The Dehumanization of Technoscience

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Abstract

The present paper sets forth the problem of the dehumanization of technoscience, both at the time of its production and at the time of its application. The causes of this twofold dehumanization are found in an oversimplified ontology and in an erratic anthropology, swinging between nihilism and radical naturalism. In the face of such dehumanizing trends, we propose a pluralistic ontology —where entities such as persons find a place—, and an anthropology of Aristotelian inspiration. This philosophical foundation implies a diversity of methods and approaches. It calls also for technoscience to accept its limits, and thus prevent its dehumanization. In sum, technoscience becomes valuable and meaningful when it is part of a wider human horizon.

Keywords: Dehumanization, Pluralistic Ontology, Person, Human Nature.

1. Diagnosis of a Problem: The Dehumanization of Technoscience

1.1. Technoscience and Its Semantic Field

Science and *technique* are two different realities from a historical and conceptual viewpoint. Indeed, there is technique since the origin of the human being, while science was born, at the earliest, alongside writing, around the year 3000 BC. There have been civilizations whose technical development was not accompanied by a corresponding development in science, as it was the case in ancient China and late medieval Europe. Inversely, some cultures, like the Greek culture, witnessed major scientific breakthroughs without a parallel technical evolution.

However, at a given moment, at the beginning of the Modern Era, they started to cooperate. Baconian philosophy issued an invitation to explore nature scientifically in order to master it technically. The two philosophical roots of Modernity, empiricism and rationalism, favored the cooperation between science and technique. Moreover, in some sense, modernity is precisely this: an age guided by the cooperation between scientific research and technical development. *Technology* was thus born. Their collaboration increased to such a point that, at the end of the modern era, it became a symbiotic entity that we may call *technoscience*.

In recent decades, technoscience has turned its attention toward living beings, considering them both an object of study and a field of intervention. The discovery of the structure and function of nucleic acids opened up the path toward *biotechnology*. Biotechnology may also have a profound impact on human beings, and therefore in this case we may speak of *anthropotechnics*. It is noteworthy that the application of technics to life forces us to reconsider the traditional distinction between what is natural and artificial and, as Hans Jonas says (1979), engenders new responsibilities.

This terminological clarification once done, I shall from now on use the term technoscience to refer to this ample semantic field (technique, science, technology, technoscience, biotechnology and anthropotechnics).

1.2. The Symptoms of the Problem

Now, technoscience is experiencing a twofold dehumanizing process: in the stage of production and in the stage of application.

On the one hand, there is a growing dehumanizing trend with regard to those who are doing technoscience. Technoscientific activities are carried out in a growingly automated context. The goal of technoscience seems to have turned from understanding the world to obtaining and processing big data. ‘Omic’ sciences provide a recent, clear example of such a trend, although their antecedents can be traced back to far earlier times: the idea of an *ars magna* proposed by Ramón Llull, Leibniz’s *characteristica universalis* or the *logical structure of the world* advanced by Carnap were already paving the way to the mechanization of knowledge, a knowledge understood as a automatable combinatorial analysis. More items could be added to this list, such as, for instance, the historical case of eighteenth-century relational chemistry (Serres 1989, 297-319). Traditionally, chemistry was focused on the properties of substances. Relations were just an occasion for the properties of substances to show up. However, in relational chemistry properties are substituted by relations. Thus, comprehensive tables of relations were drawn; the objective was to study *all* possible relations among substances. Traditional chemistry could be content with knowing the most significant reactions, that is, the reactions that unveil the properties of each substance, without the need to undertake a comprehensive compilation. I mention this historical example

because we may learn some lessons for our present situation. When there is no prudent —and therefore human— estimate of the significance and meaning of data, all of them have the same relevance and therefore it becomes necessary to perform a comprehensive, combinatorial and automated search.

Something similar is now taking place with regard to omic sciences (genomics, epigenomics, proteomics, metabolomics, connectomics), born as a result of the Human Genome Project. The suffix *-oma* comes from Greek and suggests a notion of totality. Sciences ending in -omics tend to enumerate, with the help of computers, the totality of elements in a given area (all the human genes, all the proteins, all the metabolic pathways…). Curiously, the more traditional suffix applied to sciences comes from the Greek term *logos* (biology, geology…) and it refers to a knowledge full of wisdom and not to a mere encyclopedic knowledge.

In my opinion, there can be no objections against omics, since they may result highly valuable; yet, the attempt to reduce all sciences to a sequencing exercise must be opposed. This understanding of science threatens to marginalize all that is truly human, all that goes beyond the mere registry and combination of elements, that is, anything that has to do with genuine creativity, emotions, meaning, significance and values —even moral and aesthetic values—, reflection, and dialogue. Data collection is undoubtedly a significant step in the progress of science, but a science reduced to gathering and combining data would be an effort as expensive as useless.

