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The Question about Ethics Teaching as Boundary of Artificial Intelligence

La pregunta por la enseñanza de la ética como límite de la inteligencia artificial

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Abstract

Education faces important challenges in front of moves that the Information Technologies and Artificial Intelligence are bringing about, in fact along COVID-19 pandemic the systematization of virtual education took place. On another hand, the transhumanism as current of thought is setting up imaginaries about the future. Transhumanist tradition thinkers and other outsiders of this current are paying attention to the education's future in light of educational technologies developing. Thereby, the aim is to propose a theorical approach over the troubles brought forward in the education, according to present challenges that they have been laid down by AI with regard to values learning. Thus, it will not engage with deontological codes for cyborgs or for machines capable of learning, nor will it seek to propose pedagogical model changes in response to technological innovation. Rather, starting from philosophical transhumanist documents review and critic documents with transhumanism it will particularize in the controversy about what scopes will get the AI inside of education's future projection, inasmuch as it is not sure if the machines will achieve to work functions of teaching, neither what the students could learn trough of them moreover in relationship to learning of the ethics.

Keywords

Information Technologies, Educational Technology, Virtual Education, Artificial Intelligence, Transhumanism, Ethics.

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Resumen

La educación afronta grandes retos ante los cambios que las tecnologías de la información (TIC) y la inteligencia artificial (IA) están produciendo en las relaciones sociales, de hecho, durante la pandemia de COVID-19 se experimentó la sistematización de la educación virtual. Por otro lado, el transhumanismo como corriente de pensamiento está construyendo imaginarios sobre el futuro. Algunos pensadores de raigambre transhumanista y otros foráneos a esta corriente se preocupan acerca del futuro de la educación a tenor del desarrollo de la tecnología educacional. De este modo, el objetivo es proponer un tratamiento teórico que discurra sobre los problemas que suscitan las tesis transhumanistas dentro de la educación, merced a los actuales desafíos implantados por la IA a propósito del aprendizaje de valores. En consecuencia, no se van a contemplar códigos deontológicos para cíborgs o máquinas con capacidad de aprender, ni se tratará de explicar la conversión de modelos pedagógicos conforme a las innovaciones tecnológicas. Más bien, a partir de una revisión de documentos filosóficos transhumanistas y críticos del transhumanismo, se enfocará en la polémica sobre qué alcances tendrá la IA en la proyección futura de la educación, ya que no está claro si llegarán las máquinas a desempeñar funciones de enseñanza, ni qué podrían aprender los estudiantes con ellas fundamentalmente en lo que respecta al aprendizaje de la ética.

Palabras clave

Tecnologías de la información, tecnología educacional, educación virtual, inteligencia artificial, transhumanismo, ética.

Introduction

To ask whether a robot could teach ethics is not a trivial question, nor is it a trick question to provoke agitated discourses full of controversy. Rather, this question symbolizes a non-return in the uncritical trust placed in the use of technologies. It is interesting to present the way in which virtual learning programs, as well as artificial intelligences, are taking over educational activities and institutions, which presents a moment that has not been reached by chance. A series of changes in the organization of society had been taking place beforehand, including new ways of producing, trading, consuming and sharing information. These changes explain the fact that the advance of instrumental rationality, accompanied by a battery of new technologies, leads us to wonder about the possibility of a robot teaching ethics. It is not new that machines and AI programs are doing more and more human jobs, in other words, making humans unemployed.

Therefore, the idea to be defended in this manuscript is that artificial intelligence (AI) applied to education finds its most decisive limitation in the teaching and learning of ethics. The way in which social imaginaries are conceived and created around information and communication technologies (ICT) and AI today unfailingly leads to the question «could a robot teach ethics?» Thus, two independent positions are considered, but they are still part of the same fallacious argument when it comes to conceiving education in relation to technologies and their po-

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tential transformations. The first position considers that the current educational system and pedagogical practices allow for changes that envision innovations in line with the context in which current educational subjects are immersed, around whom processes that integrate new technologies are built. The other position sees in the technologies, especially in AI, a substitute for education, which historically was entrusted with improving human beings; according to transhumanists, technologies and scientific advances will perfect the human species.

Hence, the aim of this manuscript is to confront the idea that machines can teach, considering as an insurmountable limit the teaching and learning of ethics in particular and of matters of the human spirit in general.

The first problem that arises is the transfer of the classroom to digital screens and the replacement of face-to-face educational technology by virtual platforms, which anticipates situations perfectly fit into transhumanist imaginaries. Likewise, the hybridization between face-to-face and virtuality, increasingly mediated by AI programs, is a reality in at least part of the world. Another problem lies in the replacement of human labor by robots and AI systems, which considerably reduces the number of available jobs. The paradigm shifts that are being generated around the conception of work also affect education, largely because it had been configured in relation to employability within capitalist instructional spaces, extending to different productive, administrative, commercial and training functions.

In accordance with the problems formulated, concern arises about the possible replacement of human teachers by educational platforms, applications and even, in the perhaps not so distant future, by robots with a high level of interaction with students. Although this is feasible, it still has many limitations, and the basic controversy comes from the teaching and the discussion of ethical values, where AI could fulfill certain roles that, in no case, would completely replace the work of a human teacher. In this sense, it is worthwhile to go into the reformulation of education beyond instruction or the mere acquisition of learning and values by transmission, memorization and replication. Another issue that should be mentioned goes back to transhumanism's own conception of human improvement, which is exclusively focused on the improvement of characteristics, abilities, skills and even behaviors. But this notion of improvement or enhancement does not exactly coincide with the improvements that education should achieve, since the mere empowerment of critical thinking, which addresses issues of thought, is something that AI

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programs and robotic systems in general fail to apply in all their complexity, multidimensionality and diversity.

