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Technique as a factor of socio-economic change

Annotation: Modern civilization is a hybrid of the real and virtual world. The contemporary image of human activity and determination is through the use of devices and communication. A number of scientific studies indicate, among others on the paradigm of the ubiquity of technological solutions in social life. Being immersed in the media, modern man himself promotes technology as a factor of social development. From the same point of view, as the main component of technology in a social and humanistic context.
Keywords: technique, technology, social impact, modernization, network society.

Technika jako czynnik zmian społeczno-ekonomicznych
Streszczenie: Współczesna cywilizacja stanowi hybrydę świata realnego oraz wirtualnego. Współczesny obraz ludzkości i jej aktywność w dużej mierze determinowany jest przez wykorzystywanie urządzeń technicznych a komunikacja i sfera emocjonalna odbywa się za pośrednictwem mediów i technik telekomunikacyjnych. Szereg opracowań naukowych wskazuje m.in. na paradygmat wszechobecności rozwiązań technologicznych w życiu społecznym. Będąc zanurzonym w mediach współczesny człowiek sam promuje technikę jako czynnik rozwoju społecznego. Niniejszy artykuł ma charakter rysu teoretycznego, prezentuje najważniejsze elementy składowe techniki w ujęciu społecznym i humanistycznym.
Słowa kluczowe: technika, technologia, wpływ społeczny, modernizacja, społeczeństwo sieci.

Техника как фактор социально-экономических изменений
Аннотация: Современная цивилизация - это гибрид реального и виртуального мира. Современный образ человечества и его деятельность во многом определяются использованием технических устройств, а общение и эмоциональная сфера происходят с помощью средств массовой информации и телекоммуникационных технологий. Ряд научных исследований указывает, среди прочего на парадигму повсеместности технологических решений в общественной жизни. Будучи погруженным в средствах массовой информации, современный человек сам продвигает технологию как фактор

общественного развития. Эта статья носит теоретический характер, в ней представлены наиболее важные составляющие техники в социальном и гуманистическом плане.
Ключевые слова: технология, техника, социальное воздействие, модернизация, сетевое общество.

Introduction

Contemporary civilization as indicated, amongothers Paul Lazersfeld and Marhall McLuhan is a hybrid of the real and virtual world. The contemporary image of humanity and its activity is determined to a large extent by the use of technical devices and communication and the emotional sphere takes place through media and telecommunications techniques.

A number of scientific studies indicate, among others on the paradigm of the ubiquity of technological solutions in social life. At the beginning of this text, it is necessary in the author's opinion to define a semantic division between technology and technology. Z. Łucki points to the dysfunction of understanding these terms caused by the literal translation of these terms from English. „The English term technology should be translated as a technique, and the English term technique as a technology or method (as long as we remain in the field of technical sciences and will not deal with the technique of playing the piano or skiing)"[1] In the rest of his article, Z. Łucki points to the superiority of technology over technology, presenting the example of the item „Encyclopedia updates. Technika. „Being a supplement to the Gutenberg Encyclopedia. In his essay, Z. Łucki points out the numerous occurrences of the slogans: „Isotopic technique", „Technology in informatics", „Technology in space", „Technique in medicine", „Technology in agriculture", „Technique in transport", „Technique in military, „and one reference to technologies in agricultural sciences. [2] Popular Encyclopedia PWN indicates that the term „technique" includes „Man-made material means and constituting the technical knowledge of the rules of using these means and their designs used to acquire, transform the use of material goods"[3]. The term „technology" encyclopaedists PWN have defined ways of processing and production. Analyzes regarding the coexistence of an individual in the technical environment were taken already in the nineteenth century. Karl Marx may be regarded as the forerunner of research, who noticed that the technical value of inventions is subject to skim rationalization and supports the aspirations of the capitalist class to increase profits.[4] Max Webber, unlike K. Marx, believed that the sources of modern technologies should be found in Western civilization, and that technologies themselves are a force supporting the development of capitalist ideology.[5] Jean Baudrillard mentions that new technologies do not separate the individual, but form an integrated circuit with it. In his works, Leo Marx recalls M. Heideger's the-

[1] Z. Łucki, *Proszę... nie mówmy „technologia" na technikę!*. Biuletyn Informacyjny pracowników AGH 63/99. Kraków 1999.

