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Post-Digital Aesthetics in Contemporary Audiovisual Art

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This paper examines the current tendency to theorize our contemporary times pervaded by digital technologies and media as 'post-digital'. It discusses the different understandings of this term and its relationship to other concepts that not only seek to define a contemporary aesthetics but also the current condition from which it emerges. In order to frame the main traits of a post-digital culture of artistic production, the paper starts by addressing the concept of the post-digital as aesthetics of failure. It then considers the changing conceptions of the term and related artistic approaches that gradually shift their focus on the digital medium's infrastructure towards the broader socio-cultural effects of the ubiquity of computational technologies. According to this view, we highlight how a contemporary post-digital culture of audiovisual production explores two main forms of hybridity pertaining to merging digital and analogue media and conflating digital and physical realms.

1. Introduction

The beginning of the 21st century is marked by a saturation of new digital media technologies that have become part of everyday life, such as portable smart devices, high definition screens, unified networked experiences and technology normalizations that transform human perception and influence models of artistic creation. The term post-digital is often used to describe this environment of "computational abundance whereby our everyday lives and the environment that surrounds us are suffused with digital technologies" (Berry 2014, 22).

However, the term 'post-digital' was first introduced by the composer Kim Cascone to emphasize a novel kind of exploration of glitch as an "aesthetics of failure" emerging in the 1990s. Since then, the concept has shifted from the context of digital music to encompass a broader set of artistic practices that critically address the fact that "the computational has become hegemonic" and it becomes increasingly difficult to encounter "culture outside of digital media" (Berry 2014, 26). In this sense, the term became used to define aesthetic manifestations of the post-digital as a current condition wherein distinctions between digital and analogue media, or being online and offline, become increasingly blurred.

This paper discusses these different understandings of the post-digital in order to frame the main traits of a contemporary post-digital culture of audiovisual production. To this end, it starts by addressing the notion of the post-digital as tied to an aesthetics of failure, glitch and errors, and related artistic methodologies. It then examines how the term post-digital is gradually appropriated and related to other notions that similarly reflect the cultural and aesthetic effects of the pervasiveness of digital technologies. Focusing on cultures of audiovisual production that react to uncritical notions of digitality and resist media technology-based labels, this paper discusses how these practices engage hybridity by merging media and conflating digital and physical realms.

2. An Aesthetics of Failure

When Kim Cascone first used the term post-digital he sought to highlight how the internet facilitated a "new movement in digital music", characterized by a "collection of deconstructive audio and visual techniques that allow artists to work beneath the previously impenetrable veil of digital media". This implied bringing the "background" of media to the fore by defying the normal functions and uses of software (Cascone 2000):

> "The 'post-digital' aesthetic was developed in part as a result of the immersive experience of working in environments suffused with digital technology: computer fans whirring, laser printers churning out documents, the sonification of user-interfaces, and the muffled noise of

> hard drives. But more specifically, it is from the 'failure' of digital technology that this new work has emerged: glitches, bugs, application errors, system crashes, clipping, aliasing, distortion, quantization noise, and even the noise floor of computer sound cards are the raw materials composers seek to incorporate into their music." (Cascone 2000, 12-13)

In the hype of the late 1990s high-tech commercialization and digital technology marketization, computer music artists approached glitches and errors in their compositions with the intent to "reject the idea of a digital revolution as the progress towards perfect representation" (Andrews 2002). The disruption of the idea of 'perfect representation' questions the belief in digital technology as a synonym for technical quality and higher-definition, or in "transparency" and "immediacy" by "ignoring or denying the presence of the medium and the act of mediation" (Bolter & Grusin 2000, 11). Rather, within this culture of audio-visual production artists engaged in revealing and forging glitch artefacts as a critical strategy to expose the materiality of the digital medium. As Cascone explains, this represented a new (post-digital) approach to the creative exploration of glitch in its complex lineage.

