RETHINKING THE HUMAN BODY IN THE DIGITAL AGE

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Abstract

The theory of information and Cybernetics allowed the transcendence of the material substrata of the human being by thinking it in terms of information units. The whole material world is reduced to information flows, which are encoded in various forms and which, by means of algorithms can be processed and reconfigured with a view to multiple simulation of the physical reality we live in. By applying these codes, communication and information technologies open the possibility of multidimensional reconstruction of the body in the virtual environment. With the assistance of technology, the body becomes a communication interface between the real and the virtual world. As a communication interface, the body's structure is broken down to the core functions and then telematically reconstructed in the virtual reality as tele-perception, telepresence, tele-kinaesthesia, etc. The virtual reconstruction of the body not only involves the transformation of its functions, but also the transformation of the approach of the human being which now is at the intersection between the real world and the various virtual worlds generated by technology. The conception of subject centred on self-consciousness is thus cancelled, instead appearing the idea of the fluid, unstable subject who lacks a centre being diffused in a network.

Keywords: body, information, digital age, technology, virtual reality

1. Introduction

One of the most important features of the contemporary period is the increasing reliance on Science to solve problems whose answers has been thought to belong to Humanities. The expansion of scientific knowledge has determined not only a change of the content of knowledge but the rethinking of man's condition in a world, more and more dominated by the technological consequences of Science. As Michel Foucault remarked, the modern age ends with ascertaining man's disappearance from the research field of Humanities [1]. Still, one can also remark the preoccupation for the understanding of the human being from the perspective of Natural sciences.

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This reversed situation should not be surprising, if we consider the impact Science has had on man's social, cultural, and artistic dimensions, from the very early stages of the modern age. The confidence of the Enlightenment in Science and technique as important means of man's and society's emancipation and progress has led to the emergence of a culture inspired from the scientific and technical achievements which came to compete the old culture based on metaphysical principles and on the mystical and religious view on the Universe.

Rethinking the corporeal side of man started with René Descartes, who, by his claiming the body – mind dualism, transformed the body, owing to its material character, into an object of the Natural sciences study. Hence, two consequences can be noticed: on one side, the modern view on knowing the Universe by means of quantitative methods, which aimed at discovering the laws and contain them into mathematical formulae, recommended to apply to the human body's material side as well. The eighteenth century anatomists were convinced that what animates our body is a force that can be explained rationally in the determinist terms of Newtonian physics.

On the other hand, it is still modern science that imposes, following the mechanistic model of the Universe, the automaton model in inquiring the human body. If to Descartes, only the animals could be considered similar to automatons, the Enlightenment materialists expand this idea to man. While denying the existence of the soul, they claimed that matter has all the properties that could explain the complexity of the human being, without the need to postulate a spiritual principle, which should be studied by other subjects than sciences. From this perspective, Julien La Mettrie considered that if matter reaches a higher form of organisation, it could acquire the capacity to feel and think. In this conception, man would be considered as complex machine made up of a mechanism superior to that of animals.

„Grant only that organized matter is endowed with a principle of motion, which alone differentiates it from the inorganic (and can one deny this in the face of the most incontestable observation?) and that among animals, as I have sufficiently proved, everything depends upon the diversity of this organization: these admissions suffice for guessing the riddle of substances and of man. It thus appears that there is but one type of organization in the Universe, and that man is the most perfect example. [...] I am right! The human body is a watch, a large watch constructed with such skill and ingenuity, that if the wheel which marks the second happens to stop, the minute wheel turns and keeps on going its round, and in the same way the quarter-hour wheel, and all the others go on running when the first wheels have stopped because rusty or, for any reason, out of order." [2]

The evolutionist theory came to assert man's position as part of the natural world, confirming the necessity to study him from the Natural sciences perspective. According to Darwin's theory, man is the product of the way living organisms have adapted to the environment they live in. There is no need to assume the existence of any transcendent principle to explain the emergence of man, as the scientific evolutionist laws suffice to explain such thing. Thus, the

mechanistic view was removed in the naturalistic perspective to which the world is made up of organisms, which are the expression of the capacity of the living matter to self-organise in more and more complex forms to meet the requirements of natural selection. Man represents the most complex known form of biological existence, whose higher faculties are the result of the way the organism has evolved throughout million of years with a view to surviving.

