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Settle for Nothing: Materializing the Digital

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Abstract
This article explores the behaviour of subatomic particles in order to reconceptualize the presumed non-being or 'nothingness' of the digital. Drawing attention to the imperceptible yet creative forces at play in the subatomic universe inside electronic circuits, it advocates an appreciation of non-organic life forms as well as the more-than-human forces that constitute matter or – to be more precise – the process of materialization.

Keywords
digital media, nothingness, materialization, affect

Conformarse con la nada: la materialización de lo digital

Resumen
Este artículo explora el comportamiento de las partículas subatómicas con el objetivo de reconceptualizar el supuesto no-ser o la «nada» de lo digital. A partir de las fuerzas imperceptibles pero creativas que están en juego en el universo subatómico de los circuitos electrónicos, se reconocen las formas de vida no orgánicas, así como las fuerzas más que humanas que componen la materia o, para ser más exactos, el proceso de materialización.

Palabras clave
medios digitales, nada, materialización, afecto

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'Nothing beats the real thing'. A Dutch curator, working at the Rijksmuseum in Amsterdam, needed only five words to express a commonly felt attitude toward the digitization of museum collections. The catchy statement was included in the news coverage of the launch of Google Art Project in the beginning of 2011, which was believed to herald dramatic changes in experiencing works of art online. While also granting the benefits of the ambitious project, such as the highly detailed close-ups of thousands of paintings by celebrated artists, the curator repeated a well-known argument against the presentation of art in digital environments. In point of fact, the disputed authenticity or 'realness' of the digital has always been central to both public and scholarly understandings of new media. Although it might be true that the extreme close-ups in Google Art Project allow for a technologically enhanced view that trumps the naked eye, critics mainly echoed traditionalist opinions by claiming that digitization never succeeds in grasping texture, scale, heft and other "crucial bits of art" (Januszcak, 2011). Google's application for the online presentation of museum collections thus once again incited the well-worn discussion about originality and authenticity that haunts the history of both digitized and born digital art. At the core of the argument lies the assumption that physical objects are dematerialized and reduced to a series of mere bits without colour, size, weight or smell, thereby abandoning all references to a tangible and therefore 'real' reality.

Materiality is evidently considered indispensable in view of the meaning, the value and the functioning of art, but the process of digitization has nonetheless contributed to an understanding of art as 'pure information' that is codified in a unified format and processed through algorithms. Whereas information generally needs a physical carrier for storage, transfer and distribution, the apparent lack of substance well explains the troublesome relationship between digital art and mainstream institutions. Domenico Quaranta even speaks of a digital divide, which largely arises from the fact that many organizations in the mainly object-oriented art world have yet failed to tackle the challenges that the ever-changing and ephemeral nature of the digital poses on conventional notions of production, distribution, presentation and conservation (Quaranta, 2010). After all, managing a collection of intangibles differs considerably from the preservation of precious artefacts, while "the need to turn on, boot up and log in" is both physically and conceptually far removed from "browsing in quiet galleries or navigating vast museum collections" (Greene 2004, pp. 12-13). However, writing about intangibles as a form of capital and a key resource within the value chain of the information economy, Verna Allee emphasizes that "the value of any intangible asset comes from its interplay with other assets, both physical and intangible" (Allee 2003, p. 154). The tendency to consider them as separate or unrelated entities is actually based on a false opposition and therefore pointless.

Thinking through the intimate relationship between the physical and the immaterial in connection with the digital, I will further explore the presumed nothingness or non-being of digital art in order to move beyond the long-standing and hackneyed clichés concerning digitization. My starting point is – perhaps paradoxically – the seemingly mundane observation that intangibles behave differently from material objects. They are typically conceived to be dynamic rather that static, which is tantamount to the equally common distinction between bits and atoms. However, as Nicholas Negroponte famously claims in a best-selling book on the history and the future of digital technologies, "bits and atoms are often confused" (Negroponte 1996, p. 15). A closer look at the primary units of information and the smallest elements of matter is therefore helpful to broaden the view on materiality in the context of digital art.