[2] Ibidem.

[3] *Technika*. Słownik Języka Polskiego www.sjp.pl/technika, [see at: 7.12.2018].

[4] M. Rosińska; *Kapitał ludzki podstawą budowania przewagi konkurencyjnej współczesnych przedsiębiorstw*; [w:] Bogdanienko J; Kuzel M; Sobczak I. (red.); Uwarunkowania budowania konkurencyjności przedsiębiorstw w otoczeniu globalnym; Wydawnictwo Adam Marszałek; Toruń 2007; p. 11–20.

[5] J. Mulberg, *Social Limits to Economic Theory*. London, p. 122.

sis pointing to a network of connections between the implementation and reproduction of technical goods, based on electronic communication.[6] The technological acceleration theory speaks of the total transformation of the ways and forms of everyday life under the influence of technology.[7] Łukasz Łysik and Piotr Machura compared the way in which activities were carried out in 1913 and 2013 in several spheres of social unit functioning. In the sphere of transport in 1913 railway, water transport and a car dominated and animal teams, in 2013 a car, plane and high-speed train. In the sphere of voice communication in 1913: closely related to the place of landline telephone, telegraph, in 2013 video calls, text messages, mms . In the sphere of consumption of goods and services in 1913, the physical presence of the seller was necessary, in 2013 in the western societies began to dominate the model of automated sales.[8]

Techinque as a field of research in social sciences

For the period of research on the social aspects of technology, it is possible to, according to with the literature of the subject, recognize the second half of the twentieth century, although Lewis Mumford in his earlier work entitled Technology and civilization linked technical changes with changes in thinking and changes in social organization.[9] Jacques Ellul , who criticized the technological achievements of the twentieth century, described the problem of the interaction of machines and man , pointing out that the technique has escaped human control and tends to personify, isolate and create an independent world.[10] Marshall McLuhan attempts to sociologically influence machines on society , who in his works proves the existence of a global village and processes of automation of social rituals. He also notes that in the case of technology there may be a certain paradox „it's not the looters that belong to the winners but the winner to the spoils"[11]Issues related to the social independence of technology are also taken by: Nil Postman , Walter Ong and Paul Levinson. This aspect is continued by contemporary researchers, with the most well-known Polish researcher on the issues of machine personalization in the social aspect of Krzysztof Loska. Nowadays, researchers of virtual societies deal with issues related to the problems of technological determinism, network identities, multimedia reality and definition issues.

In the process of considering the level and degree of impact of ICT solutions on social development one should differentiate between the definitions of development and progress in the perspective of social sciences. Piotr Sztompka defines social development as a „directed social process, as a result of which there is a continuous growth of some of the variables important for a given society or community.[12] The notions derived from the term social development are in the social sciences the notions of socio-economic development and technological development. Socio-economic develop-

[6] L. Marx. *The Pilot and the Passenger: Essays on Literature, Technology, and Culture in the United States*. New Jork 1989.

[7] J. Ellul, *The Technological Society*, Paris 1964.

[8] Ł. Łysik, P. Machura, *Rola i znaczenie technologii mobilnych w codziennym życiu człowieka XXI wieku*, [w:] Media i Społeczeństwo 4/2014, p. 16.

[9] L. Mumford, *Technics and Civilization*. Nowy Jork 1934, p. 149.

[10] J. Ellul, *The Technological Society*, Paris 1964.

[11] M. McLuhan, *Wybór tekstów – Marshall McLuhan*, Poznań 2001, p. 388.

