

The Knowledge Market and the Idea of Entrepreneurship in the Modern University

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Abstract

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The university model of enterprise type of 21st century is analyzed. The transfer of classical university model into entrepreneurial one presents a threat to the university cultural mission. The Science and Education become more valuable as they produce knowledge, which becomes an item of goods.

The authors compare modern university model with classic one. Following the hermeneutical method, the modern epoch is presented as a period of economic mercantilism and knowledge is interpreted as symbolic capital.

In addition to that, the formation premise of the education market and open knowledge market are analyzed.

The transformation of university structures is explored in the context of knowledge capitalization process. The article shows the knowledge as a source of innovation and the university as a result of commercial competition. The interconnection between the modern university and the mainstreaming of research project results into new technologies is based on contractual relationship (treaty relations). This relationship is defined by the term «innovation zone», which presents the final phase of the innovation cycle.

We conclude that in the context of “knowledge capitalism” universities become the means of competition for global leadership in the high technologies.

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1. Introduction

The 21st century has brought to space of university the idea of education transfer into an item of goods, which was reflected in General Agreement on Trade in Services accepted by WTO (World Trade Organization). Such special spheres of research as knowledge economy and knowledge



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management have appeared. Not only globalization, but emergence of knowledge industry as the post-industrial society trend have become the context of modernization. This premise for forming the education market, open knowledge market was essential. Indeed, the transition to a post-industrial formation has changed the status of the produced knowledge. Axial principle of the post-industrial society is the increasing social importance of theoretical knowledge and its new status as a guiding force for the social change. Teilhard de Chardin stated that the growing intention to discover; consistent replacement of factory by laboratory, manufacture by research, ambition to have more or to be more resulted in the process of cerebralisation of humanity. It means that humanity has acquired the common “cerebral organ” colossal in its scope. (Teilhard, 2002). In fact scientific research which only yesterday was some kind of aristocratic noble pastime is becoming very important or moreover the main business of humanity.

Society has always functioned on the basis of knowledge but only in the second half of the 20th century, a merger of science and engineering appeared. It changed the main gist of technology. Such dominant industry branches as steel industry, engine construction, electrical industry, phone industry, aerospace industry were created by "talented tinsmiths". They didn't know any science and worked without it. D. Bell – inventor of the telephone was a teacher of oratory art. He discovered phone principle in the search for tools that would help hearing-impaired to hear well. Bessemer who worked up the domain process to improve the casting of cannons did not know any scientific works on metallurgical process of Mr. G. Sorby. Edison apparently was the most inventive and talented scientist among those tinsmiths. Among other things he invented the light bulb, phonograph, “moving pictures”. He was completely ignorant of mathematics and he did not have any idea about the Clark-Maxwell's theoretical equations of the electromagnetic properties of matter. In general, the invention in the 19th century was the purely empirical process. It turns out that the dominant structural elements of industrial society are capital and labor, for the post-industrial society are information and knowledge.

2. Knowledge as symbolic capital

Knowledge is a social product, and the question of its cost, price, or value mostly solved differently than in the industrial society. And when knowledge in its systematic form is involved in the practical using of resources (in the form of the invention, or organizational improvements) exactly knowledge is the source of cost, rather than labor. Economists in their concepts explaining production and exchange use of such considerable components as “capital, land and labor” are more insightful researchers. For example, Zombart (Sombart, 1905) and Schumpeter (Schumpeter, 1942) added to this triad such important concepts as business initiative and enterprise. Despite the dominant approach which still dominates, the analytical approach emphasizes certain combinations of capital and labor in the spirit of the labor cost and almost completely ignores the role of knowledge or organizational innovations and management.

Labor as well as capital was the central component determining the price in industrial society. So information and knowledge become the main components in information society.

A revolution in the process of wealth creation and fundamental shifts concerning social needs led to the knowledge industry, “knowledge” production. Just knowledge has become the value and it has been

developed into the dominant form of wealth-goods. In the 80s of the 20th century the economic growth in some developing countries took its place. The new technologies were established and there was the significant progress in the qualification of the population. It led to a certain situation. The best part of manufacturing industry which was focusing primarily on the developed countries transferred to developing countries. It allowed to produce goods at much lower wage costs due to cheap labor. Because of that the problem to find a job in different economy sectors appeared in developed Western countries.

The only and real long-term strategy of economic development should include major investment in university education and professional advancement. This will increase access to knowledge and the absolute and relative supply level of skilled and educated workforce.

For modern economy the most important category of informational workers are managers and organizational experts (Vishlenkova, 2011). It is the most highly paid category in postindustrial economy. They create the new wealth using information in organizational and production systems. It helps to reduce industry costs and create new products and services. The university produces knowledge. And those industrial informative base sectors that are at the same level as modern knowledge are technologically ahead of all other sectors. They are able to get profit in the period of stagnation. They usually produce completely new products or improve productivity so that they leave behind all the competitors. Their businesses are large capital investments and huge investments of new knowledge.

