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Sistem nauke

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The Crisis of Ethically Neutral Science

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Abstract: Current crisis of morality in scientific and technical civilization leads us to a common ruin because modern science (which is free of morality) is inextricably linked to technology, and can therefore be called technoscience. As such, today it has a monopoly on knowledge of the world and therefore has the greatest power in history and is in tight collusion with the holders of power: the economy, politics, medicine, media, countries and multinational corporations. To have the greatest imaginable power (which, according to Kant, corrupts the freedom of mental reasoning), while being free from the morals that limit that power, means to turn the world into a world of the most modern barbarism and violence, destruction and self-destruction. Only morally responsible science is capable for future and it is the premise of a civilization capable of the future. Only responsible science can prevent science from turning into a comprehensive dogma. Therefore, science must be free from any ideology that depicts reality in black and white and thus produces vanity, hatred and violence. Global science requires a global ethos (global responsibility). Science cares about the truth that liberates us from lies and connects us into a single community. The fundamental ethical imperative *primum non nocere* (“first, do no harm”) is valid everywhere and forever. Ethically responsible science requires a change in the consciousness of the individual and a rediscovery of the idea of brotherhood. No human action should undermine and destroy existing reality, but rather improve it.

Key words: science, crisis of ethically neutral science, global power, global responsibility, fundamental ethical imperative, new idea of brotherhood

Introduction

In the introduction to this paper, I will first present how Alexander Görlach argued that no one - neither people nor institutions - understood the gravity of the 2008 financial crisis in the United States because only the material side of the crisis was visible to everyone, while the spiritual (moral) was unnoticed. No one, therefore, noticed the spiritual (moral) cause of the crisis - the greatest one since the Great Depression (1929–1933). I will then show what contemporary, world-relevant thinkers have to say about how a deep moral

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crisis (until the imminent disappearance of that same moral) came to be in all areas and levels of human life. At the same time, the question arises whether this is the end of the humanum, ie. the end of man? After that, it should be said that the world-renowned German moral philosopher Otfried Höffe today points out that every form of science must correspond to an appropriate form of ethics throughout history. Höffe distinguishes five stages in the development of science and its corresponding ethics. Finally, it should be emphasized that Günther Mack, a retired professor of experimental physics in Tübingen, Germany, argues that instead of science free of value (ie. morality and ethics) it is necessary to establish a science that will be responsible individually, institutionally and publicly - instead of the current paradigm of science free from morality to establish a paradigm of science capable for the future.

As an introduction to the topic, I refer to the statement of Alexander Görlach (linguist, theologian, visiting professor at Harvard and Cambridge, and professor of ethics and theology at Lüneburg, Germany) from his book *Homo Empathicus* (cf. Görlach 2019: 29), which states that no politician, no government and no supranational entity understood the gravity of the financial crisis of 2008 when Lehman Brothers went bankrupt in the United States. Everyone looked only at the material side of the novel crisis, and did not look for its spiritual cause which is called greed - one of the seven deadly sins according to Christian doctrine. No society can survive if the main vices (pride, greed, lust, envy, wrath, sloth), Görlach argues, determine the actions of its members, and he claims this referring to the text of Ralph Dahrendorf, a German-British sociologist, philosopher, economist and politician. (cf. Dahrendorf 2009), who in turn states that the economic system today destroys its own mentality assumptions. Dahrendorf reminds us that the first form of capitalism (the *Sparkapitalismus*, capitalism of savings) was based on Calvin's Protestant ethics, as evidenced by the great German sociologist Max Weber in his work *The Protestant Ethic and the Spirit of Capitalism*. Namely, Dahrendorf points out that the roots of economic thought lie in moral philosophy because a man who earns bases his agency on certain values. As an example, he cites Adam Smith, a Scottish economist and ethicist, who argues that the foundation of moral philosophy is man, not the market (not capital nor profit). In short, the modern economy has detached itself from morality and became more important than it. Dahrendorf analyses three forms of capitalism. In the first form (the capitalism of savings) ethic is respected, and in the second (*Konsumkapitalismus*, the capitalism of consumption) consumption is more important than fair work, while in the third (*Pumpkapitalismus*,

the capitalism of debt) people live by spending money they borrowed from banks, which they have not earned and which remains without coverage. The main motto of debt capitalism is: Enjoy now, pay later. The depth and potency of the mentioned financial crisis consisted in the fact that the actors of the financial system absolutized their profits (they received large severance pays) and did not show any personal or systematic responsibility. No one has been sanctioned, because no state stood behind that financial system. It follows that the whole system therefore needs to be thoroughly reformed on the basis of core moral values (cf. Görlach 2019: 16–19, 21–36).

Crisis of morality in all fields and levels of human life

After the introduction, I present the views and claims of world-relevant thinkers about the crisis of morality and the predictable disappearance of morality from all areas and levels of human life and from all parts of culture, starting from science to art and religion. I rely on the following authors: Charles Taylor, Pascal Bruckner, Robert N. Bellah, Peter Sloterdijk, Hans Jonas, Edgar Morin, Hans Küng, Žarko Paić, Jürgen Habermas, Yuval Noah Harari, Otfried Höffe and Günther Mack.

