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Understanding Knowledge in Linguistic Theory and Educational Process

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Abstract

Knowledge structures and understanding knowledge play an important role in the information society functioning. University environment is where understanding knowledge is developed, where the knowledge infrastructure of information society is formed. The optimization of a knowledge-based production is essential when discussing the university environment state. The optimization of production and knowledge distribution is closely connected with the quality of knowledge and its validation. Linguistic theory validity check is based on epistemological management, which can also be used in the sphere of education. From the perspective of epistemological management in university environment, Asian university is considered as the center of cultural values development. Thus, understanding knowledge is an environment where national innovative systems and knowledge are formed and configured.

Keywords: knowledge economics; human capital; information society; knowledge management; viability

1. Introduction

Modern information society development basis rests on mechanism of knowledge production (knowledge development), its distribution (knowledge distribution) and its disposal (knowledge use) within the framework of one cognitive aspect of the life of society or another.

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The essence of cognitive aspects comes to extracting knowledge underlying structure, role of knowledge as its constituent element. In this connection here is our central assumption stating that understanding exists apart from knowledge meaning that an individual can have an idea of something in the absence of necessary knowledge and contrariwise having knowledge in the absence of relevant understanding. Thereby, understanding appears to be an acquisition of cognitive skills.

Thereupon, understanding is more important than knowledge, because it implies occurrence of complex mental processes, which is not about knowledge (Chisholm, 1977; Sosa, 2007).

2. University environment is where understanding knowledge is developed

Modern university environment is formed by two paradigms: academic and market ones. Market relations, as affirmed by B. Bernstein (1996), require to provide accountability to the consumer and quality control in terms of standard design. Academic tradition appeals to adherence of moral supremacy and academic freedom as critical reflection purposes. B. Bernstein (1996) observes manifestation of severe epistemological crisis in this combination of education development vectors, in such a paradigm dispute.

The balance of market relations and academic tradition could be achieved in the university environment of information society by the epistemological management of theoretical knowledge, which models, on a par with production processes, the parameters of academic process and epistemological management of own educational process (Grimm, 2006).

3. Knowledge infrastructure of information society

At the current stage of its development, the information society (hereinafter referred to as IS) develops and implements a special infrastructure based on a principle of investment in knowledge and creation of accumulative database (Kulyapin, Manskov, Khalina, 2015). “Knowledge infrastructure” functioning is to create optimal conditions for the interaction and cooperation of IS scientific community members.

An important peculiarity of the infrastructure is interactivity. Unlike traditional linear model of innovation creation, modern structure possesses more universal methodology of acquisition, systemization and analysis of information. In its turn, expert information management allows getting an information product, which is ready for the distribution in this IS.

Information distribution within society structure is arranged the way to make information transferring smoother, and the purpose to achieve more predictable. To achieve the purpose, it is necessary to have well-developed distribution networks, both formal and informal (Greco, 2002).

Economic growth of society in a number of aspects directly depends on the knowledge register adaptation level for the current economic and political realities. Knowledge anabiosis caused by the last decade economic crisis, when the Customer represented by the state invested less to support and develop the network knowledge production, caused the need to urgently mobilize the scientific community to create optimal parameters of national innovation systems.

4. The optimization of knowledge-based production

Network knowledge production should become an obligatory condition for successful functioning of innovation systems, and it is implemented, as affirmed by B.V. Salikhov and B.A. Neymatova (2009), by means of specific “network factors” or corresponding tools and conditions which are not common to traditional production processes. Network knowledge is directly used as the end product or as means of the end product creation.

Within the formation of ontological basis of knowledge science, the scientific community develops a complex approach to define separated processes inside the industrial / economic core of IS, which could be specified as “knowledge-based process improvement” or KBPI.

KBPI is a set of tools for the improvement of science-driven business process and based on Karl Popper’s evolutionary epistemology (Popper, 2002). His scientific works make the theoretical foundation of KBPI, which among other things, engages ontology of business process, forming a special language of their description.
Knowledge-based process improvement supposes a special methodology that determines a systematic approach for business process improvement in practice.

Epistemology is the basis of the KBPI operating paradigm, which mission is, among other things, to produce basic assumptions. A level above is occupied by the ontology of interaction (processing ontology, or processing model), which considers the concept of business processes. Using results of the paradigm lower levels interaction, our improvement method forms a set of tools for data acquisition and analysis in order to solve particular improvement tasks. The tooling list includes process audit, grouping of effectiveness indexes, effectiveness analysis, process modeling, and improvement mechanisms synthesis.