[12] P. Sztompka: *Socjologia zmian społecznych*. Kraków: Znak, 2005, s. 23.

ment is defined as „a process of positive quantitative and qualitative changes, thanks to which in the sphere of all economic, cultural and social activities as well as socio- productive and political-political relations, existing phenomena increase and improve as well as new phenomena emerge and develop. These changes take place in time and space".[13] Technological development of societies in the subject literature it is defined as a process of changes taking place in society along with the development of technology for the production of goods and services in a multidimensional process. In the context of social sciences and the connection between this field of science and technology, the Pitrim theories should also be mentioned Sorokin , which in his work Fri. The dynamics of societies and cultures have classified societies according to theirs cultural mentality , which may be ideational (reality is spiritual), sensory (reality is material) or idealistic (it is a synthesis of the two mentions mentioned above). He suggested that major civilizations evolve in passing through the above types of cultural mentality: ideational , idealistic and sensory. Each of these phases of cultural development tries not only to describe the nature of reality, but also defines human needs, goals and the extent to which they are to be satisfied or realized. P. Sorokin interpreted the contemporary civilization as a sensory civilization devoted to technical progress. Taking as an overarching concept of social development as a result of human activities, the notion of economic development as an effect of human activities aimed at achieving the dominant position of groups and individuals in the ecosystem should also be recognized. As Grzegorz Hajduk points out: „Economic development is a complex process of change taking place in various spheres of the economy, aimed at improving the quality of human life . The multidimensionality of the problems of economic development results from the fact that they are interrelated and interdependent. Taking into account the different types of spatial structure and types of activity, one should approach in a different way."[14]Jacek Mączyński indicates that „ Technology transfer is currently the key to the competitiveness and economic development of countries. Already many years ago, such economists as Robert Solow and Joseph Schumpeter considered investing in new technologies and their dissemination as the driving force of economic growth. Technology transfer affects the pace and directions of economic development, the structure of the economy, as well as the emergence of its new branches, including highly advanced technologies. The technology market creates new forms of competitive struggle at the level of enterprises, sectors and economies, where the dynamics of technological changes, the pace of technology development and implementation are of the greatest importance."[15] According to with this idea, the concept of development understood as any improvement of human activities in the present situation is inextricably linked with technology and technologies. Norbert Biedrzycki indicates that technologies are nowadays the „development fuel" of civilization „Thanks to the wiring of our planet, each of us, whether now or soon, will be able to use all of the global, intellectual and cultural achievements of humanity".[16]

[13] L. Kupiec: *Jaki rozwój?*. [w:]: A. Bocian (red.) *Rozwój regionalny a rozwój zrównoważony*. Białystok 2008, p. 22.

[14] G. Hajduk, E. Kubejko-Polańska, *Rozwój gospodarczy regionów*, Rzeszów 2018, p. 7.

[15] J. Mączyński, *Transfer technologii a gospodarka* [w:] Baczko T. (red). *Raport o innowacyjności gospodarki Polski w 2005 roku*, INE PAN. Warszawa 2005, p. 127.

[16] N. Biedrzycki *Kiedy przestaniemy być biologicznymi ludźmi? Rolę będzie odgrywać „metainteligencja"*,

The second indispensable term to be defined in this part of the work is „progress". Piotr Sztompka defines social progress as 'comprehensive' development the society in various areas of social life, bringing them closer to a specific, positively evaluated state.[17] Małgorzata Leszczyńska points out that „in the social sciences, the concept of progress refers to a positively evaluated social change. It should be pointed out that the application of this term to social facts is related to the values used to assess whether the phenomenon of progress exists at all, and if so to what extent.[18] An additional element of the definitional deliberations is to outline the boundaries of the conceptinclusive of development and progress, ie modernization. The term „modernization" itself. Polish Language Dictionary PWN defines it as „modernization, product modernization, permanent improvement. The cultural, economic and social process that transforms the pre-industrial society into industrial. The changes are influenced by the development of technology, which leads to increased production efficiency and changes the lifestyle. These factors lead to modern industrial societies. Modernization means the modernization of fixed assets, clearly aimed at increasing the utility value (eg the implementation of works in the building consisting of water, sewage, central heating, hot water, ducted gas or one element in the building where these installations were not upgraded)".[19] The aforementioned Małgorzata Leszczyńska points to another definitional scope of the concept of modernization: „term" modernization „is thus closely related to the concept of development and in this aspect means transformation, i.e. transformation / transformation. The term is qualitative and positive. It is, however, a matter of transforming both the economy and society, enabling a clear improvement in the possibilities of their functioning. In the modern approach, „macro" means the further advancement of the economic structure, its greater modernity and the elimination of institutional, cultural and technical barriers that impede social entrepreneurship".[20] Piotr Sztompka in the book „Sociology of social change" refers to the term „modernization", the theory of social modernization, which describes a number of solutions used for the transition of societies to the stage of modern society. P. Sztompka points to the multiplicity of theories of modernization, indicating as a common feature a description of the mechanisms of development of societies having both a descriptive and normative character.[21] In social sciences, modernization is characterized by the unilinear character of social change, its inevitability and irreversibility. Social change is progressive, evolutionary and involves the passage of certain specific stages, and modernization factors - beneficial for societies in accordance with with the paradigm of progressivism - they are endogenous.[22]

