FROM « IMMATERIAL » TO « HYPERMATERIAL »

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In this proposal, it is submitted to approach the digital technologies through the question of their materiality. To do this, the references will be taken from theoretical and conceptual propositions by some French philosophers.

This paper would like to develop a sort of historical definition and conception of the new technologies of information through these philosophical concepts.

Catalog « Les immatériaux », cover pages, Centre Pompidou publications.

Introduction

By its use of the term, the exhibition entitled “Les immatériaux” / “The Immaterials” organized in the 80’s under the conception of the philosopher Jean-François Lyotard at the Georges Pompidou Center seemed to define a new plasticity of art for the computer. “The material itself never ceases to become more complex [...] stipulates Lyotard. A color, a sound and material are restituted as precisely identifiable digital numbers […] the end result comes to us analyzed and reconstituted in complex formulas.” [1]

Electronics, the digital and programs, all of which are components of the computer work together to create digital representation which we currently label immaterial.

Electronics with the rays that it emits, and its intangible physicality, computing and its digital base, the calculations it implements and the languages it manipulates participate in systems that are already symbols, hence abstractions. Thus we call the computer an abstract machine.

“Materials and digital tools are essentially symbolic and linguistic. These are what compose the language of computer programs” according to Hillaire and Couchot in “L’art numérique ou comment la technologie vient au monde de l’art” / “Digital art, or when technology comes to the art world.” [2] They nevertheless go on to say “we can no longer consider them simply as immaterial “what marks digital technologies is not their immateriality but their programmability, in other words the fact that they are reduced to computer programs with a capacity to be processed by a computing machine”. And despite the language or symbolic form that arises what is subjacent and allows the computer to function are automatically treated programs and data.

In addition, in computing and the digital we come face to face with the computer’s double language, allowing the machine to operate, uphold representation and that of interface and surface, restituting symbols that we know and recognize, i.e. text, image and sound.

Whereas it is this chain of abstraction, this superposition of digital, programmatic and semiotic languages that work together to produce the immateriality of digital technologies. From bit, the 0 and the 1, the binary basis for the functioning of the digital system, to interface that renders the symbolic figure readable by way of the treatment of data by the computer program, the computer only manipulates abstract symbols. This interweaving links *techné* and *logos* and this techno-science gives rise to technology. Thus we find the immateriality of abstract machines occupying several layers.

The immateriality described above applies itself both to computers and to the abstraction of the languages flowing through it.

However through a reading of recent work by philosopher Bernard Stiegler entitled “Economie de l’hypermatériel et psychopouvoir / “Economy of hypermaterial and psychopower,” [3] we discover a new way to ponder the developments of new technologies (via scientific research preceding them…) making their way into a hypermaterial reality. Stiegler describes the evolutions of technique, diverse periods of science, the emergence of techno-sciences and their transformation into technologies, their industrial economy and most especially he analyzes scientific terrain that he calls invisible “ranging from nanostructures to neurological foundations of the subconscious, including biotechnologies”. He calls these invisible systems the terrain of the hypermaterial when, according to him, “material remains a form (consider the quantum level) and the form is always information in itself (that is to say a transitory state of substance produced by a material)”… This hypermateriality weaves its way through cultural and cognitive technologies and closely related technologies (biotechnology and nanotechnology) whose paths converge in the digital.

“The Immaterials”, an Exhibition, a Concept

The exhibition “Les immateriaux” designed by the philosopher Jean-Francois Lyotard at the Georges Pompidou Center seemed to define through this term, first a new plasticity of art for the computer, as well as new Information Technology.

Now a key point of reference in the evolution and a definite revelation, at least concerning France, of art using new technologies, especially via electronics, computers and obviously programming, this exhibition and its title announced the coming of an immaterial art, in flux, impalpable and was a precursor in the analysis of the mutations for our senses, our sensibilities and meaning, adding significant perception to messages sent and received in the framework of these new technical mediums.

Indeed, the term “immaterials”, he tells us, was chosen for two main reasons.

Message and medium, or material, are considered to be integral parts of one another, especially in the framework of technologies where “a code itself is inscribed in the medium” and is even part of the material itself. Substance or matter which, given the complexity of the elements behind its functioning have been relegated to the function of medium as a “model of language”, for outside its physical elements, the computing machine merely manipulates abstract languages that link together to reproduce marked and significant symbols for our use.

