

TECHNOLOGICAL INFUSION!
MEDICAL DIFFUSION.
PERSONAL CONFUSION?*

by Fr. Nikolaos Hatzinikolaou

I would like to thank the organizing committee for inviting me to make the opening speech in this conference, even though my appearance is unfitting, my status unsuitable, my interests irrelevant and myself detached from the present and the future of contemporary scientific developments, “advances and controversies.” On the basis of my academic past, I was asked to talk about the unpredictable future and the hidden secrets of an unprecedented interaction between technology, medicine and human person. An interaction which provokes surprise and admiration for the technological achievement; hesitation and doubts about the future of medicine; dilemmas, worries and confusion to the human person. (This is clearly indicated by the punctuation marks used in the title.)

If art and word, beauty and truth respectively, constitute the two axes of ancient Greek civilization, we could say that the backbone of contemporary life is *technology*; a term which, while technically formed by the Greek words *techni* (art) and *logos* (reason and word), in essence does not seem to be very closely related to either aesthetics or even more so to the truth. For, while art comes forth naturally, technology is artificially imposed; although word is more abstract and delicate, technology is dominated by the coarseness of practicality. Truth and beauty make way to convenience and application. The creation of a single and unique product is being replaced by mass production of identical ones.

The influence of technology and its contribution to modern life is immense. Every detail and minute of our life confirms its overwhelming dominance. Technology has not only taken control over what we do, but it is also lurking to possess authority over who we are. In the form of machinery, it abolished the natural way of living; as space technology, it took us away from the earth and launched us to space; as artificial intelligence, it erased the monopolistic sense and indispensability of our idiomatic human capabilities. In the form of medical technology, it permeated even our skin and affected our physical intimacy; finally, as biotechnology and genetic

* Opening speech, presented at the University of Crete Vascular Symposium. September 26, 1997, Crete, Greece.

engineering, it penetrated our genes and violated the uniqueness of our biological identity.

Especially in medicine and life sciences, the relationship between man and technology is not limited to mere contact and mutual interaction; it is rather a relationship of inter-dwelling, and assimilation. In addition, the recourse to medical technology occurs at times of illness, moments of special sensitivity, and insecurity; thus, the relationship becomes more intense and affects even the soul itself. Technology in medicine does not constitute a luxury, but rather serves the need for survival. However, one wonders: Is the deformation of our identity and person the price we pay for our health?

The ethical problems and dilemmas caused by the thoughtless overuse of technology become so many and complex that we do not want to even consider them, because we are unable to make predictions and evaluations in time, let alone suggest solutions.

The happiness of man could be represented by an equation. On one side of the equation is man's absolute state of being, namely the balance and harmony of his inner world; on the other side, lies man's interaction with events, persons and the truth. It seems that technology promotes health and improves the conditions of our lives; thus it contributes to the left side of the equation. The question is, however, in what way it affects the right one.

TECHNOLOGICAL INFUSION!

The infusion of technology into medicine has greatly limited mortality and increased the average life span; it opened the way to new surgical operations, much more significant and complicated, yet more effective and less dangerous; it created safer and more accurate non-invasive diagnostic techniques, offered better post-operational recovery and a chance for a healthy life to millions of people who were otherwise hopeless cases.

Technology gave a completely new role and function to hospitals, by transforming them from shelters of relief and comfort to poor patients to places of thorough diagnosis and pharmaceutical and operative treatment. Moreover, the idea and operation of the intensive care units, the whole contemporary health care and welfare system, and medical research, as they presently stand, are the off-spring of fertilisation between the medical ovum and technological sperm.

Novel ideas, original methods and equipment come to light so rapidly that often times as soon as they appear, they are already outdated. Numerous inventions open up new avenues and alter impressively the way through which medicine transforms research to application and practice.

For instance, telemedicine promises medical attendance and health care of people in rural areas through closed circuit television communication by large medical centres. Systems of multiphasic screening may essentially promote preventive medicine, so that only those in need of high technology diagnostic or therapeutical intervention may be admitted to hospitals. The development of automation and advanced information systems will soon give doctors easy access to the patient's condition and status, not only while in hospital, but at his home as well. It is estimated that the idea of transferring knowledge instead of patients will dominate as the main medical trend during the next decade.¹

From a medical point of view, we are impressed by the achievement. Technology has made the impossible feasible and the improbable real. However, from a technological point of view, we are startled by the untapped possibilities. The applications of medical technology are far behind its capabilities. This is why we believe the big explosion is yet to come.