A. Charles Taylor

World-renowned Canadian philosopher, professor emeritus, among other things known for his own contribution to moral philosophy. In his excellent book *Quellen des Selbst* [*Sources of the Self*] (Taylor 1994) he showed how two modern individualisms arose. The originator of the first (rational) individualism was René Descartes, and of the second (expressive) Michel de Montaigne. For Descartes, man is a pure mind, a disengaged mind, separated from the body. Such a mind has an instrumental relation to its own body and to the overall reality: it rules over everything and is responsible to itself. De Montaigne's expressive individualism seeks to express man's originality, uniqueness, and singularity. Such individualism is emotional, because it expresses man's aspirations and desires, ie. the peculiarity of person's feelings, but it suppresses moral ontology, which means that it makes morality impossible as a theory and as a practice. Both individualisms, according to Taylor, neglect the moral dimension of the human being and do not ask about the essence of the good life or about what makes human life worth living. Also, Taylor shows that both individualisms contain certain moral imperatives and

norms, but they lack the ontological foundation of moral norms. Both individualisms are turned towards the human interior. Descartes emphasizes what is common for all people (the mind), and de Montaigne emphasizes what makes each person special.

In the book *Negative Freiheit? [Negative Freedom?]* (Taylor 1998) criticizes modern individualism and shows the fallacy of negative freedom. Namely, in a liberal society, freedom is understood exclusively as the independence of the individual from others, as the absence of external physical and legal obstacles. It should be said that in addition to external obstacles there are also internal ones. For internal obstacles, the highest judge is the entity itself, which excludes the possibility that its actions are judged by external entities. It follows that freedom thus understood cannot be realized, because the obstacles to the exercise and spread of such freedom are other people and law. In his book *Das Unbehagen an der Moderne [The Malaise of Modernity]* (Taylor 1995) he names three unpleasant phenomena in modernity. 1. The disappearance of the moral horizon, meaning and higher values. People once considered themselves integral parts of a more comprehensive cosmic order. Discrediting of this order is dubbed as the “disenchantment” of the world (*Entzauberung*, Max Weber). In this process, the world lost its magical power. Therefore, the first cause of malaise is individualism, which, according to many, is the highest achievement of modern civilization. Such individualistic (negative) freedom has been achieved by freeing ourselves from the older moral horizon, and now man lacks a sense of higher values, which are worth living and dying for. People today strive exclusively for “pathetic comfort” (*erbärmliches Behagen*, Friedrich Nietzsche). In this way man’s life is impoverished because man is concentrated only on their *I*. 2. The second malaise of modernity is a phenomenon we call the primacy of the instrumental mind. The mind serves only as an instrument for finding the means that serve to achieve the set goal. Everything that exists is reduced to a means for use, so technology has a dominant role, which means that, for example, a patient is the object of processing for the medical profession, not a person: the patient is, therefore, a technical problem. 3. The third malaise is that individualism and the instrumental mind in political life lead people into mild despotism (Alexis de Tocqueville). It is a government that treats citizens gently and paternally and thus becomes the guardian of its citizens. This is taking place in an extremely centralized and bureaucratized political world.

Furthermore, in his book *A Secular Age* (cf. Taylor 2007), Taylor proves that in the new age evil is no longer in man - therefore, evil is no longer

endogenous but exogenous. Namely, evil is now outside of man: in the system, in history, in structures, which is to say in reality outside man. In this way, man declared themselves sinless and harmless, and placed all evils into others: into members of other nations, religions, cultures, politics and civilizations. That sinless man today kills evil in other people without remorse. Innocent modern killers declare their murders of other people to be good deeds. These sinless people have killed millions upon millions of people in the name of the two most dangerous modern ideologies: in the name of nationalism (in the form of Fascism and Nazism) and in the name of communism (in the form of Stalinism and in the form of Chinese and South Asian variants of communism). Such a modern sinless man has become an immoral being, simply a being beyond good and evil: he has no sense of moral norm or moral obligation. Moral questions are simply absent from his consciousness. What used to be called moral philosophy or ethics is now called therapeutics. The famous “therapeutic turn” took place, which means that there is no evil in person, so they can never be guilty, but can only be mentally ill. Instead of a moral register, there is a therapeutic one today. It diminishes man’s dignity, because man has become a mere object of therapeutic treatment. By rejecting the custody of religion (ie. the Church and the clergy), modern people wanted to affirm their dignity, but now they have fallen under the custody of therapeutics, where they are treated as objects and are silenced more than believers were once silenced in churches. If modern man is incapable of sin (evil), he is incapable of both freedom and responsibility, because sin (evil) arises from man’s freedom, and from that freedom man’s responsibility arises. This has produced the demise of ethic, which many Marxists had been talking about, and many scientists are talking about today.