Currently, the irruption of artificial intelligences in everyday life and, with it, in teaching and learning processes, generates as much fascination as fear. For this reason, it is important to review the origins of these theoretical problems that concern education, which do not arise only from the irruption of AI - an immediately topical issue - but have been originating since the emergence of industrial production relations and new forms of consumption and enjoyment, accompanied by the exchange and generation of information through ICTs. For at least three decades, there has been promising improvements in the human species thanks to technologies, which brings education into play. Education, as a system and practice, was not prepared to face the changes brought by technological development, nor do technologies bring about changes in humans capable of completely replacing education. Namely, if training in values to achieve a cosmopolitan humanity and guiding individuals towards forms of coexistence based on dignity and respect for freedom are aspects of educational training in values, it is an exclusive domain of teaching and learning among humans, something that machines would presumably not be able to learn fully and, therefore, would not be able to teach.

The type of research carried out is based on an interpretative paradigm from a hermeneutic methodological approach. The research design is documentary, because no empirical field data or experimental or quasi-experimental research procedures are used. The hermeneutic method used takes the texts of the bibliography as documents on which to base the interpretations on the subject; these texts are therefore used to document the issues to be addressed and are systematically reviewed in the light of the problem posed. The search for relevant texts for the research process has resorted mainly to sources available on the Internet, and on scientific databases. PDF books by authors relevant to the subject of the manuscript have also been obtained from the recommendation of academic experts in very different philosophical and pedagogical currents, with whom informal conversations have been held (not included in congresses, seminars, webinars or reports of research groups and projects) on the topic to be explored.

Finally, the manuscript has a body of arguments divided into four sections: the first focuses on the process of digitization of education, taking as a starting point the crisis caused by COVID-19, when ICTs gained unprecedented momentum in educational processes. The second focuses on the transformation of educational institutions, which is in tune with

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the breakdown of disciplinary industrial societies and the rise of an economy based on consumption and data sharing in cyberspace. The third explores the economic and social issues surrounding the replacement of human labor by machines, which does not leave education indifferent. The fourth delves into the debates of transhumanism around human enhancement and the idea that education could be replaced by technologies for this purpose.

The digitization of education since the emergence of COVID-19

The crisis caused by the pandemic brought with it the urgent need to implement online education programs for an indeterminate period in practically all the countries of the world, due to the obligation to maintain a rigorous social distance. This situation made it necessary to implement distance education programs, so ICTs were necessarily involved in educational development. This process had already been taking place before in some areas, but the obligation of isolation accelerated it.

The situation experienced by the educational system brought with it a series of novelties deployed on the possibilities offered by ICTs when executing teaching-learning processes. Arundhati Roy (2020) argues that the widespread disruption, due to COVID-19, caused the previous normality to be yearned for as a way of denying the irreducible transformations that occurred since 2020, although many of the changes that have occurred are likely to persist, there is also «the opportunity to rethink the end-of-the-world machine we have built for ourselves» (p. 60).

A decade ago, for example, the cell phone was a device rejected by most teachers in learning activities and spaces, in fact, its presence was demonized in classrooms as a distraction for students. However, today, due to the need to replace face-to-face classes with teleducation, the cell phone has become an essential tool for many tasks involving remote interaction, both for students and teachers. In many circumstances, the cell phone is even the device from which to follow classes or perform online tasks. Maurizio Ferraris (2008) argues that something very different happens with the cell phone from what happens with access to new technologies by poor people: normally poor people are excluded from enjoying the latest technological advances, but when it comes to the cell phone people have it «without owning a house, indeed, a person can have one because is homeless» (p. 47). Ferraris (2020) argues that humanity is

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witnessing a «documedial revolution» in which human behaviors are recorded making praxis a *poiesis*. For Ferraris (2020) everything that can be recorded becomes valuable, in such a way that «zapping on television is wasting time, scrolling the cell phone is not, and the difference lies in the fact that zapping did not leave a record, while being on the Internet does» (p. 46). Education is already immersed in this new *documedial poiesis*.

In a paper entitled «Responsibility in the education of cyborgs», by Monica Ramirez Pavelic (2011), it was predicted that the next transformations to be experienced by humans, beings in constant change given their unfinished nature, are inescapably related to technologies; thus, the next modifications may no longer follow the usual parameters within the human, since the next step will be the cyborg, which will bring with it increasingly patent moral dilemmas. First, students have access to it, «affecting the ideas and interests of children and young people, whose conversations often revolve around this or that model of cell phone or game» (p. 7). Then, over the past decade, the use of digital technologies by learners went from being under conditions of subversion with respect to the attention usually claimed by the teacher's authority to being an irreplaceable input for the entire educational community.

The introduction of increasingly varied technologies in educational activities implies that it is much more advisable to promote their responsible use, if humanism in education is to be maintained. One of the problems facing humanism in education today, and specifically in educational practice, lies in the absence of ethical guidelines that promote the rational use of technologies by users. Miranda Orrego and Grijalva Alvear (2020) point out that despite the fact that *tablets* allow school children to access a large amount of data from the Internet, most of them «approach the teacher to show that they have finished their activity», which would show that the «link established between the child and the teacher exceeds the *tablet,* the latter supports or not what the teacher says, but does not replace it» (p. 199). However, the mediation of the teacher in the activities with digital devices does not prevent the requirement of adaptation to the instrumental rationality of the technological-digital operations from avoiding the processes of review and self-questioning about the way they are used, as well as the uncritical truthfulness with which the contents provided from the network are assumed.

Digitizing educational processes anticipates the hybridization between humans and technology, as a starting point in the formation of cyborgs. Haraway (1995) describes the cyborg as a cybernetic organism in which the organic and the mechanical converge, but it is also an object of

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the imagination, a product of science-fiction, which can cross the border with social reality to demand changes. For the author, the cyborg is not configured according to the opposition between the public and the private, in such a way that it «defines a technological *polis* based partially on a revolution of social relations in the *oikos*, the home» (p. 256). Although, on the other hand, he refers to the ludic use of ICTs as a way of consummating the end of public life, which enables the rise of a military and economic organization on the margins of the majority and, especially, of women:

> Technologies such as video games and highly miniaturized television receivers seem crucial to the production of modern forms of 'private life'. Video game culture is above all oriented towards individual competition and alien warfare. Here generic, high-tech imaginations are produced that can result in the destruction of the planet and a science-fictional escape from its consequences (p. 288).

