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DOES ECONOMIC DEVELOPMENT OF SOCIETY DETERMINE FORMS OF INTELLECTUAL LABOR?

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The aim of the current study is to identify the main stages of intellectual labor development, its qualitative certainty at each stage and formulate the basic evolution laws of intellectual labor development in order to highlight the important role of intellectual workers (professions) in the history of societies. The authors provide the periodization of the intellectual labor institutionalization system and conclude that the evolution forms of professional intellectual labor depend on the level of socio-economic development of society. It means that the level of economic production determines the level of intellectual development as well as diversity of professions, and the reached level of scientific knowledge organization and consumption. Earlier studies contain no understanding that intellectual labor and scientific knowledge have a character of materiality and reproduction. The study contributes to the development of intellectual labor theory, as it systematizes knowledge in the field of multidisciplinary research of intellectual labor and develops a categorical apparatus in social sciences. The practical significance of the obtained results is in constructing design of government policy, aimed at improving the regulation of intellectual (scientific) labor. In terms of intellectual property rights development there is a threat of underproduction of scientific knowledge as a public good. Thus, the current study can be used as a kind of recommendation for the state to develop mechanisms to distribute the spending on science between potential users of its results in order to ensure its growth as well as positive social and economic effects.

Keywords: Intellectual Labor; Intellectual Professions; Institutionalization of Professions; Economic Sociology, Sociology of Professions.

INTRODUCTION

The increasing role of information and knowledge in material as well as intangible production in the developed societies makes it possible to characterize them as knowledge societies. The process of labor intellectualization forms a new type of economy – knowledge-based economy with intellectual workers at its core. The concepts of post-industrial society, information society and knowledge society focused mainly on economic and technical aspects of intellectual work paid no attention to its social nature. It is intellectual workers who largely determine the prospects for creating a competitive model of the national economy. However, their role is quite often underestimated, due to the economic and technical-oriented theoretical approaches. Economic sociology approach provides an alternative as it studies the relationship between social and economic in the sphere of intellectual labor in historical perspective. Intellectual labor is considered to be a social institution, historically formed on the grounds of the social division of labor, for the functioning and development of professional communities.

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Initially, the interest in studying the problem of intellectual labor has been caused by the emergence of post-industrial society, information society and knowledge society concepts (Machlup, 1962; Galbraith, 1967; Bell, 1973; Bestuzhev-Lada, 1979; Drucker, 1993). However, they have been focused on the economic and technical aspects of intellectual work, disregarding its social nature. In economic sociology this problem that has taken form of contradiction between economic and social, and has been solved within the framework of reproductive approach, which considers the labor through the categories of production of material wealth, as well as the reproduction of the individual and society (Elmeev, 2007). Meanwhile, the material approach of science and technology in economic sociology was focused on the study of how society chooses the direction of the scientific knowledge, as well as how science (i.e. new knowledge and technology) contributes to changes in the economy and social life (Latour, 1988; Law, Bijker, 1992; Callon, 1998; Pinch, Swedberg, 2008).

We assume that intellectual labor is a kind of professional activity, which has mental practice at its basis, but by its nature and content it overcomes the traditional opposition between physical and mental labor, and it is information-intensive and productive. In our view, the profession of scientist and researcher is at the core of this concept. One can build a set of rings of intellectual professions (see Figure 1). Close to the core are management professions. The second ring is the area of applied professions (teachers, doctors, psychologists), literature and art professions (writers,

