

Medicine under the graft of NBIC convergence, a transhumanism towards posthumanity?

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Summary: In the process of modernizing medicine, convergent NBIC technologies are grafting themselves onto the medical sector. By intertwining with it, they do not fail to assist the doctor in his various functions by offering facilities for the diagnostic and therapeutic aspects. This is how we can see the health specialist being truly assisted, the patient for his part greatly relieved by the presence of new clinical possibilities, and general health normally better. From these elements, we can affirm that medicine is fortunate to have on its side these technologies that improve it qualitatively. This is a question of a transhumanism that bears a humanist stamp. But the danger is not far off because stopping at such a remark is reductionist. These same technologies by promoting transhumanism benefiting man indeed, risk leading us towards a surpassing of what is precious in us, namely our humanity. Posthumanism thus appears as the veiled element of transhumanism, presented as a lamb through convergent NBIC technologies. Ultimately, we must embrace and adopt an extreme prudence that pushes us to be sufficiently attentive to all NBIC technological productions to hope to avoid the cataclysm of humanity. In this sense, ethics committees must play a decisive role.

Keywords: Medicine, transhumanism, posthumanism, NBIC technologies, ethics committees.

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Introduction

Medicine, since its inception, has been primarily defined through a fight against illness, and the doctor, for his part, defines himself as the soldier in service of this fight. This clearly establishes that for the doctor and his discipline, man, in addition to having value, becomes a value to the point where anything that prevents him from enjoying his health is suddenly an enemy to be defeated. To put it another way, medicine has a humanizing value within it, and its specialist is an undisputed humanist because both prevent man from sinking into illness, which negatively affects his well-being.

With the advent of new technologies, there is certainly a remarkable evolution: the care that medicine offers becomes more and more effective, and men better than before, feel relieved in their discomfort caused by illness. The era of transhumanism which promotes the improvement of man by the technological revolution does not necessarily enter into contradiction with the therapeutic objective which is the basis of all medical action, except that its tentacles do not hesitate to arouse real fear: if it is possible to glimpse the treatment of so-called incurable pathologies by the grafting of these technologies in health, concomitantly

ideologies are forged whose essence is to confer no longer the only effective care, but a real race to the eternal pleasure of living in these pleasures and further to euthanize illness, pain and death. The most serious is that all this is done with the assistance of this discipline more above defined by its effectively humanist meaning. It thus becomes obvious to point out that this beautiful medicine without the grafting of new convergent NBIC technologies (nanotechnologies, biotechnologies, artificial intelligence and cognitive sciences) is the one that must be described as pure humanist, or better the one in which humanism is still clearly visible, but that the one that allies itself with this revolution risks leading inevitably to the end of man, to posthumanity and this by means of a devious path in many respects.

Faced with these preliminary elements to our analysis, we are tempted to posit the postulate that the ethical transhumanism in question with the help of NBIC technologies in medicine is cloaked in the garment of humanism, but risks very well leading us voluntarily or accidentally towards posthumanity. This therefore raises the question of the nature of the hidden intention behind the help of new NBIC technologies in medicine. Thus, what does the grafting of new technologies in the wake of medicine really bring us? Doesn't the transhumanism in which we are entirely immersed

risk ultimately drowning us in the depths of posthumanism? Doesn't the greater humanization of these technologies for the improvement of health ultimately become a necessity rather than a choice?

These questions will guide the organization of our analysis, in the attempt to provide a solution for the preservation of both medicine and man in the face of new ambivalent technological revolutions.

I. Medicine before and during the NBIC Convergence

Medicine is not a recent endeavor. It has existed since the presence of man on earth. Also, "the presence of people capable of caring for the sick is a quest consubstantial with the appearance of man" (Mattei, 2020). Despite the various mutations undergone by man and our society, the permanence of medicine is an undeniable fact. Characterized by its naturalism in distant eras, and by humanism without a doubt, the integration of new generation technologies has not failed to positively affect it for the improvement of the medical arsenal and for human well-being at the same time.