With the development the wealth has lost its material form. In agricultural civilization it was expressed by land, in industrial civilization – by capital. The appearance of "symbolic" capital form in new post-industrial civilization confirms the ideas of Marx and the classical economists, who predicted the end of the capital. "Symbolic capital" (knowledge) has a fundamentally different nature: it is inexhaustible and accessible for all users without limitations. Accordingly the nature of money has changed: paper money have been replaced with credit cards. In the second half of the 20th century there was a merger of science and engineering. Invention lost its empirical character, it was purely scientific. The scientific research became the most important activity of human society.

People started to use knowledge in production; therefore, the determination of the value of goods changed. Now the cost of goods depends on labor and knowledge invested in the production. At the same time, the use of knowledge helps to bring big profits. Knowledge becomes a resource of wealth. Knowledge demonstrates its real power in various forms, e.g. in information, in science, in art. In the information society knowledge becomes the basis; education becomes the stepping-stone to power. Elite is presented by scientists and researchers. The stratum of managers who deal with information has appeared (overstrat).

3. Premise for the education market and open knowledge market formation

Knowledge economy is the economy of "open doors". It grows and thrives in the infinite variety of abilities and talents of the people. The criterions of social and economic power of the state are the common opportunities for all to apply and develop knowledge and to get knowledge by referring to the means of production of educational services. The priority sphere of this kind is the modern university.

University in the XXI century forms and will form the specific relationship with the business structures, creating new educational technologies, “business incubators”, with various organizational and contractual forms of activity. The importance of scientific and technological change poses the problem of the relationship between the modern university and technological transfer (Markov, 2009). These relationships would be probably realized through such forms as science parks, joint company, centers of technological transfer and business innovation centers. These structures are included in the university. They reflect some kind of “division of labor”: Universities produce tomorrow's technology, small business organizations act as a window into the future of technology, large manufacturing companies reduce risk due good knowledge market operation. As a result, now the university is seen as a costly business. Accordingly, there is the threat to turn them into business structures for the production of knowledge. Trends of scientization, industrialization and globalization of modern life strengthen the position of the utilitarian and oppose the classical liberal tradition.

And the question is stated as follows: social services or the market, the university as a high quality training center that provides community service or service businesses, the following answers are possible.

If the preference is given to the second, the debate on the responsibility of the university towards the government is meaningless. In this case, it's correctly to put other questions. Can the market deliver the resources effectively? Is the higher education market competitive or oligopolistic? How can monopoly position affect the results of the university? Should non-profit enterprise (universities) close their doors? Answering the questions we can't deny the fact that the activities of the universities gradually entered in the context of commercial competition, it's obvious. Exactly the market (with all its costs) absorbs most of the university graduates. It determines the fluctuations in the offering of different specialties. Competition in the field of applied research is regulated by the market. There is a real competition between universities in the training of professionals and research. So today, the universities “break” the world of governments and the world market. But also the governments insist on strengthening of the role of the market and the weakening the public sector.

4. Transfer of universities into entrepreneurship

The system of relationship “government – university - business” faces the problem of radical challenges. It seems to us that the actions of some governments in this direction rather motivated by the desire to ensure the flow from public funds than the universities need to adapt to the social demands. But radical short-term changes are not enough. Quantitative and qualitative improvements resulting from discussions between universities and public officials will help to define the goals and the appropriate monitoring system. It can be a positive, realistic way of solving the problem, which guarantees the discharge of duties in the university in a developing society. It will also determine the consistency status of the university as a public institution, to ensure the question of its immutability, the identity of a university education.

Nowadays, knowledge in postindustrial society has the same meaning as “capital funds” in industrial society had. Education is a tool that gives a person the opportunity to save “fund of knowledge”, just as the business allows people to accumulate the “capital funds”. The more one learns,

the more “foundation of knowledge” he or she gains. According to V.I. Krasikov (Krasikov, 2008) a hidden subtext of training thus sets a new social structure, in which the main consumers of knowledge (those who accumulated more knowledge) get special privileges, have the higher income and access to more efficient means of production. This kind of “knowledge capitalism” defines the logic of the distribution of jobs and income. And if in the last century the dominant figures were businessmen, entrepreneurs and industry executives, today they are scientists, mathematicians, economists, and the creators of new smart technologies. Traditional training provides qualifications, – a new education – metaqualification, i.e. methodological and ideological system of skills as the basis for learning and generating new knowledge.

