

Cancer and metaphysics

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What concerns me is not the way things are, but
rather the way people think things are.

Epictetus

Summary Metaphysics, is generally a pleasant, and harmless intellectual endeavor. Even if leading to wrong conclusions, nobody is hurt. Suppose that contrary to general belief, the Big Bang (1) never happened and the world is eternal. No harm is done. Some philosophers, like Kant, enjoyed life despite the fact that, nature, or the thing in itself, eluded their understanding (2). But suppose that the thing in itself is your patient, and you apply metaphysical reasoning for his treatment, metaphysics may occasionally be damaging. This is particularly pertinent to cancer, a disease that is haunted by false metaphysical statements.

Since cancer is part of medicine, the present discourse deals with medical metaphysics. Medicine provides a simple way, or rule of thumb, for distinguishing between correct and wrong medical metaphysical statements. If they harm the patient, they are wrong, and if they aid him, they are correct. Statements that do not affect a patient's well being, e.g., 'Big Bang may be hazardous to your health', are of no apparent value and doubtful. Since treatment outcome is generally uncertain, the physician continually searches for new ideas that may aid his patient, even if they are metaphysical. In diseases, like cancer, that elude his understanding, his adherence to metaphysics intensifies, and he is ready to consider even doubtful suggestions for treatment. Yet by relaxing the rules of thumb for evaluating metaphysical concepts, he gradually slips into the irrational domain. © 2001 Harcourt Publishers Ltd

ASSOCIATION AND CAUSE (3)

Cancer is generally incurable. In other words, most statements about cancer do not suggest successful treatment, and the vast literature on cancer has to be regarded with skepticism. The physician is flooded by irrelevant information, and drowns in misinformation. Unaware of this, he attributes treatment failure to the fact that the cause, or etiology of cancer are unknown. Disregarding Hume's doubts about causality, medicine favors the view that carcinogens cause cancer.

Do they? Take for instance smoking, that is supposed to cause lung cancer. All we know is that smoking and

cancer are associated. Which means that either smoking causes cancer or cancer causes smoking. In other words cancer might present itself by a tendency of patients to smoke. The patient may carry a hidden pre-cancer, or cancer in his lung that induces him to smoke. After some time, cancer is detected and it appears as if caused by smoking. An association of cancer with smoking may result also by chance. Like the association of rising cancer rates with rising price of automobiles. Last but not least, such an association may result from a third unrelated factor, known as confounding. The patient may suffer from a condition that initiates both, cancer and an urge to smoke. Medicine ought to listen to Nietzsche (4) who believed, that causality is only an interpretation: 'There is no after-one-another, but only an into-one-another, a process in which the single moments that succeed each other do not condition each other as causes and effects'.

That smoke is unhealthy is common knowledge. But to claim that smoking causes cancer is not justified. It spreads misinformation.

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PARASITE AND HOST

Like the stethoscope, the quest for etiology, characterizes the modern physician (5). He believes that causal explanations, promote important discoveries. Knowledge that bacteria cause infections, was essential for the discovery of antibiotics (6). A similar cause–effect relationship might be as essential for solving the cancer riddle. Yet even in infections the cause–effect relationship is incomplete, since many individuals are unharmed by pathogens. There is more to an infection than microbes.

Nevertheless, the parasite–host model is also applied to explaining cancer. An external agent, carcinogen, transforms a normal cell into a tumor that grows unrestrained until it kills the host. The tumor is regarded as a parasite, that has to be eliminated. Like bacteria that yield to antibiotics, tumor-parasite is supposed to surrender to chemotherapy. Unfortunately most tumors become resistant to chemotherapy, and patients die.

Since the parasite-model is inadequate for saving the patient, it should be regarded with skepticism. It fails not only in cancer, but in all chronic diseases, whose causes are generally unknown, e.g. diabetes, or hypertension (5). What if their cause may never be known as Hume believed? What if the cause of a disease is irrelevant to treatment outcome? Medicine regards such doubts as heresy.