1- A humane and naturalistic medicine

The first medicine, understood to be no longer the same because of all the ideologies of our perverse times, was defined by the purpose of medicine itself, namely to see man delivered from the pathology from which he suffers. The naturalism that was the means employed had a whole humanist meaning that should be presented amply. Let us note in passing that when we speak of first medicine, it is situated in the very ancient period corresponding to the appearance of man on earth, but also in ancient and medieval times.

Humanism, let's be precise, is this movement that dates back to the Renaissance and whose essential content lies in the fact that we must value man, by granting him respect for his intrinsic dignity and considering him as an absolute, inalienable value. Humanism therefore puts the value of man first, his development and well-being as well, and in this vein, we can say that everything that falls within these guidelines and that does not oppose the values of good, justice and ethics is necessarily humanist. In other words, when we see in a discipline the will and also the action to help man, to respect him, to value him, we can easily affirm that it is humanist. This previous remark allows us to affirm that medicine before the introduction of convergent NBIC technologies was humanist firstly because medical gestures nourished the aim of seeing man in very good health by the eradication of diseases, also because herbal medicine even if it did not fail to cause undesirable effects sometimes due to the lack of control of the dosage, was a more humane way of treating man.

During Prehistory, in Antiquity and the Middle Ages, a similarity can be established regarding the provision of care. It is first and foremost the intention to help the person suffering from illness through clinical practice that prevails. Even if there are particularities depending on each of these periods, the fact remains that medicine and caregivers are present, and animated by good will, move so that patients receive quality care according to the technical platform of each period. Respect for ethics is the very sign of the humanist qualification of the discipline and of doctors. The latter becomes an obligation for these caregivers to the extent that the Hippocratic prescriptions, precisely in ancient times, become demanding. The rigor he demonstrates in his famous text

called "the Hippocratic Oath" influences, among other things, the personality of the doctor. The latter must observe irreproachable conduct not only during the execution of his mission, but also in other moments of his life. Hippocrates indeed poses the doctor or caregiver as a different being not in his nature, but in his personality. His discipline indeed requires a conduct and a great adequacy to the ethics which ultimately pushes to consider the sick person as a being who urgently needs his help. The help which is essentially medical must therefore be done with respect for the value of the person, and his dignity. As Stamatiou Tzitzis believes, "the Hippocratic oath reveals the ethics of pedagogy as a guide to the exercise of the medical profession. This pedagogy constitutes a lesson in benevolence towards patients." (Tzitzis, 2021). This is in line with the argument developed namely that the humanism of the caregiver must be observed in his ethics, the latter thus embodying good conduct and requiring a truly ethical attitude.

On the other hand, naturalism, which is very present in these cited periods, consists of taking healing remedies from nature. Decoctions and herbal teas are also widely used. Because illness can also come from nature or the environment in which we live, fortunately, there are plants in this same nature that possess therapeutic elements. Herbal medicine, without any hesitation and following this line of argument, is humanizing because it works to restore man's health and vigor to his former self.

But when we emphasize the naturalism of medicine, it is not to dismiss the effectiveness of the existence of a use of chemistry in therapeutic action. Of course, not all medical solutions were only natural, but also chemical. However, the ideologies of going beyond the stage of care to pleasure, although present, were not as imposed as today where fear drives us more than before.

Naturalism was not the only hallmark of medicine in previous eras, as there was a gradual integration of technologies, techniques, and in our era, convergent NBIC technologies. It is worth pausing to see in this addition of NBICs to health, not an evil, but a therapeutic desire and even a desire for human well-being.

2- NBIC grafting in health and increasing opportunities

The idea to be developed in this subtitle is that today's medicine, which already benefits from the grafting of new NBIC technologies, also participates in humanism through the technological means brought into play for the improvement of the technical platform of hospital centers, but especially for the role played in the health of patients.