The second reason for this terminology is linked to a change of scale initiated by this techno-science: “the infinitely small” is no longer confined to human scale and the new sciences that evolve from these new values have an influence upon artistic experimentation.

For Jean-François Lyotard and his collaborators, these parameters generate a questioning on the part of human beings and shake up the foundations of modernity that have been established in the 20th century’s culture since the Age of Enlightenment. A “notion of the complexity of things” has provoked these questions, contextualizing and making concrete this “post-modernity” announced by Lyotard.

This complexity alone made it vital to seek answers about messages of reality and its references. An ontological approach? A structural approach? A scientific approach? Whichever the case, it is an issue of going beyond appearances and understanding what was taking place at the source. In the organisms and material themselves. And Lyotard probes this, examining and analyzing to get to the roots of “the birth of meaning” and seeks “the source of these messages”, conveyed by the new mediums of electronics and computing.

Indeed, the main line of reasoning behind the exhibition “The Immaterials” was built upon the idea that “the materials themselves become more and more complex. When their brains began operating with digitalized information without analogy to their source this was a great step forward.”

Here an analogical system is compared to a digital system: for the analog signal the medium of restitution of representation still has a reference point even if it is absent. In the digital system the real model no longer exists: it has been digitalized and renders representation totally abstract. “It is as if a filter had been established between things and us, a screen of numbers, he goes on to say. A color, a sound, material, pain or a star are all sent back to us as very precise digital numbers of identification.”

It is the “language model” Lyotard evokes, replacing material which will transform reality in such a way that “the material itself comes to us analyzed and reconstituted in complex formulas” when “reality is composed of indiscernible elements” because “organized by laws of structure (matrix)”. All this, he concludes “constructed upon disproportionate scales of space and time for humans”.

Here, structure becomes texture and web and this ”immateriality” born from a complexity we merely glimpse leaves behind it a Cartesian approach to the world. Is the deciphering of meaning a revelation? Can we find ways to reign it in? The Immaterials examined the drastic change that surfaced as we move from modernity to post-modernity, as we tackle the problematic of mastering material.

Digital Art

What is the digital and accordingly, what is digital art?

How does the digital influence art?

These subjects have already been tackled by Jean-François Lyotard, as he studied computers and their digital functioning, computer languages and replaced “pure material” with numbers, erasing source material. Superimposing languages of different registers, substituting matter with algorithm, altering the model by graphics and calculation, digital art is a product of these systems of languages, all abstractions that are interconnected between reality and its digital representation.

In their book “L’art numérique, ou comment la technologie vient au monde de l’art” published in 2003, the artist Edmond Couchot and the philosopher Norbert Hillaire develop their viewpoint on digital technologies, stating that “we can no longer consider them as simply “immaterial” because while the objects they produce are virtual, they are a significant part of the real world and have a definite influence on our senses”.

No matter how we view virtual reality, or the essence of virtual artwork, it is important to stop and consider their technological mode of production or what we could call technique; this is what Edmond Couchot and Norbert Hillaire ascertain when they point out that science and art have found a new way to articulate through the digital. Indeed, they are of the opinion that ”materials and digital tools are essentially symbolic and linguistic”, functioning with abstraction and symbols that “stem from the language of computer programs”.

For Couchot and Hillaire, “the specificity of digital technologies lies not in their immateriality but their programmability, which implies they have been reduced to computer programs capable of being automatically processed by the computing machine.”

What becomes obvious first in Jean-François Lyotard”s analysis and then in the work of Edmond Couchot and Norbert Hillaire despite the results they obtain, resides in the relationship between technique and art, language and representation. Thus we discover that computer technology modifies the “texture” of artwork produced by computer or digital art, technology without which the work would be inexistent since it is encoded.

How do we seize upon the implications of digital art?

Couchot and Hillaire demonstrate early on that their terminology brushes aside “New Technologies of Information and Communication” in favor of “digital technologies” adeptly referring to their specificity. Technology rather than technique is an indication of the technical development of the science from which these are a product in terms of a system and its “formal reasoning”, a regular and methodic functioning that attains logos, or an internal logic.

