

INTELLECTUAL LABOR AS A DRIVING FORCE FOR INFORMATION ECONOMY DEVELOPMENT

Tetiana Kamenieva

Business development manager LLC “VLV Import”,
e-mail: kamenieva2709@gmail.co, Ukraine

Mirosława Skalik

PhD, Polonia University in Czestochowa,
e-mail: m.skalik@ap.edu.pl, <http://orcid.org/0000-0002-6259-4794>, Poland

Viktoriiia Radko

Assistant Professor, PhD, Kryvyi Rih Economic Institute of Kyiv National Economic
University named after Vadym Hetman,
e-mail: radko_vm@kneu.dp.ua, <http://orcid.org/0000-0003-0351-2573>, Ukraine

Svitlana Matsyura

Assistant Professor, PhD, Kryvyi Rih Economic Institute of Kyiv National Economic
University named after Vadym Hetman,
e-mail: mazura_si@kneu.dp.ua, <http://orcid.org/0000-0002-3243-7683>, Ukraine

Petro Mazurok

Professor, DSc, Kryvyi Rih Economic Institute of Kyiv National Economic
University named after Vadym Hetman,
e-mail: mazurok_pp@kneu.dp.ua, <http://orcid.org/0000-0002-5413-5408>, Ukraine

Abstract. Article deals with special preconditions of complicated mental labor expansion, as mass phenomenon. The influence of technological mode of process changes as well as changes of institutional sphere on intellectual labor emerging and expansion.

Keywords: intellectual labor, complicated mental labor, creative work, labor character and content, technological mode of process.

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Introduction

The current stage of social and economic development is accompanied by significant changes in social productive powers and property relations. Generally, this brings to structural changes of the entire economic system. Scientific and technological development of recent years have emphasized the role of human intellectual and creative abilities; knowledge, science and information became the most important elements of productive powers; simple routine physical work turned into intellectual and creative one.

The purpose of the article is to study the distinctive features of post-industrial society and economy, to determine the essence and peculiarities of complex intellectual work in terms of post-industrial social and economic relations.

The issues of human resources as a factor of production and source of economic development were investigated by such scientists as: A. Smith, U. Petti, D. Riccardo, JS Milly, K. Marx, A. Marshall, L. Waldras, J. Schumpeter and many other. These are economic researchers, who highlighted the labor intellectualization theme in their work in more or less extent: D. Gelbright, P. Drucker, D. Bell, J. C. Mill, E. Denison, M. Delyagin, P. Krugman, P. Romer, M. Porter, K. Frimen, R. Solou, M. Castells, F. Fukuiama, V. Inozemtsev, A. Tuffler, M. Masuda, F. Mahlup, T. Stouenier and others. The questions of labour intellectualization are discussed by such Ukrainian researchers as A. A. Chukhno, Yu. Bagal, O. Bilorus, O. A.

Belyaev, A. S. Galchinsky, V. M. Heyets, O. Grishnova, Y. A. Zhalilo, G. Klymko, V. S. Savchuk, Yu. K. Zaitsev, A. M. Kolot, D. Lukyanenko, Y. Makhogon, S. Mochernyi, V. Novitsky, A. Rummyantsev, L. I. Fedulova, and others.

The influence of technological mode of production and institutional sphere on intellectual labor functioning

Globalized economy of the most countries of the world is based on information technology, that causes dynamic process of changes in products, services and needs. In the first third of the last century J. Schumpeter noticed, that firms compete mainly in the field of new products and technologies, that is provided by dint of intellectual potential of their employees (*Schumpeter, 2004*). It still applies accurately to the current market situation, as far as the most successful firms and societies are leaders in development of the newest technology, knowledge and products, and thus they strengthen the role of intellectual capital, intellectual property and everything that is concerned with intangible assets. Thus, nowadays intellectual resources became the basic criteria for market stability of the companies, competitiveness of national economies and human well-being growth.

“This age of time and talent... the most critical resource wears shoes and walks out the door around five o'clock every day” – Sweden economists describe today's situation. Though, even A. Smith mentioned “a man who have got a profession by spending a lot of time and working hard... is similar to expensive machine”. On scientists' opinion, such work will compensate "all the expenses of study, at least, with the usual profit on capital" to a man (*Semyanchuk, 2012*).

