PHILOSOPHY OF MEDICINE

Can computers replace medical thinking?

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Abstract

Many are wondering if computers can replace the work of doctors. Medical science works on a set of values such as simplicity, elegance, predisposition for control, and doctors do more than process data, they understand nuances and learn to master uncertainty. Doctors maintain a human touch that cannot be replaced by a data-processing machine, with the observation that such a machine could help the doctor's work.

Comparing the doctor with "*a machine*" can only be a compliment when referring to the efficient work of the profession, but without the life-giving love, medicine remains only a computer program and the patient a data sheet.

Keywords: computer, medical thinking, patient

The appearance of the clinic

Medicine was established as a liberal and protected profession towards the end of the 18th century, at a time when "*pseudo-healers*" continued to operate freely on the therapeutic market. Medical schools begun to be organized in such a way as to include scientific discoveries into new medical perceptions and concepts. Those who were going to practice were required to take a clinical trial and four examinations: anatomy and physiology, pathology and nosology, pharmacology, hygiene and forensic medicine [1]. Initially, practical education was organized in military hospitals, where future doctors became acquainted with anatomical dissections, clinical experiences, surgeries, equipment, medication, etc. [1].

Medical practice "*at the patient's bedside*" tried to find a relationship between observation and knowledge. The disease was deciphered according to signs and symptoms. If the symptom attempted to delimit the pathological state from the healthy model, the sign announced the prognosis, meaning how the disease would evolve. For example, having purple nails was interpreted as a sign announcing the death of the patient.

The specificity of the anatomo-clinical experience consisted of the application of the diacritical principle, meaning that there could be a pathological condition only in comparison with the healthy model, with other patients or patients who died of the same disease. Over time, in addition to questioning the patient about symptoms, the methods of observation, palpation, percussion, and auscultation were introduced into medical practice. Another defining step for medical knowledge was the acquisition of the anatomo-pathological method and the practice of dissection [2].

Once the clinic was opened, patients were no longer located in the social space of their homes "*the natural place of disease care*", but were relocated to an "*unnatural*" space of the hospital. The new environment was called *'bedside space'*, which is the combination of '*seeing*', '*knowing*' and '*telling*' [3].

If the hospital was considered only a home replacement at the beginning, where the patients were of course offered support, the care they received did not differ much in terms of quality and technique from those they could have received at home. The meaning of the terms "*hotel*", "*hospital*", and "*asylum*" has changed over time, eventually designating specific activities.

The need of "*hospitals*", as we see them today, is closer to our present

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and is due to the fact that, at least in the last century, the hospital has become a CARE CENTER, where medicine is practiced effectively, but also the only place where it is possible to apply qualified medical knowledge for the care of "*severe diseases*".

It is clear that the sick went to the hospital in search of a superior "*medical comfort*" compared to the one which could be offered at home. This must be understood in the sense that, in the beginning, hospitals were arranged in buildings belonging to the former monasteries and which could only provide a militarily comfort, attractive only to the poorest of the population, who were incapable of home care or could not buy their medicines.

In the first half of the twentieth century, the hospital began to be seen predominantly as the right place and, in most cases, "*the best, safest and cleanest, for the health care of the suffering*" [4]. As they improved, hospitals began to be concerned about the quality of services provided to patients, developing an efficient bureaucratic system. This type of thinking has also had a considerable impact on the training systems of doctors and caregivers, who began to be trained to meet the demands of hospital work. This explains why, over time, the hospital has become a safe place, which patients, regardless of social status, prefer to be cared for diseases and suffering.

The scientific model of doctor training

As the clinic developed, the method of scientific hypothesis was combined with a specific clinical methodology and medical language. In other words, "*the clinician has begun to represent a scientist who uses a specific methodology for generating and testing hypotheses*" [3]. Using the observation, questioning, and clinical examination of the patient, the physician gathers the data he or she needs to formulate a working hypothesis, which is to be confirmed or, on the contrary, refuted by investigation, treatment, and evolution.

Disciplines such as anatomo-pathology, with autopsy of corpses, and pathophysiology have expanded this scientific model and begun to provide additional data to confirm medical hypotheses all placed in the same epistemological framework. These practices led to the "*nightstand*" in addition to the scientific laboratory, and the autopsy room with the laboratory of the anatomo-pathologist.