The end of the modern age find man reduced to the status of biological being which places the understanding of the human being beyond the conception of traditional Metaphysics, which considered him the goal of the divine creation. Emphasizing the biological side of the human being has determined the removal of the mechanistic model that resembled man to an automaton mechanism and its explanation as a self-organising biological machine. In *Autopoiesis and Cognition*, Humberto Maturana and Francisco Varela will assert that there is an essential difference between the internal organisation of a living system and that of a machine, which also generate differences between their functional properties [3]. Machines are human artefacts, meaning that they are predictable systems based on a determined input and output. Their finality is pre-set at the time of their design by their author, who created them for a purpose. Moreover, their internal organisation is the result of the relationships established among their internal components, as they can be configured in more ways to reach the same result.

Living systems are homeopathic and their goal is to constantly maintain their internal variables. Therefore, they are called autopoietic machines and they differ from the automaton machines because they are autonomous (their goal is only to maintain their internal organisation), they have individuality (the effect of maintaining a constant internal organisation is to acquire an identity), they are characterised by an internal unity (given by the self-production processes and not by the observer), and they do not have inputs and outputs (the responses to the environmental changes are varied and unpredictable).

„An autopoietic machine is a machine organized (defined as unity) as a network of production (transformation and destruction) of components that produces the components which: (i) through their interactions and transformations continuously regenerate and realize their network of processes (relations) that produced them; and (ii) constitute it (the machine) as a concrete unity in the space in which they (the components) exist by specifying the topological domain of its realization as such a network." [3, p. 78-79]

The metaphor of the biological machine illustrates man's condition in the contemporary age, marked, on the one hand, by condition of every human being's belonging to the animal kingdom, and on the other hand, by the awareness of the fact that man has entered a new stage of his evolution, where he is defined by his relationship with the scientific discoveries and the technological products.

2. Dematerialisation of the body in the digital age

An important step in approaching the material side of the human being was the interest of Science in researching the invisible micro-particles that make our visible reality. The existence of an invisible reality whereupon the visible reality relies has led to the idea that matter can be decomposed in indivisible units – e.g. atoms, genes, neurons, or bits. This idea offers a different understanding of its properties and how it can be remodelled. Thus, to use Slavoj Žižek's expression, the era of 'post-metaphysical idealism' is inaugurated, which is characterised by the substitution of the classical concept of matter, as an opaque and inert entity, with a more flexible understanding of the material substratum both people and objects in the surrounding world are made of [4].

„This 'spectral materialism' has three different forms: in the informational revolution, matter is reduced to the medium of purely digitalized information; in Biogenetics, the biological body is reduced to the medium of the reproduction of the genetic code; in Quantum physics, reality itself, the density of matter, is reduced to the collapse of the virtuality of wave oscillations (or, in general theory of relativity, matter is reduced to an effect of space's curvature). […] Materialism is not the assertion of inert material density in its humid heaviness – such a 'materialism' can always serve as a support for gnostic spiritualist obscurantism. In contrast to it, a true materialism assumes the 'disappearance of matter' the fact that there are, is only void." [4, p. 25]

The main contribution in this line of thinking was the introduction of the concept of information by Cybernetics, which made possible not only the construction of mechanisms but also the conception of automatons capable to give answers according to the variety of the stimuli received from the environment. The aim of Cybernetics, as Norbert Wiener, its initiator, asserted, resulted from the reunion of the theory of communication with the theory of system control, is to offer a new image of what we call organism. To this purpose, Wiener started from the resemblances between being endowed with nervous systems and automated mechanisms, considering both as communicational systems, characterised by a continuous exchange of information with the environment.

"Man is immersed in a world which he perceives through his sense organs. Information that he receives is co-ordinated through his brain and nervous system until, after the proper process of storage, collation, and selection, it emerges through effector organs, generally his muscles. These in turn act on the external world, and also react on the central nervous system through receptor organs such as the end organs of kinaesthesia; and the information received by the kinaesthetic organs is combined with his already accumulated store of information to influence future action." [5]

To Wiener, Cybernetics represents the last stage in conceiving the idea of mechanism. After the mythical stage of golem, the clock stage (the 17th and 18th centuries), and the steam age (the 18th and the 19th centuries), the age of communication and control emerges, an age dominated by communication

engineering, which is preoccupied with the 'appropriate reproduction of the signal'. In this context, the metaphor used for organism is that of a message, construed as an organisational model that the better it is structure, the better the functions it carries out. The human body is thus reduced to a collection of digital information, which can exist independently from their material substratum and which preserve their content when they are sent to another entity.