On the other hand, the most recent applications of technoscience, as it is reflected in anthropotechnics, become a risk to human nature itself. *Trans-* and *post-*humanist projects point towards the dissolution of what is human through the use of technoscience (Diéguez 2017).

Furthermore, technoscience's applications may transform nature, rendering it hostile to the necessary requirements of a human ecology (Valera 2013). Likewise, in this area it is possible to refer to technoscience as a dehumanizing agent.

To sum up, dehumanization is —obviously— a problem for the human being, since it is expelled from the practice of science and technically manipulated, but it is also a problem for technoscience itself, when its thirst for understanding is replaced by a blind power based on the brute force of computing. Giving in to dehumanizing trends, technoscience would risk becoming both stupid —since it will provide no understanding— and useless —since it will provide no service to anyone—.

1.3. Possible Causes

Among the possible causes of the detected problem, my intention is to consider two of them: a naturalistic ontology and an erratic anthropology. I am talking about an ontology that reduces all existing things to natural things, and indeed to material things (Soler 2013). Were we to accept the tenets of radical naturalism, it would be quite improbable that technoscience may acknowledge its inner diversity and its outer boundaries. Therefore, it will be unlikely for technoscience to search for legitimate partners to cooperate with in the complex task of knowing. In the eyes of the radical naturalist, the sources of knowledge external to technoscience would be, at the very best, provisional and superficial, if not plainly illegitimate.

For instance, in the field of biology, genetic reductionism was trendy for a while. According to genetic reductionism, every living being would be absolutely knowable and explainable once its genes were explored. Every living being was seen as a mere combination of genes; in fact, somehow as an epiphenomenon of its genes. Consequently, some scholars thought that the enumeration of genes would derive into a profound and complete knowledge

of all living beings, would open unlimited possibilities for its technical manipulation and would be a panacea for curing all illnesses. This is the reason behind the origin of the major *genomic* projects that have been the beneficiaries of sizable endowments. However, the development of such projects has allowed us to perceive their limits, since not everything is held in the genes (Marcos 2011). The verification of this fact paved the way for many other *omic* disciplines, a welcome step towards a certain plurality that needs to become even greater. Understanding living beings calls for a pluralistic research, at very different levels and using various methodologies, including the philosophical method. We can hardly understand what a living being is without concepts such as complexity, function, identity, information, conscience or meaning. Some of us think it is not possible to translate these concepts into naturalistic jargon. When dealing with a phenomenon as complex as life, we must resort, of course, to the brute force of computing, but also to all imagination, creativity, intuition and prudence that the human spirit is able to master.

The second root of dehumanization lies in an anthropology we have labeled as erratic. Nowadays, fashionable intellectual trends go from the existentialist or nihilist denial of human nature to its radical naturalization. Both extreme positions, while seemingly the opposite, have similar practical consequences. The denial of human nature invites to its technical production, whereas the radical naturalization of human nature makes humanity as available to technical manipulation as any other object of nature. In both cases we face a kind of anthropotechnics with no boundaries or criteria, leading to the dehumanization of the human being on account of its unrestricted artificialization. It is possible to say that there are no criteria because both the nihilist and the radical naturalist have renounced a normative vision of human nature (Marcos 2010).

2. Searching for a Solution

After explaining the main points of the problem, my intention is to offer some philosophical ideas that may contribute in the search of a solution. In the first place, it seems that the assertion of a pluralist ontology may advance the cause. This type of ontology is in line with the promotion of a plurality of scientific methods and with the acceptance of a diversity of legitimate epistemic sources, thus going beyond the limits of technoscience, while at the same time interacting with it. In the second place, dehumanization is fought against by showing the irreplaceable function of persons in the production of technoscience. Technoscience is from its very inception a personal action, as I shall claim below. Finally, in the third place, I shall argue for a guiding concept of human nature, which may become a criterion, and so may protect us from the danger of dehumanization caused by an uncritical use of the anthropotechnics. In sum, anthropotechnics must be used in order to improve human life, to make it *truly* human, not to transcend –and supposedly enhance- what is human.

2.1. A pluralist ontology and a systemic model

The dehumanization of technoscience is fought against from its very ontological roots, assuming a pluralist ontology that provides a shelter for the many various entities that compose the abundance of reality (Feyerabend 1999), including basic forces and material elements, living beings, plants, animals and people especially. People are endowed with a subjective conscience that allows them to do technoscience and that probably lies beyond the limits of technoscience itself (Arana 2015). Moreover, technoscience does not only have limits; it was precisely born out of a methodological process of limitation (Marcos 2016).