2.1. Glitch Art Practices

Acknowledging this complex lineage, we can trace back glitch art to different procedures and processes explored by pioneers of early audiovisual media art. Some works created by artists such as Nam June Paik or Steina and Woody Vasulka explore glitches with analogue electronic media such as audio and video synthesizers and processors of the 1960s and 1970s. These practices are nevertheless informed by earlier physical manipulations of analogue media in experimental music or film from the first half of the 20th century. Considering the diversity of glitch, digital media scholar Iman Moradi categorizes glitches into "Pure Glitch" and "Glitch-alike". The first is described as an "unexpected result of a malfunction" and the latter as "a collection of digital artefacts that resemble visual aspects of real glitches found in their original habitat" (Moradi 2004, 9-10). Instead of subjecting glitch to Moradi's binary categorization, art theorist and visual artist Rosa Menkman describes glitch as follows:

> "[...] a (actual and/or simulated) break from an expected or conventional flow of information or meaning within (digital) communication systems that results in a perceived accident or error. A glitch occurs on the occasion where there is an absence of (expected) functionality, whether understood in a technical or social sense. Therefore, a glitch, as I see it, is not always strictly a result of a technical malfunction." (Menkman 2011, 10)

In this sense, a glitch is both the product of malfunction and artificial creation. Glitch artefacts are produced through signal or process corruption and

by designing dysfunction, often combining different experimental methods that "challenge user experiences with digital media" (Dragona 2016, 192).

According to this idea, creative practices can explore glitch by hacking or experimenting with hardware, data manipulations or even custom software. For example, the practice of circuit bending physically modifies the electronic circuits within the black boxes (the hardware), as seen in the work *Super Mario Clouds* (2002) by the artist Cory Arcangel, or in *The Royal Touch* (2014) by the composer Nicolas Collins. Using feedback systems, audio and/or visual artefacts can be generated through feedback loops, as exemplified in the work *The Collapse of PAL* (2011) by Rosa Menkman. The techniques of databending and datamoshing explore glitch artefacts by manipulating digital data; the former through editing hexadecimal or raw data in a text editor, the latter through compression and its different codecs, as seen in the work *Monster Movie* (2005) by the artist Takeshi Murata.

Likewise, the technique of pixel sorting transforms horizontal or vertical lines of pixels that result in perceivable errors. Data manipulation techniques can be achieved through manual processes or by using scripts or programming. The creation of custom software is also used to produce intentional glitches, such as the online platform *Hydra* (2018) developed for live coding of real-time visuals by the artist Olivia Jack, as well as through hacking and modifying pre-existing software, as in *Untitled Game* (1996-2001) by JODI (artist duo Joan Heemskerk and Dirk Paesmans).

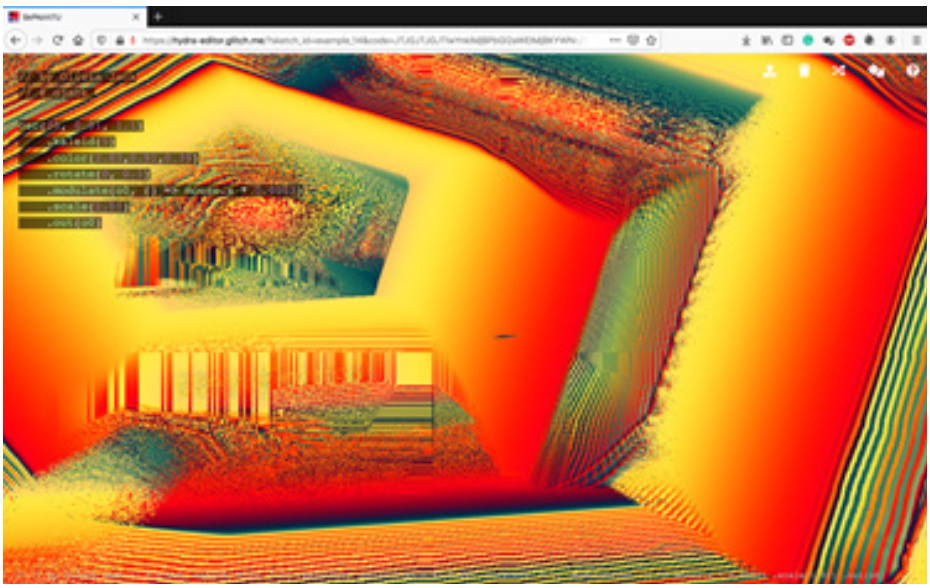

Fig. 1. *Hydra* (2018) by Olivia Jack. Online live coding platform screenshot.