Each technology has its own significant advantages. Nanotechnology, for example, makes it easier than ever to make the smallest parts of the human body that are diseased visible, and to treat them directly through the transport of nanoparticles. This is an advantage because all parts of the body can now be visualized. Even if not all of these parts are yet known for their respective roles, it must be fair to say that nanotechnology is a boon for new medicine, that is, medicine that benefits from the help of new-generation technologies.

As we know, biotechnologies are working to restore hope to patients because new therapies are being considered for ailments that were previously difficult to treat. By integrating technology into nature, there is ultimately a revolution in medical activity. Biotechnologies allow, for example, organ and tissue transplants to give life to an altered part of the human body. Also, by working

with stem cells, there are many advances in the direction of repairing what is altered and also regenerating what has been worn out. Doctor Jean-François Mattei agrees with this position when he writes:

The discovery of pluripotent somatic stem cells (...) has definitively opened the way to regenerative and restorative medicine, the results of which are spectacular (...) Given the limited regenerative capacities of the heart and the lack of donors for heart transplantation, the use of stem cells presents itself as a therapeutic perspective (...) (Mattei, 2020).

It is therefore clear to see in this technology a way of helping medicine for its positive improvement.

For its part, artificial intelligence, which is part of this technological convergence, is both a benefit for the doctor and his discipline. At first glance, it serves the caregiver insofar as it constitutes a large memory for him. AI is in fact a machine that has been endowed with the ability to simulate intelligence, a human as well as an animal capacity. This is how it performs calculations and predictions for the health specialist based on the evolution of the disease; it even already makes the diagnosis and proposes a roadmap for therapy. More recently, it is already providing itself with the means to perform surgical interventions by remotely controlling machines. It is thus becoming clear that doctors, and especially future doctors, must integrate artificial intelligence training into their training curriculum. On the other hand, the doctor, because he is now an "augmented doctor" (Mattei, 2020), becomes a professional whose discipline no longer becomes a burden. His discipline benefits from this entire technological arsenal, which contributes to its improvement for greater effectiveness than before through new therapeutic possibilities.

The final element of this technological convergence is cognitive science. This is also an advantage because in this area, we are primarily interested in understanding the brain. Understanding how the brain works is a difficult quest due to the richness of this part of the body, but the small portion already explored and understood is already yielding results in therapy, especially for mobility patients. Thus, quadriplegics, that is, people whose brain no longer properly controls the four limbs of the body, have hope of being treated with knowledge of the brain. This will help reestablish the connection between the brain and the disconnected inactive parts.

In summary, it should be noted that the convergent NBIC technologies as we have just presented them, are working to help medicine to be better in its objectives and missions. For this, we cannot deny that they are also humanist, or better that this new medicine which is defined by the grafting of these technologies does not deviate for a first analysis from the medical humanism known in the first medicine presented above. It is therefore a question of surreptitiously showing that transhumanism is not harmful at its threshold. Indeed, man can come into the world in a condition that does not allow him to enjoy his humanity like other men, and this is how "the transhumanist project, taken in its most general sense, consists of wanting to intervene through technology at the heart of physical, biological and cognitive processes with the aim of tearing man away from the most grossly and atrociously hazardous, wasteful and painful aspects of his condition" (Balmont, 2020) as Frédéric Balmont rightly points out. In his profound consideration of transhumanism, there is a help that is given to man

to help him overcome natural injustice, which is in line with our idea developed here.

Unfortunately, we must not block our thinking at this stage for fear of being blind to the technological movement that is spreading at great speed, shocking lovers of the human condition.

II. NBIC Convergence in Health, A Veiled Posthumanism?

Before supporting the thesis that posthumanism is the ideology veiled by transhumanism, it would be wise to insist more on the fact that the transhumanism we are talking about and in which we are immersed with the grafting of NBIC technologies in health, is not contrary to the therapeutic objective. It is entirely a question of an extension without falsification of what we are deep down. If there is a multiplication of therapeutic opportunities with this ideological movement, it must also be recognized that it can bear, to some extent, the stamp of aid to human humanism. We will then reveal the idea we have of its deviousness.