Galileo laid the methodological foundations of modern science when he delimited the aspects of reality under scrutiny.

Acknowledging the existence of boundaries requires us, at the same time, to accept the existence of other sources of knowledge and of other practices as legitimate as technoscience, although external to it. Moreover, such acknowledgment paves the way for the cooperation between technoscience and other areas of human life that may provide it with further knowledge and meaning. These mutual, collaborative relationships can be conceived in light of a systemic model (Agazzi 1992) that considers technoscience as a system of human actions, an autonomous but necessarily limited system related to other systems. The systemic model highlights the feedback processes in which technoscience is involved. For instance, if technoscience ends up being perceived by the public opinion as a threat to the environment, as a dehumanizing agent, and as an enormous pile of hard-to-grasp and even harder-to-convey data, the support it presently receives (whether in the form of financing, legal protection, new technoscientific vocations, media exposure or academic promotion) would experience a likely decrease. Thus, the systemic model suggests that the dehumanization of technoscience is, among other things, a threat to the functioning of technoscience itself.

2.2. Technoscience as a personal action

In the second place, I consider necessary to emphasize the irreplaceable function of persons in the production of technoscience. Technoscience's call to understand can only be fulfilled when it is carried out by persons and not merely entrusted to machines. Technoscience is a *personal* action: all the dimensions of a person are, to a greater or lesser degree, involved in doing technoscience (Marcos 2014). The tendency toward dehumanization in technoscience derives from a misunderstanding of the scientific method and of the concept of objectivity. It might seem that objectivity in technoscience is achieved by suppressing or standardizing everything that is subjective and by replacing it with some kind of automatically executable method. Rather, the subjective-personal dimension is a necessary prerequisite in building technoscientific objectivity. Precisely, the personal dimensions of the subject allow for the creativity and the sensible judgment that are indispensable for the production of an intelligent, communicable and useful technoscience.

For some philosophers, particularly in the positivist tradition, science is made of theoretical and observational assertions, the type of assertions typically found in articles, lab reports and books. The formulation of such assertions would be guided by a supposedly scientific method, exclusively based on observation and logical inference. However, not even observational reports and logic inferences are fully automatable; moreover, this vision of science is, to say the least, partial, and nowadays it is considered outdated.

All human faculties —not only logical and observational abilities— take part in the different stages of technoscientific research. It is obvious that the initial stage of research —the identification of a problem— depends upon our capacity to wonder and our curiosity, as well as upon the social context and the traditions in which we are rooted. Certainly, there is no algorithm capable of identifying problems in a purely mechanical manner. The identification of a problems calls for the concurrence of all dimensions of a person.

After identifying a problem, researchers start to formulate hypotheses in order to solve it. The formulation of hypotheses greatly depends on the imaginative abilities of the person, and sometimes the origins of a hypothesis have to be found in distant places from technoscience, such as someone's artistic education or someone's metaphysical or religious convictions.

After the problem is proposed and the hypotheses formulated and filtered, we must consider the stages of empirical testing. In order to test a hypothesis, we must draw its

empirical consequences, an impossible task unless we include some presuppositions besides the hypothesis. Therefore, we have to choose the auxiliary assumptions and decide how much trust we place in them. Once again we face an operation that can only be performed if the whole person is involved.

It may be possible to think that, once this point is reached, the empirical stage is absolutely free from any personal involvement. However, we know that is not the case: even the simplest observation is conditioned by our expectations. In many cases it is the action of researchers that originates a given object or phenomenon. Perception, even in the most straightforward cases, is not a passive action; it only emerges as a result of someone's activity.

Once the empirical results, whether by observation or experimentation, are obtained, they may totally or partially agree with expectations or they may differ from them. If there is no total agreement, we must resort to some kind of estimation ability in order to ascertain whether the difference is significant or not. After deciding if the disagreement must be taken into account or not, we find that the empirical testing can either reinforce or weaken the hypothesis. Yet, pure logic does not allow us to determine whether a hypothesis has been definitely proved or refuted. We somehow know that a correct empirical test tends to argue in favor of the hypothesis; nonetheless, the assessment of the empirical test cannot be done by pure logic or probability calculation, but rather by the combination of human abilities that a person can harmonize thanks to his or her common sense. Similarly, an empirical mistake should lead us to reconsider either the hypothesis or some of the auxiliary assumptions; logic by itself cannot tell us which way to follow. It is following our common sense that we decide which hypotheses are to be accepted and how much trust we can place in them.

At the more technological stages of research, we know that automatically applying a theory to the resolution of a practical problem is hardly a possibility; rather, it requires some kind of art, some complex tradition. The resolution of a problem does not derive from a simple, mechanical translation of a theoretical science; it calls for a balanced effort of a large number of human capacities.