Usually defined as the basic particles that ultimately constitute material objects, the idea of atoms suggests the existence of pure substance. Moreover, being closely entwined with a conception of chemical elements that are discrete, measurable and uniquely identifiable due to a characteristic and invariable set of properties, the notion of atoms refers to an understanding of matter that seems "to provide the solid foundation of existence and to offer itself to an unambiguous ontology" (Coole, Frost 2010, p. 7). The physical objects in a museum collection are likewise expected to be perfectly controllable, because they behave predictably according to the specific properties of the used materials as well as the environmental conditions inside the gallery space. Additionally, as a result of the classical image of matter as being inanimate and having no inherent power of action, a work of art is basically comprehended as a piece of material that is deliberately chosen and worked by the artist. Conservation strategies are consequently directed at maintaining the original materials or constituent parts of an artwork, since they are thought to "hold within them evidence that causally links the object back to the hand of the author" (Laurenson, 2006). The process of digitization, on the other hand, entails a shift from the preservation of matter to the electronic transfer of information that is composed of bits instead of atoms. The outcome of a quick search on the Internet demonstrates that a bit is generally understood as

> a variable or computed quantity that can have only two possible values. These two values are often interpreted as binary digits and usually denoted by the numbers 0 and 1. […] The correspondence between these values and the physical states of the underlying device is a matter of convention.[1]

Bits are, in other words, predominantly symbols, hypothetical objects or mathematical representations of a physical quantity rather than actual pieces of matter. As such, they are indicative of the commonly

1. 'Bit', from *Wikipedia, the free encyclopedia,* http://en.wikipedia.org/wiki/Bit.

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held image of the digital as "the void of the immaterial" (Lovejoy, 2004, p. 73). Even a single bit is nonetheless associated with real-world parameters, such as waves in the time-varying flow of electric current through copper wires and bundles of optical fibre. Furthermore, on a subatomic level, changes in the value of a bit refer to differences in energy that result from the exchange of photons between electrons in the circuit of a computer. The photon is a so-called 'carrier particle' that transmits the force of electromagnetism, which – like gravity – is a fundamental force of nature (Barrow, 2001, p. 227). Although electrons are supposed to be attracted towards each other by the ineluctable pull of gravity, the electromagnetic force is stronger and causes the negatively charged particles to be repelled and driven away. The combined movements of attraction and repulsion that occur on the level of photons and electrons create a choreography for "the tiny dance of subatomic particles" (Marks, 2002, p. 174). Moreover, if electrons move closely past each other, they induce small fluctuations of energy in the vacuum of space, which spontaneously turn into new electrons and 'antiparticles' of the electron (Close 2009, p. 107). Seemingly an immeasurable void of empty nothingness, the vacuum is *de facto* a sea of fluctuating energy that is alive and teeming with pairs of virtual particles that oscillate into existence before – almost simultaneously – disappearing again (Al-Khalili, 2011). Thus, from the perspective of the natural sciences and perhaps contrary to metaphysical intuitions, matter is energy that has become solid or stable.

The peculiar behaviour of subatomic particles, which also determines the properties of chemical elements, has been further explained with quantum field theory, but a journey deeper into the territory of physics leads too far away from the inquiry into the nothingness of the digital. The provisional and highly tentative exploration of the difference between atoms and bits has nevertheless yielded a wider perspective on the materiality of digital art. Reconfigured as the distinction between force and matter, the perceived dichotomy between the digital and the non-digital points to a shift from an object-oriented view of art towards a framework of dynamic forces, complex interactions and the instantaneous transfer of energy. In addition, by following "the various electronic pathways through cathode ray tubes, silicon chips, copper cables, optical fibres and other media" straight back into the perceptible world of art, the behaviour of binary digits and elementary particles serves as a provocation to rethink the supposed permanence of matter as well as the one-sided focus of museums on preventive conservation rather than also allowing for the transience or transformation of physical objects (Marks, 2002, p. 163). At the same time, however, art history and cultural theory are traditionally characterized by "the desire to protect a theology of transcendence" (Connolly 2011, p. 17). Only studying materiality on a very general or abstract level, the discourse of art theory is even said to be governed by anxiety for matter and substance, which are primarily "assigned to making, to the realm of art production" and consequently "set safely apart from historical, theoretical and critical accounts" (Elkins, 2008). The materiality of concrete objects is, in other words, no less disregarded than the materiality of the digital. The challenge is therefore to counterbalance the concept of transcendence that has permeated both theories of art and the discourse surrounding digitization.

The first step in doing so is to revisit to the assumption that the realm of the digital is abstract, immaterial and essentially unreal. After all, the short excursion to the field of the natural sciences has drawn attention to the fact that the subatomic universe inside electron circuits is literally crawling with non-organic life, such as photons and electrons, which exhibit "sensations, perceptions, movements, stratagems, and patterns of organization that work much beyond the confines of the human world" (Parikka 2010, p. ix). Constantly moving, interacting and mingling in a concerted relationship with the more-than-human forces of nature, the elementary particles display a non-human form of agency that simply discords with the belief that matter is essentially lifeless, inert and merely "a vehicle of aesthetic expression" (Coole, 2010, p. 92). Artistic practice in the digital age does therefore not simply correspond with a set of techniques for working specific materials, but is all the more an enterprise of co-creation and working together with matter that is active, self-organizing and no less productive. Refusing to generate solely useful and efficient outcomes, the partial transfer of control to non-human actors further contributes to "an understanding of production that is no longer dependent on a humanist notion of intentional agency" (Broeckmann, 1997).