The possibility of conceiving the real in units of information has determined significant changes in how sciences have approached the human being. In Biology, this change has meant an in-depth study of genes, considered to incorporate the digital information specific to the human species, in the neurosciences, the brain as been thought to be similar to a unit that encodes and decodes of the digital signals transmitted to and from the surrounding world, in the artificial intelligence theory, thinking has been also seen as the capacity to process the information received by the brain.

The image of this flow of information crisscrossing throughout the material world, from the organs of our body to the components of technical objects, has led to imagining the possibility to unify and even improve the body by means of technological devices. This idea was suggested by using the cyborg metaphor, which, in the contemporary imaginary, would refer to the condition of man in the digital age. The cyborg's hybrid status, as it is described by Donna Haraway, means the possibility of the natural world to converge with the technological one with a view to obtaining a new being. The human body is construed as a cybernetic mechanism, or, in other words, an ensemble of biotic components, coordinated by the same informational flow, which can be reconstructed at any time with the help of Computer science technology [6] and Biotechnology.

"In Communications sciences, the translation of the world into a problem in coding can be illustrated by looking at cybernetic (feedback-controlled) systems theories applied to telephone technology, computer design, weapons deployment, or data base construction and maintenance. In each case, solution to the key questions rests on a theory of language and control; the key operation is determining the rates, directions, and probabilities of flow of a quantity called information. The world is subdivided by boundaries differentially permeable to information. Information is just that kind of quantifiable element (unit, basis of unity) which allows universal translation, and so unhindered instrumental power (called effective communication)." [7]

Consequently, the cyborg represents the cancellation of the traditional understanding of the body as an inert matter animated by a vital principal. The whole material world is reduced to information flows, which are encoded in various forms and which, by means of algorithms can be processed and reconfigured with a view to multiple simulation of the physical reality we live in. By applying these codes, communication and information technologies open the possibility of multidimensional reconstruction of the body in the virtual environment.

3. From virtual reality to virtual body

Virtualisation does not refer merely to the computers' capacity to create a virtual space, but it also refers to the various versions of reconstructing the physical reality by the plurality of technical instruments existing nowadays. By means of these reconstructions, a virtual dimension is obtained, which intersects the reality we live in and opens new possibilities, otherwise impossible to realise in the physical reality: the notion of space is modified by the telecommunication system, which facilitates visualisation of some remote events or people, the notion of time is modified by accelerating the speed of transmitting information, the simultaneous presence of a person in multiple (virtual) locations is also possible, etc.

Virtualization would correspond to what Jean Baudrillard calls 'hyper-reality', a reality made up of the flow of simulacra produced by means of the media, with a view to exacerbating mans' desires and stimulating man's consumption tendencies [8]. Hyper-reality designates the 'implosion' of media reality in the social reality and the cancellation of any borders between reality and unreality, public and private, representation and fantasy, signified and signifier, subject and object, etc., up to the point where simulacra become more real than the real itself. This thing has happened because in the virtual medium, the intensification of producing signs has determined transformations in the nature of the sign. According to Baudrillard, in the simulacra age, natural signs are replaced by artificial surrogates. Recapitulating the history of the sign, Baudrillard shows that it has experienced four stages: in the Middle Ages, the sign was the reflection of reality, in the modern age, it becomes an imitation of reality, in the industrial revolution age the sign loses its originality, and is subjected to reproducibility, only to reach the hyper-reality age when the "sign has no connection whatsoever with any reality, whatever that may be: it is its sheer simulacrum" [8, p. 174]. The final point of this sign transformation process is represented by the separation of reality from its representation, meaning taking off the signifiers from the signified. The language of computers, which generate the virtual reality and have no direct representation connection with what it produces, exemplifies this fact. This means that, from the point of view of Baudrillard's theory, the signifiers precede the signified, the control of reality being taken over by the signifiers. Hence, hyper-reality means autonomy of the world of signs as it is resembled to a 'river' of signifiers that permanently refer to other signifiers.