B. Pascal Bruckner

French writer and one of the “new philosophers” known for his critiques of (not only) French society and French culture. In his book *The Temptation of Innocence* (cf. Bruckner 1997) he shows how it came to violence in the former Yugoslavia. People and whole groups, whole nations want to absolve themselves of responsibility in two ways: infantilism and victimization. These are the two symptoms of today’s man and today’s society. Infantilism consists in the fact that adult people and entire nations behave infantile, ie. as spoiled children: they do evil and do not feel guilty, but rather expect recognitions and rewards for the evil they have committed. Victimization is manifested in

the fact that adults and entire nations consider themselves victims, who are incapable of evil. They allegedly endure other people's evils, and expect others to acknowledge their sacrifice.

C. Robert N. Bellah

An American sociologist internationally known for his work on the sociology of religion. In the co-authored book *Habits of the Heart* (Bellah et al. 1996), he criticizes two forms of American individualism, referring to the prominent French social philosopher Alexis de Tocqueville, who in 1830 called some aspects of American democracy individualism. Bellah proves that both American individualisms (utilitarian and expressive) rule in American society, and for both the individual is the primary reality, while society is secondary, ie. derived reality.

D. Peter Sloterdijk

World-renowned German philosopher, television presenter and essayist. In his three-volume work entitled *Sphären* [*Spheres*] (cf. Sloterdijk 1998; 1999; 2004), he argues that modern individualism is placental, because in the new age both individuals and systems function as sacred egoists. While criticizing individualism, Sloterdijk proves that the human being is a "bipolar being" from the very inception, because *the couple* represents a size more real than the individual.

E. Hans Jonas

A prominent American-Jewish philosopher, born in Germany, known for his works on Gnosticism and the ethics of responsibility. Long ago, in the book *Das Prinzip Verantwortung* [*The Imperative of Responsibility*] (cf. Jonas 1984), Jonas proved that science and technology had become the greatest threat to nature, man, and humanity. In the past, they promised salvation, and today they offer ruin, so they lead humanity to destruction and self-destruction. Related to the economy (especially the military) and the media, they have unprecedented power. That is why Jonas formulated a new ethical imperative, which reads: "Act so that the effects of your action are not destructive to the permanence of genuine human life on Earth" (Jonas 1984: 36)

F. Edgar Morin

French philosopher and sociologist, one of the most inspiring thinkers of today. In the book *Ethics* (cf. Morin 2008) he warns us that today's humanity may end up in barbarism instead of in true civilization and humanization. He points out that the relationship between science and ethics has become so inseparable that the term *technoscience* simply imposes itself on us today. The development of knowledge for the sake of cognition (it is the scientific imperative) has become inseparable from the mastery of nature (it is the technical imperative). It should be added that modern rule over external nature has also turned into rule over human nature. Science and technology in the service of economics (industry, transport and communications) and scientific research in the field of chemistry and genetics have introduced science into the world of profit. Thus, modern technoscience is the most powerful driver of society. Science explains the structure of atoms and genes and thus becomes a powerful means of destruction and manipulation in the hands of political forces. Scientists are deprived of power that is being concentrated in the hands of large companies and state powers. The atomic bomb has escaped the control of scientists. Science is present today in all areas and at all levels of human life, it has unlimited power, "but it is completely powerless to control its own power" (Morin 2008: 71).

G. Hans Küng

The most famous Catholic theologian, and also known as a philosopher, the founder of the dialogue between religions based on the principles of world ethos. In the book *Projekt Weltethos* [*Project World Ethos*] (cf. Küng 2006) he argues that the world ethos applies to all areas and to all levels of human life: politics, the economy, science, the media and other areas of public life. We need a global ethos that will apply to the whole world. Namely, the ethos frees us from all ideologies that portray reality in black and white and thus produce vanity, hatred and violence.

H. Žarko Paić

Croatian sociologist and philosopher, versatile intellectual. In the book *Identity Politics. The Culture as a New Ideology* (cf. Paić 2005) demands an approach to culture and ideology different from the current one because

he wants “deideologisation of culture and deculturalization of ideology” (Paić 2005: 209). According to Paić, culture has become a universal ideology of global capitalism. The triad of *biopolitics of identity - the ideology of humanitarianism - genetic technology* determines the contemporary global capitalism. Culture, as a new ideology, includes science, religion and art. In the age of globalization, there has been a cultural turn, according to which culture becomes a new ideology of the new world order. Thus, contemporary culture justifies the development of global capitalism, and thus betrays its essence (autonomy, self-improvement, and integration). It should be mentioned that Paić wrote a five-volume work entitled *Technosphere* (cf. Paić 2018–2019), in which he asks whether a turn towards humanism is possible in the technosphere.