https://businessinsider.com.pl/technologie/nowe-technologie/wplyw-technologii-na-ewolucje-czlowieka/qbj257d (access: 7.12.2018).

[17] P. Sztompka: *Socjologia zmian społecznych*. Kraków: Znak, 2005, p. 23.

[18] M. Leszczyńska, *Modernizacja i rozwój społeczny w perspektywie nauk społecznych*. https://www.ur.edu.pl/file/20790/02.pdf (acces 7.12.2018)

[19] *Modernizacja* [w:] Słownik Języka Polskiego PWN, https://sjp.pl/modernizacja (acces 08.12.2018).

[20] M. Leszczyńska, *Modernizacja i rozwój społeczny w perspektywie nauk społecznych*. https://www.ur.edu.pl/file/20790/02.pdf (access 7.12.2018).

[21] P. Sztompka: *Socjologia zmian społecznych*. Kraków: Znak, 2005, s. 130-141.

[22] H. Bernstein. *Modernization theory and the sociological study of development* Journal of Development Studies 7#2/1971, p. 141–160

The literature on the subject also indicates that in the post-modern societies, technology is the main modernizing factor. Because modernization entails social transformation from agrarian to industrial societies, it is important to look at the technological point of view, with the proviso that new technologies do not themselves change societies. The modernization change is rather a reaction to the technology that causes changes. Often technology is recognized, but it is not used for a very long time, as exemplified by the ability to extract metal from the stone, which was initially not used, and which later had profound implications for the development of societies. Technology enables the creation of a more innovative society and stimulates a broad social change. Cell phones, for example, have changed the lives of millions of people around the world. This is especially important in Africa and other parts of the Middle East, where there is an inexpensive communication infrastructure. Thanks to cellular technology, widely distributed populations are connected, which facilitates communication between enterprises and provides access to the Internet in remote areas, which - as D. Tipps points out - leads to the growth of literacy skills.[23]

The modernization, developmental and progressive aspect in the aspect of social sciences is undoubtedly the development of media understood as information creators as well as the technical and media themselves. The most prominent representative of this current is Marshall McLuhan . The basis of the theory proposed by M. McLuhan is technological determinism understood as the unchangeable influence of technical inventions on cultural change. Technological determinism itself is defined as a reductionistic theory, which assumes that the technology of society determines the development of its social structure and cultural values. „Technological determinism tries to understand how technology influenced human actions and thoughts. Changes in technology are the main source of change in society. It is believed that this term comes from Thorstein Veblen , an American sociologist and economist.[24] Charles A. Beard , stated that „Technology is branding seven-league shoes from one ruthless revolutionary conquest to another, destroying old factories and industries, throwing new processes at a terrifying speed." Proponents of technological determinism consider technology as the basis for all human activities, not believing that the impact of technology varies depending on how technology is or can be used. In the second half of the twentieth century,technological determinism was defined as an approach that identifies technology or technological progress as the main causative element in the processes of social change (Croteau and Hoynes). Because technology is stabilized, its design tends to dictate user behavior and thus reduce human presence. However, such a position ignores the social and cultural determinants of technology development. Claude Fischer characterized the most significant forms of technological determinism as a „billiard" approach, in which technology is perceived as an external force introduced into a social situation, causing a number of ricocheting effects.[25] Other researchers, such as Konrad Chełmecki, point to the fact that „M, McLuhan emphasized the decisive importance

[23] D. Tipps, *Modernization theory and the comparative study of national societies: A critical perspective.* Comparative Studies in Society and History 15#2/1973, s. 199–226.

[24] L. Green. *Technoculture. Crows Nest*. Seattle 2001, s. 1–20.