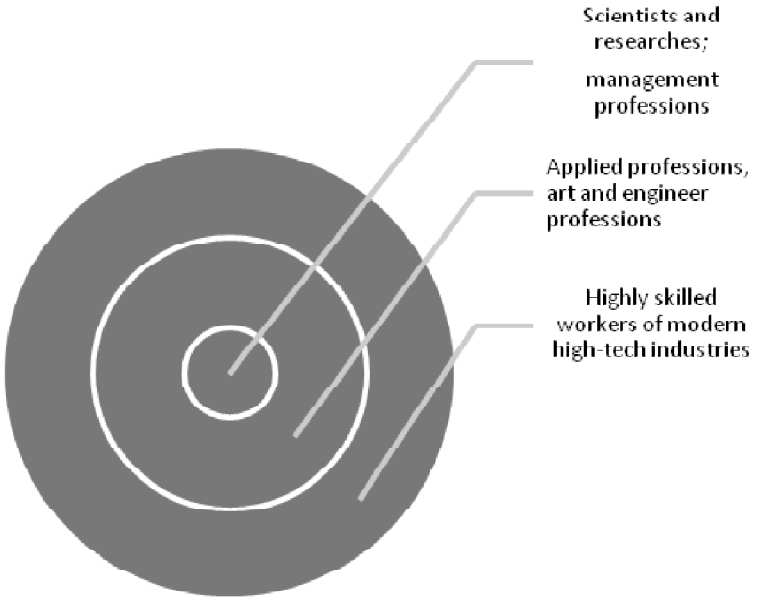

Figure 1: A set of intellectual professions rings

actors, artists), and engineers (for example, designers). And highly skilled workers of modern high-tech industries are in the outer ring. Their professional activity is not possible without the use of a significant amount of knowledge as well as intense attention, the creation of new algorithms of activity and unregulated labor intensity.

The concept of 'intellectual profession' is, unfortunately, forgotten since it has been first used by Sorokin (1947), and in recent time it has fallen out of scientific sociological lexicon. Analyzing inter-professional stratification, Sorokin does not define this term directly, but reveals it through the existence of high status professions in society requiring a high level of intelligence to work and relating to functions of social organization and control.

Florida (2011) considers the representatives of intellectual professions in modern society as creative class. This class consists of professionals involved in the creative segment of the economy, i.e. those whose economic function is to create an intangible asset, bringing tangible dividends. From this perspective, creativity becomes a hallmark of a new class, but it is not just about the intelligence of men, or their creative abilities. Creativity includes the ability to synthesize, and the result of this synthesis can be anything – from invention of device and development of the theory, leading to problem solution, to creation of a masterpiece. Therefore, an essential component of creativity, on the one hand, is innovation, and on the other, it is efficiency in solving the existing problems.

It should be emphasized that the creative class, according to Florida, is quite a poorly differentiated community, but the key driving force of economic development of post-industrial cities. The core of creative class is constituted by professions in the scientific and technical sphere, architecture, design, education, art, music and entertainment, whose economic function is to create new ideas, new technologies and new creative content (Florida, 2011).

LITERATURE REVIEW

The phenomenon of 'intellectual labor' has been fruitfully studied in social sciences. For example, Brick and Mills (2011), studied the concept 'public intellectual' using controversial sociological and political approaches, and came to conclusion that it is a social type as well as political or civic action, or a person engaged in scholarly, creative work. They examined the character, values and virtue of this person in different periods of time to highlight the dilemma appeared in public discourse around his figure. Besides, Kalleberg (2012) outlined four basic roles of the academic (sociologist): researcher, teacher, public intellectual and expert, with an emphasis on the last two to highlight their increasing influence in modern society. Furthermore, one can find many research papers devoted to the nature of modern professions, professional associations and the sources of legitimate power of professional groups, the size of social capital they perform. For instance, Koivumäki (2013) introduced an instrument for measuring the social capital of dentists in

Finland. Moreover, Dallyn, Marinetto, and Cederström (2015) investigated social nature of professional and concluded that academic public intellectual is a kind of temperament, rather than a technical specialist employed as an academic. Finally, Arora and Arora (2015) analyzed a knowledge engineering process in terms of shifting paradigms affected by global economy and the role it plays in forming professionals. They found that today professionals are trained to distinguish logic from tradition as well as common sense and nonsense from each other.

