From Immateriality to Neomateriality: 
Art and the Conditions of Digital Materiality

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Abstract
This paper explores the evolution of materialities in the context of art and digital technologies and proposes “neomateriality” as a current condition of material and objecthood. It traces the evolution from dematerialization and the immaterial to hypermateriality and neomateriality as a term capturing various disruptions that introduce new aesthetic paradigms. The concept of neomateriality strives to describe an objecthood that incorporates networked digital technologies, and embeds, processes, and reflects back the data of humans and the environment, or reveals its own coded materiality and the way in which digital processes see our world.

Keywords
digital objecthood, immateriality, hypermateriality, neomateriality, post-digital, post-Internet, new aesthetics, coded material

Introduction
The materiality of the digital has been transformed as technologies developed over the past decades. Digital and networked art has commonly been classified as immaterial, an understanding that builds on the dematerialization of the art object in the art of the 1960s and 70s (in Conceptual art, happenings, Fluxus etc.) and emphasizes the coded, software components of the digital medium. In the past decade, in particular, discourse surrounding digital art has returned to the material realm. The terms post-digital and post-Internet art attempt to describe a condition of artworks and “objects” that are conceptually and physically shaped by the Internet and digital processes – taking their language for granted – yet manifest in the material form of objects such as paintings, sculptures, or photographs.

The condition described by the “post-” label is a new, important one: a post-medium condition in which media in their originally defined format (e.g. video as a linear electronic image) cease to exist and new forms of materiality emerge. However, the label itself is problematic in that it suggests a temporal condition while we are by no means after the Internet or the digital. Internet art and digital art, like good old-fashioned painting, are not obsolete and will continue to thrive. Nevertheless, post-digital and post-Internet represent a condition of our time and form of artistic practice and are closely related to the notion of a “New Aesthetic,” a concept originally outlined by James Bridle's at SXSW and on his Tumblr. The New Aesthetic, in particular, captures the process of seeing like and being seen through digital devices. The post-digital and New Aesthetic provide us with a blurry picture or perhaps the equivalent of a “poor image” as Hito Steyerl would understand it, a “copy put it. [1] The concept of neomateriality is proposed here to describe an objecthood that incorporates networked digital technologies, and embeds, processes, and reflects back the data of humans and the environment, or reveals its own coded materiality and the way in which digital processes see our world. Neomateriality is understood as different from the theories of neomaterialism that emerged in the 1930s and investigated relationships between human activities and the productive capacity of the environment in the concept of anthropology and evolution. Artworks by Clement Valla, Sterling Crispin, and Ashley Zelinskie are used as examples that reflect or become a residue of the concept of neomateriality.

Post-Digital and The New Aesthetic
As digital technologies have “infiltrated” almost all aspects of art making, many artists, curators, and theorists have pronounced an age of the “post-digital” and “post-Internet” that finds its artistic expression in works both deeply informed by digital technologies and networks, yet crossing boundaries between media in their final form. The terms attempt to describe a condition of artworks and “objects” that are conceptually and physically shaped by the Internet and digital processes – taking their language for granted – yet manifest in the material form of objects such as paintings, sculptures, or photographs.

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in motion” with substandard resolution, a “ghost of an image” and “a visual idea in its very becoming,” yet an image that is of value because it is all about “its own real conditions of existence.” [3] Whether one believes in the theoretical and art-historical value of the post-digital, post-Internet, and New Aesthetic concepts or not, their rapid spread throughout art networks testifies to a need for terminologies that capture a certain condition of cultural and artistic practice in the early 21st century.

From Immateriality to Neomateriality

The era of the post-digital and New Aesthetic marks a new stage in the relationship between digital technologies and materiality. In the late 1960s and early 70s, Lucy Lippard theorized the dematerialization of the art object. [4] While Lippard did not explicitly talk about digital art, the art forms she examines – such as Fluxus and happenings – are today considered part of the lineage of digital art and emerged in a cultural climate that was infused by cybernetics and systems aesthetics. Over the following decades a slow process of rematerialization occurred. While Jean-François Lyotard's exhibition Les Immatériaux (1985, Centre Georges Pompidou, Paris) seemingly highlighted immateriality it in fact also argued that the immaterial is matter subjected to interaction and conceptual processes. Bernard Stiegler equally believes that there is nothing that is not ultimately in a material state, and the immaterial therefore does not even exist on a nanolevel. [5] Stiegler says:

*I call hypermaterial a complex of energy and information where it is no longer possible to distinguish its matter from its form [...] a process where information – which is presented as form – is in reality a sequence of states of matter produced by materials and apparatuses, by techno-logical devices in which the separation of form and matter is totally devoid of meaning.*

This, Stiegler concludes, is not dematerialization but hypermaterialization. While Stiegler's term grasps the gathering, monitoring and processing of information through material devices, it focuses on sequences of states rather than, for example, the affective aspects of materials that are shaped by data and mirror and reflect us and the environments we inhabit back to ourselves. Stiegler's hypermaterialization does not highlight the state of materials waving back at us or objects representing how the machine sand softwares we created perceive us. I propose the notion of neomateriality to capture an objecthood that incorporates networked digital technologies and embeds, processes, and reflects back the data of humans and the environment, or reveals its own coded materiality and the way in which digital processes perceive and shape our world. Neomateriality describes a twofold operation: first, the confluence and convergence of digital technologies in various materialities; and second, the ways in which this merger has changed our relationship with these materialities and our representation as subjects.