1- NBIC technologies in the service of humanist transhumanism

We understand humanist transhumanism as a transcendence that does not assume that we have fled the human condition to become something other than that. In our sense, there is a use of this means as a path that, by helping us and giving us what we naturally or accidentally lack, does not aim for anything other than maintaining us in this same humanity that has been naturally or accidentally deceived.

To put it more simply, transhumanism should not be seen as a negation of humanity or nature. Since there are natural elements that do not exist through man, on the other hand, there is also that which depends on his activity. What is artificial, while praising the creative spirit, also exists for human well-being. Man of all times has always believed that, in addition to what he found in nature, he needs other elements that this time depend on him and that contribute to the momentum of his development: this is the artifact. Fire, for example, helps man to keep warm and cook his food; chairs for comfort while sitting; clothing to cover himself from the cold and protect his nudity, so many examples in this sense.

Further, NBIC technologies are a transhumanist expression that transcends previous examples because they work in a more advanced sense. When applied to medicine, they have three main areas of solution.

First, they allow us to work on prediction to achieve prevention. In this aspect, they are activated thanks to nanoparticles, artificial intelligence machines, among others, so that the specific disposition of the entire body or a specific part can be projected into a specific future. The advancement of time ends up revealing anomalies. Thus, thanks to these new technologies, we can determine in advance a disease or a deformity that could arise in ten years.

These technologies are also central to therapeutic care. With the pace of technological development, news about artificial intelligence emerges every day. This is proof that the designers and engineers of these technologies are truly committed to revolutionizing various sectors of life. In our era, for example, connected or AI-powered machines are useful for both diagnosis and therapy. It is already possible, under the doctor's orders, to undergo an MRI (magnetic resonance imaging) or CT scan. A few

years ago, these machines were limited to providing an image of the targeted areas, but today, a complete diagnosis can be made without the need for interpretation by the doctor. This is an advantage because these same machines will simultaneously propose a therapeutic roadmap.

Finally, having identified future pathologies, in the third angle of our argument we disseminate the information that these technologies are doing what is necessary to counteract them before their arrival. PGD (preimplantation genetic diagnosis) is a typical example of this in relation to unborn children.

By stopping at this level, it becomes easier to affirm that transhumanism is not a useless overcoming. Indeed, if man manages to manufacture new generation machines, this is only the expression of what resides in him and in his nature: the will for perfection which means that everything is never complete or definitive. The addition to nature that man makes here does not deny this nature. On the contrary, he helps it by correcting its failures and absences. This crossing of humanity has therefore not been deleterious for this humanity because the purpose is to make this humanity more fulfilled. In this, the transhumanism in which the technological advances at NBIC are situated is not harmful to humanity. On the contrary, it serves this humanity, hence the expression humanist transhumanism. But what is frightening is the dangerous direction in which this transhumanism is slowly heading.

2- The tentacles of new technologies towards posthumanism

The concept of posthumanism refers to an ideology that suggests that man is in a transitional phase of his evolution, and based on this premise, he must be completely transformed not only in his biophysical dimension, but also in his condition as a human being. He must therefore be freed from human weakness, from natural vulnerability, from the powerlessness to be what he has thought. His greatest fantasies must be realized, and since it is his human condition that disposes him to be sensitive in the register of vulnerability, he must finally get rid of them. The posthuman no longer wants to feel pain, he wants to completely conquer illness and even kill death in order to experience pleasures eternally. We can deduce that he is therefore no longer human, and all those who support the arrival of this stage of evolution are anti-human insofar as they wish for the end of humanity, because there is no humanity without pain, without illness and without finitude. Unfortunately, posthumanity is announced and its supporters are becoming more numerous.