For the medical student, the corpse is "*his first patient*" whom he systematically explores and analyzes during the first year of study. Body work is in fact the longest relationship he has with any of the living or dead patients he comes in contact with.

In the anatomy course, the first-year student is led to the top by the segments and organs of the human body as Virgil had led Dante on his journey to Paradise. Take for example the nervous system whose study begins primarily with the spinal cord, which sends commands to the main movements of the body, then ascending to the brainstem that receives most of our sensations. Next comes the cerebellum, the inner gyroscope that holds the acrobat on the wire, or the ballerina on her points. In fact, everything forms the orchestra of the whole body that sings the wonderful symphony of life. Finally, the glorious coronation of the cerebral hemispheres, containing all the treasures of our experiences. But life is impossible without the organic compounds known as amino acids. They are the bricks from which proteins are made and at the same time the end product of their activity. It is a kind of paradox that biochemistry, which by definition deals with the study of life processes, is probably the most dreaded course a medical student has to take because the vital function is reduced to the lifeless diagram and a lot of complex formulas immobilized on countless documents.

But proteins are the end product of a whole series of extraordinary events that begin with the gene. Its history is synonymous with the history of modern biology. Ernesto Sábato may be right when he repeated the words of Blaise Pascal: "*Life is a game table on which destiny puts birth, character and circumstances, those that we cannot avoid*" [5]. Obviously the gene opens the way for evolution. But it is at the same time conservative, meaning that it must remain what it is, otherwise the cell disappears, and fragile, it must transform to continue its evolution. There is a need for a perfect balance between stability and transformation. This was the great performance of evolution. Of course, we wonder what the gene is! According to a unanimously accepted definition, it is a DNA segment, which ensures the synthesis of a polypeptide chain. It may be functional as such, or associated with other polypeptide chains. Its length is variable and consists of an average of five hundred bases. Very soon the human genome will be completely deciphered, and everyone will have their genetic record with its points of maximum and minimum resistance. We will know the risks of developing a given disorder, and Huntington's chorea is already a famous example. The risk of cancer, senile dementia or any other late-onset disease can already be assessed [6].

In the 18th century, the physiologist Xavier Bichat stated that: "*Life is the set of forces that resist death*" [3]. This understanding of physiology is best illustrated during the study of cardiac activity in terminally ill patients. I remember such a case in which some of my colleagues stayed by the patient's bedside with the hospital nurse to follow the evolution of vital functions both on the monitor and through direct contact with the patient in agony. An incredible learning opportunity that you are lucky enough to meet during university. At the invitation of a resident doctor from the ICU, some of the colleagues preferred to look at the data on the monitor in the emergency room. The behavior of the nurse who remained in the room holding the patient's hand in her hands because, as she said, "*I hate to see people die alone ...*", made me think of the question

Balzac's hero asked, before he died: "*Why do you treat me like a plague - when you know very well that death is not contagious? Why do you let me die alone and not help me die with the image of life on my retina*? ... "

The term "pathology" comes from the Greek "*pathos*", which means "*suffering*". It is the morbid part of histology. Over time, pathologists have earned a reputation for infallibility. If some of their colleagues in hospitals can sometimes make the wrong diagnosis, the right answer can always be found post-mortem. In other words, those who practice this specialty may not be able to treat it, but they can certainly tell the exact cause of death. There is also a pearl passed on by older students to students: "*the definite diagnosis is always confirmed by the anatomo-pathologist.*"

The figure of style saying that to become a doctor you need to handle a large amount of feces is harsh but realistic. The stages of knowledge have been difficult to ascend in medicine. The discovery of antisepsis is an edifying example. It resulted from an intuition based on simple clinical observations. It is due to surgeon Joseph Lister in the prevention of wound suppuration and Ignaz Semmelweis in the prevention of puerperal fever. It was only through the discovery of microbes that Pasteur finally brought the scientific foundation of a conception that had long been met with adversity by doctors. In the end, the prevention of infection solved a major problem of surgery [7].

To learn the injection technique, the first "*patient*" you are offered is an orange, whose beautiful-smelling tissue resembles the texture of a human body. I felt no emotion. I drew the juice with the syringe, then inoculated the stoic fruit with tap water. In the following days we had to choose a partner from our colleagues with whom we would change the roles of patient and therapist. If at first the bravado was completely absent, my colleagues began to take courage, so that within a short time we got to take so much blood during the training that if they had known Count Dracula, he would have sold his castle and wished to be admitted to our group.

