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## Philosophy of Technology

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**Abstract.** The contribution of the philosophy of technology is based on a reflection on the nature of artifacts, their knowledge and the normative conditions linked to their production and use, with a discussion on the realism/anti-realism of artificial classes according to the functional theory and the historical-intentional theory of artifacts. At the same time, questions of functional knowledge and the epistemic privilege of the knowledge that makers have of their products are addressed. Finally, the discussion of artifacts as value-bearers and their normative dimension of technique is analyzed.

**Keywords:** Philosophy of Technology, technology, ontology, complexity.

## 1 Introduction

Since the beginning of history, human beings have manufactured different utensils, tools and instruments for their subsistence, using elements of the environment, such as wood, bones, stones, among others, which in one way or another gave rise to the periodization of history, among these the Stone Age, the Bronze Age, the Iron Age.

Today, technology is a frequent and polysemic concept, understood in multiple ways. Aguilar-Gordón (2011) mentions that some conceive it as the set of knowledge, skills, abilities and means necessary to reach a predetermined end, others understand it as a set of technical knowledge, scientifically ordered, that allow designing and creating goods and services that facilitate adaptation to the environment based on the satisfaction of human needs and desires.

However, it is pertinent to highlight within these proposals the one that arises from ontology: in the analysis of the spanish philosopher José Ortega y Gasset (2001), where there is a clear influence of Heidegger, it is established that the origin of the technique, including tools and instruments that are generated with it, corresponds rather to the character of the inner life of human beings. That is to say, technique and its material meaning up to the complex context in which the creation of technology is reached would correspond rather to an inherent aspect of the human being. So, the question of the classic opposition between humans and nature would rather be one where a second nature is created from the artifice created by technique and technology.

According to the above, the path built between the fact of producing accessories for mere survival would run hand in hand with the production and reproduction of the technical objects that make up that artificiality; which in turn is determined by culture. Given that not all human beings in the world satisfy their needs with the same tools or objects, but rather these needs arise from the same created artifice; and that has variations depending on culture and society.

In any case, it is evident that today technology has determined the way human beings govern, educate, think, communicate and even live, and to the extent that they have found in it the immediate solution to their problems, they have been losing their capacity for astonishment, contemplation and admiration for what was previously interesting, attractive and disturbing.

The advance of technology has brought with it a forgetfulness of the self and the implementation of principles and values in everyday actions. In this scenario, although the use of technology depends on the needs of the subject, the context and the culture in which it arises, it is essential to rethink about the sense and meaning of technology, it is necessary to rethink the educational processes in a technological world, it is necessary to reconsider principles and values that allow an ethical use of technology.

In the modern age the inventions generated created great technological systems, that is to say, several elements of technical action of the human being are united in a single one, such as in machinery, presenting more complex mechanical systems, because in a single machine the human being presents a close relationship between the manifestation of his bodily organs and his soul, because through this he can do what from the first moment would be difficult and to a certain extent impossible. In other words, the development of the means of production and technical innovations have led to changes in the socio-political and ideological structure of society. In other words, technology takes precedence over any social aspect and sphere, and as a consequence the humanities begin to be neglected.

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At present there is a clear confrontation between technology, its valuation and its influence in the different social spheres and philosophy in relation to the role it plays in it. Since its acceptance or vision from the positive or negative point of view also depends on the different philosophical lines that work on it.

One of the challenges of the technology which his relation with the education is to build a bridge between the old and new generations, through pedagogy and educational sciences, by means of preparation and updating in relation to technological media, the ability to develop a critical intelligence, capable of leaving aside some traditional methodologies and start talking about digital language, that teachers know how to guide the use of the types of information obtained to achieve socially constructive results. In other words, it is no longer a matter of looking for the places where information can be found, but of having the capacity and critical intelligence to discriminate relevant information.