I. Jürgen Habermas

The famous German philosopher in his book *Glauben und Wissen* [*Faith and Knowledge*] (cf. Habermas 2001) points out that science today has a monopoly on knowledge about the world and that science has revolutionized our everyday knowledge. But modern science, in Habermas’s interpretation, has turned into bad philosophy because it abolishes the distinction between describing reality (which is the task of science) and justifying reality (which is the task of philosophy). Such science does not recognize man as a free and responsible being. In the book *Dialektik der Säkularisierung* [*The Dialectics of Secularization*] (cf. Habermas / Ratzinger 2011), he claims that our civilization is threatened by “secularization that is losing its course” (ibid.: 17), because sources of morality (especially solidarity) have dried up. Therefore, the constitutional state wants to preserve all the cultural sources “from which the sense of the norm and solidarity of citizens are fed” (ibid.: 33). If people are not aware of the moral norm that unconditionally binds them, they cease to be moral beings, ie. free and responsible beings; if they have lost their sense of solidarity and if the suffering of others does not affect them, they have become modern barbarians.

J. Yuval Noah Harari

Israeli intellectual, historian by profession, professor of history in Jerusalem. His book *Homo Deus. Eine Geschichte von Morgen* [*Homo Deus: A Brief History of Tomorrow*] (cf. Harari 2017) concludes by arguing that in the 21st

century, censorship means (instead of a former ban) flooding people with irrelevant information. People then simply do not know what to draw their attention to, so they spend their time dealing with secondary aspects of some problem. In earlier times, power meant access to data, and today it means knowing what to ignore, knowing what to concentrate on in our chaotic world (cf. *ibid.*: 536). Harari announces changes at the beginning of the third millennium. He points out that hunger, disease and war can already be controlled by humanity. For the first time in history, more people die from overeating than from hunger; more people die from old age than from infectious diseases; there are more suicides than victims of crime, war and terrorism. At the beginning of our century, the average person is more likely to die from overeating at McDonald's than from drought, Ebola, and al-Qaeda attacks (cf. *ibid.*: 10). It is possible, according to Harari, for humans to become gods in three ways: through biotechnology, through cyborg technology, and through the production of inorganic living beings. Biotechnology starts from the realization that development begins from amoebae, through reptiles and mammals, to homo sapiens, and can go even further than homo sapiens. Cyborg technology will supply the organic body with artificial hands, eyes, and millions of nanorobots (cf. *ibid.*: 64). The third great project will be for mankind to appropriate to itself the divine power of creation and destruction, and to elevate homo sapiens into *homo deus*. So, according to Harari, all projects boil down to one project: to achieve divinity, but that divinity is understood more in terms of the Greek and Hindu gods, and less in terms of the almighty God of the Bible. Our descendants, Harari supposes, are likely to have their own traits, inclinations and weaknesses, but they will be able to love, hate, create, and destroy in a completely different way (cf. *ibid.*: 69).

If we look at human life as a whole, following Harari, all problems and developments will be overshadowed by three interrelated processes: 1. Turning science into a comprehensive dogma that claims that organisms are algorithms and that life is data processing; 2. Intelligence is separated from consciousness; 3. Unconscious but highly intelligent algorithms could soon know us better than we know ourselves. These three processes raise three key questions: 1. Are organisms really algorithms and is life really data processing?; 2. Which is more valuable - intelligence or consciousness?; 3. What will become of our society, our politics, and our daily lives if unconscious but highly intelligent algorithms know us better than we know ourselves? (cf. *ibid.*: 536–537).

K. Otfried Höffe

World-renowned German moral philosopher, specialist in the philosophy of Immanuel Kant. In the fifth chapter of his book *Die Macht der Moral im 21. Jahrhundert* [*The Power of Morality in the 21st Century*] (cf. Höffe 2014: 64–79) he gives an overview of the development of science and technology in five phases. If we consider the history of science, Höffe argues, we will see that the history of science (especially the history of nature research) shows what changes in science require a conversation with ethics, or rather, what kind of ethics they require. This approach has two advantages: it is not subject to the danger of moralizing that is far removed from reality, but begins with research and extends the ethics of research with known critical ethics and control ethics. If we look at the history of science in essential terms, we can distinguish five phases, each of which has its own characteristic relationship to ethics. In the Old East, it was, morally speaking, easy to deal with science. Medicine, astronomy, mathematics, and planned observation were in the service of human life, so conversing with ethics was superfluous. It can only be objected that the results of science served only a thin social stratum: the ruler, his family, the nobility, and high officials - in short, science there was humanitarian but unjust.

In the second phase, Höffe claims, the enormous progress in the Greek space was backed by an epistemic revolution focused on knowledge, ie. on the discovery of a logical order that had already been prepared in the ancient East. That revolution disempowers the myth in the name of the logos. Two aspects (two evolutionary shifts) of this revolution should be highlighted here. The scientific-theoretical shift deprives knowledge of the character of a recipe and makes it questionable so that it can be passed on through studying and learning. Knowledge is in the full sense determined by general concepts, reasons, causes, and laws. In order to realize the first aspect of the revolution, another aspect is needed, that is the intentional revolution, according to which research is free from benefits in two ways: it initiates a new kind of research ethic, an ethic that initiates and legitimizes research, and narrows the rank of today's predominantly humanitarian knowledge.