Neomateriality describes the embeddedness of the digital in the objects, images, and structures we encounter on a daily basis and the way we understand ourselves in relation to them. It finds different kinds of expression within contemporary culture and artistic practice in the form of objects or artworks that 1) use embedded networked technologies, reflecting back their surrounding human and non-human environment; 2) reveal their own coded materiality as part of their form, thereby becoming themselves a residue of digital processes; 3) reflect the way in which digital machines and processes (seemingly autonomously) perceive us and our world.

What distinguishes most digital art – and software art, in particular – from other artistic practices, is that its medium resides in distinct materialities. Paintings, for example, allow us to perceive the brush stroke or paint splatter that created them and film consists of consecutive frames of images. In digital art the visual results of the artwork – no matter how “painterly” or “cinematic” – are derived from code and mathematical expression. The back end of the work and its visual front end typically remain disconnected. Code has also been referred to as the medium, the “paint and canvas,” of the digital artist but it transcends this metaphor in that it even allows artists to write their own tools – to stay with the metaphor, the medium in this case also enables the artist to create the paintbrush and palette. Artistic practice engaging with conditions of neomateriality often highlight this condition by turning code and abstraction into the material framework of an object.

Figure 1. Ashley Zelinskie, *Space Triangle*, 2014; 3d printed PLA (eco friendly plastic); 12 x 12 x 12 in. © Ashley Zelinski.
Ashley Zelinsky's *Reverse Abstraction* series [Figure 1] engages with the different languages, concrete and abstract, through which humans and machines perceive the world. Objects and forms cannot be perceived by computers without layers of abstraction while the codes that make computers run or execute operations are not necessarily readable by humans. *Reverse Abstraction* constructs traditional objects out of material representations of the hexadecimal and binary codes that allows a computer to construct them. If computers were to read the code that constructs the artworks they would “see” the form that a human perceives. Transforming abstraction into material, Zelinsky's project strives to dissolve the duality of human and machine.

A different take on form as a coded materiality is provided by Clement Valla's *Surface Proxy* series (2015), which consists of objects literally wrapped in their own representation. The starting point for these objects were iconic, intact architectural fragments, all of French origin, from the RISD Museum in Providence, Rhode Island, as well as the Metropolitan Museum and the Cloisters in New York. Valla employed these historical relics as a basis for a complex process of remediation. Using 123d catch, an app that lets users create 3D scans of virtually any object, Valla produced 3D models of the architectural fragments. These 3D models where then digitally draped with cloth by means of the 3D graphics and animation software Blender and the surface of the original object was virtually imprinted on the cloth. After this process of digital remediation, the virtual objects were translated back into the real world. The cloth depicting the image was printed using an inkjet printer and wrapped around a 3D print of the object's form. The object is re-skinned by its own image in an analogue version of texture-mapping. [Figure 2] The image has to fragment and splinter itself in order to conform to the object it strives to represent. The object's surface functions as both a stand-in and questions its own authority to represent the object.

While scanning one of the original architectural fragments in the Cloisters, a plant unavoidably was captured, too. Rather than wrapping a 3D print of a plant, Valla decided to exhibit an actual plant next to the relic and to display the unfolded version of the wrap generated from the virtual model of the plant on the wall next to it. Living nature thereby resists presenting itself as iconic.

Sterling Crispin's *Data-masks* (2013 - present), by contrast, reflect on the way digital technologies “perceive” us and construct our identity. Crispin uses face recognition and face detection algorithms for producing human-like faces that take the physical form of masks. In Crispin's work, mathematical analysis of biological data becomes material form revealing how software systems represent human identity. What distinguishes *Data-masks* [Figure 3] from other virtual representations of human faces and bodies – such as 3D models or renderings – is the fact that their creation involves softwares designed to determine identity and thereby demonstrates their process. Sterling sees his work as an instance of the digital panopticon staring back into its own mind. [6] The 3D-printed face masks were algorithmically evolved to satisfy facial recognition algorithms: the software creates a materiality that reflects a seemingly autonomous machine vision of identity.


In the *Surface Proxy* exhibition at xpo gallery in Paris, this fragmentation unwraps itself in only one instance.


New technologies of representation always introduce new complexities and render image flow and materiality problematic in different ways. Digital technologies have
introduced new ways of “seeing” the world and of rendering objects. Digital materiality in the age of the Internet of Things (as the network of physical objects or "things" embedded with electronics, software, sensors and connectivity) and the quantified self (as data acquisition on aspects of a person's daily life through wearable sensors and computing) means that objects are constructed by and understood through the language of the digital. The new digital materiality is characterized by processes of seeing like and being seen through digital devices and has changed our relationship with objecthood and our representation of subjects.

References

Author Biography
Christiane Paul is Associate Prof. and Associate Dean at the School of Media Studies, The New School, and Adjunct Curator of New Media Arts at the Whitney Museum of American Art. Her recent books are Digital Art (Thames and Hudson 3rd revised edition, 2015), Context Providers – Conditions of Meaning in Media Arts (Intellect, 2011; Chinese edition, 2012), co-edited with Margot Lovejoy and Victoria Vesna; and New Media in the White Cube and Beyond (UC Press, 2008). At the Whitney Museum she curated exhibitions including Cory Arcangel: Pro Tools (2011) and Profiling (2007), and is responsible for artport, the Whitney Museum’s net art gallery. Other recent curatorial work includes The Public Private (Kellen Gallery, The New School, 2013), Eduardo Kac: Biotopes, Lagoglyphs and Transgenic Works (Rio de Janeiro, Brazil, 2010); Biennale Quadriartale 3 (Rijeka, Croatia, 2009-10); and Feedforward - The Angel of History (co-curated with Steve Dietz; LABoral, Gijon, Spain, 2009).