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TECHNOLOGY EDUCATION IN THE CONTEXT OF HUMANIST ECOLOGY – A TRIBUTE TO PROFESSOR JURAJ PLENKOVIĆ

TEHNIČKO OBRAZOVANJE U KONTEKSTU HUMANE EKOLOGIJE – POČAST PROFESORU JURAJU PLENKOVIĆU

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Abstract
Along with rapid development of science and technique, as the basic drivers of civilisation transformation, there are still radical changes in various social phenomena, modelled by multifaceted development of technique. The prerequisite, determining the efficiency of such processes, is change of human awareness. This requires redefining the notions in the area of human sciences, and the presence of such phenomena is already perceived in pedagogical sciences. It can be said that a quality transformation is taking place in them gradually, but systematically. Will this be an educational revolution? Time and history will show.

Sažetak
Usporedno sa brzim razvojem znanosti i tehnike kao osnovnim pokretačima transformacija u društvu, događaju se i drastične promjene kod raznih društvenih fenomena, koje su uzrokovane razvojem tehnike. Preduvjet koji određuje učinkovitost takvih procesa je promjena ljudske svijesti. To zahtijeva redefiniranje pojmova u području humanističkih znanosti, do čega je već došlo u pedagoškim znanostima. Može li se reći da se kvalitetne transformacije događaju postepeno, ali sistematično? Hoće li ovo biti obrazovna revolucija? Vrijeme i povijest će pokazati.

INTRODUCTION

In his summary of the monograph entitled 'Humanist ecology in the face of globalization', J. Plenković states that /**1**/: *In line with production capacities, man has become a danger to the environment. The stage of intensive exploitation of nature, initiated in the mid 19th century, is now coming to an end. Its final is to perceive man as the creature who is responsible for the entire nature, which may be destroyed by his own carelessness, or saved, if man subjects his decisions to the principle of responsibility before God and future generations.* This statement proves the necessity to shift the orientation of objectives and curricula of contemporary education systems, in which the cultural dimension of humanism requires a distinct enrichment with humanist orientation of technical education (in Croatian primary schools, this subject has been rightly called "technical culture").

1. QUESTIONS ABOUT MODERN GENERAL TECHNICAL EDUCATION

The notion of educating through technique, and other notions related with general technical education require explanations, as assuming a specific interpretation as a basic assumption modelling pedagogical phenomena. These comprise: *technology, technical activity, the field of education, teaching technique, canon of general education.* Interpretations of such notions are related with a whole range of transformations occurring in the contemporary times. They are expressed, among others, in diversifying the content of each of them, and often in different understanding of them in relation from how they were perceived and understood several years ago. One can find in them many interesting views and interpretations of the aforesaid group of notions. Certainly, the

following reflection will occur here: did pedagogical sciences and psychology, sociology, or philosophy supporting them not work a uniform terminological convention? Those that were developed earlier, were always corresponding to the needs of the times and the then stage of their development. Such notions are historically variable. Moreover, the 1980s were the beginning of period of rapid development of all sciences, including biological and humanist sciences.

2. FROM PRAXEOLOGICAL TO HUMANIST TECHNIQUE

Dictionaries and encyclopaedias include various definition of a technique depending of the point of view from which such a notion is analysed. Diversity of understanding the notion of *technique* affects the communicativeness and verifiability of statements formulated by sciences dealing with problems between man and technique (e.g. didactics of technique).

2.1. Technique in praxeological perspective

In this sense, technique is perceived as a system of activities and skills. Therefore, this approach is called activity-related understanding of technique. Praxeology, as an efficient and effective science, also includes technological activities. Praxeological understanding of technique is also related with its etymological meaning. Greek *technikos* means ingenious, skilful, and *techne* – fluency, practical skill, art, craft. Therefore, in this sense, technique is seen as /**2**/:

a) the art of performing something;
b) the ability to use tools for production or processing purposes;
c) rational manner of performing some activities (methods of technique);
d) the field of actions aiming to transform and adapt nature to one's own needs;
e) craftsmen activity.