The science comprehends the highest and most general causes and reasons and strives for cognition for the sake of cognition. Just as a free man, unlike a slave, lives for himself, so, in the cognitive sense, free knowledge is sought for itself. This rank includes not only the First Philosophy, which we later called metaphysics, but also mathematics, astronomy, theoretical physics and

biology. Research does not serve external interests or external obligations. The second epistemic revolution is associated with a moral revolution, with a moral evolutionary shift. The desire for knowledge belongs to the nature of man endowed with reason and therefore epistemic free research has a humane and at the same time moral rank. Such research meets the criteria of the ancient moral principle (*eudaimonia*), happiness to the greatest extent. In free research, man's rational nature is perfected and realized, and this is called happiness. Among the Greeks, epistemic free research of good has the highest moral rank. Whoever engages in philosophy or the study of nature leads a good life (*eu zen*) - a happy and prosperous life. This forms the core of the ethics of science and the ethics of research. Such ethics affirms science because it initiates and legitimizes research, affirms free research as the highest form of human life. A great proponent of such ethics was Aristotle, who does not deny the value of his father's medical vocation, but at the top of the hierarchy of science stand exclusively philosophy and science that is neither utilitarian nor humanitarian.

Aristotle did not neglect the multiplicity of nature, for he shows that even the lowest animals in their expediency have on them something worthy of admiration. This admiration for the infinite richness of nature points to a third epistemic evolutionary shift. Charles Darwin himself calls Aristotle one of the greatest, if not the greatest observer of nature. The Greeks made significant diagnostic and therapeutic advances in medicine. They made the second evolutionary shift: the solemn self-commitment of physicians. In it, they indicate another research ethic, even a control ethic. The Hippocratic physician subjects himself to two moral obligations. The first Hippocratic commandment contains the third reason that legitimizes and at the same time controls research. This is the first element of control morality: the well-being of the patient is the highest law (*salus aegroti suprema lex*). The second obligation sets a limit by prohibiting harm to anyone (*nil nocere*). Newer medical ethics adds a third to these principles: the command of enlightened consent.

In the third stage, according to Höffe, a conflict arises between the natural desire for knowledge and the knowledge that comes from divine Revelation. Here I wish to supplement the author with new insights. Namely, it should be noted that there was an exaggeration on both sides: both on the side of the natural mind, and on the side of faith (Revelation). Some wanted to reduce faith to knowledge and others knowledge to faith. Both are violent. The real solution lies in achieving harmony between reason and faith. New research into medieval philosophy and theology shows that the great Franciscan

theologians and philosophers already had the primacy of practical (moral) intellect over speculative (theoretical). This is clearly stated in Roger Bacon, for whom moral philosophy is the pinnacle of philosophy, because practical intellect or free will is the intellect of freedom, from which responsibility arises. This reversed the hierarchical order of science that prevailed under Aristotle: theoretical, practical, and poiethical science. In Bacon, Johannes Duns Scotus and William Ockham, practical sciences take precedence over theoretical sciences (cf. Babić 2015: 67–86). In his history of philosophy J. Habermas proves that two Franciscan greats in the Middle Ages (Scotus and Ockham) were the originators of the modern paradigm, ie. of the modern way (*via moderna*), because they put crossroads for scientific, religious and socio-political modernity (cf. Habermas 2019: 761–851). Renowned researcher of medieval philosophy Ludger Honnefelder claims that the main characteristics of Scott's philosophy are intentionality, transcendence and morality. With his conception of freedom, Scotus establishes his ethical theory, which is beyond voluntarism and naturalism (cf. Honnefelder 2005).

In the fourth phase, Höffe shows how research developed in the early modern age, in contrast to antiquity and the Middle Ages. The seminal work of the prophet of scientific and technical civilization, Francis Bacon, *Instauratio Magna* or *Novum Organum* (1620) on the title page has a picture of a ship returning from its journey across the boundless ocean into the strait of the sea. This clearly indicates two evolutionary shifts characteristic of the new age: the ship frees itself from the ropes of the strait of the sea and thus symbolizes an intellectual emancipation that involves unlimited free will for knowledge. Contrary to the First Philosophy, which seeks the highest knowledge, the most general causes and reasons, a humanitarianly obligatory innovation now emerges: the adventure of discovery on the boundless ocean. In research, Bacon insists on empirical experiments. In this evolutionary step, Kant saw an epistemic revolution, which consisted in the fact that researchers do not observe nature passively, but actively process it. Researchers ask or invent precise questions for nature – hypotheses - and with the help of interventions, experiments, force it to answer. Both Bacon and Kant, however, ignore the moral consequences of such research, because research that affects the world of life imposes responsibility for such action, for the risks that arise from such intervention in nature. Bacon asks from scientists to learn to look at nature in a whole new way, as young children - to be free from preconception and prejudice. It should be said that small children live without preconception,

but in a certain respect they act without thinking, ie. they neglect the negative consequences and overlook the costs of their venture.

