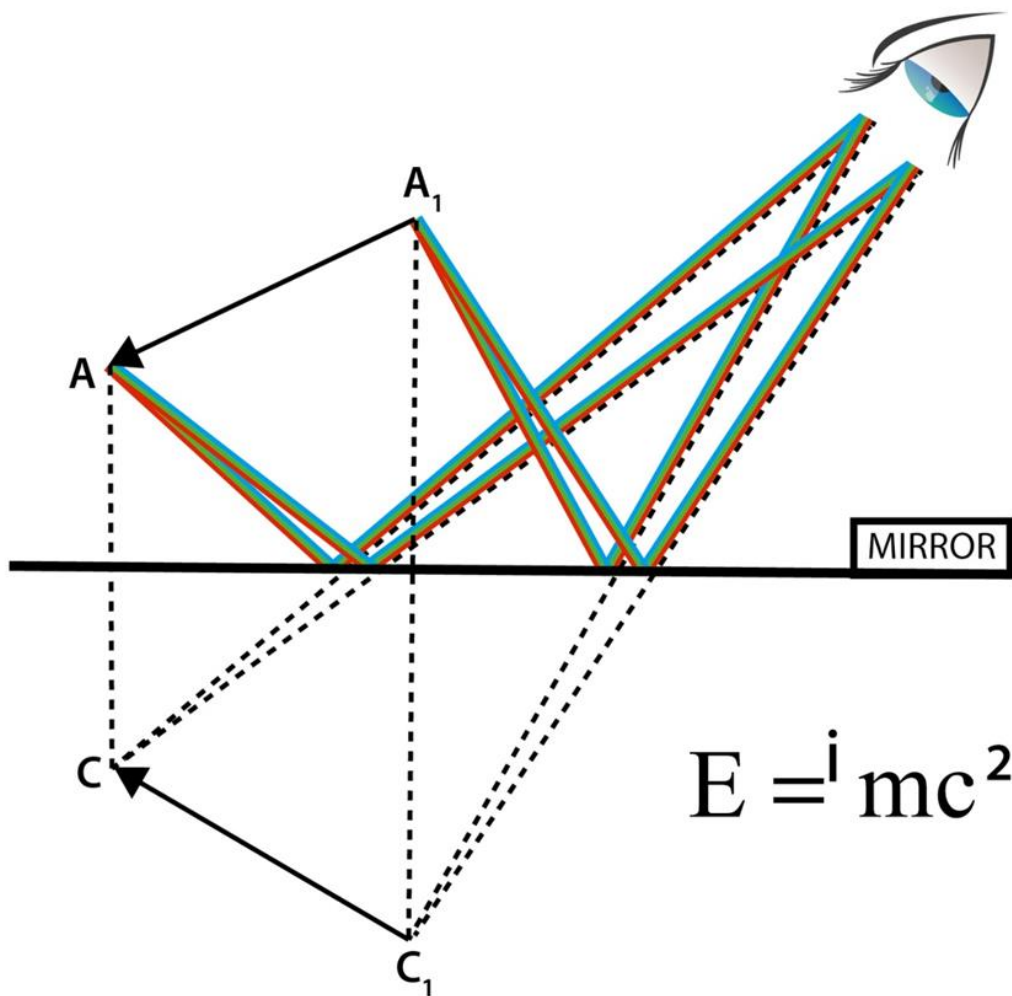


INFORMATION MEDICINE

RUDOLF KLIMEK



WIU CRACOW
2018

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ISBN 978-83-923871-5-2 Information Medicine

Medicine is the most important human domain dealing with theoretical principles how to protect or restore personal health and simultaneously applying them into practice, what is prescribed in the book **“Psychoneurocybernetic conquest of carcinogenesis and cancers”** (published by Nova Science Publishers, Inc. New York 2015), which content was the main subject of the electronic world congress **“Biocosmology and Cancer”** in Cracow, printed successfully in the electronic journal **“Biocosmology and neo-Aristotelism”** [vol 7(1,2,3/4) 2017, vol.8(1,2): 1–262]. The monograph **“Information Medicine”** is based also on the video-document of this congress (<http://tiny.pl/gnzdk> – lectures Konstantin S. Khroutski, Rudolf Klimek, Karl Kratky, Xiaoting Liu, Josef Bremer, Peter Heusser, Walter Kofler, Joseph G. Schenker, Piotr Karocki), promoting goal to bridge gaps between the expansion of information and its implantation in medical practice. The field of the congress compassed a wide spectrum of subject from medicine of health to the cosmic technology, which was inaugurated by the collective articles of J. Bremer, K.S. Khroutski, R. Klimek, R. Tadeusiewicz and J.G. Schenker. Upon multi years own experiences the Authors presented the primary significance of human lifestyle in the formation and progress of social health along with importance of caring about the environment inhabited by people. They have summarized the public reactions to historic discovery of natural thermodynamic cause of cancer and infertility as well as the obstetrical prevention and psycho-neuroendocrine therapy of all diseases thus updated the following earlier editions of **“Explained cause of cancer”** (Klimek R, Jasiczek D, Stencl J. 2013), **“Cancer and infertility. Truth and myth of medicine”** (Hodorowicz S, Jasiczek D, Klimek R, Tadeusiewicz R. 2011), **“Cancer – neoplasms and neoplastic diseases”** (Klimek R, Madej JM, Sieroń A. 2006), **“Monitoring of pregnancy and prediction of birth date”** (Klimek R. 1994), **“Conquering cancer ourselves”** (Klimek R. 1990), **“Pre/Peri-Natal Psycho-Medicine”** (Klimek R. ed. 1992), **“Cancer – cause, determinants and host-defense”** (Klimek R. 1985), what illustrated the personal continuation of an uninterrupted scientific cooperation since international symposium **“Oxytocin and its analogs”**, which occurred in Cracow in 1963.

This monograph should be of special interest to physicians, health-care givers and laymen, who cares about ethics in medicine, closely linked to certain human behaviors and procreation. For example, now over 30% caesarean deliveries are

performed simply due to maternal request, what incurred several risks none only for the baby, but also are related to appearance of cervical cancer of mother [K.S. Khroutski, R. Klimek **Biocosmological definition of information and its naturalist causative significance.** *Biocosmology – neo-Aristotelism* 2018, vol.8 (2): 204–262; J.G. Schenker et al. (eds.) **Reproductive Medicine for Clinical Practice.** Springer V. (2018)]. Infertility and cancers pertain to natural phenomena which, in contrast to common belief about their dramatic meaning, actually safeguard the existence of Homo sapiens. Infertility concerns about 20% of sexual partners in equal measure responsible for the lack of the desired offspring and can even concern a pair of healthy people, who exceptionally only in that relationship cannot have children. Both phenomena are linked by their inception from a single cell, every time selected from millions of gametes or from somatic cells endangered by the cessation of their metabolism, in which the whole multicellular organism is involved. Each cell grows in multicellular host organism, but the cardinal fact is the means by which cancer kills normal cells destroying healthy tissues, i.e. increasing dissipation of matter, information and energy in its environment. The essence of knowledge lies as much in a methodology of reaching the truth as in any view of what form that truth might ultimately take.

Each word is the informational part of world connected with individual person as man is quantum of human verbal world, which unifies people with transcendent beings, and that the Cosmos and the Earth are living entities of high complexity. Myth as a story about super-human beings of an earlier age existed in all preliterate societies to explain how universe came into existence and consists or to express the invisible power and invisible life? The observable universe is composed almost entirely of ordinary matter, but the whole Universe seems to be made of 4.9% atomic matter, 26.6% dark matter and 69.5% dark energy. The problem of matter and antimatter in the visible universe becomes now solved by the mass-information-energy equivalence equation that is $E = mc^2$, since the amount of the released energy is usually proportional to the total mass of the collided matter and antimatter. Gases, liquids and solids are the usual phases of matter, in which quantum effects are often hidden by random atomic movements, e.g. according to Smoluchowski-Einstein's equation of diffusion coefficient $D = \lambda^2/2t$ (a distance λ particle can jump when diffusing in a time t) gives a connection between microscopic and macroscopic world of its particles. In extreme cold (close to absolute zero) quantum physics

suddenly becomes visible when all moving particles cease. However, we do not “see” the words, but we recognize the person speaking in the mirror as visible effect of information rays. What’s more, seemingly having no material component, the words can have the power to act if the person receiving them reacts to them with their behavior under the influence of the environment in accordance with the informational cosmic unity. For example, sight, light, color and form themselves are the subject of view among the other twenty-two known formal properties of all visible things. Such expanding understanding of the psychoneurothermodynamic pathogenesis of diseases has brought medicine to a new age of prevention and therapy directed against multiple characteristics of cancer cells to prevent cancer development and the elimination of new cancer cells before they form clinically evident disease, which is generally considered fatal illness because its full symptoms can be seen only in the last period of an individual human life. But it is forgotten that only 5% of cancers exist in the absence of other diseases and in addition relate to the aging of the body what is important from the therapeutic point of view. The modern therapeutic aim is not only to destroy cancer cells without harming healthy tissues, but about strengthening the fight already in precancerous cells on the basis of the whole thermodynamic knowledge of material-informational-energetic equivalency.

Time and space primarily belong to the informational reality as e.g. perceived by people love, fear, hatred, jealousy, self-awareness, etc. Each of these feelings has a beginning and its conditions, as all the events and their perceived causes and sources, e.g. the verbal aspect cannot be separated from the body language, covering gestures, facial expressions, body posture and the timbre of the voice, and even yawning and grunts. Man also for centuries was accustomed to light rays penetrating through only the transparent structures, and did not take into account the possibility of penetration even through opaque objects newly discovered in the twentieth century the radiation of neutrinos, and now gravitational and finally informational rays. New thermodynamic dissipative model of cancer has also proved to explain psychosis (e.g. Schizophrenia) as well as socio-economic crises in which money, like cancer for the life of individual cells – acts as an alternative end for the social life of man. In same the manner **A.I. Orlov** developed a basic theory of information economy as the specific economic and managerial development, which main aim is not profit, but addressing the needs of people!

The more human beings know reality of the world, the more they know themselves in their uniqueness, with the question of the meaning of things and of their very existence. These are the questions which we find in the writings of Confucius and Lao-Tze, in the sacred writings of Israel, Christianity, in the Veda and the Avesta and in the philosophical writings of Plato and Aristotle. Although times change and knowledge increases, it is possible to discern a core of philosophical insight within the history of thought as a whole. Certain fundamental moral norms are shared by all. Thus beyond different schools of thought, there exists a body of knowledge which may be judged a kind of spiritual heritage of humanity. Yet the positive results achieved must not obscure the fact that reason, in its one-sided concern to investigate human subjectivity, seems to have forgotten that men and women are always called to direct their steps towards a truth which transcends them.

Information medicine in every country must be considered as a social system comprised of individual people as living subsystems, co-creating the inner state of human verbal world. According to **W. Korohoda** the most important thing is to introduce to medicine very useful concepts of medical thermodynamics by informative recognition of morphological and energetic informational changes concerning all cellular form of life, leaving subcellular details to theoreticians, since they are not directly available for a physician in his practice. The cellular form of life is the dividing line separating applied medicine (practice) from theoretical medicine, at the same time being the basis for understanding etiopathogenesis of diseases due to modern technologies which armed physicians with a toolbox for monitoring human health and diagnosis of diseases at molecular level. Lately, the recognition of cancer as “Caesar of all diseases” has gained new importance when the biography of cervical cancer, originally known as mothers' cancer and/or premature sexual intercourse cancer, was linked with the termination of pregnancy via cesarean section performed without obstetric indications. Preventing the plague of cesarean sections serves as an example of oncological prevention. In treating patients doctors use scalpels, lasers, radioactive radiation and poisons as effective tools, part of which is also language, made up of words, which are understandable by persons. The word itself is even enough when treating the informatonoses. Therefore, a special place is taken by heredity and the upbringing of a person, who, due to her/his free will, lives according to own autoteleological scale of values and rules of human social life.

Our book we address not only to medical profession, but first of all to the public at large what can be seen from its contents and references as well as video documentation in internet. Therefore, I desire to acknowledge the help and friendship received from so many **P.T. Scientists** who have contributed to this publication aiming that every person could understand the significance of health and the primary significance of own life style in the formation and progress of diseases.

Information Medicine is dedicated to All **P.T. Members** of **International Academy of Human Reproduction** and the **Editorial Board of *Biocosmology – Neo-Aristotelism*** (and the **BCA** associates), as well as to Magnificent Rectors **P.T. Krzysztof Penderecki** and **Ryszard Tadeusiewicz**, who as professors personifying resp. energy and matter.

Cracow-Zakopane Harena

24.12.2018

Rudolf Klimek

$E = i mc^2$

Chapter 1

Rudolf KLIMEK

Applied medicine

Do not be afraid of Truth doing Good

Introduction

The scientific revolution has led contemporary philosophy to critical reflection focused on the spacetime area of internally structured cognition, which is **information** itself, what therefore in its own right demands to be independently studied and investigated. Other basic concepts, just like “being”, “knowledge”, “life”, “consciousness”, or “good and evil” are also central notions standing in relations of interdependency, but “information” is still more basic concept defined as quantum equivalent only to matter and energy! The philosophy of information concerns three areas: 1. information as something that exists as an objective and mind-independent feature of the natural world and can be quantified as such, 2. information in each biological systems, and last but not least 3. information-exchange conceived as an important part of human communication, in which word and gesture are regarded as tools for disseminating information with distinguishing right from wrong, and good from bad. And it is well known that to be in possession of the right information can often mean that one is in a position of power over other people, but concerning only the cellular form of life, leaving subcellular details to theoreticians, since they are not directly available for a physician in his practice.

The cellular form of life is the dividing line separating applied medicine (practice) from theoretical medicine, at the same time being the basis for understanding etiopathogenesis of diseases due to modern technologies which armed physicians with a toolbox for monitoring human health and diagnosis of diseases at molecular level. The phrase “knowledge is power” even today has not lost any of its potency of meaning in human history and it came with the “industrial turn” as the means of production of goods and then “turned” towards a focus on power being expressed through the control of information. Governments, empires, companies and individual persons all want to do so, and this inevitably bring ethical questions as an important component within the philosophy of information on the ethical standards and moral codes governing human conduct in our society. The perfect health is a

balance between body, mind, spirit, and social wellbeing, but the essential challenge is how to recognize the discovery of natural thermodynamic cause of diseases, its prevention and psycho-neuroendocrine therapy. Presently medicine uses both meanings of information, i.e. belonging to animate matter and energy as well also existing as spirit and social wellbeing¹. For example, every person is created through the unification of generative cells of his/her grandparents as a unique single cell (zygote) *to uphold the species*, but not only to define the unique identity of each person, whose life is determined by own free will and even self-organizing neoplasms. Fetal cells are genetically heterologous to the mother, nevertheless they are tolerated thanks to mental, physical, biochemical, hormonal and immunological tolerance, whose potential avoidance contributes to the spontaneous initiation of child delivery. Therefore caesarean section performed on request one week or more before the true delivery term, when such tolerance disappears, often results in transfer of pregnancy cells (fetal or placental) outside the reproductive organ (not only to the postoperative skin wound), with other pathological consequences, including carcinogenesis. What more, cesarean section is associated with the significance of a reducing of birth-related surge in lymphocyte formation for future personal immune function and health.

Scientists from Karolinska Institute tested whether the immune function at birth relates to mode of delivery². They linked the fetal blood levels of T-cell receptor (excision protein circles and k-deleting recombination excision circles) with the mode of delivery, infant sex, gestational age, birth weight for gestational age and maternal characteristics (age, parity, smoking, diabetes and hypertensive disease). Compared with vaginal route of delivery, cesarean delivery is associated with increased risk of immune disorders later in personal life, such as asthma and allergies, diabetes, celiac disease and inflammatory bowel diseases, obesity, immune deficiencies, leukemia, and other malignancies affecting young people. Possible pathways for their associations include lower and timely activation of fetal immune system due to

¹Klimek R. “Psychosomatic aspects of infertility” in: Schenker J.G. et al. (eds.) *Reproductive Medicine for Clinicians*. Springer V. (2018): 35–52.

²Titus Schlinzig, Stefan Johansson, Olof Stephansson, Lennart Hammarström, Rolf H. Zetterström, Ulrika von Döbeln, Sven Cnattingius, Mikael Norman (2–017). “Surge of immune cell formation at birth differs by mode of delivery and infant characteristics – A population-based cohort study,” *PLOS ONE*. Published: September 14, 2017 – URL: <https://doi.org/10.1371/journal.pone.0184748> (accepted: July 23, 2018).

absence of labor which reduced stress of being born, and altered bacterial colonization of the infant gut. As elective cesarean delivery is almost exclusively performed before term gestation, lower gestational age has also been suggested to be in the causal pathway between childhood and adult immune diseases. Schlinzig T, Johansson S, Stephansson O, Norman M. et al. found differential DNA-methylation related to mode of delivery in regions of genes involved in immunoglobulin synthesis, so cesarean section delivery without a clear medical indication has to be eliminated most rapidly, because of reducing number of T- and B-lymphocytes in newborn infant³. Also current literature suggests that the gastrointestinal tract of normal fetus is sterile and during birth and rapidly thereafter microbes from the mother and the surrounding environment colonize the infant's gut and stimulate the lymphoid tissue with the gut mucosa to produce antibodies to pathogens.

1. Information rays and patterns.

The observable universe is composed almost entirely of ordinary matter, as opposed to an equal mixture of matter and antimatter. Particles of matter and antimatter are the same, except for an opposite electric charge and bring them together annihilates. For example, S. Hawking showed that black holes can radiate energy as at the same time particles are created in their vicinity, then cosmologists have recorded the gravitational waves emanating from black holes, which created a region of gravity so intense that not even light can escape its grasp. Now also information rays fill all spacetime that allowed them to pass through it without obstacles and interact with matter and energy, and the universe as the unity of all its parts (beings) is a self-realizing information with the principle of quantum equivalence of mass, energy and information $E = mc^2$ [Klimek, 2014]³.

Matter and energy are just two aspects of the threefold informational essence of the reality, what only man can describe using his senses and knowledge. Person himself is composed of the same elementary cosmic particles, but wrongly man realized that by looking in the mirror he perceived his form as material things or by changing their shape as appearance of related their energy, but the mirror image (*informgraph*) is only the locally resonating information space (pattern field) with the

³Klimek, Rudolf (2014). “Threefold material-informational-energetic reality: $E = mc^2$ ”, *Biocosmology – Neo-Aristotelism* Vol. 4, No. 4 (Autumn 2014), pp. 405–415;

bidirectional human information rays, which now we can see and even photography![Klimek, 2016]⁴



Real person and it's informgraph picture

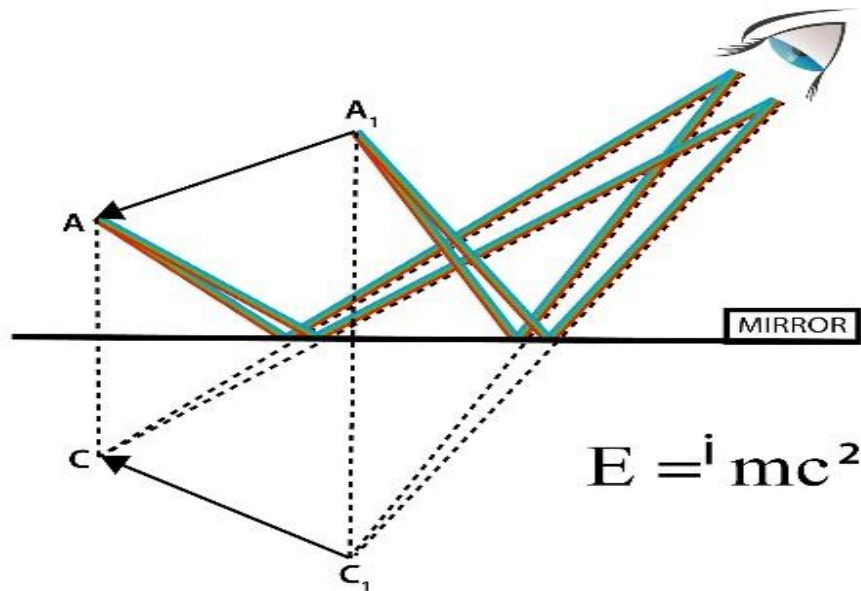



Fig.1. The sight (- -) and light rays  between eye, mirror (|_|), real AA₁ and informational CC₁ objects according to quantum equation $E = i mc^2$.

⁴Klimek R. Life, Cancer and Virtual Information. Biocosmology – Neo-Aristotelism, 2016; 6(2): 255-272.

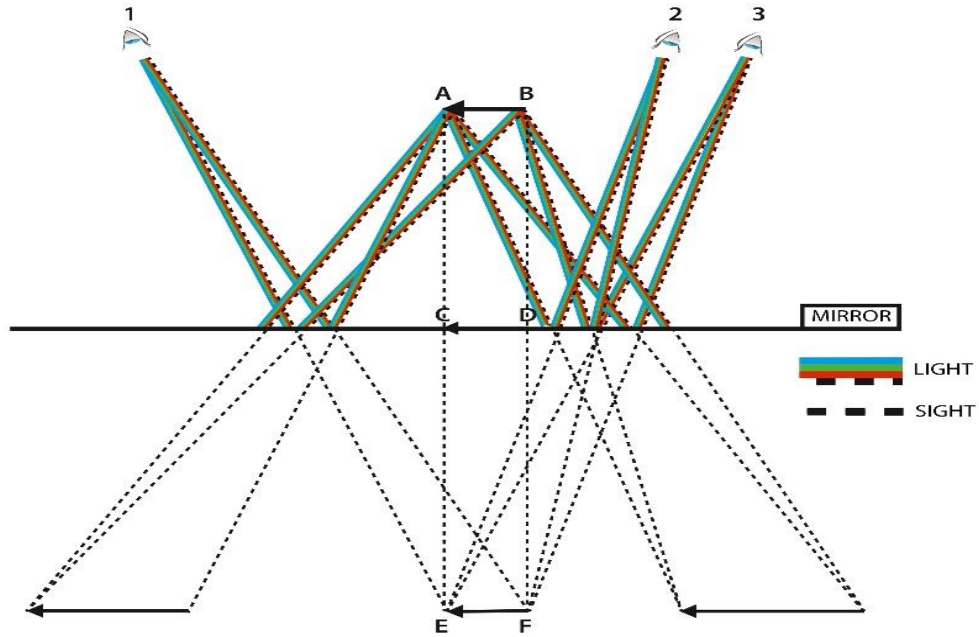


Fig.2 Information rays of transmitted images from original object AB to informographs CD EF

The carriers of images – as generally accepted in science – are electromagnetic waves and thanks to them they can be fixed technically (photographed). These images, however, reaching different fields (viewpoints) are the effect of resonance of the primary image (portrait) informational rays and light. The course of this type of spatial radiation takes place along the road on which real information (image) travels in the direction from the object of observation and through the mirror to the observers or cameras of digital transmission records (Fig.2).



Fig. 3.

Figure 3 presents the photos of man's portrait as they can be obtained also mechanically by photographic apparatus, which also differentiates the color and form of any object from perspective of observer's localization, i.e. photos of portrayed man en face and from both sides from two opposite observer's localization. Transmitted images are successive informgraphs (CD, EF) of the original perception object, i.e. a two-dimensional portrait (Fig.1). Practically, in this context, everyone can see their silhouette visible in the mirror, which reflection does not contain any single atom of the real person (Fig.1) or any visible object (see chapter 3).

Already in the thirteenth century the Polish canon and physician of Wrocław Vitelon conducted observations, described in his discovery as „*The mathematician and scientist Vitelon about optic, i.e. about the essence, the cause and the projection of the rays of sight, of light, of color and of form, commonly known as Perspective, ten books*”⁵. He investigated the rectilinear propagation, reflection and diffusion of sight and light as well as meteorological phenomena, being interested in the mechanics of the action of the eye and the subconscious functions of the mind. He claimed that the eye received no information other than sight, light, color and form from angular size. His work “**Perspective**” was printed in 1535 in Nuremberg and also in 1572 in Basel. He recognized sight, hearing, smell, taste and touch as external senses of soul, and the imagination, fantasy, judgment, and memory as internal senses. Vitelon supplemented Aristotle with a judgment of visible form, whose size depends on the angle of view and coordinates the movement of eyeball as a power of sensual distinction and memory by seeing and fixing individual forms that are comparable in every case.

Importantly human sight accepts the bidirectional information rays coming from visible object or its mirror picture as ability to see with emphasis familiar with everybody [Klimek, 2015]⁶. **Information as the transparent elementary part of Nature** acts on matter and energy by means of determination of the range of their possible reactions to develop into functionally complete being. It is a medium that functions to organize, accommodate, and affect all of the elements and forces of nature, formed prior to matter and energy as antecedent estate [Challenging

⁵*Vitellionis Mathematicii Doctissimi Peri Optikīs id est de natura, ratione et proiectione radiorum visus, luminum, colorum atque formarum quam vulgo Perspectivam vocant Libri X*, written in 1270–1273.

⁶Klimek R. (ed.). *Psychoneurocybernetic Conquest of Carcinogenesis and Cancers*. NOVA Science Pub, Inc. NY, USA, 2015.

Integralism, 2017]⁷. Like ancient ether any information has no qualities (e.g. is not either hot, cold, wet or dry) and incapable of change with exception of change of place by its natural move in circles, and has no contrary or unnatural motion. It is weightless, transparent, frictionless, and undetectable chemically or physically, and literally permeating all matter and space, where only its resonance effects with the cosmic information patterns can be visible (see chapter 3). The problem of matter and sight in the visible universe becomes now theoretically solved by the equation of quantum equivalence $E = mc^2$, since the amount of the released energy is usually proportional to the total mass of the collided matter and antimatter [Klimek & Szkutnik, 2018]⁸.

2. The philosophy of informational being: $E = mc^2$

The observable beings refer to the capability to detect not only light, but first of all the information rays coming from any object and can move in any direction not being restricted by the speed or barriers what e.g. happens with light or language. Presently it is possible to notify directly existences of information and why its appearance in human (immanent and transcendental) verbal world. For example **Ana Bazac** from both a philosophical and lay person standpoint described cancer as almost the most terrifying, mysterious and important illness of man, while other diseases only unpleasant episodes, but on the basis of the ethical message cancer is a natural phenomenon by emphasising both the physical-chemical and the teleological origin of cancer. Man must think the naturalness of the biological states neither as reducible to bottom up mechanical relations nor as a simple normatively introduced by the reason of medical doctors and researchers, but as Aristotle conceived of, as a state “situation” of the subject/the human as such and it is both subjective and objective, both considered from within and from without. Language creates the informational basis for individual and social human life, although it is difficult to bring someone into permanent state to exert a decisive influence on him or her, or

⁷Bremer J., Khroustski K.S., Klimek R., Tadeusiewicz R., “Challenging integralism, Aristotelian entelechy, hyle and morphe (form), and contemporary concepts of information, touching upon the etiological issues of carcinogenesis (with reflecting feedbacks of Paul Beaulieu, Ana Bazac, Anna Makolkin, Leonardo Chiatti, Milan Tasić and Dariusz Szkutnik)”, *Biocosmology– Neo-Aristotelism* Vol. 7, No 1 (Winter 2017): 8–111.

⁸Klimek R, Szkutnik DA. (2018). “Informative character of the visual radiation in the phenomenological aspect,” *Biocosmology– Neo-Aristotelism* Vol. 8, No2 (Spring 2018): 300–313.

create a world that exists by virtue of being spoken⁹. Alas, A. Einstein in his theory of relativity disproved the ether known as the fifth element to air, earth, fire and water of antique universe, because the well-known equation $E=mc^2$ was related only to two of the three constant cosmic parts. Presently it is possible to notify existence of information and why its appearance.

Philosophy of being enables the verification not only the unity of micro- and macro-cosmos, but first of all the existence of human transcendental verbal world (ideas) expressed as an informational resonance feedback: **input =ⁱ output**. From the long ancient time the man was understood as the abstract soul and the real matter-energy body of a person, who, through words, can express his psycho-emotional state and always truth as an informational event resonates with human conscience. **R. Tadeusiewicz** developed a method of the abstract modeling of reality, subsequently testing it in practice¹⁰. Man, as an individual unit of society, through his life and work with own free will defines his relationship to truth and good not only through action, but also through inaction in relation to his environment on the level of an informational coexistence. New medical age moved from the basic level of molecular biology's cellular nuclei to the level of atomic nuclei with the universal use of their magnetic resonance and its thermodynamic interpretation to satisfy human curiosity of earthly surroundings and the sense of life. Some of the most daunting secrets are those which deal with the cause of sickness following the rapid scientific developments. Therefore each part of reality should be of special interest to physicians, health-care givers and laymen, who want to know about the latest knowledge concerning the true and who cares about ethics in medicine or the funding of medical research closely linked to certain human behaviors and procreation. Every discrete part of the universe considered to constitute a **system** is a **being** (the quantum of the threefold, indivisible material-informational-energetically reality, or its multiple), who's mass is informationally balanced with its current and potential energy, and with its simultaneous coupling with its surroundings. In truth the thermodynamic law of equivalence of the mass, information and energy of the universe expresses the raising of the sign of equation $E =ⁱ mc^2$ to the power of

⁹Bremer J., Klimek R., (2017). "The information turn and the philosophy of information." *Biocosmology– Neo-Aristotelism* Vol. 7, No 1 (Winter 2017): 279–283.

¹⁰Tadeusiewicz R. (2015). Biocybernetics links medicine and technology. In. Klimek R. (ed). Psychoneurocybernetic conquest of carcinogenesis and cancers. Nova Science Publishers. New York, pp 77–97.

information (=i), in which matter and energy are understood to constitute two aspects of that information, construed as something causally efficacious. **The equation** settles the centuries-long dispute over the **essential** and **existential essence of each being**, the understanding of which has been invested in its constantly varying names, limiting it to some merely informational conception – as, simply, an immaterial word deprived of energy.

First of all, it is necessary to understand what the word ‘**being**’ really refers to. The word denotes the entirety of everything that in any way, or in some specified way, exists in the essential sense (most important, just that constituting the essence) or the existential (the very fact of its existence), both as the whole of the universe, and in the form of any part of it, called a **system**. There is a fundamental difference between any sort of real being and its merely abstractly conceived existence (in human thought), where the latter is increasingly often misleadingly referred to as a ‘virtual’ one, while this term is itself derived from the Latin expression used to denote virtues or powers. Metaphysical abstraction is something already described by Aristotle when, starting out from some particular particle of reality, he would abstractly subtract all its individual qualities from it in order to arrive at either a physical abstraction (e.g. describing some species) or a mathematical one (capturing its quantitative aspect). In ancient time the four classical elements of universe consists of earth, air, fire and water, which correspond to a particular state of matter: earth as solid matter, air – equivalent to gaseous form, fire equals plasma, and water represents liquid form. The fifth element is a part of all other elements holding all them together, and was known as quintessence or ether, translated as pure air or sky in the Greek language.

Information links cosmic matter and energy, which are just two aspects of the informational essence of the reality, and therefore information, as the realization of the perfect idea, counts as more important than either of them. Modern mathematicians hold that there is nothing in the material world that cannot be captured mathematically, while mathematical models may show up sometimes quite simply news regardless of the intentions of researchers. The causal relationships exist in the world as cognizable precisely through mathematical connections, while matter and form are different names for the same thing. **R. Tadeusiewicz** developed an abstract imaginary (information) model of human reality (*experimentum in computo*). Through such model truth can be defined as the existence of each event in a quantum

state, from its beginning to its end form. It is possible to identify being as the smallest part of any reality as tantamount to a material-informational-energetically concept denuded of all of its particular specificities. For example, every word is a being in the human verbal world similarly as each person is a part (being) of triune universe, e.g. words fides and ratio are two his/her inseparable sides of the same informational part of personal life (**Faith** =ⁱ **Reason**). Theirs power can be expressed by the response to singular word of crowds in whom the information waves may resonate with human motivations for action relevant to each and any of the persons there. Unfortunately, this is also the basis for what happens in cases of informational pathology, where the affected person reacts uncritically to the information transmitted, a classic example being the treating of false medical information as veridical. Images and sounds act on the human senses directly, but when already in the form of written or spoken words people are required to understand their content thanks to the informational resonance of the person who, as with every being, exists and acts in accordance with the law of quantum equivalence of mass, information and energy. The display of letters, numerals or musical notation is a conventionally agreed informational human construct serving to convey some content or other to suitably initiated persons, reflecting the fact that letters composed in some order form words that are only properly understandable in a specific language. Numerals relate to many languages, yet very few people can distinguish notes, and not many of these, in turn, are able either to read and convert them into sounds or to simply feel the beauty exhibited by the relations obtaining between parts of a whole, and between these and the whole itself, where this marks the transition from a concrete to an increasingly abstract being. Each such display is, however, regardless of the degree of understanding involved, no less part of the field of information available to every consciously responsive human being, subject to the state of his or her health, upbringing and education in order to bring someone into some permanent state, to exert a decisive influence on him or her, or create a world that exists by virtue of being spoken. Composer **K. Penderecki** from own feelings creates miraculous music.

3. Natural law of carcinogenesis and infertility

The equation $E = mc^2$ mathematically expresses the triad of the matter-information-energy universe combining, i.e. the formation, existence and interaction of cosmic structures and processes. For example, the prolongation of human lifespan

increases the number of neoplastic illnesses as the organism ages. Until the creation of the concept of generative entropy it was difficult to distinguish the necessary conditions from the sufficient cause of self-organization of neoplasms from the cells of the ill or only ageing patient. It was the eternal human dream of easily understandable explanation of observed world events and treatment of the illnesses coexisting with the neoplasms, which lie in the various medical disciplines. Therefore, the aim of physicians is not only to destroy cancer cells without harming healthy tissues, but also to strengthen the fight against carcinogenic processes already in precancerous cells. Neogenesis of cell can result in a multicellular organism's risk of existence, but may also help to control the further growth of the species in depending on the state of reproductive health, which plays a decisive role in the intergenerational transmission of human life. In this view, self-organizing dissipative neoplastic structures appear as the basic regulator of not only the existence and development of a person, but through selective elimination of individuals least suited to the environment guarantee the continuous development of the *Homo sapiens* species. A special role in this is played by information medicine for the protection of human procreation.