These practices are aligned with a post-digital aesthetics as artistic strategies that ultimately seek to bring to the surface "the digital medium's subsurface" to focus on its infrastructure by routing the "inframedia" layer out into the sensorium, as "a reminder of materiality, a collapsing of representational transparency" (Whitelaw 2004).

2.2. The Critical Role of Glitch

The critical role of Glitch in promoting awareness of the materiality and infrastructure of audiovisual media is also discussed by theorist Michael Betancourt, who argues that it is "not simply an interruption of functional continuity in the media work" (2017, 128). In order for glitch to work as a critical element, the audience has to be able to recognize it as an intended feature of the work, and not as an actual technical failure. The audience has to understand the glitch's role "as disruption — the semiotic role that a specific glitch has in determining the meaning of the work compared with other works" (Betancourt 2017, 160).

This is the case with the "deconstruction of digital files" mentioned by Cascone (2000, 16) which indicates "a formal demonstration of the data-stream" as the "fundamental material for digital art" (Betancourt 2017, 106). In this sense, works such as *Super Mario Clouds* or *Untitled Game* express a desire not only to engage with the digital medium's infrastructure, but also to challenge the user's assumptions of the experience of digital media. Instead of merely formal or stylistic experiments in technological failure, these strategies render apparent the "disembodied technological instrumentalism of the digital" otherwise eluded by "illusions of perfection, transparency and immediacy" (Betancourt 2017, 162).

Without this semiotic function, there is no critical rupture. However, glitch has become a trivial formal aesthetic that can be easily achieved through software presets, which remediate it as a common sound and/or visual effect. This trivialization of glitch *effects* as mere appearance neutralizes the role of glitch in bringing to the surface and interface level the constraints and limitations of the experience of digital media. Through their deconstruction and repurposing, the perceivable glitch artefacts signify indexically the invisible layers of computational processes that are usually hidden inside the black box.

2.3. Beyond Digitality

The concept of the post-digital then reflects a critical engagement with media technologies, by defying their normal functions and use and exposing their infrastructure and materiality. However, "the very computational materiality of today's visual media is hidden beneath layers of user-friendly software, hardware, networks, cloud-based processing and storage services" (Mirocha 2015, 58). This is to say that the materiality of today's digital media devices, permanently connected to communication networks and the internet, is not reducible to, or exposed through, glitches. Therefore, a "glitch does not reveal the true functionality of the computer, it shows the ghostly conventionality of the forms by which digital spaces are organized" (Goriunova & Shulgin 2008, 114).

The materiality of digital and computational media is likewise "not reducible to the screen, not to software, and not even to hardware. It is a massively distributed reality that in turn conditions our perceptual realities" (Bishop et al. 2016, 13). Therefore, the conception of the post-digital as an aesthetic reaction to a narrative of digital progress already suggests the loss of significance of the digital as a disruptive or comparative attribute, at a moment when digitality and computation become enmeshed in our daily lives.

Consequently, the term post-digital has been gradually appropriated to address the contemporary context of widespread computational media where digital technologies have become banal. It is now used to encompass the complexity of the different "modulations of the digital or different intensities of the computational" that bypass distinctions between digital and non-digital (Berry 2014, 26).