However, the works on the analysis of the intellectual labor, the unity of its material socio-economic nature, place and role in the system of social reproduction in the historical perspective, are not available. This article attempts to fill the existing gap in the social sciences, answering the question of *whether evolutionary forms of intellectual labor are determined by the level of socio-economic development in the history of societies, or not.*

METHODOLOGY

An economic sociology approach that frames the logic of the study is based on the idea of social reproduction of society. Social reproduction is understood as the reconstruction of pre-existing elements of social structure and the relations between them, the appearance and expanded reproduction of new elements and relations, which form the changing and evolving individual. An economic sociology approach provides an opportunity to focus on the ability of an individual not only to create (produce) something new, but also to preserve and maintain the entire system of social relations in the production process (Elmeev, 2007).

In the framework of economic sociology approach, the authors of this article argue that efficiency (productivity) of labor activity is the main cause for the development of society at all its phases. The more effective work is in the economic (material) production, the less population to be engaged in this sector and the more developed to be the non-manufacturing sector, including the sphere of intellectual labor. The level of development of non-productive activities in general and intelligent services in particular indicates the level of development of society. The specificity of intellectual labor in contemporary society lies in the fact that it involves the employees of the productive sector, in modern high-tech industries (Lebedintseva, 2012).

RESULTS

The institutionalization of intellectual professions: two methodological perspectives in economic sociology

In the analysis of intellectual labor as a kind of professional activity two perspectives can be defined. According to *the first one*, the profession is viewed as a specialized type of labor, which benefits society; it is performed by common people who follow

nearly the same lifestyle. Besides this point, intellectual professions have to possess such features as: a) the realization of labor activity in the community, b) the manifestation of labor division to physical and mental, c) the understanding of professional work as an activity associated with specialization, d) the performance of intellectual labor by a particular social group. Based on the listed features, one can determine the historical period of the first appearance of intellectual professions.

Thus, in ancient Greek civilization craft was separated from agriculture (the second largest division of labor), there was trade and commodity production, intellectual types of activities appeared differing in content from craft activities. In the ancient society classes began to acquire the features of specialization and differentiation by occupation (shown for the first time) – farmer, shoemaker, weaver, builder, poet, philosopher, etc. (Plato, 2007). According to the approach indicated above, the first intellectual professions appeared at that historical period.

Thus, the question may arise: why could not earlier ancient Egyptian civilization be attributed to that period? Yes, in a certain respect, if we talk about professions in general, regardless of mental or physical components (but within the first widest perspective to understanding the profession), we should start from this historical period, as almost all the features mentioned above are present, except for the last one – the requirement to perform intellectual labor by a particular social group. And, it is appropriate to refer again to the intellectual professions, limited to the spheres of science and research.

Indeed, one could start considering that division of labor into mental and physical belonged to the time of appearance of the first cities, i.e. to the era of the first dynasty in Egypt and the early kingdoms in Mesopotamia. One reason for emergence of conscious mental activity was the social need in the formation of a special caste of organizers-rulers, who were exempt from physical work in favor of management. This caste was composed of priests as members of the upper social class, who performed three functions: governance, education and intelligent research.

The professions that most clearly represent the intellectual labor were those associated with the emergence and development of abstract science and the scientific way of thinking in the ancient society. This way of thinking was characterized by rationality and realism, i.e. the ability to prove something using arguments and to appeal to common experience, which was not distinguished at earlier time. The professional intellectual labor was based on the separation of actual and verifiable knowledge from the emotional and traditional assertions.

Initially, the professional practice of that time, in our context, was the figure of philosopher, who reflected on the development of nature, humans or the universe. The result of this intellectual labor was scientific knowledge, perceived rather as a product of rational evidence than on dogmatic beliefs, supported by the authority (which could be seen at earlier time). These signs were the prerequisites for

highlighting the sphere of science in the professional intellectual labor, focused on the acquisition of knowledge in the form of evidence, by appeal to the actual reasons and grounds. The planimetry of Hipparchus, the Hippocratic medicine, the history of Herodotus and the Euclidean geometry were built according to this principle.