But medicines must be inserted into the syringes. The scientific and mathematical models offered by the studies are provided by pharmacokinetics. It teaches you to know the transformations suffered by the drug inside the body, the prediction of its path, but also of the metabolites with the evaluation of the ratio between the beneficial and toxic effects of the drug. The other branch of pharmacology is pharmacodynamics, which studies the molecular, biochemical and physiological effects that chemicals have on living organisms.

With this wealth of knowledge, accumulated in the first three years, the student, who until then worked only on corpses, test tubes, frogs and dogs, fixed on the work tables, enters the fascinating world of the clinic to try to decipher the medical alphabet.

I remember the stories of the Semiology assistant, who tried to convince us that there was no technology in the medical investigation, be it X-rays, ultrasound, magnetic resonance imaging or even a microscope, capable of replacing the human senses. The fundamental diagnostic tools will always remain our sense organs: eyes, ears, nose and hands. He reminded us that the moment we begin to feel the patient, we already give the impression that we have begun to heal him. I noticed that the body is a symphony of sounds that, if harmonious, plays a pleasant melody and if there is a discord, it shows that somewhere in the body orchestra there is an instrument that plays falsely, and the difference in sounds can only be perceived by one ear that is well trained. For example, a noise heard at an important artery indicates a narrowing of the vessel or even a partial obstruction. The chest with the sternum and the ribs make an acoustic box in which the vibrations, the whistling, the rales indicate a dysfunction of the respiratory tract. pleural fluid. Of course, there are breaths, a murmur of the heart going up and down and showing us that a valve is damaged. All of these can sometimes mean life or death, so the doctor needs to know what they mean.

Clinical diagnosis starts with the senses and then uses tools that increase their sensitivity. For example, in the case of imaging, microscopic, radiological, ultrasound, computed tomography, nuclear magnetic resonance, etc. If exploratory omissions are to be criticized, even over-investigation is not without its shortcomings: lost time, costs and, above all, risks. It is also possible to fetishize the examinations, hence their crediting with a certain magical force. Being seen "*in the rays*" or ultrasound is often equivalent to the guarantee of recovery itself. But even today, how calm can be an anxious person who declares that he has done "*all the tests*".

In principle, the laboratory must complete the clinical examination, its role being to enrich our knowledge of the case under study and to confirm the diagnosis. In the preface to Guy Laroche's book on laboratory tests, Anatole Chauffard makes it clear: "*Undoubtedly, the laboratory is far from giving us the ready-made diagnoses and it would be a great mistake to ask them. It does not replace the direct study of the patient, but complements it, always clarifies it, often rectifies it*" [8]. In fact, blind faith in the laboratory can be equated with magic in medicine.

Magic and / or miracle in medicine

The dominant myth of contemporary society is the belief that modern medicine is conceived as a science born of technology. Interventional surgery, transplantology, reproductive medicine, medical genetics, etc. belong to the fascinating adventure of human history. However, the Holy Apostle Paul warns us: "*All things are lawful for me, but I will not be brought under the power of any*" (I Cor. 6:12).

The therapeutic tradition developed by Christianity in the first centuries is disappearing, contemporary medicine becoming more and more "pagan" and closer to magic than

miracles. Although both guidelines continue to be used to achieve and sustain human well-being, the two modes of healing are different.

1.Magic assumes that there is no "*unyielding network of forces that the initiate cannot exploit for personal gain or block for personal protection*." Since the aim was only to control them in a pragmatic way, there was no need to deepen the study of the specifics of these powers. In Christian thought, however, the ignorance of the source and the lack of limits of these powers are extremely problematic. In addition, contemporary medicine seems to recognize its limitations in the face of human finitude.

2.The miracle comes from another order, from the divine, from God. For Christians, this power is not used according to the will of the sufferer, who must implore, thus acknowledging that God's power is reflected only by His divine will.

If the Christian cannot use magic because the source of its power is suspicious, he nevertheless resorts to medicine, living with the conviction that the created being already has grace, and the line between medicine and miracle is drawn under the sovereignty of God: "*He is the One who has given knowledge to the people, that he might be glorified in his miracles*" (Sirach 38: 6).

From a Christian perspective, bioethicists appreciate that contemporary medicine has become closer to magic, as it uses all skills, regardless of their source, only to control the world according to their own will.