K. Marx emphasized repeatedly that the development of physical, mental and creative human abilities is "real wealth" and "the main productive power of society" (*Fetisov, Khudokormov, 2004*). At once, some time ago scientists regarded every human only as economic and rational individual, who cares exceptionally about his material wealth and this point of view dominated during a long period of time. Nevertheless, today this attitude also finds its followers even among the representatives of mainstream. Rapid scientific and technological development at the beginning of XXI century, transition to a post-industrial technological mode of production and network economy – all this determined economists to study human and worker in economic life as a modular individual with multiple needs, interests and incentives, that make him able to function effectively as a part of social production and reproduction systems. Thus, there is a need to investigate the non-economic, intangible, social components and factors that influenced on changes of the content and the character of the labor, social and economic relations of post-industrial society, the institutional forms of labour in system of such relations.

Economic development of many countries in the world at the beginning of the XXI century provides a level of basic material goods and services consumption, that cultivates an interest and sustainable need for various forms of self-development, i.e. there is a need to move constantly to the higher levels of A. Maslow's hierarchy of needs, or move up by "social lift". In modern society such nature of human or individual needs forming ensures a certain harmonization of interests among various social groups, particularly entrepreneurs and employees; removes contradictions within objective needs of economic development, state and society needs, and business requirement of intellectual labor in order to compete effectively and increase the profit from economic activity. That is, according to scientists, "equalization of incomes, special guarantees and equal starting conditions, is absolutely necessary prerequisite for the economic development of a modern technological system based on the intensive use of skilled and creative work" (*Zaitsev, 2002*).

It should be mentioned that for almost all of the twentieth century, representatives of the dominant branches of economic theory – neoclassic and mainstream - paid a great deal of attention to improving methods and techniques of efficient and rational use of scarce resources, reducing production costs, ensuring the economic freedom for individual producers and consumers. Though they did not actually pay attention to the fundamental principles of the functioning and development of economy and society. These fundamental principles describe the increasing demand for qualitative transformation in social production, the place and the role of modular individual, and not only economic one, in this process. In other words, scientists did not investigate new trends and changes in the character and content of socio-economic relations and the causes of these changes. Although, it is impossible to outline long-term prospects and the nature of changes beyond that analysis. This is the case of changes in the structure of the productive forces of modern society and in the whole system of ensuring a general equilibrium in terms of post-industrial mode of production.

We apply to K. Marx scientific work in order to understand the essence and objective laws of capitalist social and economic relations evolution. They cause changes of the content and the character of the labor, the role of individual in production process and the growth of his needs. That was K. Marx (and earlier, that was A. Smith), who found the capital owner's objective interest in productivity growth. And therefore owner is interested in technological changes and human capabilities building at the enterprise. Later, J. Schumpeter explained that this interest is a part of entrepreneurship and entrepreneur's nature, that's why J. Schumpeter regarded entrepreneur as an innovator.

Since K. Marx times it is often stated that «capital usually develops the areas of technological progress, which lead to an increase in value added. If the result is purely increase in the volume and quality of public goods and does not bring additional profit, capital will not invest or will do it in form of charity, which is nothing to do with capitalist production».

As for the industrial economy, there was no need in intellectual worker. The industrial production system needed a standardized, unified workforce.

Thus, we can conclude that the massive intellectualization of labor, society and economics occurs only in terms of transition from industrial to post-industrial system. New technological mode of production arises as a result of qualitative and revolutionary scientific and technological transformations of all elements of productive forces. Countries, societies, entrepreneurs could gain social and political competitive advantages only when they realize the necessity of spreading and intensive cultivation of intellectual potential of the employees and proper conditions for its formation and development (Fig 1).

Figure 1 shows the interaction among material and personal elements, that causes evolutionary development of human and means of production.

Industrial revolution, scientific and technological progress, informational revolution have become the impetus for the workforce intellectualization. Indeed, previous stages of social and economic development require, first of all, physical strength, and not "pure knowledge". As far as material production prevailed, it determined the employment structure.