For a long time, the new age tried to give the character of innocence to its innovations. It must be admitted that experiments such as Galileo's with the fall of the stone were innocent because they meet five conditions: 1. Experiments are conducted on a small scale; 2. They are conducted on inanimate matter; 3. The changes they cause in nature can be well estimated in advance; 4. They do not cause any major damage; 5. They cause only reversible damage. Bacon's third evolutionary shift is that he does not renew the ancient ideal of free research, because for him, research has a humanitarian purpose. In his scientific utopia *New Atlantis* (1627), the research republic sought remedies against hunger, plague and disease, under the motto: "Medicine instead of metaphysics". Therefore, in a humanitarian sense, research is limitless. In his work *Instauratio Magna*, Bacon argues that one cannot exaggerate when it comes to love in humanitarian research. Modern research is responsible for two things: 1. It is co-responsible for changing attitudes, ie. for a new utilitarian understanding of self and the world; 2. It is responsible for fulfilling its humanitarian promise. One of Bacon's first great supporters, René Descartes, assumed that "we might free ourselves from innumerable diseases, both of the body and the mind, and perhaps even from the infirmity of old age." A particularly extreme example of irrational expectations is offered by the Congress of leading molecular biologists held in London in 1962, which expected the liberation of the world from infectious diseases, life without suffering, and - thanks to organ transplants - endless life, which means improving genetic supply. Ethics as a critique of ideology rejects the implantation of omnipotence. Already Bacon himself criticized some biomedical research that wanted to play the role of God, who created the world in six days and rested on the seventh. Man cannot create nature from nothing (*ex nihilo*) like God, and cannot rest on the seventh day and look at what he has created as good. Man's desire for knowledge cannot be satiated (it is innate to humanity), and his interest in facilitating and improving human life remains constant. But human creation is never so good that it cannot be further perfected nor is secular paradise possible for man.

In the fifth phase of the development of science, Höffe shows that the latest research requires responsibility because it changes nature and because the consequences of research are irreversible, which means that the damage caused is impossible to repair. It is impossible to suppress radioactive radiation, which is also evident in atomic experiments. In his experiment, Galileo

had to be careful only that no one was passing on the path on which the stone fell, and the stone itself could later be returned to the place from which it was taken. The framework conditions of research in early modern times were significantly violated in gene research. Here the basic elements of life are experimented with, and the consequences for the world outside the laboratory cannot be estimated. And the consequences can be fateful epidemics. Philosophical ethic cannot decide on the dangers that threaten us, but it can name responsibilities that are appropriate to such research while developing a control ethic and a risk ethic. We need to investigate the types of dangers that threaten us (completely unknown and therefore unpleasant) and the risks (that are manageable or not) by taking biological and physical precautions. Last but not least, one should ask about the price and the currency in which these experiments are paid for. Personal, social and even aesthetic costs should be taken into account. The risks should be determined not ahistorically, but only depending on the specific culture. Risk ethic refers not only to the personal character of morality, but also to the social measures that are needed, but must be flexible so as not to stifle the creativity of research. The international research community can be helpful in establishing internationally valid rules so that national legislators do not hinder their researchers.

Furthermore, in modern research, another evolutionary shift of the new age becomes important: the humanities. Until the 19th century, many prominent researches primarily served cognition. Thus, Newton's laws, Darwin's theory of evolution, quantum theory and the theory of relativity, and even the deciphering of DNA, were motivated by a pure desire for knowledge rather than humanitarian stimuli. Today, the opposite direction is dominant, as the era of sciences of life has come, from which higher benefits are expected. Deciphering the genetic code marks a structural change. It consists of a new order of theory and practice, because fundamental research can be transformed into a novel technology in a short time. The laws of Gregor Mendel, an Austrian priest and scientist, were already technically usable, and they offered only a theoretical upgrade to a long-practiced technique, the traditional cultivation of plants and animals. In molecular biology, the order is reversed: now theory precedes technique. Basic research almost creates possibilities of application which is sought to be exhausted as much as possible for the imperative of boundless improvement. However, more inter-research is needed, ie research into the foundations of application. Ethics is needed here as a critique of ideology. Whoever demands humanitarian gain from the inter-research of, for example, embryonic cells, is not only frivolous, but is

also drawing a humanistically erroneous conclusion. Namely, they call for the possibility of helping patients, although they are still dealing with only preliminary work. In this case, the commandment applies: seriously ill patients and their relatives, who are clinging to the straw of salvation, must not be given any open promises. Even someone who can promise them new opportunities to help does not provide them any current help yet. Whoever conceals this difference draws another humanistically erroneous conclusion. A certain assessment of epistemic innovation is also frivolous. For example, if the human genome has been deciphered, the human being itself is not. At a time of boom in the sciences of life, philosophy and the humanities must not be forgotten. The benefits of medicine are welcome to all citizens, but they are the result of external research, ie. statutory insurance of patients, the welfare state in general, whose justification is subject to social ethics.