For the first time in history their work was organized and received material support in the walls of the Museyon (Alexandria Museum), which can be called the first 'public research institution' that existed from the III century BC until the II century BC. It resulted in significant development of mathematics, mechanics and astronomy. There were also scientists, engaged in intellectual labor at the courts of the kings such as political advisers or philosophers, who had, generally, their own school. It was a widespread view that the prestige and stability of any political governance had been increasing if it was supported by a famous philosopher as an advisor. Only a few had to earn their own living: for example, Protagoras and other sophists of that time received tuition. This practice was a rule at the later historical period; however, it was an exception for the Antiquity. It should be noted that such philosophers existed not only in ancient Greece, but also in the East (Palestine, India, China and other countries). Later, the intellectual professions started acquiring even more diverse features.

The indicated approach to the definition of professional intellectual labor is certainly not free from drawbacks, especially if we rely on modern methodology of the sociology of professions. However, in our opinion, it has the right to exist, in case we seek to describe professional labor from the standpoint of specialization and differentiation.

The second perspective imposes more stringent requirements for the concept of the intellectual profession and for the process of formation of its features in the society. The first and the most important condition is the institutionalization of profession that involves the acquisition of a number of important features. The most detailed enumeration of the characteristics of the profession has been composed by Millerson in the 1960s (Millerson, 1964). Institutional approach to the profession and the benefits associated with it has been applied by the Russian sociologist Korableva: "The subject of sociological research of profession is viewed from the perspective of society as a special institution, historically formed on the grounds of social division of labor, for the operation and development of professional communities and their interaction by institutionalization and reproduction of rules, standards, norms and professional behavior patterns" (Korableva, 2013: 115).

Following the logic of this approach, the institution of profession arises on the basis of the developing processes in the division of labor, which are directly connected with the efficiency of economic processes that affect the level of non-productive sphere. With the exception of Durkheim, who over a hundred years ago was the first to speak about the impact of the social division of labor on the

formation of professional groups, today modern Western sociologists pay little attention to this fact. They mainly focus on the role of state in the formation of a professional complex, which results in appearance of two types of models: the Continental and Anglo-American (Moran, 1999; Saks, 2015, and so on). According to M.A. Shabanova who should be mentioned among Russian sociologists, concepts 'profession' and 'professional' are closely related to the type of socio-economic system, and historical features of its development: the content of these concepts is determined by the dominant type of social and economic relationships in the society, the quality of economic and non-economic institutions, especially culture, etc. (Shabanova, 2006). In general, the specifics of intellectual labor is disclosed in position that, for example, science as professional activity, the level of its development, opportunities, etc. are determined by the level of economic development, understood not only as the production of things, but also as the reproduction of social relations (Shabanova, 2013). In our opinion, one of *the main features* and, at the same time, the condition for the institutionalization of a profession is the presence of open channels for vertical social mobility, as opposed to the social estate structures which impose severe restrictions on mobility in social hierarchy. *The second feature*, which is closely connected with the first, is the availability of formal education, understood as a system of expert knowledge. In the terminology of Parsons, it means the predominance of the intellectual part of the university complex in teaching profession (Parsons, 1966, 1968). Having started to be formed in the Western world in the XII-XIII centuries, the institutionalization of professions was completed by the XVIII century (Carr-Saunders and Wilson, 1933).

Hence, the question arises: whether the emergence of a professional intellectual labor was possible up to that period? Obviously not, because the professional practice has to go through the process of its institutionalization, with all its attributes. Therefore, a definite profession in any area of specialized activities might not occur until that period.