MEDICAL DIFFUSION.

Technology did not only influence -very positively, indeed- health as a pursued result; at the same time, it provoked intense vibrations to the medical perception and attitude. It gave a new thrust to medicine as a science, research and clinical practice; it influenced decisively and transformed the physician's mentality, the nature of his vocation and medicine's relation to society as a whole.

The exposure of physicians to the new technological approach, on one hand, and the involvement of an increasing number of engineers in medical research, on the other, modified the classic, synthetic and conservative way of thinking into a more analytical one.

The physician today feels much more self-confident. He knows the power and effectiveness of the means he has at his disposal. The scope of his choices has greatly expanded. He can do much, but not on his own. At the same time, he has also gradually turned into somewhat of a mechanic or technician. The frantic rhythms of development and constant need for adaptation to new knowledge and equipment, however, have made the physician think less and depend more. If he

¹ Ramo, Joshua C. Technology: Doc in a Box. *TIME Magazine*. Special Issue. The Frontiers of Medicine, Fall 1996, p.57.

cannot keep up with technological development, he is likely to feel inadequate and outdated. Medicine runs the risk to become more medicine of knowledge and learning than of intelligence and thinking; of what the books and “others” say, rather than of what the physician himself feels or senses.

The involvement of the patient in the diagnostic procedure has been limited. Even his sense that the doctor is actively participating in the process has been wounded. The unquestionable objectivity of laboratory tests has abolished the monopoly of the physician’s personal assessment and diminished the gravity of the patient’s opinion. Correct evaluation in medicine tends to become laboratorial rather than personal, because machines decide what is right and men merely approve it. It appears that, in medical diagnosis, machines are dominating, physicians are watching and patients are absent. However, it is personal communication which underlines the uniqueness of the person, whereas the uniformity of technical procedures undermines it.

Technology functions as a layer interposed between the patient and the doctor, and therefore it affects the nature of human interaction. Patients feel more like machines and objects than persons. This is why, although public interest in medical advancements had never been greater, people’s confidence in medicine is declining (between 1966 and 1982 from 73% to 32%).² According to recent statistics, half of the population thinks that medical research is oriented more towards the physician’s interests than the patient’s needs.³ People believe that doctors are concerned more with the physical ailments than with the persons afflicted by them. Human contact is being replaced by dependency on machines. As a result, the doctor feels more as a mediator and less responsible. If this is true for diagnostics, with the rapid development of robotics, it may soon apply to surgery as well.

Technological progress has changed not only the identity of medicine, but also its relation to society. The more esoteric medical advances become, the more difficult it is for society to assess the achievement, make the appropriate decisions and influence medical policies. The enormous number of existing committees displays the complexity of biomedical issues and the inability of present institutional infrastructure to meet them. This complexity has provided specialists and experts, or those who hire them, with increasing control over science and technology policy, while at the same time it has inhibited those concerned in participating in the decision making process.

² *Louis Harris and Associates National Surveys*, 1966-82.

³ National Commission for the protection of Human Subjects, *Special Study*, Department of Health, Education and Welfare Publ. No. (OS) 78-0015 (Washington, D.C., Government Printing Office, 1978), p. 207.

Finally, money and complexity started playing a decisive role in medicine. Rapid technological development is extremely difficult to keep up with and requires expensive equipment. Often, our health and life is evaluated solely by financial and legal criteria. Very expensive equipment (a knife of gamma-rays, a superb device which can focus tiny cobalt beams with tremendous accuracy on minute tumors and malformations of the brain, costs over 3 million dollars,⁴ a pozitron emission tomography (PET) scanner costs almost 2 million dollars, etc.),⁵ huge fees and outrageous medical expenses, resulting from high technology, often give to medicine a strong financial character. The patient's therapy and health do not lie on whether he can be treated, but rather on whether he can afford it. Decisions regarding the length of stay in the intensive care unit, the allocation of organs, or the choice between more or less expensive operations, etc. are no longer exclusively medical, but are often taken on financial grounds. Technology is costly and so is health. Therefore, it tends to become an exclusive privilege of the well-off.