Editor of the bilingual electronic journal *Biocosmology-neo-Aristotelism* **K.S. Khroutski** in issue 2017 [7(1):5-6] introduced a new vision for realizing the general Triadologic strategy of Biocosmological Association development starting from the actualization of the contemporary information conceptions according to integral formula $E = mc^2$ to reach the goals of genuinely Aristotelian naturalism. The principle of triadicity (*omne trinum perfectum*) means the presence of three autonomous active spheres of live: two opposite spheres (polar) and the third as intermediate one that is always realizing interaction with and between both poles. For example, K.S. Khroutski in his paper published during inauguration of BCA Symposia referred to the Triadic neuronal regulation of the autonomous nervous system that uses the material structure and energy of sympathetic and parasympathetic with the third part meta-sympathetic (as revealed by A.D. Nozdrachev in the 1980) that links the two other divisions. Now taking into account the theory of being expressed by the equation of equivalence of mass, energy and information, the metasympathetic part can be interpreted as information part of triune reality. People are looking two poles of any system mostly as opposite ones instead their informational cooperation and synergistic reaction towards environmental

changes of any observed being. Biologists know material and energetic features of the whole nervous system, but each of its components encompasses information.

As far back as time of Socrates, people encounter the claim that if he is entirely focused on intense love, man can attain eternal truth, dignity and beauty. Eternal truth has no limits, whereas people set out to define the truth for themselves within the terms of their own limited language. That is exactly the reason why mathematics has become the main tool employed by the natural sciences and in the end by medicine too, to disseminate ideas without taking the trouble to ensure their broad-based, substantive justification. This is where ideology and religion as human views meant to be of use in our overall interpretation and transformation of the world, conceived as a system of beliefs and practices operative in the space between the divine sphere and society understood as the culmination of the development of culture. Man lives and acts according to natural laws, but he himself decides on their selection, following the guidance of philosophical thought, in which words play the most essential justificatory role, in respect of what purpose they are meant to serve, and in what manner and to what effect they are employed. Two ways of using and understanding language are distinguished: descriptive language, informing us about something, and the language of the rhetoric of Socrates, understood as “the inventor of persuasion”.

The word “**truth**” as the informational opposite of “lie” has a triple meaning, because it is not only the name of an event (structure or process) at the same time proving its real existence, but also means it is identical with the name of each structure or process it describes. The concepts of truth and lie, like good and bad are used to define the psycho-emotional state of a man, who has the capacity to be astounded, e.g. the truth about the natural cause of cancer, which is commonly defined as all neoplastic diseases, astounds people. Astonishment is a fact felt by people, unfortunately until recently considered in isolation from the three-fold reality which is composed of matter, energy, and information. Everyone knows that certain words can easily lead to loss of friends, a break of friendly relations, and maybe not always a loss of love, but it never leads to the disappearance of remorse, because **truth is an informational event resonating with human conscience**. Each person can express information about his inner human state to the outside, but cannot negate his conscience, because the concept of truth is one of the natural laws, which people with the lack of understanding thereof, try to conceal in self-made laws or rules.

Man is endowed with free will, which ensures a good, functioning social life, as long as the eternal laws of nature are followed. Humans do not create these laws, but can only strive to understand them better in order to use them correctly, because the twentieth century has seen the introduction of a dangerous informational illness (**informatonosis**) in people bent on wealth and power, who intimidate and lie to others. Luckily, conscience also fulfills gratifying functions, such as the feeling of satisfaction or happiness which comes from performing a good deed, or even from simply differentiating well from evil. Exemplary for decades the formation and different causes of cervical cancer have been studied, in order to model all neoplastic diseases (including psychological ones), then completing the new equivalent equation ($E=i mc^2$). The decision about the truthfulness of an event can be in accordance with it, or it can be a lie based on bad conscience. Therefore K.S. Khroutski demands the increased methodological medical procedures on the side of health and not only on the side of predominantly diseases, as is in today's medicine¹¹. This is why oncology must bring back the original idea of medicine – a holistic modern diagnose-treatment procedures to destroy cancer cells without harming healthy tissues, but also to strengthen the fight against carcinogenic processes already in precancerous cells, what can also help to control the further growth of the species, which plays a decisive role in the intergenerational transmission of human life. In this view, self-organizing dissipative structures appear as the basic regulator of not only the existence and development of a person, but through selective elimination of individuals least suited to the environment guarantee the continuous development of the Homo sapiens species. Modern philosophical research has yielded to an undifferentiated pluralism, based upon the assumption that all positions are equally valid, which is one of today's most widespread symptoms of the lack of confidence in truth. This is why many people stumble through life to the very edge of the abyss without knowing where they are going. At times, this happens because those whose vocation it is to give cultural expression to their thinking no longer look to truth, preferring quick success to the toil of patient enquiry into what makes life worth living. The contemporary science is enormous and boundless, and hugely specialized, consisting of the innumerable amount of disciplines and their vast objective data. Therefore, from the

¹¹Khroutski K.S. (2019). “New Noocratic integral rationalism, as the basis for building a “Community of common destiny,” *Biocosmology – Neo-Aristotelism* 8(1): 1–4 and 148–194.

very beginning (since the launching of BCA in July 2010) K.S. Khroutski strongly propose to distinguish three main autonomic Types of rationality:

- 1) the Aristotelian Dynamic Organicist (Entelechial) naturalism (and naturalist – teleological – physics), wherein the ultimate causes and forces are essentially internal and operate *from within*;
- 2) the opposing (polar) Type of Platonic Dualist (Idealist/Materialist) approach – essentially the mathematical-physicalist Type of scientific activity (that is now dominating, or, rather dictating the norms for scientific work), and wherein the main aetiological causes and forces are driven *from without*; and
- 3) the third basic, axial universal type of knowledge, that is based on its own (equally to the polar Types) cosmological foundations; which does possess its own basic rational elements and synthesizes the needed – Integralist – rational means, since Aristotle : “...it is clear that something must underlie the contraries and the contraries must be two” (191 a 4-5); so, “it was said first that only the contraries were starting points, but later that something must also underlie them and that they must be three;” (191 a 17-18).

The three types of rational knowledge lived alongside each other in peace, and fruitfully interacted with each other. Astronomers such as Copernicus and Galileo began to share and build upon their experiments, and religious reformers began to publicize new ideas that rejected naturalist approaches. The modern Scientific Revolution had given birth to an Industrial Revolution that dramatically transformed the daily lives of people around the world, which at the same time as a whole is moving into the future of world wars and the reduction of world population, and cyborgization (dehumanization) of the remaining amount of people, thus categorically withstanding the natural(ist) laws of the real Universe.

Now Scientists urgently need the appearance of the institutions that are based on the self-actualization principle, and which possess the potential to contribute essentially and significantly to the actual process of raising awareness and management of the given great becoming of the new age of rationality. Precisely this was the major goal of our substantiating and putting forward during World Congress “Biocosmology and Cancer” in Cracow 2017 the initiative of originating the *World Information University* (WIU). Aiming at a brief and substantial characterization of this proposal it is appropriate to point out to its Motto: **Do not be afraid of Truth, and Do Telic Good!** and Formula: $E=i mc^2$, wherein “i” has basically the meaning of

Telic Aristotelian Information, which relates essentially to the naturalist (*telic*) notions of *Hyle*, *Morphe*, and *Entelecheia*. **WIU** fundamentals for *methodology* are the recognizing the triadological essence of rational knowledge (see the explanation at the BCA-site – <http://en.biocosmology.ru/>) and the principle of ***auto-teleology of John Paul II***, who urged Scientists to continue their efforts without ever abandoning the *sapiential* horizon within which scientific and technological achievements are wedded to the philosophical and ethical values which are the distinctive and indelible mark of the human person¹². Faith and reason “mutually support each other”; each influences the other, as they offer to people a purifying critique and a stimulus to pursue the search for deeper understanding, to lead people to discover their capacity to know the truth and their yearning for the ultimate and definitive meaning of life. He appealed also to philosophers to explore more comprehensively the dimensions of the true, the good and the beautiful to which the word of God gives access and what is often the only ground for understanding and dialogue with those who do not share any faith. The search for truth, even when it concerns a finite reality of the world or of man, is never-ending, but always points beyond to something higher than the immediate object of study, to the questions which give access to mystery. Only within the horizon of truth will people understand their freedom in its fullness and their call to know and love as the realization of their true self: “May their journey into wisdom, sure and final goal of all true knowing, be freed of every hindrance by the intercession of the one who, in giving birth to the truth and treasuring it in her heart, has shared it forever with all the world”.

Conclusion

Biocosmos is a triune living universe understood by a mankind as a spontaneous exchange of matter, information and energy between elementary its particles. Biocosmology stated that modern naturalism has a variety of connotations in various contexts, but they primarily mean its ancient Greek (Aristotelian) significance (<http://en.biocosmology.ru/>). At the same time, another approaches are also worthy of attention, e.g. concerning the bio- and ethnic-diversity to contribute to the effective approaches (to) and realization of the actual forms of New Cultural Integralist Era. Informational medicine testifies the need to replace existing theories by the practice of psychoneurocybernetic diagnosis and treatment of people. On the

¹² given in Rome, at Saint Peter’s, on 14.08.1998, in the year of His Pontificate.

basis of the history and clinical evaluation of possible ailments and symptoms of the patient a physician orders additional assessments, the aim of which is to confirm the initial diagnosis, but according to modern medical knowledge he alone should provide a range of values of expected results. There is also the possibility of judging based on the effects of treatment (*ex juvantibus*), as the oldest of methods to assess the diagnostic and therapeutic. In case of divergence in expected results of the diagnosis (in medicine, where knowledge must always be combined with appropriate action and behavior) the change of diagnosis is still possible. For example, this happens in obstetrics that the newborn maturity index in technical quanta can and must be forecast now for a few weeks before delivery using properly programmed devices for imaging fetal development and in multiple pregnancies also separable each of the individual children. Also in the modern oncological diagnostics imaging prevents harmful complications which arise after only statistically matched organ punctures instead of confining themselves to selective places of locally increased pathology due to improper diagnosis or therapeutic procedures when information is incorrect both in terms of medical knowledge and the tools used.

Psychoneurothermodynamical explanation of carcinogenesis and infertility has brought medicine to a new age of prevention and therapy of new sick cells before they form clinically evident disease. New medical age moved from the basic level of molecular biology's cellular nuclei to the level of nuclear atomic nuclei with the universal use of their magnetic resonance and its thermodynamic interpretation to satisfy human curiosity of earthly surroundings and the sense of life. From the medical point of view, the most important thing is the fact that a cell always acts as a whole, by analogy with the functioning of every person in society. Cells are a special form of life: they have the unique ability of multiplication by division into daughter cells having the same genetic identity. The new cancer cell cares primarily about itself according to the laws of nature where in order to survive in the wrong conditions it must harm the environment, what is responsible for the signs and symptoms of diseases popularly called cancer. The course of the disease depends on the relationships between the neoplasm cells and the condition of the other cells of which the genomes have not changed. All those cells come from a single zygote produced by the father's sperm and the mother's egg joining together. Simply, the life and development of every person is partially programmed in parental germ cells, appearing as early as on the 11th day of fetal life of parents. Therefore, preventing

cancer lies in strengthening the body's defenses, and the continuing improvement of health education and regular control and prevention studies. Every metabolic path in a cell has its biophysical conditions of which the measure, in addition to temperature, are the relaxation times of Nuclear Magnetic Resonance and the magnitude of the cell's oxidation-reduction potential from inorganic ions to the state of inner membranes and the whole cell, bordering on its environment. Thus R. Virchow's cellular theory about the structure of the body has been taken from the level of cell nucleus to atomic nucleus, and it has made possible the identification of the pre-neoplastic states of cells in tissues, which can be diagnosed with other morphological methods much later. **The cellular form of life is the dividing line separating applied medicine (practice) from theoretical medicine, at the same time being the basis for understanding etiopathogenesis of diseases due to modern technologies which armed physicians with a toolbox for monitoring human health and diagnosis of diseases at molecular level.**

Rudolf Klimek

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Rudolf KLIMEK and Konstantin KHROUTSKI

Organicist and Integralist approaches in Information Medicine*Medicine – the most valuable domain of human life***Introduction**

The congress “**Biocosmology and cancer**” (held Krakow 2017) brought large-scale recommendations to rehabilitate and recognize the authentic significance of the Aristotelian archetype of OrganonKosmology as a possible contribution and effective means for scholarly participation in evolving the **World Information University**. The essential challenge is how to recognize the meaning of the discovery of natural thermodynamic cause of diseases, its prevention and psycho-neuroendocrine therapy, while the **truth** means **the existence of each event in a quantum state**. Presently medicine uses both meanings of information, i.e. belonging to animate matter and energy as well as existing as spirit and social wellbeing [Khroutski & Klimek, 2018]^{1,2}. Every person is created through the unification of generative cells of grandparents as a single cell (zygote) *to uphold the species* and to define the unique identity of each person, whose cells are tolerated by pregnant woman until the spontaneous initiation of child delivery. Scientists from Karolinska Institute linked the fetal blood levels of T-cell immune function at birth with the mode of delivery and maternal characteristics (age, parity, smoking, diabetes and hypertensive disease). Compared with vaginal route cesarean delivery is associated with increased risk of immune disorders later in life, such as asthma and allergies, diabetes, celiac disease and inflammatory bowel diseases, obesity, immune deficiencies, leukemia, and other malignancies affecting young people. They found differential DNA-methylation related to mode of delivery in regions of genes involved in immunoglobulin synthesis and the rate of stem cell differentiation peaks which after the birth the gradually decline. Therefore, cesarean section delivery without a clear medical indication has to

¹ Khroutski K.S., Klimek R. Biocosmological definition of information and its naturalist causative significance. *Biocosmology– Neo-Aristotelism* 2018 Vol. 8(2): 204–262.

² Klimek R. Quantum equivalence of information, matter and energy: $E = mc^2$. 2nd Global Conference and Expo on Applied Science, Engineering and Technology, Amsterdam 2018. *Adv Theo Comp Phy*, 1(3): 1–6.

be modified most rapidly, because of reducing number of T- and B-lymphocytes in newborn infants³.

1. Autoteleological principle of the Information Medicine

Matter and energy are just two aspects of the threefold informational essence of the reality, what only man can describe using his senses and knowledge. He himself is composed of the same elementary cosmic particles, which are locally resonating information pattern field what now we can see and even photography! Bidirectional information rays fill all spacetime that allowed them to pass through it without obstacles and interact with matter and energy with the principle of equivalence of mass, energy and information $E = mc^2$ [Klimek, 2014⁴, 2015⁵, 2016⁶]. Information as the third elementary part of nature acts by means of determination of the range of possible reactions to develop into functionally complete being [Challenging Integralism, 2017]^{4,7-9,5}.

Medicine is the unique human activity in which man is not only the object and who simultaneously connects directly the theoretical achievements with the art of the protection of life and bringing people back to health, but also who is the subject of her/his inherent ontogenetic life activity⁶. This obliges people to continuously track the progress of both general knowledge and its technological use, including the introduction of purely informational diseases, what is one of the greatest challenges and perspectives of the twenty-first century medicine. In this course, for instance, lies, telling untruths, or concealment are treated as an adequate cause of diseases, which destroy motivated human behavior. The information functions already in the

³ Titus Schlinzig, Stefan Johansson, Olof Stephansson, Lennart Hammarström, Rolf H. Zetterström, Ulrika von Döbeln, Sven Cnattingius, Mikael Norman (2017). “Surge of immune cell formation at birth differs by mode of delivery and infant characteristics – A population-based cohort study,” *PLOS ONE*. Published: September 14, 2017 – URL: <https://doi.org/10.1371/journal.pone.0184748> (accepted: July 23, 2018)

⁴Bremer J., Khroustski K.S., Klimek R., Tadeusiewicz R., “Challenging integralism, Aristotelian *entelechy*, *hyle* and *morphe* (form), and contemporary concepts of information, touching upon the etiological issues of carcinogenesis (with reflecting feedbacks of Paul Beaulieu, Ana Bazac, Anna Makolkin, Leonardo Chiatti, Milan Tasić and Dariusz Szkutnik)”, *Biocosmology– Neo-Aristotelism* Vol. 7, No 1 (Winter 2017) 8–111.

⁵Klimek R, Szkutnik DA. (2018). “Informative character of the visual radiation in the phenomenological aspect,” *Biocosmology– Neo-Aristotelism* Vol. 8(2): 300–313.

⁶Bremer J. & Klimek R. (2017). “The information turn and the philosophy of information,” *Biocosmology– Neo-Aristotelism* Vol. 7, No 2 (Spring 2017): 279–283.

unique intrauterine human development stage, later in his upbringing, education, and finally in regard to their own existence in society. Now it is time to transform mostly morphological and biochemical medical views into a more thermodynamic interpretation of cause-effect relationships. For example, in 1847 I.P. Semmelwies described “The etiology, the concept and the prophylaxis of childbed fever” remarked about the lack of medical students washing their hands. It was not until the late nineteenth century that the introduction of his discovery to obstetrics led to a steep fall in deaths from puerperal fever. Also it has taken forty years to achieve recognition of neurohormonal background of cervical cancer and to understand the thermodynamic cause of carcinogenesis and therapy of cervical intraepithelial neoplasia (see chapter 7). First of all informational preventing of cancer depends on strengthening the immune system, a constant improvement in better health education and regular control/prophylactic examinations. In fighting diseases, the defenses are proper eating habits and taking care of the environment in such a way as to use one's biological-economic heredity, since medicine through surgery, radio-, chemo-, thermo- and hormonal therapy is responsible only for about 20% of the successful treatment. That is why each professional has two duties: competence and supplying information, because each person needs knowledge and also skill in practical application of life force of correct information.

Life is determined by different words of human languages, the existence of which distinguishes the “spoken world of man” from the rest of the non-verbal universe. The verbal communication between people depends on the method and context of its use by a man taking also in account the non-verbal body language, e.g. gestures, facial expressions, posture and tone of voice in the universal information field, in which the eternal natural laws exist as the essence of animate or inanimate things. In every cause there is precisely the image of the plan, what this cause will precipitate. In relation to man his life is distinguished by the ability of assessing the state of personal health and socio-economic environment, e.g. the kind of feeling of increasing ease of fatigue as a person grows older.

Ageing is characterized by a gradual loss of equilibrium of internal personal state and therefore lessening the ability for self-defense and self-regulation of the person in response to the environment action. It results in an increased of weariness (fatigue), as a measure of entropy, what in medicine allowed to understand the origin of ageing and cancer. This term pertains to human consciousness, regardless of how

we call it: ego, “I”, a person or simply own name. Humans view their own consciousness as the non-material motivation for their lives and actions according to their own values of social life and livelihood. A lot of information is passed on as true and correct, but not always is known who has created it and for what reason, or in what surroundings it manifests itself. According to Jan Paul II “Truth always presents itself as universal event. If it is not the whole truth, that it must be true for all people and all times.” Nevertheless, the information also may be inaccurate, superfluous, or its effects are not always directly foreseeable, e.g. **basta** is the name given to an illness (informatonosis) which is detrimental to personal and social human health, the cause of which is blameful anti-human socially tragic activity or only information generated by bad humans. Unfortunately, in medicine sometimes the information is based upon seemingly correct theoretical assumptions not applicable in clinical practice, but is spread as if it was a tried and tested by diagnostic method or therapy. Only years of research, additionally confronted with a recent state of whole knowledge possess current value to express the invisible informational power to peoples to defend the capacity of human reason to know the truth which is found in every human heart for deeper understanding of reality!

Philosophy of quantum being enables the verification not only the unity of micro- and macro-cosmos, but first of all the existence of human transcendental verbal world (ideas) of each person, who, through words, can express his psycho-emotional state with self-evaluation of personal achievements and motivation for performing them (R. Klimek, “Cancer and the organicist laws of Nature; The Cosmological aspect of truth and conscience medicine,” *Biocosmology – Neo-Aristotelism* 2018, Vol.8 (3&4): 380–390 and 506–512). For example, it is important to understand the sentences like “the word, and in it, life” or „before I created you in the mother’s womb, I knew you” (Jr.1,5). Each person’s genetic identity appears in the moment the two gametes with different parental identities merge into a new cell creature by the huge selection of millions of dying spermatozoa and hundreds of thousands of egg cells, going to be used at the moment of conception. From the moment of fertilization the fetal cells which developed from the grandparents' zygotes ensure the maturation of a fetus which is able to pass on life through its own generative cells. The life itself is a spontaneous event what means that in the beginning of the world there could not have been a scientifically defined concept of the noun “word”, but an unknown informational qubit in its core, i.e. contemporary

“life in statu nascendi” of humans and the universe yet without the co-existence of its carrier. Thought is made of life, which allows thought to reach itself, so conferring to **Michel Henry** life can never be seen from exterior, because of its radical informational immanence. No-one has ever given himself life, which reveals permanently itself⁷.

Peoples are most effectively protected against diseases by living according to socially acceptable ethical and moral values, while many body cells die all the time to ensure that the organism is alive despite the impact of ageing processes and pathogenic stimuli, but in exceptional cases the end of their individual life may be prevented by changing the matter of its own non-functional organelles into energy needed for self-organization. Such a new cancer cell may still exist only by increase the chaos in its closest environment and this is why it condemns itself to death together with the body, because only within it can exist. Modern technologies armed physicians with a toolbox for monitoring human health at molecular level */www.biobohemia.ru/*. Nevertheless, the metabolomics results give information which requires medical interpretation of eventual detecting abnormalities. Informational spacetime is the most important being not only due to own existence, but first of all to its measurable features as well as their values with the Gaussian distribution similar to time, space or growth measurement of any universal structure or process. Its informational resonance feedback is also astonishing and people during the acts of interrelations have the outlet of emotions, like that of friendship or love, or hate. From the long ancient time the man was understood as the abstract soul and the real matter-energy body of a person, who, through words, can express his psycho-emotional state and always truth as an informational event resonates with human conscience. R. Tadeusiewicz developed a method of the abstract modeling of reality, based on the development of an imaginary (information) model of reality, subsequently testing it in practice⁸. For the too longest time thinking was attributed to the brain, as if this part of the body could function without the circulation of blood or breathing. The same atoms make up the heart, the lungs, and the brain, but in nuclear magnetic resonance imaging they all resonate depending on their surroundings and the internal whole person's psycho-emotional state, taking even gender into account

⁷M. Henry, *I am the truth toward a philosophy of Christianity*. Stanford, University Press, 2003.

⁸Tadeusiewicz R. (2015). *Biocybernetics links medicine and technology*. In: Klimek R. (ed). *Psychoneurocybernetic conquest of carcinogenesis and cancers*. Nova Science Publishers. New York, pp 77–97.

[Klimek, Lauterbur and Mendonca-Dias, 1981]⁹. At the atomic level each subsequent new quantum of personal maturity appears at a particular time which is inseparable from maturing body structures and functions. The fetal maturity level can be evaluated not only immediately after labor through obligatory assessment of just six of child features (position of the limbs, elbow angle, its mobility, breast nipple, plantar creases and lanugo), but using technical imaging (USG, MRI) also beyond the 26th week of single as well as multifetal pregnancy. For each of those features one can allocate from 0 to 2 points, which maximally gives 12 technical points (quanta) of full fetal maturity (see chapter 8).

2. Entropic understanding the etiopathogenesis of cancers

XXI century started with the domination of information, which turns the focus upon the meaning of the moral-ethic dimension of humanity. Now the most efficient prevention of carcinogenesis and infertility is proper upbringing and education of every person to live and work according to her/his *autoteleological* principle of compatibility between deeds and socially acceptable human values¹⁰ and are culminated in the scheme of “Thermodynamic branch of cell’s inner states” (see: Fig.1).

⁹Klimek R, Lauterbur PC, Mendonca-Dias M.H. A discussion of nuclear magnetic resonance (NMR) relaxation time of tumors in terms of their interpretation as self-organizing dissipative structures and of their study by NMR in vivo by NMR zeugmatographic imaging. *Gin Pol.* 1981; 52: 493–502; *Materia Medica Polona.* 1981; 15/119: 47–53.

¹⁰Klimek, Rudolf (2014). “Threefold material-informational-energetic reality: $E = mc^2$ ”, *Biocosmology – Neo-Aristotelism* Vol. 4, No. 4 (Autumn 2014), pp. 405–415; Klimek, Rudolf. (2016). “Life, cancer and virtual information,” *Biocosmology – neo-Aristotelism.* Vol. 6, No.2 (Spring 2016): pp. 255–272; Bremer, Josef; Khroutski, Konstantin S.; Klimek, Rudolf and Tadeusiewicz, Ryszard. “Challenging integralism, Aristotelian *entelecheia*, *hyle* and *morphe* (form), and contemporary concepts of information, touching upon the aetiological issues of carcinogenesis (with reflecting feedbacks of Paul Beaulieu, Ana Bazac, Anna Makolkin, Leonardo Chiatti, Milan Tasić and Dariusz Szkutnik),” *Biocosmology – Neo-Aristotelism* Vol. 7, No. 1 (Winter 2017): 8–111 (for brief, we call this paper as “Challenging Integralism”).

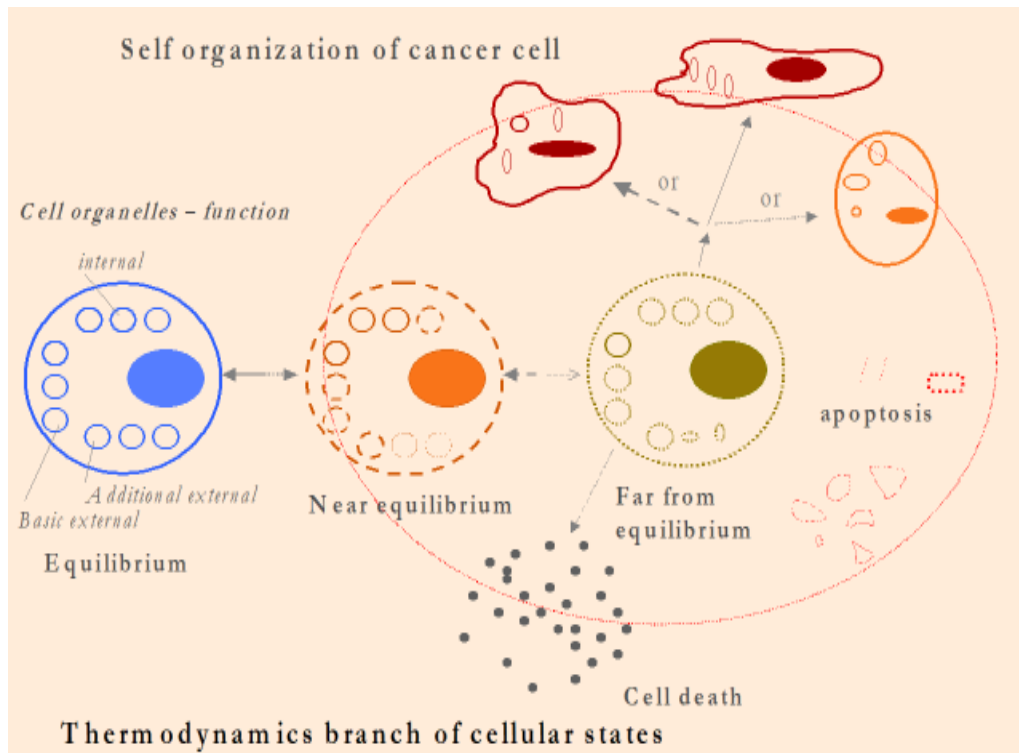


Fig.1 Taken from [Rudolf Klimek, 2016].

In the result, “in place of the existing inefficient cells there appears a disposable biological system (cancer) with increased dispersion (dissipation) of entropy in the environment.” [Klimek, 2016, p. 262]. In such a way, “Cancer is a natural alternative form of existence of the cell sentenced to death whose only further development as dissipative structure is responsible for the signs and symptoms of diseases popularly called cancer.” [Ibid., p.264]. Cancer is certainly the disorder related to ageing [Klimek, 2014, p. 411]. Therefore, the cancer therapy must take into account just these relationships of the natural processes of the individual with its social frame and existence. As a matter of fact, while in the space evolution we have entropy that ever increases; on the contrary (polarly), we have the entropy of a developing embryo that ever decreases [Challenging Integralism, 2017, p.47]. Therefore, if so, then of course nothing but neuro-, immuno- or thermotherapy as a mean of treating the whole body can prevent and cure **the carcinogenic states, which are a primary cause of carcinogenesis of any part of the body.** Consequently the local ablative therapy must be simultaneously followed by medical restoration of the body’s defense mechanism to prevent the recurrence of the disease.(in more detail, see Khroutski

[2002]¹¹). The Functionalist organization is the best way to reduce entropy and restore the normal organization of a cell or any other living subject – the man first of all, and, thus, to suppress the causes for carcinogenesis. The main conclusion is “not the identity or unity, but the coexistence of opposites, and not a conjunction, but excluding their disjunction. The very essence of opposites is the co-existence of the incompatible values, rejecting the exclusion of the third” [Brusentsov, 2002¹², 2008¹³] Essentially, therefore, cause by coincidence (“κατά συμβεβηκός αιτίον” – the circumstantial or resonance cause) naturally serves to the unity of the subject and his surroundings, by virtue of active selecting the necessary conditions and opportunities for normal existence and ontogenesis of the subject. The latter precisely makes it possible to realize the needed changes, and, on the whole, to ensure steady and successful ontogenetic evolution^{14,15}.

Each structure or process in the universe is enrooted in its causative information, which are always accompanied by the production of entropy, what has enabled the understanding of an organism's ageing and the emergence of cancer. In our “entropic” approach to studying the issues of carcinogenesis, we see that ageing is characterized by a decreased ability for self-defense and self-regulation due to the gradual loss of internal equilibrium as a reaction to environmental effects. Fatigue is a sign of growing entropy, which production in living organisms is linked with the increasing (positive source) or decreasing (negative source) magnitude of molecular processes. The basis for all irreversible processes of life, including carcinogenesis, are the changes (d) in entropy production (diS) over time (dt), known under the name of source of generated entropy: **diS/dt = Sgen**.

¹¹Khroutski, Konstantin S. (2002). Epistemology of civilised man diseases // *E-Logos*, 2002. URL: <http://nb.vse.cz/kfil/elogos/epistemology/khrout1-02.htm>

¹²Brusentsov, Nikolay P. (2002). “From Aristotle to computers (Ot Aristotelya do komp'yuterov),” *Cybernetics – expectations and results. Polytechnical readings*. Issue. 2. M.: Knowledge, pp. 104-105. (in Russian)

¹³Brusentsov, Nikolay P. (2008). “Adequacy of intellect and heraclitic coexistence of opposites (Adekvatnost 'intellekta i geraklitovo sosushchestvovaniye protivopolozhnostey,” *Tavrisheskiy vestnik informatiki i matematiki* (Taurian herald of informatics and mathematics). 2008. No. 1, pp. 97–100. (in Russian)

¹⁴Martinás, Katalin (1991). Aristotelian Thermodynamics. In: Martinás, K.; Ropolyi, L. and Szegedi, P.: *Thermodynamics: History and Philosophy*. World Scientific, Singapore, p. 264, 1991.

¹⁵Author is citing: Duhem, Pierre (1980). *The evolution of mechanics*, p. 188., trans. Michael Cole, Sijthoff & Noordhoff, Alphen aan den Rijn, The Netherlands, Germantown, Maryland, USA.

In turn, if the production of entropy in a system decreases the system can still exist via an increase of production of entropy in its environment count by the reality formula $E = i mc^2$, where “i” encompasses also the generative entropy¹⁶, which helps in understanding the causal purposefulness of observed structures and processes in liaison with their environment on account of the causative role of information [Klimek, 2018]¹⁷. **R. Tadeusiewicz**¹⁸ develops an idea that information is a form of cognitive resonance. Unfortunately, modern social institution pays attention exclusively to scientific approaches that study only the lower levels (inorganic, vegetative and animal, so-termed by Aristotle), and only the states of ‘Static’ natural organization (created *from without*); and which are incapable for self-evolvement, i.e. which lack the substantial natural inherent telic forces that act *from within*. In this respect the official CERN-site and its study of “The matter-antimatter asymmetry problem”¹⁹ states that “overall, dark energy is thought to contribute 73 percent of all the mass and energy in the universe; another 23 percent is dark matter, which leaves only 4 percent of the universe composed of regular matter, such as stars, planets and people.”²⁰ In the result, “All the stars, planets and galaxies that can be seen today make up just 4 percent of the universe. The other 96 percent is made of stuff astronomers can’t see, detect or even comprehend.” The visible matter- and energy-constituents (that we imply in the formula – $E = i mc^2$) comprise less than 4% of the Universe’s total volume [Khroutski, 2013²¹.Khroutski, 2010]²². Despite the great

¹⁶ Klimek, R. “Threefold material informational energetic reality: $E = i mc^2$ ”, *Biocosmology – NeoAristotelism*, 2014; 4(4): 393–402.

¹⁷ Klimek, R., Tadeusiewicz R., Gralak P. Virtual information links Matter and Energy: $E = i mc^2$ in: Hisaki H. (ed) *Philosophy of Nature in Cross-Cultural Dimensions*. Dr Kovac Publ. Hamburg, 2017, 197–217.