This definition accepts anachronistic understanding of technique and on no account may be treated as the exclusive (only) one.

An example of such a definition is included in *Mała encyklopedia prakseologii [Small encyclopaedia of praxeology* /**3**/*:* ***Technique*** *– a deliberate, rational manner of performing works in an certain field, e.g. acting, writing, computer, agricultural, piano, painting technique, etc. To have a good technique is to develop, master a technique, to make it perfect.* It is often said that the technique is: a manner and fluency of performing an activity, conducting the process or production technology. Technology comprises this scope of the notion technique, which determines it in an activity-related meaning. Technology deals with analysing and developing methods of producing or processing raw materials, semi-finished products or products for such products which conform to usable requirements. *Leksykon naukow-techniczny [Scientific and technical lexicon]* /**4**/ includes two meanings of technology: (1) *method of producing certain kind of products;* (2) *science used in process of creating products from raw materials.* Currently, technology refers to three technical categories such as matter, energy, information (respectively: material technologies, energy technologies, information technologies).

2.2. Technique in ontological perspective

Ontology – science on the existence – basic field of philosophy dealing with theory of existence, nature and structure of reality or general theory of objects. In this sense, technique is defined as system of objects (tools, machines, buildings) necessary to make its activity real. This approach can be called a material understanding of technique. For example *Leksykon naukowo-techniczny [Scientific and technical lexicon]* /**5**/ states: 1) *technique – all means and activities included in the scope of human activity related with creating material goods;* 2) *technologies* (it is the perception of technique in the aforesaid activity-related meaning). Treating technique as an independent existence has become a dangerous modern phenomenon. This results from the fact that technique is present everywhere and assists the man in all forms of his activity. It differs significantly, in terms of quality and quantity, from how it is understood in etymological meaning.

By universality of applications and omnipresence in human life and activity, technique has achieved a new ontological status. It has become an objective existence, developing according to its own, immanent rights. It has subjected all areas of human life, both individual and social, creating also a new type of society – technical society: information society, IT civilisation /**6**/. It can be said that the ontological definition comprises all realm of artificial, but useful objects.

2.3. Technique in epistemological approach

Technique is a group of such disciplines of science and knowledge which deal with issues of designing and performing any kind of constructions, tools, machines and performing various kinds of manufacturing, processing and energy processes. Such an approach can be called attribute-based meaning of technique. Currently, an inherent

(constitutive) feature of technique is knowledge (cumulated in technical sciences). Technical sciences – comprise a comprehensive group of scientific disciplines constituting the entirety of knowledge about technical and technological phenomena gathered in the course of historical development of the society. M. Heidegger /**7**/, seeking the essence of technique, concludes that *technique is not only a means. It is a method of discovery. If we pay attention to this, the essence of technique is open to a completely new discipline. It is a discipline of discovering the realness of the world.*

2.4. Technique in anthropological perspective

Anthropology perceives a human being as a social being and his overall relations with the realm of culture, with overall social works being result of human activities. In this sense, technique is human ally in his various actions; it contributes to perfecting human life and perfecting the world, in which he lives and creates /**8**/. In definitions of technique – determined from ontological and anthropological point of view, it is often emphasised that the objective of technique is to perfect the conditions of human life. Therefore, variable nature of technique should be noted here (contemporary technique is completely different from technique from the past).

3. TECHNIQUE IN HUMANIST AND ECOLOGICAL PERSPECTIVE – NEW PARADIGMS OF EDUCATION

Generally, technique may be perceived from two points of view:
- anthropocentric view (human being is the creator and user of technique);
- technocentric view (human being is subjected to works of technique).

