

INVITED PAPER

HEALTH, ILLNESS AND HUMAN LIFE¹

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An old and not very attractive aphorism says: "If you are older than 55 and feel no pain when you wake up in the morning, then you must have died last night". As I am at a considerably more advanced age than that, I am happy to feel some pain on waking up; this means that I am alive! Yet, although being alive, this does not mean that I am healthy. I have been burdened with a number of discomforts consistent with my old age. Therefore, this essay will be dedicated to my considerations about health, illness and life.

The above-mentioned aphorism, as well as everyday living, appears to impose the following question: what is health? The question is by no means easy to answer. The definition of health as once stated by the World Health Organization, according to which health is physical, mental and social welfare, cannot be accepted without criticism. According to this definition, there would be "heaven on earth", which would be theoretically attainable only in the ultimate phase of Utopian Communism. Then, how should health be defined? In an attempt to answer this question, it might best to compare with love. Love is the most beautiful and noble human feeling. We have a potential for love, we long strongly for love, and when it is felt it fills us with joy and happiness. Yet, it may not last forever and is permanently in jeopardy. It should be continuously cared for and nourished, which may require great endeavours. Something similar applies to health. It is given, it is longed for, and when present it implies great happiness. However, health is not a permanent category either, and it also

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requires continuous care and attention, thus demanding true dedication. Obviously, health is not something warranted and it does not mean a normal biological condition as opposed to illness as an abnormality.

Then how should health be defined? I believe that the answer to this question should be compatible with the reality of life and the biological specificities of human beings. Therefore, it seems that health should correspond to a life condition which is not burdened with pain, injuries, organ and functional damage, physical and mental disorders, while allowing man to perform all age-appropriate activities. A living condition that does not meet these parameters should be considered as illness. Considering human life and biological characteristics, health would be an ideal living condition yet any deviation from it being the rule rather than an exception. Thus, we should not expect health to be something we are fully entitled to and warranted by nature. We should accept health as a great good fortune which, unfortunately, is transient, in line with normal changes within the frame work of the life cycle.

Why is that so? Why has the Almighty Creator not endowed us with permanent health when using natural evolution for carrying out His creative endeavors? Why has the Almighty not arranged it so that any deviation from the ideal living condition, i.e. health, would be exclusively a consequence of inappropriate human behaviour such as poor dietary habits, harmful dependences, inadequate physical activity, etc.? In this case, illness would result from our moral failure and only we would be to be blame for wasting our health. However, we are not constituted in this way. During life, from the very beginning, one is exposed to various detrimental effects that cannot always be successfully overcome, and which impair one's health architecture. Therefore, alternating stages of health and illness are natural and normal phenomena in human life. The ideal and permanent health cannot exist. In this context, the following thought of Jean Jacques Rousseau finds its full meaning: "Man is a little healthy – just as he is free". This message appears to be ever more clearly observable in the modern world when we are ever less free and ever more diseased!

Discussing the definitions of health and illness, we have approached the topic of human life in which health and illness play an important, not infrequently a decisive, role. Therefore, I will continue with some specificities of life among which, in my opinion, the diversification among living creatures is among the most important ones. It is obvious that we owe our origin to the process of evolution. Evolution is also responsible for the diversification among living creatures, even within a species. For instance, there are great differences between lions and tigers, the two cat species, not to mention individual differences in humans. With the exception of monozygotic twins, people are born individually different. This fact becomes prominent during subsequent development, now recognized owing to the high achievements of molecular genetics.

The "lottery-wheel" of fertilization is responsible for the existence of a human being as an individual. The coupling of male and female sex cells results in an unavoidable mixing of their chromosomes, i.e. genes as carriers of hereditary traits. The huge number of genes allows for a myriad of gene combinations with consequential formation of individual differences. This fact confirms one of the main genetic messages, i.e. that there is no gene standard or ideal gene type. In other words, the creation of a so-called "pure race", tried by force but unsuccessfully by some pseudo-scientists not very long ago, is not possible. Should it be possible, it would definitely be a biological tragedy and disaster.

In the life of humans, a population based on gene diversity is absolutely necessary. This diversity makes the basis of human existence, enriching and diversifying life. Gene diversification enables development of individual personalities and abilities of humans. Nobody can become a Goethe, Beethoven, Marie Curie or Einstein just because he or she wants to but primarily owing to his/her own genetic predisposition supported by a number of extrinsic factors such as education, upbringing, environment, etc. It is exactly this genetic individual diversity in combination with the above-mentioned extrinsic factors that is responsible for the existence of Nobel prize-winning scientists musical geniuses, Godgifted virtuosos, great artists, Olympic Games winners, and other extraordinarily gifted individuals. Had it not been for the gene structure, all people would be more or less identical, i.e. more or less attractive or unattractive, smart or stupid, healthy or ill. In such conditions, the development of humans and their life pursuits would be questioned. We would lose what is most valuable for us, i.e. our individuality, while any competition keeping progress alive would thus be precluded. Briefly, life would not be real life without diversification; in fact, there would indeed be no life.