The year 2020 demonstrated that the potentiality offered by ICT and cyberspace can also encompass areas such as the School and rapidly change habits that seemed unchangeable -such as the face-to-face classroom for the virtual education class-. This, without taking into account many elements that had traditionally been considered essential to the educational task. Before the prohibition of classes, a way was sought to keep the contact between the different actors involved in education through online programs, which were implemented with some success, although not without difficulties and details. Expósito and Marsollier (2020) indicate that, according to the study they conducted in Argentina, which mainly surveyed teachers, there was evidence of a decrease in student performance. Although there was a positive use of pedagogical-didactic resources by teachers and family support to students, inequalities in access to technologies, a factor related to the cultural capital of each family, could not be avoided.

Despite the proliferation of cyberspace, now systematically applied to education, the problems related to unequal educational access continued and will probably continue. This is more a political than a technical issue and technological-instrumental rationality alone will not solve it. However, the struggles for social rights will also be more strongly installed in the claim for access to technological means that, among other things, allow free education in cyberspace. Perhaps this is a space without a defined place where human beings can claim their dignity in a moral and political sense, although, paradoxically, immersion in cyberspace

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contributes to transmute the traditional notions of what is human and what is dignified.

The characterization of technological devices and digital relations in the discourses of certain critics, theorists and thinkers, even before the forced social distancing of 2020, raises the question of whether the supposed advances that humanity is experiencing do not also contribute to entrenching ineluctable systems of domination. During the first months of 2020, authors such as Franco «Bifo» Berardi (2020) insisted on suspicions of a use of technologies taken to the extreme of totalitarian domination of human life. Specifically, the author speculates on the possibility - for him improbable - of «a techno-totalitarian form in which bodies will be forever distributed, controlled, commanded at a distance» (p. 44), although he later argues that a capitalist totalitarianism in which the circulation of capital is not stopped, but which withholds bodies, would not succeed given that it underestimates subjectivity and the harmful effects on the psyche and the economy. Regardless of this, it is possible to notice how the author introduces a hypothetical dystopian scenario that takes technologies as the only indispensable executors of a supposed totalitarian order.

Likewise, it is worth mentioning Byung-Chul Han (2020), who, with regard to the success of *big data* in controlling the pandemic in China and other countries in the East, reaffirms his distrust of technological advances for the benefit of citizens and raises the advent of «a digital police regime» (p. 110). Han (2015) qualifies *big data* as a mechanism for extracting knowledge from subjective aspects that respond to the mere arbitrariness of individuals, it is «a necessary aid that makes up for the lack of objective data» (p. 88). According to Han (2016) the saturation of data in hyper-informed societies does not represent the access to forms of truth and, rather, accuses an important emptiness where only data abound in the absence of theoretical concepts carrying meaning. In particular, *big data*, according to the warning of Niño Morales *et al.* (2024), has a direct impact on the development of politics, «since the information generated is used as a tool by rulers and political parties to provide and offer targeted information for specific purposes, in the search for and attainment of power» (pp. 250-251).

Another relevant reflection is provided by Markus Gabriel (2020) when he states:

> The coronavirus highlights the systemic weaknesses of the dominant ideology of the 21st century. One of them is the erroneous belief that scientific and technological progress can drive human and moral pro-

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> gress. This belief encourages us to trust that scientific experts can solve common social problems. Coronavirus should be a demonstration of this for all to see (p. 131).

What Gabriel (2020) points to is the absence of a relationship between technological and scientific development with the level of morality of societies, which questions whether a higher level of technological and scientific knowledge really improves human beings from a moral point of view, thanks to the ability to coexist better within local, community, socio-political and geo-political spaces.

Cyberspace relations and the dismemberment of the School in the post-industrial age

Sloterdijk (2006) identifies education with a process of anthropogenesis corresponding to the domestication of *animal-sapiens* for the formation of *man-sapiens*. He considers that education is a masquerade of civilization, whose starting point corresponds to the moment when «speaking men live together in larger groups and are linked not only to the houses of language but also to built houses, they are also subjected to the field of forces of sedentary ways of life» (p. 57). Leopoldo Tillería (2020) emphasizes that Sloterdijk proposes «upbringing instead of education» (p. 68). Today, cyberspace has risen above what Sloterdijk (2006) calls «literate associations of forced friendship» (p. 24), what nations became between the nineteenth and twentieth centuries, just when «humanism became pragmatic and programmatic» (pp. 24-25). As opposed to the formative programs aimed at a public with common readings that cement filial ties in the cyberspace on which social networks emerge, associations of individuals are taking shape, exchanging small messages, whose sharing occurs according to social relations based on daily life, friendship, work or pleasures, but not according to national culturalization and civility programs programmed by the state for the creation of a common public.

The exchange in social networks is not epistolary, nor does it even require a high level of literacy; in most cases it is enough to be able to read and write in a functional way. Cyberspace linking groups can be formed from many different types of relationships, coming from different spheres of social and personal life, such as family, co-workers, partners, colleagues, nights out, friendships abroad, etc. Friendship in a social network, being or not in a group, often outlines a person's structure of preferences and companionship. It is not the national fraternity that unites people around

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social networks, nor do state educational programs establish a bond, its participants are often users without a necessary vocation for writing, in fact, there are also those who resort to images (memes, *sefies,* etc.) and even to tiny fragments of voice that cannot be called speeches, whose emission is produced through the recorder built into the *smartphone*. In this way, everyday life simply emerges, accompanied by a voracious tendency to show tastes, slogans, affinities, bodies, feelings, experiences, etc., in which the subjects usually appear as a showcase for consumers.