KBPI is focused on different aspects of knowledge management, such as distribution of interactive connections within science-driven business process, analysis of current state of knowledge system, finding connections needed to be improved and as a result, forms a method for the knowledge-based production process improvement.

Science-driven business processes are characterized by: a) multilevel interactive structure, which exists in several aspects of cognitive design at the same time. Given structure is mobile and dynamic, it is flexible and open for additional modules of cognitive design to be included; "agents of knowledge" co-exist in the structure, b) resistance to various destabilizing factors (spontaneous tasks, irregular issue, and etc.) by means of a group of knowledge designers, analysts of the information code execution environment, and etc.

5. Knowledge interpretation as the basis for the optimization of knowledge production

Knowledge interpretation in the context of our discussion engages ontological basics of epistemology. Knowledge identification in modern IS poses the following principle questions: What is the knowledge? Where does it exist? How is it created? What is the role of recorded data (data encoded and stored in certain media), and the concept of information?

Knowledge interpretation requires laconic and maximally informative wording, which is possible only with a clear understanding of the knowledge function. We assume that the main task of knowledge (and it is confirmed by its practical use) is addressing a particular issue. Thus, the state of IS could be indicated by its current tasks set by the IS members.

A problem solution method is formed using actualized knowledge base of IS. Thus, knowledge design driver, with its subsequent inclusion into the IS knowledge base, is the task set. Knowledge appears to be a set of solutions required at a certain stage of knowledge development. However, this understanding of knowledge nature is true only within a context (Kvanvig, 2003).

As known, K. Popper (2002) in his studies defines the following three worlds of human experience: material (includes material objects), immaterial but subjective (mental states), and immaterial but objective (inmaterial human creations).

Knowledge that we produce and use to address actual problems is formed by means of material and immaterial worlds’ interaction.

K. Popper (2002) suggested the following sequence of knowledge forming: P-TT-EE-P (problem proposition – a tentative theory – error elimination). Given this sequence logic, we assume that knowledge cannot be valid until empirically tested. Developing this idea, we believe that the term “knowledge source” is purely abstract, and cannot be treated as a subject of world 2 or 3.

6. Knowledge validity check

The process of knowledge formation provides for operations in both material and immaterial worlds. People use their sensory organs (or auxiliary electronic means) to catch contextless signals existing around, and keep a record of them. Then, the data is sorted out to keep essential information only (be means of mental activity or using electronic computing systems). The final stage of knowledge forming implements previously validated knowledge available, which allows for information processing in order to initiate an action required, or to generate new knowledge based on it.
We make the following assumptions in the context of epistemological critique: knowledge, which can be used for business processes optimization, shall be objectivized, which means that that it can be considered separately from its designer. We also accept an idea that knowledge can never be perfect a priori. We shall pay more attention to knowledge objectives (world 3), while world 2 still has its impact, and individual knowledge is important to us. Thus, we are to choose the best theoretical grounds to meet information society demands.

A matter of choosing the best theory and the highest quality product is one of the most important questions of science philosophy in the XX century. Thus, K. Popper’s evolutionary epistemology describes the process of knowledge development as a continuous movement to produce better theories by means of criticism. T. Kuhn (2001) promotes an idea that science is created by people, and that only the scientific community is to estimate this or that theory. Paul Feyerabend (2007) suggests a principle of methodological pluralism, which states that all theories have the right to exist.

At the turn of the century, the issue of knowledge quality we use becomes actual: technical capabilities in the era of information society development make it possible to introduce intellectual products to the scientific community in the shortest time, and get relevant feedback same fast. Besides, there is a growing number of people professionally engaged in science. “The science is growing rapidly in a way that its quantitative characteristics increase as the time goes. The total number of articles published in scientific journals around the world doubles in 12 – 15 years. <…>. Given the growth rate, the current generation of scientists makes 9/10 of the total number of all scientists ever existed” (Turchin, 2000, p. 2).

7. Linguistic theory validity check: epistemological management

Thus, one of the epistemology vital tasks is finding models for intellectual activity results assessment to distinguish science from pseudoscience, eliminating non-scientific forms of knowledge. This arising trend is called epistemological management, which is “a branch of intellectual products critical analysis, research programme, hypothesis, project, theory building method, research area” (Halina, Belousova, Prikhodko, 2012, p. 19).

Linguists’ interest in this kind of problem is caused by the nature of knowledge itself, which is objectivized by the language means and refers to semiotics (Kitcher, 2002).

