

critique. Though aural aesthetics are always important in any musical ontology, constructive Post-Digital practice differs from deconstructive practice in its primary definition by its characteristic processes, rather than by its final aesthetic results. The implicit “update” of the Post-Digital ontology lies in its expansion beyond aesthetics into practice, in the educational bent of its engagement with technical materiality, in its inclusion of the egalitarian dialogues of improvisation and indeterminacy, and in its commitment to free/openly shared practice. In all cases, the ontology is newly defined as a critical dialogue that posits egalitarian, educational practice as an explicit and implicit challenge to the “veil” of mass digital capitalism.

Though these are large hopes for an admittedly niche practice, the fact remains: if history has truly returned, then constructivist updates of the deconstructive narratives of the past are necessary for the possibility of a continually relevant critique. Beyond music, constructive critiques must aim towards a better future for all. In as much, constructive dialectics need to remove any inclusion of oppressive egoism, imposition, and domination as a part of all socio-cultural practice. Only then can an ethos of educational egalitarianism be realized to its full potential within the larger format of “society at large”. The constructive Post-Digital musical ontology shows us that this is possible through its provision of a model-format for how these “lofty” concepts can exist in critique of neoliberal capitalism and beyond. The future is coming and, though we undeniably still live within late stage capitalism, alternate dialogues can have a great impact if they are able to provide critique that offers functional, meaningful, and practical alternatives to the status quo. Again, the constructive Post-Digital musical ontology allows us to see that this is possible. Through its practical vision of a society predicated on collectively supported individualism, egalitarianism, total democratisation of productive resources, and belief

in critical educational practice, constructive Post-Digitalism reminds us that there is always an alternative to oppressive digital society, and its cultural foundation, late stage capitalism.

Recognizing this, one must begin by learning and engaging with the newly freely available dialogues and technical principles of mass digital culture in a supportive dialectical process.

Such a process conceptually allows one to subvert, temporarily, the oppressive nature of the mass digital condition and, in doing so, grants the capacity for meaningful constructive critique. If knowledge is power, shared knowledge is revolutionary.

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