The education that could emerge from here disrupts the obsolete programs that nation-states implemented through schools since the establishment of universal education. State educational programs have been forcibly adapting to a globalized world, but without altering the domestication component with which they have tried to mold the new global citizens, as a function of the market and business and as a replacement for the national citizen. Moreover, the trend towards the technologization of educational processes does not fail to generate alarming scenarios for the future. However, any alarm is undermined by the public's almost blind trust in the digital spaces of which they are users, which has been affirmed since the COVID-19 pandemic. Since the emergence of digital devices, their indiscriminate use within many educational contexts presents one of the most pressing problems for the critical component within education: during the time that individuals use these devices as users, they operate them with an uncritical attitude.

The degree of speed in the transmission of information offered by ICTs, as well as their power to put entire populations in communication, apparently provide the opportunity to think of a digital democracy that is more efficient, direct and transparent in the governance of public affairs. According to Quintanilla Fisac (2002), digital democracy could increase the levels of citizen participation in public affairs and the connection between political representatives and their constituents could be improved, although he does not believe that it is possible:

> The most important challenges and solutions for the development of democracy have little to do with the use of information technologies to organize voting, to make continuous consultations with the population on political issues, or to substantially improve the problems of legitimacy and efficiency that political representatives have in their communication with voters (p. 639).

Democracy does not necessarily improve if citizens find greater communicative possibilities; it could even get worse if we pay attention

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to the opprobrium and insults exchanged by sympathizers of different political parties in social network chats. The improvement of democracy, as well as the improvement of social coexistence, does not come in any case from an increase in the technological power of each user; however, even the presence of ICTs in human relations contributes to the reflection of serious flaws that humanity has been dragging along and that now become visible more quickly in cyberspace. The composition of political disputes in social networks shows a greater verbal violence that, in fact, on more than a few occasions materializes in the public space. Specifically, in the political sphere, the festering of irreconcilable ideological positions comes from an ideological subject that is prototypical of the previous century, whose decadence is noticeable in cyberspace, but also with violent drifts.

The basic challenge lies in the possibility of cyberspace becoming a community of educated citizens sufficiently prepared to participate in public affairs, beyond the ups and downs of ideological politics. One of the problems in this regard is the devaluation of the state in educational policy. According to Khvastunova (2020) the contribution of States to educational plans generates programs that seem to be increasingly prone to satisfy mercantile demand and the returns of private capital. The relevance of education has to be reviewed in light of the new educational challenges for public coexistence, both digital and physical.

Regarding the above, Sibilia (2006) says that the educational institutions that emerged at the pace of industrial societies, like many other current institutions, are in crisis; paradoxically, the control and disciplining mechanisms «of the past are gaining sophistication, some are intensifying and others are changing radically» (p. 27). New subjectivities are emerging, thrown into the market and driven by the digitalization of social relations, these new subjectivities are not apprehended within the disciplinary devices, the school and the classroom are no longer the primary places where, from childhood, subjectivity is forged. The ideological man of industrial societies cannot face (or resist) the collapse of the institutional walls in which dominion over bodies was exercised in order to turn them into productive force. This new situation «is quite different from the scenario of modern society at its industrial boom, and therefore, it can be assumed that new modes of subjectivation are emerging» (pp. 32-33). The school space was one of the foundations of disciplining, destined to discipline bodies for industrial development. But with the rise of new technologies, the human being becomes expendable and replaceable by machines, so that consumption rises as a way of generating wealth

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-this will be discussed in more detail in the next section- therefore, the way of exercising effective control over individuals configures new formative scenarios, as well as it simultaneously constitutes new resistances from the educational sphere itself.

When Haraway (1995) raises the futuristic of the informatics of domination in the idealized spaces of advanced capitalist societies in the school, the author sees the place of pairing between the needs of high-tech capital and public education. In the school, elements of selection intervene to create an education for the masses, making them ignorant and distant from science; also in higher education, directed by industry, mechanisms of control and selection intervene «by the multinationals of science (especially electronics and biotechnology companies); numerous elites of privileged education in a progressively bimodal society» (p. 294). A concern that Adela Cortina (2024) points out is the constant widening of the digital gap, aggravated by the introduction of AI to education, since most educational institutions around the world do not have access to the Internet. Despite the promises of personalization and automation of learning from the technological-educational market, with platforms that through «ratification» techniques generate the incentives to retain their learner clients, here «inequalities widen, because the well-placed receive attention from people, while the masses are in the hands of intelligent machines» (p. 218).

Today, Silicon Valley introduces all the ingredients for imagining the exclusive and exclusionary school of the future as a model of selection and class division according to knowledge. Within the top-ranking schools, studies will be offered to keep a group of individuals in the social elite. The counterpart will be a multitude of traditional schools, including universities, with serious shortcomings in offering state-of-the-art scientific knowledge to their students.

The increasing participation of technologies in production and the redefinition of work

The automation of various productive activities, management and services contributes to the loss of employment for human beings. Rifkin (2014) gives an account of how in almost all sectors, not only industrials, the impact of new technologies causes disengagement of employees. «Automation, robotics and Artificial Intelligence are eliminating jobs in management tasks and in the service sector at the same rate as in the

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manufacturing and logistics sectors» (p. 161). Not spared are knowledge workers, who are also becoming expendable. The streamlining of algorithms and the development of AI contribute to the ability of machines to make discoveries, propose hypotheses, translate languages, etc. AI is also being applied to document analysis in professional fields whose workers would never have suspected it. The truth is that there are computer programs -predating today's artificial intelligences- capable of doing the work of many professionals more efficiently than humans, giving equal or better results and at very low cost. Rifkin (2014) predicts that over the course of this century «an increasing share of society's productive economic activity will be in the 'hands' of intelligent technology overseen by small groups of highly skilled professionals and technicians» (p. 168).