The term is then reframed to describe a post-digital condition and also to cover a broader set of aesthetic manifestations that critically address current contexts where "the computational has become hegemonic" and there is nearly no "culture outside of digital media"(Berry 2014, 26). The post-digital then involves artistic methods, techniques and practices that go beyond an aesthetics of failure to express new hybrid digital and non-digital forms that seek "to make tangible the ever-elusive relationships between technology, society, and culture" and try to raise awareness of "the material complexities of digital culture beyond the clichés of zeros and ones" (Bishop et al. 2016, 13–16).

3. Post-Digital, Post-Internet and New Aesthetic

According to scholars Berry and Dieter, our current life in computational societies inspires the search for new concepts, such as 'Post-internet' and 'New Aesthetic', which are devised to describe artistic approaches that critically engage the effects of a contemporary life suffused with digital computational technologies. These notions are associated with the post-digital, as "attempts to grapple with the immersive and disorientating experiences of computational infrastructures as they scale up and intensify (Berry & Dieter 2015, 4). They emerge to highlight that "as ubiquitous computational infrastructures radiate data, they encourage tacit modes of knowing and the iteration of habit", therefore, directing us "towards a passive trust in widely delegated, yet obfuscated, actions" which "may undermine structures of reflection and critique" (Berry & Dieter 2015, 5).

3.1. Post-Digital and Post-Internet

The term post-internet was first coined by artist Marisa Olson around 2008, referring to "works that engage with digital networking through hybrid, often offline, manifestations" (Berry & Dieter 2015, 5). As Olson explains, "the notion of the postinternet encapsulates and transports network conditions

and their critical awareness as such, even so far as to transcend the internet" (Olson 2011, 61). The term was rapidly accompanied by other notions seeking to reflect on what internet art has become, such as art *after* the internet, *aware* of or *engaged* with the internet. In their shifting interpretations, they end up emphasizing a conceptual break with previous artistic engagements with the internet as a medium to highlight the broader cultural effects of its pervasiveness.

> "After the dot.com bubble and with the arrival of the Web 2.0, the internet started to be perceived less as a medium and more as a key part of our daily lives; less as a utopia to construct together, and more as a dystopia we are all part of, but that still provides interesting opportunities for networking and community making, and an unprecedented tool for "surfing" reality and getting a better understanding of it." (Quaranta 2015)

Thus, the disenchantment evoked by post-digital aesthetics echoes the post-internet, as an expression of a "shift from an earlier moment driven by an almost obsessive fascination and enthusiasm with new media to a broader set of affectations that now includes unease, fatigue, boredom and disillusionment" (Berry & Dieter 2015, 5).

These different labels underline how the present moment is shaped by digital technologies and, in particular, the internet as a given; "less a novelty and more a banality" (McHugh in Olson 2011). The increasing dilution of online and offline time brought about by the spread of mobile technologies also contributes to the notion that all culture is reconfigured by the internet. As such, these labels are also transferred from art to culture at large. As critic Michael Connor explains, "it no longer makes sense for artists to attempt to come to terms with 'internet culture', because now 'internet culture' is increasingly just 'culture'" (Connor 2014). The term post-internet then points to a particular symptom of the post-digital condition, or as scholar Katja Kwastek argues:

> "[...] the notion of the post-digital is used to acknowledge that, today, digital technology is deeply embedded in 'everyday life'. It serves to emphasize that 'the digital' is not as definite as we might assume: that it is no 'virtual reality' distinct from our everyday world, but a constitutive part of it." (Kwastek 2015, 79)

3.2. Post-Digital and New Aesthetic

Another notion that relates to the effects of the increasing ubiquity of digital technology on culture is the New Aesthetic term coined by artist James Bridle in 2011 as an attempt to contextualize the visible influence of computation and the internet in everyday life. It refers to "situations where imageries and structures that are usually associated with the digital networked computer

are superimposed on—or leak out into—the physical world" (Andersen & Pold 2015, 271).