Nevertheless, genetically based diversity also implies the possibility of some undesirable consequences that may threaten human health and by no means infrequently human life. In Nature, there is a "golden rule" stating that every benefit must be paid for. Thus, along with the priceless value of genetic diversity, one has to accept its possible adverse consequences as well. The latter are caused by an undesirable, ill-fated mutation of a gene responsible for a particular hereditary trait. Such a gene mutation leads to aberration from the normal "gene product", resulting in a series of body malformations, genetic diseases, i.e. hereditary disorders.

Modern molecular medicine has focused on intensive research in the prevention and possible treatment of genetic diseases. These efforts consist of a number of very complex biotechnological operations trying to insert an identical but normal gene into the cell in order to replace the "faulty" gene, thus to correct the damaged gene expression causing the disease.

Now, we have arrived at a very delicate field, at the very border separating medicine from ethics. In his essay entitled *Zukunft der Medizin*, Johannes Rau, former president of the Federal Republic of Germany, says: "May humans never destroy what God has created". Yet gene manipulation and their horizontal transfer, if performed for health care and preservation, cannot be identified with something that "God has created." On the contrary, such a procedure has not only a medical but also a strong ethical justification. It is quite easy to conceive the gratification of mankind once these procedures will have enabled successful prevention of malignant and other genetic diseases. There is no doubt that molecular medicine dealing with the genesis of genetic diseases and their prevention has great prospects. Yet such research must always stay within the limits of ethics, fully respecting the personality of *homo sapiens*.

Besides genetic diseases, however, there is the possibility of inheriting susceptibility to the development of particular diseases. This dormant susceptibility represents a "tinderbox" that may explode under certain conditions and induce a particular disease to manifest. In this context, I will mention psoriasis, an embarrassing disease, as an example. The susceptibility to this disease is inherited, while the disease will manifest itself under the influence of stress. Therefore, every one of us should be aware of being a potential carrier of the concealed susceptibility to a particular disease from the very beginning of his/her life.

At the end of this discussion about health and illness, we have to accept the fact that health cannot be taken as something normal and natural. Health cannot be permanent because there is a continuous alternation of health and illness throughout one's life, and this alternation is a rule rather than an exception. How long the period of health will last only to be replaced by illness is a matter of individual difference. It depends on one's genetic structure, his or her innate immunity to extraneous substances and microbes as well as on lifestyle, habits, occupation, etc.

Now, I will turn to a specific and highly important natural ability of some living creatures, especially humans. This ability is of utmost importance in the protection of health and *in ultima linea* of life. This specific ability is the sense of pain. It has the role of an "alarm" warning that something unusual and undesirable has occurred on or in the body, e.g., functional or organic impairments, traumatic lesions, and various other harmful stimuli including strenuous physical efforts. Like everything in life, so the sense of pain has its evolution, which is closely related to the evolution of the nervous system. The higher the nervous system development, the more superb the sense of pain. Some living creatures such as insects do not feel pain. Observing them, it is seen that even the most severe mutilations do not change their activity and mobility, nor cause any modification in their behaviour. The sense of pain appears to be a privilege of long-lived living beings, especially humans, in whom it has reached the

highest stage of development. As the sense of pain is closely related to the nervous system, it is quite conceivable that it greatly depends on the patient's will and mental state. So, the sense of pain may be fully suppressed from consciousness under the action of a strong stress. This frequently happens when one has to fight for life, e.g. in war. In this case, even severe injuries need not be accompanied by a sense of pain at the time of infliction. In stress, the nervous regulatory mechanism for pain is depressed, resulting in diminished pain sensitivity due to the increased pain threshold. A similar phenomenon occurs in boxers in the ring. Although receiving severe blows, not infrequently accompanied by injuries, they feel no pain during but only after the match. The intensity of the pain felt also varies with the individual's mental state. Mentally stable persons have a considerably higher pain threshold and can bear pain better than mentally unstable and frightened persons. In the latter, the pain threshold is decreased, thus they can hardly bear even a very low pain intensity and show an overresponse to it.

The great importance of the sense of pain for health preservation is best exemplified by patients in whom the nervous system segment responsible for pain has been destroyed by a disease, e.g. patients suffering from leprosy who are prone to severe injuries, even losing parts of their extremities (e.g. fingers/toes), or to extensive, deep burns due to the loss of the sense of pain.