Consequently, with the automation of jobs, the demand for labor will decrease. It could be argued that it does not seem to be affecting the educational field, since at least for now no school or university would allow robots to perform the same tasks as teachers. But it is worth noting that at present, there are instructional and programming activities directed from robots to other robots. The economist Santiago Niño Becerra (2020) states in this regard:

> The supply of labor is already greater than the demand for labor, and structural unemployment is increasing. But technology will gradually reduce the need for labor and, in any case, demand professionals with very high qualifications and experience. In fact, we are entering scenarios in which robots are already teaching other robots how to perform tasks and in others where machines are already programming machines (p. 392).

For this author, the level of unemployment that will be generated by new technologies and AI is a cause for concern; the forecasts are not encouraging and, although technological development will create new types of employment, it is estimated that these will not satisfactorily cover all the available labor supply. The question therefore arises as to what to do with the mass of workers who will be deprived of gainful employment. Even more worrying is the question of what will be the use of secondary and higher education if machines and robots take over most of the technical and administrative jobs that traditionally required a large number of skilled workers.

One issue that cannot be overlooked is the fact that robots are already programming other robots, which does not exclude the possibility that they will end up carrying out teaching tasks for humans -if we re-

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duce teaching to a kind of instructional programming. Cortina (2024) comments on a case regarding the use of robots in tasks that have normally been performed by humans: in 2010, Michael Anderson and Susan Leigh Anderson programmed an assistive robot called Nao, whose main function was to remind elderly patients when to take their medication and to establish when to stop taking it. But the particularity of Nao was that it could choose the degree of insistence to make the reminders, and could even decide not to insist, in order to respect the autonomy of the patients, of course always informing the corresponding human supervisor. The Andersons considered that the robot was capable of making basic ethical decisions, although such decisions - as Cortina points out - are based on moral principles installed in the robot's programming.

This case leaves open a question no less relevant to the educational field: could a robot be entrusted with the education of one or more people, just as Nao was granted the care of the elderly? If a robot has a margin of choice when caring for the elderly, insofar as it decides when it should not overstep the limits of someone's personal autonomy, then that same robot, based on the criteria of its programming, would be able to offer a lesson in ethics and even give examples to its students based on its choices in practice. It is worth arguing, however, that under these hypothetical teachings given by the robot would always be operating the principles of its programming, i.e., algorithms by means of which it calculates what is most convenient. Cortina (2024) classifies this type of programming within the level of «roboethics» that has to do with «machine ethics» (p. 93). At this level, an ethical code is installed in robots and a certain degree of autonomy is attributed to them, so that humans can judge to what extent the robot operates according to an ethical code and to what extent the program applied by the machine is appropriate. Just as a code can be applied by a robot, it can also be taught by it, if its action is recorded by the algorithmic program as a kind of good or appropriate action.

On the other hand, taking up again the problem of automation in relation to human jobs, the activities that robots are able to perform make it necessary to go deeper into the concept of work. One of the authors who takes on this task is Ferraris (2020, p. 164), who realizes that automation will cause the disappearance of a large part of jobs, as well as the reduction of the costs of goods and services. However, he argues that the conception of work must be broadened. For Ferraris (2020), consumption, by generating profit, will also fit as work, since «human labor as production will be a phenomenon quantitatively too rare to be an economically significant element» (p. 165). The paradigm shift of labor involves

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the production of value through the consumption of data. Beyond the awareness of working -according to the example presented by the author- if a pack animal creates value without being aware of working, then, also a porn viewer will be working insofar as he produces data and thus wealth. Likewise, Ferraris (2020) indicates that there is no place for considering work as alienation, i.e. there is no way to relate work to activities that imply enjoyment for the person or people who perform them, because it would lead to the conclusion that those who enjoy their work should not really receive a salary: «If you enjoy it, it is not work» (p. 172). The author is careful to present «as a hope, what in the West is perceived as a threat» (p. 173), in relation to the incessant loss of jobs and the position of the human being as a dispensable entity in production.

With respect to the above, it can be seen that Ferraris' proposal dimensions the concept of work on much wider margins than mankind has so far believed, not overlooking the fact that if consumption is equated to work, then, also to consume would require an instruction, which would entail the need to teach ethical guidelines that would allow the creation and interpretation of the ethical codes that regulate the consumer's profession. In fact, without being considered a profession, consumers all over the world urgently require codes of ethics. But for the moment, the trend is not towards the idea of a consumer code of ethics. The consumer considers himself to be free, and this is how many market analysts see it; starting from freedom is a legitimately ethical point, but its definition in consumption tends to belittle any kind of obligation or deontological agreement, and the simple fact of proposing them is often portrayed as contrary to freedom.

In practice, consumer freedom is a fiction of economic science: the consumer is only driven by data frequencies that ICT tunes to the affective frequencies of subjects, these fluctuate in the social composition of desires and passions, in turn moving crowds in the order of pre-designed consumption preferences. Today, there are AI systems capable of offering consumers the good or service they are looking for according to the characteristics deduced from the data they provide in their web searches and participation in social networks, but, although these programs are in some cases very effective in locating preferences, there is no evidence of consumer ethics. There is so much voracity of the consumer that it puts the sustainability of planet Earth at risk. Caring for the Earth is an activity not entirely contemplated as a form of work because, if there are unsuspected conceptual dimensions in the definition of work, caring for human communities, biodiversity and the environment would also be in-

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cluded in this definition. This work does not generate immediate returns in the sense of «documedial» value, but it can produce relevant balances in the long term.