Medical science operates on a set of values such as: *simplicity; elegance; predisposition for control*. The first two come from "Ockham's razor", meaning that the simplest explanation for a phenomenon is preferred and assume, without much evidence, that the natural order of the body is simple and elegant, rather than complex and chaotic. The third value of contemporary medicine derives from a Baconian feeling, of human control over nature and the body.

But a physician must recognize the technical limitations of medicine, meaning that, beyond them, there is a metaphysical realm.

Of course, we wonder how the physician can reach the metaphysical, when he is accustomed to the limits of his technical medicine, with the mechanical and physico-chemical perspective on the body. There are circumstances in life when you understand that reason, even springing from the brightest minds, becomes an element on which you cannot rely exclusively.

As illustration, here is an episode, or rather an *experience* I had at the beginning of this year together with colleagues from the Intensive Care Unit, all involved in the case of a patient suffering from a severe lung disease. He had been rushed to the hospital with toxic shock sepsis. His lungs were suffering terribly. He practically had no respiratory surface; only artificial ventilation kept him alive. The team did not leave the patient's bed for days. There were hard times when I thought the patient was going to die. One day the patient asked me in a whisper and jerk - he was talking very hard because of the intubation probe - if I could bring him a priest. I shuddered, surprised that the dying man had managed to read my mind. I immediately asked the priest of the hospital, a man very dedicated to his calling, who had been helping us a lot for several years. Due to the patient's extremely serious condition, I was left in the room door. The priest prayed - I also heard his prayer - for the sick, creating an atmosphere of trust and closeness to God, giving courage to the sick, but also to me, the doctor. Moments of struggle with the disease followed. The patient recovered and was then cared for with great self-sacrifice by his wife and two children.

I had a discussion with him after his serious condition improved. He told me that he felt that imminent fear of death, but after falling into a deep sleep, he felt his body revitalize and he was again able to fight the disease. Every doctor knows that if an organism does not react and does not fight the disease, medicines and equipment, no matter how sophisticated, cannot lead to a good therapeutic result on their own.

Here is another case, which led me to build a Christian monument in the courtyard of the Hospital that I have run for many years. It is about Father Seraphim Man of Rohia Monastery, who was diagnosed around 1950 with laryngeal cancer. The doctors from the ENT Clinic in Cluj sent him back to the monastery, giving him no chances. This priest returned to Rohia and tried, I think, by practicing the prayer of the heart.

I had a discussion with Father Serafim Man in 1989, and two friends were present: Father Ioan Pintea and the artist Marcel Lupşe. It is usual that in a community or in a group where there are older people and a doctor appears, they often seek to engage in a dialogue about their illness. Father Seraphim, who had meanwhile become the abbot of the Rohia Monastery, told me how, after the diagnosis established in Cluj, he returned to the monastery. And he set to work on rebuilding the entire monastic settlement. After ten years he went to the ENT Clinic in Cluj. The doctors, of course, did not recognize him. They did all the tests again and were surprised to find that the tumor that had been diagnosed not only clinically but also by biopsy (so by taking laboratory tests that showed the presence of neoplastic formation) had completely disappeared. Father Seraphim Man, who is no more - God rest him in peace! - told this episode of his life with great pleasure.

Of course, we wonder if medicine is a profession or a calling. It is very difficult to answer, because it is somewhere between technique and art. If we were to define it, however, I would paraphrase Prof. Iuliu Haţieganu, who said that medicine is science and conscience, and if we add faith to it, I think it is the most beautiful definition that could be given to medicine.

Regarding the untamed invasion of technology

in a field characterized by quintessential direct human relationships, when the latter weaken, it is possible that a crisis situation may arise due to the broken connection between the man who knows and must heal and the suffering man who needs to be healed, encouraged and comforted in his intimate life.

The patience to be patient

The language used in the clinic and the technical power of medicine reduce the patient's body to a simple physiological machine. The same thing happens with the medical student, who also looks at his own body as a mechanism. I am thinking here of the humorous example, when in semiology classes, as we learnt the abstract signs and symptoms of the disease, we diagnosed our own imaginary suffering and finally convinced ourselves that nothing was real.