The periods of the institutionalization of intellectual labor

As it was mentioned above, science is the result of material production development, understood not only as the production of goods, but also as the reproduction of social relations. Science is a presumption process (i.e. production + consumption); it exists, operates and develops due to the consumption of goods created in material production, and, thus, due to past, materialized labor. The intellectual labor analysis in historical perspective is based on five factors: the level of economic development, its subjects, its characteristics, its main achievements (outcomes) and the organizational forms of intellectual labor. Thus, the periodization of the development can be summarized as follows:

Stage I –'*Pre-institutional stage*': up to the XVII century BC, Mesopotamia, Ancient India and Ancient China.

Economic conditions of development set the standard, forms of existence, character and largely determine the results of intellectual labor. The main feature of ancient society was to delegate the execution of intellectual functions to a certain layer in society, due to the increasing efficiency of agricultural production. The subjects of intellectual labor were the priests, who had sufficient level of education. The main social causes of intellectual labor appearance were: the social need to form a special caste of the organizers-rulers, freed from working with material objects, as well as the necessity to have means of measurement to compare goods and to have certain standards. The distinguishing feature of intellectual labor of that period was its pre-scientific nature.

The aim of intellectual labor was rather to produce solutions of practical problems, then universal evidences, and therefore, the grounds for the relevant decisions were a professional secret, turning science into a magic act. The result of intellectual labor of that time was the knowledge as a set of ready-made recipes, i.e. it was utilitarian, applied in its character, and was lacking solidity and rationality. The intellectual achievements of early civilizations were the emergence of astronomy, astrology, medicine (anatomy and physiology), and chemistry.

Stage II – *'The initial institutionalization stage'* (the period of Antiquity).

It is a period of intellectual labor in the developed slave economies of Ancient Greece, Rome, China, and India. The use of slave labor enabled to release material production to the broader social strata of society. In the West the subjects of intellectual labor were philosophers (recruited from free citizens) of the ancient society, and in the East they were philosophers, who belonged to a religious school.

The aim of intellectual labor was to formulate universal algorithms for producing knowledge, and in such a way to translate knowledge from individual to the entire society. Only at that stage there appeared such forms of cognitive intellectual labor as systematic evidence, rational reasoning, logical deduction, idealization, which later acted as characteristics of classical science.

Also new organizational forms of intellectual labor appeared, these were state institutions (e.g. schools and Museion) and religious institutions (e.g. monasteries). The result of intellectual labor in science was true knowledge, perceived as the product of rationality, evidence-based justification, but no longer as dogmatic faith, supported by the authority. The transmission of knowledge occurred vertically, from generation to generation. The horizontal circulation of knowledge from stratum to another stratum was either minor or absent. The content of intellectual labor was different in the East and in the West, depending on its purposes: in the West the intellectual labor of the Greeks was focused on Cosmological doctrines, they studied the nature of the gods, the elements, constituting the physical Universe; in the East (China, India) political and ethical issues were set at the first place. At that time, special attention was paid to the problem of human nature: it was selfish and

anti-social, benevolent, and socially responsible or originally evil and in need of control through ritual, or coercion by means of laws. The result of the intellectual labor was religiously arranged, which largely decelerated the development of science.

Stage III – *'The development of institutional characteristics'* (IV-XIV centuries).

Intellectual labor in the Middle Ages in the West acquired a religious connotation and was largely based on religious tradition. The carriers of intellectual labor were the clergy. The scientific labor was of individual character, scientists did research in their free time, aiming to accumulate scientific information and to extend the scientific horizon. Later this knowledge promoted the spiritual achievements of the Renaissance. Intellectual thought of the Middle Ages was unable to go beyond the achievements made by Aristotle. The main theme (problem) of that period was formal organization of education in the East and the West. The school education, typically associated with the prosperity of culture, often acted as the killing of culture, since ideas of the past were preserved at the price of suppression of creativity at present. In medieval Europe, the universities, being the centers of art in the early periods, became places associated with stagnation and dogma after the mid-XIV century. West Europe was the only one of the heirs of the first great flowering of Hellenistic science able to make a progress. In the XV century the Muslim world was economically decayed and was ravaged by the civil war and invasion. China retained its old culture, but in the presence of the bureaucratic state system, which for 400 years hindered the unification of inventions and book learning.