There is another highly relevant natural ability of some living beings, especially humans, that has developed owing to the nervous system's evolution. This ability is primarily intended to preserve health; however, it is commonly abused by some individuals in the form of detrimental addictions. It would be absolutely impossible for humans to develop alcohol, nicotine, heroin, cocaine or any other dependency had we not possessed specific "receivers", i.e. receptors in the body, which have been intended, evolutionary speaking, for other pleasures than those experienced through surreal sensations. These receptors have primarily developed to serve an important task of biological control and health protection, and are connected with the brain. It is well known that many animals use certain plants as medicines to protect their health and to maintain normal life functions. Unfortunately, we do not always use this ability in favour of health. In this way, an ability that has been designed by evolution for health protection turns in to a health risk. There is no doubt that some people are genetically predisposed to develop addiction, and that achieving and maintaining abstinence is especially difficult for these individuals.

The life of modern man is not only burdened with alcohol, nicotine and other drug addictions. In addition, there is a passionate striving, almost dependence generated by our longing for high achievements and prestigious position merely for personal reputation. This passionate striving is observed, for example in sports requiring extreme physical efforts that may quite commonly lead to

severe health impairment. It is hardly conceivable that anybody would willfully expose himself or herself to the risk of severe body lesions merely for one's sports ego. The use of stimulating agents, i.e. doping, with the aim of achieving top sports results in spite of recurrent and persistent body exposure to severe, occasionally directly life-threatening lesions in some sports, is even harder to conceive. The time when sports activities were primarily intended for recreation and health maintenance, stimulation of physical development and achievement of mental stability, has obviously become irretrievable. At that time, the wish for wide recognition and winning in sports was of minor importance. Nowadays, however, the sportmen's ego and desire to achieve top results are associated with the potential of huge material profits, whereby some political interests cannot be excluded either. Top sport has become a highly profitable business as well as a means of personal and even political recognition. It would therefore be impossible to turn sport back to the era of amateurism, when it primarily served for health promotion along with spontaneous competitive spirit, consistent with the well-known saying, *mens sana in corpore sano*. This avid inclination of modern man to high achievements and personal recognition is not only found in sports. It is also present in many other aspects of life, quite frequently with a negative qualification.

When talking about health, illness and life, we have to admit that human life expectancy has considerably increased owing to advances in medicine and modifications in lifestyle. As the result, the population is getting older and more burdened with diseases. Although it has prolonged our life expectancy, medicine has also made it financially more demanding. This is one of the major reasons for the ever-increasing costs of health care. It also contributes to the ever more difficult situation in health insurance agencies, which are simply unable to ensure optimal health care to all potential users. This is especially pronounced in transition countries; however, neither are the highly developed postindustrial countries free from the problem. In the United States of America, which allocate highest resources for health care, it cannot be provided for more than 40,000,000 of their citizens. The issue of health care has turned into a worldwide problem and we should be aware that the generally warranted, optimal health care cannot be expected anymore.

As diseases more commonly occur in the elderly and old, an interesting question should be asked: why are we getting older? The question may seem trivial, as it is well known that every engine operating incessantly will gradually run out. Then, why should the human bioengine, working permanently for an average of 70–80 years, not wear out, too? The answer is by no means simple. There is no engine comparable with our bioengine. A car, television or computer cannot repair itself, whereas living beings, humans among them, can do this in an amazing way. For example, surgeons can remove a major part of a diseased liver, one of the vital organs, the remaining part of the liver being regenerated in a relatively short time. Or, for instance, fractures of bones res-

possible for body stability and indispensable for body movements can heal spontaneously through the process of regeneration and regain their full function. That is why no engine, however technically sophisticated it may be, can be compared to the human bioengine operating permanently for decades, performing numerous complex processes and activities. Therefore, old age with all its diseases such as carcinoma, maturity-onset diabetes, cardiovascular diseases, and degenerative bone and joint diseases should not be considered as a consequence of the bioengine being worn-out, but as a gradual failing of the gene control of vital functions.

In conclusion to my considerations about human life, health should obviously be considered as a great but fragile good fortune. Unfortunately, it is neither permanent nor a rule. Disease, with all its life-threatening potential, is an inescapable alternative to health. Yet illness is not something abnormal but an inevitable component of human life. During life, we should continuously build up and upgrade our awareness and responsibility concerning all sorts of temptation and perils that may threaten our health and frequently even our lives. We should learn how to avoid all the traps that threaten our health in order to maximally prolong the period of good health and to reduce the period of illness. Unfortunately, not even the utmost care of one's health can ensure everlasting perfect health and welfare. Life is not a "lightsome operetta" but usually a hard, merciless reality of which disease and suffering are unavoidable constituents. However, one should not throw in the towel on facing the difficulties of life. We should realize that disease and suffering are the rule in life rather than a supernatural punishment. In realizing this, we will acquire due strength to firmly fight the difficulties of life, which is what ultimately makes us human beings.

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