When the doctor meets real patients, his problem becomes much more complex than the paranoia of a medical student. Both the doctor and the patient are in the "*neutral space of the clinic*", where subjectivity must be replaced by objective scientific elements. This scientific knowledge becomes an act of power through the control that the doctor exercises over the patient. This act of medical knowledge, of subjecting the sufferer to the clinical scrutiny, is by no means a neutral act, but one of violence even if it is dressed in the white robe of scientific objectivity [3]. In fact, the doctor is not involved in a neutral project, but in a moral one, which modern medicine masks by asking doctors to adopt a scientific conduct that at first sight seems neutral. Medical knowledge belongs to a group of people trained to interpret the hidden signs and symptoms of the body that we call "*medical gaze*". In this situation, the language between doctor and patient is no longer transparent. Many consider the medical gaze capable of penetrating illusions, that is, of discovering a hidden truth through the biological reductionism of the human body. This knowledge is possible only by observing the patient, especially the disease. It is a practical knowledge acquired in a specific space that is the clinic.

Even if the clinical attitude is an act of violence, patients do not always recognize this dynamic.For example, hearing a diagnosis that the person in question considers contradictory to the understanding of his life may lead him to say "*I know my own body better than you do*". This reaction is not just a psychological act of denial, especially when a serious diagnosis is made, but can be seen as a reaction to the violence of the clinical gaze. On the other hand, understanding the suffering body as a machine that refuses to be repaired can lead to the alienation of the self from the body. A similar alienation can occur in doctors who, despite their best efforts, cannot repair "*a sick body*", a situation in which they consider that their moral project has failed. Frustration becomes even more apparent when the doctor, whose purpose is to detect signs and symptoms in others, undermines his own powers to discover the disease within himself.

Since technology cannot control death, medicine must borrow knowledge from the social sciences such as psychology, sociology, theology and so on. This led to the formulation of the theory of the five stages of behavior of patients in the terminal stage of the disease: shock, rejection, revolt, depression and acceptance. Although there is a hypothesis that all patients should reach acceptance before they die, we wonder what happens when a dying person does not follow the path established by medicine. Certainly, in this situation, the doctor is again frustrated, because the medicine is hindered in the attempt to control, and the doctor's moral project is jeopardized. In other words, the other's body appears not only as a "*dying body*," but as a body that does not obey the rules.

Although most doctors enter the profession with the desire to help and heal, the social and bureaucratic apparatus of medicine sometimes suggests ways of behaving contrary to the original purpose, placing an inappropriate burden on doctors. "*People who all their lives have thought only of small immediate personal interests, who never had before their eyes a goal to achieve, who are taught to lie whenever it is useful to them, they are unable to change their way of thinking and acting, even if they want to* "[9]. That is why we must have the strength to look beyond contingency, as objective scientists, striving to identify and name the disease, then offering treatments based on appropriate medical technology, because our emotions, our biases, our weaknesses, even our own bodies cannot interfere with this task.

Our body can be used as the skill of a surgeon who performs a delicate operation or an internist who listens to a diseased lung, but he must never betray this task. The mechanization of the body makes it an instrument in the project of medicine, alienated from our own experiences as contingent human beings. Like the patient's body, the doctor's body becomes the body of the "*Other*," a machine that must be subdued by the mastery of the will in case it could ever interfere with the project of medicine. Strangely, calling a doctor "*a machine*" can turn into a compliment when referring to the efficient work of the profession. On the other hand, when a metaphor begins to control intelligence, such as the resemblance of the human body to a machine, we must look for distortions and absurdities, which lead to a fundamental change in the perception of the role of the doctor in society. Wendell Berry wrote in a 2002 article: "*Of course, the body is not like a machine ... A human mind is probably much less than a computer ... In the art and science of healing, the metaphor of the machine falsifies the healing process, because it falsifies the nature of the creature ... If the body is a machine, then its diseases can be cured by a kind of mechanical tinsmithing*" [9].

In terms of power, medicine has promised more than it can offer. It cannot take us away from our contingency as

it takes us away from our humanity. In addition, modern man is the victim of the sciences of life lagging behind the sciences of matter. The power to feel the suffering of others creates the moral being, who strives to ease the pain and hardships of life for people. The one who masters moral beauty acquires through it a strange inexplicable power. It increases the strength of intelligence and improves the outcome of work.

As providers of medical services, our bodies are pushed, by internal and external forces, to fight against mortality and suffering with the "*saving*" power of medicine, with the remark that medicine cannot provide salvation [10].

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