The idea that computing technologies introduce new signifying models, which create a virtual world of the signifiers separated from the signified, has been also noticed by Katherine Hayles [9]. Starting from Lacan, who, in order to cancel Saussure's relation between significant and signified, denies the fact that written language is a code, Hayles has in view the illustration of the process of detaching the significant from the signified, in the language of the computer, which it cannot be denied the code character. To Lacan, the image between the two components of the sign is that of a flow of signified floating underneath the

network of signifiers. Hayles represents that, in the case of machine code, we can no longer speak of floating signifiers but of flickering signifiers, which transform into signified, becoming part of an arbitrary chain of signifiers and signified.

„In informatics, the signifier can no longer be understood as a single marker, for example an ink mark on a page. Rather it exists as a flexible chain of markers bound together by the arbitrary relations specified by the relevant codes. As I write these words on my computer, I see the lights on the video screen, but for the computer, the relevant signifiers are electronic polarities on disks. Intervening between what I see and what the computer reads are the machine code that correlates alphanumeric symbols with binary digits, the compiler language that correlates these symbols with higher-level instructions determining how the symbols are to be manipulated, the processing program that mediates between these instructions and the commands I give the computer, and so forth. A signifier on one level becomes a signified on the next-higher level." [9, p. 31]

Modifying the signifier-signified network involves not only literary texts, but the human body as well to the extent that it is reduced to its informational dimension. Hayles resembles materiality of the body with that of a book, both being understood as devices that store, encode, and transmit information. Cancelling a text's quality of durable inscription, information technology has opened the possibility to manipulate the text, insert it in new networks of signification, with a view to its being re-signified, and obtain new meanings. Similarly, the virtualization of the body implies the acquisition of multiple, rhizomatic identities, looking like as arbitrary chains of significances undergoing a continuous change.

Hence, the natural environment inhabited by man as a biological being is doubled by a virtual environment generated by the information technology, where man has the possibility not only to redimensionalise reality but also to reinvent themselves as a person. The cyberspace or virtual reality is the environment that eloquently speaks for itself as it is considered by many the fulfilment of the metaphysical desideratum of reconstructing reality, not only via the means of (artificial) intelligence, crossing thus the barriers imposed by our body. From this perspective, the virtual reality model is the platonic world of Ideas and Perfect Forms, made only of ideal objects, which are images of the real object multiplicity and which reproduce reality by means of mathematical algorithms operating with units of information. Virtual reality represents the deliverance from the materiality of objects and the end of man's dependence on their natural limits represented by the five senses, from the existence of the identity fixed by the physical characteristics of a person, by a reason-centred subjectivity, by a reality unfolding independently from the human being's will, by a freedom socially conditioned, etc.

In this context, virtual reality does not represent a mere simulation of reality, meaning a copy of the objects from the physical world. Virtual reality implies the virtual reconstruction of objects by permanently interacting with

them until when we ourselves become virtual objects, which has a direct consequence the emergence of a new sensitivity, of some new experiences, of some new ways of behaviour and socializing. The body's virtualisation involves extending its capacities by means of information technology, which use the functions of the body to access virtual reality. With the assistance of technology, the body becomes a communication interface between the real the virtual world. As a communication interface, the body's structure is broken down to the core functions and then telematically reconstructed in the virtual reality as tele-perception, telepresence, tele-kinaesthesia, etc. This dematerialising process begins with intensifying the functions of our sensory organs and communication abilities, by detaching them from the possessing subject and integrating them in the collective domain of the virtual space.

"The telephone for the hearing, the TV set for the sight, the remote control systems for the touch, and the sensory-motor interaction: these devices virtualise the senses, thus organising the convergence of the virtualised organs. All those watching a television broadcast, for instance, share the same large collective eye. Owing to the still cameras, to the television cameras and to the recordings we can perceive the sensations felt by other person, at other moment and in some other place. Moreover, the so-called virtual reality systems allow us to experiment the dynamic integration of the various perceptive modalities." [10]

The virtualisation of the senses also offers new sensory experiences that cannot be encountered in the real world. The term tele-synesthesia is thus used to describe the possibility of multi-sensory stimulation simultaneous with the body's immersion in the virtual world. This means that cybernetisation of sensory organs entails the possibility to project the body into the cyberspace. Thus, the image of our body can be transmitted easily anywhere, allowing for its presence in many locations at the same time. The tele-presence is the manner in which the user voyages through the virtual reality, covering distances inaccessible so far, making their presence felt in spaces of interest they desire to access.