¹⁸ Tadeusiewicz, R. (2015). Biocybernetics links medicine and technology. In. Klimek R. (ed). *Psychoneurocybernetic conquest of carcinogenesis and cancers*. Nova Science Publishers. New York, pp 77–97.

¹⁹ See the CERN-website “The matter-antimatter asymmetry problem”:
<https://home.cern/science/physics/matter-antimatter-asymmetry-problem>

²⁰ Moskowitz, Clara (2011). “What’s 96 Percent of the Universe Made of? Astronomers Don’t Know,” SPACE.com (May 12, 2011). URL: <https://www.space.com/11642-dark-matter-dark-energy-4-percent-universe-panek.html> (Accepted, June 26, 2018)

²¹ Khroutski, Konstantin S. (2013). “Forming an evolutionary vector to the Aristotelian pole of scientific Organicism (Biocosmology),” *Biocosmology – neo-Aristotelism*. Vol. 3, No.1 (Winter 2013): pp. 28–51.

²² Khroutski, Konstantin S. (2010). “All-Embracing (Triune) Medicine of the Individual’s Health: A Biocosmological Perspective,” *Journal of Futures Studies*. Vol. 14, No 4. P. 65–84.

successes of modern hi-tech medicine in the treatment of acute and of chronic diseases – biomedicine still is unable to disclose and rationalize the aetogenesis of chronic diseases and cannot develop a healing approach that enables complete recovery of the persons who suffer from chronic diseases, including tumoral diseases²³. The major challenge today is how to integrate (unite) all types of knowledge on the basis of Information principle and by means of Information medicine.^{46,47}

Integrating information is of fundamental importance in all events in nature, in which feedback is an example of information's action, found on both sides of the equation of equivalence: $E = mc^2$ of every cause-and-effect relationship. Each beginning ($=^i$) is a real new information which on the one hand belongs to its source, while on the other – to the newly created process or structure. Resonance is a synchronization of a source with its reactive object. In humans the word becomes a causative agent only if there is an agreement between the person who gave that word or other information, and the person who willingly accepted it, and used it in an appropriate way. There is also a reverse relationship: material phenomena, for example received pain evokes specific information response, which is linked with certain type of changes at the molecular level, or even the sub-molecular one. The human mind, confronted with many very different problems, generally can cope with them by focusing on certain fragments, usually the most visible ones. The feedback loop (input $=^i$ output) is a very special type of informational system, the return of part of the output to the point of input for monitoring or self-regulation. Then, first and foremost – we need to restore the authentic meaning and significance of the Aristotelian crucial terms, notions and concepts [*Challenging Integralism* [2017]]^{24,25,26}. which is based on recognizing the natural potentials of the world

²³ Kudrin, Victor B. & Khroutski, Konstantin S. (2017). “Three-valued logic and ternary informatics of N.P. Brusentsov: their Aristotelian foundations,” *Biocosmology – neo-Aristotelism*. Vol. 7, Nos. 3&4 (Summer/Autumn 2017). Pp. 337–388. (In Russian)

²⁴ Bremer, Josef; Khroutski, Konstantin S.; Klimek, Rudolf and Tadeusiewicz, Ryszard.

“Challenging integralism, Aristotelian *entelecheia*, *hyle* and *morphe* (form), and contemporary concepts of information, touching upon the aetiological issues of carcinogenesis (with reflecting feedbacks of Paul Beaulieu, Ana Bazac, Anna Makolkin, Leonardo Chiatti, Milan Tasić and Dariusz Szkutnik),” *Biocosmology – Neo-Aristotelism* Vol. 7, No. 1 (Winter 2017): 8–111.

²⁵ Szkutnik, D.A. (2018). “Aristotle's and Hans Driesch's substantial form and entelechy,” *Biocosmology – Neo-Aristotelism*. Vol. 8, No1 (Winter 2018): 74–89.

²⁶ An additional characterization of Bio-sciences, see: Khroutski, Konstantin S. (2001). Introducing

sociocultural evolvement expressed in the great research by Pitirim Sorokin and contained in his four-volume scientific treatise “Social and cultural dynamics”, 1937–1941”²⁷.

3. Biocosmos and medicine

Biocosmos from its emergence to transcendence is the informational four-dimensional spacetime whose quintessence are information rays and patterns of quantum equivalent matter, information and energy! It is worth to underline that ratio and fides are two sides of the informational part of human life within observable Nature by people, e.g. for Chinese’s Tao is some essence or patterns behind the natural world that keeps the universe balanced and ordered. Also Aristotle’s teleology was based on the idea that not only living beings, but all cosmic systems have an intrinsic nature and value. According to **Ana Bazac** man must think the *naturalness* of the biological states neither as reducible to bottom up mechanical relations nor as a simple normatively introduced by the reason of medical doctors and researchers, but as Aristotle conceived of, as a state/“situation”/ of the whole organism felt and judged from the standpoint of the subject/the human as such. Now **information** means a **basic quantum part of the cosmic spacetime field for every natural structures or processes**. Disease means the losing the stability of the multicellular body and man recovers more easily in a state close to the inner equilibrium than in states that are more distant from it, which eventually precede death of the body even though his cells, tissues and even whole organs may, as microsystems, function in the system of another person after being transplanted.

This statement could be partially explained between 1957 and 1967 using natural hypothalamic hormones, which R. Klimek introduced into medical therapy, when among others he described the postpartum hypothalamic insufficiency as a factor predisposing to carcinogenesis. Thank to that in 1977 he explained the dissipative state of cell defining cancer as: “*a natural biological dissipative structure self-organising in the body; if a part of the body (microsystem) is for a sufficiently long period in a state far from the biological equilibrium of its environment, and the body as a whole cannot change this state to one that is at least close to the*

Philosophical Cosmology // *World Futures*. Vol. 57(3), 2001, pp. 201–212.

²⁷Sorokin, Pitirim (1970 [1957]). *Social & Cultural Dynamics. A Study of Change in Major Systems of Art, Truth, Ethics, Law and Social Relationships* (Revised and abridged in one volume by the author). Boston, Parter Sargent Publisher.

equilibrium, than such a microsystem has an alternative: to die or to choose the lesser of two evils and transform into a new biological structure (a new system), that is a neoplasm. Carcinogenesis is the rarest but the most dangerous consequence of provoked disruptions of the internal state of the system and at the same time a signal warning against the endangered existence of the whole body; prophylaxis of neoplasm ought to involve elimination of all deviations from the equilibrium, especially at the level of the whole body “. In 1980, R. Klimek together with P. Lauterbur (chemist – Noble prizier from 2003) and M.H. Mendonca-Dias (physicist) generalized the results of independent studies in a publication about the self-organizing dissipative structures according to the laws of both physics and biology at an atom level, even though human senses permit perceiving only colour, sizes, motion, taste, consistency or smell of body parts.

Two general directions for therapy of neoplastic diseases aroused from the thermodynamic essence of neogenesis: the direct one – targeting neoplasms, and the indirect normalization or sufficient alteration of the environment of the neoplasm. From 1985 indirect immunological therapy is aiming to change the biological state of the environment of the neoplasm in which it was formed and which is the only environment in which it can grow and develop. Immunopotentialization therapy of cervical intraepithelial neoplasia involves also the desired cooperation of symbiotic bacteria *Lactobacillus vaginalis*, which to secure their own existence compete with bacteria and viruses that are pathological for man. By exchanging plasmids with those, they are a natural source of antigens for activation of human immunity system, also for the protein component of viruses. The problem is that in merely only ten-plus percent cervical cancer has a direct causal relationship with infections with too many existing virus and bacteria types.²⁸

Single-celled organisms are considered to be alive, which by their division form daughter cells of the same genetic identity associated with the structure of the nucleic acid of the cell nuclei. Unfortunately, the biochemical nucleic genomes were divided into individual nucleotides (chemical compounds), which also were called genes, although heredity determines appropriate characteristics only with the participation of the whole structures of individual cells. The organism, starting from individual atoms

²⁸ The vaccine was introduced to oncological practice by R. Klimek in 1986 at the II International Symposium of Cervical Pathology and Colposcopy, demonstrated that: “*usually used in chronic Trichomonas vaginalis infections, by causing immunopotentialisation of the system [the vaccine] may become a prophylaxis and treatment method in these lesions*”.

(e.g. oxygen, iron, calcium) and cells, unites man's biophysical structure at the atomic level, which has been directly tested in spatial and energetic dimensions using technology based on magnetic resonance imaging. The thermodynamic interpretation of body structure recognizes all the cells as individual entities in relation to the whole body, including not only the components of body fluids, but e.g. also natural tissue macrophages infiltrating the stable cells. It must be emphasized that this is always cytomolecular, i.e. the overall interaction of cells and their components, because the existence of cells requires primarily biochemical compounds to be involved in their metabolism, even while denatured losing its biological properties they retain their existing material composition. Pathological states of cells may regress following neurohormonal normalization and/or immunopotentialization of their environment, which improves the results of medical treatment, especially in early stages of the disease. The lack of significant progress in combating infertility and carcinogenesis is the result of focusing only on the molecular biology as genetic, chemical, physical and biological factors, without the use of basic knowledge, mainly that of quantum thermodynamics.

Many causes of infertility and the cervical cancer fall within a wide range of the same factors, from genetic hereditary states to psycho-emotional procreative and sexual reactions. The most common, but at the same time the easiest to eliminate factors – are the constantly increasing cases of abnormal course of pregnancy and birth also due to medial causes. Infertility and cancer are the most informational diseases of personal and social human lives. Both have their own beginning related to only one cell which appears according to health states and behaviors of individual persons what enables their modern causal prevention, because infertility, abortion and preterm deliveries from one side and cervical cancers from the others side have common aetiopathogenetic roots. Since the launching of the Biocosmological Association in Veliky Novgorod, Russia, during the first meeting at the Novgorod State University, in July 2010 its main aim is the expansion of the accepted by modern science laws of nature by recognizing and establishing the neo-Aristotelian foundational principles of sociocultural and evolutionary knowledge. In fact, all this is the urgent need for appropriate progress in science and medicine. For instance, even the authors of an important Report to the Club of Rome Wijkman and Weizsäcker, in their landmark book “Come On!” [2018] – state that modern life sciences cannot meet all the challenges of human well-being of the two opposing

systems of knowledge today: *Dualist* (Idealist/Materialist – of mathematical physicalism; which is a basis for modern biology) vs *Organicist* (of Dynamic naturalism and teleological Organicist physics). For this, in a metaphorical way, the authors place the image of a dissected rat with comment that “Dissecting a rat means killing it; ironically, this is called life sciences” [p. 85]. In turn, as an example to the contrary they add the image of a rat that is subjected to the training and emergence of new skills, attitudes and behavioral capacities, essentially coming *from within* (and by virtue of inherent life telic – purposeful – potentials). The metaphor of “dissected rat” reflects the essence of modern biology that treats the living matter as substantially the lifeless – materialistic, i.e. mechanistic, thus fully aimless, which is deprived of its own self-motivated and goal-oriented activity. In realizing new scientific breakthroughs, and stressing our main claim – we do need to integrate the two polar systems and types of knowledge, i.e. of mathematical physicalism (the so-called “scientific method”) and of teleological physics (based on the Aristotelian naturalism). From the perspective of Biocosmology Konstantin S. Khroutski affirms the need and substantiates the Northern future for the current dominating rationality from the binary mathematical physicalism to the ternary Aristotelian Organicistic naturalism necessary putting forward the integralist Sorokin's Sensate type of sociocultural organization of all sociocultural spheres methods by a new integral dominating cosmology. The real laws of nature, however, were gradually abolished in the 16–18th centuries, first among the Western European scientific community.²⁹

4. Prevention of preterm birth and diseases

The well-being of the patient is the highest medical goal and the prohibition of causing harm to humans encompasses not only the medical, but all human conduct due to the natural ageing of human cells before aggressive and often irreversible changes occur. Multicellular organism, as well as each individual cell, has to exchange matter, energy and information with its closest environment and the loss of strength and well-being is an intrinsic quality of human ageing. After the period of neonatal, foetal and then embryonal psycho-perinatology, medicine has reached the level of an individual human cell, especially the formation and development of

²⁹ Sorokin, Pitirim (1970 [1957]). *Social & Cultural Dynamics. A Study of Change in Major Systems of Art, Truth, Ethics, Law and Social Relationships* (Revised and abridged in one volume by the author). Boston, Parter Sargent Publisher.]

reproductive cells due to their potential influence of the human world (*eukumene*). New analytic techniques allow for a qualitative and quantitative analysis of circulating cells and their structures for answering clinical questions and the exploration of molecular phenomena in individual cell, what has been confirmed via an epigenetically (through a cesarean section) changed DNA-methylation in white blood cells of infants. Self-organization of cellular forms also applies to a person's psychological and social life in the form of long known neuroses or psychoses and newly described informative disease (informatonosis), i.e. when doctors prematurely perform a cesarean section solely on the basis of the patient's wish contrary to the medical indications. The existence of such an informational illness is shown by the increased risk of a change of the physiological progress of the pregnancy into pathological obstetric incidents.



Man, placed in the middle of the observation of the universe by Nicolaus Copernicus, influences the material and energetic constituents of reality through language created out of words as tools of informational actions (picture: Copernicus speaking with God). Man not only has the same role in the world as a cell in any multicellular organism, the state of which is examined by medicine, but also always plays a part in the human social life³⁰ Specialists evaluate that “overall, dark energy is thought to contribute 73 percent of all the mass and energy in the universe; another 23 percent is dark matter, which leaves only 4 percent of the universe composed of regular matter,

³⁰ See: <https://home.cern/topics/antimatter/matter-antimatter-asymmetry-problem>

such as stars, planets and people.”³¹ In the result, all the visible stars, planets and galaxies that can be seen today comprise less than 5% of the Universe’s total volume, that we imply in the formula $E = mc^2$. Each living subject essentially needs the extrinsic information for the ultimate stable realization of the healthy wholesome life conditions launching and implementing the Bio-naturalist laws “Forming an evolutionary vector to the Aristotelian pole of scientific Organicism (Biocosmology)” [Khroutski, 2013]^{32,33}. The major challenge today is how to integrate all types of knowledge on the basis of Information medicine. In this, essentially, we urgently need an adequate ‘conceptual’ language for the mutual understanding. In our application we call the cognition “by analogy” as “The method of «essential metaphor»^{34,35,36}. This approach is in full accordance with the Aristotelian potentiality/actuality theory^{37,38}.

The word becomes a causative agent only if there is an agreement between the person who gave that word or other information, and the person who willingly accepted it, and used it in an appropriate way. There is also a reverse relationship:

³¹ Moskowitz, Clara (2011). “What’s 96 Percent of the Universe Made of? Astronomers Don’t Know,” SPACE.com (May 12, 2011). URL: <https://www.space.com/11642-dark-matter-dark-energy-4-percent-universe-panek.html> (Accepted, June 26, 2018)

³² Khroutski, Konstantin S. (2013). “Forming an evolutionary vector to the Aristotelian pole of scientific Organicism (Biocosmology),” *Biocosmology – neo-Aristotelism*. Vol. 3, No.1 (Winter 2013): pp. 28–51.

³³ Kudrin, Victor B. & Khroutski, Konstantin S. (2017). “Three-valued logic and ternary informatics of N.P. Brusentsov: their Aristotelian foundations,” *Biocosmology – neo-Aristotelism*. Vol. 7, Nos. 3&4 (Summer/Autumn 2017). Pp. 337–388. (In Russian)

³⁴ Khroutski, Konstantin S. (2011). “From the three-dimensional reality in the integral sociology of Pitirim A. Sorokin – to the construction of the triune universalizing (Bio)cosmological approach,” *Biocosmology – neo-Aristotelism*, Vol. 1, No. 4 (Autumn 2011). Pp. 369–395.

³⁵ Khroutski, Konstantin S. (2014). “What can neo-Aristotelian ideas contribute to establish an Integrative medicine?” // In: *The Concepts of Health and Disease: From the Viewpoint of four Cultures* / Fengli Lan and Friedrich G. Wallner, (eds.) Verlag Traugott Bautz GmbH, 2014. P. 153–188.

³⁶ And, in turn, which (the life experience) is possible exclusively through the ongoing fixation-memory and the consistent automatic retrieval and immediate use of the ready needed life reaction.

³⁷ Cited from: Aristotle. (1957). *Physics*, ed. by P. H. Wicksteed and F. M. Cornford, Loeb classical library, Harvard University Press.

³⁸ Klimek, R. Quantum equivalence of information, matter and energy: $E = mc^2$. 2nd Global Conference and Expo on Applied Science, Engineering and Technology, Amsterdam 2018. *Adv Theo Comp Phy*, 1(3): 1–6.

material phenomena, for example received pain evokes specific information response, which is linked with certain type of changes at the molecular level, or even the sub-molecular one. The feedback loop (**input** =ⁱ **output**) is a very special type of informational system, the return of part of the output to the point of input for monitoring or self-regulation. In *De anima*, II, 412b5, Aristotle defines *psychè* as “the first *entelecheia*³⁹ that is *organikon*⁴⁰ and second *entelecheia* that produces the needed effects. In the 20th century I. Prigogine and I. Stengers conclude contemporary organicist and integralist thermodynamic research that “the theory of dissipative structures moves us closer to Aristotle’s conception,” as well as “classical science denied becoming, natural diversity, both considered by Aristotle as attributes of the sublunar, inferior world.” In line with this reasoning, we cannot but note the achievements of another eminent scholar, Thomas Kuhn, and his outstanding “The Structure of Scientific Revolutions”⁴¹. Therein, the scholar argues that “before Newton was born the «new science» of the century had at last succeeded in rejecting Aristotelian and scholastic explanations expressed in terms of the essences of material bodies”; and that Aristotle and Galileo were the two “fundamentally at cross-purposes” men. Kuhn reveals the transformations of the paradigms in the world history of science, for instance, “the transition from the original Aristotelian to the scholastic impetus paradigm for motion.” and that “like the early Copernicans who criticized Aristotle’s proofs of the earth’s stability, they did not dream that transition to a relativistic system could have observational consequences.” In the result, the scholar concludes that “Einstein’s general theory of relativity is closer to Aristotle’s than either of them is to Newton’s.” The Biocosmological Association do need to reinstate the authentic significance of the entire *Organon* Kosmology of Aristotle, starting with rehabilitating the significance of the Aristotelian physics as a kind of *matrix* for all the scientists engaged in Organicist and Integralist studies devoted to the *Challenging Integralism* [2017]⁴².

³⁹ Taken from: Aristotle (1907). *De Anima*. Ed. by R. D. Hicks. Cambridge: Cambridge University Press. Herein, the words “actuality” and “body” are replaced into the original *entelecheia* and *organikon*.

⁴⁰ Emphasizing, once again, that originally, from Greek – *organikon* means instrumental (functional).

⁴¹ Kuhn Thomas S. (1970). *The Structure of Scientific Revolutions* (Second Edition, Enlarged). The University of Chicago Press, Chicago

⁴² Bremer, Josef; Khroutski, Konstantin S.; Klimek, Rudolf and Tadeusiewicz, Ryszard.

“Challenging integralism, Aristotelian *entelecheia*, *hyle* and *morphe* (form), and contemporary

Infertility and **carcinogenesis** are the states of the living body which is not in its native inner balance in accordance with its age. Physicians should not only fight existing sick cells, but they should fight them as they arise and not look for present cancer to treat it, but look for people who are likely to develop cancer. In every living human there are around a hundred mutated cancer cells created every day. If the immune or neural system is in a bad state, any one of these cells can survive and hide for a while, and when once again the immune forces are impaired, they can begin to grow. Cancer, essentially, is both the defense of a single cell against its non-existence and the whole cell's self-jump (breakthrough ascendance) into the higher level of organization, more capable of metabolic activities. Notably, the time between the first cancer cell and the first clinical symptoms lies at 10 to 15 years.

The fight against cancer and infertility must be shifted to the first their causal stage, which always links mass, energy and information in both the system and the environment. In reality information describes the state of organization of each system, i.e. its material and energetic constituents, as a third and equal bonding element. It is enough to hold something in one hand, e.g. a material object (a coin) with its own embedded energy (kinetic, gravitational), and not hold anything in the other hand, to understand that both hands are linked by the difficult to understand information described by the word "nothing" in the empty hand in its pure form and in the other hand exists only hidden information in the material-energetically coin as an inseparable part of every system and its environment. This requires the understanding of the amount of information in a similar way to the mass and energy of objects. The part of a system which, multiplied, fits completely into the whole system is called a **technical quantum**, e.g. a gram is a quantum of a ton or a second of an hour.

The smallest unit of information is a qubit, which for example is used to determine the maturity of the fetus to the independent life of the child and/or to monitor the progression of the pregnancy. Unfortunately, the lack of understanding (i.e. information) of fetal maturation and relativity of calendar duration of pregnancy paradoxically in obstetrics sometimes leads to iatrogenic morbidity and mortality using modern medical means as ultrasonography devices, cardiotocographs or

concepts of information, touching upon the aetiological issues of carcinogenesis (with reflecting feedbacks of Paul Beaulieu, Ana Bazac, Anna Makolkin, Leonardo Chiatti, Milan Tasić and Dariusz Szkutnik),” *Biocosmology – Neo-Aristotelism* Vol. 7, No. 1 (Winter 2017): 8–111.

neonatological incubators, which from the technical point of view stem from the greatest advance of quantum mechanics, theory of relativity and biocybernetics. Unnecessary labor induction and/or cesarean section at a time improper for individual pregnancy are such common obstetrical errors. Currently, 10-18% of labors are induced prematurely only because the calendar time of pregnancy duration has exceeded 287 or 294 days from the date of the last menstrual period, which additionally is given by the mothers accurate to several days, anyway. Meanwhile by means of the existent ultrasonography devices on the basis of two measurements within ≥ 2 weeks the obstetricians not only can assess the current maturity, mass, length and gestational age of the child, but also predict those values in the coming perinatal period to bring the percentage of premature birth down to the natural limit of 2.5% of all deliveries! Such individual evaluation of maturation of each delivery ought to be performed directly in obstetrical ward by routine assessment of the adaptation of the newborn in Apgar scale and first of all according to new index of fetal maturity, what is particularly important in the case of instrumental deliveries (see chapter 8).

5. Main causes of iatrogenic disease

The four main causes of iatrogenic and social risk factors predisposing all diseases in women result from: 1. the increase in the number of operative deliveries due to lack of correct understanding of the relative duration of pregnancy; 2. failure to conduct the measuring of the blood levels of oxytocinases as the most stable enzymes regulating the neuroimmunological state of each pregnancy; 3. discounting the diagnosis of the hypothalamic neurohormonal insufficiency syndromes as the major cause of the pathological course of pregnancies and future life of newborns, and 4. lack of immunopotentialisation using symbiotic bacteria like *Lactobacillus vaginalis*.

According to the existing equivalence of energy, information and mass the different fetal features combine the same ratio of increase of their value relative to the lapse of time between two of their consecutive obstetrical measurements. This allows one to forecast the state and expected birthdate with a precision of ± 3 days instead of ± 3 weeks. For example, preterm birth means a not fully mature fetus born a week or more before the real date of the individual term. Unfortunately, the traditional obstetric calendar scale falsifies reality. Premature births occur at the

latest at the end of the 42nd week of pregnancy, contrary to a popular lie that it can only affect pregnancy before 37 weeks of their duration on the basis of the date of last menstruation, additionally reported by the woman with an accuracy of a few days. Fetuses of the same middle mass (3400g) and height (54 cm) can mature slowly (A), regularly (B), or quickly (C) in different calendar time, correspondingly until: 42, 40 or 37 weeks, e.g. child B born on the 281st day (40^{1/7} weeks) is carried longer relative to child C, but shorter to child A despite the same maturity real-time. Meanwhile performing two ultrasonography measurements of the fetal size two weeks apart, already two or three months before individual birth term one can determine the individual true date of the expected delivery within last few days of pregnancy, when the lungs and heart are adapting to rapid changes in blood circulation and respiration of the child outside the mother's system, which has a decisive influence on the child's life! Therefore, relying only statistics and not on individual clinical data has led for the need to combat "obstetric terrorism" because of frequent interruptions of the natural fetal human development by cesarean section done before the last week of normal pregnancy.

Doctors provide services to people suffering from diseases or disasters or affected by the socio-economic development. The scope of their means is huge, ranging from single words and/or gestures, and ending with the use of space equipment, or the use of even fire, radioactive radiation, a knife (scalpel), or even poisons. At the same time a healthy organism every day eliminates cancer cells through the literally causal power of information. For example, during pregnancy there is increase in the production of hormones and enzymes of the placenta, especially to the synthesis of cysteine-beta-aminopeptidase and isocysteine-beta-aminopeptidase, which decompose neurohormones, the function of which has an essential meaning in the mutual mother-fetus neuro-immuno-endocrine relationship. Maternal blood levels of the oxytocinases (enzymes) show high correlation with the fetal and placental mass as well as with the fetal maturity state. Any damage to the placenta (partial separation, calcification, vascular clots) or only hypoxia, leads to a decrease of the concentration of these enzymes in the mother's blood. On the basis of the rate of change in the levels of these enzymes in the mother's blood one can preview when the danger of miscarriage, premature birth or the death of the fetus has or could occur. Also the biophysical processes are of great importance, since they are related both to atomic level of metabolism and purely physical blood flow and

activity of neurohormonal hypothalamus-pituitary-adrenal axis, which is related to adrenal glands by metabolism of steroid hormones with an analogical axis ended with gonads. Excessive use of steroid hormones not only inhibits gonadal steroidogenesis, but also blocks hypothalamic stimulation of endocrine glands, i.e. gonads and adrenal glands. For instance, the use of contraceptive pills for several months excludes a cyclic activity of gonads, whose role is to prepare a potential mother not only to get pregnant but also to a proper development of pregnancy and fetus, e.g. in case of recurrent miscarriages, necessary adrenal stimulation is rarely used.

The fall of the neurohormones' blood concentration is a natural occurrence only before birth in pregnancies brought to term physiologically, while at an earlier time it signals an endangerment of the pregnancy due to a miscarriage or premature birth. The application of long-acting adrenocorticotropin (ACTH-depot 0.5 mg dose/week) results in the disappearance of symptoms of a premature birth before the clinical abortion become evident. Also pure informational indications exist for the treatment, e.g. history of neurohormonal hypothalamic post pregnancy syndrome, habitual miscarriages, a premature childbirth, shortened or non-existent lactation after previous childbirths, long-term usage of anti-conception pills (especially during maturation years), as well as cytological or colposcopically determined precancerous cervical states. The level of ACTH below 5pg/ml is an indication for a continued substitution therapy with ACTH-depot, because the hypothalamic-pituitary-adrenal axis is more significant for the viability of the fetus than the hypothalamic-pituitary-gonad axis. Also low blood levels of oxytocinases $< 0.8 \mu\text{mol/l/min}$ and isooxytocinases $< 1.4 \mu\text{mol/l/min}$ in an early pregnancy are an indication for beginning the therapy with single 0.5 mg doses of ACTH-depot, while levels of both these enzymes $\leq 4 \mu\text{mol/l/min}$ in the third trimester require their continued weekly use. In women with hypothalamic insufficiency syndromes that have not been diagnosed in time, intrauterine death of the fetus occurs in at least 50% of cases, while the replacement hormonal therapy with adrenocorticotropin of prolonged activity (ACTH-depot) is successful. The constant increase of oxytocinemia up to the time of delivery in 81% of pregnancies and potential stabilization of its level during the last week of pregnancy in a further 12% of cases are the most sensitive indicators of the proper development of fetuses.

Aside from enzymatic monitoring of adrenocortical therapy as the only method used in the last 50 years, currently one may determine the ACTH level in the

mother's blood via laboratory procedure. The role of ACTH in creating a tolerance for the embryo becomes apparent in a slight decrease in pre-pregnancy level of this hormone in women from 14.1 ± 7 pg/ml to 12 ± 6 pg/ml and a return to them in the second trimester (15.4 ± 5 pg/ml) to increase in the third trimester to the highest pre-birth levels of 23 ± 10 pg/ml, which, in contrast to oxytocinases, sharply decrease already during delivery. Every quick increase of the ACTH level in early pregnancy indicates danger and requires a series of ACTH doses as a complementary therapy and is usually effective. The pregnant patients in need of substitution therapy with a clinical endangered pregnancy miscarried in a whole 80% of cases before the introduction of ACTH-depot therapy in obstetrics 50 years ago.

ACTH-therapy is decisive in high-risk pregnancies, especially in multifetal ones enzymatically monitoring of each fetus separately from the 25th week of pregnancy. For example miscarriages, hemorrhages and infections with high fever, as well as premature births are often result of the damage of neurosecreting cells of the hypothalamus, called post pregnancy hypothalamosis, which manifests itself through a complete lack or a significant shortening of lactation, disturbance of menstruation up to its complete disappearance in 16% of cases, infertility, frequent recurring inflammation of the urogenital organs as well as the loss of hair, obesity, and especially neurosis. These symptoms clearly show a system insufficiency both originally neurohormonal and immunological, which can be confirmed via laboratory procedures.

Pathological cellular states regress after a neurohormonal normalization and/or immuno-potentialisation of their surroundings, which e.g. in the case of surgical removal of the neoplasm, especially in the early phase of the illness, greatly enhances the results of oncological treatment. In precancerous states one should use natural means, for example by using symbiotic bacteria like *Lactobacillus vaginalis* co-acting with the organism also in directly combating infectious microorganisms. Thirty years ago in Poland was introduced vaccine comprised of weakened forms of *Lactobacillus vaginalis* (SolcoTrichovac–Gynatren, Lactobim) to battle precancerous states of the cervix uteri in women treated for infertility who were diagnosed with cervical intraepithelial neoplasm and/or a non-specific inflammation of the vagina. The basic elements of an immune system of an organism are both stable cells, for example tissue and organ cells, as well as unstable cells such as leukocyte, erythrocyte, lymphocyte T and B, macrophages, fibroblasts and dendrite cells, which recognize,

fight, and remember the types of pathological microorganisms. They are assisted by the symbiotic bacteria of lactic acid (*Lactobacillus vaginalis*), which in the course of symbiosis use energy and matter from the person's body, and in turn fight and prevent infections.

The colonization of the gastrointestinal tract and vagina by the *Lactobacillus* bacteria is beneficial to the organism, because it strengthens the effectiveness of the neurohormonal and immunological body system, which decreases as the organism ages. In women the disappearance of the *Lactobacillus* symbiotic cells enables the invasion of pathological microorganisms causing not only inflammations, but indirectly causing pre-cancerous states of the cervix uteri, which is determined by the neuro-immunological regulation of the whole system. For example, hypothalamosis syndrome apart from the absence of lactic acid bacteria in 1/3 of the cases is characterized by inflammatory states and an increased number of metaplastic cells in half the cases and in a whole 20% of dysplastic cells, which shows that the organism was not able to maintain the conditions necessary for its symbiosis with the *Lactobacillus*. In these cases, the current hormonal substitution treatment has proven to be insufficient in too many patients. Using Lactobim vaccine not only causes a desired therapeutic effect, but also positively affects the health effect in the future. In addition to the natural somatic defense only humans possess a parallel psycho-emotional mechanism, as well as a brand new method of discovery and subsequent usage of nano-substances selectively destroying pathogenic biological units.

The unique genome of the original cancer cells is recognized as such and attacked by biophysical, biochemical, and by immunological mechanisms, which requires not only time, but a production of specific antibodies for each individual neoplasm. An immunotherapy using lactic acid bacteria differentiates itself from other such therapies by the fact that the vaccine uses cells of symbiotic cells (*Lactobim*), for which the human organism is a natural habitat. This means the person does not mark his antigens as alien to his or her body, as would be the case in, for example, vaccines against tuberculosis. Also, an age-long symbiosis of man and symbiotic or saprophytic microorganisms has led to the evolution of many different of their strains, whose set differs depending on the environment of peoples' lives. Hence not only the type of symbiotic bacteria, but also the proportions of different strains have an influence on the efficacy of different vaccines, which take into

account the physiological flora in the urogenital and gastrointestinal tracts maintaining the proper acidic base in these organs.

Lactovaginal vaccine (Lactobim) is a preventive drug of choice in all grades of cervical intraepithelial dysplasia and the necessary treatment of all chronic or recurrent inflammations of the reproductive organs, induced by pathological bacteria, viruses and parasites. The introduction of lactovaccine to chronically ill women with hypothalamic-pituitary insufficiency presents a new stage in the fight against cancers, and not only ones of the reproductive organs. The emergence of dysplasia indicates that the cell can save its life only in a new cellular form, otherwise it will die. The lactovaginal vaccine should be complemented by supplementation with probiotic solutions containing the symbiotic microorganisms. They not only interact with labile human cells (e.g. macrophages, leukocytes, lymphocytes and erythrocytes), but, first and foremost for the sake of their own existence, they eliminate from their environment any pathogenic organisms. A lactovaginal vaccine, of which a single dose of 0.5 ml contains approximately 7×10^9 inactivated forms of 8 granular strains of *Lactobacillus acidophilus* (3 – *L.vaginalis*, 3 – *L.rhamnosus*, *L.fermentum* and *L.salivarius*) – is a drug of choice and like neurohormonal therapy there are two general directions for the immunotherapy of cancer: a direct one against cancer, and an indirect one, resulting in normalization, or a sufficient change of environment, where the cancer can continue to grow and develop. The indirect therapy has been tested first in the cases of cervical intraepithelial neoplasia (CIN) and works by administering, bi-weekly, three injections of a lactovaginal vaccine, originally produced against trichomoniasis under the name Solco-Trichovac or Gynatren. A single dose induces the formation of antibodies against antigens of pathological micro-organisms (bacteria, viruses, fungi and other parasites) and does not impair, but even promotes the development of lactobacilli. As a result of the stimulation of local and systemic immune mechanisms of the vaginal environment, foreign organisms disappear and the normal flora returns. For example, out of 61 women aged 20–35 years being treated for infertility, in 24 of them there was found a Cervical Intraepithelial Neoplasia (CIN1 – 13 cases, CIN2 – 9 and CIN3 – 2). Already after only two injections the neoplasia disappeared in 13 women (54%), the number of CIN1 decreased by half, and CIN2 and CIN3 disappeared altogether. At the same time in 53% of the cases there disappeared the signs of inflammation and the natural presence of *Lactobacillus vaginalis* improved by just as much. In the other

37 equally treated women (but without CIN), the regression of inflammation went up to 82% and the proportion of natural bacterial flora was higher. Immunotherapy can be compared to the regression of lesions on the cervix of women with hypothalamic insufficiency under the influence of normalization of their state with natural hypothalamic hormones. Women with neurohormonal hypothalamic insufficiency have, cytological detected, precancerous states in more than 10% of cases, and twice as often when detected via colposcopy. When cervical intraepithelial neoplasia (CIN) was found, it was shown that in 67% of cases there was obstetric hemorrhage, 52% have had a shortened lactation and, 70% of cases showed “erosion”. In contrast, in the absence of CIN, patients show statistically significantly less hemorrhage (25%), disorders of lactation (7%) and the existence of erosions (36%).