Another problem deriving from the conceptual crisis of work concerns the meaning of education in a world where training is no longer a guarantee of insertion in the labor market. If machines occupy more and more human jobs and their supervision will foreseeably require only a handful of hyper-skilled and hyper-specialized human technicians in control functions, then training understood as education will be reduced to select groups of people whose access to it will be privatized in financial terms, which will bring with it very demanding, rigorous and exclusive selection mechanisms for those who cannot afford to pay for accessing this type of education. These selection and exclusion mechanisms respond to the rise of econobiopolitics, which Villacañas (2020) considers as the neoliberal reduction of biopolitics, whose purpose is the conversion of «the human being into a *cyborg* better adapted to the suffering of a permanent crisis stabilized as nature. The best adapted is now not selected by the biological load but by the implanting of the best *Homo economicus*» (p. 185). This readaptation to the permanent crisis would be implemented from the internalization of a logic of productive-financial performance that would not discriminate between human and artificial intelligences. The technological would be blurred in the human flesh itself. In this way, it can be affirmed that education is no longer properly such, since it has lost the purpose for which it was conceived. According to Ferrando's (2019) the characterization of *paideia* is:

> The formal education of its citizens -in the *Polis* of the ancient Greeks- (although not everyone had access to it), and also the informal participation in culture, promoting an identification process of the individual with the political *ethos* (p. 91).

Today education is stripped of the *paideia* that originally founded it. The conception of education in industrial societies has been linked to the idea that the training of human beings is worthwhile, according to the benefits to be gained from instruction in the productive apparatus. This notion of education has increased to the point of perishing those fields of knowledge that do not have immediate productive or financial results, as they do not respond to a sufficient demand of students because they do not guarantee a promising professional future. With the entry of robots into productive and labor activities, education, understood as instruction that interests individuals to the extent that it prepares them to perform

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more or less specialized work, also succumbs. Nevertheless, the reduction of jobs does not necessarily make education disappear, because it has a much greater meaning than instruction or preparation for the development of a particular profession or job. A scenario is opening up where vindicating the «paidetics» component inherent to education will be a way of keeping its integral sense alive.

Margins of possibility for ethical education in a transhuman context

Transhumanism is a philosophical movement that reflects on possible scenarios in a future horizon, under the assumption that technical and techno-scientific advances will substantially modify the human being. In this way, transhumanism does not try to develop technical abilities of humans from their natural capacities, thus what education does in a traditional sense, but rather, it promotes «transforming the human being into another type of entity, into an entity with another nature or without any nature. For this project, very diverse technological modalities are used» (Marcos, 2021, p. 1). The controversies opened by transhumanist imaginaries also loom over education, given that both the spaces and the practices and theories that are evident in education are susceptible to be influenced by the complexities brought by ICT in the cognitive, sociocultural, technoscientific, economic and political dimensions.

One of the most striking AI programs today is AlphaZero, capable of learning by itself to play strategy games. So far, AlphaZero's great achievements can be counted in chess, where it has demonstrated intuition, creativity, the ability to take risks, and even to generate beauty on the board. These characteristics correspond to human traits and qualities that until a few years ago were unthinkable for an AI program. At the end of 2017, AlphaZero beat StockFish, considered the best chess program and with which grandmasters learned - the fact that they improve their technique by resorting to AI programs already says a lot about the potential alternatives of learning with AI programs. In an interview with the world champion Magnus Carlsen (Garcia, 2019), he acknowledged that his own style of play was modified once he began to take ideas from AlphaZero, in fact, many chess scholars note that the world champion's style has become much more aggressive, speculative and disruptive with respect to the rules of opening and positioning established and recommended by the chess academy. Apart from the achievements of AlphaZero, other

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versions such as AlphaFold perform with high prediction accuracy in the field of genetics.

Long gone is the 1997 victory of the Deeper Blue version of IBM's Deep Blue computer against the then world chess champion Garri Kasparov. Bostrom and Yudkowsky (2011) argue that Deep Blue «became the world chess champion, but it cannot even play checkers, let alone drive or make a scientific discovery» (p. 3) (own translation). Deep Blue could calculate «the relationship between a move and its possible future consequences more accurately than programmers» (p. 4), yet this computational system could not transfer its calculations to areas other than the game of chess, nor did it have the ability to draw consequences from one game to another. However, AlphaZero can learn, which shows that in twenty years AI has managed to cross an important barrier: from functioning as a system programmed to execute predetermined actions according to complex calculations to being able to improvise in decision making taking into account previous situations. The AI can decide whether or not to move a pawn, but one wonders whether it can also make a decision that is considered ethical or whether a kind of ethicity can be attributed to one of its decisions.

Possibly education is the field where AI can demonstrate its scope and, presumably, also where its ineluctable limitations become evident. With respect to learning, Sánchez Ramírez and Juárez Landín, (2017) show that there are already robots that intervene in teaching processes, and are proving useful for humans to learn languages, science and technology. On the other hand, López Ramírez and Andrade Sosa (2013) highlight the advantages of education through robotics and with robots, which contribute to stimulate the construction and reconstruction of knowledge from the learning subjects. Likewise, the authors emphasize the importance of the construction of robots to reinforce the ethical criteria of students, by critically and argumentatively discriminating between the beneficial purposes of technology and the damage that can be caused if they are used for ethically illicit purposes. AI programs do not know the moral purposes for which they can be used, so far, just as they are incapable of questioning their existence, they have no capacity to ask themselves about the good or evil intrinsic to the morality of actions independently of the codes with which they are programmed; neither can they show the moral lawfulness of the purposes for which they were created.

As far as learning with robots is concerned, it is possible for the learner to stimulate his or her abilities independently of the teacher's intervention and without the need for textbooks. Just the fact of proposing

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that a human teacher can be replaced by a robot establishes an ontological equivalence between AI and human beings, a latent problem in the definitions and concepts of current ontology, since, as Tillería Aqueveque (2022) argues, «so far it has not been clear what are those human attributes that would be hypothetically outside the heuristic possibilities of an intelligent machine» (p. 62). If these attributes are not defined with precision, then, an AI could never be denied the role of a teacher, as can countless professions (discussed in the previous section).