HEALTH AND DISEASE

Medicine is imprisoned in an archaic conceptual framework, that originated in ancient times, and was augmented by Plato. It involves health and disease. Our medical ancestor, the Medicine Man adhered to a simple model. Diseases are caused by demons and his task was to exorcise them. This model has the following properties:

- Disease is caused by an external agent that enters the host
- Host and agent differ qualitatively
- Cure is achieved by removing the agent and restoring health
- Health and disease are reversible.

The Greeks realized that agents other than demons may also cause disease. Each agent had its specific disease. Plato placed diseases in his world of ideas, that exists outside space and time. Physicians treat ‘imperfect diseases’ that may lack many ingredients of the ideal disease. Diagnosis is a matching between observed signs and an ideal disease. This deceptively simple definition is accepted also by modern medicine, and has bred a multitude of disease specialists. It explains also the appeal of the parasite–host model, which is none other than a

modern version of the demon model. According to medicine, the four properties hold for any disease.

TUMOR ASSOCIATED ANTIGEN

In cancer, none of these concepts appears to be true. Despite decades of intensive search for qualitative differences between tumor and host, none has been found. A century of search for a unique tumor antigen, absent in the host has failed. Leaving medicine with a compromise, a tumor associated antigen that is common both to the tumor and tissue of its origin. Tumor and host differ only quantitatively. All properties of the normal tissue are expressed in an exaggerated manner in the tumor. Unlike a demon or a genuine parasite, a tumor is not an external agent but an integral part of the host (7).

Not only cancer, but most chronic diseases lack the above properties. In none is it possible to demarcate between host and disease. Disease is a mixture of normal and abnormal components, that cannot be untangled from each other (8). Which led Ludwik Fleck (9) to conclude that diseases do not exist in nature, only patients matter: “It is easier to cure a patient than really to know what his disease is”. According to Fleck diseases are constructed by physicians for didactic reasons, and for communication.

CANCER EVOLVES

Aristotle who was interested in the empirical nature of diseases challenged Plato’s idealism. He believed that diseases (like demons) are beings. You either get it and lose your health, or get rid of it, and regain your health. However, diseases are not static entities. They evolve. A tumor starts when a normal cell is transformed into a malignant one, creating a cell population that grows and proliferates. Cells are born, age and die. By the time the tumor is detected, the founding mother cell is long gone. A tumor is a process that evolves and its properties emerge. Nothing in the founding cell make up reveals whether its descendants will kill the host or let him live. Although malignant transformation involves genetic changes, genes do not reveal its future behavior. Since it is unpredictable, tumor evolution, like life itself is creative in a Bergsonian sense.

Cause of cancer is irrelevant to treatment outcome

Once a tumor has established itself, the cause of its origin is irrelevant to treatment outcome. What might be the significance of the initial transformation of a normal cell into a malignant, when the founding mother cell is long gone? Not ‘Cause’ but ‘Association’ matters. The study of associations of agents with disease is essential for

preventing disease. In the past it was the sole objective of epidemiology (3). Under the influence of the exact sciences, this turned into a 'cause-effect' discipline and an important source of misinformation. The smoking-cancer connection is its own brain-child.

Despite their logical appeal, all four explanations of an association of smoking with cancer fail to account for cancer behavior. Because cancer is not a being, but an evolving process. Smoking induces a lung disease, that may evolve into cancer. Lung cancer in smokers does not start as such, it is preceded by an inflammation. You inhale, and smoke initiates inflammation manifested by coughing. After getting used to the poison, cough subsides, and you may smoke undisturbed. At this stage smoking is accompanied by a silent lung disease, without any malignant transformation. Some heavy smokers may never get cancer. In the less fortunate, a malignant transformation is initiated, and a tumor evolves.

