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(BIO)Technological Images about Human Self-construction on Spain Context:

A Preliminar Study

Juan R. Coca[1]

Jesús A. Valero Matas[2]

Abstract: The study of (bio) technology has a great social significance. As time goes by, the human being is getting more linked to technology. (Bio)technology and society are, therefore, two inseparable fields. Furthermore, this study shows the importance of setting a new context of analysis for (bio)technology. This context will be a polycontexture formed by biological, technical, psychological, sociological and axiological factors. In order to analyze this polycontexture, we consider that one of the most powerful methods is that used by social imageries. Social imageries have been studied by many researchers, but we believe that Juan Luis Pintos has developed the best method. In the end, this paper concludes that the materialization of this polycontexture is the *cyborg* metaphor.
Keywords: Cyborg; Policontexture; Juan Luis Pintos; Socials Imageries

INTRODUCTION

Along history of human thought, technology[3] has been studied bearing in mind that it was a mere tool to transform reality. With the passing of time and, above all, nowadays, technology has been considered more important than it used to be and it has been proved that it maintains a tight (bidirectional) link with issues from a wide variety of fields: ethic, political, social, epistemological, religious, etc. For this reason, the number of people who study this particular field is increasing. The reason for this, in words of García Bacca, is that we breathe technology all day long. Therefore, the development of human civilizations is parallel to technological development. To that effect, the first deep thoughts on technology, made by Ortega (1982), Heidegger (1994) or Ellul (1960) focused on the anthropological link with technology. Ortega y Gasset himself considered the human being as a *Homo faber*.

With the Industrial Revolution, and thanks to capitalism, technological development enjoys a great push taking "western" civilization into a new paradigm. Later on, in the 20th century technology starts to

[1] Grupo Compostela de Estudio sobre Imaginarios Sociales, Departamento de Socioloxía, Universidade de Santiago de Compostela. Spain
[2] Departamento de sociología y trabajo social, Universidad de Valladolid. Spain
[3] In this article we didn't distinguish between technique and technology. But we are aware of the difference between these terms.
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be seen as profoundly linked to scientific development. Finally, by the mid seventies, people started to talk about technoscience.

Technological progress along the 20th century has generated a great level of social mutation. The new sources of energy, the synthesis of new materials with properties never thought before, laser technology or biotechnology have invaded every single filed of human being with the consequence that the greater social system is articulated, more than ever before, round the technological activity. In turn, technological activity never had before such a notorious repercussion in the structure of this great system (Quintanilla, 2005 & Woolgar, 1988).

One of the activities which seem to have the greatest social repercussion is that of biotechnology. This has caused a great discussion in many societies. For this reason, authors like Jeremy Rifkin already talk about the *century of biotechnology*. This new era presents, according to this author (Rifkin, 1999) an operative array with a number of elements making this new era possible:

1. Human beings have the capacity to isolate, identify and recombine genes so that these can be considered as raw material of future economic activity.

2. Commercialization via patents of genes, cell lines, tissues, organs and organisms developed thanks to genetic engineering.

3. Globalization of commerce and business makes possible to exert an unknown power over the biotic resources of the planet.

4. Knowledge of the human genome and the development of genetic and molecular technology pave the way for a complete change of the human species and the born of a eugenic civilization driven by economy.

5. The new scientific research about the genetic basis of behaviour and the new socio-biology, offer the cultural context to accept new biotechnologies.

6. Computer and telematic means provide the suitable communication and organization to manage the genetic information based on the biotechnological economy.

7. The new ideas about nature, compatible with the operative assumptions of new technologies and the new global economy, offer the frame to legitimize the century of biotechnology.

Thus, it can not be denied that the social systems is heading unstoppable towards a new (bio) technological paradigm where the human self-transformation acquires an unusual importance. This new era, ruled by the possibilities of human change, generates a number of images, metaphors or imaginaries (although this concept is, in principle, much deeper than the others) allowing us to glimpse the course to be taken in a near future by the social systems more (bio) technolgized. For this reason, the purpose of this paper is taking the first stops towards the analysis of these humans imaginaries and, therefore, social, which will make up our future.

METAPHORS OF A NEW WORLD

In order to be able to make this exercise of “futurology”, we are going to recover three metaphors recently developed by Manuel Garrido, who named them as follows: the man of Turing, the network paradigm and Dedalus paradigm. Before going on, we must explain that these three metaphors are great imaginary contexts where we could find (if we carried out the deep methodological analysis we have not made this time) a great variety of small imaginaries.