Therefore, the success of technoscience, in terms of truth and usefulness, depends on the correct dosage of each one of our personal abilities in each stage of research. And it is prudential reason that helps us find the correct dosage and rhythm. The one doing technoscience is always a human person. Logic reasoning and observation are indeed human abilities, but a person is far more than that. Technoscience derives from the whole person, with all his or her (dis)abilities, attitudes and circumstances. This includes one's emotions, feelings, motivations, affections, interests, attention, intuition, imagination, memory, aesthetic sense, social context (conversation), historical context (traditions) and so on. Someone might say that all these personal —and thereby subjective— dimensions are precisely those that must remain at the door of the lab so that scientific objectivity is not compromised. I do not believe such thing. I rather think that it is not possible to do science unless the whole person is involved. Moreover, the integration, dosage and balance of all human abilities are achieved thanks to the common sense, or, in more philosophical terms, thanks to a prudent attitude.

If we accept the unavoidable personal nature of technoscientific research; what is more, if we acknowledge that the objectivity in technoscience is precisely the result of the sensible actions of people, we shall find a remedy against the dehumanizing trends.

2.3. Technoscience at the service of a (truly) human life

Finally, in the third place, technoscience makes sense when it is placed at the service of human life. However, the *trans-* / *post-*humanist project stands for an in-depth

modification of the human being by using anthropotechnics. In this business of allegedly enhancing humanity, we are dealing with an abstract idea of perfection that someone wishes to impose upon real human beings. When a particular and real human being is compared to an abstract idea of perfection some undesirable effects emerge (Sandel 2009). For a start, it is an unfair comparison that often derives into rejecting or despising human life in general. Moreover, history has taught us that when the senseless dream of utopian perfection has prevailed, a disastrous collateral effect is the disdain for the weakest, most vulnerable and disabled people. The real human being, imperfect as it is, comes off badly when compared to the designed utopia. This leads us to overlook that our human life is already a gift.

We cannot forget that human nature functions as an essential normative indicator. If human nature is not respected and taken as an ineludible reference point, technoscience itself loses its meaning and becomes sterile. It might produce changes in the world, but those changes cannot be considered as an improvement, since they precisely destroy any possibility to reach a shared normative reference.

On the contrary, both the common sense and the Aristotelian tradition argue for a normative understanding of human nature, including its animal, social and spiritual aspects. These three dimensions of human life cannot be reduced to one of them and are not simply juxtaposed. Each one of them completely permeates the other two. Furthermore, we must always keep in mind that humanness is a wholesome, single and indivisible attribute in each person. Human nature, thus understood, provides technoscience with a meaning and a purpose; it must be place at the service of the well-being of persons and their environment; at the service of a just and peaceful social living; at the service of the multiple possibilities opened for a full spiritual development; in sum, at the service of the wholeness of person.

3. Concluding Summary

We have detected the existence nowadays of some trends toward the dehumanization of technoscience, both at the time of its production and of its application. Such dehumanizing trends are a true problem for human life and for the continuity of technoscience itself.

A false concept of objectivity leads to the necessary exclusion of the personal subject from the process of doing technoscience and to its replacement by automated systems that enable the gathering and processing of big data. With regard to the application of technoscience, the ecological environment that provides a home to humanity is being endangered and there is an attempt at implementing anthropotechnic projects to reinvent human beings —that are viewed as deprived of a nature— as artifacts (posthumanist project) or to transform its own nature —that is seen as a strictly natural reality— at the deepest level (transhumanist project).

Once the symptoms are identified, we have tried to point out the possible causes of such ills. A poor, radically naturalist ontology endorses the idea that a science without subject is the one legitimate source of knowledge. An erratic anthropology, swinging between nihilism and radical naturalism, fosters the idea that human beings must be at the mercy of anthropotechnics. Therefore, these philosophical trends, insofar as they are a current intellectual fashion, pave the way for dehumanization.

In the final pages of our paper we have attempted to point out some possible solutions to the problem of dehumanization. In line with our proposal, we have argued for a *pluralistic ontology* that, in turn, calls for a methodological diversity that include both sciences and humanities. Furthermore, we have suggested that the *systemic model* can shed some light when reflecting about these issues. Thus, technoscience would be seen as an open subsystem, exhibiting its own inner complexity and interacting with many other subsystems proper to human life (educational, political, economic, moral…).

Moreover, we have recommended a revision of scientific methods, emphasizing the essential relevance of personal aspects, even as we try to be objective. If we perceive technoscience as a personal action, it would be harder to give in to the current dehumanizing trends.

Finally, we stand for a concept of human nature that provides technoscience with a purpose. Precisely, it is meaningful when it is placed at the service of *a truly human life*, that is, a life according to the nature of human beings.

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