With these definitional elements established, the main idea we are developing here is that transhumanism, which presents itself under the guise of helping humanity and therefore has the humanist characteristic, surreptitiously veils what it actually wants to propose, namely posthumanism. From another angle, if this ideology is not the veiled element of transhumanism through innovative NBIC technologies, we risk accidentally arriving there by gradual steps while turning a blind eye to the temptations to which said technologies expose us. In other words, the most plausible consequence of transhumanism through NBIC technologies in health risks being posthumanism.

For the first point, the transhumanism we are facing veils posthumanism because it is already announced through clearly presented analyses. Generally, ordinary people behave as simple consumers of technological productions without, however, asking

themselves the question of their evolution and the direction they are taking. To understand this, we will take an example: when we retrace the history of artificial intelligence from its tentative steps to today's stage, we clearly realize that it was first thought to account for human sagacity and this allowed for animated objects for domestic use, for entertainment or for religious exercise. Gradually, its use became more imposing in facilitating life and work. But it is already advancing at a dizzying speed that, while dizzying, risks losing us. For Mattei and Israël Nisand, "We are all collectively embarked on a high-speed train, but without warning signals or brakes. Collective vertigo is of course present." (Mattei & Nisand, 2013) Is this not a warning bell? Have these authors not, in this statement, presented the very content of transhumanism, which risks turning against us?

Moreover, Jean-Gabriel Ganascia announces a stage of this evolution during which machines will self-determine, and will have supreme power on earth. The consequence is that man will be deposed from his pedestal of being the most important in nature to become a subject of this technological reign: this is the technological singularity (Ganascia, 2017) that he describes from the beginning of one of his major works. This places us excessively in a terminal moment of evolution, and unfortunately it is the end of humanity.

For his part, Frédéric Balmont does not hesitate to openly affirm the direction this transhumanist turn is taking: it is in the service of the creation of the post-human. His own words are as follows: "Transhumanism must create the post-human. This is evident from the fact that the primary ambition of researchers and supporters of transhumanism is not to create ever more entertaining video games or to develop gadgets." (Balmont, 2020) This means that the ambition is not for distraction, but rather for greater aims. Moreover, to this statement, he adds a few words revealing the true ambition: "No, the idea is rather to effectively combat disease, aging and death. It is also to manipulate space and time: via technologies of communication, extension and longevity, speed of information processing and reconfiguration of matter (nanotechnologies)." (Balmont, 2020)

This is the shameless presentation of the entire transhumanist project. It can be presented in several ways, including that of a firefighter who comes to extinguish the fire of natural injustice, or as an aid to medicine in the provision of sophisticated care, but the light at the end of the tunnel is known: the highest expression of man's creative force in the satisfaction of his libido technica and the ultimate realization of all possibilities or everything he dared to think without worrying about the destructive or valorizing value of his humanity.

Why is transhumanism an alibi for posthumanism? Quite simply because, by placing ourselves in the medical context, these artificial intelligence machines are already not just important, but have become necessary for quality care, referring to conventional medicine of course! These machines are becoming so indispensable, and the speed of their improvement is a fright for the medical professions (nurses, nursing assistants, and more seriously, that of doctors). Predictions at this level indicate that there will be a time when medicine will be done without doctors, but only with AI machines. This, it must be said promptly, can only correspond to posthumanity, and according to Jean-François Mattei, to the end of medicine, because there can in no case be medicine without doctors (Mattei, 2020). And we must also keep in

mind that "medicine does not pursue this quest for immortality, it cannot accompany posthumanism on this path. She is a humanism that always questions the meaning of what she undertakes." (Mattei, 2017).