Today universities generate and will continue to generate new industrial sectors (such as Silicon Valley or our domestic science cities). Therefore university education belongs to the most influential branches of modern industry. Thus education in cultural and methodological content expresses some a sort of “industry knowledge”. The system of research university works, the structure mass-media - publishing, cinema, radio, television, mail, Internet, and others can be considered as the components of the knowledge industry. The industry knowledge also includes information machines, computers, control systems, musical instruments and signal systems.

The information society is characterized by the phenomenon of becoming elite universities funded by high-tech corporations and manifesting itself within the industry of knowledge. In fact, the modern university is in a problematic situation: on the one hand, the university must defend its scientific autonomy, and on the other - to strengthen cooperation with the social and economic life. Another significant phenomenon of the evolution of universities – “industrialization of science”, when industrial production becomes a sphere of knowledge production. According to V.I. Krasikov (Krasikov, 2008) the fundamental science becomes an area associated with significant investments that could go either from the State or from transnational corporations. Universities form their program as the structures which should compensate the huge investment. As knowledge becomes more and more short lived, the investments must be amortized before the next update cycle. Short term creates the need to overcome difficulties and, as a consequence, the need for cooperation of research teams. In these circumstances, the university may lose the quality of institutions for society and become the means of competition for global leadership in the field of high technologies.

Will the university remain his role in the intellectual social evolution? Finally, what are the possibilities and the loss of technology transfer? Authors studying the problems associated with developing an university education, today speak about the dangers that the modern university face (Petrova and etc., 2015). Will it be able to stand against everything that dissolves the boundaries and specificity? Will the modern university be able to keep the autonomy, in spite of increasing connections with the economic context? In a situation of «industrialization of science” universities provide such programs, which can “work off” the investments resulting from the contact with the high-tech often transnational corporations. In addition, the transformation of universities into business structures for the production of knowledge can be a factor contributing to the destruction of the classical liberal tradition of university education. This process will show its evidence with the globalization growth trends and modern life scientization. Previously, it was possible to talk about the stability of the universities. A

premise for this stability was the fact that the university always dealt with knowledge. In the situation of “capitalism of knowledge” university structures may become a licensing agency, and academic institutions will gain the status of market units. University, faced with transformations in its own paradigm, will act as enterprises (not being them actually). The autonomy of the university, which has historically equated to corporate freedom – will set face against the misinterpretation of the university as a kind of expensive business (Petrova et al., 2015).

5. Idea of multiuniversity

Due to a reduction in the canonical general knowledge the movement towards to scientific innovation will require a radical transformation of the programs, their specialization and modeling. It occurs in the formation of interdisciplinary learning paths. Meanwhile, the knowledge got by a student, and the knowledge got in the course of the study differ from each other. And how is it possible to combine such need for a man as an existential desire for truth and the desire to get knowledge, which is supposed to have status of goods?

These are just some of the problems associated with the development of the entrepreneurial university type. Speaking about it, we note that the futurologists focus their attention on the organizational structure of the University of the Future. They offer the idea of “multiuniversity” (Kerr, 1960). There will be a community of students and alumni, administrators and teachers, humanists and the natural sciences. They will keep the eternal truths and create new truths.

C. Kerr in his works “Industrialism and industrial man” (Kerr, 1960), “Problems of the university”, “Marshall, Marx and the contemporary period”. “The univariate society” he described the academic monastery of Cardinal George Newman and developed the “ideas of the modern university” of A. Flexner. He proved that the dynamism of European culture outstrips the assumptions of futurologists. The academic world deals with the tasks of society. University of a new epoch, says C. Kerr (Kerr, 1960) – is a sociocultural phenomenon – the series of communities passed through the global transformation, with the rich historical past.

Multiuniversity – is incompatible Institute. This is not one but several communities – the community of students and post-graduate community, a community of humanists, social scientists and community of scientists, community of administrators. As an institution, it looks away in the past and far into the future, and often does not agree with the present. It works for society almost like a slave – and also criticizes it. The university has the internal incompatibility but it does not prevent being compatible with the society. On the contrary, a constant internal struggle is the key to “stable freedom” although multiuniversity has not the common “soul”, but it has its own ideal. Everything should be directed to the search for truth. Objectives have already been given: the preservation of eternal truths, the creation of new knowledge, to improve service where the truth and the knowledge of the highest quality can cater the human needs. The goals have been given. It’s necessary to improve the means permanently in competitive dynamic environment”.