RED HERRING

Lung cancer is always preceded by non cancerous lung disease. The poison affects the entire organism. The interaction between smoke and organism initiates a systemic disease, that may be manifested in different organs, e.g. lungs, heart, and blood vessels. Thus even if lung symptoms predominate, as in lung cancer, the disease is systemic. A lung cancer as such does not exist. There is only a patient with a systemic disease in which lung cancer predominates. Yet medicine refuses to see it that way, claiming that lung cancer is a localized disease of the lung. In a different context this approach is known in medicine as a Red Herring.

This describes a patient who is brought to the emergency ward with prominent non life threatening manifestations for which he is promptly treated, while an undetected life threatening pathology leads to his demise. A similar red herring in cancer may account for the fact that treatment generally fails. Yet medicine refuses even to consider, that cancer might start as a systemic disease, because medicine adheres to false metaphysical concepts (10).

THOUGHT-STYLES IN MEDICINE

The tremendous success of the exact sciences in explaining natural phenomena has had a great impact on modern medicine. Technology introduced into medicine new ways to study disease. The language of physics is applied in cardiology to describe heart-mechanics. Non-linear dynamics tackle the fibrillating heart. Action potentials obey the laws of electricity. Medicine hopes to become a scientific discipline like physics or chemistry. While in acute conditions the exact sciences have advanced

medicine to new achievements, their impact on the treatment of chronic diseases is detrimental, which is best illustrated in terms of Fleck's philosophy.

Fleck (9) was interested in the philosophical theory of reality rejecting any absolute and objective criteria of knowledge. There is no objective and absolute truth. Truth in science is a function of a particular thought style by a group of scientists, or thought-collective. A thought-collective is 'a community of persons exchanging ideas or maintaining intellectual interaction'. The individuals of a thought-collective share the same thought-style. Truth and falsehood in science are meaningful only within a specific thought-collective and with respect to a given thought-style and depend on the purpose of investigation. Different views can be equally true.

'Sciences do not grow as crystals, by apposition, but rather as living organisms, by developing every, or almost every, detail in harmony with the whole'. 'The process of cognition is not a two-term one... It does not occur solely between an abstract subject and an equally absolute object. The collective is incorporated into this process as a third member'. 'Between the subject and the object there exists a third thing, the community. It is creative like the subject, refractory like the object, and dogmatic like an elemental power'.

In the past, medicine had generally consistent thought-styles, e.g. the humoral theory of diseases, or homeopathy (11). Modern medical research confronted medicine with different thought-styles, e.g. physics, chemistry, pathology, microbiology, and psychology. Instead of incorporating relevant ideas from each thought-style into its own framework, medicine adopted them all, unmodified. Medical thought-style consists of a conglomerate of inconsistent concepts, that cloud medical reasoning. Attempts to resolve this difficulty ended in the formulation of new medical disciplines, e.g. psychosomatic medicine, immune-neuro-endocrinology, or molecular-medicine, yet confusion mounts. What is cancer? A genetic disease? A cellular aberration? Or a psychosomatic reaction?

Each question involves a different therapeutic approach. Geneticists suggest the replacement of cancer genes. Surgeons believe in removing the tumor. Psychologists try to strengthen the psyche. Since they all fail in nearly all cases, their suggestions ought to be regarded with suspicion. Confusion is highlighted by the dispute about the correct medical approach. Should one adhere to reductionism, or holism? Will the human genome project really shed light on the nature of disease? Or, is disease meaningful only in the context of the organism. Reductionism is preferable in physics or chemistry, yet any attempt to apply it to the stock market fails. In medicine both views coexist, creating a conceptual chimera, that clouds reasoning. In order to find its way,

medicine turns to human experimentation known as the clinical trial, in the process sometimes disregarding traditional ethical values (12).

WHY ME?

Metaphysics looms even in the doctor's office. A young mother who discovered a lump in her breast, asks her physician: 'Why me?'. The Medicine Man might answer: 'Why bother soon the demon will be exorcised, and you will be healthy again.' Hippocrates might respond: 'Ill fate'. Christianity invented sin as a cause of disease. Unfortunately even God's death (4), as Nietzsche suggested, did not rescue her from medical metaphysics. Now she blames herself for disobeying the Surgeon General and smoking. She might have missed her scheduled mammography, and now it is too late . . . What is the exact meaning of 'too late' (13)?