The second element according to which posthumanism risks arriving accidentally is related to the previous argument. Indeed, the designers and engineers of artificial intelligence and other cutting-edge technologies used in healthcare may well work towards providing innovative ideas and solutions to help medicine be more operational and efficient. The problem may come from the ideologies that are propagated about the arrival of this terminal stage of our evolution which corresponds to the reign of posthumanism. Philosophers, bioethicists and other specialists attentive to technological evolution by sounding the alarm bell, can also encourage these ideologues to continue their adventures, but what remains is the fact that imposes itself by itself: namely, the sophistication of technology useful in the hospital can precisely lead to a contingency of the human team! As proof, it is quite remarkable to note to what extent machines officiate better than humans. Remote surgical operation coordinated by a health specialist allows the machine used, which is an AI, to gradually learn through the "machine learning" mode, and in a few years it may become common to see the machine in place of the human without requiring its intervention. To put it simply, the pace of development of these technologies risks leading us to a progressive reduction of health personnel starting with nursing assistants, nurses, medical secretaries, specialist doctors before arriving at general practitioners. This reduction will increase to the point where engaging in training for medical professions will be scary, the decline will begin and will also be gradual for fear of not having opportunities, and finally, this progressive reduction of personnel combined with the fear of engaging in the paths of health professions will ultimately cause a contingency of humans for these professions, and this coming not from men, but especially from technological growth and sophistication of it.

As we can see, transhumanism risks being the transitional path to posthumanism. This transition stage may seem near or far, but the urgency to act in favor of the preservation of humanity, or rather, of humanity on Earth and within medicine, is more than pronounced.

III. Humanization of Health Technologies

The time for predictions or reflections is over. With the urgency pronounced, concrete actions can slow down the pace of technological sophistication. These technologies are like a kitchen knife that can also be used as a dagger and therefore require careful choice of use on the part of man. It does not consist of completely stopping production or slowing down or even giving up. The evolution of these technologies is undoubtedly good for humans, but greater rationalization is needed to avoid improving and ultimately losing ourselves. Everything must instead be done with human thought in mind, because what use would all these technologies be without them? Man must become the center of these technological improvements. For this fundamental reason, it is wise to emphasize technological production projects through ethics committees, but also ethical education to raise collective awareness of the changes taking place and their rationalization through a spontaneous attitude stemming from education in their use.

1- Ethics committees to monitor research projects

The direction in which transhumanism in health is leading is truly dangerous and tortuous for the future of our humanity. Solving a problem as urgent as this one recommends using safe methods. It is therefore necessary to act at the base of technological creation. This base is in fact the established projects allowing the implementation of technological productions. A research project is in a way the roadmap where the key tools are mentioned but also all the constituent elements of the technology to be produced. Each technological production has this roadmap. It is exactly at this level that ethics committees will intervene. Even if we do not pretend to know that a project can change elements during its implementation, it is at least a good way to act profoundly to mark out or better still, censor said projects. Also, because it is impossible to read minds in order to counteract all ideas of technological production harmful to man and his humanity, it must be common to resort to ethics committees from the development of the project of construction of a technological device.

Jacques Ellul (Ellul, 2012) has precisely an opinion that interests us and is also the basis for the proposal we are making, namely to control research projects to invalidate them if they are harmful to humanity, or to encourage them if they aim to create technologies for the benefit of man and his humanity. For this author, technicians generally do not like to hear about morality or ethics because they are obstacles to the completion of their work. This is why we believe that placing or imposing the submission of projects to ethics committees appears to be a possible solution to prevent everything from being produced, even what is not good for humankind. If these technicians do not like to hear about morality and ethics, it is simply because they have things to reproach themselves for in their progress or in the final production of their technologies. Thus, the concept we are developing makes ethics committees a sieve that allows projects that work for humankind to pass through. For this reason, a true organization and even constitution of the members of these ethics committees must be a priority to guarantee effectiveness.