[25] S.J Staudenmaier, M. John *The Debate over Technological Determinism. Technology's Storytellers: Reweaving the Human Fabric*. Cambridge 1985, p. 134–148.

of inventions in the field of communication, because he believed that every new form of innovation in the media widens human capabilities. The book is an extension of the eye. The circle is an extension of the opportunities offered by the rate; clothing is a fasting of the possibilities that the skin gives us; electronic circuits are an extension of our central nervous system; McLuhan avoided narrowing the definition of the media; the media is everything that strengthens or intensifies the body, sense or function; the media not only extends our reach and increases effectiveness, but also acts as a filter that allows us to organize and interpret our social existence."[26]. Neil Postman points to the unprecedented expansion of technology in everyday life. „Printing, computer and television are therefore not simply machines that provide information.They are metaphors through which we conceptualize reality in one way or another. They classify the world for us, order it, frame it, enlarge it, reduce it, argue how it is. Thanks to these media metaphors, we do not see the world as it is. We see it like our coding systems. This is the strength of the form of information provided by technical means. The key to understanding the modern world is electric current".[27]

Progress participants - network society

As mentioned above, the forms of societies have changed over the centuries, which was connected with the revolutions and evolutions that took place in connection with the development of technology, economy and politics. These societies have been identified and described by their precursors, as shown in Table 1.

Table 1. List of social change names after World War II

Year	The name of the society	Author
1977	The electronic revolution Information economy	evans Porat
1978	Anticipation democracy Nation of the network Republic of technology Telematic society The society is wired	Bezold Hiltz and Turoff Boorstin Nora and Minc Martin
1979	Computer age Millennium	Detouzos and Moses evans
1980	Micro revolution Microelectronic revolution Third wave	Large Forester Toffler
1981	Information society Network market	Martin and Butler Dodrick
1982	The revolution of means of communication The age of information	Williams Dizard

[26] K. Chełmecki, *Komunikacja społeczna – wykłady*. https://www.academia.edu/3839634/Komunikacja_spo%C5%82eczna_-_wyk%C5%82ady, [access 7.12.2018].

[27] N. Postman, *Teaching as a Conserving Activity*. Nowy Jork 1979, p. 39.

1983	Computer state Age of genes	Burnham Sylvester and Klotz
1984	Second industrial division Turing man	Piore and Sabel Bolter
1996	Network society	Castells

Source: Goban -Klas T., Sienkiewicz P. Information society: opportunities, threats, challenges. Wydawnictwo Fundacji Postępu Telekomunikacji, Kraków 1999, p. 47.

The transition between the various stages of social development had - according to the theory of modernization described above - a staged character. An important example is indicated by D. Pałka and K. Stecula, the impact of technology on the socio-economic optics that has its origin in the first industrial revolution. As the authors point out: „ Currently, the world is in the transition stage from the third industrial revolution to the fourth, referred to as Industry 4.0. A large number of enterprises are not yet ready to carry out radical changes, but some of them successfully implement technical solutions to which the future belongs. A characteristic feature of the new times is the disappearance of the barrier between people and machines. In other words, the integration of people and digitally controlled machines dominates. The pillars of Industry 4.0 are such concepts as the „Internet of Things", which allows for global access to data and machines, as well as „machine intelligence", aimed at the autonomy of production processes"[28]

Summary

Observations of changes in the impact of technology and technology on society over the centuries make it possible to define technology as a development factor. Over time, human needs have been met more and more quickly and more effectively, and progress has become a tool to improve and improve existing solutions. Technological innovations influencing various areas of life have become the result of technological progress: economy, economy, ecology, technology. What is also extremely important technological progress contributes to the increase in the standard of living of societies and also enables the achievement of goals whose implementation for the retrograde generation was a phantasmagoria, such as the landing of a man on the moon). Technical and technological progress is an indispensable element of human activity with a whole value aggregate in both positive and negative terms. Regarding which opportunities and threats everyone has technology users should be aware.

[28] D. Palka, K. Stecula. *Postęp technologiczny. Dobrodzejstwo czy zagrozenie?* http://www.ptzp.org.pl/files/konferencje/kzz/artyk_pdf_2018/T1/2018_t1_587.pdf, [access 7.12.2018].

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