The lactovaginal vaccine provides a long lasting protection against new inflammations via interaction of symbiotic bacteria. The removal or destruction of the tumor is only the withdrawal of the effect rather than of the cause, and therefore it is necessary to normalize the environment of the cancer via vaccination. The lactovaginal vaccine is indicated in all cases of cervical intraepithelial dysplasia (CIN1-3) and should be complemented by supplementation with probiotic solutions containing the symbiotic microorganisms. They not only interact with labile human cells (e.g. macrophages, leukocytes, lymphocytes and erythrocytes), but, first and foremost for the sake of their own existence, they eliminate from their environment any pathogenic organisms.

Discussion

The main aspects of electronic biocosmological congress: “**Biocosmology and cancer**” were also orally discussed and in next **chapters 3-8** are presented the full texts related to the cognition of information, word and faith. The problem of contemporary integrals conceptions occupies a special place, including the studies on the Earth topic. According to **Xiaoting Liu** Chinese earth-mother philosophy changes the priorities for contemporary scholarly endeavors in the biocosmological perspective that is mostly based on the wisdom of the Earth, which from the immemorial past has been regarded as a kind of God or an object to worship owing to its full production and breeding ability. The coherence of Chinese civilization and the possibility of close observation may be explained e.g. by an interpretation of the two hexagrams: “As heaven maintains vigor through movements, a gentleman should

constantly strive for self-perfection. As earth's condition is receptive devotion, a gentleman should hold the outer world with broad mind". This thought can be regarded as the general principle of Chinese civilization since tenth Century B.C. The second example is Taoism established by Laozi, which directly regards the earth as a mother, human as babies, and Treats Mountains, rivers and vegetation as the limbs and the skin of the earth. Man and nature have primitive high layer identity. The most essential manifestation of the thought of Earth-Mother in China is the so-called Almanac of Earth-Mother, which is a kind of Chinese traditional calendar based on lunar calendar, with each page corresponding one day of a year. In general, therefore, Chinese cultural thought basically is align with organicist type of mentality, wherein Nature essentially has the inherent potentials of self-changeability and self-organization, and wherein humankind constitutes a higher level of the Earth-Cosmic Organicist world. The earth and the heaven are all concrete and sensible, which means both of them have the accessible personified existent. Earth is not only the object of experience and the basis of life, but it is also the world of co-existence with man, which means that the life of man is connected with the life of earth.

In turn, **Li Tong** has undertaken studies of traditional Chinese medicine from the integral's understanding of Chinese Meridians and Collaterals by attributing it to the traditional Chinese philosophy, and expounds the relationship between medicine and human body, combined with organic cosmology. He proposes the future way of life and the ecological nature of the global future in accordance with Chinese medical experience. **Karl W. Kratky** presented three basic principles (in Ayurveda, India – 3 *doshas*; in the Tibetan medicine – 3 *nyes-pas*): kapha (*beken*) is cold, pitta (*tripa*) – hot, and vata (*lung*) – cool. The dominating dosha define each individual for the whole life, modified according to daytime, season, age of life and the digestion. Then **Sijia Wang** presented the constitutive way of biocosmology in Chinese primitive mythology, which concerns the relationship between human beings and cosmos. The most important topic in myth is creationism, as the formation of order. In the early stages of primitive mythology in China, the universe was not described in great detail. Another feature the myth is the coexistence of god and man, and the holistic coexistence of everything get together by some holy mountains or trees. A new composition of exact solutions is in bidirectional, forward and backward information rays in the equation $E = i mc^2$ as real constant and universal.

Walter W. Kofler presented conclusively the incompatibility to justify medicine as a whole as scientifically based on the examples of information and meaning related (psychiatric) diseases on the basis of a hierarchical evolution understanding and the General System Theory. But his proposal to win such a “biopsychosocial model” could not be realized in an epistemologically sufficient way within the different evolutionary levels of a human person as a biopsychosocio (eco-cultural... etc.) person. Another reason is the lack on a proposal to link energy and information related aspects in living and not living entities. The key for the solution can be seen in a new paradigm which can cover all the health related scientific disciplines. Einstein handled a similar problem; two parts of physics seemed to be incompatible: mechanics and electromagnetism. He was able to invent a more basic physical movement without solid matters (mechanics) and electromagnetic fields (electromagnetism). This was a view on physics just based on energetic field. Einstein’s procedure gives a hope to unify medicine. His proposal can be understood also as based on an evolutionary process: Then “beyond” of a universe with electromagnetic fields and solid matter can be seen a universe “evolutionary before” without solid matter but electromagnetic field as such. And “before” that, a universe could be without electromagnetic fields, but just with energetic fields. “Quanta” can be understood as the name for the situation, in which two energetic fields (one playing the role of electric and one of magnetic field) are crossing as close as possible. Einstein’s formula $E=mc^2$ expresses just the energetic aspect of the self-guiding electric fields. There is a need to integrate the additional qualification of energetic fields and their descendants. R. Klimek made such a conclusive proposal: $E=i mc^2$ introducing informational waves and patterns. Medicine deals usually just with so called “light matter” according to the standard model of cosmology, which integrates inflation and Big Bang. From them the human person as a social and final oriented being can be deduced. This evolutionary process (from “Big Bang to Big Mac”) focuses on the needs and must. Walter W. Kofler by his Special Extended View focused on the evolutionary processes of meaning and information for the understanding of the person with a focus on the wishes, options and hopes for so many specialist disciplines.

Xiuhua Zhang remembered the Whitehead’s inheritance and transcendence on Leibniz’s organic cosmology. Whitehead as a founder of the constructive postmodernism tried to transcend Leibniz’s understanding of the universe, namely,

the “windowless monads” are replaced by the “actual occasions” as empirical subjects; the “substantive thinking” is replaced by the “process thinking”; the pure spiritual “apparitions, perceptions, representations” are replaced by the activities of “dipolar pretensions”; the “properties” and “changes” of substances are replaced by the “becoming” and “relationships” of actual entities; the omnipotent Creator is replaced by the poetic God; the predetermined harmony is replaced by actualizing universal civilization through the creative “conrescence” and “evolution”. Although Leibniz and Whitehead lived in different ages and different states, they shared common aspects in many academic fields.

Also **Leonardo Chiatti** presented some considerations about information, in particular the formulation of the unified concept of “space-time” has received considerable attention in the philosophical field. Others see in it an unrealistic denial of freedom and creativity. However, quantum mechanics clearly introduces, with the concept of “collapse of the wave function,” the idea that elementary physical events are manifested, that is, emergent from a “potential” state or condition. This fact reduces the efficient causality that connects the actualized events on the space-time to a particular aspect of the formal causation associated with their actualization. Creativity is thus reintroduced into the physical world, but it is necessary to distinguish between information related to the patterns of actualized events and information associated with their actualization. In L. Chiatti’s view this is a necessary step for understanding psycho-somatic unity and therefore for an aware recondition of medical practice. In fact, the subjective, inner and living dimensions of the world coexist with the external and objective dimension.

According to **Milan Tasić** the idea of anthropoidity as overall cause in the interpretation of the world, has a character of regulatory principle in nature: In everything that occurs, nature (and the man himself) is trying to create entities with the anthropoid principle. Therefore not only the emergence of organic life on Earth is legal, but also the emergence of ratio and consciousness in the role of an “observer”, or the being who is capable what is outside him to do as a part of himself. Namely, the anthropoid principle seeks to show that the vector of evolution has only one direction, which is in it to create an organism, mind, and consciousness, what in the case of human being has been really confirmed. The highest form of organization of matter achieved (so far) in man might indirectly serve to distinguish its laws, the laws of evolution.

Conclusions

Mankind is the highest known form of life, because of man's free will people may consciously act according to the natural laws, as well as against the laws of Nature known to them. A person, created through the unification of generative cells of his grandparents as a unique single cell (zygote) – fulfills himself in social life with other people. The very word is a powerful tool: via information it may help in social life but also literally, through slander, it may be harmful to the health and even lives of people, regardless of their initial health condition, and even increase incidence of diseases in healthy people through aggressive or false advertising of medicines or medical procedures. It must be emphasised that deceitful – and especially mendacious – information, reaches social consciousness, creating a false, often even imaginary reality of the human world. Everyone can change their inner state as to their hierarchy of values and thus contract the disease affecting the society known as baneful anti-humanitarian socially tragic advertisement, ideas or/and agitation, called **basta**. Physician affected by this disease may withdraw the well-known methods and proven on thousands of patients and they applicate the harmful caesarean section without clinical indications.

The goal of fertilization is the creation of a new being to uphold the species. However, the development of the first neoplastic cell only extends the cellular form of life without the possibility of autonomous existence. Cancerogenesis cannot be eliminated, but illnesses which are caused by neoplastic cells can and should be treated, as they can be healed more often by directly fighting the pathogenic factors and indirectly strengthening the whole organism through neurohormonal therapy or immunopotentialisation with vaccines. Due to that, while explaining e.g. the cause of cancer, autoteleology of man was regarded as superior to the technology of social life, in which information often proved to be more effective than its potential matter and energy carriers. Unfortunately, information is often used to agitate for harmful ideas, an example it has been proven that gynaecologists contribute to the increased incidence of the best understood cancer that is cervical cancer. The diagnosis of disease and treatment processes must take into account the whole spectrum of human aspirations, first and foremost the integral and personal notion of man, thus referring to man's properties going beyond matter and energy, to reach his informational "inside" and thus guide the "external" human conduct while preserving the right hierarchy of values, exemplary including unborn child and pregnant mother. Therefore, the causal therapy must take into consideration not only as the indications on the mother's side (e.g. diabetes, thyroid and adrenal gland diseases) or the child's

side (intrauterine development disorder), but first of all to the dynamically changing relationship between these two organisms.

The actual medical goal is the defense of humanity against those workers of the medical profession whose patients become the victims of their improper actions or only ideas (words), what can be illustrated by the clinical meaning of Naegele's rule, which based only on the date of last menstruation before the pregnancy enables to determine expected delivery date with an accuracy of ± 3 weeks! Labor occurred at an improper time is a common obstetrical error, which finds confirmation among others in higher perinatal mortality indexes both at the beginning (weeks 37th/38th) and the end (weeks 41st/42nd) of birth occurrence range in humans. The former is characterized by neglect of assistance in actual preterm labor one week before true individual term, and the latter by preterm labor induction or – even worse – to bring belated assistance in post-mature pregnancies, whose birth date has passed in the former weeks of the calendar scale of pregnancy duration. Mother's organism decides about the life or the death of each fetal microsystem. Thus, the assessment of the newborn's maturity is very important not only for child, but also for the mother as the index of the higher cancer risk. Individual pregnancy ends with reaching full fetal maturity, which is neither mass nor time and cannot be assessed in grams or units of time. The fetal maturity level can be evaluated immediately after labor through obligatory assessment of just six of the many possible newborn features: position of the limbs, elbow angle, its mobility, breast nipple, plantar creases and lanugo. For each of those features one can allocate from 0 to 2 points, which maximally gives 12 technical points (quanta) of full maturity, while immature newborns have less than 6 points. Modern obstetrics has explained the relation of preterm births to cervical cancer which can be promoted among others by many gynecological factors as faulty prediction of birth date, instrumental labor as well as hypothalamic conditioned abortion.

Modern medicine still is using the methods that are borrowed from physics and chemistry, but they all appear to be unable to reach a full understanding of the individual's health and the specific mechanisms of its failure. Entire cells may act as single cell organisms, or properly fulfill their role in biological multicellular structures, only if they have the correct substantial *telic* organization and arrangement. The universe exists due to the eternal, progressively more known and understood natural laws, that is, due to – **information**. In the late XX century the newly discovered law of natural dissipative self-organization the physicists call the local formulation of the second law of thermodynamics, e.g. reducing the activity of

biophysical and/or biochemical changes in a cell can result in the risk of a multicellular organism's existence, but can also help to control the further growth of the species in depending on the true state of reproductive health. Both man and cancer come from individual cells in accordance with the equivalence of matter, information and energy of the same elementary particles of the universe. Their beginning is real information about the existence of each new being, on the one hand belonging to its source, while on the other belonging to the newly created process or structure, i.e. the organization of intrinsic forces that determine the biological, personal, social and ecological development of a living being. Man is not only figuratively moving from his conception to his death, but his personal life is informationally determined by the reproductive cells of the grandparents' zygotes. Also each person can see their own informational character by looking in a mirror in which the image seen (the mirror form) does not contain a single atom of his body, but is only the resonant result of feedback information. Nevertheless, more important feature of living organisms is not life itself, but the ability for its intergenerational transmission. Hence it is important to distinguish between living beings and the universal existence of life. Finally, the existence of cancer confirms the superiority of life in general over the life of every multicellular organism, since all cancer cells, to sustain their own life, can result in self-organization due to active virtual information.

Modern medicine has the features of high technological effectiveness and achieved great successes in curing and management of diseases, but at the same time is also characterized by a so-called "etiological paradox" (in detail, see Khroutski, 2010⁴³), because biomedicine still is unable to disclose and rationalize the aetogenesis of chronic diseases or so far cannot develop a healing approach that enables complete recovery of the persons who suffer from them, including tumoral diseases. The core of the theory of causation has been generated by Aristotle, nearly 25 centuries ago, based on the naturalist etiology. diametrically opposed to present causes of the human beings, which are totally replaced by the significance of the absolutely different external causal precedents (factors, influences, forces, causes) to a disease emergence. Meanwhile healthy pregnancy taken place in optimum condition of the woman's state provides the emergence of the family as the most valuable supporting structure in the natural existence of the human species.

⁴³Khroutski, Konstantin S. (2010). "All-Embracing (Triune) Medicine of the Individual's Health: A Biocosmological Perspective," *Journal of Futures Studies*. Vol. 14, No 4. P. 65–84.

Rudolf Klimek and Dariusz A. Szkutnik

Phenomenological aspect of informative Visual Radiation**Introduction**

The ancients described the world looking for the so-called the reality they have seen. The beginning of pre-scientific knowledge was based largely on the essence of putting fundamental questions, to which science is looking for answers. The methodological postulate of visual radiation was put forward in the Middle Ages by Polish scientist Vitelon, who believed that in addition to light radiation, there is a specific type of visual radiation in the range of colours and shapes, which in his work will be called a specific type of optical radiation. The rapid development of science and technology led scientists to great discoveries, e.g. in Cracow to condense the elemental constituents of air or to finally know the atomic structure of matter in solid, liquid and gas states of concentration and the philosophical meaning of the nothingness concept. The 20th century dominated the interdependence of mass and energy, which contributed to the great progress of science, thus giving cognitive hope to people who believe in the real existence of things that man can see or touch! Nowadays scientists have counted about 4% of the visible matter in the universe and 26% of energy, and the rest counted down to dark energy. Finally, the discovery of gravitational radiation and the formation of the Higgs particle completed the rest, so that nowadays both the image and the sounds of a person through digitalisation can be simultaneously transmuted in the context of the information that next to matter and energy occurs in the equation of dependence $E=mc^2$.

The “look” in the phenomenological cognitive process occupies a special place, because unlike speech it has an unlimited range in receiving and transmitting certain content in relation to another person, i.e. a spatial distance without words. A look can also be one of the elements of knowing reality, which enables the transformation of a letter into sounds (reading aloud or showing its meaning by graphically depicting specific contents (drawing)). It distinguishes it from the behavioural functioning of animals thanks to the specific ability of speech to share with other people their thoughts and experiences. The phenomenological analysis of receiving specific phenomena should examine the object in itself, as an object of given looks, disregarding its relation with possible references, and examines a subject free of

complex character structure and perceptual conditions. Husserl's project of "returning to the things themselves" was aimed at describing direct data, and the phenomenological interpretation of the phenomenon may be seen as an attempt to organize the relationship between vision and thinking, that is between what is sensual and conceptual.

The phenomenological attempt to reach the source experience attempts to show how the object appears through purely visual reflection to the pre-reflective intellect. The category of eye-sighting in the phenomenological tradition meant a specific form of experience in which special attention was devoted to the way the object appeared. First of all, sensory experience (differing from full knowledge of the fact that the subject is as a whole a form of cognitive experience) is also the beginning of knowledge about the world [Coleman, 1966, p. 197–203]. The mere connection of two cognitive sources, intellect and sensuality, according to phenomenologists, leads to a false conception of the transcendental pattern in which sensuality is completely in the possession of the intellect. It seems that the Kantian cognitive model, assuming the recognition of experience through subjective rules and cognitive principles, gave many answers about the intelligible knowledge of the subject, but at the same time lost the pre-reflective moment that phenomenologists pointed to. From Kant's reasoning it was clear that Time and Space are not content in the surrounding world of external objects, but only forms of consciousness imposed on the consciousness of contact with an unknown and unknowable object [Kant, 1919, p. 78–86]. In opposition to Kant's views, there is the general theory of relativity of Albert Einstein, in it a peculiar combination of time and space comes into being: a fourth coordinate is added to the three-dimensional Euclidean space. As the modern physicist Stephen Hawking writes: "An event is something that occurs at a specific point and a specific moment. To determine the event, therefore, four coordinates should be given" [Hawking, 2000, p. 82]. Similarly, Cassirer states: "It turns out that we can understand and present the theoretical relations that occur in the real space only by recreating them in the language of a four-dimensional non-Euclidean manifold" [Cassirer, 2006, p. 99]. Physical time is understood as the real event of reality. Before the experience becomes the subject of cognition it is necessary to look for what may be a natural and primitive "preparatory act". Such a different cognitive genesis accentuates in a specific way of seeing, which can be described as a primary vision, pre-reflective, free from intellectual conditions. We will define this type of pre-

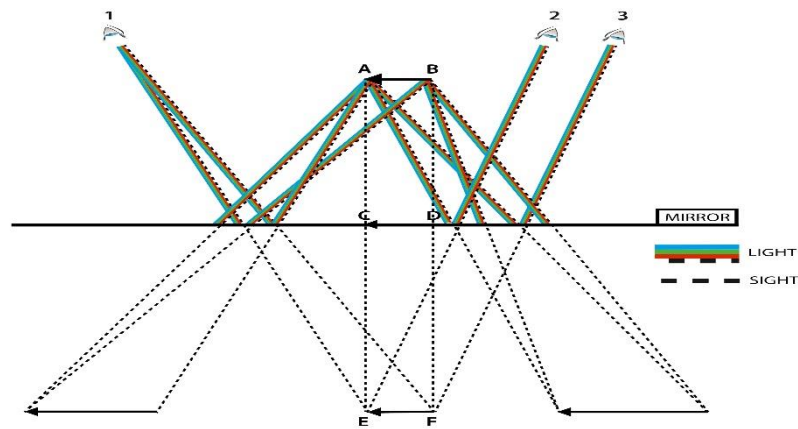
reflective view in further parts of this text as “perception” in the subject-object relation, or in the entity's “perception” and “sensation” of the subject. In addition, the “pre-cognitive” level, which also includes the process of “perception” of various physical phenomena, there are special information relations, which in further stages of cognition are developed and processed by the human intellect.

1. Phenomenological aspect of Vitelon’s visual radiation

All forms of things consist of many visible and detailed features. Vitelon believed that the eyesight sees the forms of visible things, and these things are carnal. Just as there is no size without shape and shape is not without a position – wrote Vitelon – so things do not exist without colour, the colour is not without light, which propagates only in a transparent body. Vision therefore does not perceive any single feature, but it perceives any feature while perceiving visible forms that have a greater number of detailed features. Since no trait itself fills form of object perceived by the senses, it is obvious that it is impossible to see only one trait in isolation from other traits. Always in the form visible to the senses, more features are gathered simultaneously. At the same time, perception always sees many detailed features, which are distinguished only in the imagination with the help of discriminating ability [Vitelon, 1994, p. 82-83]. The emergence of the form-shape of a given object emerges in the further epistemological process supplemented with other attributes of a given thing. Therefore, it can be unequivocally stated that in the process of visual perception of physical reality Vitelon, in addition to light radiation, has distinguished some kind of cognitive aspect of the visual radiation manifested in the phenomenological structures of real reality in the relation of the subject to the object as well as the subject to the subject.

Vitelon distinguished sight, light, colour and shape. Today, scientists translating into modern languages his ten volumes, which were written in the thirteenth and published in the sixteenth century, unfortunately levelled – postulated by Vitelon visual radiation with light. Its message in the form rays of radiation very shaping things is still overlooked. It is well-known that light or heat rays are reflected from the obstacles encountered under the so-called a reflection angle equal to the angle of incidence. Thanks to this the image is visible not only in front of the viewer, but also can be viewed at different angles of view. The carriers of images – as generally now still accepted in science – are electromagnetic waves and thanks to them they can be

fixed technically (photographed). These images, however, are reaching different fields (viewpoints).



In Fig. 1. rays from the object AB (---) form a visible CD and EF images, from which the light propagates in the whole surrounding space. The course of this type of spatial radiation takes place along the road on which real information travels (image) in the direction from the object of observation AB, through the mirror to the observers or cameras of digital transmission records. Transmitted images are successive infograms of the original perception object, i.e. a two-dimensional portrait. Practically, in this context, everyone can see their silhouette visible in the mirror, which reflection does not contain any single atom of the real person. Vitelon's merit is the separation of visual (- - -) radiation from the light rays(🌈).

2. Short historical outline of perceiving the phenomenological reality

The process of light “perception” is colloquially called visible part of electromagnetic radiation, i.e. visible radiation received by the retina of the human eye. Precise determination of the electromagnetic wave length range is not possible here, because every human sight has a slightly different sensitivity – hence 380-780 nm is assumed to be the widest range, although smaller ranges (especially from longer waves) are often given up to 400- 700 nm. In the exact sciences, the optical radiation is subject to the laws of geometric optics, which covers the range of electromagnetic waves from 100 nm to 1 mm in length, divided into three ranges: infrared, visible light and ultraviolet and measured using a similar set of instruments and the same laws of physics. Optics, as a mathematized science of light, allowed to know the world, because all natural forces work by radiation formed a cone whose tip

was located in the centre of the eyeball curvature, and the basis was the surface of the object seen.

The conditions necessary for the proper course of the visual process described by Alhazen include: certain distance from the object, external light source, defined spatial extent and density of the object and transparency of the medium. Bacon added the object's temporal extent and good eye health, while Jan Peckham put a special emphasis on visual irradiation, assigning them an important role in the process of seeing [Lindberg, 1976, p. 108–110]. Jan Burydan, considering whether the external light (lumen) is necessary to see colours depending on the medium, decided that light and colour are necessary for viewing due to the impact on the species. Mikołaj Oresme distinguished between “visual perception” – the internal property of the sensory organ and “visual radiation”, a phenomenon located before or just beyond the eye, the approach preferred by the ancients. His views on this matter were similar to Vitelon's views that “seeing” is passive and generally involves the reception of species or rays emitted by visible objects. According to Wilhelm Ockham, vision was caused by the interaction of visible objects on the organs undergoing them, and by the ability to take these pressures. Thanks to this, the presence of additional carriers such as species or medium seemed superfluous. He distinguished the effects of external objects on the sense of sight: the specific irritation of the eye, maintaining this state in time and inducing the very process of seeing by being its necessary element [Lindberg, 1976, pp. 122–142].

3. From phenomenological acts to Information in interpersonal relations

Man is a social being that is found in certain cognitive relations in relation to exchange thoughts (information) with his surroundings, as well as enables some group collaboration in the discovery of reality. The term “interpersonal communication” was coined by mathematician Claude Shannon and cybernetics by Warren Weaver. In 1948, the researchers presented a model of signal transmission in telecommunications systems (telephone and telegraph), quickly transferred to the area of description of interpersonal communication. Such conceptual conversion of individual categories of a technical objective nature into terms of a subjective nature only changed the transmitter into a sender, and the receiver into a recipient. It should also be noted that to date the most common definition of subject communication is the cybernetic definition, according to which communication is the flow of

information from the sender to the recipient, in which the situational context of causal information exchange takes place, but is not taken into account. [Shannon, Weaver, 1948, pp. 3–16].

Differences in the interpretation of the same statement by several people result from the fact that each of them has their own life experience influencing the way of thinking and understanding speech and the message itself can be done in completely different situations. For people words and their sequences often have a different information meaning. In this cognitive context, subject communication becomes a psychological process in which the individual transmits and receives information during contacts with other people. Speech, mimicry, pantomimic and voice intonation, people pass on certain information to ourselves. It seems that the subject may receive some information about the object in the initial stage of phenomenological cognition, which in the further process is processed by his intellect and may provide a more complete picture of the reality that he perceives, which can be passed towards another group of entities, what we perceive in the categories of information feedback $E = mc^2$ – as an exchange of verbal, vocal and non-verbal signals (symbols) in a given situational context in order to achieve a better level of cooperation. The way in which man speaks by moving the lips, the layout of the lips and eyebrows, the grimace of the face, the expression of the eyes during the conversation – all this testifies to our emotional state and is usually the first reaction to information sent by another person. It should be remembered that in the verbal information transmission process, interference may occur on both the sender's and the recipient's side. Not always the recipient reads the transmitted message in the same way in which the sender issued it. And although sometimes we would like to hide something from our interlocutor, a sudden change of facial expression may reveal our true feelings and opinions. The bidirectional flow of information is so fast that we often do not even realize it. Also the posture of the body expressed during the conversation expresses our attitude towards the other person. Therefore, it should be emphasized that information plays not only a fundamental role in the area of primary phenomenological processes, but also, and above all, is a leading factor in the development of psychology as a science. However, its dynamic form found in reciprocal (subjective) feedback can't be captured in Shannon's technical telecommunications dependencies. Such a static approach to information does not

express or explain its complex essence in the complex cognitive reality of a human being or a group of people.

4. Two-way nature of information

Information works always bi-directionally and moves with unimaginable speed. Metaphorically, we can say that the beginning of its path coincides with its destination. This approach confirms and explains the theory of being, which treats the properties and essence of the cosmos as an inseparable matter-energy-information whole, understood as a dependence in quantum approach, described by the equation $E = mc^2$. It seems, however, that information for research purposes can be separated from the material-energy wave of light composed of photons. In the prolongation of the light rays the two-dimensional visual beams, precisely the informative rays and light rays follow, in every place of space, by resonance with analogous information waves, create an informgram of the original object! This phenomenon of resonance is commonly used in imaging the internal state of the body by means of nuclear magnetic resonance, where the electromagnetic field leads to technically resonant only atoms of selected elements, and their behaviour not only can detect cancer and/or the place of their potential self-organization and, as a result, the onset of cancer diseases. Similarly, the whole person resonates to an even single word, if he understands it and wants to how much he can use the information he carries. Such an intangible component of every being also initiates human material and energy changes.

The prolongation of invisible rays of information on the principle of just resonance of information pattern field creates an informational image of the original object (portrait) without the participation of its atoms, that is, material and energetic components. Man sees his informative character in the mirror as he can literally see black holes in space and record their rise or disappearance. In the life of a man towards a large scope, the notion of “look” belongs to these information definitions, whose understanding always depends on their personal acceptance. The gaze is understood as both sensations related to the organ of sight and mental generalizations in relation to the whole world, starting with saying: a glance, as a short and quick look at anything, but also pleasant or hostile, which most often feels than in any way can be justified as in the proverb: Out of sight, far from heart.

Conclusion

Information, together with inextricably linked matter and energy, determines not only the organization of the universe, but also is a source of sensory and intellectual cognition. Already in Antiquity, Vitelon put forward a proposition of a specific visual radiation (radiation of colours and shapes) which today is called by us information radiation, and which permeates whole biocosmic spacetime. Visual radiation – colours and shapes rays next to light, is the element conditioning the phenomenological (preliminary) process of cognition, which takes place in the subject-object relationship, based on the mutual relations of coupling the dizzying matter, energy and information. The phenomenological process of cognition thus becomes a kind of basis for the construction of a conceptual grid by the intellect of the subject of the existing reality, which can be passed on to another entity or a group of entities. In this way, information becomes not only the basic category of phenomenology (as the science of cognition) and psychology, but also is the basic physical parameter, next to matter and energy constituting a fundamental element of the surrounding universe, $E=i mc^2$.

Bibliography

- Bremer, J., Khroutski, K.S., Klimek, R., Tadeusiewicz, R. (2017). “Challenging integralism, Aristotelian *entelechy*, *hyle* and *morphe* (form), and contemporary concepts of information, touching upon the etiological issues of carcinogenesis (with reflecting feedbacks of Paul Beaulieu, Ana Bazac, Anna Makolkin, Leonardo Chiatti, Milan Tasić and Dariusz Szkutnik)”, *Biocosmology– Neo-Aristotelism* Vol. 7, No 1 (Winter 2017) 8–111.
- Cassirer, E. (2006). On Einstein's theory of relativity, Kęty.
- Coleman, F. J. (1966). A Phenomenology of Aesthetic Reasoning, *The Journal of Aesthetics and Art Criticism* 25 [2].
- Hawking, S. (2000). A Brief History of Time, Warsaw.
- Hawking, S. W. (1974). Particle creation by black holes. [In:] *Quantum gravity; Proceedings of the Oxford Symposium*. Harwell, Berks., England. (A76-11051 01-90) Oxford, Clarendon Press, 1975.
- Kant I. (1919). *Kritik der reinen Vernunft*, Leipzig.
- Khroutski, K.S. & Klimek, R. (2018) “Biocosmological definition of information and its naturalist causal significance,” *Biocosmology-Neo-Aristotelism* 8(2): 204–262.
- Klimek R. (2014). Threefold material-informational-energetic reality: $E=i mc^2$ *Biocosmology – neo-Aristotelism* Vol. 4, No. 4 (Autumn 2014), pp. 405–415.
- Klimek R. (2015). *Psychoneurocybernetic Conquest of Carcinogenesis and Cancers*.

Nova Biomedical, New York.

Klimek R. & Szkutnik D.A. “Informative character of the visual radiation,” *Biocosmology-Neo-Aristotelism*, Vol.8, No. 2 (Spring 2016): 300–313.

Lindberg, D. C. (1976). *Theories of vision from Al-Kindi to Kepler*, Chicago.

Medawar, P. B. (1969) *Induction and intuition in scientific thought*. London.

Shannon, C. & Weaver, W. A (1963). *Mathematical theory of communication*. United States of America.

Szkutnik, D.A. (2018). “Aristotle's and Hans Driesch's substantial form and entelechy,” *Biocosmology – Neo-Aristotelism*. Vol. 8, No1 (Winter 2018): 74–89.

Klimek, R. & Szkutnik, D.A. (2018). “Informative character of the visual radiation in the phenomenological aspect,” *Biocosmology– Neo-Aristotelism* Vol. 8, No2 (Spring 2018): 300–313.

Joseph Bremer

The Informational Turn and the Philosophy of Information*Ignatianum Jesuit University in Cracow***Introduction**

In the beginning there was information. The word came later. The transition was achieved by the development of organisms with the capacity for selectively exploiting this information in order to survive and perpetuate their kind.²The philosophy of information, just like any other cases of human intellectual advancement, calls out to be interpreted and re-interpreted in terms of what is of relevance to present-day scholars. Progress in other fields, such as the medieval theory of knowledge, the theory of being, or the theory of interpretation, has brought to light problems that have since had to be elaborated in more systematically rigorous terms, albeit augmented by historical considerations. Such proposed elucidations offer new perspectives on the past, and such an enhanced understanding of the latter can itself then lend support to some new ways of presenting current issues in the philosophy of information. Nevertheless, it is reasonable to assume that it also relinquishes certain problems that have resurfaced under diverse names ever since ancient times. The history of the philosophy of information does not exhibit any unproblematically straight progression from Plato, Aristotle and Thomas Aquinas to our current intellectual situation as represented, for example, by such scientists as Rudolf Clausius, Claude E. Shannon or Robert Rosen.

The primary aim of this article is to formulate the kind of broad-based but elementary conception of information that is what is above all needed as a basis for outlining the main ideas presented in the philosophy of information. Its secondary goal is to offer a brief account of the current state of the concept of information in biology, such as will serve to exemplify the connections between historical and contemporary ways of understanding information. At the same time, the abovementioned aims also furnish an opportunity to introduce the philosophy of information as a fully-fledged field of properly conceived interdisciplinary research.