Regarding the organization, there must be an ethics committee at each level of society for all knowledge production centers and technological device production centers. We are referring, for example, to universities that are large knowledge production centers; to technological research centers; to technological laboratories; to large and small local or international firms. All this must be linked to the executive branch of each state because the Ministry of Scientific and Technological Research or its equivalent in each country must have a general manager of the various ethics committees. But once this organization is done, the long chain of verification must not constitute an obstacle to the realization of these planned projects. The process must not be discouraging for technological developers, otherwise these committees will be nothing more than a brake on development, not only technological but also social.

This leads us to understand that this organization must not simply emanate from informed people in the population. Our role is to think and make good proposals in the register of improvement and preservation of what must be preserved, but it is exactly from the guarantor of powers that order must come: the State. It must take charge not only of the political and social organization of individuals, but also be the guarantor of the preservation of life or better of the humanity of men, and this involves the control of

technological productions that have this great impact on this humanity which in reality risks being lost by the advances which are becoming more and more imposing, end up partially or completely replacing man in his domestic, administrative and sometimes medical functions. The step towards dehumanization is not to be excluded by the same means. However, organization alone is not enough because it is also necessary to think about the constitution of the members of these ethical committees which is crucial.

It is clear that this must be discriminatory because delicate matters such as these recommend being rigorous at the same time in the selection. It will thus be necessary that the members of the various ethics committees have first of all a strong dose of ethical attitude by their conduct. The ethical qualification must also be in place. These committees must be composed of people trained in ethics, bioethics, or another parallel training which gives the possibility of having skills in these fields. A high intellectual level is undoubtedly a requirement because it will be a question of understanding the hidden intention behind each research project that will be submitted, and even of grasping the content, the purpose and the different issues, also the impact of these productions on reality and on humans. The member of the ethics committee must, like the philosopher, have a panoramic view of reality to understand the slightest actions, productions and gestures to deduce what they could cause on the regional or general totality of our entire society. The members of these committees must therefore be visionaries.

The insistence on the organization and constitution of ethics committees is a reflection of their necessity. How will all this unfold once this organization and constitution are complete? It will indeed be a matter of each technology designer appearing before a committee in order to clearly present their project, which must be approved by the members of the ethics committee. In our opinion, operationalizing such an approach will limit surprises in the face of the insidious nature of technologies that highlight the benefits for humans and their environment without revealing the true purpose, which can be truly harmful to them.

To put it simply, we must remember this formula: because they are highly useful in facilitating our daily lives, their surveillance must be effective because they can tear us away from what is precious to us, namely our human nature. But all these technological productions can also do without ethics committees only in the case where there is ethical respect, where the manufactured machine is not fundamentally dangerous for humans. But in addition to this initial opinion, the integration of these technologies into our school programs is a great opportunity for their rationalization.

2- Schooling in new technologies

Understanding the core of our thinking about new technologies is important. We are not in favor of the extinction of technology or the shrinking of the technological arsenal. Technophobia also does not enter into our considerations. On the contrary, we are happy to see the various sectors of life develop through innovative technologies. The particular case of medicine amazes us because multiple successes that were not possible before these technologies are now effective for the benefit of patients not only, but also for the positive evolution of our health systems, which provide more solutions to our ailments.

The idea we are developing in this phase of our argument is that new technologies must be integrated into school learning programs to better familiarize them. Such a takeover by school instruction will simultaneously pave the way for real education and therefore lay the groundwork for their rationalization. From early childhood, it is important to emphasize them so that children and young people learn them as early as possible to be better equipped to use them. The family is the primary place of learning, instruction, and education, but school also plays this role more than ever. This is why we are emphasizing this. The outcome of this approach, not only of instruction but also of education in understanding and using new technologies, is obviously the emergence of responsible use. Responsibility in use is for ourselves in order to make our daily lives easier, also for others for the same reason and in the improvement of all sectors of life in general and medicine in particular, and especially for generosity towards the generations to come. This is humanism.