Attributing a sense of agency and autonomy to electrons obviously also involves the acknowledgement of spontaneity, randomness and contingency, since the little particles might perhaps "never be fully tamed by the electronic circuits that herd them around" (Marks, 2002, p. 180). Often resulting in fatal errors, sudden crashes or the complete breakdown of computer systems, the mischievous and unpredictable behaviour of electrons is just as much appreciated for creating aesthetically beautiful effects. The uncontrollability of internal processes does, in other words, not necessarily amount to the disruption or destruction into total disorder. The idea of chaos is actually more applicable to the space of nothingness and the sense of immateriality that have come to dominate the general discussion about digitization. After all, in the etymological sense of the word, chaos refers to both a yawning abyss and a formless void of primeval matter. In ancient mythology, it is "the abstract concept of the primordial shapelessness before creation" (Auerbach *et al.*, 1999, p. 184). Containing an infinite potential for the coming-into-being of new objects through "vibratory oscillations [and] the whirling, unpredictable movement of forces", chaos is also the realm of pure virtuality (Grosz, 2008, p. 5). Matter is actualized and given consistency by tapping into the swirling flows of energy and thereby slowing down the continuous process of emergence and instantaneous disappearance to "a temporary halt, an aggregate […] or frozen moment" (O'Sullivan 2006, p. 24). The ontological status

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of the digital is consequently less a question of being in time and space than a process of chaosmosis or being-as-becoming through the materialization of energy and information. More importantly, as opposed to being governed by a transcendent teleology, every step in the process is unfolded from chaos and therefore evidently immanent.

Seeing that both energy and information are always on the move in a process of transference between objects, a singular entity is neither finite nor complete in itself, but rather "a play of forces, a surface of intensities, […] a transformer and a relay point for the flow of energies" (Braidotti, 2002, p. 21). Moreover, being drawn toward each other in movements of attraction and repulsion that are linked with the fundamental forces of nature, objects display the ability to engage in a mutually transformative encounter with other objects. Synonymous with an encounter's potential for alteration is the notion of affect, which is a gradient of an object's immanent capacity "to act and be acted upon" as well as "the passage (and the duration of passage) of forces and intensities" (Seighworth, Gregg, 2010, p. 1). Not unlike the forces of gravity and electromagnetism, affect is precisely found in the conveyance of intensities and sensations between objects, carrying momentum and moving them to change. Additionally, in the context of art, affect is the immanently actualized transformation of matter into sensation. Although partly residing within the material before being released by the power of affect, sensation is actually capable of sustaining without the need for a material support:

> Even if the material lasts for only a few seconds it will give sensation the power to exist and be preserved in itself […]. Sensation is not realized in the material without the material passing completely into the sensation. All the material becomes expressive (Deleuze, Guattari, 1994, pp. 166-167).

It follows that the impact of art is not so much produced by the physical manifestation of the work itself as by the creation of sensations that extricate themselves from the material object so as to circulate and resonate between bodies.

To a large extent operating independently from matter, the concepts of affect and sensation are pivotal in opposing the programmed aversion to the digitization of the arts, which clearly stems from a firm belief in "the 'real' material world of solid, bounded objects that occupy space" (Coole, Frost 2010, pp. 7-8). They not only bridge the gap between the presumed sustainability of matter and the perceived transience of the digital, but they also emphasize the non-human or more-than-human character of art by going beyond acquainted parameters, such as the artist's intention, the primacy of materiality and the related concern for preserving an artwork's original and authentic state. Above all, they contribute to rethinking both digital and non-digital objects as fluxes and refluxes of materialization.

Returning to Google Art Project, which was applauded for providing "the closest possible view at ultra-high resolution of the workings of an artist's hand" and thereby creating awareness of "the incredible skill and dexterity of artists", I would like to suggest that the project rather advocates the appreciation of the imperceptible yet creative forces at play in both the subatomic universe of electronic circuits and the determinate materiality of the gallery space (Serota, 2011). Furthermore, in response to the supposed non-being of the digital and the averseness to stepping off into the void of the immaterial, I conclude with rephrasing the commentary on the launch of Google Art Project: nothing simply *is* the real thing.

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