Medical care and research turned from a private, self-funded enterprise into a massive, national or even international one, requiring high-cost equipment and skilled personnel, and financed mainly by public funds, industry, corporations and private health insurance companies. Thus, today we can speak about "corporatization," "industrialization" and "commercialization" of health. It is interesting that for-profit hospitals in the USA have tripled within the 1990s.⁶

Medicine, along with its spectacular progress, goes through an identity crisis.

PERSONAL CONFUSION?

Health constitutes an extremely important factor of man's happiness and medical technology has greatly contributed to its development; it has offered alleviation, has prolonged the life span and has given joy, hope and consolation, not only to millions of patients, but also to their families and friends. Thus, agony gave way to a true sense of life and health, pain to relief, mental tension to a deep feeling of satisfaction and joy, and an aching body to a comforted soul.

Technological achievements appear in our days as true miracles. Bio-robotics helps limping men walk; bio-electrical engineering promises people who are unable to even see darkness or hear the rumble of silence, that soon they may be looking at the sparks of light and enjoy the melody of sounds; bio-fluid mechanics

⁴ Ramo, Joshua C. Technology: Doc in a Box. *TIME Magazine*. Special Issue. The Frontiers of Medicine, Fall 1996, p.56.

⁵ Blume, S.S. 1992. *Insight and Industry: On the Dynamics of Technological Change in Medicine*. MIT Press. Cambridge, MA, p.1.

⁶ Dutton, D.B. 1988. *Worse than the Disease: Pitfalls of Medical Progress*. Cambridge University Press, p.18.

provides novel diagnostic and surgical techniques to the areas of cardiovascular, renal and pulmonary medicine; medical technology has replaced anxiety about the unknown state of our health for a period of months with thorough knowledge of our condition within a few days.

At the same time, however, high-tech health coincides with a weakening of man's humane feelings and a devaluation of his spiritual qualities. Technological man has tremendous power, but not endurance; a multitude of desires, but not a will; he has great potential, but lacks inner strength. He has created high hopes, which are often out of proportion, compared to the achievements themselves as well as their importance and value. He became less humane and yet more human; merely human.

We have passed from the state of man-person to the one of man-machine; to the dehumanized man who appears more as a combination of numerical figures and incomprehensible parameters, as a medical case, as a means to apply specific diagnostic or therapeutic procedures, as a financial bill. The average patient, who undergoes routine tests, views his health in terms of numerical values. As the numbers increase, he may feel sick before he actually falls ill. Mechanical support may create an unhealthy dependence. Technical error is scarce, but the fear of its occurrence is more torturing. We trust man more, even if he is capable of less.

Moreover, this false dependence gradually leads to the mechanical perception of human identity and life. As artificial heart researcher Robert Jarvik puts it, life is "an aggregate of a bunch of mechanical and chemical things; it's very ultimately definable."⁷

Technology makes its appearance in our days with an overpowering dominance. It runs the risk, though, of overruling man, rather than serving him. Technological man tends to become less humane and more human; only human. The onset of sometimes unrealistic hopes and the unprecedented temptation to play God have overthrown Him, and withered our yearning for overcoming our present state of being and narrow thinking. We have created a silly and human substitute of God, unworthy of our faith and trust. By humanizing God, we have lost the vision of divine man. Thus, technology enhances the model of finite man; the man who is only human, who is bound to his humanness, who survives but does not live; the man with his personhood weakened and his eternal, heavenly and divine dimension dormant.

⁷ Robert Jarvik, quoted in Marie-Claude Wrenn, "The heart has its reasons," *UTAH HOLIDAY* (July 1982), p.34.

Enslavement to needs, selfish interests, comfort and the ephemeral seems to inhibit the possibility to transcend space, time and our nature. Our aim should not be to merely prolong life or postpone death; it should be to transcend life and overcome death. Life with death as its perspective, even if it is healthy and lengthy, is poor in quality and short in quantity. Death with eternal life as its perspective ensures good quality and immense quantity, namely true health and unending life.