Taking into consideration the anthropocentric assumption, one can state that *technique is a unique, historic civilisation phenomenon expressed in supporting people in these various forms of their activity in which they use their potential capabilities, and aim to perfect the world and all their actions in order to change the quality of their own and others' lives.* /**9**/. E. Franus puts it in a slightly different way /**10**/: *Humanist (or ergonomic) technique is a field of practice in modern scientific and technical civilisation, using the rights of human development and natural rights discovered by the science, as well as principles of technical operation to transform reality via relevant means and organisation of actions in order to provide the human being with, tools, machines and usable means as well as organisational and esthetical conditions for work and life, adapted optimally to his needs, expectations and capacities of their use.* Definitions of humanist technique do not reflect the necessity of seeking and establishing the state of balance between pursuing to satisfy evolving consumption needs and natural capacities. This is where the necessity of establishing ecological technique as the priority becomes of essence in the dominant technocentrism. J. Plenković elaborates on this issue in detail /**11**/: *Detrimental effects of work for the environment were invisible until the development of heavy industry, which is based on mass work. Irrational exploration of huge amounts of raw materials and processing them in plants - industrial sprawls – releases harmful waste, which is deposited in the natural environment. In line with increment in masses which are foreign for the nature, contamination of soil, water and air is taking place, i.e. contamination of all living space of human beings. Ecologists, perceiving long-term effects of this unbalance in the area of existence, try to lead to normalising relations between man and the environment and limit pollution generated by civilisation. These warnings, in confrontation with the vision of direct profits from irrational exploitation of nature, are not welcome. The tension between ecological requirements and industrial needs is not only the effect of absence of good will on the part of global industrial lobby, but in many cases results from technological conditions. Production methods non-compliant with ecological requirements may not be eliminated before new alternative manufacturing technologies appear, non-harmful to the environment and human beings. Modern industry systematically reduces threat to the environment, using so-called ecological absorbers which collect and isolate harmful production waste.*
Holistic approach to the problem of the existence of technical works requires paying attention to the end of their existence. In this case, entropy is a common law for all material systems. All materials systems are subject to decomposition. Sooner or later, but it is certain that always. Machines, premises, whole constructions are closed down. If they are not respected monuments of culture, even in the form of ruins, one must remember about the problem of rational liquidation of a material system, which ceased to be useful technical means. It is commonly accepted that all objects have their purpose. Growing demand for any recycled materials, which may be obtained from the material from which technical means was created, as well as difficulty in disposing of any kinds of substances, which so far have been defined as waste, are arguments supporting the view that the closed down material system should have a predefined purpose – therefore the life cycle of the creation is closed.

CONCLUSION

Analyses presented here show the necessity to extend the notion of technique with non-technical elements confirming that it is a component of culture. If cultural values can be divided into material and spiritual, then technique refers to the entirety of material values, but in its essence, it modifies the system of spiritual values and needs of human beings.

Modelling didactic and educational processes allowing for implementing the planned functions of general technical education is based on introducing a paradigm, namely the notion of humanist and ecological technique.

Notes

/1/ Plenković J., Ekologia humanistyczna wobec globalizacji [Humanist ecology in the face of globalisation]. Published by UR, Rzeszów 2004.
/2/ Furmanek W., Zrozumieć technikę [Understand technology] . Published by Wyd. Oświatowe Rzeszów 1998.
/3/ Mała encyklopedia prakseologii [Small encyclopeadia of praxeology]. Warszawa 1978.
/4/ Leksykon naukowo-techniczny[Scientific and technical lexicon] . Published by NT, Warszawa 1989.
/5/ Ibidem
/6/ Furmanek W., Zrozumieć technikę [Understand technology] . Published by Wyd. Oświatowe Rzeszów 1998.
/7/ Heidegger M., Pytanie o technikę[Questions about technology] [in:] Budować, mieszkać, myśleć[Build, live, think]. Warszawa 1977.
/8/ Furmanek W., Zrozumieć technikę [Understand technology] . Published by Wyd. Oświatowe Rzeszów 1998.
/9/ Ibidem
/10/ Franus E., Wielkie funkcje technicznego intelektu [Great functions of technical intellect]. Published by UJ-UR, Kraków-Rzeszów 2000.
/11/ Plenković J., Ekologia humanistyczna wobec globalizacji [Humanist ecology in the face of globalisation]. Published by UR, Rzeszów 2004.