The programmer may be aware of the consequences and purposes of the programs he or she creates. But with advances in AI, we may witness a very different scenario, which professional chess players have begun to experience, the reversal of learning programs: it could be the AI that programs the way the learner learns, based on the discovery of new ways of learning. Bostrom (2003) predicts the replacement of humans by more autonomous and independent forms of life thanks to the implementation of new technologies and scientific advances, twenty years ago he stated that «we could face the prospect of real artificial intelligence. New cognitive tools will be built with which to combine artificial intelligence with the technological interface» (pp. 4-5) (own translation), which would completely annul human intervention in all life processes, including educational ones. It is obvious that if an AI entity were to create an educational program, even today, it would require human programmers with sufficient pedagogical advice and supervision, however, if AI already has the capacity to learn, overcome its own mistakes and improve its techniques, nothing prevents an AI system from reaching pedagogical programming, reaching facets and assuming factors not noticed by humans -automation of teaching and learning.

Educational practices are being reoriented to social relations within a post-organic environment, Sibilia (2006) wonders which are the most demanded human forms nowadays, to which the author finds a possible answer within the complexity of the issue: «they are those modalities that best adapt to the integrated circuits of global capitalism, those that our society requires to be able to function properly» (p. 262). Thus bodies and minds merge in connections mediated by technologies that form networks more complex than traditional political and economic spaces. Klichowski (2015) speculates on the possibility that an intelligent machine manages to stimulate «the growth of human intelligence and enable its transfer from a human body to a machine (robot) or to a given system created by machines» (p. 433) (own translation). Klichowski (2015) points out that transhumanist thinking involves making the effort

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to imagine life that maximizes experiences to unsuspected limits. Transhumanism allows rethinking and redefining traditional anthropological conceptions and contemplating new solutions to problems that are indecipherable for current humans. The improvement of future generations is an approach that accompanies these new challenges, which inexorably involves education as well:

> Education has been the formal process of making people better. It is education that has to be redesigned in the transhumanist concept, moreover, taking into account the fact that changing man through technology and education are ethically equal categories of action, and that technology is (and always will be) more effective than education (p. 437) (own translation).

In this sense, Sorgner (2021) considers education and genetic improvement as two parallel and equivalent processes of human improvement, without discriminating between biotechnologically induced modifications and those that are didactically-pedagogically established. He points out that education aims at an improvement or enhancement of the child's life from the transmission of cultural values from the «parents» or legal guardians -where the family environment would be included by extension, although the author does not mention it-. Similarly, Sorgner (2015) argues that eugenics applied to children would also come from the hand of the decision of some legal guardians. «It is always uncertain whether genetic enhancement will yield beneficial results. In any case, it is also an open question whether education will have beneficial consequences in any specific case» (p. 35).

Whether through technology or technoscientific advances applied to genetic modification, the proponents of transhumanism are taking for granted that education and eugenics have the same ontological value, which inevitably leads to equate them ethically. However, although both processes may share the same purpose, namely human improvement, they are not carried out through identical elements and, therefore, collaterally the results may be very different. Moreover, it is assumed that education also trains the human subject to exercise critical thinking; so far, there is no implant or injection that artificially fosters it. In fact, critical thinking enables each subject, in the exercise of his / her reflection and capacity to reason, to submit to judgment even the type of education he / she received or is receiving; and if that same subject had gone through genetic modifications that his / her parents eventually decided to make during the childhood, critical thinking would provide him / her with the

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capacity to value them beyond the immediate results, perhaps in terms of justice or existential state.

Education is a social process, requiring the relationship between student and teacher; between students and between teachers, with institutions, etc. Normally, transhumanists support the use of technologies to transform humans, however, Terrones (2018) qualifies that «the modalities adopted by enhancement are very varied, ranging from enhancement by means of drugs to the integration of our mind in machines, to genetic manipulation» (p. 62). The use of technological and/or technoscientific resources to enhance capacities or qualities presupposes and plans changes aimed at improving one or several humans, but does not follow the procedural pattern that accompanies educational activities, since the latter modify individuals from roles and social relations framed in an institutional framework and customs. Educational activities are permeated by problems and learning styles, also in response to the needs of the learning subjects and the social environments where they are developed. A machine may be able to program a teaching plan, but it would still be unable to improvise according to the particularities that would be presented to it. The presence of the teacher is irreplaceable, because he/she is a necessary moral subject in any teaching and learning process, even though robots are capable of strengthening certain skills and abilities in learners with great efficiency.

Technologies and AI can provide important advantages in educational processes: they stand out for their effectiveness in bringing individuals into contact remotely, contributing to data analysis, calculation, anticipation, prediction, data storage capacity and speed in the search for information; these are some of the many possibilities that AI provides for the improvement of educational processes. What is worrying is not the intervention of technologies in teaching and learning procedures, but rather the attempt to ontologically and axiologically equate human improvement through technoscientific advances with human improvement through education. As Khvastunova (2020) states «a machine, by definition, cannot be spiritual» (p. 887) (own translation), so that the conversion of humans to machines or the digitalization of people should not be imposed, in any case, as a single path of improvement. The author also says that it is necessary to adopt different options, «because a person is an intelligent, creative and, most importantly, free creature, that can always offer an alternative to the dismal future of the digital singularity» (p. 887) (own translation).