Scholars Andersen and Pold note that the 'new' in New Aesthetic "carries traces of a historical compulsion to define digital media as new [...]. 'New media' was a catchphrase during the 1990s and early 2000s alluding to the convergence of computational and audio-visual media in multimedia computers" (Andersen & Pold 2015, 275), where the word 'new' stands for 'better'. Adding to this connotation of newness, Kwastek argues that while "postness insinuates some kind of reflective distance and disenchantment, newness implies a considerable amount of fascination, or, at least, wonder" (Kwastek 2015, 79-80). Andersen and Pold also suggest how the notion of the New Aesthetic must go beyond observable effects or the sensory domain by focusing on the underlying technological structure in order to "point to how the technologies themselves are also cultural constructs" (Andersen & Pold 2015, 277). This means that for a New Aesthetic to be significant it has to attempt to reveal how cultural constructs of technologies propagate former ideologies, power relations and cultural biases.

Post-internet art and New Aesthetic are thus related concepts in that both attempt to reflect how digital technology becomes embedded within the physical world. Nonetheless, post-internet art gives emphasis to the internet as the particular medium of influence on material instances or objects in the physical world. In other words, the term post-internet can be seen as a product of the present as "inherently informed by [...] the collapse of physical space in networked culture, and the infinite reproducibility and mutability of digital materials" (Vierkant 2010). The new aesthetic, in turn, scratches the surface of digital technology but, as Kwastek argues, it is "ultimately no more and no less than a post-digital aesthetics" highlighting the merging of digital and material realms while emphasizing "its perceivable effects" (Kwastek 2015, 79).

In sum, these terms underline how our perception and experience of reality is shaped by the ubiquity of digital technologies, or in particular the internet, as an indicator of a broader condition characterized by the inevitability of computational technologies and the need for a critical stance toward this phenomenon:

> "'post-digital' art, design and media—whether or not they should technically be considered post-digital—challenge [...] uncritical notions of digitality, thus making up for what often amounts to a lack of scrutiny among 'digital media' critics and scholars" (Cramer 2014, 20).

4. Towards Hybridity

The uncritical notions of digitality that scholar Florian Cramer describes evoke the loss of fascination or "disenchantment with digital information systems and media gadgets" that shifts from a "niche phenomenon" to a

"mainstream position" (Cramer 2014, 12-13). Consequently, the post-digital defines "a condition in which digital disruption is not transcended as such, but becomes routine or business as usual" (Berry & Dieter 2015, 5). The post-digital is best understood not as the *end of* or *after* the digital, but as the continuation of the digital in its "subtle cultural shifts and ongoing mutations [...] after the initial upheaval caused by the computerization and global digital networking of communication technical infrastructures, markets and geopolitics" (Cramer 2014, 13).

Artistic practices associated with the post-digital label not only reject techno-positivist innovation narratives but also try to bypass media based labels. They do so by shifting their creative focus on the digital medium's infrastructure towards the forging of hybrid media forms that are not easily classifiable as analogue or digital and that merge digital and material realms. As such, a post-digital art practice often draws on artistic methodologies guided by principles of deconstruction, hacking or subversion of media technologies to unveil their inherent mechanisms and processes:

> "It tends to focus on the experiential rather than the conceptual. It looks for DIY agency outside totalitarian innovation ideology, and for networking off big data capitalism. At the same time, it already has become commercialized." (Andersen, Cox & Papadopoulos 2014, 5)

4.1. DIY Practices, Neo-Analogue and Digital Maker

The digital maker and neo-analogue media practitioner are part of "one and the same post-digital culture" (Cramer 2012), which reinforces DIY practice as a "hacker attitude of taking systems apart and using them in ways which subvert the original intention of the design" (Cramer 2014, 18).

The digital making and hacking cultures of artistic production can be seen as alternatives to, and resistance against, the corporate state of digital technology, where software, hardware and the internet are controlled by a few corporations that subject their users to passive consumption. These cultures defy a conception of the user as largely "unaware of the computer as a system that is programmed, that can be reprogrammed at any moment, and that could potentially be programmed or reprogrammed by its users" (Lialina 2016, 137).