Stage IV – *'The professional institutionalization of intellectual activity'*.

Conventionally, this stage can be attributed to the XV - XVIII centuries, i.e. the periods of Renaissance, New time and Enlightenment. That stage ended with the institutionalization of intellectual labor, it became professional labor. In this regard, circumstances appeared to overcome the extremely personal nature of scientific labor through the creation of the first European Academy of Sciences. In the XVI century they were organized in Italy, in the XVII century – in England and France, and later in Germany and Sweden. State and national libraries, as well as observatory were at the disposal of these scholarly societies. However, laboratories, as a rule, were private.

The general secularization of public life affected scientific activities as well. Developing capitalism actualized the practical value of scientific achievements of that time; so that physics, especially mechanics, were the most popular and demanded branches of science. Since then, the science got the trends that subsequently would only increase and receive the most complete development in the XX century: primarily collective character of scientific activity and basically pragmatic focus of research.

Stage V – *'The integration of intellectual labor (science) and economic production (technology)'*: the second part of the XVIII century – mid. XX century, Europe.

Scientific thought of that period received a pronounced military orientation. Even fundamental science, designed to produce pure knowledge, to discover the unknown regularities of the material world, was actively used for military purposes. All kinds of research directly or indirectly related to military industry were strongly encouraged. During that period, science was actively implemented into the system of productive forces of society; it became one of the most important economic capacities of developed countries. It is important to emphasize that science stimulated the development of material production and technological progress, in turn, military orders and technical progress stimulated the development of science. Realizing the practical significance of scientific research, the governments of developed countries began to invest in science on the increasing scale. As a result, the science for the first time in history became a professional occupation. Since that time, the number of scientists has been increasing steadily in the world.

Stage VI – *'Modern stage. The development of intellectual labor':* the second part of the XX-XXI centuries. This historical process involves all countries.

Intellectual labor is aimed at transforming the primary information (i.e. the object of labor) in order to produce new information to maintain and manage complex social and technical systems. Various ways to transform information are the means of intellectual labor implementation. Thus, such technical means as computer programs, procedures for the preparation, handling, storage and use of the information in an increasingly large extent provide savings of intellectual labor and economic progress in general. The specific character of intellectual labor is its results, i.e. a public good, especially in the field of fundamental research.

Intellectual labor emerged as a consequence of the law of social division of labor. To be more precise, the law of labor change is reflected in the need for continuous improvement of skills and knowledge in terms of intellectual production. The law of labor socialization is manifested in the development of various forms of collective activities in the field of intellectual labor. Based on the identified interactions with the laws of social organization of labor the specific laws of intellectual labor could be formulated and disclosed: the law of specialization (differentiation) of intellectual labor; the law of formation of associated forms of intellectual labor in the process of its development; and the law of labor intellectualization (i.e. raising the level of intellectual types of labor).

DISCUSSION

The relevance of the current study of intellectual labor in economic sociology is determined by the need for a comprehensive description of its role, content, socio-economic forms, and laws of development. So far, no studies of intellectual labor

have been conducted in economic sociology. Economic sociology is studying the relationship between the social and economic in the sphere of intellectual labor; it does not have a methodological apparatus for studying the process of the emergence, development and institutionalization of labor. The study contributes to the development of intellectual labor theory, as it systematizes knowledge in the field of multidisciplinary research of intellectual labor and develops a categorical apparatus in social sciences.

