

MULTI-DISCIPLINARITY, PLURI-PERSPECTIVITY AND INTEGRATIVITY IN THE SCIENCE AND THE EDUCATION

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In the era of extreme fragmentation and specialization of science and education, it is increasingly difficult to talk about the purposes and the objectives of science and education in the traditional sense. Also, very concepts of knowledge and truth are coming into danger. In order to answer the question about the causes of these problems, whose negative consequences affect different levels of human life, we should re-think the modern paradigms of science and technology (i.e. techno-science), as well as the modern forms of economy and politics, which are closely connected to them. This article tries to offer a basis for re-thinking the concepts of knowledge, science and education, as well as to show why the concepts of multi-disciplinarity, pluri-perspectivity and integrativity – articulated by *integrative bioethics* – play an important role in building such a basis.

Key words: science, education, knowledge, philosophy, integrative bioethics.

Multidisciplinarnost, pluriperspektivnost i integrativnost u znanosti i obrazovanju. U doba ekstremne fragmentacije i specijalizacije znanosti i obrazovanja sve je teže govoriti o svrhama i ciljevima znanosti i obrazovanja u tradicionalnom smislu. Također, u opasnost dolaze i pojmovi znanja i istine. Da bismo odgovorili na pitanje o uzroku ovih problema, čije se negativne posljedice tiču različitih razina ljudskoga života, trebamo promišljati novovjekovne paradigme znanosti i tehnike (tj. tehnološke znanosti), te s njima povezane moderne forme ekonomije i politike. Ovaj članak nastoji pružiti osnovu za promišljanje pojmova znanja, znanosti i obrazovanja, te pokazati zašto pojmovi multidisciplinarnosti, pluriperspektivnosti i integrativnosti – artikulirani u okviru *integrativne bioetike* – igraju važnu ulogu u izgradnji takve osnove.

Ključne riječi: znanost, obrazovanje, filozofija, integrativna bioetika.

Contemporary system of science and education is facing great problems. Some people, especially scientific/education managers and politicians dealing with the issues of science and education, rather say that we are facing great "challenges". However, this is only the term which hides, in a euphemistic manner, the fact that not only the *system* of science and education, but also the *idea* of science and education suffers today from serious, systemic and deep-rooted problems, so that we should

oppose the trends that have caused such a crisis. It should be a social and political struggle for the science and education as one of the main fields of public/common interest, but it should be also a struggle *inside* the science and education, which means rethinking the *concepts* of science and education, as well as their current derogation. In that sense, the principal adversaries are – *mono-perspectivism* and *reductionism* of current science and education.

I think namely that mono-perspectivism and reductionism are the main features of the modern science which prides itself being the only science, i.e. the Science with capital S. Such a science clearly separates natural and technical sciences from the "rest of everything". Ironically, what "rests" are the sciences which still preserve the meaning of *scientiae universalis*, i.e. the science of the human, the non-human, the "sub-human", the "over-human". Modern science separates natural-scientific and technical-scientific scientificity from the humanistic sciences, so-called *humanities*, depriving the latter from very title and status of science. Nevertheless, it is not only a terminological issue. I believe that while researching such terms, we can get to the essential problems of modern science, and modern education as well.

A possible description of the source of these problems could be – the lost of the whole, the idea of the whole and the feeling of the whole, as well as the extreme fragmentation and specialization of the science and, consequently, of the education. In the time of fragmented science, it is more and more difficult to talk about the aims and the goals of science and education in the traditional sense, as well as about the related concepts of knowledge and truth.

We are living in the world where the Science, i.e. the science of nature (which is also segmented and dispersed) lost its right to philosophy. It is not anymore *ancilla philosophiae*, but it did not become its own master: it became subordinated to technology and to the authority of economic and political machinery.

We are living in the world where the philosophy lost its right to poetry, but it did not achieve scientific independence and autonomy or the scientificity status. It became *ancilla scientiae* and it tries to compete with the science at the science's own ground, where it unavoidably loses the game, because – in the terms of "exactness"

and "objectivity" – it can be only an auxiliary discipline of natural sciences or even a hassle to them.

Finally, we are living in the world where the poetry (as well as the literature and the art in general) became so marginalized that it lost any right: it has lost not only its constitutive role in the human life, but also its right to enlighten the world as one of the most important ways of reflecting the human and the world.

In contrast, but at the very edge of "modern consciousness", there is the "old-fashioned" sketch of the human, the non-human, the nature, the life, the truth, the knowledge, the science and the education, which should not be idealized, but we could use it in order to find some important footholds for our rethinking today's situation. One of such footholds could be the idea of wholeness and harmony, i.e. idea of the *order* which is neither "naturally given" nor "god-given" nor "given" at all, but it is continuously constructed and constituted by human efforts that show what the human actually is. German philosopher Ernst Cassirer articulated such an idea in the following way:

"Science gives us order in thoughts; morality gives us order in actions; art gives us order in the apprehension of visible, tangible, and audible appearances." [1: 213]