Adding to the do-it-yourself attitude, neo-analogue practices also explore analogue media devices and offline manifestations in a reaction to structures of control and online surveillance. But, as Cramer argues, rather than mere nostalgic revivalism of older media technologies, they become meaningfully post-digital when they "functionally repurpose them in relation to digital media technologies" (Cramer 2014, 18). In this way, neo-analogue practices result in digital analogue media hybrids, while the digital maker and hacker practices approach audiovisual creative production through digital-physical combinations.

4.2. Beyond the Screen

This kind of merging of digital and material realms can also be related to the need of "developing ways to see beyond the screen", as theorist Josephine Bosma proposes. She argues that "'hidden structures, like network technologies, code and software processes" are the basis of media arts, which go largely beyond "a straightforward, retinal view" by questioning "boundaries between technological and socio-cultural domains" or how technological concepts penetrate life and culture (Bosma 2014, 109-113). Accordingly, theorist Mel Alexenberg suggests to move away from a single-point perspective in order "to explore post-digital perspectives emerging from creative encounters between art, science, technology, and human consciousness" and also question the divide between making and displaying art through collaboration, participation and interaction (Alexenberg 2011, 9).

Therefore, the audiovisual media hybrids and digital-physical combinations resulting from DIY practices, neo-analogue and digital maker cultures seem to emphasize how the post-digital condition is one, where "computation becomes experiential, spatial and materialized in its implementation, embedded within the environment and embodied" (Berry & Dieter 2015, 3), thus palpable and manipulable in various ways.

We can see how these forms of media hybridization are reflected, for example, in the audiovisual installation *Illuminations* (2013) by the artist Vibeke Sorensen, where projections of abstract visuals and sound are generated by the interaction with the audience and plants, both becoming actors in the creation of the audiovisual environment. Similarly, the networked installation *Biotricity* (2012) by the artists Rasa Smite and Raitis Smits, created in collaboration with the artist Voldemars Johansons, presents a real time visualisation and sonification of bacteria by means of a bacteria battery that stands on a table in front of a screen where the video presents images of bacteria and is manipulated live by the sound. Additionally, the audiovisual performance *Data.Nature.Anagenesis* (2016–18) by Hyungjoong Kim, seeks to deconstruct the single-point perspective of the screen by combining lights that are wearable through a self-made jacket as well as a number of strobe lights that act as part of the performance.

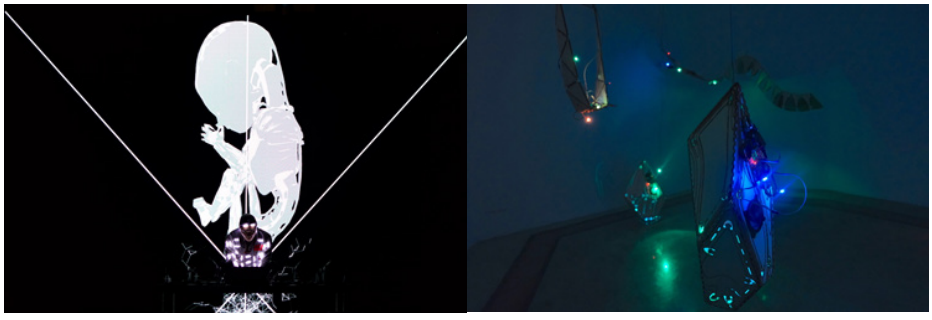

Fig. 2. *Data.Nature.Anagenesis* (2016-18) by Hyungjoong Kim. Audiovisual Performance at TADAEX, Tehran, Iran (2018).

Fig. 3. *UTopologies* (2017-20) by S4NTP (Society For Nontrivial Pursuits). Audiovisual Installation at Distopya Sound Art Festival, Istanbul, Turkey (2019).