Most recent studies focus on two aspects of intellectual labor, i.e. its social role (Brick and Mills 2011; Kalleberg, 2012; Fleck and Hess, 2014; Arora and Arora, 2015) and nature (Koivumäki, 2013; Dallyn et al., 2015); and the problem of knowledge production with its historical forms in ancient (Chin and Vidas, 2015) and modern society (Forman, 2012) or its material and spatial dimensions (for example, see Schillings and Wickeren, 2015). However, they overlook the understanding of material as well as reproduction character of intellectual labor and scientific knowledge at any stage of socio-economic development of society that has been demonstrated earlier in institutionalization periods of intellectual labor.

Today the intellectual labor is based on knowledge and information that can receive both objective and subjective form. Knowledge is a public good and has all the necessary properties: it is non-competitive, non-exclusive, inexhaustible and accumulative.

The spatial universality of scientific knowledge (its international character) allows acquiring the results of research, without spending time and labor to create the relevant knowledge. The higher the universality of scientific knowledge, the faster and more efficient goes learning process, and the lower the social costs of scientific knowledge production. This means that the required amount of labor and costs of scientific knowledge production should be considered on the basis of its reproduction, and not production.

Modern trends of the world development demonstrate the direct impact of technological progress on the economic growth and improving social welfare. Analysis of the development of modern information and communication technologies indicates the impossibility of privatization and commercialization of scientific data and information and the need to open access to global public goods.

In general, the subordination of science to political or economic interests inevitably involves its destruction. Intellectual (scientific) labor has always existed on the basis of principles, which differ from the principles of the market economy and constitute, according to Merton (*1973)*, the ethos of science, revealed in the presence of four imperatives: universalism, collectivism, unselfishness and organized skepticism. In today's economy, the role of government in the regulation of intellectual (scientific) labor is especially significant. If the state manages to solve the problem of non-exclusiveness of scientific knowledge, there is a limitation of access to a certain part of potential consumers. Therefore, the problem could

also be described as relative underproduction of scientific knowledge as a public good. Thus, one of the most important tasks for the state is to develop mechanisms to distribute the spending on science between potential users of its results in order to ensure its growth as well as positive social and economic effects. Moreover, it is only the state that can ensure the reproduction of intellectual labor and its results as a public good, strengthening the notion of intensive and innovative highly skilled intellectual labor as the main source of increasing national wealth in the public consciousness.

CONCLUSION

Thus, the economic sociology approach to the study of intellectual labor has been identified, providing the analysis of its content, role and trends in historical perspective. The article has introduced the authors' definition of intellectual labor as a qualitatively new kind of work, which appeared as a result of intellectualization of economic activity and the emergence of high-tech industries. Moreover, the authors' periodization system of the institutionalization of intellectual labor has been proposed. Besides, general intellectual labor laws have been identified: the law of social division of labor, the law of labor change, the law of labor socialization; and specific intellectual labor laws: the law of specialization (differentiation); the law of formation of associated forms of intellectual labor in the process of its development; and the law of labor intellectualization.

The authors conclude that institutionalization process depends on the level of socio-economic development in society: its effectiveness has a direct impact on the amount and structure of employment in the sphere of intellectual labor. The emergence of professions as social institution with all necessary features, its 'scientification', i.e. giving scientific form and sense, is not possible without creating a broad field of educational and scientific activities. Thus, one can speak of the relationship between economic (material) production and its social outcomes. In other words, the level of economic production determines the level of intellectual development and diversity of professions, and the reached level of organization and consumption of scientific information. Furthermore, it is state that plays a dominant role in regulation and social reproduction of intellectual workers as a human potential of science, and determines their social significance and place in the social structure in different historical epochs.

The agenda for further research lies in the integration of the achievements of multidisciplinary studies of intellectual labor in social sciences on the basis of the historical method that makes it possible to realize the idea of synthesis of new historically oriented knowledge about the interaction of the economy and society, the 'embeddedness' of the knowledge-based economic system in social relations and the construction of explanatory structures of new intellectual economy, its functioning and development.

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