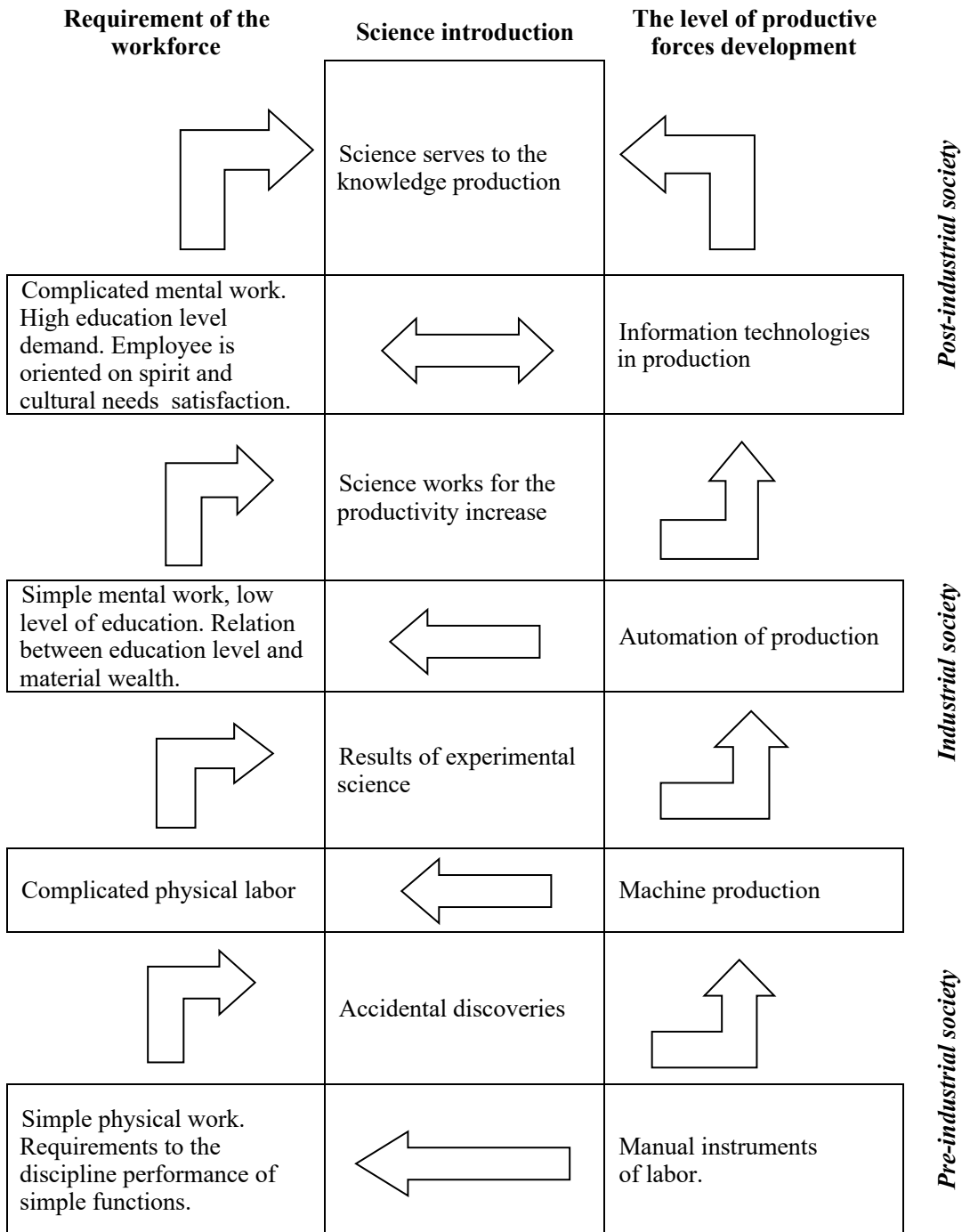


Fig. 1. The interaction among material and personal elements, in the process of workforce and means of production development
 Source: (Pestova, 2014)

Therefore, the vast majority of employees was engaged in physical labor, which, moreover, was routine, monotonous, and conveying. E. Toffler stresses, "work was a mindless drudgery, it was the main condition to have a profit. The more employees are exploited; the more money is made." (*Grishnova, 2006*). However, since XVIII century the rapid development of experimental science started in England and, later, in other European countries. The achievements of science were introduced into production for benefit of the capital owners and the bourgeois state. The implemented technologies contributed to the growth of productivity and the increase of industrial production employment share, which ensured the maximization of profits.