The project *UTopologies* (2017–20) created by the collective S4NTP (Society For Nontrivial Pursuits, the group around Alberto de Campo and Hannes Hoelzl), presents different audiovisual machines installed and networked around the space. They generate audiovisual patterns autonomously, communicate with each other, capture live sound and are open to human participation through live coding.

These works explore media combinations that break the single perspective or display while involving multiple interactions with the environment and audience as constitutive parts of the work. As such, they devise digital-physical hybridizations that are not reducible to the digital computational realm and its code poetics or digitality. Rather, their poetics is influenced by both human and non-human agents while merging digital and physical realms.

5. On Post-Digital Aesthetics

In order to conclude on these aesthetic manifestations of the post-digital condition, it is useful to address different perspectives on aesthetics in the sense that aesthetics does not refer to the artefact as artistic production but to its subjective experience. Accordingly, scholar Lotte Philipsen argues that the "tendency to understand aesthetics in a technologically pre-fixed manner" projects aesthetics onto the technical qualities of the work and tends to subject "aesthetic experience to technology or equating it with poetics", but it is important to acknowledge that this is a matter of poetics (Philipsen 2014, 124–125). Philipsen then contrasts digital and post-digital "perspectives on aesthetics", meaning that a "digital perspective's notion of aesthetics" points to "an overall techno-essentialist character", while a "post-digital perspective [on aesthetics] takes a post-technological and post-media point of departure" (Philipsen 2014, 127).

This point of departure is reflected in the artistic methodologies that blur established dichotomies between old and new media, online and offline, digital and physical realms, drawing on the deconstruction, hacking or repurposing of media technologies to unveil their inherent mechanisms and processes as well as the social-cultural effects of their pervasiveness. In this manner, DIY practices, neo-analogue and digital maker cultures tend to challenge common assumptions about media technologies and "disrupt and challenge user experiences with digital media" (Dragona 2016, 186). To this end, they explore the hybridization of digital and analogue media or forge digital-physical combinations that are not reducible to digitality but embody the computational and make it tangible "and operable through a number of entry-points, surfaces and veneers" of interaction and participation (Berry & Dieter 2015, 3).

This paper sought to highlight how these practices explore two main strands of hybridization in their poetics and resulting post-digital aesthetics. One that engages the post-digital condition by rejecting the "new" through

the functional repurposing of analogue media with digital computational technologies, according to a move from fascination towards disenchantment. The other is a form of hybridization explored by hacking and making cultures of artistic production that deconstruct and subvert media technologies, their hidden structures and processes, exploring new modes of materiality that blend the digital with the non-digital as part of the same reality. Often breaking with the single-point perspective of the display, these making cultures also react to institutionalized modes of artistic production and reception, though collaboration, participation and interaction.

In this sense, these cultures of audiovisual production also relate to what scholar Matt Ratto calls 'critical making', as a methodology that explores the intersection between digital technologies and the human, and between online and offline modes of production (Ratto 2011). In this manner, digital-physical hybrids emphasize "critique and expression rather than technical sophistication and function" (Ratto 2011, 253).

Post-digital aesthetics then reflects "the digital and non-digital, finding characteristics of one within the other, deliberately mixing up processes of making things discrete, calculable, indexed and automated in unorthodox ways" (Berry & Dieter, 2015, p. 6). This subversive attitude denotes a critical engagement with digital computational media as a key part of our daily lives; as "a cultural reference, and an environment, rather than a medium" (Quaranta 2015).

Accordingly, post-digital aesthetics expresses a post-technological and post-media artistic approach that can be related to what scholar Alexander Galloway generalizes as artists working "'on' the digital or 'within' it", according to a modern and to a post-modern or non-modern approach. This means that while "in the former, one's attention is directed from the outside in, taking the medium itself as its object, the latter takes the perspective of the medium itself, radiating attention outward to other contexts and environments" (Galloway, 2016). Through a set of artistic methodologies that critically engage media technologies as an act of resistance, post-digital aesthetics then moves between the digital medium's infrastructure and the cultural and social effects of its pervasiveness in everyday life.

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