This idea of schooling with new technologies echoes that of Laurent Alexandre, for whom our governments must urgently address the technological evolution of artificial intelligence in particular, the latter leading us to change our mentalities. In his view, with AI, we are required to change schools by integrating it into our curricula. Because it is important, even necessary in our times and even more so for times to come, schools must contain instructional modules but also education in AI (Alexandre, 2017). We cannot continue to learn using traditional methods. They are not outdated, but we can save much more time today thanks to technology! In addition, certain modules in certain disciplines must be reinvented, because the internet provides us with clear information. This is one of the reasons for integrating technologies into training modules at school. Teachers themselves must also be retrained to better guide or supervise learners. Rather than teaching history by recounting scenes from the past, for example, the teacher can instead assign learners research work on the internet at this level, leading them to do in-depth research to find hidden truths or truths that are not on the web. Or even use elements of the past to improve the present and envision the future! The teacher in our era must be more of a guide, a knowledgeable being attentive to developments for fear of repeating what is already widely accessible at a lower cost.

Without losing the thread, let us note that schooling in new-generation technologies already presupposes that we do not consider them as enemies, but rather as means of facilitation and therefore development. This familiarization must lead not only to the acquisition of their knowledge, but also to the development of technical skills in their use. In addition, we must achieve ethical education in their use, as mentioned above.

According to this logic, it will be necessary to develop new programs in order to completely revolutionize the school, not to abandon traditional learning methods, but to gradually introduce new ones by logically and rationally aligning ourselves with artificial intelligence and new NBIC technologies.

Given the urgency of a reconversion and the integration of these converging technologies into school learning curricula, our governments must become the main promoters of this movement by taking measures for the effectiveness of what we propose because inserting these elements into school and academic programs means ensuring a reasoned link between these technologies and human well-being.

We finally realize that the work to be done in the integration of NBIC technologies in health is great. These technologies help in a significant way as the results are regularly visible. In order not to waste the positive energies of such transhumanism by perverting it towards posthumanism, we have proposed to control research projects for technological production by seriously constituted ethics committees. Also, the proposal to integrate these technologies into our school and academic programs is a means of education in responsible use in health, but also in everyday life.

Conclusion

Medicine strongly needs new technologies, as we have noted. But we made an important observation: their integration into health is a promotion of transhumanism, which can unfortunately hide the worst situation that humanity fears: posthumanism. Our problem was precisely located at this level. What is the hidden intention behind the grafting of technologies into health? Is it the improvement of care techniques, or is it a question of pretending to do good and ultimately making us lose our nature by promoting posthumanism?

As well demonstrated in the body of our work, medicine before these sophisticated technologies had a truly humanist character due to the desire that drove caregivers to eradicate the disease by means of naturalism, all this while respecting ethical and rigorous measures in respect of the person being treated. This does not mean, however, that there were no errors or malpractices. On the contrary, deviations were observable, but the evil was not as deep as it is today to the point where it becomes more plausible to affirm that the grafting of converging technologies in health has to a large extent gradually contributed to the flight of humanism to install a transhumanism veiling the posthumanism that seeks to settle comfortably.

It is true, as we have demonstrated, that these technologies are greatly useful in health and allow for better care than before. In the ancient times preceding this integration of technologies in health, ethical rigor was required, but the quality of care was only approximate, but with these technologies, it is the trend that has

shifted: improved quality of care and boosted therapeutic hopes while ethical practice is diminished or completely absent. This ethic that is dying in hospital environments in our times with the innovative and new therapeutic possibilities that simultaneously and unfortunately open the door to several excesses that could not only change the spirit of medicine but also lead men to make non-medical demands on caregivers, which can easily be called the realization of thoughtless fantasies and dangerous for the sustainability of our humanity.

It is in this logic that we have issued tentative solutions. First, to establish oversight by ethics committees of all technological manufacturing intentions manifested in written research projects. Second, through solid ethical education for all, through schools, the content of which aims to foster an inner disposition to use technologies properly in health and in our daily lives.

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