There is no such an order anymore, because modern science has destructed the idea of wholeness which is a necessary framework for any human effort directed to the meaning. Unfortunately, mono-perspectivism and reductionism are not only mere deviations of a scientific-educational model or paradigm, but its very essence – the essential moments of modern techno-science which tends to be the only science or at least all-determining matrix of the science. Term 'techno-science' comprises a complex network of natural sciences, mathematics, biomedicine, biotechnologies and information-communication technologies,

including the old and the new media. It is the unity of modern natural sciences and technology which tends to be the only valid form of understanding and directing the human and non-human life on the Planet. This kind of techno-science also forms the coalition with the current forms of economy (neo-liberal capitalism) and politics (bureaucratic - partitocratic - militaristic version of liberal democracy), which are in the same way mono-perspectivistic and reductionist. [2] Elaborated evidence of the disastrous consequences of mono-perspectivistic and reductionist approach and three elements system consisting of techno-science, economy and politics we can find in the books *Biopiracy* [3] and *Water Wars* [4] by Indian scientist and activist Vandana Shiva.

This criticism should not be understood as a kind of demonizing the natural sciences and technology, because they cannot be "bad as such". (Natural sciences – e.g. theoretical and fundamental research in physics – also suffer from mono-perspectivistic and reductionist model.) What the problem is, is the emphasis which is (in the ideal entirety of the knowledge and science) put on the *one* segment of science that becomes the essential element of science and, finally, the only "scientific science". This is well-known as a monopoly of natural and technical sciences on the entirety of knowledge and scientificity. German scientist and philosopher Jürgen Mittelstrass says that there are two different types of knowledge or two different aspects of knowledge. On one hand, there is *instrumental* knowledge, inherent to so-called objective and exact sciences and directed towards practical utilization. On the other hand, there is *orienting knowledge* (knowledge of orientation), inherent to humanistic and social sciences and directed towards creating the orientation in the life of human as an individual and humankind. [5]

The problem is that the whole science – including the concept of scientificity, the meaning, the role and the importance of science – is reduced to its instrumental function. It would not be tragic if those "instrumental sciences" would be able to comprise the wholeness of the life-world. However, they cannot do it, but they even do not have the *intention* to do it.

By adjusting the reality, the human, the nature or the life according to its own categories and methods, this instrumental science necessarily amputate a whole aspect of the life-world from the field of scientific relevance and treat it as a side-effect of what techno-science can and wish to enclose. Just like Cassirer says:

"... for this triumph of scientific reason we have to pay a very high price. Science means abstraction, and abstraction is always an impoverishment of reality." [1: 185]

However, this is not only a question of theory of knowledge or philosophy of science, because the daunting consequences of such reductionism can be found in the physical world as well. Probably the most dangerous expressions of global crisis (that could be called 'crisis of scientific-technological civilization', 'spiritual-moral crisis', 'crisis of humanum', 'crisis of instrumental mind', etc.) are *the crisis of modern medicine* and *the ecological crisis*, because they cause a general endangerment of the human and humankind and represent a threat to what is most vulnerable – the bare life, the body and the health.

Described situation (the power of intertwined complexes of techno-science, economy and politics, which affects the very essence of human and non-human life, and the nature in general) has led to the emergence of – *bioethics*. Bioethics has brought to the game an insight into the *interlacement of relationships within the living world*, and into the *interlacement of the problems* that humanity is facing in this

techno-scientific era on the one hand, and that also concern other living beings and nature as a whole on the other. This insight into a network of problems implies the need to *network approaches*, i.e. the need for an all-embracing perspective on the issues of the life.

The idea of such an intense and extensive networking, articulated at the level of both subject-field and methodology, represents a basis of an innovative bioethical approach called – *integrative bioethics* [6; 7; 8]. It should be mentioned that the *concept* of integrative bioethics has resulted in the *project* of integrative bioethics which exists, more than ten years, not only at the level of theoretical discussions or different scientific and professional "embodiments" related to them, but also in the area of practice, from localized ethical committees to more comprehensive social networking.

The concept of integrative bioethics starts from the following definition of bioethics:

"Bioethics is an open field of encounters and dialogue between different sciences and professions, and diverse approaches and worldviews, which gather to articulate, discuss and solve ethical questions concerning life, life as a whole and each of its parts, life in all its forms, shapes, degrees, stages and manifestations." [9: 83]

The main characteristics of bioethics thus understood can be summarized using the concepts of multi-, inter- and trans-disciplinarity, pluriperspectivism and integrativity. *Multidisciplinarity* refers to the gathering of all human sciences and professions relevant to bioethical issues; *interdisciplinarity* to the promotion of dialogue and of finding a way in which these disciplines would collaborate; and *transdisciplinarity* to the overcoming of their mutual differences, or the incorporation of these differences in a unique, bioethical view focused on

questions that cannot be fathomed from the perspective of a *single* science or a *single* field of knowledge. This introduces the concept of *pluriperspectivism* to the game. This concept refers to the incorporation and mediation through dialogue of not only scientific but also of non-scientific (i.e. cultural) contributions, including different modes of reflection, different traditions of thought and culture, i.e. diverse views that rest on cultural, gender, religious, political and other specificities. Yet, bioethics should not content itself with a mere mechanical gathering of diverse perspectives, different disciplinal and world-views, but should aim at *true integration*, the development of a unified platform for discussion of the ethical problems concerning life. *Integrativity*, therefore, refers to the task and capability of bioethics to bring all the differences that have been discussed together into a unique *bioethical view*. Bioethics should offer an *orientation* rather than the "final objective truths" about *bios*. [9: 83–85]