CONCLUSION

Man, every man, can be represented by a numerical fraction. On the numerator is his soul, his spiritual self; on the denominator is his life, his physical, biological dimension. The denominator has a minimum value; the one of determinism and survival. Technology is a parameter which basically influences life. Its contribution to physical man seems to be immeasurable. At the same time, though, its responsibility for man's spiritual disorientation is considerable. The front cover of next week's TIME magazine bears the title: "How mood drugs work ...and fail."⁸ This may very well apply to medical technology. What appears to be a short term success may end up into a long term failure. Technology restores health, but affects the delicacy of the soul. We appreciate technology, but we are afraid of it; it deserves our gratitude, but not our trust.

As science pushes the frontiers of medicine, it strains the limits of traditional morality. Famous medical ethicist Willard Gaylin once warned: "the loss of human values would diminish us all, and extract a price we cannot anticipate in ways yet unknown and times not yet determined."⁹ Human dignity and personal autonomy seems to be the high price for health improvement. Technological medicine tends to become inhumane in regards to social interaction, thus running the risk to weaken human relationships; and only human in regards to man's capabilities, thus narrowing the horizon of perspectives. It has inhumanly decreased humaneness and inhumanly increased humanness.

It is commonly believed that there is a need to return to Hippocrates' holistic approach of man. Many people also talk about the need to bring back warmth and humaneness to the interaction between the medical care giver and the patient or, even suggest putting more emphasis on social sciences and humanities in medical training curricula. We should try to co-operate with nature, rather than attempt to dominate it.

⁸ *TIME Magazine*, September 29, 1997.

⁹ Williard Gaylin, "Harvesting the Dead: The Potential for Recycling Human Bodies," *HARPERS* (September 1974), p.30.

In the above critique, one may detect a negative tone, which probably does not do justice to medical technology. The problem is certainly not technology itself, but the direction we have finally given it; it is not solved by what we do, but rather it is dealt with who we can become. Causes are never found in lifeless things, but lie in man. Unfortunately, the explosion of technology coincides with a deep crisis of values, societies, of man himself. We seem to be unable to carry the load of its achievements without any cost. If spiritual values operate as a strong parameter in the numerator, technology may freely do its job in the denominator of the human fraction.

Undoubtedly, along with the problems that technology solves, it also creates new and remarkable dilemmas. To the degree that they are insoluble, it provokes confusion; to the level that we can face them, it brings to surface new information and better understanding of human identity. The merit of technology to health progress is immense, while its contribution to the awakening and birth of new sensitivities may be proven inestimable. The daily struggle for the secret of the beginning of life or the mystery of its end may lead to a deeper understanding of human nature -who we are- and to a more lucid picture and perspective of the human person -who we can become.

Technology and science may interfere with our lives. Man's soul, however, does not belong to them. The answer to the technological onslaught is not imposing prohibiting rules to its development and growth; instead, it is the balance, wholeness and integrity of man, not only as an individual, or a simple social unit, but rather as a person with divine countenance and eternal perspective. Technological man may become dangerous. The man who is only human is inadequate. Spiritual man is the one who can even turn technology from a ruler into a servant of his life. So far, technology has decisively influenced man; now it is time for society to give way to man to create not an intelligent but a wise technology.

The idea and suggestion to limit or control technological development with laws, rules, regulations, resolutions and committees is not only inapplicable, but may also be misleading. Technology, development and progress do not need instructions; they need an instructor. They need man. A man who can harmoniously combine the enthusiasm for new discoveries with old standards and ideals, who can balance health progress with economical factors, who can weigh research interest of medical scientists with humanistic and practical sensitivities of lay people.

Now it is time to give technology what it lacks; the components of its name, *techni* and *logos*. It needs a surgery on our part. Technology, dissected into *techni* and *logos*, namely inspired by the beauty of humanness and the truth of eternal values, can transform medicine from "a science of body repair" to a true "art of

human treatment” and recompose true man; the one who possesses techni and logos, aesthetics and the truth as the two axes of his life and God as his origin and perspective.

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