BIOLOGICAL TIME

Medicine operates within a wrong time framework, physical time, and measures disease progression with a wrong time piece, the clock. In reality the organism has its own time reference, known as biological time. You can spot the difference between the two when watching your neighbors. A 40-year-old worn out male may look like an old timer, while a 70-year-old grandfather jogs like a youngster. This daily experience reveals a difference between the two time scales, which you perceived intuitively. Biological time has a property that lacks in physical time. Although both time scales are correlated, they differ in their clock rate. Physical time is linear, and one dimensional. Biological time is non-linear, and two dimensional. Its clock rate is controlled by a second dimension, health (14).

Measurement of disease progression requires biological time. A minute tumor may look 'physically' young and promising, nevertheless the patient dies within a year, while an old timer with a big tumor enjoys life. Within the physical time framework, correlation between tumor size and prognosis is weak, since outcome depends also on the patient's reserves (or health). Medicine ignores the discrepancy as negligible. Since patients continue dying it concludes that the tumor was detected too late and promotes massive screening for minute tumors. Results are still disappointing.

What is the ingredient of biological time that is missing in the physical? For the Medicine Man time was meaningless. His treatment success depended on his relationship with spirits. The patient's age or illness duration were irrelevant. Even Hippocrates was not interested in time (15). When estimating prognosis, he judged a patient's reserve. The missing ingredient in physical time,

involves the patient's reserves to resist disease defined, below as tolerance.

MEDICINE IN THE GRIP OF TECHNOLOGY

Although health is the main concern of medicine its exact meaning is not at all clear. Medicine is more concerned with non-health, known as disease. Yet not every disease may be regarded as non-health. Many young adults have in their arteries arteriosclerotic plaques without any apparent health deterioration. Are these plaques non-health and should they be treated? Obviously health and disease are not complementary. How then to handle diseases that do not impinge upon health? Sophisticated technology reveals slight aberrations that in the past were unknown, e.g., mild hypertension, a slightly elevated blood sugar, or breast cancer precursor lesions. Are these aberrations real diseases? Modern technology confronts medicine with a new problem, how to deal with aberrations in a patient that feels healthy?

Technology revealed also that diseases evolve. They start as small aberrations without clinical manifestations, while the patient feels healthy. Advancing technology reveals more and more pre-clinical aberrations, and medicine lacks clear guidelines for dealing with them. To wait until they become more pronounced is generally regarded as malpractice. Medicine presumes that the traditional guideline 'primum non-nocere' (Do not harm) results from ignorance and helplessness, and is not advised. Yet technological innovations endow this concept with a new meaning, e.g. 'Do not harm, and don't interfere until the aberration ripens for treatment'.

MEDICINE OF HOMO FABER

Medicine adopted also the philosophy of technology, according to which physico-chemical laws control the organism in health and disease. It is the philosophy of 'Homo Faber' that applies laws of machines to the organism. A small aberration is therefore a malfunction, that should be corrected whenever found. True, the patient with a minute arteriosclerotic plaque feels healthy, yet his sensations are deceiving him, and he has to be told that he is ill. While in the past sickness drove the patient to seek help, today he learns from his physician that he is ill, and he is advised to be periodically screened for malfunctions. Yet health is more than that as revealed by Georges Canguilhem in his important treatise: 'Le normal et le pathologique' (16).

A DIFFERENT VIEW OF DISEASE

Interaction between an external agent and protective strategies in the organism is manifested as disease. Some

phenomena observed in a disease are contributed by the agent, the rest are strategies mobilized by the organism. During transition from health to disease the organism is not dragged passively by the disease, rather it chooses its most adequate response under the given circumstances. It does not adapt, it is creative (Bergson [17]). Some functions change while others remain at their physiological level. According to Goldstein quoted by Canguilhem: 'Disease is not merely the disappearance of a physiological order but appearance of a new vital order'. 'Disease is a positive, innovative experience in the living being and not just a fact of decrease or increase'. 'Disease is not a variation on the dimension of health; it is a new dimension of life'.