In addition, in Great Britain the experimental science results were widely accessible for the general public and for employees. That explains the success of the country in the XIX and early XX centuries at International competitive scene.

Contemporary quantitative development in science and technologies create a conditions for the constant growth of productivity and for industrial workers to be released and to pass to the sectors of economy that are not related to material production. Such a process has ambivalent consequences. On the one hand, it means that social production builds up the capability to ensure the material needs. On the other – it escalates such contradictions of capitalistic system as rapid increase of "unnecessary" people. As researchers figure out, "Robotics replaces the working class and automatically raises the welfare of society, while automation of services is often practically impossible. And it is the last bulwark to hide the modern society "from unemployment" (*Erokhin, 2007*).

More indicative contradiction is the influence of an innovative economy in developed countries on the welfare growth in these countries and in the rest of the modern world. We agree with researchers, who emphasize, that harmonization of the labor relations between intellectual potential - employee - and business in developed countries, at the same time, monopolize the right to use this intellectual potential in order to achieve sustainable advantages at the international economic scene. This causes the gap between the core of the countries-innovators and the rest of the world population. According to UN and other organizations statistics, the proportion of the gap is 4 to 1. That means, only 20% of the world population live in welfare, mostly northern hemisphere citizens. While 80% of the planet inhabitants live in poverty, or on the verge of poverty.

These examples show, that effective economic development of any country is possible only when political and economic tasks are solved. It is referred to qualitative socio-economic changes, both in national and global economic systems. That will ensure high level of social and economic justice, motivate for work intellectualization, and so, contribute to solution the problems of introduction of the science achievements in order to refocus economic life in favor of human development. As far as, global and regional economic and social problems solution is impossible without transition to a "human centered economy".

Numerous scientific reports that was made to order of Roman Club explain such a direction of modern economic development. These reports offer ways for a qualitative transformation of human role in the modern world: cultural (educational) revolution; refusal of the focus on material wealth growth and refocus on spiritual values; conditions for complete human potential fulfilment; ecologization of production, ensuring social justice, achieving political and economic freedom as the highest social value (*Shkurupiy, 2010*). In such terms, state should take care about universal principles of adaptation of individual to the changing environment of modern production (*Yelmeev, 2007*). The basis is continuous learning and information enrichment, standardization of knowledge and skills within the entire economic system.

European countries showed an interest in capitalist economy growth almost since they had been founded. The liberal doctrine of the nineteenth century is the main evidence of that. According to E. Gellner, state educational policy and the formation of market economy institutes became a reason the independent and responsible individual turned into the modular individual. Scientist emphasized: "his modularity is the ability to solve a variety of tasks within certain cultural field." State interference in industrial society resulted a new form rationality, which relied on scientific standards and plunged all other forms of knowledge into the cultural periphery. Universal truth (science) spreads everywhere instead of authoritarian truth (power) and unique truth (church). Books, knowledge and standardization played a leading role in the process. The law replaced the privileges and family ties inside states that became bourgeois.

State's efforts were aimed at economic growth and It could be embodied only by means of educational system through the science standard expansion and the growth of the number of applied professions. The technological orientation of science was created Due to active state investment. Thanks to state efforts, labour and technologies became a special subject of study and engineer and technologist professions gained high social status.

Theoretical and practical science focused on engineering and technology. In continental Europe of XVII and XVIII centuries the applied researches were stimulated mainly by the state. Large business turned to be the main beneficial of science researches only when large national and transnational companies developed. So, schematically reflecting the conjunction among ideas, technologies, knowledge and market, one can focus on the key role of the state in the process of developing a post-industrial economy (Fig. 2).