The works that evolve thanks to these digital technologies “share two common characteristics”; they are generated from the automatic calculations of computers and are adept at interacting with their creator or the intended user. Hence they are noteworthy for their programmability and interactivity. What Couchot and Hillaire would like to stress is that “the processes of fabrication that build the work” “are no longer physical but “computational and language based”. Lyotard said the same thing using different words. But the latter all insist upon the role played by scientific modalities in digital computers. Their

programming activity is based on “logical models and mathematics from science”. Sciences that use reality as a model in order to capture it and then reconstitute it. And this is accomplished by simulation. “Digital technologies are for the most part technologies of simulation” add Couchot and Hilaire.

Therefore digital simulation and its mathematical models are the underlying elements of representation. “Because of the digital, science cannot be interpreted metaphorically”, rather “it asserts itself directly upon art by way of models of simulation, materials, tools and more importantly its processes”.

We can consider the digital as a new state of representation, tied to a form of technique. Herein we are exposed to another approach to the complexity of the digital.

States of Material, or a Reason for the Hypermaterial

While Jean-François Lyotard considered material as a state of energy, and energy as being immaterial Bernard Stiegler’s analysis took on a new approach with regards to science and technologies and their potential, “technologies of information, communication and cultural and cognitive technologies.” by situating them in “hypermaterial devices”, when the notion of information is offered up as an invisible yet omnipresent material.

“There is nothing that is not a material state”, says Bernard Stiegler. And so for this philosopher, “”the immaterial” does not exist, not even in the nanometric dimension.

“States of evanescent material” remain material nonetheless. He foresees a situation of hypermateriality for our era and our economy. “I call hypermaterial a network of energy and information where there is no longer a distinction between material and its form – as we find in quantum mechanics”, he explains, “and I label a process as being *hypermaterial* when information – presenting itself as form – is in reality a succession of states of material produced by materials, apparatuses, and techno-logical devices when the division between material and form is totally devoid of meaning”. In reality “this is proof not of dematerialization but on the contrary, of hypermaterialization: all is transformed into information, or states of material through the intermediary of material and apparatuses which are instantaneously manageable and controllable “in the infinitesimal and the infinitely brief.”

The only way to understand this concept or consider hypermateriality is to move beyond the out-dated differentiation between matter and form and acknowledge the state of the nanoworld. When matter becomes invisible and consequently “the problem is not one of immateriality, but the *invisibility* of matter”. And we cannot comprehend the notion of such widespread information without keeping in mind that it is transformed matter, which is to say the product of other states of material, compiled in the digital and its mediums, or in the words of Bernard Stiegler, grammatize it by a process of discretisation, shifting from one form of material to another until matter and form merge. A process of discretisation that he reminds us has existed since the Upper Paleolithic from the sharpened flint to the digital and IPV6 and where it is always a question of mental processes that perform like engrams, because inscribed, encoded, memorized through materials, techniques and representations.

As such, in an analysis of formation and components of matter and a reformulation regarding information (its substance, its texture), hypermateriality takes on a definite consistency : “it is a state of transitory matter, in movement, a process which is always *up-to-date*, impossible to analyze simply, as either matter or as form. It is energy and information.” Bernard Stiegler goes on to say that on the nanometric

scale there is really no reason to distinguish between the information industry and the industry of matter.

Bernard Stiegler's objective is not to refute the idea of the "immaterial" but rather the so-called economy of the immaterial which would ignore the possibilities of this new mode of production and transformation of matter, that of digital information (ranging from nanotechnologies to biotechnologies), whose encoding presently represents "colossal possibilities" which stretch beyond "the number of atoms on earth".

He is wary of a hyperindustrial society, capable of an infinitesimal accumulation of computer memory (data of every sort and their meta-data), within the confines of these technologies of the hypermaterial. His critique is founded upon the perspective of a "non-inhumane" future for humanity, a world Jean-François Lyotard had already described as being on an inhumane scale twenty-five years ago.

References and Notes:

1. *J. F. Lyotard, Les immatériaux - Catalog (Paris: Centre Georges Pompidou, 1985).*
2. *E. Couchot, and N. Hillaire, L'Art Numérique ou Comment la Technologie Vient au Monde de l'Art (Paris: Flammarion, 2003).*
3. *B. Stiegler, Economie de l'Hypermatériel et Psychopouvoir (Paris: Mille et une Nuits, 2009).*