A DIFFERENT VIEW OF HEALTH

In Canguilhem's words: 'Being healthy and being normal are not altogether equivalent since the pathological is one kind of normal. Being healthy means being not only normal in a given situation but also normative in this and other eventual situations. What characterizes health is the possibility of transcending the norm' ... 'Health is a margin of tolerance for the inconsistencies of the environment'. 'To be in a good health means being able to fall sick and recover, it is a biological luxury'. 'Inversely, disease is characterized by the fact that it is a reduction in the margin of tolerance for the environment's inconsistencies'.

This health definition is the essential ingredient of biological time, that is missing in the physical and will be illustrated by a few examples. The more inconsistencies the organism can handle, the greater its tolerance to environmental threats, the healthier it is. Let's define as the health set, all normative functions of the organism. Each example will compare a function in two individuals, assuming that the rest are equal in both of them.

- A weight lifter is healthier than a person that does not lift weights. Provided that all other normative functions in both are the same. His tolerance to weights is greater.
- An athlete has higher tolerance to myocardial infarction, than a sedentary person.
- A jogger has higher tolerance to bone fractures than a sedentary person.
- A vaccinated person has a higher tolerance to smallpox than the non vaccinated.
- Since an old person does not get childhood diseases, his tolerance to childhood disease might be higher than that of a child. Despite his advanced age he may be healthier than a child (19).

DESTRUCTIVE TOLERANCE ESTIMATION

When a plague kills 20% of the population, one may conclude that before the plague started, 80% had a higher

tolerance to it, than the unfortunate 20%. They were healthier.

The toxic dose that kills 50% of mice, known as LD-50, leaves the other 50% with a higher tolerance to the poison, and therefore healthier.

As cancer advances, a patient's tolerance to it, or his health, declines, and when he drops below a viability threshold, the patient dies. A young patient with a small tumor may die sooner than an old one with a large tumor, since his tolerance (or health) is lower. This is what Hippocrates (15) tried to estimate in his patients, and is ignored by modern medicine. This view of health introduces a new directive for treatment. Treatment ought to maintain or increase tolerance (health): 'Maximize tolerance' is the only way to treat disease.

LIFE IS AN EVOLVING PROCESS (18)

This formulation of health and disease introduces medicine to its future mathematics, known as non-linear dynamics (14). The organism is regarded as a set of processes that interact with each other. Each process is marked by a tolerance. The sum of all tolerances is the health of the organism. Since all processes interact, disease involves the entire set. Even a localized disease is systemic. The organism continuously evolves, and its properties emerge. It aims to maximize tolerance in any given situation. This is the mathematical expression of Canguilhem's normativity, and Bergson's creative evolution.

MEDICAL THOUGHT-STYLE

Concepts, e.g. process, complexity, self-organization, emergence, and non-linearity (14,18), serve as cornerstones for the medical thought-style. The patient is considered as a whole, and the therapeutic objective is to maximize his health (tolerance). The physician continues his search in other thought-styles, for new ideas that improve therapy, like:

- Association between environmental factors and disease (epidemiology, microbiology).
- Delineation of processes and their interaction. (Chemistry, Bio-chemistry, Molecular Biology, and Physical Chemistry).
- Structural manifestation of processes (Histopathology).
- Process control (Physiology, Pharmacology, Neurology).
- Communication between consciousness and sub-conscious processes (20) (Psychology, Ethology (21), Conditioning, Philosophy).

During interaction with other disciplines, the medical thought-style will incorporate their ideas into its own

framework. Ideas will be acceptable only if they improve health (tolerance).