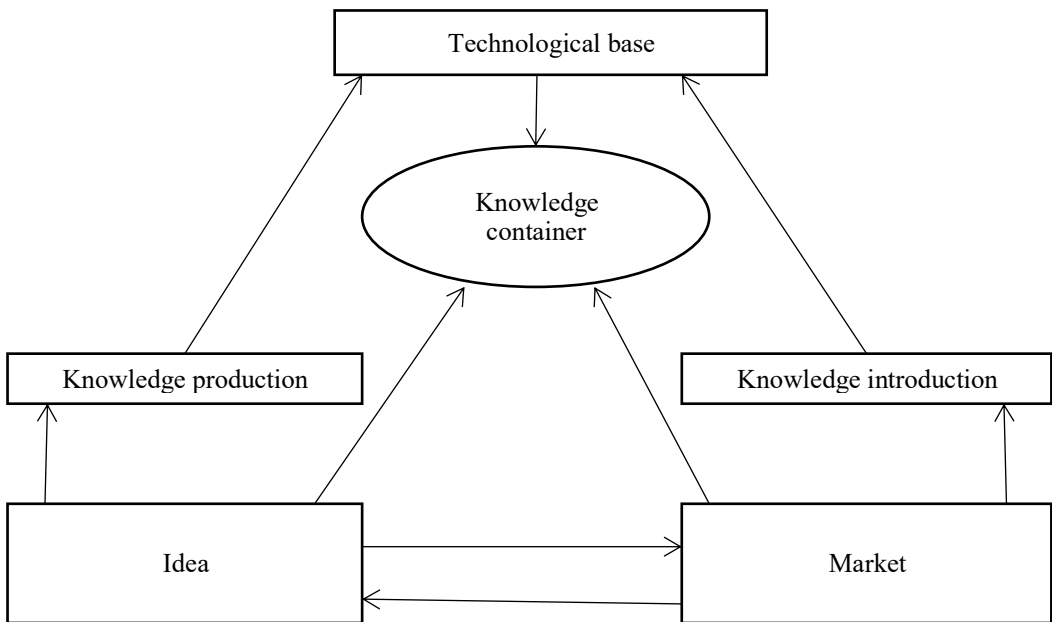


Fig. 2. The conjunction among ideas, technologies, knowledge and market

Source: (Toynbi, 1995)

It should be noted, that important condition of intellectual capital development, comprehensive intellectualization of the economy and implementation of state strategy is solving the disproportions on the innovation market, where the demand structure does not

correspond to the supply structure. At the same time, the capabilities of state institution are limited in the sense that they cannot completely substitute market institutions and business entities motivation. It mostly intended to combine demand and supply in the most effective way, to act as a mediating mechanism.

The famous researcher A. Shandler studied and documented the transformation of capitalism, caused by the emergence of giant multinational companies. He analyzed the activities of more than 200 major companies in America, England, Germany over the centuries of their existence, since 1890. He managed to find that the success of these companies was largely determined by the right decisions that were made in time. The large size of the company itself could not be a guarantee of success in the future. Companies always actively search and implement successful market strategies. One of these strategies was to focus on the effective implementation of the latest scientific results. These companies created their own research and development laboratories and placed them in close proximity to production, so that scientists could, if necessary, contact the engineers and technologists directly and vice versa.

We systematized approaches to the factors and results of wide introduction of science into production, and building up innovative systems and then we focused on three main concepts (Table 1).

Table 1

The technological development concepts based on system approach

The technological development concepts based on system approach		
Technological systems	Industrial clusters	Innovation systems
J. Dosi, N. Rosenberg	M. Porter	B. Lundwal, K. Freeman, R. Nelson
Technologies as an integrated systems of components that are supported by managerial or public relations. Changes in technology lead to changes in the whole public order	Groups of competing firms form the blocks on a technological basis, providing competitive advantages in different types of markets.	Innovation system is a set of interconnected organizations (structures) engaged in the production and trade of scientific knowledge and technologies: legal, financial and social technologies provide innovative processes and have strong national roots, traditions, political and cultural differences.

Source: (Toynbi, 1995)

Conclusions and suggestions

At the modern stage of economic development and globalization of economic and social system, the main requirements and terms of sustainable economic and social growth are intellectualization of labor and constant growth of the intellectual potential. It is the massive

use of intellectual work that can solve a set of the most complex contradictions and problems facing the economy, mankind and human.

The priority goal, the most strategic task and function of the state is comprehensive motivation for development and use of the intellectual potential of each person and employee.

It is not only about conditions for reproduction of abilities to work, it is mostly about the solution of the fundamental problems of qualitative transformation of social and economic relations system, both at the national and at the global level.

At the same time, we absolutely agree with the leading scientists: only when profession becomes a personal vocation, when human capital is not only an instrument of competition in order to gain the innovative potential, when lifelong learning is natural process, and not the means of improving the social status, only then we would speak of a truly golden age of intellectual labor.

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