Another challenge of the technology in education is the re-conceptualization of the position of the teacher and the learner in the teaching-learning process, the student would take a machine as a teacher, accessing different networks in which he/she will interact with different people, contexts and of different ages. In addition, in this process of learning on the network, the student must be educated to be questioning of what is presented to him. Websites turn out to be sources of distraction and alienation of the subject. Therefore, the presence of technological media in educational institutions forces to change the design of learning environments. The roles and functions of teachers and students are forced to change along with their way of relating, due to the presence, incidence and correct use of different websites such as You Tube, Facebook, Twitter and others that could generate safe and valuable learning through the information published in these places, however, nowadays social and academic networks are so open that in some of them the quality of the information uploaded is not filtered, so the presence of the guiding teacher is necessary for the selection and classification of the information.

Nowadays, more than in other times, being immersed in the Information and Communication Society (Castells, 1996) poses great challenges for education. Since the progressive modification of traditional teaching towards active models has also meant greater socialization regarding information and communication technologies (ICT), the challenges have become more evident. On the one hand, and as mentioned above, in this context the incompatibility between traditional teaching practices is clear, especially in the transmission of content and the assimilation of these by the students. The need to use the tools suggested by active pedagogies then becomes clear. It seems that the discrimination of the enormous amount of information that flows through the network requires active intervention as part of teaching practice.

## **3 Human/technology relationship**

According to what has been previously stated, it is pertinent, nowadays, to think of a pedagogy that attends to and promotes more and more criteria and reflection, without this consisting only in a rational exercise, but in a valuative and desiderative one. It is important to face the fact that the changes that technology brings with it in the educational field also have repercussions on the subjectivity of students. Therefore, the question in this paper is the following: what kind of impact does technology in education have on the subjectivity of students.

To begin with such analysis, I consider important to point out that, in its coexistence with the human, technology can be interpreted as an artifact: one of the main consequences of the human/robotic interactions can be found in the becoming-machine of the human, and in the becoming-human of the machine (Ferrando, 2019, 114), that is, due to the coexistence in which it is immersed, technology can be understood as a produced and manufactured entity.

For example, Heidegger (1992) comments that artifact, is the tool, the apparatus, the instrument, the machine, that is, an entity that is defined by its utility and by the relation of use that it has with us, or, *Zeug*, German correlate for the Greek term *prágmata*, the things of use in the general sense, that with which one deals in praxis.

Now, a coexistence of use or *prágmata* with things, for Heidegger (2005), consists in a being-in-the-world that is distinguished from the speculative, contemplative or theoretical way of being, he says: To be-in-the-world means to be absorbed a-thematically and circumspectively in the constitutive remissions of the being-at-hand of the whole of usefulness, that is, to be immersed in the dealing with *prágmata*. That is, in our praxis with things, the speculative abstraction of the world takes second place and, instead, we find ourselves "circumspectively" immersed in the world; how is this, "a dealing with and in the surrounding world" (Ibidem).

This circumspective way of being in the world, through our praxis with things, amounts, for Heidegger, to an access to the world in terms of *Umsicht*: the tools allow an originary access to the world in terms of *Umsicht*' (Di Pego, 2019), a word that we can analyze, according to the dictionary, as follows: *Um* means around and *sicht* means view, with which, its definition is: a looking around. Immersed in the world through the coexistence of use with things, we access, then, to a look around, a vision that corresponds to the practical field and not to the speculative or theoretical one.

To clarify the above, I return to the distinction between episteme and poiesis in the *téchne* or technique. According to Heidegger, from Plato to the present day, the prevailing understanding of *téchne* is that of episteme, that is, technique as knowledge or logos, while, its meaning as poiesis, that is, technique as creation or production, has been forgotten. Ferrando (2019), for example, comments: Modern technology is different from ancient technology because of the way society is now approaching science and technology. Modern technology has been systematized and humanized as an ordering regulated on human factual needs, in a reductionist approach which limits its possibilities as a mode of revealing (p. 42). The "looking around is a poietic, not an epistemic, mode of revealing.

The gaze of theory is directed to the interior of the human being, to his intellect; it assimilates the real according to its principles and laws. The concept and the representation are expressions of this intellectual activity, which, in addition, allows the construction of knowledge. In everyday dealings with tools, then, the *Umsicht* predominates, which cannot be compared to the theoretical vision of a subject that represents objects (Parente, 2008). For its part, looking around is directed outward from the human, it is a vision outside the intellect and, in that sense, a looking that finds a point of encounter with the real or the environment. The practical sphere refers, as we have seen, to the activities or attitudes of poiesis and praxis, which are characterized by being contingent and changing, while the theoretical sphere refers to the activity of *theoria*, which is characterized by dealing with what is necessary and eternal (Ibidem).