1. What does “information” mean?

The word ‘information’ has been given different meanings by various writers in the general field of information theory. It is likely that at least a number of these will prove sufficiently useful in certain applications to deserve further study and permanent recognition. It is hardly to be expected that a single concept of information would satisfactorily account for the numerous possible applications of this general field.²⁶ Information, as a concept, has many meanings. The concept of information is closely related to notions of constraint, communication, control, data, form, instruction, knowledge, meaning, mental stimulus, pattern, perception, and representation. In its most restricted technical meaning, information is an ordered sequence of symbols. “Information is a high-frequency and low-content phrase that permeates our ordinary language without attracting much attention, since its meaning has long eroded”.²⁷

Etymologically, the concept of information comes from Latin, via French, through an integration of the term “inform”, meaning “to give a form to the mind”, with the suffix “-ation”, indicating a noun of action. This earliest definition of “information” relates to instances of training or moulding of the mind. In the 15th century, the French word “information” emerged in everyday language as possessing a whole cluster of meanings: “investigation”, “education”, “the act of informing or communicating knowledge”, and “intelligence”. The technical term “information” then practically disappeared from philosophical discourse, as though it had quite lost its attraction. Instead, when the English empiricists went back to the original Platonic source that had first inspired it, they coined the term “idea” (derived from the Platonic *eidos*). We may read, for example, of “whatsoever is the object of understanding when a man thinks... whatever is meant by phantasm, notion, species, or whatever it is which the mind can be employed about when thinking”.²⁸ The great philosophical adventure consisting in the exploration of this notion of “idea” would then unfold from David Hume, through Immanuel Kant and the German idealists, right up to Edmund Husserl and beyond. Nevertheless, if we return to the term “information”, we can see from the history of both philosophy and science that it has had many more lives than just one. Aristotle begins his discourse on metaphysics with the assertion that all human beings have the desire to acquire knowledge, to have information: “all men by nature desire knowledge”.²⁹ He then seeks to extract significant implications from this idea of the human need for knowledge: some of the

men or women that have knowledge also acquire the power of that knowledge, while others appraise knowledge or information for its own sake, entirely separately from its utility or power. Aristotle mentions the pleasure taken in sense perception and, especially, in vision, the sense that differentiates the largest number of discernible forms. Plato, meanwhile, expressed the pleasure we take in vision in a still more drastic way in the *Symposium*, by attributing it to a demoniacal authority, Eros, who raises human beings up from the world of everyday life to the domain of pure intelligible structure. Eros mediates between the wise and the ignorant, the beautiful and the ugly, good and evil, and the mortal and the immortal.³⁰ His works present what amounts to a poetic characterization of the philosophical nature of human beings, but they also highlight the question: what type of knowledge and information can be considered typically philosophical? Similar questions have played a formative role in shaping philosophical thought over the course of subsequent centuries.

In the works of Plato and Aristotle (both of whom count as amongst the founding fathers of Western philosophical thought), we may encounter both a poetic and more drily rational commentary on the universality of that which is the chief object of veneration within philosophy itself. Both of them aim to replace mere opinion with genuine knowledge. They value truth that is universal more highly than any other more narrowly specific kinds, and define knowledge, wisdom and information, in the strict senses of these terms, as something that should be distinct and clear. The medieval concept of *informatio* is presented by, amongst others, Thomas Aquinas (1225–1274), in his theory of knowledge, and is compatible, according to his overall understanding, with the principles of Aristotle’s philosophy: i.e. with his own conviction that philosophy must be pursued and discussed on philosophical grounds, and that Aristotle’s philosophy can itself prove useful in substantial and significant ways when seeking to explore a Christian understanding of the human being and his or her place in the world – even though Aristotle was not, of course, a Christian philosopher. Descartes, meanwhile, commented on the way in which the human ocular lens functions, as well as more generally on the multiple ways in which information is transmitted via the eye to the brain.³¹ Behind his concept of “information flow” stands his conception of the human body as being analogous, with respect to its function and structure, to a machine.

Although information has long been allied with language and coding, our modern concept of information only really emerged with 19th-century physics. When

explaining macroscopic events in terms of large quantities of discontinuous microscopic ones, Rudolf Clausius introduced the statistical notion of entropy. Entropy measures the number of different microscopic states that a macroscopic system can be in. The entropy in a container is higher if the particles are evenly distributed over the space in the container. With this concept, Clausius formulated what we today call the Second Law of Thermodynamics: a closed system either persists in the same state, or it becomes more disordered over time: i.e. its entropy can only ever grow.³² According to the aforementioned Second Law, the entropy is an extensive state variable of the system. This means it is proportional to the size of the system, and at any time only depends on the state of that system. Clausius summarized the laws of thermodynamics with his famous concise statement: [A] “The energy of the universe is constant – the entropy of the universe tends toward a maximum”. Ipso facto, his summary [A] ends with what amounts to a disturbing observation from an informational point of view. Thanks to Boltzmann, the notion of statistical entropy later came to be transferred into mathematical statistics and information theory. In this manner, during the last century, “information” became a theme for mathematical theory – especially with the ground-breaking article of Ronald Fisher on the foundations of statistics.³³ Indeed, the whole of probability theory might thus be seen with some justice as amounting to a de facto form of information theory.³⁴ Objective probability would then turn out to be more closely related to physicalist perspectives, with subjective probability being more strongly associated with information as used by rational human beings.

The ground-breaking prototype here is to be found in the work of the mathematician and engineer Claude E. Shannon (1916-2001) on channel transmission, which has come to be associated above all with the term “information theory”. Shannon defined the quantity of information generated by a source – for example, the quantity of information in a message – using a formula analogous to the equation that defines thermodynamic entropy. In information theory, the concept of entropy characterizes how much information there is in a given signal or event.³⁵ Informational entropy will be the number of binary digits required to encode a given message. Shannon’s enlargement of Boltzmann’s conception of entropy to include probabilistic processes has since served as the starting point for all quantitative discussion in this domain, without major modification or adjustment to specific contexts. Undoubtedly, though, entropy is frequently still also understood in a more

restricted thermodynamic sense, as the information contained in the random motion of microscopic particles manifested as heat. According to D. Chandler's conception, the strong points of Shannon's model are its simplicity, generality, and quantifiability, and such positive features have made the model attractive to several scientific disciplines. It has, moreover, drawn justified attention to human communication and "information theory" in academic circles, prompting further levels and directions of research and inquiry. At the same time, though, Chandler criticizes Shannon's model when he states that it assumes communicators to be isolated individuals and makes no proper allowance for differing purposes, diverging interpretations, unequal power-relations, or situational contexts.³⁶

As is consistent with our longstanding understanding of the term, information is taken to be related to data: it has, or carries, "content". On the one hand, in order to elucidate this idea, the philosophy of information has coined the concept of "semantic information", which construed as strongly related to such notions as "reference", "meaning" and "representation": semantic information has intentionality, in the sense of "aboutness" – it is directed to other things.³⁷ On the other hand, in the field of the empirical and theoretical sciences certain problems are phrased in terms of a notion of information that is held to be amenable to quantification. At present, we find this mathematical point of view with regard to information being exhibited in several different formalizations, each appropriate to its own version of the underlying concept.

2. Information in biology: Aristotelian and contemporary approaches

The role and contribution of Shannon's information theory to the development of molecular biology has proved an object of lively debate over the course of the last thirty years or so. The theory not only furnishes a technical tool for analysing DNA and proteinic sequences, but also holds out the prospect, at least, of performing a higher-level role by influencing the construction of a suitable model for the handling of genetic information across the whole field of molecular biology.³⁸

Although Aristotle's methods and biological theories must seem somewhat primitive to modern humanity when compared to the work of Shannon, any serious history of biology has to commence with his zoology. We are indebted to him for one of the very first studies of living beings, and of the natural world, and that alone is enough to ensure him an important place in scientific history. His research amounted

to a quantum leap in the advance towards the complex structure of human biological knowledge we have today in the form of genome codes, connectome projects, microbiology, and evidence-based medicine. His zoology is something that every modern biologist must learn about, representing as it does an excellent model of how to establish a structure of knowledge based upon attentive observation with the naked eye. For him, the strongly reductionistic methods of contemporary science would be inappropriate when it comes to attempting to understanding living organisms. In his book *Life Itself*, Robert Rosen (1934-1998), a theoretical biologist and biophysicist, makes a number of references to Aristotle's theory of causation.³⁹ One term essential to Rosen's concept of "relational biology" is "function". In the quotation below we see him casting this idea in objective terms: Suppose... we are given a system, or better, a state that is perceptibly heterogeneous; one part looks different, or behaves differently from another part. If we leave the system alone, some autonomous behaviour will ensue. On the other hand, we can ask a question like: if we were to remove, or change, one of these distinguishable parts, what would be the effect on that behaviour? It involves a new element, not merely observation, but wilful active intervention. The result of that intervention is, in effect, the creation of a new system which can be regarded as a kind of perturbation or mutilation of the original one.⁴⁰

In accordance with what Rosen writes, when we interfere with a system (such as an organism or an ecosystem) we diminish its autonomy, thereby creating a new, poorer modification of the original. There exists a layperson's term – "information" – that refers to autonomous eco-systemic processes operating with the optimal degree of integrity in the absence of human intervention. Rosen himself speaks of both the function and the self-identity of such systems, and as Aristotle would no doubt say, there is a considerable difference between a random accumulation of elements and an organized whole. "Integrity" here denotes the evolutionarily, naturally optimal state of the organized whole. Classical reductionist science fails to give us anything like a full account of what causal reasoning involves, because of its dogmatic insistence that science can only deal with questions of "how?", and never questions of "why?" The fruitful biological ideas of Aristotle in this area have therefore been proscribed. In fact, the version of information theory used in classical reductionist science has been limited to a highly formal and fruitlessly syntactical conception of this rich semantic area. To be sure, the idea of asking "how?" fits perfectly with the restricted domain of the Cartesian machine metaphor: we ask how machines work, and our answer to just

this question is what defines the machine. Had we proceeded to then ask “why?” a machine exists, we would have been led naturally to the issue of Rosen’s “function”.

Aristotle proposed four ways to answer the question “why?”, and according to him, understanding and explaining a natural being indicated a grasp of all of these four different, but nevertheless closely related, perspectives. Posing the abovementioned question means that one seeks to identify the main factors in the process of actualizing a potentiality. In line with Aristotle, “science” just means “causal knowledge”: knowledge about what causes are is crucial for each and every science. We have knowledge of anything only when we have understood its four causes. Since we think that we understand something when we know its explanation, and there are four sorts of explanation (one, what it is to be something; one, that if certain items hold it is necessary for this to hold; another, what initiated the change; and fourth, the purpose), all of them are proved through the middle term.⁴¹ This can be construed in the following overall way: we seek to know the essence (the “suchness”), the necessary conditions, the (efficient) cause, and the purpose. In this sense, Aristotle’s “causes” are often better thought of as “explanations” or “reasons”.

The causal explanations for which Aristotle sought in his role as a biologist should demonstrate in what way some of the features that differ among members of a species can be traced back systematically, by means of the mechanisms of heredity, to the same features present in their ancestors. He does not say precisely which features are inherited, but it is clear that at least some of them will be features below the level of the species – creatures that vary from one individual to the next. Aristotle offered an inheritance theory of animal organisms, to the effect that perhaps females, like males, cooperate in delivering actual material to the foetus – a form of female semen, and that the foetus might be formed from the reciprocal contributions of male and female elements. Using analogies, he called the male contribution a “principle of movement”, where “movement” was not meant to literally designate “motion”, but rather “instruction” or “information”. Using contemporary terminology, such “movement” might well be referred to as “code”. The actual material exchanged during sexual intercourse was merely a substitute for a more obscure and mysterious exchange. Matter, in point of fact, was not really matter; what was transferred from man to woman was not matter, but an informational message. Like a carpenter’s handiwork operating on a piece of wood, the male semen served to transport informational instructions to the flesh and blood of the child.⁴²

Where contemporary reductionist science tends to look to identify the cause for a particular phenomenon, Aristotle sought to identify no less than four different kinds of causation: “formal”, “material”, “efficient” and “final”. The first three of these conform – more or less – with current scientific notions of causation, with material causation corresponding to the initial conditions leading to a particular being, formal causation corresponding to the set of dynamic rules to be applied to the initial conditions, and efficient causation corresponding to the particular application of those rules to the particular initial conditions to produce the being in question. In contrast, modern science only marginally acknowledges final causation – the category Aristotle regarded as being of paramount importance – inasmuch as final causation includes the teleologicality exhibited in goal-directed action. Clearly, these “four explanations” furnish us with far more information about the “why?” of an organism than the usual notion of information theory ever could. On that basis, Rosen applied his causal version of category theory to a relational model of the living organism to respond to the question “How does an organism differ from a machine?” by asserting that the fact that an organism is not a machine should have been obvious from one crucial fact: namely, that in all the years of investigative research, even using the most advanced contemporary methods, we have not come even close to reverse-engineering the simplest organism. There is a different kind of information that would be needed for such engineering: something else, for example, which we have to know about a given organism – about “why” it possesses such a vital function as its metabolism, say, or “why” it exhibits its own process of constantly ongoing “self-repair”.

3. The philosophy of information as a mature field of properly conceived research

For some time now, contemporary philosophers have been engaged in investigating the new intellectual issues emerging from the world of information and the information society, and in this respect the philosophy of information, as a sub-discipline, actively seeks to broaden the existing boundaries of philosophical research. At the same time, it does so not by comparing or merging previously discussed topics – such as the principle of being (*arche*), the interdependency of being and consciousness, or existential questions – but rather by reorganizing the program of philosophical inquiry itself, opening up and initiating new areas of

philosophical research and seeking out new research methodologies.⁴³Hence, the following question arises: can the philosophy of information as it stands today be considered a mature field of properly conceived research? One can only hope so. In this regard, on the one hand, we are driven mainly by our contemporary, globalized culture, and the increasing dependence of society on information technology, while on the other, this shift impacts upon our understanding of the history of philosophy itself, and of the dynamic forces that regulate the development of philosophical systems. So what kind of philosophy of information is to be expected? To answer this question, we must on the one hand strive for a clearer view of the philosophy of information as it relates to the history of human thought (Plato, Aristotle), and on the other keep track of developments in modern science (Rosen, Shannon...). Here we can only offer an outline sketch of the sort of path of inquiry that can be foreseen in this regard.

Philosophy continues to grow because it limits the areas of its own research, handing some of them over to particular branches of science.⁴⁴ The more complex the world and the task of its scientific description become, the more important must seem the level of philosophical discourse understood as *prima philosophia* – i.e. that which distances itself from all unwarranted assumptions and misleading forms of inquiry, such as may wrongly be thought to belong within the normative heuristic activity of conceptual modelling. This discourse must be cognizant of research in the history of philosophy, in order to accomplish a transcendental move as far as the research associated with the philosophy of information is concerned: that of moving into the more and more abstract and optimized conditions pertaining to new possible areas of study, while keeping in mind not only scientific forms of explanation but also modifications to them, and innovations, stemming from philosophy.

References

- ¹ B. Lown, *The Lost Art of Healing: Practicing Compassion in Medicine*, Boston: Houghton Mifflin, 1996 (2nd edition: 1999), p. 61. Dr. Lown's work has contributed considerably to an understanding of the role of psychological factors in the realm of cardiac pathology. In 1985 he received the Nobel Peace Prize. Cf. S. Alexander, *The Origins of Physicians for Social Responsibility (PSR) and International Physicians for the Prevention of Nuclear War (IPPNW)*, *Social Medicine*, Volume 7, Number 3, October 2013, pp. 120-126.
<http://www.socialmedicine.info/>

- 2 L. Wittgenstein, *Tractatus Logico-Philosophicus*, translated by C.K. Ogden and F.P. Ramsey (London: Routledge & Kegan Paul, 1922); L. Wittgenstein, *Philosophical Investigations*, translated by G.E.M. Anscombe, 3rd ed. (Oxford: Blackwell, 1968).
- 3 See, e.g., L. Wittgenstein, *Philosophical Investigations*, § 23.
- 4 Plato, *Gorgias*, in: J. M. Cooper (ed.) *Plato. Complete Works*, Indianapolis: Hackett Publishing Company, 1997, pp. 791-870, 456b [p. 801], [This dialogue translated by D.J. Zeyl]. Cf. 456b-457c.
- 5 Aristotle, *Rhetoric*, 1356a 2, 3 [por. 1356a, 1-26], in: *Complete Works of Aristotle*, Volume 2: *The Revised Oxford Translation*, Edited by J. Barnes, Princeton: Princeton University Press, Bollingen Series, LXX, 2, 1991. Cf. Aristotle, *Topics*, 149b25; *Rhetoric*, 1355b26f.
- 6 In English the transitive verb “to perform” is used not only to describe something occurring within a given reality, but also something that may itself count as changing social reality. Cf. the following dictionary definition: “to do in a formal manner or according to prescribed ritual”, Merriam-Webster <<https://www.merriam-webster.com/dictionary/perform>>.
- 7 See Austin, J.L. *How to Do Things with Words*, Oxford: Clarendon Press, 1962, p. 2. Cf. V. Kalitzkus, P. F. Matthiessen, *Narrative-Based Medicine: Potential, Pitfalls, and Practice*, *The Permanente Journal*, 1/13, 2009, pp. 80–86 <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3034473/>>.
- 8 Palmer, F.R. 1981. *Semantics*. Cambridge: Cambridge University Press; Miroslav Černý, *On the Function of Speech Acts in Doctor-Patient Communication*, 2007, <<http://www.phil.muni.cz/linguistica/art/cerny/cer-001.pdf>> ISSN 1801-5336. Černý distinguished five categories of speech acts: statements, questions, answers, directives, and reactives.
- 9 Extracted from J. Searle, *Speech Acts. An Essay in the Philosophy of Language*. Cambridge: Cambridge University Press, 1969, pp. 57ff. Barry Smith, *Towards a History of Speech Act Theory*, in: A. Burkhardt (ed.), *Speech Acts, Meanings and Intentions. Critical Approaches to the Philosophy of John R. Searle*, Berlin/New York: de Gruyter (1990), pp. 29–61.
- 10 From c. 1300 onwards, “touch” is used in the transitive sense of “to bring into physical contact”, <<http://www.etymonline.com/index.php?term=touch>>, cf. B. Goldschmidt, N. van Meines, *Comforting Touch in Dementia and End of Life Care: Take My Hand*, London: Singing Dragon, 2012, pp. 25-36.
- 11 Cf. J. Bremer, *Aristotle on touch*, *Forum Philosophicum*, 1/16, 2011, pp. 73–87.
- 12 M.J. Hertenstein, R. Holmes, M. McCullough, D. Keltner, *The Communication of Emotion via Touch*, *Emotions*, 4/9, 2009, pp. 566–573.
- 13 Cf. U. Lynn, *Gestures in dictionaries: Physical contact gestures*, in: C. Mueller et al (ed.), *Body – Language – Communication*, Vol. 2, Berlin: Walter de Gruyter, 2014, pp. 1502-1511 [pp. 1505–1507].
- 14 Dr. Bernard Lown’s Blog, <https://bernardlown.wordpress.com/2010/11/14/the-lost-touch/>

- 15 B. Lown, *The Lost Art of Healing*, Boston: Houghton Mifflin, 1996 (second edition: 1999), p. 82. See: P. Morin, G. Reiss, *Inside Coma: A New View of Awareness, Healing, and Hope*, Santa Barbara/CA: ABC-CLIO, LLC, 2010, p. 80. In his book, Lown discuss the simple instruction he received from a Russian physician: “Every time a doctor sees a patient, the patient should feel better as a result” (p. 124). He spends most of his book trying to convince us that doctor–patient dialogue is the only solid way to ensure a positive medical outcome. “I know of few remedies more powerful than a carefully chosen word. Patients crave caring, which is dispensed largely with words” (p. 332).
- 16 L. M. Macdonald, *Expertise in Everyday Nurse–Patient Conversations. The Importance of Small Talk*, *Global qualitative nursing research*, 3, 2016; <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5342634/>>, doi:10.1177/2333393616643201.
- 17 Dr Bernard Lown’s Personal Blog, <<http://bernardlown.wordpress.com/2008/11/18/the-doctor-as-a-placebo/>>.
- 18 Cf. M.B. Strauss (ed.), *Familiar Medical Quotations*, Boston: Little Brown and Co., 1968, p. 410.
- 19 Natasha K. J. Campbell, Amir Raz, *Placebo science in medical education*, in: Amir Raz and Cory Harris, *Placebo talks: Modern perspectives on placebos in society*, Oxford Scholarship Online, 2016, pp. 83-98 [p. 88].
- 20 Ibid. p. 88.
- 21 J.R. Searle, *Speech Acts: An Essay in the Philosophy of Language*, Cambridge: Cambridge University Press, 1969, p. 68.
- 22 J.R. Searle, *Speech Acts: An Essay in the Philosophy of Language*, p. 17. Cf. J. Ruytinx, *Speech acts, truth and reality*, in: *Logique and Analyse*, 117-118, 1987, pp. 167–172 [p. 168].
- 23 J.R. Searle, *Speech Acts, Mind and Social Reality*, in: G. Grewendorf, G. Meggle (eds), *Speech Acts, Mind, and Social Reality: Discussions with John R. Searle*, Dordrecht: Springer, 2002, pp. 3-16 [p. 7-8].
- 24 Cf. A. Miles, *On a medicine of the whole person: away from scientific reductionism and towards the embrace of the complex in clinical practice*, *Journal of Evaluation in Clinical Practice*, 15, 2009, pp. 941-949. Cf. J. P. Meza, D.S. Passerman, *Integrated Narrative Medicine and Evidence-Based Medicine. The Everyday Social Practice of Healing*, London: CRC Press, 2011. Cf. V. Kalitzkus, P. F. Matthiessen, *Narrative-Based Medicine: Potential, Pitfalls, and Practice*, *The Permanente Journal*, 1/13, 2009, pp. 80-86 <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3034473/>>.
- 25 Dretske, F., *Knowledge and the Flow of Information*, Cambridge, MA: MIT/Bradford, 1981, p. vii.
- 26 C.E. Shannon, *Collected Papers*, edited by N. J. A. Sloane and A. D. Wyner, New York: Institute of Electrical & Electronics Engineers, Press, 1993, p. 180. For the engineer C. Shannon, information is a transmissible state that is not defined semantically as a meaning of intentional content, but as one of a “set of possibilities”. D. Baecker, *Why Systems?*, in: *Theory, Culture & Society*, 1/18 pp. 59-74 [p. 66].

- 27 Pieter Adriaans and Johan van Benthem, Introduction: Information is what Information Does, in: Handbook of the Philosophy of Science, Volume 8: Philosophy of Information, Volume editors: Pieter Adriaans and Johan van Benthem. General editors: Dov M. Gabbay, Paul Thagard and John Wood, Elsevier, 2008, p. 5–28 [p. 1].
- 28 J. Locke. An Essay Concerning Human Understanding, J. W. Yolton, ed., Dent, London and Dutton, New York, 1961, I,i,8.
- 29 Aristotle, The Metaphysics, Arcadia e-book 2016, Edited by Roger Bishop Jones, 1013a (Book 5, sec. 2). Translated by W.D. Ross, 980a22.
- 30 Cf. Plato, Symposium, <<http://classics.mit.edu/Plato/symposium.html>> 202a2-9, b 1-5, d 10-e 1. Translation: Benjamin Jowett.
- 31 Cf. Desmond M. Clarke, Descartes’s Theory of Mind, Oxford: Clarendon Press, 2003, pp. 55-57.
- 32 The Second Law of Thermodynamics, or so-called Law of Entropy, uses the concept of entropy to express the everyday experience that transformations of energy and matter are unidirectional. For the “generalized second law of thermodynamics”, cf. M. Zubair, S. Bahamonde, M. Jamil, Generalized second law of thermodynamic in modified teleparallel theory, The European Physical Journal C (2017) 77: 472. <https://doi.org/10.1140/epjc/s10052-017-5043-y>; cf. Günter Jakob Lauth, Jürgen Kowalczyk, Thermodynamik: Eine Einführung, Berlin-Heidelberg: Springer-Verlag, 2015, p. 129.
- 33 Cf. Mark Burgin, Theory of Information: Fundamentality, Diversity and Unification, Singapore: World Scientific Publishing Co, 2010. p. 545.
- 34 See Ian Goodfellow, Yoshua Bengio, Aaron Courville, Deep Learning, Cambridge/MA: The MIT Press, 2016. “While probability theory allows us to make uncertain statements and reason in the presence of uncertainty, information allows us to quantify the amount of uncertainty in a probability distribution” (ibid. p. 52). “Information theory is a branch of applied mathematics that revolves around quantifying how much information is present in a signal” (ibid. p. 71).
- 35 C.E. Shannon (together with Warren Weaver) present the idea of information entropy in the article entitled “A Mathematical Theory of Communication”, The Bell System Technical Journal, Vol. 27, July, October, 1948, pp. 379–423, 623–656. Cf. J. Bremer, K. Khroutski, R. Klimek, R. Tadeusiewicz, Challenging Integralism, Aristotelian Entelecheia, Hyle and Morphe (Form), and Contemporary Concepts of Information, Touching upon the Aetiological Issues of Carcinogenesis, in: Biocosmology – Neo-Aristotelism. Official Organ of the Biocosmological Association <<http://en.biocosmology.ru>> Vol. 7, N. 1, Winter 2017, pp. 9-55 [here: pp. 35-36].
- 36 Cf. D. Chandler, The Transmission model of Communication, 1994/2000, <<http://visual-memory.co.uk/daniel/Documents/short/trans.html>>.
- 37 Cf. L. Floridi, “Semantic Conceptions of Information.” In: E. N. Zalta (ed.), The Stanford Encyclopedia of Philosophy (Spring 2013), URL = <<http://plato.stanford.edu/archives/spr2013/entries/information-semantic/>>.

- 38 Francesco Fabris, Shannon's information theory and molecular biology, *Journal of Interdisciplinary Mathematics* Vol. 12, No 1, 2009, pp. 41-87
<<http://dx.doi.org/10.1080/09720502.2009.10700611>>
- 39 Cf. R. Rosen, *Life Itself: A Comprehensive Inquiry Into the Nature, Origin, and Fabrication of Life*, New York: Columbia University Press, 1991; cf. A. H. Louie, Functional Entailment and Immanent Causation in Relational Biology, *Axiomathes*, Vol. 18, Issue 3, 2008, pp. 289-302 < <https://doi.org/10.1007/s10516-008-9047-y>>. Louie elucidates the decisive role played by the Aristotelian conception of "efficient cause" in Rosen's descriptions of life (i.e. "heterogeneous systems"). In particular, he outlines the concepts of functional entailment and immanent causation, before examining how they fit into "relational biology". Two of the Rosen's leading questions are "What is life?" and "How does an organism differ from a machine?"
- 40 Robert Rosen, *Life Itself. A Comprehensive Inquiry into the Nature, Origin, and Fabrication of Life*, New York: Columbia University Press, 1991, p. 116.
- 41 Aristotle, *Posterior analytics*, translated with a commentary by Jonathan Barnes, 2nd ed. Oxford: Clarendon Press, 1993, 94a20.
<<http://classics.mit.edu/Aristotle/physics.3.iii.html>> Translated by J. A. Smith. Cf. J. Bremer, K. Khroutski, R. Klimek, R. Tadeusiewicz, Challenging Integralism, Aristotelian Entelecheia, Hyle and Morphe (Form), and Contemporary Concepts of Information, Touching upon the Aetiological Issues of Carcinogenesis, in: *Biocosmology – Neo-Aristotelism*. Official Organ of the Biocosmological Association
<<http://en.biocosmology.ru>> Vol. 7, N. 1, Winter 2017, pp. 9–55 [here: pp. 17-24].
- 42 Cf. Aristotle, *Generation of Animals*, Harvard University Press, Loeb Classical Library, Translated by A. L. Peck; <http://www.loebclassics.com/view/aristotle-generation_animals/1942/pb_LCL366.401.xml>, 730b11-13.
- 43 Cf. Luciano Floridi, What is the Philosophy of Information? *Metaphilosophy*, 33, 2002, 123–145.
- 44 Cf. Kun Wu, *The Interaction and Convergence of the Philosophy and Science of Information*, IS4IS Summit, Vienna, 2015.

Joseph G Schenker¹**Medical Science and Jewish Law (Halakha)****Definitions**

Science is defined – intellectual and practical activity encompassing the systematic study of the structure and behavior of the physical and natural world through observation and experiment.

Medical science – dealing with the maintenance of health and the prevention and treatment of disease. **Bioscience – life science** – any of the branches of natural science dealing with the structure and behavior of living organisms.

Religion – the belief in and worship of a superhuman controlling power, especially a personal God or gods Religion is largely based on faith. There are about 270 religion groups. They hold diverse and often conflicting beliefs. Most people believe that their own faith is the only completely true one. **Monotheism** – the belief in a single all-powerful god, as opposed to religions that believe in multiple gods. **Judaism, Christianity and Islam** are widely practiced forms of monotheism.

The Jewish law (Halakha) – Halakha – the word is derived from the Hebrew root that means “to go or to walk” is the collective body of Jewish religious law, including the biblical law (the 613 *mitzvot*, or commandments) and the later Talmudic and rabbinic law as customs and traditions. The Jewish religion is characterized by a strict association between the faith and practical religious rulings. In order to understand the Jewish cultural developments, it is essential to have a deep insight into the various components of the halakhic literature – the Jewish law. In principle, the halakhic literature is composed of two divisions: 1. The Written Law and 2. The Oral Law.

The foundation of the Written Law is the Torah – the first five books of the Scripture which are the origin of authority. The Oral Law interprets and elucidates the written-Torah and regulates new rules and customs. Its authority is derived from the written –Torah. Likewise, the authority of the “*poskim*” – the rabbinical scholars that

¹ President International Academy Human Reproduction, Department Obstetrics Gynecology Hebrew University Hadassah Medical Center Jerusalem, Israel. *E-mail* joseph.schenker@mail.huji.ac.il

represent the Oral Law toward the public – is derived from the Torah (The oral Torah, including thousands of books, owes its name to the old prohibition to write its recollections (Babylonian Talmud.). This prohibition practice ended about 1700 years ago as a result of the difficulties caused by the suppressed by Jewish liberty in Israel (Maimonides. Introduction to the Code). The dominant parts of the Oral Law are: 1. the Mishnah, 2. the Talmud, 3. the Post-Talmudic codes and 4. the Responsa.

Torah – the foundation of the Written Law and the origin of authority is the Torah, the first five books of the Scripture. As stated above, the Written Law is defined as the origin of authority. This definition is derived from the ancient tradition and the belief concerning the original revelation on Mount Sinai, when God ascribed the Torah to Moses and to the Jewish people. The Torah is not an ordinary text of law. It is an expression of God's revelation, teaching and guidance for man. The attitude to the Torah is therefore as to a unique and holy divine text, which includes moral values as well as practical laws. The Oral Law interprets, expands and elucidates the written Torah and regulates new rules and customs. Its authority is derived from the written Torah.

The Mishnah – this early textbook was compiled systematically by numerous scholars over a few centuries. Its final form was established early in the third century. The Mishnah includes early traditional and original interpretations of the written Torah, ancient regulations that are not written in the Torah, and post-biblical regulations. The Mishnah consists of six major section-orders that cover all aspects of human life: Zeraim (laws regarding agriculture), Moed (laws regarding holidays), Nashim (laws regarding women and family life), Nezikin (civil law), Kodashim (laws regarding the Temple), and Toharot (laws regarding ritual purity). Two of the orders, Nashim and Toharot, are relevant to Judaic family practices.

The Talmud – for approximately three centuries after the final compilation of the Mishnah, the great interpreters studied the six orders to the Mishnah and wrote a monumental composition, the Talmud. The great interpreters (Amoraim) included within the Talmud commentaries and interpretative studies of the Mishnah and the Midrashim, or investigations, and established regulations and new customs. The Amoraim in Babylon composed the Babylonian Talmud, while the Amoraim in the Holy Land composed the Jerusalem, or Palestinian, Talmud. During the period of Jewish sovereignty in Judea, laws were made by the Sanhedrin, a body of 71 leaders

gathered for this purpose, and by local courts with 23 judges. After the fall of the Second Temple, halakha became primarily the creation of rabbinic Judaism.

Post-Talmudic codes – an enormous amount of Talmudic knowledge was essential for accurate ruling. These post-Talmudic codes were compiled with the intention of assisting access to the laws, regulations, and customs of the Talmudic halakha. Up to the 16th century, different scholars summarized and reviewed the halakhic conclusions of the Talmud in the post-Talmudic codes. Among the scholars were Rashi (1040–1105), Rabbi Moshe Ben Nachman (1195–1270), and Rabbi Menachem Ben Shlomo Hameiri (1249–1316). The most prominent post-Talmudic codes are the Sheilot, Halakhot, Maimonides, the Piskey Harosh, and the Shulchan Aruch.

Responsa – is a term usually confined to written replies given to questions on all aspects of Jewish law by qualified authorities from the time of the later Geonim to the present day. *Geonim* were the presidents of the two great Babylonian Talmudic Academies, accepted spiritual leaders of the Jewish community worldwide in the early medieval period. About 1,000 volumes, containing more than half million separate response, have appeared in print. The various attitudes of rabbinic scholars about the way halakha should be applied in a changing world is analyzed and discussed with regard to the legal codes. Throughout the ages, written opinion has been given by qualified authorities to questions about aspects of Jewish law. Contemporary rabbinic scholars deal with new problems that arise with the investigation and treatment of medical conditions. Different groups have developed among Jews from ancient times and especially in the modern era. The Orthodox, Reform, and Conservative movements are the three major ones today. Orthodoxy is the only movement formally and legally recognized by Israel; Non-Orthodox movements have remained largely a feature of Judaism in the Diaspora.

Relationship: Halakha-Medicine

A mutually respectful relationship exists between halakha and medicine. Halakha recognizes the sacred duty of healing and uses medical knowledge in the solution of halakhic problems. Medicine draws ethical principles and legal concepts from the halakha. From a practical viewpoint, conflicts occasionally arise between halakha and medicine. The Tora permitted the physician to heal and gave healing the status of mitzvah. Medical practice is accepted as law by all halakhic authorities.