Coming back to the metaphors by professor Garrido, the first one is inserted in the computing and communication world. This imaginary takes shape, to a great extent, thanks to Alan Turing (1912-1954), who got a paper published in 1936 named “On calculable numbers”. In this paper he got to theorize about an eventual calculating machine. Many people considered it the beginning of what it would be later known as Artificial Intelligence. This imaginary of a machine capable of thinking has permeated to

literature, cinema, television, etc. and can be appointed to a modern view of the human being.

> "This image was designed in its many dimensions and aspects, not always coherent among them, during the 16th and 17th centuries by the men who led the Great Scientific Revolution. Generally speaking, this image presents a human subject, unlike the traditional classic thought, like an entity radically different and even separated from the rest of objects of the universe." (Garrido, 2007: 872).

This imaginary, with its variants, represents human beings as thinking machines or computing entities hypertrophying our condition of technological beings. In this sense, as Garrido shows, Karl Popper develops in his book *The Self and Its Brain* a clear computing metaphor as the relation between mind and body.

The second metaphor, the network paradigm, is a clear sign of the current computer revolution. This second great imaginary feeds on the previous one; so much, that it bears a strong resemble with it.

> "During the first three or four decades of their existence, these machines were conceived and built as machines which simulated the behaviour of the introvert solipsist subject from the Cartesian philosophy. They were tools to make marvellous calculations, but unable to communicate among them. It wasn't until some years later, in the decade of the sixties, when some visionary researchers started to tackle this problem succeeding in interconnecting these utmost powerful mechanical calculators so as to becoming tools able to maintain a flow of mutual information" (Garrido, 2007: 874).

Nonetheless, despite of the fact that this network allows communication levels never imagined before, it is still widely accepted that these machines have inside this solipsist subject and, at the same time, it "imprisons" him. Nevertheless, there are many (even more than the first ones) who defend fiercely the Internet as one of the best communication, information and, even, emancipation tools.

> "This situation forces to reinterpret the relevance given to communication in the contemporary society which is not only, nor mainly, a consequence of the rising importance of mass media in the 20th century society. It is also and, essentially, consequence of a symbolic array interweaving communication, technology and future and has its conceptual origin in cybernetics and the political reorganization of mercantile and managerial mentality" (Cabrera, 2006: 139 and f.).

The third metaphor has been named the Dedalus paradigm. This imaginary emerges thanks to the impact of biological sciences. This new great imaginary, according to Manuel Garrido, has implicit the improvement and modification of the human being. As a result of this, the eugenic issues and bioethical problems have acquired an importance unusual until now. Furthermore, this new imaginary collides with ontological aspects belonging to the previous thought. This has made that the discussion regarding this matter can not be compared to the previous metaphors.

In fact, Gilber Hottois states that the biotechnological revolution, as well as the computer one (and, for us, the network paradigm, too), produces machines and a new and artificial environment. In this new environment, the natural system, like the personal system, is machinized by the genetic genius, says Hottois, and the artificial environment becomes immaterial (computer networks, cyberspace, virtual reality, etc.) (Hottois, 2003).

IMAGINARIES, BIOTECHNOLOGY AND SOCIAL INFLUENCE

The theory of social imaginaries has been developed in these years by thinkers of the stature of Cornelius Castoriadis, Michel Maffesoli, Josetxo Beriaín, Ángel E. Carretero, Juan Luís Pintos, Emmanuel Lizcano, Esther Díaz, Celso Sánchez Capdequí, Manuel Baeza, etc. All these thinkers and many more have set out the different aspects to define the concept of social imaginary. Nevertheless, we consider that the majority of aspects studied lack a clear methodological approach which allows a detailed analysis of the imaginaries. Bearing this in mind, professor Juan Luis Pintos has developed one of the most methodological definitions of this concept which is more likely to be used in the technoscientific field thanks to its greater precision. For this reason, from now on, we will use the definition proposed by Juan Luis Pintos, and its application will be object of later studies.

For Pintos, social imaginaries (SI) *are being schemes socially built, which allow us to perceive, explain and intervene in what every differentiated system has as real*. These imaginaries *operate as a metacode in the socially differentiated systems, inside a specific "mean" (money, belief, power, etc.) belonging to each system, through the relevance/opacity code and they generate forms and ways which act as realities.* Furthermore, they have several functions, i.e., *producing an image of stability in changing social relationships, generating perceptions of continuity in discontinuous experiences, providing global explanations of fragmentary phenomena and allowing intervention in processes built under the differentiated perspectives.* Moreover, it can be said that they are built and rebuilt in three differentiated fields: *in the differentiated specific system (politics, law, religion, science, etc.), in that of the organizations which make real the institutionalization of the system (governments, banks, churches, academies, etc) and in that of the interactions produced among individuals in the environment of the system.* Therefore, the SI show several types of procedures: *criticism of the "facts", construction of the "observable", mechanisms activated on a level of the first and second order observations and through the use of a relevance/opacity code.* To finish this complete delimitation of the SI, Juan Luis Pintos says that these have *spatio-temporal, semantic references, references to the perspectives of construction of realities and opacities.*

We are not going to offer a detailed description of this explanation of SI. We refer the reader to some of his several works (Pintos, 1995a; 1995b; 2001a; 2001b; 2003; 2004; 2005; 2006a; 2006b). Nonetheless, we consider that it is essential for our paper to expound the concept so as to be able to circumscribe to the topic we are referring to.