Thus, if human/technology coexistence is a coexistence of use or *prágmata*, technology, as an artifact, first, and as a technique, in its poietic meaning, later, offers us an access to the world that consists of looking around (circumspective), creative, productive and poietic, as Ferrando (2019) comments above, without reducing or limiting its possibilities in order to reveal.

This is our first proposal: to understand our coexistence with technology as a relationship that, even in its own technical foundation, poses a process of openness, of possibilities linked to action or praxis and not of possibilities, only, linked to speculation or epistemic.

It is worth mentioning that the concept of openness, in Heidegger, also comes from the pragmatic relation of the human being with his environment. For him, the human being is an *aperient* being, that is, a being that opens worlds, by his capacity to approach entities in view of the relation means/end, that is, by the coexistence of use or *prágmata* that he has with the surrounding world or environment. As Parente (2008) states:

For Heidegger both making tools and using them are actions possible only within a historical-linguistic world that cannot be explained in terms of adaptive resource. While both the tool and the organ point to a *para-what*, the latter is intrinsically related to the being of the organism that develops it, something that does not happen in the link between the tool and its human user.

In this way, the concept of openness and the means/end relation allow us to show the difference between theoretical looking and looking around, insofar as the worlds that the human opens are not intrinsically determined by the nature of an organism, but are extrinsically generated by the relations, interactions or coexistence that the organism or the human has with its environment.

Therefore, to point out that in the human/technology relationship there is room for a process of openness, capable of projecting possible modes of interaction and coexistence, is the aspect that this paper seeks to highlight, both in the educational field and in the subjectivity of the students.

In order to understand and give meaning to the opening proposal from the world of objects and theoretical-linguistics, it is of utmost importance to highlight the processes of construction of subjectivity from the use of tools; specifically, those involved in information technologies; since they are what enable the immersion of students in the formation of a subjectivity that receives algorithmic language.

#### **4 The human/technology relationship in the educational sphere**

First of all, I would like to emphasize that, considering the concept of artifact described above and the field of possibilities that is proper to it, the educational environment is presented as an ideal scenario to set in motion such openness and discovery. The field of possibilities that the concept of artifact raises, finds in the human condition the ideal raw material to produce a look around in a creative and poetic way.

The concept of education that interests us is that of Paideia. According to Jaeger (2001), paideia originates an understanding of the human, namely its anthropoplastic nature. For the Greeks, the human condition has a nature with the capacity to be molded. Moreover, the image or mold that forms it responds, in Ancient Greece, to a social, political and cosmological function. I consider this to be important because, although this civilization has a mold or image that forms the human being, its mold does not respond to individualism, as in Hellenism, with the Cynic, Hedonist, Stoic or Epicurean schools, for example, nor does it respond, for example, to a liberal or enlightened model in which universal freedom and reason prevail, as Villoro (2007a) expresses below: The good intention that drove the enlightened project was to achieve universal unity among the citizens of the world. However, its mode of effectuation was not the most suitable, in an ethical sense, because it consisted in uni-forming or educating homogeneously, under the mode of ideology. The paideia then is established in Ancient Greece, deliberately, with the purpose of forming something that can be formed.

Likewise, it is important to mention that it is not the image or mold under which human nature is projected, transformed and informed, but rather the plasticity of human nature, a condition that the concept of paideia originates and reveals, that is, the plasticity of human nature.

Nevertheless, the formative-educational image or mold is relevant because it allows us to question the uses about it: whether they are hegemonic, imposing, dignifying or liberating. When is one and when is the other? We consider that it depends largely on whether the mold or image assumes and integrates the natural human plasticity. Nevertheless, just questioning the image or the formative-educational model is already an ethical, dignified and liberating exercise.