MEDICINE IS DEAD

A viable medical thought-style may be created only after rejecting medical metaphysics, and clearing its conceptual confusion. When Nietzsche declared that 'God is dead' he meant also metaphysics. This is also the sense of 'medicine is dead'. Nietzsche's call 'down to earth', is reiterated here as 'face the patient!' The death of medicine will rescue physicians from misinformation, useless concepts and metaphors. Back in the thirties of the last century, Albert Szent-Georgyi believed that the necessary information to solve the cancer riddle already exists. Concepts have to be reshuffled, which may be achieved only when 'medicine is dead'.

REFERENCES

1. Hawking S. W. A Brief History of Time. New York: Bantam Books, 88.
2. Zajicek G. Cancer and Metaphysics. *The Cancer J* 1992; 5: 2. <http://www.what-is-cancer.com/papers/CancerMetaphysics.html>
3. Skrabanek P., McCormick J. Follies and fallacies in medicine. Buffalo: Prometheus Books, 1990.
4. Kaufmann W. Nietzsche: Philosopher, Psychologist, Antichrist. 4 ed. Princeton, NJ: Princeton University Press, 1974.
5. Zajicek G. On cause and etiology of disease. *The Cancer J* 1998; 11: 4-5. <http://www.what-is-cancer.com/papers/CauseEtiologyOfDisease.html>
6. Zajicek G. How to diminish microbial resistance to antibiotics. *The Cancer J* 1993; 6: 52. <http://www.what-is-cancer.com/papers/MicrobialResistanceWOB.html>
7. Zajicek G. What is neoplasia? *The Cancer J* 1991; 4: 228. <http://www.what-is-cancer.com/papers/WhatisNeoplasia.html>
8. Zajicek G. What is a disease? *The Cancer J* 1991; 4: 296. <http://www.what-is-cancer.com/papers/WhatisDisease.html>
9. Fleck Ludwik Fleck L. Genesis and development of a scientific fact. Chicago USA: The University of Chicago Press, 1977. <http://www.what-is-cancer.com/papers/Fleck.html>
10. Zajicek G. Cancer starts as a systemic disease. *The Cancer J* 1992; 5: 128. <http://www.what-is-cancer.com/papers/CancerSystemic.html>
11. Hahnemann S. Organon of Medicine, translated by Boericke W. New Delhi: Sixth edition, 1956.
12. Zajicek G. Medical ethics-Two codes of ethics in medicine. *The Cancer J* 1995; 8: 226-227. <http://www.what-is-cancer.com/papers/MedicalEthics.html>
13. Zajicek G. Lady, think twice before having a mammography. *The Cancer J* 1996; 9: 172-173. <http://www.what-is-cancer.com/papers/mammography.html>
14. Zajicek G. Chaos reigns – Heraclitus is back. *Cancer J* 1993; 6: 108. <http://www.what-is-cancer.com/papers/ChaosHeraclitus.html>
15. Hippocratic writings. Lloyd G. E. R. Editor Chadwick J. and Mann W. N. Translators. London: Penguin Books, 1950
16. Canguilhem G. Le normal et le pathologique. Translated into English by Fawcett C. R., Cohen R. S. Zone Books New York 1991. <http://www.what-is-cancer.com/papers/NormalPathological.html>
17. Bergson H. Creative Evolution. Translated by A Mitchell. Lanham MD: University Press of America Inc, 1983. <http://www.what-is-cancer.com/papers/Bergson.html>
18. Philosophers of Process. Browning D. and Myers W. T. Eds NY: Fordham University Press, 1998. <http://www.what-is-cancer.com/papers/streaming/streamorganism.htm>
19. Zajicek G. Cancer in old age is more benign than in younger adults. *The Cancer J* 1996; 9: 64-65.
20. Zajicek G. Wisdom of the body. *The Cancer J* 1994; 7: 212-213. <http://www.what-is-cancer.com/papers/WisdomofBody1.html>
21. Eib-Eibesfeldt I. Ethology, the biology of behavior. Holt Reinhart and Winston Inc, 1975