Since the ultimate goals of both halakha and medicine are identical, appropriate and acceptable solutions can be found. Throughout the generations, many of Jewish religion authorities had extensive knowledge in medicine.

Jewish law (halakha) and reproduction

Jewish attitudes toward infertility can be discerned from the fact that the first command from God to Adam was, “Be fruitful and multiply” after he was created (Gen. 1:28). This commandment has been interpreted as an obligation on the part of the man to reproduce. The Torah records that all the patriarchs and matriarchs suffered from prolonged infertility: Abraham and Sarah had given up hope of ever having their own children when God gave Abraham the promise that he and Sarah would have a son whose offspring would be greater than the stars in the sky.... God fulfilled his promise with the birth of Isaac. (Gen. 16-21). Rebekah was barren.... It was 20 years after their marriage that the Lord blessed Isaac and Rebekah with twin sons, Jacob and Esau. (Gen. 25:21). Rachel suffered from prolonged infertility; she tried everything she could think of to have children. She bore Joseph and Benjamin and died giving birth to Benjamin. A Talmudic saying from the 2nd century states, “Any man who has no children is considered as dead.” This position arises from the Bible itself and refers to the words of Rachel, who was barren: “Give me children or else I am dead” (Gen. 30:2). Indeed, many halakhic authorities view infertility as illness. The laws of Shabbat are intricate and form an integral part of the life of the halakhic-committed Jew. However, in cases where life is threatened, these laws are suspended. Many halakhic authorities maintain that infertile couples are considered to be in the category of those who are dangerously ill but whose lives are not in danger. Therefore, it is permitted to ask a non-Jew to perform work, to provide infertility treatment on Shabbat for such a person even when a biblical prohibition is involved.

A rabbinic disagreement in the Mishnah, the rabbinic literature, deals with the number of children required to fulfill the divine command of procreation. The Shammai’ school claimed that two sons were sufficient and referred to Moses with his two sons as a proper model. The Hillel school insisted that one son and one daughter were essential. As in most cases, the Talmudic preference is in accord with the Hillel school (as taught by Maimonides). Although a man who has fulfilled the basic command of servant procreation is not obliged by the Torah to continue procreating, he is obliged to be married and not to live in celibacy. The Mishnah

raises an interesting question: Does the command to procreate rest equally on men and women, or is it an exclusive obligation of men while women, who bear all of the risk of childbearing, bear no responsibility. A directive is given in Isaiah 45:18, which reads, “He did not create the world to be isolate, but rather inhabited.” The quote from Isaiah, commentators have explained, pertains both to men and women – thus, women are included in the obligation to fill the world. Marriage is a legal contract between a man and a woman. The couple commits themselves to their mutual duties and creates between them a binding religious relationship that also affects others. From a practical perspective, marriage is a mitzvah, or religious duty, and is considered to be among the most useful means of preventing sexual sins. It is also the proper framework in which to fulfill God's command to be-fruitful and multiply. The duty to marry and procreate is independent of social status or religious position. Moses and other biblical heroes married and had children. In the Temple, the high priest was not allowed to serve on the Day of Atonement unless he was married.

Sex is part of human life. The Jewish approach to sex has always been free, healthy and lacking frustration and Jewish law recognizes sexual desire. Each partner has conjugal duties toward the other. The wife has conjugal rights based on the mitzvah *onah*, one of the three elementary duties of the husband: supporting his wife with food and clothing. The frequency of sexual relations to which she is entitled depends on the man's occupation and his style of life.

The beginning of human life

The development of assisted reproductive technologies (ART) has made it necessary to consider the question of the beginning of life and the moral status of the embryo from different perspectives. Life is a process that has a beginning and an end. The consensus about the time when human life really begins is still not reached among scientists, philosophers, ethicists, sociologists. Procreation is acknowledged in the Bible to be the gift of God. The halakhic interpretation of when human life begins is extracted predominantly from the halakhic sources. The Bible does not make any direct references regarding the beginning of human life. The first detailed description of the creation of a human being by God points to the moment when human life begins. “Yahveh”. God formed the man from the dust of the earth and breathed into his nostrils the breath of life and the man became a living nephesh” (soul). Life began for human being when God breathed breath into him (Gen. 2.7). Additional

statements in the Torah demonstrate that breath is understood to be essential to life and that when the breathing stops, life ends: “And all flesh that moved on the earth perished, birds, cattle, wild animals, all swarming creatures that swarm upon the earth and all human beings. Everything which had the *nishmat* (breath) of life in its nostrils, all that were on dry land died” (Gen. 7. 21-22). The Bible does not make any other direct references regarding the beginning of human life. The conclusion as to when human life begins can be obtained from the Torah's stated position on the issue of abortion: *And if men strive together, and hurt a woman with a child, so that her fruit depart if she miscarries] and yet no harm follow, he shall be surely fined, according as the woman's husband shall lay upon him; and he shall pay as the judges determine. But if any harm follow, then shall thou give life for life. (Ex. 21: 22-23)*

According to the Jewish interpretation, if this passage refers to the survival of the woman following her miscarriage, there is no capital guilt involved, and the attacker is merely liable to pay compensation for the loss of her unborn child. “But if any harm follow” (i.e., the woman is fatally injured), the man responsible for her death has to give “life for life”. In that event, the capital charge of murder exempts him from any monetary. From this interpretation of this passage it can be inferred that the killing of an unborn child is not considered murder punishable by death in Jewish law. What is explicitly stated in the Jewish law is that murder is an offense that is punishable by death: “He that smites a man, so that he died, shall surely be put to death” (Ex. 21:12). The response literature based on these two passages concludes that the capital charge of murder should be used for death of a man, but not a fetus, which means that complete human life does not begin at the embryonic or fetal stage of development. The Jewish Talmudic law assumes that the full title to life arises only at birth. Accordingly, the Talmud (Talmud, Tohoroth II, Oholoth 7:6) describes the situation in which a woman's life is endangered during childbirth: “If a woman is in hard labor [and her life cannot otherwise be saved], one cuts up the child within her womb and extracts it parts by parts, because her life comes before that of the child. But if the greater part [or the head] was delivered, one may not touch it, for one may not set aside one person's life for the sake of another.” The legal text states that the fetus must be dismembered and removed limb by limb. However, if “the greater part” of the fetus has already been delivered, the fetus should not be killed. This is based on the belief that the fetus becomes a person only when most of its body emerges from the birth canal. Before personhood has been reached, it may be necessary to sacrifice

a potential life in order to save a fully existent human life (i.e., the pregnant woman in labor). After the forehead has emerged from the birth canal, the fetus is regarded as a person, and neither the baby nor the mother can be killed to save the life of the other.

A second consideration is that of self-defense. Some Jewish authorities have asserted that if the fetus placed its mother's life at risk, the mother should be permitted to kill the fetus to save herself, even if the greater portion of its body has already emerged from the birth canal. This ruling, sanctioning embryotomy to save the mother in mortal conflict with her unborn child, is also the sole reference to abortion in the principal codes of Jewish law. It adds only the further argument that such a child, being in pursuit of the mother's life, may be destroyed as an aggressor following the general principle of self-defense. This formulation of the attitude toward abortion in the classic sources of Jewish law implies that:

1. the only indication considered for abortion is a hazard to the mother's life.
2. otherwise, the destruction of an unborn child is a grave offence, although not murder.
3. it can be viewed [hat the fetus is granted some recognition of human life, but it does not equal that of the mother's and can be sacrificed if her life is in danger.

Rashi, the great 12th-century commentator on the Bible and the Talmud, states clearly of the fetus, "*Lay nephesh hu*" ("It is not a person"). Objection to abortion in Jewish law is thus strong but not absolute. It is not permitted even if the fetus carries a genetic conditions or other congenital malformation, nor for social reasons. Abortions are not permitted for economic reasons, to avoid career inconveniences, or because the woman is unmarried. However, some rabbinical authorities have been known to approve abortion in the early stages of gestation, within the first 40 days, during which it is, according to one Talmudic statement, "mere water". The Babylonian Talmud Yevamot 69b states, "[T]he embryo is considered to be mere water until the fortieth day." Afterward, it is considered subhuman until it is born. The fetus has great value because it is potentially a human life. It gains "full human status at birth only." Each case of abortion must be decided individually by a rabbi well versed in Jewish law.

In Vitro Fertilization and Embryo Transfer (IVF)

Modern technology of infertility treatment consists precisely of producing embryos outside the woman's body by in vitro fertilization with a view to subsequently implanting them in the uterus, where they have the opportunity to develop into full-term children. The fact that this is even feasible shows that the embryos have not taken on a different character by being created outside the woman's body. The basic fact that allows IVF-ET to be considered in the rabbinical literature at all is that the oocyte and the sperm originate from the wife and husband based on the commandment of procreation stated in the Bible (Genesis 1:18). The Jewish majority's religious point of view, however, as formulated by the chief rabbis of Israel, supports both IVF and ET.

Status of the Human Embryo

Various criteria exist in Jewish law, which determine the status of a fetus or an embryo. One fundamental principle that is agreed upon by all branches of the Jewish faith that full human status is not acquired until birth. Thus, until then, the destruction of a product of conception does not constitute homicide culpable as murder. Although the Jewish law refuses to grant a full human inviolability to the unborn child from conception, it is clearly agreed that the potentiality for life must not be compromised except for the most substantial medical reasons. Man's creation "in the image of G-d" confers infinite value on every human life and renders its destruction a capital offence. Since the pre-implantation pre-embryo carries a low probability of reaching the neonate stage, and achieving full human status, it does not enjoy the same sacred title to life as the fetus and its status is more similar to that of human semen. According to the Talmud, during the first 40 days from fertilization until the completion of organogenesis, the embryo is defined as "plain water", for the purpose of certain laws. The Talmudic status of "40 days embryo" has significant implication in ART like: preimplantation diagnosis (PGD), cryopreservation, sex preselection, embryo research, use of embryonic stem cells for regenerative medicine etc.

Cryopreservation of pre-embryos

Cryopreservation of pre-embryos is routinely practiced in IVF programs. Our IVF unit at Hadassah Medical Center Jerusalem was among the pioneers to apply the technology. Early embryos having undergone cryopreservation implant at the same

rate as equivalent fresh counterparts. No increase in birth defects or development abnormalities. Embryos, frozen ones appear to have at least as good obstetric outcome, measured as preterm birth and low birth weight for children born after cryopreservation as compared with children born after fresh cycles of transfer. Because cryopreservation stops the development and growth of the embryo, it raises the basic question of whether it cancels all rights of the pre-embryo's father. As far as the mother is concerned, the difficulty is removed, since the pre-embryo is transferred into her uterus. As for the father, whose main function is to fertilize the oocyte to form the pre-embryo, the period of freezing may sever his relationship with the child. Freezing the spermatozoa and pre-embryo is permitted in Judaism only when all measures are taken to ensure that the father's identity will not be lost.

Preimplantation diagnosis (PGD)

Preimplantation genetic diagnosis (PGD) is an early form of genetic testing where genetic defects in embryos, conceived through in vitro fertilization, are analyzed before implantation in the uterus. This offers couples at risk of genetic diseases the chance to have a healthy child. Some couples use this technology for social reasons in order to select gender and other social traits. This has raised an ethical debate within the medical community. The most widely used approach for obtaining genetic material is blastomer stage of embryonic development, testing the individual embryonic cells from the cleavage state of the embryo. PCR is a fast and convenient way to test DNA. However, it requires sufficient amounts of an uncontaminated, high-quality sample of DNA, which is sometimes difficult to obtain from a single cell such as a polar body or blastomer. Recent advances in DNA sequencing and bioinformatics have led to an approach that identifies carriers of known mutations that cause recessive genetic diseases. Jews couples have a much higher rate of many gene mutations. Pre-implantation testing is their best option to obtain a healthy offspring. Jewish Law states that abortion is generally reserved only for cases involving danger to the mother. However, if the threat is a fetal abnormality, Jewish Law prohibits abortion and rules that prenatal birth defect detection with the possibility of abortion is not permissible. If abortion is not permitted, a question then arises regarding whether one is able to discard the embryos that were created but deemed unhealthy to implant. The Jewish debate over this matter is fueled by the forbidding of one to waste potential life, as stated in (Gen. 38:9-10) "Zera Levatala."

Judaism sees much value in every potential life, extending to not wasting sperm. Some prohibits embryo discarding in this situation, since it eliminates potential life. However, many other disagree, because producing healthy children is intended through consideration of parental anguish. Many *poskim* maintain that one can perform genetic testing if the embryo has a ‘serious or significant’ defect. Most *poskim* recommend against the performance of elective PGD. The Gemara states that an embryo is considered to be halachic equivalent to water (fluid) for the first forty days after conception makes it possible to apply PGD.

Pre-embryo Research

Pre-embryo research may be therefore permissible if it is carried out in order to enable the sperm owner to have his own child. It is prohibited to use a pre-implantation pre-embryo for research, unless specific medical research. The destruction or use of a pre-implantation pre-embryo for research is forbidden, as long as it has the potential to implant. It is permitted to create *In vitro* pre-implantation pre-embryos for research if there are real chances that the sperm owner may benefit and have a child as a result of this research. When this does not apply, then the creation of a pre-embryo for research purposes is strictly forbidden.

Cloning

Animal models have demonstrated that in several mammalian species, such as mice, sheep and cows, SCNT has resulted in live births that developed into healthy adult animals. This would suggest that reproductive cloning could be achieved in humans. Perspectives for applying cloning technology to human reproduction have generated much controversy. Worldwide legislations have banned reproductive cloning. The Jewish religion takes the position that reproductive human cloning could conceivably be justified in some circumstances. This view is largely based on historical tradition and sacred writings, which largely focus on human destiny. The Jewish tradition emphasizes that man is in partnership with God. Some Jewish thinkers find justification for this view in the story of Genesis, which says that Adam and Eve were ‘to work it [the garden] and to preserve it’ (Genesis 2). Jewish scholars believe that the potential benefits of developing cloning technology outweigh the potential risks, provided man fulfills his obligation to minimize violations of human dignity. Some Jewish thinkers fear that cloning human beings might harm the family by changing the roles and relationships between family members that define their

responsibilities to one another and patterns of inheritance. In Judaism, religious status is passed down through the mother and tribal designation is passed down through the father. Thus, a child needs both a mother and a father.

Jewish Law is squarely situated on the side of medical research that has potential to save and preserve life. Given this presumptive duty, it is possible to support therapeutic cloning as a remedy for diseases. Since Jewish law does not grant full moral status to the human embryo, therapeutic cloning research conducted on the early human embryo may be acceptable. However, there have been a number of recent technological developments that have made it possible to create entities called embryos by other means, such as somatic cell nuclear transfer (SCNT) and induced parthenogenesis. Applying such new technology will likely be prohibited by Rabbinical Authorities.

Definition of Death

The definition of death has serious medical, legal, moral and theological significance.

Human death can be determined (by physician) in two ways: 1. showing the permanent cessation of circulatory and respiratory functions and 2. showing the irreversible cessation of all brain clinical functions. The heartbeat may continue when the patient may be on a respirator (“life support”) to maintain vital organs activity. In recent years there has been a concerted effort to modify the traditionally accepted criteria of death “circulatory”. The motivation is a twofold: 1. to make organs available for transplantation before such organs become irreversibly damaged and 2. to eliminate the financial and emotional expense of sustaining the life of patients for whom medical science holds out no hope of recovery. Various proposals, which have been offered center around differing forms of “brain death.” The most widely propounded proposal for a new definition of death is that of the Ad Hoc Committee of the Harvard Medical School.

The definition of death in Jewish law is first mentioned in the fifth-century Babylonian Talmud. The Talmud then comments as follows: *How far does one search [to ascertain whether he is dead or alive]? Until [one reaches] his nose. Some say: Up to his heart. life manifests itself primarily through the nose, as it is written: In whose nostrils was the breath of the spirit of life.* The renowned biblical and Talmudic commentator Rashi explains that if no air emanates from his nostrils, he is certainly dead. Rashi further explains that some people suggest the heart be examined for signs of life, but the respiration test is considered of greatest import. All rabbis

“*poskim*” agree that the classic definition of death in Judaism is the absence of spontaneous respiration and heartbeat in a patient with no bodily motion. A brief waiting period of a few minutes to a half hour after breathing has ceased is also required.

Brain death is not generally accepted by rabbinic scholars to be a criterion for establishing death other than to confirm death in a patient who already has irreversible absence of spontaneous respiration and no heartbeat. Donation of an organ from a living person to save another's life, where the donor's health will not appreciably suffer, is permitted and encouraged in Jewish law. Donation of an organ from a dead person is equally permitted for the same purpose: to save a life (*pikuach nefesh*). Recently increasing numbers of orthodox authorities including Chief Rabbinate accept brain stem death. Israel State passed organ donation laws in 2008 with the full support of Chief Rabbinate. Heart transplantation is still Halakhic problem. Additional problems in Jewish law that may arise in connection with organ donation are: Mutilation of the dead – The Torah prohibits the unnecessary mutilation of the dead, Postponement of burial, Benefiting from the dead.

Euthanasia

Euthanasia is clearly prohibited by the sixth commandment, regardless of the ill person's request. This moral principle is seen in the case of King Saul, who fatally injured. Saul commanded his armor-bearer to kill him so that he would not suffer humiliation from his enemies. His armor-bearer refused (1 Sam 31-35). In contrast, when the Amalekite brought In contrast, when the Amalekite brought In contrast, when the Amalekite brought news of Saul's death to David, claiming that he had killed Saul at the king's own request in order to end his misery (2Sam,1:1-16). The practice of euthanasia – whether active or passive – is contrary to the teachings of Judaism. Any positive act designed to hasten the death of the patient is equated with murder in Jewish law, even if the death is hastened only by a matter of minutes. The physician must make use of any medical resources which are available, not hazardous to prolong patient's life.

Conclusion

A mutually respectful relationship exists between halakha and medicine. From a practical viewpoint, conflicts occasionally arise between halakha and medicine. Since the ultimate goals of both halakha and medicine are identical appropriate and acceptable solutions were found by Jewish religion authorities.

Piotr Karocki¹**Christian body and soul****Introduction**

Is the division of reality into matter, energy and information correct? What shares the term “information” from above mentioned division with term “information” known to physics (which, defines, after all, for example, the information capacity of the Universe, and deals with such problems as the breaking of the principle of information conservation by matter falling into the black hole)? Is the term “information”, used as a description of a formal subject of scientific discipline called computer sciences, a completely different term? Is the information just the inverse of entropy? How the physical equation $E = mc^2$ is related to the philosophical notion of entelechia? How about the philosophical and theological concept of soul? To answer this question one has to determine the meaning of the term “soul” as one of the basic concepts of anthropology (in its philosophical rather than natural manner). This Congress is attended by people brought up in different cultures throughout the world, and there is a completely different view of man, a completely different anthropology in each of them. This article will try to present a brief Christian anthropology, in the Catholic version, at least even because some of its elements are given as dogma, and this means that rejection is an automatic self-exclusion from the Catholic Church. For example, a Christian² cannot proclaim that a man has no soul³.

It seems advisable however, to point out at first that the issue I am going to present is more in the humanities than in the natural sciences⁴; it means a completely different methodology. As in the natural sciences we have, with the passing of the ages, an ever better understanding of the processes around us, we are able to tell more and more about what is happening, and anticipate further fate of these processes, so the humanities have a completely different approach. It is true that one of the tasks of philosophy is to point to the causes, but the very important tasks of the philosopher include the drilling, sometimes far-reaching, meaning of words. Probably everyone will agree on the thesis “man cannot be killed”, but what “man” means will

¹ Pontifical University of John Paul II in Cracow

² In this case, Christian generally, not only Catholic.

³ Of course, not as a word, but as a concept.

⁴ Both philosophy and theology sometimes are grouped as completely different science’s domain.

sometimes be very differently understood. As medicine all the time deals with the human body, completely measurable (today largely measurable also practically, for centuries – measurable only theoretically), can weigh, weigh, count, spell out all elements of cancer cells, get to know their DNA and relationships with the remaining cells, the whole body and the environment, so theology describes things that are not only measurable but will never be; and not because of the imperfection of the apparatus, but because of the very nature of the object of their interests, beyond extent of physics⁵. Much of what theology says and many things that philosophy speaks about is not (and cannot be) subject of verification, nor falsification⁶; We can agree that we accept a thesis as true, but that is just our contract, not a reflection of reality⁷. Sometimes it is possible to perceive the “progress trend” as the view on a given subject has changed from age to age, from the thinker to the thinker⁸. You may even try to extrapolate “what the next thinker will say”, but there may be a “Copernican revolution” and we can invert thousands of years of thought in a given field⁹. In the natural sciences we can only use the latest publications, but in the area we are interested in, we can never forget previous concepts; they may turn out to be much closer to the truth than today’s state of science. That is why form of this article should not be surprising, referring to the Christian view from the biblical time to the present, as well as to Western philosophical thought.

Christian view

From the earliest times, even (in the light of recent discoveries) in the Neanderthals world¹⁰, there was a sense that not all man dies. It seems that faith in the lack of afterlife is something quite new, probably only from Epicurus¹¹. In today's

⁵ Both in classic Einstein’s physics, dealing with matter and energy, and in physics extended by, justly or not, information.

⁶ In Popper’s sense.

⁷ Although there is “internal consistency criterion”, but it can be questioned: how we can prove that our “earth logic” is applicable to physics-less entities?

⁸ As we shouldn’t be overconfident in current state of science, also in natural sciences, their current state is not final, and even we cannot be sure that anything in them is correct.

⁹ Copernicus simply returned to heliocentric system, known to Greeks; one of proponent of heliocentric system was Aristarchus living in third century B.C.E., so Copernicus nullified 1900 years of geocentric idea’s progress.

¹⁰ Their faith in afterlife is supported by ritual burials e.g. from 60 thousands year ago in Chapelle-aux-Saints cave: Chris Stringer, Clive Gamble In Search of the Neanderthals: Solving the Puzzle of Human Origins, London 1993, p. 159.

¹¹ Greek philosopher living at the turn of fourth and third century B.C.E. Epicurus argued that only

Western culture, we most often use Christian division into the soul and body¹², but unfortunately, in a different from the Christian (and even contradictory!) understanding of these concepts and the nature of the relationship between them. Sometimes we even recognize psychicism as a soul. What is the soul anyway?

Looking for an answer to this question, let's see how this concept was formed, how it evolved. Let's start with ancient Greece, otherwise known for its adoration of the body. Despite this approach, for the Greeks, the body was something worse than the soul – at least for those Greeks who acknowledge existence of something beyond the plain matter¹³. According to Orphism's believes¹⁴, people were raised from the ashes of the Titans burned by Zeus¹⁵. It was a punishment for killing and eating the god of Zagreus (the incarnation of Dionysus), the son of Zeus and Persephone. The Titans were wicked, so the body of man is bad. But in the ashes of the Titans there were also ashes from the body of the deity they ate, and so the people included in themselves the element of good (a human soul). Therefore, the soul was immortal and largely independent from body. Plato¹⁶ proposed furthering the independence of the soul. Every man had three souls, or three levels of soul: intelligent soul in head, and two mortal souls: sensory (located in heart), and vegetative (located in liver). Only the first soul is a purely human attribute, the sensory soul is attribute of humans and all animals; and the last, vegetative soul, which is attribute also of plants¹⁷. The first soul before incarnation exists in the immaterial world of ideas, and therefore is immortal; and the immortality of the soul allows for postulating the journey of souls¹⁸ – which in the next incarnation can become a punishment, according to Plato, the soul of the woman, and falling lower still – the animal¹⁹. The body, acting as a soul's

matter exist, so God (any deity) doesn't exist. This was necessary to save his hedonism from being absurd. But we should remember that his hedonism has little in common with today's meaning of this word: self-flagellation could be treated as hedonism, but „wine, woman and sing” was rejected as contradictory to hedonism.

¹² Although most modern West people are epicurean, not Christians.

¹³ In matrix of today's physical terms, it would be “beyond matter and energy”.

¹⁴ About seventh century B.C.E.

¹⁵ Orphicorum fragmenta, II, fragm. 140.

¹⁶ His real name was Aristocles; he lives at the turn on fifth and fourth century B.C.E.

¹⁷ Beware that “plants” and “animals” in these times had another meaning that in today's biological taxonomy, e.g. fungi was treated as plants, and crystals were considered alive.

¹⁸ But if immortal is only intelligent soul, we get inconsistent system: intelligent soul has no way to incarnating inside animal.

¹⁹ Plato *Timaeus*; 42b-42c.

prison²⁰, is not only limiting its capabilities; the body enslaves the soul to taking care of body, for example for providing food²¹, it does not allow to take care of something that Plato consider best: practicing philosophy²². As we can see, the soul²³ is a completely separate entity; being from a completely different plane than the observable world.

Aristotle²⁴ appreciated body somewhat more. It was no longer a prison, only a ship controlled by a sailor-soul²⁵. Matter and ideal world are in union. Matter and form can't exist separately²⁶, they always occur together to make a substance. And only about the substance can be said that it has features such as color, place, weight, etc. Soul vitalizes the body – it distinguishes living from dead²⁷. If anything can be alive (using Aristotle's words: has the potency of being alive), it immediately becomes alive by gaining a soul. Again using Aristotle's words: the soul is the first actualization, the first act of the natural body, which possesses in possibility life²⁸. Matter is body, form – soul. Also in Aristotle there are three souls – vegetative, sensual and intellectual, corresponding with (as in Plato) plants, animals and man²⁹. For Aristotle, man is a rational animal (ζῷον λογικόν [zoon logikon]), distinguished from everything else existing in the world only by rational, intellectual soul. In this typical human soul, he distinguished two levels – passive reason and active reason³⁰. Only the latter was not associated with the body, it was pure form – and only it was immortal; The remaining souls died with the body. However, no level of soul was identified by him, nor compared by him with entelechia, this “blind” force of nature that is teleologically oriented, “pushing” the being to its destiny (or its potential realization). Both Plato and Aristotle claimed that there is a separate being whose

²⁰ This is the reason Athenians reacted with derision to St. Paul's words about the resurrection (Acts 17:32), as it means a voluntary return to prison.

²¹ Plato *Phaedo*; 66c-67a.

²² Plato *Phaedo*; 67b.

²³ At least, intelligent soul.

²⁴ Aristocles' apprentice; he lives in fourth century B.C.E., and created philosophical system competitive to system of his teacher.

²⁵ Aristotle gives this analogy, but with remark that he is not sure if this analogy is a good one; Aristotle *De anima*; n. 413a.

²⁶ This division to matter and form, whole Aristotelian system is named hylomorphism (ὑλη [hyle], matter, μορφή [morfe], form).

²⁷ Aristotle *De anima*; n. 413a.

²⁸ Aristotle *De anima*; n. 412a.

²⁹ Aristotle *De anima*; n. 414a-415a.

³⁰ Aristotle *De anima*; n. 430a.

existence is in no way dependent on the body, and – unlike what we now call matter – is eternal. Today we are inclined to attribute this to the “soul” label, but for Plato this will be only one of the three levels of souls, and for Aristotle active reason.

“Christianity has grown out of Judaism”, that is what the Christian believes has its roots in Semitic concepts³¹. The substance of faith is expressed in terms of Greek philosophy, since the Semitic world did not know abstract concepts³², nor did it have anything like “scientific work” in our meaning of words. When one is reading Semitic texts, he should always pay attention to the meaning of words, which should be considered in the broad context of the contemporary understanding of the world. From the point of view of our Congress, it is very important to say that in the Semites there is a unity between thinking and acting³³. The word is not just a word, something intellectual – the word is connected with action, word and deed is the same, that is the same Hebrew word דָּבָר [dābār]³⁴. When I know that something is good, I will definitely do it (because when I do something else, it means that I do not know that it is good, at most “I have information that is good”).

For the East, man is always the body and soul; the soul itself is dead, it is a spirit without time³⁵; man will be man again only after resurrection of bodies. By using today's language one can say that “man is a psychophysical entity”³⁶. Although there

³¹ See *Nostra Aetate document of Second Vatican Council, n. 4*: “As the sacred synod searches into the mystery of the Church, it remembers the bond that spiritually ties the people of the New Covenant to Abraham's stock. (...) The Church, therefore, cannot forget that she received the revelation of the Old Testament through the people with whom God in His inexpressible mercy concluded the Ancient Covenant. Nor can she forget that she draws sustenance from the root of that well-cultivated olive tree onto which have been grafted the wild shoots, the Gentiles”.

³² Ludwig Köhler *Der Hebräische Mensch*; Darmstad 1980, p. 118.

³³ Semites also don't divide everything to future, present and past; their grammar has no verb tenses, only distinguish perfective and imperfective aspect.

³⁴ Same understanding of the word can also be seen in fantasy literature, and in the most straightforward is spelled probably in the *Earthsea cycle* – when one learns the language of dragons, the primordial language in which everything has its true names, it can force everything to obey: “Old Language is the dragons language (...) what gives us the power to do wizardry, it also creates the limits of that power. The wizard can only rule over what is near him, what he can call accurately and completely”, URSULA K. LEGUIN, *Wizard of the Earthsea*; Gdańsk, 1990, p. 40. But even a hungry wizard would not lure a rabbit to eat it, it would be ingoble: “I could call him by name and he would come. But could you kill, skin and cook the rabbit you called in this way? It seems to me to be a misuse of trust”, URSULA K. LEGUIN, *The Tombs of Atuan*; Gdańsk 1990, p.135.

³⁵ Marian Filipiak *Biblia o człowieku*; Lublin 1979, p. 36.

³⁶ Mieczysław Krąpiec *Ja – człowiek*; Lublin 1974, p. 7.

are words בָּשָׂר [bāšār], נֶפֶשׁ [nəpəš], רִוּחַ [rīvāḥ], which were rendered in Greek mostly as σάρξ [sarks], ψυχή [psyche], πνεύμα [pneuma] and in English as body, soul and spirit, but these concepts have no ontic significance, they are not separate entities³⁷. When God takes the spirit (rīvāḥ), the body (bāšār) will fall apart³⁸. We also know that at sickness, rīvāḥ is weakened and that at sleep it is taken almost just as it was at the time of death³⁹. By the end of the Bible creation (the Catholic canon of the Old Testament), the Greek influence comes to the fore, with the example seen in the sentence “For the corruptible body presseth down the soul, and the earthy tabernacle weigheth down the mind that museth upon many things.”⁴⁰. Such approach, almost the opposite of entities, is, however, alien to the earlier books of the Old Testament⁴¹. We do not have separate entities here, and getting out rīvāḥ for night can be treated as “device power off”.

Christianity quickly fully integrated the biblical tradition with Greek philosophical thought. At this integration, it must have opposed the gnosis dominated by radical dualism – the opposite of good and evil, spirit and matter⁴². There was also a trend called “Gnostic libertinism” within the gnosis; which allowed everything to be done with the body: since the body is a rag, do what you want, because it does not matter; it will not be much more debilitating⁴³: “Without a grudge, they do all the

³⁷ All three together are mentioned in 1 Th 5:23. The Apostle means rather unity of the three spheres of action, the whole (which is underlined by ὁλοτελής). *Pneuma* is the deepest, spiritual sphere of man, opening man to God; *psyche* is the center of life, experience, emotional life, human personality; and *soma* – its fragility. Biblical (Semitic) thinking about the lack of separation between body and soul / spirit can be seen, for example, in the prologue of the Gospel of Sts. John: “And the Word was made flesh”. It's not about the body as something separate from the soul (it would be apollinarianism), the text should be understood as “The word became man”.

³⁸ Hi 34,14-15; cf. Marian Filipiak *Biblia o człowieku*; Lublin 1979, p. 42.

³⁹ Albert Gelin *Pismo Święte o człowieku*; Paryż 1971, p. 15. Death is therefore a reflection of sleep, the difference would be mainly the elapsed time before return of rīvāḥ – in the case of sleep it is only a few hours.

⁴⁰ Mdr 9, 15; por. Marian Filipiak *Biblia o człowieku*; Lublin 1979, p. 21.

⁴¹ Marian Filipiak *Biblia o człowieku*; Lublin 1979, p. 66. Jewish cabal, since the time of the rabbi Moses ben Jacob Cordovero, known as Ramak (1522-1570), distinguishes five parts of the soul: *nəpəš* (possesses also by animals), *rīvāḥ* (basic thinking skills, speech, emotions), *n'ešāmāh* ('Higher' thinking, intelligence, ability to pray), and two levels we can develop, but in fact only in *tzadikas*: *haja*, *yehida*.

⁴² Wincenty Myszor *Gnostycyzm* [in:] Mieczysław A. Krąpiec [red.] *Powszechna Encyklopedia Filozofii*; tom 3 Lublin 2002, p. 805.

⁴³ However, such behavior only applies to “pneumatics” who are saved from their own nature. But most people are “psychics”, and their salvation does depend on deeds. Hans Jonas *Religia gnozy*;

forbidden things that Scripture assures us that 'those who do such things will not inherit the kingdom of God.' (...) Others, without moderation, serve the corporeal flesh and say that one has to give the flesh to the flesh and spirit to the spirit"⁴⁴.

Augustine of Hippo grew up in Manichaeism, grown from gnosis. Therefore, for Augustine, man is a combination of the more perfect soul and the lower body⁴⁵. The soul, living in the body and animating it, binds itself through body and matter to other people and forms the community; they arise mainly through the life of the soul manifested in the love of the common good⁴⁶. Augustine was "improved" by St. Thomas; for him, man is not a *mixtum* of body and soul, only their *compositum*⁴⁷, not a cacophony but a symphony. Man is not mixed in a blender body with soul, only composition, intricate and thoughtful. The soul without body is incomplete, she needs body⁴⁸, "gravitated to body"⁴⁹, only with body is complete substance⁵⁰. The soul can "function" also without the body, although he is detached from the senses he can learn the material world⁵¹. Since the soul can function, can know the world and even make choices, it means that it is endowed with existence. It can't be Aristotle's entelechia, it is not the laws of nature, it is the being with free will.