These imaginaries are of the utmost importance regarding biotechnology. In fact and obviously, the SI linked to biotechnology allow us to understand the tight connection established between biotechnology and society. In this sense, we can say, together with Emilio Muñoz (2001) and generally speaking, that social imaginaries of biotechnology maintain society-biotechnology relations which can be, in general: *satisfactory*, *ambivalent* or *controversial*. These three greater fields allow us to build a contextual frame letting us move through biotechnology.

We, therefore, distinguish between (bio)technological and biotechnological taking into account that the first concept includes the second one. Biotechnology is a "group of techniques which make possible the use of properties from living creatures to produce goods and services" (Muñoz, 2001: 11). That is, it is a technology with a strong productive and economical purpose. Whereas, (bio) technology refers to the technologies linked to the living in a global sense and, therefore, to those closely linked to the human being and his transformation. For this reason, (bio)technology is not circumscribed to the attainment of goods and services; the transformation itself of our body can be included in this concept. For instance, genetic engineering is not considered as part of biotechnology, in spite of the clear, deep and technological change of life it implies.

Setting these terminological digressions aside (although they are relevant to develop an analysis as

most detailed as possible), it is necessary to state that the perception of biotechnology is closely linked to its stages of experimental progress.

> "Biotechnology has experienced different stages, depending on the degree of manipulation of the organisms used and of the products obtained. Classic technology designs the empirical technologies aiming, basically to obtain food (bread, beer, cheese, wine, etc.). Later, appeared a number of Technologies to obtain specific products, such as amino acids, methanol, ethanol and, above all, antibiotics, through the selection of natural organisms able to produce these compounds in their fermentative processes, or to secrete these important secondary metabolites. Theses technologies have been designated as modern biotechnologies. The present stage of New Biotechnologies is characterized by the possibility to modify the genome of human beings" (Montoya and Murillo, 1991: 191).

We can see in this paragraph the existing confusion regarding the concept of biotechnology; hence, our intention to clarify our terminology. In this paper, we are just focusing on the last part, i.e., the stage of New Biotechnologies which opens the possibility to transform our genome or that of the different human beings, as well as the other technologies to transform the human being. This has originated that the communication of the (bio)technological advances shape a greater imaginary environment focused on the self-construction of the nature and of ourselves.

HUMAN SELF-CONSTRUCTION

As a consequence of (bio)technological advances, many people have asked themselves what will happen to the human being after these numerous changes and if we will be able to cure all our ailments and pathologies. In fact, professor Miguela Domingo (1999-2000) asked herself if it is possible an overcoming of the man (human being) thanks to the genetic and technological advances. On the other hand, Andrés Moya (2007) states that that the self-intervention is one of the areas of knowledge constituting the future field of new technology.

> "No field within biology, when we think in the positive level (the level focused on the achievement of a singular product) implies a certain capacity of intervention. We manipulate genes now, but we will manipulate genomes, cells, embryos, organs. We are gaining access to the understanding of the basis of the human behaviour, but we will end up having a detailed map of the process of how the brain works when we generate feelings and of the higher categories of thought, including the process of taking decisions. We develop drugs, still rather generic; however, we will develop nanomachines or minimal cells able to head for "the problem in order to achieve a possible molecular solution" (Moya, 2007: 228).

This thinker sets an analogy between human beings in the future and the *cyborgs* of the film Blade Runner and asks himself if these *cyborgs* will be the supermen of the future. Perhaps, it is still too soon to be able to measure the influence of modern technology in the processes of identity, personal and collective building (Broncano, 2006: 24). In spite of these doubts of Fernando Broncano, Andrés Moya states, combining somehow the three metaphors mentioned before:

> "[…] I believe that the combination of all these disciplines [referring to robotics, computation and new materials] and derivative technologies is something from the present, where the *cyborg* represents a "retroactive future model" upon which we should reflect, among other reasons, because it could construct, like Nietzsche never imagined before, the living image, in biological and ethical terms, of what he made out as the "overman"" (Moya, 2007: 229).