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On the other hand, it is convenient to break away from the idea of education as mere learning in order to aspire to a development model, as humanist authors such as De Zubiría Samper (2006) state. Often humanistic pedagogical trends fall into an exaltation of the human without taking into account the displacement that the subject is having in what Ferrando (2019) calls the «post-anthropocentrism» (p. 105). In these circumstances, development is not only limited to the human and its interests, but also, doubly, technological and environmental development to avoid a future collapse that exceeds the aspirations that for millennia forged the Anthropocene. Particularly in the paradigm shift that is opening up the transhumanist philosophy, which is but a current of thought within the complex posthumanist and postanthropocentric context, we are beginning to foresee what will most likely be the new tensions in the medium term: conserving nature at the cost of limiting the technological progress that poses the greatest risks to life on Earth and the need to generate scientific and technological advances that are not harmful to the environment but that contribute to human betterment. In the midst of this polarization between the development of the technosphere and the need not to deteriorate the Earth's natural processes while guaranteeing its sustainability, there are debates from which we will tend to think about the future of education, within the hybridization of humans with machines and diverse intelligences.

The educational sphere, with the currently predominant pedagogical system and models, has not yet inserted itself within this polarization that will constitute the contradictions within social and geopolitical relations in an increasingly near future. According to Terrones (2018) the relationship between biological and artificial intelligence is rapidly tightening. The Singularity, which represents the booming stage of technological growth, brings with it the risk that «intelligent machines could dispense with any human influence» (p. 66). If this were to happen, education might be the last possible redoubt of humanization in a world that is technically efficient but devoid of meaning.

Conclusions

The continuous presence and advance of digital devices and virtual spaces in the development of education is largely motivated by an unrestricted trust of societies in technologies and their innovations. Since 2020, the proliferation of educational alternatives based on virtuality and the

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systematic use of technological means to pursue learning has been increasing, and the scope of technological innovations applied to the educational sphere seems to have no end, much more so since 2022, when AI became a technology for public use. Like an avalanche, AI *apps* covered new market niches, offered alternatives for accessing, receiving, collecting and transmitting knowledge, which put at risk the occupation of jobs that seemed to be only human domain. Education was not exempt from this new wave of possibilities offered by AIs, but the truth is that confidence in digitization and new technologies had been imposing itself as an almost inescapable reality for educators, students and educational institutions since before.

With this panorama, transhumanism has for several decades been analyzing the imaginaries that seek to anticipate possible scenarios, thanks to technological advances. However, there are several issues to be addressed in the present, despite the transhumanist promises of a future with a myriad of human improvements brought about by techno-scientific advances. It should be borne in mind that the technological horizon is not *per se* surrendered to transhumanist approaches or to linearities that respond to established narratives and discourses, because often the readings that are made in this regard tend to magnify both the most optimistic and the most pessimistic visions of the development of technologies. It can be said that the transhumanist current can sometimes create innocuous concepts with no real opportunity to flourish.

As far as education is concerned and the question that is the title of this manuscript, it can be stated without delay that an education managed exclusively by virtual programs, artificial intelligences and machines programmed to optimize learning processes is highly debatable. As far as the teaching of ethics, whether a robot can become competent as a teacher is a question that arises only from the unusual trust placed in technologies. Of course, there is the possibility of programming a robot to deliver a lecture on utilitarianism, formalism, or any other ethical doctrine one might consider, but usually ethics education entails doing more than lecturing. Dialogue, deliberation, and all forms of exchange of ideas in ethics education are essential practices, not least because not everyone necessarily has to be convinced that one or another ethical perspective is best in practice and indisputable in theory. Likewise, ethical issues are often intertwined with sociopolitical issues; so, a robot and any AI program would have a hard time interacting fully in the context in which students are immersed in the classroom.

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A robot programmed to learn deontological codes would probably also be successful in transmitting them and making them known with some clarity, precision and even elegance, but the way it teaches those codes may fail in any discussion among humans, since humans are quite unpredictable when it comes to discussing values. Humans tend to speak on the basis of passions, sometimes we seek to rationalize them, sometimes we pass off a sentimental approach as rational and universalistic, generalizing it to other cases or trying to put others «in the place of». In fact, not infrequently we humans interact motivated by feelings and passions and then find points of rationality that give meaning to communication and action. Thus, in dialogic contexts, if by chance a robot were to learn a formalistic code of ethics in conversations between ethics experts, it might not do very well in a bioethics committee, because these committees imply necessary agreements when making a decision in a particular case. A robot that assimilates some deontological points of view would almost certainly act in a biased way, without experiencing the situations and events that allow the flexibility required for joint decision-making. In the same way, within an ethics class, the robot would suffer from the same details.

Ethics does not only consist of gathering information; a code of ethics is not only acquired by virtue of absolute values, because sometimes situations arise in practice that merit decisions that are not systematized according to an established doctrine. If the robot were capable of learning and even improvising, its criteria would not be the most reliable or the most recommendable, because its deontological configuration would respond to very particularized cases, when in ethics it is a question of projecting regulations of a universal nature, or at least, if this is not desired, regulations that can serve as a reference point for the great majority of humans. This does not mean that everything that an AI can contribute in the field of morality is disposable, but, in any case, fortunately, deontological structures do not respond only to algorithmic relations, calculations and axioms, much less to preprogrammed elements.

The configuration of an ethical cyborg would require the hybridization of technology and AI with biological and natural components, however, in this process, mechanical compounds may predominate by preventing a personal development where the individual is exposed to learning through negative experiences. Algorithms do not admit the negative because their operational logic is based on continuous positivity. Algorithms apply a program, they do not question its veracity, they simply operate possibilities within preset rules of the game. However, hu-

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mans, when it comes to discussing values and deliberating on possible actions, can sometimes resort to negative experiences around an uncritically taken-for-granted approach. They can also question the rules of the game by virtue of their needs, thus showing certain margins of creativity around the interpretation of normative codes and practice, from personal experience, but also imagining how this experience could occur in the case of others.

Education can provide other perspectives and offer alternative conceptions and logics, as long as these are not limited to programming mentalities, since it is possible to see how in many situations education has been considered as a kind of programming of human beings (instruction), even before AI and educational technologies appeared. If education is considered as mere programming directed at human beings or cyborgs, the replacement of teachers by machines could be anticipated and ethics would no longer have anything to teach.

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