Molecular biology is moving towards the fifth evolutionary shift, which may have three perspectives: 1. In humans, molecular-biological relationships could be more complicated than relationships in the subhuman realm; 2. Health is an elementary good, so research has a humanitarian rank; 3. Only man has the rank of self-purpose, which we call human dignity, and therefore with regard to means there is a higher moral responsibility. Medically assisted fertilization offers itself as an example. Ethics first asks whether it is permissible to limit the power of destiny, then seeks arguments that speak for and against in the context of fertilization for the diagnosis of preimplantation. Finally, ethics distinguishes the question of what the legislator can extort, from the question of what is considered right and what friends and relatives advise in a given case. Thus, philosophical ethic distinguishes between the morality of rights (what we are obliged to do) and the morality of virtue (what we do beyond that which is commanded). In the name of the morality of virtue, the morality of rights must not be violated; no one's life should be ended in the name of the command to help another. In short, life must not be harmed (*nil nocere*).

L. Günther Mack

In his text entitled *Die Suche nach einem zukunftsfähigen Wissenschafts-Paradigma* [*The Search for a Paradigm of Science Capable of the Future*] (cf. Mack 1998: 308-329), Mack argues that science is a cultural activity whose formative power (*Machtformigkeit*) is growing. The power of science, therefore, is growing in all areas of culture, society and politics, especially in

the field of economics and the military industry. Feelings of fear of scientific and technological consequences are expanding, and range all the way to hostility towards science and technology. So far, the consequences of science and technology, as well as the consequences of their consequences, have been neglected. These are the problems of armaments (atomic, biological and chemical weapons), the ecological threat to humanity and disasters (climate change, the ozone depletion, deforestation and devastation, chemical plagues, species extinctions, etc.), information and genetic technology, population growth and economic, societal, social and political conflicts. This needs to be completely rethought and a shift in awareness needs to be initiated in order to reach a minimum consensus on the highest values and common goals. In this, the most important is change in the notion of science – a new paradigm of science that will replace the previous paradigm of science free of values, which was responsible neither for its applications nor for its consequences. Therefore, it was not possible to hold science accountable because it is obliged to pure knowledge and to find the truth, and because its applications in technology are not its business, even though those applications change the world, endanger everything and bring catastrophe. The discussion of ethics and the requirement that science and technology must be accountable for the present and future consequences of their ambivalent action is a symptom of a break. The impetus for changing the understanding of science comes from science itself, but also from beyond it. The crisis of science must not be seen as an isolated phenomenon because the crisis of morality is all-encompassing today. It affects all areas of the cultural and natural world (the world of life). We have been seduced by modern civilization thanks to its scientific and technical progress, but both the whole society and ourselves have been seduced.

Science today is to a large degree organized internationally, so its consequences are largely global. Therefore, the question of the paradigm of science capable of the future involves a discussion of world ethos. Science capable of the future is the premise of a civilization capable of the future. The reverse is also true. The question of the future of science is a question of a supradisciplinary kind. The cause of the crisis of science is the ethos of science that was focused on the internal management of science and the associated notions of freedom from values and about freedom of science. Namely, science had no relationship with its applications. Mack states that Robert K. Merton described “pure” science: knowledge is the common good (*donum commune*); scientific knowledge is valid for all people (it is, therefore, universal); it is not bound by any extrascientific ideologies or interests (disinterest); scientific knowledge

is constantly subjected to critical re-examination by scientific methods and criteria. In this disinterest (freedom from external ideologies and interests) it is best seen that science understands itself as free from values (*wertfrei*). This therefore excludes extrascientific and supradisciplinary consequences of scientific activity. The principle of value-neutral science neglects the interdisciplinary and supradisciplinary dimensions of science. Science free of values in practice was more fiction than reality, because even Max Weber himself found it *difficult* to separate valuations from empirical constataions. One cannot speak of the disinterest of “pure”, free and value-free science, because science and research in their real social character are inextricably linked and actively intertwined in the scientific-technical-economic complex. As an example, suffice it to mention that fundamental research in radiochemistry and atomic physics has unleashed revolutionary, politically subversive danger and power. This is also true of gene research, which leads to radical change. People from the economic, societal and political circles demand productive strength and competence to solve problems (actually benefit), and even the proponents of the value-free science thesis do not notice this.