The body's virtualisation is also accomplished by exploring technologies in Medicine, which offer the opportunity to observe hidden areas of the human body, without using invasive methods. The three-dimensional reconstruction of the body by means of computer tomography as well as the analysis of somatic activity from the perspective of mechanical, electrical, and biochemical processes occurring at this level, have discovered the depths of our body, whose inside is open to exploration. Visualising and measuring organs and fluids that ensure the well functioning of our body produces the cancellation of the opposition between the inside and outside and involves subjecting the body to public control.

„Medical authorities encourage us to monitor consumption of sugar, caffeine, salt, fat, cholesterol, nicotine, alcohol, steroids, sunlight, narcotics, through the use of such devices as electronics scales, home pregnancy kits, diabetes tests, blood pressure machines and fat callipers. These devices function as a set of visualisation techniques that contribute to the fragmentation of the

body into organs, fluids and 'bodily states', which in turn promote a self-conscious self-surveillance whereby the body becomes an object of intense vigilance and control. ,, [11]

The virtualisation of the body does not involve its unitary reconstruction in the virtual environment but its dispersing into a multitude of simulacra. This dispersing has consequences on man's understanding of the virtual space as a subject. The virtual subject is one obtained from interacting with the other users of the virtual space, as such a subject lacks a centre, it is diffused in a network, it is fluid, and unstable. The conception of subject centred on self-consciousness is thus cancelled, as the idea of consciousness is dissolved now into a collective consciousness, which consists of the interaction of the users participating to the creation of the virtual space.

Lacking a centre offering stability to man, we can no longer speak of an identity in the traditional meaning of the term. Identity becomes an experimental issue, which rather pertains to the exploration of a new subjectivity without involving the existence of an original subjectivity, which would be the true one. Thus, we speak of a polyphonic identity, which is not connected to a certain place or a genealogy and which "is built through time by the profile creating the history of its own activities and movements." [12]

The consequence of virtual reconstruction of the body is not merely the transformation of its functions, together with its transformation into the interface accessing to virtual reality. It is also the emergence of a new subjectivity determined by man's position at the crossroads of the real world with the diverse virtual worlds generated by technology. This subjectivity does not seek to configure in a stable structure, but to experiment various identities along with the development of technical devices that create new possibility of virtualizing the body.

Acknowledgement

References

[1]   M. Foucault, *The Order of Things: An Archaeology of the Human Sciences*, Random House, New York, 1970.
[2]   J. Offray De La Mettrie, *Man a Machine*, Kessinger Publishing, Montana, 2004, 36.
[3]   H. Maturana and F. Varela, *Autopoiesis and Cognition*, Kluwer, Dordrecht, 1980, 141.
[4]   S. Žižek, *Organs without Bodies: Deleuze and Consequences*, Routledge, New York, 2004, 217.

[5]   N. Wiener, *The Human Use of Human Beings*, Free Association Books, London, 1989, 17.

[6]   M. Gavrilescu, Eur. J. Sci. Theol., **8(4)** (2012) 159

[7]   D. Haraway, *Simians, Cyborgs and Women. The Reiventation of Nature*, Routledge, New York, 1991, 164.

[8]   J. Baudrillard, *Selected Writing (Simulacra and Simulations)*, Stanford University Press, Stanford, 2002, 294.

[9]   K. Hayles, *How we became Posthuman: Virtual Bodies, in Cybernetics, Literature and Informatics*, University of Chicago Press, Chicago, 1999, 350.

[10] P. Levy, *Il virtuale*, R. Cortina, Milano, 1997, 18.

[11] A. Balsamo, *Forms of Technological Embodiment: Reading the Body in Contemporary Culture*, in *Cyberspace, Cyberbodies, Cyberpunk*, M. Featherstone (ed.), Sage, London, 1995, 216.

[12] M. Doueihi, *Le grand conversion numerique*, Seuil, Paris, 2008, 83.