The soul is treated differently by the Jesuit Pierre Teilhard de Chardin⁵². An educated geologist and paleontologist, he participated in examinations of the Piltdown man⁵³ and the Peking man⁵⁴. For Teilhard, the universe is constantly evolving, everything we see is subject to this evolution. And this is the same evolution – pre-life, life and thought are considered as one continuous flow of

Kryspinów 1994.

⁴⁴ Irenaeus *Adversus Haereses*; n. I.6.3, from: Hans Jonas *Religia gnozy*; Kryspinów 1994, s. 287.

⁴⁵ Augustine mentions, as correct, Warroc's statement that man is neither the soul nor the body, but the soul together with the body., Augustine *O Państwie Bożym: przeciw poganom*; Warszawa 2003, n. 19.3.

⁴⁶ Mieczysław Krąpiec *Augustyn – Myśl filozoficzna* [w:] Feliks Gryglewicz et al. [red]. *Encyklopedia Katolicka KUL*; tom 1, Lublin 1989, col. 1097.

⁴⁷ Thomas Aquinas *De anima*; a. 1 arg. 13.

⁴⁸ Thomas Aquinas *Summa theologiae*; I, q. 76 a. 5.

⁴⁹ Thomas Aquinas *Summa theologiae*; I, q. 76 a. 1.

⁵⁰ Using Aquinas terms: soul is substantial form of body; Thomas Aquinas *Summa theologiae*, I, q. 76 a. 4.

⁵¹ Thomas Aquinas *Summa theologiae*, I, q. 89 a. 1.

⁵² He lives in 1881 – 1955.

⁵³ This is term for described in 1912 remains of an early human bone that was supposed to be unknown to science. The find turned out to be a forger, but only in 1953.

⁵⁴ Discovered in 1921, hominid remains called *Homo erectus pekinensis*, today estimated as 750 000 years old, and in Teilhard's time "only" as 500 000 years old.

development that led to the emergence of the human soul by the transformation of lower psychology⁵⁵. However, it is a completely different understanding of the word “soul”, he is not interested in the substance of the soul, but only the visible effects of its action. And because of it, one can use the apparatus of the natural sciences to study it⁵⁶. In the context of our Congress, the classification of views on the existence of the spirit appears to be important. According to him, there are two basic classes⁵⁷ of such views: First, there are views that say that there are independent material and spiritual worlds. Spirit is here a separate entity, something so specific and exalted above matter that in no way can be identified with the material energies that animates. They connect with them in an incomprehensible way and transforms them without being blended with them. The other are the views that the spirit is accidental and secondary. The fact of consciousness⁵⁸ is something really unimportant, does not add anything measurable to the material energy. Teilhard believes he has found a third approach. Spirit is not something “from the outside”, nor is it anything less meaningful than matter. It is a further stage of evolution, from inanimate matter, through life, simple (animal) psychology, to human psychology. Teilhard conceives the human soul simply as a reflexive center, equipped with thought and will, and striving for beauty and truth⁵⁹, not in terms of ontic. The action of God in Teilhard's conception can be tried to identified with information as the third component of reality: God creates a soul, but does not do so in the classical sense of the word “creation”. God does not act directly, but makes elements work⁶⁰, that is, God creates also the soul in the process of evolution⁶¹. In his conception there is no antinomy between the spirit and the body – for spirit existence, must body exist. Soul is not a separate creation, but is created simultaneously with the body. The creative activity of God is not transcendent but immanent, for God inwardly raises parental activity, the

⁵⁵ Tadeusz Wojciechowski Teilhardowska koncepcja transcendencji duszy ludzkiej i jej wpływ na chrześcijańską antropologię filozoficzną „Śląskie Studia Historyczno-Teologiczne”; VII (1974), p. 215

⁵⁶ Œuvres de Pierre Teilhard de Chardin; Paryż, tom VI, 1962, p. 117.

⁵⁷ The classes he defined themselves, but while defining them he simplified the philosophical views, omitting, for example, the tomystic composition of body and soul; cf. Tadeusz Wojciechowski Teilhardowska koncepcja transcendencji duszy ludzkiej i jej wpływ na chrześcijańską antropologię filozoficzną; „Śląskie Studia Historyczno-Teologiczne” VII (1974), p. 216.

⁵⁸ By using such phrase, he clearly shows what the soul is to him.

⁵⁹ Œuvres de Pierre Teilhard de Chardin; Paryż, tom VI, 1962, p. 78.

⁶⁰ Œuvres de Pierre Teilhard de Chardin; Paryż, tom III, 1957, p. 36.

⁶¹ Whereas Humani Generis in no 36 says: „the Catholic faith obliges us to hold that souls are immediately created by God.”

end of which is the whole man⁶². The liquidation of the antinomy of the spirit and the body allows us to say that man is one, that is, a return to the Semitic understanding of man. The spirit once formed is eternal, as Teilhard writes: “The souls of men are released one after the other, and in the form of ulcer they lift up their infallible burdens of consciousness”⁶³. On the other hand, there is no place for the pure spirits in this vision⁶⁴.

Catechism of the Catholic Church

After the brief historical review, let's go to what the Catechism of the Catholic Church⁶⁵ says about topics that interest us. This is a compendium of the substance of faith, gathered in one place resolutions of the councils and synods, so they are obligations of every Catholic. For many, this can be seen as a restriction of freedom, but on the other hand, every mathematician is required to state that $2 + 2 = 4$, and how one would claim otherwise would not be a mathematician⁶⁶. In number 362, the Catechism states that “The human person, created in the image of God, is a being at once corporeal and spirituals” So it is not only the body, not just the matter. One of the next numbers, 365, says that spirit and matter in man are not two connected nature, but their unification forms one nature. The term used in the Council of Vienne is referred to here: “The unity of soul and body is so profound that one has to consider the soul to be the «form» of the body”⁶⁷, in the aforementioned hylemorphic sense.

The soul is immortal⁶⁸, so it does not perish after its separation from the body at the moment of death and will reconnect with the body at the moment of the final resurrection. The catechism also notes the existing distinction between soul and spirit⁶⁹, but claims that it cannot be treated as duality in the soul⁷⁰. The soul and reason

⁶² Antonin-Gilbert Sertillanges *L'idée de création et ses retentissements en philosophie*; Paris 1945, p. 120 nn.

⁶³ *Œuvres de Pierre Teilhard de Chardin*; Paryż, tom I, 1955, p. 302.

⁶⁴ Tadeusz Wojciechowski *Teilhardowska koncepcja transcendencji duszy ludzkiej i jej wpływ na chrześcijańską antropologię filozoficzną*; „Śląskie Studia Historyczno-Teologiczne” VII (1974), p. 221.

⁶⁵ Promulgated in 1992 by pope John Paul II.

⁶⁶ The malicious may say that he will be a creative accountant.

⁶⁷ Council of Vienne, decree 1,3.

⁶⁸ Here we found reference to 8th session of Lateran Council V, I.3.

⁶⁹ As in 1 Th 5:23.

⁷⁰ Number 366, referring to Constantinopolitan Council IV, canon XI.

is not the same as what we are told in number 1705: “By virtue of his soul and his spiritual powers of intellect and will, man is endowed with freedom”. In the summary of the article, in paragraph 1711, the statement that delineates the soul and reason is repeated: “Endowed with a spiritual soul, with intellect and with free will, the human person”.

The resolutions of the councils and synods are also helpful in our deliberations. Lateran Council IV, held in 1215, advocates in point 1.2 of the Constitution *On the Catholic Faith* for the existence of the two worlds, the spiritual and material worlds, joined in human nature: “Creator of all things invisible and visible, spiritual and corporeal, who from the beginning of time and by His omnipotent power made from nothing creatures both spiritual and corporeal, angelic, namely, and mundane, and then human, as it were, common, composed of spirit and body”. The term “spiritual beings” used here does not mean “beings from energy”, but “beings beyond our own reality”. If we say that information is the third component of reality, of our reality (since matter is one of these components), then automatically such information does not exist in the spiritual world. The same Council also draws attention to the mutual value of body and soul: “And since the soul is far more precious than the body, we forbid under penalty of anathema that a physician advise a patient to have recourse to sinful means for the recovery of bodily health”⁷¹.

The declaration of one of the next Councils, held in the years 1311-1312 in Vienne, is understood only on the basis of classical philosophy: “we define that anyone who presumes henceforth to assert defend or hold stubbornly that the rational or intellectual soul is not the form of the human body of itself and essentially, is to be considered a heretic”⁷². The Council in this way straightened the teachings of Peter Jan Olivia, but this statement is important today primarily because it is cited in the Catechism. The Fifth Council of the Lateran, held in 1513, issued after its eighth session a document in which we read: “with the approval of the sacred council, we condemn and reject all those who insist that the intellectual soul is mortal, or that it is only one among all human beings, and those who suggest doubts on this topic”⁷³. The Council of Toledo states in 400, “If anyone claims and believes that the human soul is a part of God or that it is a substance of God, let it be excluded”⁷⁴. Saying that

⁷¹ Canon 22.4.

⁷² Decree 1, 3.

⁷³ Session 8, number 3.

⁷⁴ Pius Bielch, Tomasz z Akwinu Suma Teologiczna; *commentary to volume 7*, Londyn 1962-1989, p. 176.

souls are sent to the body “for punishment” was condemned Council of Constantinople of 543: “If anyone says or thinks that human souls were formerly spirits and sacred powers, but (...) that they were turned to evil (...) and, hence, the name of souls⁷⁵ and the penalty was being cast into the flesh – be excluded from the community of the faithful”.⁷⁶ The Council of Braga in 563 writes similarly, referring in canon 6 to the heresy of Priscilla: “If anyone says that the souls of men first sinned in the heaven, and that they were cast into the earth in the flesh, as Priscillian said, let him be excommunicated”⁷⁷. The same council in canon 9, condemns the basis of astrology: “If one thinks that the souls of men are subject to the unavoidable influence of [celestial bodies], as the Pagans and Priscillians have said – let him be excommunicated”⁷⁸. This statement can be interpreted as contributing to the question of possible relationship between soul, entelechia and information: the soul is free, so it cannot be liken to entelechia. And using contemporary terminology, the Congregation for the Doctrine of the Faith stated in 1979: “The Church affirms that a spiritual element survives and subsists after death, an element endowed with consciousness and will, so that the «human self» subsists. To designate this element, the Church uses the word «soul»⁷⁹. Subsistence mentioned in the last paragraph is not merely an waiting, it is full of activity. This is attested by the appearance of saints. Until the deceased is only seen, the mind of the rationalist will prove that the event has taken place only in the psyche. However, sometimes the deceased announces his visit, and then lend a pen to living person who writes on the sheet of paper answers of the deceased to the questions collected from his friends⁸⁰.

Our folk traditions say that the first 40 days after death you can meet with the deceased before he fully goes to “outside world”. Also in the Orthodox Church, forty days is spent taking the soul to the destination – for the first two days the soul enjoys a relatively large freedom and can visit places on earth that are valuable to her; then

⁷⁵ There is wordplay in Greek language: ψυχή [psyche, soul] and ψύχος [psychos, cold].

⁷⁶ Jan Maria Szymusiak, Stanisław Głowa [red.] *Breviarium fidei*. Kodeks doktrynalnych wypowiedzi Kościoła; Poznań 1964, n. BF V 30, BF VIII 100.

⁷⁷ Jan Maria Szymusiak, Stanisław Głowa [red.] *Breviarium fidei*. Kodeks doktrynalnych wypowiedzi Kościoła; Poznań 1964, n. BF V 31.

⁷⁸ Jan Maria Szymusiak, Stanisław Głowa [red.] *Breviarium fidei*. Kodeks doktrynalnych wypowiedzi Kościoła; Poznań 1964, n. BF V 32.

⁷⁹ *Sacra Congregatio pro Doctrina Fidei Epistula ad Venerabiles Praesules Conferentiarum Episcopaliū de quibusdam quaestionibus ad Eschatologiam spectantibus; „Acta Apostolicae Sedis”* 71 (1979), p. 941.

⁸⁰ Pietro Eliseo Bernardi *Il beato Leopoldo Mandic*; Padova 1976, p. 508.

passes through the legions of evil spirits (mytarstwa), who block the passage and which accuse her of the various sins to which they tempted her. For the next 37 days soul visits the heavenly places and the hellish abyss, yet to the end not knowing where he will be staying, and only at the fortieth day the place of her stay until the dead rise will be determined⁸¹.

Conclusion

From the foregoing considerations, it seems that the Christian soul (or soul in the Christian sense)⁸² is something not only beyond Einstein's famous equation⁸³, but also outside the equation extended by information. Beyond these equations is the whole spiritual world, so not only the soul, but also the angels, and of course, the Christian God⁸⁴. Thus, from the point of view of the Christian theologian, adding the index *i* to the equality sign in the Einstein equation does not change anything in his knowledge; it is merely a curiosity – although of course it is worth knowing, as the equation itself; the more beauty we see in the world, the more we appreciate the work of the Creator: ***“God as being one, sole, absolutely simple and immutable spiritual substance, is to be declared as really and essentially distinct from the world”.***

⁸¹ As described by the Orthodox saint, Jan Maksymowicz (1896-1966), referring to Saint Macarius of Alexandria (4th century). In this description there is no place for purgatory, because Orthodoxy does not recognize this state (in catholic sense of the word). Jan Maksymowicz *Życie po śmierci* [w:] Seraphim Rose *The soul after death contemporary after-death experiences in the light of the Orthodox teaching on the afterlife*; Platina 1993.

⁸² Or, in body, soul and spirit trio: spirit.

⁸³ Albert Einstein published article *Ist die Trägheit eines Körpers von seinem Energieinhalt abhängig?*; „*Annalen der Physik*” 18 (13) [1905], p. 639–643; but there is no famous equation $E=mc^2$ in this work, only description that matter and energy are equivalent.

⁸⁴ This is mentioned by Pius IX in the *Syllabus Errorum*, list of the condemned thesis, as appendix to the *Quanta cura* encyclical of 1864. The first of these (condemned) theses is pantheism thesis: “There is no deity (...), separate from all things of this world. (...); One and the same are God and the world, and therefore the spirit and the matter...” Jan Maria Szymusiak, Stanisław Głowa [oprac.] *Breviarium fidei. Kodeks doktrynalnych wypowiedzi Kościoła*; Poznań 1964, n. BF V 16. A few years later, this is confirmed by the First Vatican Council in *Dei Filus* (1870), No. 17: “God (...), as being one, sole, absolutely simple and immutable spiritual substance, is to be declared as really and essentially distinct from the world”.

Dariusz Jasiczek¹ and Marek Klimek²**Forty years of thermodynamic oncology****Introduction**

The most valuable for human life is medicine, which is practical art simultaneously studying and helping human health and procreation. The well-being of the patient is the highest medical goal and the prohibition of causing harm to humans encompasses not only the medical, but all human conduct due to the natural ageing of human cells. Historic discovery of natural cause of cancers linked neurohormonal époque of medicine with thermodynamic oncology through two publications in 1978 about firstlings neuroendocrinologic and then dissipathogenic cervical carcinogenesis¹⁵⁻¹⁸. Then regarding organism state at molecular level modern technologies armed physicians with a toolbox for monitoring human health, but the metabolic results to give information require medical interpretation of detecting abnormalities. This obliges people to continuously track the progress of both general knowledge and its technological use, including the introduction of purely informational diseases. In this course, for instance, lies, telling untruths, or concealment are treated as an adequate cause of diseases, which destroy motivated human behavior in the informational four-dimensional spacetime whose quintessence are information rays and patterns! For example man instead of the exchange of products and services for money (coins) unfortunately began to use only information of their values, but through the life and work of individuals, money indirectly still is associated with substantive information. In social life if one does not know what is going on, it is usually due to money and power as information. In relation to man his life is distinguished by the ability of assessing the state of personal health and socio-economic environment, e.g. the kind of feeling of increasing ease of fatigue as a person grows older. An intrinsic quality of human ageing is the growing up loss of strength and well-being, what defined as thermodynamic entropy, which also occurs in other natural phenomena.

Despite the passage of 40 years since the discovery of the thermodynamic cause of neoplasms, many doctors still do not apply the new rules in the treatment.

¹ Word Information University

² Jagiellonian University Cracow Poland

Determining the types of medical specializations in the European Union, oncology was rightly not left out of the primary medical fields, apart from widening the field of radiology by including oncological radiotherapy. Only after nuclear magnetic resonance imaging technology was introduced it is possible to view a three-dimensional image of a cell's inner state before aggressive and often irreversible changes occur. Self-organization of cellular forms also applies to a person's psychological and social life in the form of long known neuroses or psychoses and newly described informative disease (informatonosis), e.g. when doctors prematurely perform a cesarean section solely on the basis of the patient's wish contrary to the medical indications, because in these cases they interrupt the natural development of the child's. This illness can also be caused by abandoning the hitherto successful methods of monitoring the intra-uterine development of the child. The existence of such an informational illness is shown by the increased risk of a change of the physiological progress of the pregnancy into pathological obstetric incidents. Now information means a basic quantum part of the cosmic informational field for every natural structures or processes. In 1971 was announced that incidence of cancer would be reduced by half before the end of the 20th century and later would be eliminated, what only increased the fear of the disease. What more, despite the similarities of thermodynamic pathogenesis between cancer and infertility the both diseases were not expected to have the same natural cause, which is why there were attempts to assign an individual source to each of them.

Thermodynamic carcinogenesis

Many cells as microsystems die all the time to ensure that the organism is alive, but the end of their individual life may be prevented by self-organization into a new cellular system. Life of a cell may be saved through self-reorganization of its genome by changing the matter of its own non-functional organelles into energy and such a new cancer cell may still exist, but it must enhance chaos (dissipation of matter and energy) in its closest environment.

This universal phenomenon in nature, discovered by Ilya Prigogine (Nobel Prize 1977) was used by Rudolf Klimek to explain the reason for formation and diversity of neoplasms as a result of informationally conditioned processes^{4,11}. The thermodynamic theory of carcinogenesis was confirmed when Nuclear Magnetic Resonance imaging was introduced in medicine, being an outcome of one-hundred-

year-long studies at the Jagiellonian University in Cracow, firstlings presented for the international evaluation of the paper *Etiopathogenesis of tumors and theories of oncogenesis*^{18,20,24}. In 1906, professor of the Jagiellonian University Marian Smoluchowski described the foundations of the kinetic theory of matter and stochastic processes known as the Einstein-Smoluchowski's fluctuation-dissipation theorem, thus explaining the role of thermal fluctuations in optimisation of the functioning of living systems and dispersion of light in opalescence⁵¹. This thermodynamic depiction of events in the morphology-dominated medicine initiated a new direction for function tests, even though at that time R. Virchow's cell theory of the structure of man was not fully accepted. In 1942 B. Skarżyński and the Noble Prize winner H. von Euler-Cheplin (1929, in chemistry) wrote *Biochemie der Tumoren* (F. Enke Verlag, Stuttgart, translated to Italian in 1945. *La biochemica dei tumori*, Einaudi, Torino), which initiated the biochemistry era in oncology.^[52] They stated that a "*cancer cell is a mutated cell and diet creates favourable conditions for development of cancer*" along with the suggestion that lifestyle and nutrition helped fight the neoplastic disease! Their statements connected also the ethology of neoplasms with cell nucleus and decided that the gene responsible for heredity is a nucleoproteid, but at that time its exact structure was unknown.

Between 1953 and 1955, B. Skarżyński generalised his own oncological views in papers "Chemism of carcinogenesis" and "Biochemistry of Neoplasms," stating that: *All attempts to identify in neoplasms a specific chemical compound, typical only of a neoplastic cell and absent in a normal cell, have failed. The differences between a normal tissue and neoplasm are only quantitative rather than qualitative*... "*A significant moment in the transformation of a normal tissue into a neoplastic one is such damage to cells that does not make the cell unable to live but that is sufficient to alter its metabolism in a specific way. According to these facts accumulated by biochemistry, carcinogenesis would be a response of a normal tissue to continuously repeated minor damage, to unfavourable environmental conditions created by a carcinogenic factor.*"^{5,6} This statement could be fully explained only at the level of biophysics.

Between 1957 and 1967 B. Skarżyński's disciple R. Klimek introduced treatment with natural hypothalamic hormones to medicine, explaining also the neuro-endocrinological causality of cervical cancer; among others he described a different reactivity of blood vessels to those hormones in neoplastic and

preneoplastic cervical states and the frequent clinical postpartum hypothalamic insufficiency as a factor predisposing to neoplastic lesions^{16,17,43,44,46}. Now neurohormonal therapy is a systemic treatment method against neoplasms and preneoplastic states. Thank to that in 1977 he explained the dissipative state of cell^{26-29,49} defining cancer as: *“a natural biological dissipative structure self-organising in the body; if a part of the body (microsystem) is for a sufficiently long period in a state far from the biological equilibrium of its environment, and the body as a whole cannot change this state to one that is at least close to the equilibrium, than such a microsystem has an alternative: to die or to choose the lesser of two evils and transform into a new biological structure (a new system), that is a neoplasm. Carcinogenesis is the rarest but the most dangerous consequence of provoked disruptions of the internal state of the system and at the same time a signal warning against the endangered existence of the whole body; prophylaxis of neoplasm ought to involve elimination of all deviations from the equilibrium, especially at the level of the whole body.”*

In 1980, R. Klimek together with P. Lauterbur (chemist) and M.H. Mendonca-Dias (physicist) generalised the results of independent studies in a publication about relaxation times of Nuclear Magnetic Resonance in neoplasms within their interpretation as self-organizing dissipative structures and their *in vivo* studies interpreted according to the laws of both physics and biology at an atom level in tissues, which can be diagnosed with other methods much later, as preneoplastic states^{25,38-41,47}. Similarly to neurohormonal treatment two general directions for immunotherapy arise from the thermodynamic essence of neogenesis: the direct one – targeting neoplasms, and the indirect normalisation or sufficient alteration of the biological state of the environment of the neoplasm in which it was formed and which is the only environment in which it can grow and develop^{22,35-37,42}. Immunopotentialisation therapy of cervical intraepithelial neoplasia involves also the desired cooperation of symbiotic bacteria *Lactobacillus vaginalis*, which to secure their own existence compete with bacteria and viruses that are pathological for man. The problem is that in merely ten-plus percent cervical cancer has a direct causal relationship with infections with too many existing virus and bacteria types. The *Lactobacillus* vaccine was introduced to oncological practice by R. Klimek in 1986 at the II International Symposium of Cervical Pathology and Colposcopy, demonstrated that: *“usually used in chronic Trichomonas vaginalis infections, by causing*

immunopotentialisation of the system [the vaccine] may become a prophylaxis and treatment method in these lesions”^{1,21,31}. Histopathologically certain and decisive diagnosis of a self-organising dissipative neoplastic structure at a cell level using Nuclear Magnetic Resonance made it possible to study the cell metabolism of not only neoplasms but – what is much more important from medical point of view – also cells in preneoplastic states^{19,23}.

Discussion

Scientists are under the obligation to communicate the truth about cancer according to the general state of knowledge and not only according to the views of oncologists. Over 80% of malignant neoplasms are formed with participation of carcinogens that pertain to mostly human behaviour: lifestyle, diet and bearing connected with reproduction. The factors contained in the smoke of burnt tobacco condition malignant neoplasms not only in lungs (80–90% in men) but also in the oral cavity, throat, larynx, oesophagus, pancreas, urinary bladder and kidney, and smoking cessation significantly reduces the risk of carcinogenesis. Diet components may have both harmful and protective effects, similarly to physical exercise. Among occupational factors, the highest risk concerns skin, airways, lungs and urinary bladder, but these factors apply to only ca. 5% of neoplasms in men and 1% in women. Current results of epidemiological and clinical trials – in a huge scope, which covers observations of human behaviour at work, school and during leisure in various periods of human life – were presented in the monograph *Gastrointestinal cancer in Poland* by Wiesław Jędrychowski, for years managing an international team comprised of representatives of various fields of medicine, biology, psychology and sociology^{6,31,32}. For instance, the frequency of the total impact of viruses, other infections and genetic disorders (15%) which are commonly considered as oncogenic factors is lower than that of such important variables as diet (30–35%) and smoking (30–32%)! Analytical and epidemiological studies on gastrointestinal diseases showed the impact of diet, lifestyle, nicotinism and alcoholism on incidence of stomach cancer against the functioning of a whole family that was influenced by many oncological risk factors. Similarly, the factor that plays the primary role in cervical cancer is improper procreation, as evidenced by the same oncological risk factors that lead to preterm births^{11-14,53}, and in women with postpartum hypothalamic

dysfunction preneoplastic cervical lesions are observed in colposcopic tests in as many as 20% of cases and in cytological tests in at least 10%^{2,7,26,54}.

In 2006 in the book *Cancer-neoplasms and neoplastic diseases*, R. Klimek, J.M. Madej and A. Sieroń directly referred to the general biological scientific achievements and traditions of the Jagiellonian University on the 100th anniversary of the beginnings of modern biochemistry and physics⁴. The text of this book includes edited parts of the R. Klimek's monograph entitled *Cancer-cause, determinants and self-defence*, of 1985, whose content was supplemented with clinical application of imaging and spectroscopy using Nuclear Magnetic Resonance³⁵⁻⁴¹. Finally, in 2011, S. Hodorowicz, D. Jasiczek, R. Klimek and R. Tadeusiewicz presented contemporary oncology in a generally accessible book entitled *Cancer and infertility. Truth and myth of medicine*⁴, and they published the relevant source data in reputed scientific journals. The purely biophysical cause of cancer cannot disappear as neither can the existence of equally natural phenomena like e.g. lightening. Due to meteorological forecasts, effects of this dangerous phenomenon have been largely reduced through use of constantly improved lightening conductors. When it comes to effective fight with cancer, the hopes focus on detecting and/or delaying the dissipathogenic states, well known as preneoplastic states, and on strengthening the natural protection of a sick body against neoplasms, e.g. via immunopotentialisation with vaccines^{1,21,30-35}.

Conclusions

Prevention, prophylaxis and proper treatment is of great significance in those who have suffered from statistically increased incidence of certain diseases, including e.g. cancer, infertility, obesity and depression, because of the lack of special care about the health of pregnant women, through proper monitoring of foetus development, determining the time of delivery with an accuracy to days rather than weeks and treatment of neuroendocrinal disorders during pregnancy using ACTH-depot therapy⁷⁻¹⁰. Before that, between 1941 and 1945, a Pole B. Skarżyński and a German H. von Euler-Cheplin published book summarising the biochemistry of neoplasms and they were right to indicate e.g. the significance of genes in carcinogenesis, but with genes perceived by them according to more modern notions than those currently expressed in biochemistry, where they are reduced just to a sequence of nucleotides⁵². At a level of thermodynamic deliberations peoples are

most effectively protected against self-organization of neoplasms by living according to autoteleological principles, which means that man acts in accordance with their own and socially acceptable ethical and moral values. Every disease is only one of the many unhappy events in the life of man, who is always influenced by social determinants. There are many reasons required for each system to be brought to dissipathogenic states which would inevitably endanger its existence. It is the dissipation that causes the signs and symptoms of neoplastic diseases ending with destruction of the body if the treatment comes too late and/or is insufficient, limited only to removal of neoplastic lesions without the always necessary elimination and/or prevention of preneoplastic (dissipathogenic) states. The existence of whole Universe is hidden for man due to its informational essence, which until formulation of equation $E = mc^2$ has appeared in different forms and names. The matter and spirit are not two independent entities, because remain in the information field together with matter and energy, called biocosmos.

References

1. Bałajewicz M, Dembowska J, Klimek R. Test of immunopotentialization in colposcopy – a clinical evaluation. *Eur. J. of Obstet. and Gynecol and Reprod. Biology*, 1989, 33, 253–257.
2. Cosmi EV, Klimek R, Di Renzo GC, Kulakov V, Kurjak A, Maeda K, Mandruzzato GP, Van Gelin HP, Wladimiroff J. Prognosis of birth term: recommendations on current practice and overview of new developments. *Archives of Perinatal Medicine*. 1997, 3(2), 31–50.
3. Hodorowicz S, Jasiczek D, Klimek R, Tadeusiewicz R. Rak i niepłodność. Prawda i mity medycyny. (Cancer and infertility. Truth and myth of medicine). Trio Kraków-Warszawa 2011.
4. Jasiczek D, Kaim I, Czajkowski K. Historical discovery of natural cause of cancer. *Neuro Endocrinol Lett*. 2012;33(4):101–111.
5. Jasiczek D, Klimek R, Stencl J, Tadeusiewicz R, Tholt M. Obstetrical prevention of human cancers. *Neuroendocrinology Letters* 2012;33.
6. Kaim I, Klimek M, Popiela TJ. 60 years of cancer biochemistry. *Gin Prakt*, 2001, 9:32–34.
7. Khroutski K.S. & Klimek R. Biocosmological definition of information and its naturalist causal significance. *Biocosmology – neo-Aristotelism* 2018;8(2):204–262.
8. Khroutski K.S. Rehabilitation of the Russian civilization's biocosmological possibilities. *Biocosmology – neo-Aristotelism* 2016; 6(2): 324–369.

9. Khroutski K.S & Szkutnik D. Editorial and Discussion Forum. *Biocosmology – neo-Aristotelism* (2018; 8(1): 4-7 and 148–194.
10. Klimek M. Monitoring of pregnancy and prognosis of birth as spacetime events. UJ DREAM Kraków 1996
11. Klimek M, Klimek R, Mazanek-Mościcka M. Preterm birth as an indicator of cancer risk for the mother. *It J Gynecol Obstet*, 2002, 3, 73–77.
12. Klimek M, Klimek R, Mazanek-Mościcka M. Biological diagnosis and prognosis in practical obstetrics. *Polish J Gynaec Invest*, 1999, 2 (2), 57–66.
13. Klimek M, Wicherek L, Popiela TJ, et al. Changes of maternal ACTH and oxytocinase plasma concentrations during the first trimester of spontaneous abortion. *Neuro Endocrinol Lett*. 2005; 26: 342-6.
14. Klimek R. Monitoring of pregnancy and prediction of birth date. The Parthenon Publishing Group, New York, London, 1994;
15. Klimek R. Dysypatywna struktura nowotworów na modelu raka szyjki macicy. (Dissipative structure of neoplasms, studies on the model of uterine cervix cancer). *Gin. Pol.* 1978,49,765.
16. Klimek R. Hypothalamus hypofunction as an etiological factor in cervical neoplasia. Abstracts of III World Congress I.F.C.P.C. 20, Orlando, 1978.
17. Klimek R. Neuroendocrinologic aspects of the dissipative structures of tumors. *Mat Med Polona*, 1980; 1-2:91–96.
18. Klimek R.: Etiopathogenesis of tumors and theories of oncogenesis. *Gin. Pol.* 1983; 54: 603–609.
19. Klimek R.: Nucleomagnetic resonance of atoms as an evidence of dissipative structure of malignant tumors. *Przegl. Lek.*,1982; 39;313-317.
20. Klimek R. Cancer – cause, determinants and self-defence. PWN 1985
21. Klimek R. Immunotherapy of cervical intraepithelial neoplasia. in: Bompiani A, Carezza L, Salvadori B, Pachi A.(eds). LXIV Congresso Nazionale della Societa Italiana di Ginecologia e Ostetrica, 1986, vol. I, 275–278.
22. Klimek R. Induction and stimulation of immunologic defenses with Gynatren (Solco Trichovas) as an example of cause-related prevention and treatment of neoplasms. *Gin Pol*, 1987, 58, 552–555.
23. Klimek R. NMR imaging in terms of human atomic pathology. *Europ J ObstetGyn & Reproductive Biology* 1987; 24 (2): 135–143.
24. Klimek R. Cervical cancer as a natural phenomenon. 4th Meeting EAGO, Cracow 1989; *Eur J Obstet Gynecol Reprod. Biol*, 1990, 36, 221–238.
25. Klimek R. Nuclear magnetic resonance in obstetrics and gynecology. *Int J Gynecol Obstet* 1990; 32:199–205.
26. Klimek R. Conquering cancer ourselves. New trends in gynecology and obstetrics. J. Libbey CIC s.r.l., Roma, 1990, Vol. VI(2); 53–117.