The discrepancy between the self-limitation of science in the traditional ethos and the social orientation to practice belongs to the causes of the crisis, as science preserves its internal freedom, while the critical evaluation of its consequences comes from social instances, threatening the autonomy of science. Science and research, in addition to problem-solving competence, can also have the potential to produce problems. Therefore, science can no longer be justified by the principles of traditional ethos. One cannot speak only of the responsibility of scientists (individual ethics), but also of the responsibility of the scientific community in institutions and organizations. Sanctions are needed for scientists and institutions that act contrary to ethics. Today’s moral crisis in science cannot be resolved within the current paradigm, so a new one needs to be established. New science should be open to other scientific disciplines (interdisciplinary) and to what transcends all scientific disciplines (transdisciplinary). A qualitative and quantitative expansion of its horizon is needed, which includes its responsibility. The contours of the science paradigm that will be capable of the future include the recognition of the value character of scientific cognition and action. Value is an integral part of science, which means that responsibility essentially belongs to scientific cognition and action. Not only is negative freedom required, but also positive freedom - freedom for higher values. Responsibilities include interdisciplinarity, transdisciplinarity and publicity of work.

Responsible scientific action is manifested in internal, institutional and public accountability, which includes assessing the consequences of research, especially when it comes to armaments, gene research and genetic technology. At that, it is important to determine the objectives of research, which will be in line with the personal and institutional ethos. And when in doubt - as Hans Jonas said - the prophecy of doom should be given priority. Scientific and technical responsibility also includes the appropriate teaching about it, then the institutional conditions, ethics commissions, people authorized to protect ethics, society and associations. The role of science in society and politics is to seek a fundamental ethical consensus, with society and politics. At the same time, scientific journalism is important, which will give the public qualified information, not sensations. What should we do? *Günther Mack asks at the end of his text and replies that this question goes beyond science.* Mack quotes Leon Eisberg, an evangelical pastor who works with students, who says that the idea of fraternity in our time is a prerequisite for our survival. We need, therefore, to rediscover the idea of brotherhood.

Conclusion

From the above, I draw the following conclusion. Until the new age, man's cognition was mostly receptive and man was mostly a passive being. Therefore, injustices could be inflicted on man only by active forces: natural and higher forces. Namely, the active principle was more important than the passive one. It is only in the new age that human cognition becomes active, so man becomes the primary active being who changes nature (the world around him) and himself. This happened with the Copernican turn in the new age, when man, thanks to natural sciences and technology, mastered not only external nature, but also his own. In scientific-technical civilization, science has acquired a monopoly on knowledge of the world, and is now seeking to turn it into a comprehensive dogma. Only the power of morality can oppose it, which must be global because the power of science is also global.

Modern societies, according to Otfried Höffe, live off assumptions that they cannot guarantee on their own (cf. Höffe 2014: 194). With this claim, Höffe relies on the claim of Ernst-Wolfgang Böckenförde, who long ago asserted that a libertarian secularized state lives off assumptions that it alone cannot guarantee (cf. Böckenförde 1991: 112). The assumptions we cannot live without are fundamental values: justice, truth, freedom, responsibility, equality and fraternity. The essence of the human being includes freedom and

responsibility. If a man renounces freedom and responsibility, he renounces his own essence, ie. himself - he renounced his humanum, that which makes him a man.

We need a new understanding of science, which recognizes that freedom and responsibility are immanent to all human cognition and action. Freedom and responsibility are indivisible as science and technology are indivisible today. To change the notion of science requires a change in the consciousness of the individual. The secret is that this change cannot be forced by force and fear. Such change is possible only from freedom, and supreme freedom is positive freedom, the one that strives to achieve the highest values and the one that connects us with others in one community. Hannah Arendt argues that Johannes Duns Scotus, the greatest Franciscan medieval thinker, was also the greatest philosopher of freedom in Western thought and that only Kant could equate himself with him in unconditional devotion to freedom (cf. Arendt 1998: 376). Namely, Scotus proved that there are two inclinations in human free will: a tendency to self-interest and a tendency to justice. Both inclinations (aspirations) are free. The inclination of justice is innate freedom, according to which our will can want some good that is not directed at us, that is by which our will does not seek its own benefit, but that which transcends our benefit, our selfishness and egocentrism. The propensity for justice is more sublime than the propensity for one's own benefit, because to love justice for the sake of justice, for the sake of another, is a freer and more communicative act than the act of love for one's own benefit. Such an act of positive freedom frees us from egoism and connects us with other people and such freedom indirectly speaks of the idea of brotherhood, which is a prerequisite for the survival of humanity (cf. Babić 2012: 54–55; Duns Scotus 2012: 154–157).

For Scotus, natural action is necessary, but selfish, while only by free action that respects the other as the other, can we transcend natural necessity and selfishness. In his book *Reportatio Parisiensis Examinata* he argues that freedom can be proved a posteriori and that without freedom no virtues, no commandments, no warnings, no rewards, no punishments, no honours would be needed, and no human community would be possible. (neither political nor religious). Freedom is, therefore, a presupposition of politics, morality and soteriology. At that, Scotus has in mind the freedom that is free from egoism and that is communicative because it connects us into one community (cf. Babić 2019: XXI – XX; Duns Scotus 2005: 78–80). In short, true freedom is realized in morality and love.

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