The society becoming a meritocratic has to focus on the “new intellectual cast”. Today, in a “non-classical” time, major universities around the world exist in epoch of global transformation. They try to combine the outstanding intellectual potential with the ideas of competitiveness, productivity and

entrepreneurship. Charles M. Vest in "Pursuing the Endless Frontier-Essays on MIT and the Role of Research Universities" (Vest, 2004) writes about the universities, which combine the education of high level and scientific research (e.g. independent research institutes of the Max Planck and universities in Germany which entered into the integration and innovation projects of research centers of Cambridge and the Massachusetts Institute of Technology). Such countries as China, Mexico, Singapore create scientific research centers of world-class. These are "metauniversities", based on global research cooperation, the sharing knowledge. At the same time teaching and knowledge are based on software with open source Linux (Martinov, 2013). Metauniversity demonstrates the new relationship in global cooperation of teachers, students and researchers.

6. Is the threat of the dissolution of university real?

Knowledge used to be a public benefit. Nowadays, however, it has become a commodity, which complies with the laws and regulations of the market. When knowledge becomes a part of the market mechanism, it ceases to be public; the university loses its quality of social benefits, as an institution for the whole society: "It becomes a part of the toolset in the competition for global leadership in the field of high technology, the means of modern science and modern economy. It becomes an effective instrument of power, which is used by about 700 million people living in the developed regions of the world: in the USA, in Japan and in Western Europe. It means the end of a universal function of the university: it is true that it is still going through a period of expansion, but in the development of its huge potential as a means of competition, its horizon will be narrowed by corporate thinking. A huge revolution in the quiet form has already happened" (Vest, 2004).

However, knowledge should be a public domain of the human mind. Knowledge is a result of creative human activity. It should be managed equally. The intellectual heritage of humanity should not be the property of any one group of people. The responsibility of university leaders is to make knowledge available to everyone. It should be considered an element of the universal history of humankind, because it embodies the integrity of human creativity. If the given model springs to life, it will lead to two cultures: a high-tech (natural science) and weak-tech (humanities). The differences will grow, simply because people will not be connected to one another (Retrella, 1994).

7. Conclusion

The technical character of the modern society is leading to a decline in humanization. This direction is potentially dangerous because in this case the deficit of human or social understanding will be critical. If global society will use scientific tools for only business purposes, we will soon reach the limit of traditional human self-understanding. The art and history will disappear.

According to evolution paradigm the history of the evolution of the Universe has been passed several stages until present time. These stages are: a lifeless world, the world of the living and then the epoch of human. Now there is the next stage of development – the artificial intelligence. In this context, human society has lost its significant role in the evolution. If the knowledge is global, it should be directed to the 7 billion people now living on the planet, rather than to 700 million, now living in

economically and technically developed countries. Science and technology should not be the privilege of the developed markets.

Thus, we conclude that intellectual horizons should be protected and expanded by universities. According to this idea modern universities and the academic society should save their traditional mission, if they remain loyal to the great concept of human and human destiny under the conditions of technological progress domination over humanity.

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References

- Kerr, C., John, T., Frederick, H. & Charles, A. (1960). *Industrialism and Industrial Man: The Problems of Labor and Management in Economic Growth*. Cambridge: Harvard University Press, 331.
- Krasikov, V. (2008). University education in the context of traditions and reality of modern informative society. *Classical university in non-classical time. Works of Tomsk state University*. 269, 13-15.
- Markov, K. (2009). Commercialization of research at US universities. *Journal of Nizhny Novgorod University of N.I. Lobachevskiy*. 5, 22-23.
- Martinov, K. (2013). Distance Coursera. *Domestic notes*. 4 (55). 123-125.
- Petrova, G., Brylina, I., Kulizhskaya, E. & Bogoryad, N. (2015). Corporate Culture of Contemporary Research University in Search of Complementarity of Humanitarian and Commercial Principles in Education. *Procedia - Social and Behavioral Sciences*. 166: *Proceedings of The International Conference on Research Paradigms Transformation in Social Sciences 2014 (RPTSS-2014)*. 505-510.
- Retrella, R. (1994). University as a place for knowledge production. *Alma mater (Journal of high school)*. 3, 16-25.
- Schumpeter, J. (1942). *Capitalism, Socialism and Democracy*. New York: Harper & Row, 381.
- Sombart, W. (1905). *Sozialismus und soziale Bewegung*. Jena: Verlag von Gustav Fischer. English translation: *Socialism and the Social Movement in the 19th Century*. New York: G.P. Putnam's Sons, 1898, 220.
- Teilhard, C. (2002). *The Phenomenon of Man: A collection of essays*. Trans. from fr. M.: LLC "Publishing ACT".
- Vest, C. (2004). *Pursuing the Endless Frontier Essays on MIT and the Role of Research Universities*. Cambridge, MA: MIT Press.
- Vishlenkova, E.A. (2011) Representation or universalism: university in the history of Russia. *Russian Journal*. Retrieved from <http://www.russ.ru/pole/Predstavitel-stvo-ili-universalizm-universitet-v-istorii-Rossii>