As far as the present analysis is concerned, such image or mold is not assumed to be static, but dynamic: it interacts with the human educational-formative process, in such a way that both the mold and human nature affect each other. In this formative-educational process, we have identified three fundamental aspects: 1) to project, insofar as the form intended in human nature is not actual, but possible, 2) to transform, insofar as human nature can be different from what it is, without losing its identity, rather, its identity consists in such otherness, and 3) to in-form, insofar as human nature assimilates the form.

The concept of paideia reveals that education has as its basis or starting point the plastic human nature, with which, an image or model, ad hoc to the technological presence in the educational field, as it is pointed out above, would have to assimilate and integrate taking the projective-transformative-in/formative aspects mentioned above.

The openness of looking around, indicated in the previous section, by the coexistence of use that we have with technology, is congruent with a human nature open to process, transformation, projection and in-formation since its virtually actualizable dispositions are activated with the possible ways of revealing that technology in its poetic meaning offers.

If the subjectivity of students is forged at the meeting point between these two spheres: their anthropoplastic nature and the look around of our coexistence of use with technology, then, we believe, the student is in unequalled conditions to forge his own mold or criterion, mainly because the interaction, the meeting point, is constituted by his plasticity and the possible ways of revealing the use of technology.

The criterion, for example, for Aubenque (1999), is [a] practical [d]isposition concerning the rule of choice, i.e., an action or mode of acting that is directed towards something. And, without this mode (hubris) and without this something (hamartía), the criterion loses its generative capacity. The criterion, then, includes a mode of action and that to which the action is directed, and it is in this interaction or meeting point that the criterion is formed. For example, for Villoro, knowledge is not conformed or articulated only under a condition of truth, but under an ontological condition that consists in the tie between thought and reality

(2007b, pp. 210-211). That is, the meeting point between thought and reality is an ontological condition, rather than a condition of truth, and knowledge makes use of that meeting point.

That is to say, through that to which the action is directed (objectum) and the way (phronesis) in which the action is performed, ethical praxis allows for the forging of a criterion and the student is in a position to construct a subjectivity, one that consists in looking at possible modes of action with respect to the object or situation with which there is an encounter, in this case, his plasticity and the possible forms of disclosure that the use of technology offers.

Regarding the latter, it should be noted that the possibility that the use of technology intervenes as part of the process of construction of subjectivities is precisely due to the fact that they concentrate the perception of processes of the surrounding material. In this case, this materiality would be made up of the various information technology devices; both in its language form and in its material aspect.

## 5 Conclusions

Since the beginning, man has created several instruments for his subsistence, these have been perfected to the point of creating complex systems, which have ended up replacing the same human participation, hence the urgency of a new discipline that leads to self-criticism of the action and behavior of human beings with nature and with others.

The philosophy of technology, as a subdiscipline of philosophy, arises from the need to better understand the aims, purposes, sense and meaning of the use of technology, which is understood in a negative way, since some theorists, teachers and students have the false premise of understanding technology as an instrument that deprives freedom, preventing the ability to create and innovate for themselves, when in fact it should be understood in its rightful measure as that which allows the resolution of problems and the generation of knowledge that allows social development.

The task of the philosophy of technology is to propose different strategies that help to understand the users, the narratives of power used through social media, for this it is necessary to apply different philosophical methods that in one way or another help to understand the impact of technology on human existence.

It is evident that the growth of information and communication technology has given rise to the conformation of a new digital scenario where the Internet has become the virtual gateway to knowledge, information and the whole world. Despite this and the fact that technology has a significant impact on education, modifies the behavior of human beings, transforms their being and being in the world, the mere incorporation of technology in educational processes is not a guarantee of educational quality, there is much to be done in this regard.

The network society brings with it a new structure of thought, new forms of information processing, new ways of transmission and construction of knowledge that at the same time demands the generation and use of new techniques, tools, strategies and instruments in all areas of human action.

In this new digital context, education is responsible for energizing the use of technology and all its derivatives, it is up to it to propose mechanisms to raise awareness about the use of the media and instruments generated, it is up to education to enhance the communicative capacity, promote subjects with principles and values, promote the development of critical, analytical, reflective, constructive, proactive spirit, generate autonomous beings, free thinkers, entrepreneurs able to respond to new social demands.

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