Pluri-perspectivism is a multilayered discovering, viewing and constructing the reality, the world, the life, the truth, the knowledge, the science, etc. Idea of pluri-perspectivism could be interpreted as a reflected methodological superstructure of what the philosophers, from Heraclitus and Plato to Gadamer and Levinas, called *logos* and *dialogos*. Therefore, I use the words 'dialogue' and 'pluri-perspectivism' with a conviction that they really mean something. These concepts are not only "beautiful ideas" or the ideas of "beautiful souls". They really function in practice, even in bioethics as a "particularly dangerous minefield". In the dialogue everyone takes a step back from his/her own basic scientific or worldview position, in order to better see the other. Afterwards one meets the other and tries to understand the other. *Nolens volens*, these attempts to understand always strive to agreement. Therefore, neither dialogue nor

pluri-perspectivism are only epistemological, methodological, ontological, anthropological or aesthetical concepts; they are also the *ethical* concepts.

The practice of dialogue and pluri-perspectivism is not always easy. Moreover, it is sometimes tense and painful. However, if the dialogue remains open, if controversial points of dialogue can be transformed into the argument-based and fruitful polemics, if there is a basic readiness to meet and to recognize the other with all its differences, and to revise own views in the light of previously unknown or misunderstood attitudes – variety and diversity could be seen as a wealth which, dialectically and synthetically mediated, finally becomes an "enriched wealth".

Presupposition of it is developing and cultivating the "pluri-perspectivistic reflex" in recognizing, articulating and solving the problems. Nevertheless, in order to avoid some dangers such as short-sighted or blind "ethical relativism", we need to be permanently critical and auto-critical, i.e. to be methodologically rigorous and ethically responsible while practicing pluri-perspectivism. This kind of rigorousness and responsibility is not restrictive at all; on the contrary, it is – liberating. The only ban imposed by the pluri-perspectivistic approach is the ban of mono-perspectivism. No single approach, isolated from other approaches, can have a monopoly on truth. There are no *many truths*, but also there is no *one* truth as a definitive and eternal Truth which should be discovered using either experimental scientific research or philosophical speculation or religious meditation. There should be indeed one truth, but it should be constituted or constructed from different perspectives. Therefore, we could say that the integrative bioethics advocates *monism of truth* and *pluralism of perspectives* which aim to the truth. [10]

"Terrible accusation" directed towards pluri-perspectivism ("Pluri-perspectivism is nothing but pure relativism") has no ground. Certain "relative relativism" *inside* the pluri-perspectivistic way of discovering, viewing and constructing is unavoidable, just like in any approach which tends to be comprehensive, but it is something different from the "absolute relativism" of mono-perspectivistic approach, because it can in no way embrace the whole: it always sacrifices some (massive) segments of the life and the world in order to achieve theoretical rigidity, self-sufficient coherence and consistency, in other words – "mythical" ideals of "exactness" and "objectivity".

Idea of *integrative bioethics* (which can be also widened towards the idea of *integrative thought*) call upon a wider view on and deeper insights into the life and the world. However, neither integrative bioethics nor integrative thought should stop at the boundaries of theory. Theory implies raising the consciousness and empowerment of a particular human being which is both an individual as an "end in itself" and as a social being, so that the scope of this intellectual empowerment is always defining the role of a particular individual in the social context and "tuning" the influence one can have on its own life and the life of the community by following some inter-subjectively defined norms such as freedom, justice, solidarity, etc. Therefore, theory should always lead to significant socio-political changes.

Nevertheless, it is not a "new instrumentalization of theory" (for example: science should be subordinated to the social engagement and used as a mere tool of "revolutionary action"). It is only a new or renewed way of achieving the meaning of science and education. Science and education are the ways in which we try to enclose the Whole by our thoughts, and to build it by our action. What the "Whole"

means, we cannot know, except by (re)thinking and (re)acting simultaneously.

But we know intuitively that the world is the whole, so that our life in the world should also be the whole. It is not only "mysterious" inner (psychological or emotional) demand, but also the question of the whole existence of the individual and humankind; it is the question of *existential orientation* without which we cannot truly think, act and create. In order to achieve it, we should have an approach to the world which will be able to reflect the world as the whole. What kind of reflection should it be? Modern techno-science cannot accomplish

the above mentioned goal, but the integrative approach could do it, because it tries to harmonize "instrumental" and "existential" aspects of science as a form of human relation to the world.

Therefore, it implies both *holistic scientific approach* and *holistic approach to the science*, leaving aside any mono-perspectivism and reductionism.

I believe that the holistic approach can be implemented into scientific and educational policies which mission should be seen as a preservation and promotion of diversity and unity of knowledge and science.

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