27. Klimek R. Casual prevention of cancer as a natural biological phenomenon. *Medicine Biologic Environment*. 1990, 18, 8–10.
28. Klimek R. Prevention of cervical cancer promotion in gynecological practice (English). *Zapobieganie promocji raka szyjki macicy w codziennej praktyce ginekologicznej* (Polish). III Symposium of Cervical Pathology and Colposcopy. Cracow 1992, pp.113–122 (Polish); pp. 129–133 (English).
29. Klimek R. Biology of Cancer: Thermodynamic Answers to Some Questions. *Neuroendocrinology Letters*, 2001, 22, 413–416.
30. Klimek R. Precancerous and cancerous states in the light of the modern knowledge. *Stany przed- i nowotworowe w świetle współczesnej wiedzy. Kolposkopia*, 2001, 1(1), 41-42.
31. Klimek R. The etiology of cancer in historical view. *Ginekol Onkol* 2004;2(4): 214–222.
32. Klimek R. Cancer: health hazard resulting from attempted life protection. *Rak jako zagrożenie zdrowia dla ratowania życia. Curr Gynecol Oncol*, 2010, 8(3) 149–159.
33. Klimek R. Dekalog jako teologiczny program Świętej Trójcy w stworzeniu świata. (Ten Commandments – Holy Trinity teleological program of the universe creation). w. *Człowiek i Wszechświat*. Jamroz M, Kuźmich A, Wszolek B. (eds), 59–68.
34. Klimek R. (ed), Bręborowicz GH, Chazan B, Czajkowski K, Dębski R, Dubcak J, Fedor-Freybergh P, Hajek Z, Kamiński K, Klimek M, Krzysiek J, Lauterbach R, Lukacin S, Malarewicz A, Maly Z, Marianowski L, Oleszczuk J, Pisarski T, Reroń A, Roztocil A, Sajdak S, Skręt A, Stencl J, Szymański W, Wilczyński J, Unzeitig V, Zdebski Z. Declaration of the Childbirth in XXI century. *Archives of Perinatal Medicine*, 2001, 7(3), 8-14; *Gin Prakt*, 2001, 9, 6-13; *Gin Pol*, 2002, 73, 3–13.
35. Klimek R, Dembowska J, Bałajewicz M, Plechanow J. Effect of immunopotentialization on rate of vaginal smear normalization according to appearance of cervical intraepithelial neoplasia. *Int J Gynecol Obstet*, 1989, 28, 41–44.
36. Klimek R, Jasiczek D, Gralek P, Fedor Freybergh P. Cancer – final cellular form of life. *Int J Prenat Psychol Medicine*, 23, 1-2(2011), 7–17.
37. Klimek R, Klimek M, Jasiczek D. *Immunotherapy of cervical cancer as a biological dissipative structure. Neuroendocrinology Letters*, 2011;32(4): 380–38.
38. Klimek R, Lauterbur PC, Mendonca-Dias MH. A discussion of nuclear magnetic resonance (NMR) relaxation time of tumors in terms of their interpretation as self-organising dissipative structures and of their study by NMR in vivo by NMR zeugmatographic imaging. *Gin. Pol.* 1981, 52, 493–502; *Materia Medica Polona*, 1983, 15/119, 47–53.
39. Klimek R, Lauterbur PC, Mendonca-Dias MH. Nucleomagnetic resonance in gynecological diagnosis and therapy. *Mat Nauk XXI Zjazdu PTG Poznań*, 1981, t.II:27-28.
40. Klimek R, Lauterbur PC, Mann WJ, Mendonca-Dias MH, Kaplan C. Nuclear resonance technique in human surgery. *Przegl Lek*, 1982; 39:335–338.

41. Klimek R, Lauterbur PC, Mendonca-Dias MH. Et al. Nuclear magnetic resonance relaxation time as a proof of the plasmid in Escherichia Coli. *Przegl. Lek.*, 1982, 39, 533-534.
42. Klimek R, Loster A, Dembowska J, Bałajewicz M. CIN as an indication for immunotherapy with Gynantren. II Symposium of Study Group for Cervical Pathology and Colposcopy. 1986, 158-162, Cracow-Rabka.
43. Klimek R, Madej J. Octapressin in colposcopy. In Klimek R, Król W. (ed): Oxytocin and its analogues. Cracow 1964, Symposium of PTE, pp.115–118. *Gin Pol*, 1964, 235–290.
44. Klimek R, Madej J. Simultaneous epithelial and vascular changes in carcinogenesis. *Gin Pol*, 1985, 56, 53–56.
45. Klimek R, Skarżyński B, Szczepkowski TW. Biochemia samożywnych bakterii siarkowych . Cz.III. Cytochrom w *Thiobacillus thioparus*. (Biochemistry of autotrophic sulphuric bacteria). *Acta Biochem.Pol.*, 1956, 3, 261–266.
46. Klimek R, Walas-Skolicka E. Le syndrome hypothalamique post-gravidique comme agent de risque de developpement de cancer du col uterin. *Arch Anat Cytol Path*, 1977, 25, 5, 305–309.
47. Mann WJ, Mendonca-Dias MH, Lauterbur PC, Klimek R. Preliminary in vitro studies of nuclear magnetic resonance relaxation time and three-dimensional nuclear magnetic resonance imaging in gynecological oncology. *Am J Obst Gynec*, 1984; 148:91–96.
48. Milovanovic R, Grcic R, Stojkovic L. Effect of vaccination with SolcoTrichovac on the vaginal flora of female patients with Trichomoniasis. *Biol Res Pregnancy*, 1980, 1-4, 181–186.
49. Prigogine I. From being to becoming: time and complexity in the physical science. San Francisco 1980; W.H. Freeman.
50. Skarżyski B, Klimek R, Szczepkowski T. Cytochrom in thiobacillus thioparus. *Bull Pol Acad Science*, 1956, 4:299–302.
51. Smoluchowski M.: Zur kinetischen Theorie der Brownschen Molekularbewegung und der Suspensionen. *Ann. Phys.* 1906, 21, 756–780.
52. von Euler-Cheplin H, Skarżyski B. *Biochemie der Tumoren*. F.Enke Verlag 1942 Stuttgart.
53. White L., Laske K., Welters MYP, et al. *J Cancer informatics* 2014: doi:10.4137/CIN.S16346
54. Wicherek L, Popiela TJ, Gałązka K. et al. Metallothionein and RCAS1 expression in comparison to immunological cells activity in endometriosis, endometrial adenocarcinoma and endometrium according to menstrual cycle changes. *Gynecologic Oncology*. 99(3):622-30, 2005.

Computer-aided prognosis of true childbirth date²

Introduction

Gynecologists are responsible for the primary prophylactic against all neoplasm, and not only for women's reproductive organs, because the neoplasm always mirrors the state of the entire organism, which is often unfortunately not fully functional due to incorrect procreation and obstetric care, e.g. when doctors prematurely perform a cesarean section solely on the basis of the patient's wish or by abandoning the hitherto successful methods of monitoring the intra-uterine development of the child by the increased risk of change the physiological progress of the pregnancy into pathological obstetric incidents. For example ultrasonographic measurements of selected fetal parameters by means of existing devices are exact and precise, but it is only their interpretation that is false, e.g. when making physical measurement of one of 100 fetuses in 37th week of pregnancy even by means of the best and unfortunately common percentile scales one cannot conclude if the fetus has to be deliver in days or weeks (Fig.1)

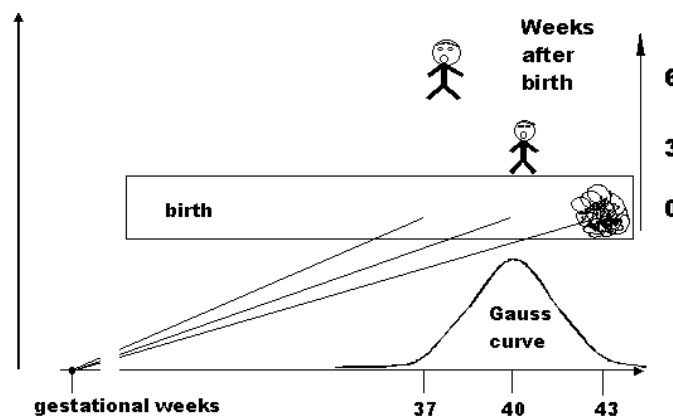


Figure 1 Comparison of fetal and postnatal ages of babies of 43rd week

Both fetus and mother in the last 3-4 days of pregnancy undergo rapid pre-labor changes necessary to delivery and sudden child's adaptation to extrauterine life. Labor which starts one week before its own individual term (preterm) as well as

¹ Jagiellonian University, Cracow, Poland

² updated summary of references:6-22.

delayed due to disturbance of its initiation (postponed pregnancy) is possible in the large six-week range ($37^{0/7} - 43^{2/7}$). Thus, a preterm birth can occur even at 42nd week just as a poster birth is possible even at 38th week owing to failed feto-maternal mechanism of labor initiation. At the beginning of the birth period the increase in morbidity and mortality is caused not only by labors of multifetal pregnancies, but mainly by lack of help necessary for undiagnosed true preterm births. Reversibly, at the end of the period $>41^{\text{st}}$ week premature induction in over ten percent of labors causes iatrogenic prematurity of those fetuses, which will indeed be spontaneously born during e.g. 41st or 43rd week.

1. Maturity quanta

Each subsequent new indivisible unit (quantum) of fetal maturity appears at a particular time until delivery when a full quanta of fetal maturity has been completed at the atomic level. Some fetuses are already mature at $37^{0/7}$ postmenstrual weeks of gestation while the other ones have to mature until $43^{2/7}$ (95% of confidence limits). Technical quantization differs from physical one by the fact the scale of examined parameters is set on macro level in such a way as to make them multiples of a selected measure (quantum), in our case-points. Physicians' error consist in fact that in spite of the proven simplicity of maturity quantization and its expression in point scale, doctors attempt to measure it on the scale of grams or centimeters or – even worse – of gestational days or weeks. However, it is enough to understand the meaning of the three categories of pregnancy time to eliminate many iatrogenic actions. In figure 2 the calendar time is marked on the horizontal X-axis, where the starting points is the date of conception or of the last menstruation. The developmental time, is measured on the vertical Y – axis and in physics adopts the designation “imaginary time”. Every fetus during the period of maturation must acquire a specific amount of maturity quanta sufficient for self-dependent life. The rate of fetal maturation depends on the frequency of appearance of maturity quanta and therefore the biological time, which is the sum of developmental time and intraquantal intervals, is longer and is located on the diagonal line.

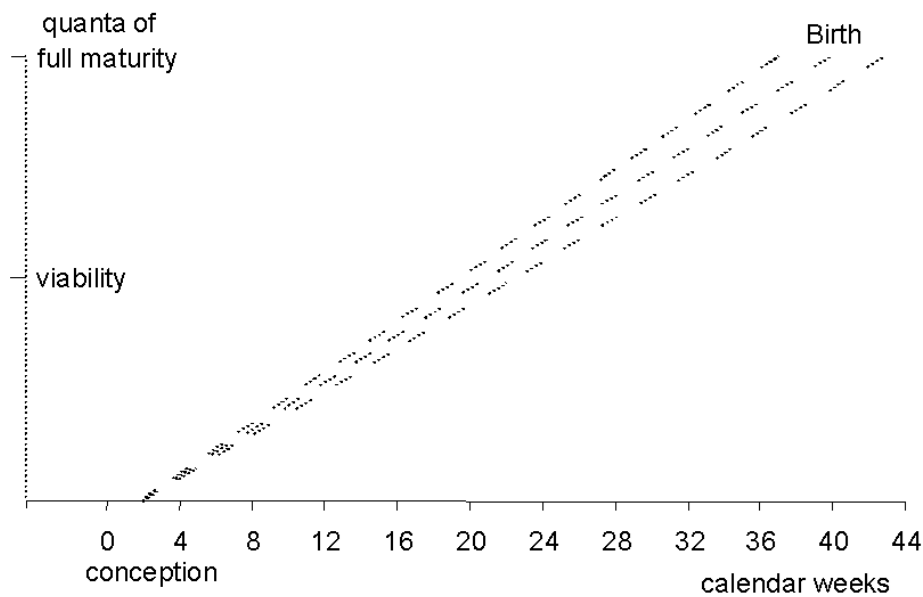


Figure 2. Quanta of fetal maturity

Adjustment of the existing ultrasound devices to the requirements of the modern medical thermodynamics was patented first in Poland and later in Europe (European Patent N° 0 557 831) which not only proves the originality of the method of ultrasonographic fetal biometry and birth prognosis with the accuracy of several days, but should primarily force the manufacturers and designers of the faulty scales to change forthwith their way of doing things due to the growing hazard for human health. In contemporary clinical practice even the most sophisticated ultrasonographic imaging equipment fails to provide in advanced pregnancy more accurate information relating to individual birth date than Naegele's Rule (95% confidence interval ± 3 weeks) using only the knowledge of the date of last menstrual period. In 1985 S. Campbell and co-workers verified Naegele's Rule though their ultrasonographic interpretation, unfortunately contained a cardinal error, which lies not in the technologically superior equipment but rather in the application of its programs. For example, the $40^{0/7-6/7}$ week on the calendar scale may represent for all observed babies only one of three different possibilities: 1) the 40th week for the babies in which delivery is to occur (i.e. birth only for 30% cases), but 2) some babies to be delivered during the 37th week are actually three weeks overdue, while 3) those to be delivered during the 42nd week still have two more weeks prior to birth.

Therefore pregnancy dating scale which is incorporated in USG programs can only provide a statistically probable range of delivery since calendar time what needs to draw attention to the responsibility of industry for programming their products, if their use could entail medically harmful effects.

Instrument, which is advertised as the one that enables to assess fetal age, must not obtain data differing by 1 or 2 weeks in the average values of pregnancy duration, depending on which scale was chosen by the manufacturers (Tables 1-4), also because some scales end at week 40. or 41. Biometric scales of few fetal parameters used in ultrasound devices are not correlated with one another and therefore the result that assessment of fetal age can differ even in average values by 2 weeks depending on the examined parameter, e.g. femur length, head or cranium circumference. It is caused by the fact that it is not the absolute value of the examined parameters and the postmenstrual pregnancy duration which determine the birth term and the condition of the newborns but the constant growth rate of all spatial fetal parameters. An increase in instrumental deliveries and lack of progress in lowering the number of premature births associated with increased fetal morbidity and mortality are the consequence of this approach.

Table 1. Mean values of BPD (mm) at the same gestational age (weeks) according to Asia (I, II, III) and Europe (IV, V, VI) scales

Age/weeks	BPD scale mm				
	I	II	III	IV	V
28	72	70	74	74	75
37	91	88	92	96	94
40	94	91	96	101	103

Table 2. Mean values of FL (mm) at the same gestational age (weeks) according to Asia (I, II, III) and Europe (IV, V, VI) scales

Age/weeks	FL scale mm			
	I	II	III	IV
28	50	50	52	53
37	67	67	69	74
40	71	73	73	80

Table 3. Mean gestational age indicated by Asia (I, II, III) and Europe (IV, V, VI) BPD scales

BPD (mm)	Mean gestational age (weeks+days)				
	I	II	III	IV	V
72	28	29	27+2	27+4	27+1
92	38	42	37	35+4	35+6
95	-	-	37	39+6	38+3

Table 4. Mean gestational age indicated by Asia (I, II, III) and Europe (IV, V, VI) FL scales

FL (mm)	Mean gestational age (weeks+days)			
	I	II	III	IV
52	29	29	28	27+5
55	30+3	30	29+3	29
72	-	40+2	39	36+2

The same difference of various sets of ultrasound measurements corresponds to different angles, depending on the elapsed time between consecutive exams. Thus, the same absolute increase of measured ultrasonic parameters between serial measurements at the 1st and 2nd examination do not have a distinctive quality, but decisive is the angle at which growth line will take place over a known period of time. Under physiological conditions all tested parameters of individual fetus have the same rate of maturity, but using angular growth rate, computer-aided method gives us clear differentiation between measurements of slow and fast maturing fetuses (Figure 5)

2. Computer-aided prognosis of childbirth

Fetal growth means increase in the size of any of its parts occurring in the process of gestational maturation simultaneously with the mother's adaptation to the labor. It suffices to compare an ultrasonographic measurement made e.g. in 37th or

later week to any previous during 2-3 weeks examination $\geq 28^{\text{th}}$ week what enables to divide fetuses into fast (F-predicted labor in 37^{th} - 38^{th} week), regular (R-labor in 39^{th} - 40^{th} week) and slowly (P- labor in $\geq 41^{\text{st}}$ week) maturing once. The results of two (or more) examinations can be input into the computer program to obtain prognoses of observed pregnancy and birth, what is shown in the table 5.

Every fetus during developmental time must acquire a specific amount of maturity quanta sufficient for self-dependent life. Adjustment of the existing ultrasound devices to the requirements of the modern medical thermodynamics was patented (European Patent No 0557831) which proved the originality of the new method of ultrasonography fetal biometry and birth prognosis with the accuracy of only several days. Under physiological conditions all tested parameters of individual fetus have the same rate of maturity and using angular growth rate computer-aided method gives clear differentiation between measurements of slow and fast maturing fetuses, depending on the elapsed time between consecutive exams and mother enzymatic standing, The same absolute increase of measured parameters between serial measurements at the 1st and 2nd examination do not have a distinctive quality, but decisive is the same angle at which growth line takes place over a known period of time.

Table 5. Data and results of obstetrical computer-aided prognoses of pregnancy

Data	Year	Month	Day	AC	HC	FL	BPD	OXY
Exam 1	00	11	13	243	263	53	74	4.22
Exam 2	00	11	30	269	291	57	81	4.2
Exam 3	00	12	12	306	303	62	86	5.2
Exam 4	00	12	30	341	330	68	94	6.8
Results	Growth	Gestational weeks		EDD	Weight [g]		K maturity index	
Exams					actual	at birth	actual	
12	FR		30.4	21-01	1551	3319	5	
123	PF		32.1	11-01	2032	3274	7	
1234	PF		34.7	11-01	2752	3275	10	
Total	Birth date			Birth weight		BirthK		
	14-01 \pm 3 days			3299 \pm 133		12		

Results of extended patient's data analysis:

Results	Growth	Gestational weeks	EDD	Weight [g]		K maturity index
				actual	at birth	
Exams						
13	P/F	32.3	13-01	2125	3464	7
23	P/F	32.1	15-01	1875	3095	7
14	F/R	35.3	19-01	2498	3117	9
24	P/F	34.4	15-01	2784	3390	10
34	P/F	34.5	15-01	2839	3455	10
124	P/F	34.7	11-01	2781	3258	10
134	P/F	34.8	13-01	2927	3459	10
234	P/F	34.6	14-01	2578	3168	10

Also enzymatic monitoring serves as the basis of the biochemical diagnostics in all fields of medicine except for obstetrics, although the first enzyme used in medicine was the placenta-produced and known as „defensive pregnancy enzyme” discovered by E. Abderhalden. In 1957 H. Tuppy and H. Nesvadba described the chemical assay of the oxytocinase (caspase enzyme) using as substrate L-cystine-di- β -naphthylamide, erroneously indicating a 1% concentration of sodium nitrate instead of 0,1%, what precluded the determination of oxytocinase values. In 1961 R. Klimek and M. Pietrzycka revised the methodical error and made the first attempt at establishing an international unit ($\mu\text{mol/l/min}$) of enzyme activity, whose maternal blood levels show high correlation with the fetal and placental mass as well as the fetal maturity state. The following years brought an increasing interest in assessment of aminopeptidase activity in obstetrics (B. Berde, J. Berhard, P. Fylling, G. Graff, T. Hashimoto, H. Kleiner, R. Klimek, S. E. H. Melander. Z. B. Miller, W. Muller-Hartburg, A. P. M. van Oudeusden, A. M. Riad, A.M. Rutenburg, G. Ryden, S. Sakamoto, I. Sjolholm, E.E. Smith, F. Sorm, M. A. Titus, P. Wilken et al.). Unfortunately, in 1966 C. Babuna and E. Yenen published the modification of the original chemical assessment of oxytocinase, which in fact hindered investigations of enzyme monitoring in pregnancy. Three years later R. Klimek delivered a paper in which these laboratory mistakes were corrected, unfortunately owing to refusing its publication in Am. J. Obstet. Gynecol. (also this journal published his other clinical studies) it was published in a biochemical journal which was readily available for the

clinicians. Enzymatic monitoring of pregnancy is based upon the rule that the constant increase of the oxytocinases level until delivery proves the proper course of pregnancy. In healthy woman the continuous increment of blood oxytocinase level until labor is observed in 81% of cases, decreases in 12%, and it is irregular with variable profile in 7% only. Their low level during pregnancy proves the hypothalamic hypofunction and is a pathognomonic symptom in the habitual abortions caused by such insufficiency. Decrease in levels instead of the normal constant increase precedes by several weeks the intrauterine death of the fetus which reaches 70% when untreated in such neuroendocrine gestoses. (Fig.3).

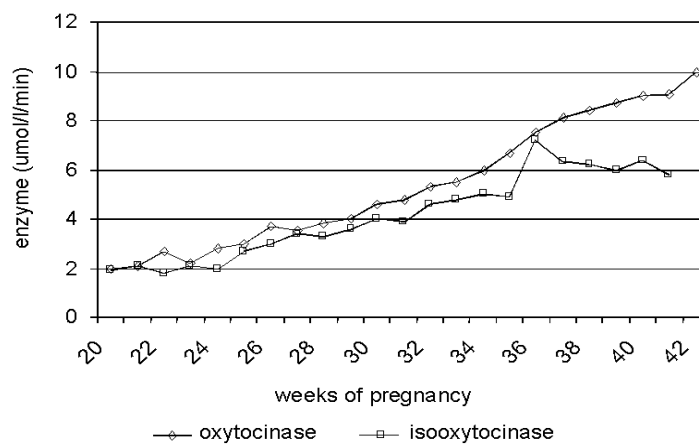


Figure 3 Value of oxytocinase and isooxytocinase according to calendar age.

The same difference of various sets of ultrasound measurements corresponds to different angles, depending on the elapsed time between consecutive exams (Figure 5). Thus, the same absolute increase of measured ultrasonic parameters between serial measurements at the 1st and 2nd examination do not have a distinctive quality, but decisive is the angle at which growth line will take place over a known period of time. Under physiological conditions all tested parameters of individual fetus have the same rate of maturity, but using angular growth rate, computer-aided method gives us clear differentiation between measurements of slow and fast maturing fetuses (Figure 4)

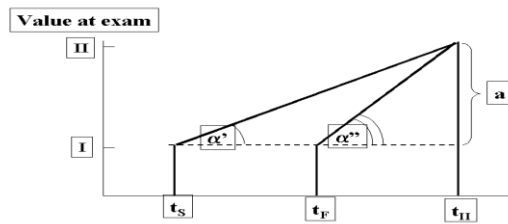


Table 6 summarizes the mean values of ultrasonographic parameters [mm] with fetal weight [kg] and fetal maturity index [points], to indicate e.g. mean values taken together for the last or birth week.

Table 6. The mean values of ultrasonographic parameters [mm] with fetal weight [kg] and maturity for F – fast, R – regular and S – slow growing fetuses

Weeks	Growth rate	Parameters USG				Fetal weight
		BPD	HC	AC	FL	
birth	F	99.4	338.6	341.4	77.7	3.3
	R	99.8	338.9	343.4	76.7	3.4
	S	97.5	339.1	346.6	77.4	3.6
36	F	97.1	332.3	331.8	75.5	2.9
	R	92.3	318.6	312.3	69.2	2.7
	S	92.3	315.5	306.8	68.3	2.5
34	F	92.6	319.7	312.5	71.3	2.4
	R	88.2	307.4	295.2	65.2	2.3
	S	90.2	306.1	290.9	64.7	2.1
32	F	88.0	307.1	293.2	67.0	2.0
	R	84.1	296.2	278.0	61.2	1.9
	S	88.1	296.7	275.0	61.1	1.8
28	F	78.9	281.9	259.6	58.8	1.1
	R	75.9	273.5	243.7	53.1	1.1
	S	83.9	277.9	243.2	53.8	1.1

Conclusions

The quantum thermodynamics makes possible prediction of the birth term with the accuracy of $\pm 3-4$ days (!) considering *premature* end of each pregnancy which occurs ≥ 1 week before, and *post-term* if the labor does not occur ≥ 1 week after the individual term. In each of three components of pregnancy (fetus, mother and placenta with the fetal membranes) several days before the birth term there occur clinically noticeable changes which enable verification of the clinical prognoses of birth date and the course of labor done with computer-aided method ≥ 28 weeks of gestation. Fetal maturity is an informational feature like other measurable fetal material-energetic ones inseparable from maturing fetal body. At the atomic level each subsequent new indivisible unit (quantum) of fetal maturity appears at a particular time and delivery occurs when a full quanta of fetal maturity has been completed. Thus, accordingly to the quickness of appearance of the consecutive quanta some fetuses are already mature at $37^{0/7}$ postmenstrual week of gestation while the other ones have to mature until $43^{2/7}$ (95% of confidence limits). The maturity level has to be evaluated immediately after labor through direct assessment of just six of the many possible newborn features: position of the limbs, elbow angle forearm (100–180, 90–100, <90); its mobility by pulling an elbow to the middle line of the body; breast nipple development (areola appearance and bud size less than 3-4 mm or more than 4 mm), appearances of plantar creases and lanugo. For each of those features one can allocate 0, 1 or 2 points, which maximally gives 12 technical quantum points of Klimek's maturation index (K) in newborn infants for the full fetal maturity: 9 ± 1.5 points in the range from 6 to 12 points, while immature newborns have less than 6 points, not taking into account weight and fetal age. Its values of maturity (index K) indicate a high statistical correlation with the results of both computer-aided monitoring method of pregnancy and prediction of birth date.

From ethical and medical reasons, the progress in neonatology and anesthesiology obscure the iatrogenic labors for individual childbirth, especially due to induction of labor very often instrumental, one week before true individual term. By means of the existent ultrasonography devices, but taking into account biocybernetics information one can make – on the basis of two measurements within ≥ 2 weeks – not only assess the current maturity, mass, length and gestational age of the child, but also predict those values in the perinatal period. This is the best way to bring the percentage of prematurity down to the natural limit of 2.5% of all

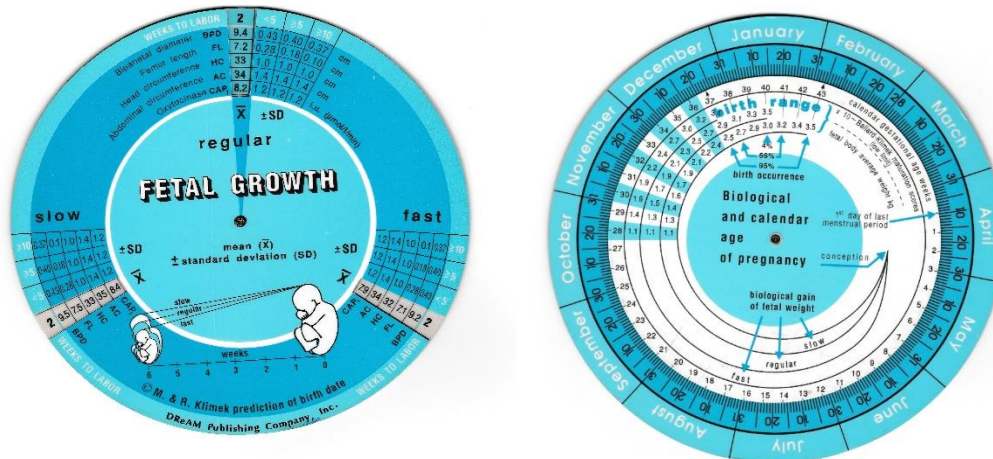
deliveries, because currently 10-18% of labors are induced prematurely only because the calendar time of pregnancy duration has exceeded 287 or 294 days from the date of the last menstrual period, which additionally is given by the mothers accurate to several days, anyway. Low birth weight, perinatal mortality and prematurity rate have been even adopted as general social and economic indices of development of entire countries or at least selected territories. After reprogramming of ultrasonography biometry as well as revitalizing of enzymatic monitoring of pregnancies, there is also a moral imperative to evaluate fetal maturity of newborn infants immediately after their deliveries. Such individual evaluation of each delivery ought to be performed directly in obstetrical ward not only by routine assessment of the adaptation of the newborn in Apgar scale but also of its fetal maturity according to new index K of fetal maturity, what is particularly important in the case of instrumental deliveries. The problem acquired a new importance in connection with the description of informatonosis as a new disease of social human life which can be found also in doctors with a conscious distancing from their professional calling and proclaiming harmful views, what even more e.g. performing iatrogenic cesarean sections. This illness pertains to persons with an intact understanding to their own words and actions, but not to a socially accepted hierarchy of values and rules. Also the substitutive ACTH-depot therapy with enzymatic monitoring makes possible to end every pregnancy successfully, what is particularly curiously, as the first enzyme used in medicine was the placenta-produced “defensive pregnancy enzyme” discovered by E.Abderhalden.

Pregnancy as a process of transmitting life to the next generation in relation to man applies not only to biology, but also to the psycho-emotional processes so often more powerful than ecological phenomena. Man himself decides about procreation even without the necessity of informing the sexual partner, especially if the possible pregnancy is a threat to his personal socio-economic status. Unfortunately, more and more people are delaying the possibility of pregnancy, thus deliberately limiting the primary process in which biology precisely determines the optimum time for conception, and only allows psychological motivation. The vast majority of people simply ignore this fundamental task pertaining to the maintenance of the species of homo sapiens, and only infertile people know the value of pregnancy as the most precious gift of life.

References

1. Babuna C, Yenen E (1966) Enzymatic determination of placental function. A rapid method *Am J Obstet Gynecol*, 95(7):925-34.;
2. Bieniasz A., Drewniak K. Klimek R. (1968) Clinical studies on desaminoxytocin *Am J Obstet Gynecol* , 98: 535.
3. Campbell S, Warsof SL, Little D, Cooper DJ. Rutine (1995) Ultrasound Screening for the Prediction of Gestational Age. *Obstet. Gynaecol.*; 65: 613.;
4. Chitty LS, Altman DG, Henderson A, Campbell S. (1994) Charts of fetal size : 4. Femur length. *Brit J Gynecol Obstet*; vol. 101: 132-5;
5. Cosmi V, Klimek R. *Philosophy of Birth* (1993) Natural process or artificial obstetrical procedure? *Int J Gynecol Obstet.*: 41, 231–32.
6. Klimek M. (1992) Simultaneous ultrasonographic and enzymatic assessment of birth-term. MD Dissertation, AM Cracow.;
7. Klimek M. (1993) Psychological Aspects of Determining the Expected Date of Delivery. *Int.J Perinatal Psychology and Medicine.* 5, 2: 143–149.;
8. Klimek M. (1994) Computer-aided imaging in advanced pregnancy. In: Popkin, D. R. and Peddle L.J. (eds): *Women's Health Today. The Proceedings of the XIV FIGO World Congress, Montreal, Sep.* (New York-London: Parthenon, pp.245–250;
9. Klimek M. (1994) Prognoza terminu porodu i stanu noworodka. Prognosis of birth-date and newborn state, DREAM Publishing Company, Inc., Cracow.;
10. Klimek M. (1993) Psychological aspects of determining the expected date of delivery. *Int J Prenat Perinat Psychology Medicine.*; 5: 150–155.
11. Klimek M. (1995) Psycho-medical prognosis versus mathematical prediction of birth term. *Int. J. Prenatal and Perinatal Psychology and Medicine.* 7, Supl. 1:39.
12. Klimek M. (1995) A Critical Evaluation of Fetal Weight Assessment in Late Pregnancy. *Int.J. Prenatal and Perinatal Psychology and Medicine*, 7, 1: 17–22.
13. Klimek M. (1995) Computer-Aided Ultrasonic Fetometry in Advanced Pregnancy. *Int.J. Prenatal and Perinatal Psychology and Medicine*, 7, 1: 7–16.
14. Klimek M. (1995) Fetometria ultra-sônica computadorizada na prenhez avançada. *Ginecologia Obstetricia*, GO, Junho, Sao Paulo, 4, 6: 85–92.
15. Klimek M. (1995) Magnetic resonance imaging and ultrasonography in timing of pregnancy. In: E.V. Cosmi (ed) *The Place for New Technologies in Gynecology, Obstetrics and Perinatology*, Monduzzi Editore S.p.A.:145–150.
16. Klimek M. (1995) Monitorowanie ciąży wspomagane komputerowo.(Computer-aided monitoring of pregnancy) In: Spaczyński M. (ed) *Ultrasonografia w położnictwie i ginekologii*. PZWL, Warsaw.
17. Klimek M. (1996) Medical prognosis versus statistical prediction of birth term. In: Klimek R., Fedor-Freybergh P., Janus L., Walas-Skolicka E. (eds) *A Time to Be Born*. DREAM Publishing Company, Cracow: 9–33.
18. Klimek M. (1996) Monitorowanie ciąży i prognozowanie porodu jako zdarzeń czasoprzestrzennych. (Monitoring of pregnancy and prognosis of birth as spacetime events). DREAM Publishing Comp. Inc., Cracow.
19. Klimek M. (1997) La prognosi medica in rapporto alla predizione statistica del termine di gravidanza, in: *Nascere, QUANDO?*, G.C.Di Renzo, CIC Edizioni Internazionali, Roma: 15–37.

20. Klimek M., Frączek (1995) A. New charts of fast, regular and slow fetal growth. *Archivio di Ostetricia e Ginecologia*, 2: 35–39.
21. Klimek M., Klimek R., Mazanek-Mościcka M.(1999) Biological diagnosis and prognosis in practical obstetrics. *Polish J. Gynaec.Invest.* 2 (2): 57–66.
22. Klimek M, Frączek A, Hann R, Hassan H, Grzegorek K. (1994) Prospective clinical evaluation of fetal weight gain in late pregnancy by means of computer aided fetometry. *Archivio di Ostetricia e Ginecologia.*; 2: 53–56.
23. Klimek R. (1994) *Monitoring of Pregnancy and Prediction of Birth–date.* London – New York: The Parthenon Publishing Group.
24. Klimek R., Bieniasz A. (1969) Studies on the relation between serum oxytocinase and labor. *Am. J. Obst. Gynec.*, 104: 959.
25. Klimek R, Klimek M. (1992) Biological gestational age and its calendar assessment with ultrasound. 2. Biological–Calendar Scales for Prediction of Birth–date. *Gynaecol. Geburst. Rundsch.*; 32: 159–63.
26. Klimek R., Pietrzycka M. (1961) Biochemische Methode zur Bestimmung der Oxytocinase und Klinische Bewertung. (Biochemical method for the determination of oxytocinase and its clinical value). *Clin. Chim. Acta*, 6: 326.
27. Klimek R., Drewniak K., Bieniasz A. (1969) Further studies on the oxytocin-oxytocinase system. *Am. J. Obstet. Gynec.*, 105: 427.
28. Skręt A., Klimek R., Cebulak K., Klimek M., Palczak R., Lassota L., Dorski A., Janeczko J. (1992) Flowmetric biological age in advanced pregnancy. *Int. J. Prenat. Perinat. Stud. Suppl.* 1, 97; *Int. J. Prenatal and Perinatal Psychology and Medicine*, 1993, 5, 2: 135–141.



For notes