The SI of the (bio)technological overman has become one of the main guidelines of technological advances experienced these days. In fact, there are many factual studies about ageing and how to minimize its effects; researches on new technologies capable of making up for physical disabilities (cochlear implants, pacemakers, orthopaedics, etc), advances in the research with stem cells which allow a "reconstruction" of any kind of damage or pathology, etc. To all this, it must be added the technoscientific efforts aiming at the improvement of the procedures and the achievement of materials in plastic surgery. Although we are not going to develop this fact, it is linked to the SI from the perspective of health and ageing. Regardless of this, we can state that, given the interpretation between the technoscientific system and the social one, the great consume of plastic surgery in certain regions of the world, above all those more technologized, exert pressure on the direction to be followed by technoscience in order to implement these technologies.

These facts make current to find people with silicone in their breasts, hair extensions, hearing aids, IUDs, artificial nails, arterial implants, etc. For this reason, we can state that the human being walks unfailingly towards his own future as a *cyborg*. In this future, two aspects have a great importance: the body aspect and the interpersonal links conditioned by the former, that is to say, sex. In fact, within *cyborg* subjects, sex and gender have been the most studied. (Figueroa y Seteven, 2002; Haraway, 1991; García Manso, 2006; García Selgas, 1999; Sánchez Palencia and col. 2001, among others.

Regardless of the sex field, not to be studied now, the *cyborg* will bring with him a basic differentiation to our formal knowledge between machines and organisms, between the technological and the organic (Haraway, 1991), although this is already happening. This differentiation could imply, as Broncano (2006) states, that the *cyborgs* would be the key to dissolve the dichotomies between the natural and the artificial, between culture and technology, between technology and praxis, between representation and action (Broncano, 2006: 26). On the other hand, the cyborg metaphor implies the concept of technology as text (Woolgar, 1988 & 1991).

Thus, with the passing of time, our daily experiences will be more influenced by the (bio)technological. For this reason, the "traditional" human bio-psycho-socio-axiological polycontexture is in a process of change towards a bio-techno-psycho-socio-axiological polycontexture. That is, (bio)technology will change, (in fact, this is taking place), the evolution of the alive, our food, our affective, volitional and social relations, etc. Hence,

> "[the] *cyborg* would be the central figure of our space-time, where the main rules of interpretation, assessment and localization interweave and become more visible […] at least, regarding the social agent. In this sense, the *cyborg* would be the figure which ties the main arguments or subjects of our stories of identity and allows materializing, personifying or seeing the events, tensions and conditions which outline nowadays the eventual social agents" (García Selgas, 1999: 185).

All this presents a great number of challenges both at personal and social level. In this challenge, as we have already seen, the psychic, biological, technological, social and ethical contextures meet. All these generate a new polycontexture to be taken into account in the analysis of the influences of the new (bio)technological advances. In the development of this polycontexture the social imaginaries play a great role, since they are mediators (they perceive, explain and intervene) of what is considered as reality.

For this last reason, in spite of what some technoscientists state, knowing the inner structure of the (bio)technological objects is not so important. In fact, the existence of the contemporary human being is full of activities where just the object needs to be used without understanding at all the inner structure (Queraltó, 1998 & 2005). However, it is basic for the analysis of the social system to know the social imaginaries because of its constructive and explicative capacity.

Rodríguez Ladreda refers to this idea when he says:

> "The technological civilization has shaped a euphemistic society, of welfare, of the everlasting summer and youth, insisting on turning transcendental the intranscendental. Contradictions of an absolutely ephemeral society which adorns itself with values of eternities as fragile as the aromas from an essence bottle and, however, can not bear the absolute contingency of life, love and death" (Rodríguez Ladreda, 2008: 137).

CONCLUSION

The era or paradigm where we are immersed is not free from great controversies and challenges. One of which, and perhaps, the main one, is that of the possibilities of (bio)technological human self-transformation. As a consequence, the human being starts to be considered as a cyborg, which implies many fields: ethical, political, anthropological, philosophical, social, etc. For this reason, the analysis of biotechnological social imaginaries (SI) is basic.

These pre-realities will have a certain function in the social system, making technologized societies, as we have explained, shape as one of the main processes of constitution that of welfare, youth and nihilism. This process is deeply linked do the metaphors of the man of Turing, the network and the Dedalus one.

With this paper, we have made the first move in the development of a future and wider study of biotechnological social imaginaries stating that the human polycontexture is a bio-techno-psycho-socio-axiological complex. This greater complex of research takes shape in the image of the human being as a *cyborg*. Far from being trivial, this is, as we see it, one of the greatest future challenges for many philosophical, sociological and even pedagogical disciplines.

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