A monograph on “The linguistic theory validity assessment on an example of graphosemantic modeling” (Khalina & Belousova, 2013) presents practices of development and justification of linguistic critiques for the language science, defines a technique for the analysis of linguistic intellectual product. This theory is based on the evolutionary epistemology ideas of Karl Popper, concept-knowledge theory (C-K design theory) (Yoshikawa, 1981), total quality management (TQM) philosophy (Deming, 1982; Deming, 1986), and design theory. The application of this methodology to one of modern linguistic theories allows for several conclusions. Thus, based on the results of texts conceptual framework analysis, representing analyzed theory, those intellectual products to facilitate intensive theory development, and those to facilitate its extensive development have been made. Using the C-K design theory concepts allowed for the reconstruction of the analyzed theory design process. The conformity of the theory with the TQM principles has been revealed (Taguchi, 1986; Juran & Gryna, 1988).

Linguistic and epistemological critique of the language theory, presented in the study, allows the assessment of intellectual product from a perspective of the truth / false opposition.

Postnonclassical philosophy blurs the status of science as knowledge, claiming to maximum accuracy, and the truth criterion can no longer be the basis of knowledge assessment today, as the problem of defining the concept of “truth” remains fundamentally unsolvable. The “validity of intellectual product” makes it possible to assume another knowledge assessment paradigm. The validity can be understood as the quality of knowledge, its competitiveness in the market of intellectual products. This approach appears to be in sync with the information society situation, where the knowledge is the main “currency” and acquires the status of an economic category. The economy itself is based on knowledge in such society.
8. Epistemological management in education

Another field of epistemological management application is education. The epistemological management in this context is regarded as a component of the base for “the methodological basis for the management of knowledge and ensuring the quality of education process” (Bochkov, 2011, p. 144).

Given the Western approach to the matter, which has a long time been a guide for the development of education in Russia, the assessment of knowledge is related to the total quality management philosophy (TQM) (Dale, Boaden, Lascelles, 1994; Tamimi & Gershon, 1995; Flynn, Schroeder, Sakakibara, 1994; Garvin, 1986). Eurasian universities, focused on American ideas of quality standards, have not been able to generate standards to integrate the West (European) and the East (Asian) approaches. Thus, Russian education development vector is found now in the creation of an education environment called “Asian university model”, which replaces the TQM criteria with the viability criteria. The viability can be defined as the ability of an object to save itself and keep its functions in different environments.

Asian universities are treated as a role model now, which tops the ranking of the best world universities according to Times Higher Education. Among educational institutions are Chinese, Singaporean, and especially South Korean schools.

9. University environment from the epistemological management perspective: Asian university as the center of culture developing education

From the epistemological management perspective, one of techniques to study the educational system adopted in Asian schools is ontological engineering, which is the development of the educational process ontology: “Such ontology is to demonstrate the national linguistic tools availability for the educational process, which, as we believe, can be one of the viability criteria. So called availability of linguistic tools or equipment is understood here as the degree of terminological system development for the subject area” (Belousova, 2014).

The study (Belousova, 2014) presents analysis of one of the most successful modern education systems, which is the South Korean system from the epistemological management perspective. The development of the educational process ontology allowed making some conclusions regarding the ground of South Korean schools viability.

From the epistemological point of view, Asian schools are the centre of educational culture in the Eurasian region based on Eurasian identity (Khalina & Stolyarova, 2013). N.V. Khalina and N.N. Stolyarova (2013) believe, that the Eurasian cultural identity exists also because of the fact that Eurasians speak several languages, which in turn allows them to get a more clear understanding of Eurasian region culture, and its central concept of topogenesis.

A characteristic feature of modern Asian school is the introduction of Anglo-Saxon and Anglo-American components into the educational process, but there is no complete rejection of traditions to observe, and traditions to consider and study the linguistic sign are still actual.

Network knowledge production creates new ways of thinking, which demonstrate the evolution of knowledge, being the improvement of forms and ways of theoretical design according to I.V. Rozov (2002).

As I.T. Kasavin (2008) notes, modern manmade culture, appeared under the science and technologies influence, created a special environment, which includes the science and other kinds of knowledge such as eidetic knowledge based on the intuitive understanding of the subject matter. Eurasian knowledge design provides for the semantic integration of not only the Eurasian region, but also the whole world. The TQM principles in the European education field are framed in KSC (knowledge, skills, competence).

The creation of new universal TQM method for all production processes was caused by the tendency to facilitate the production of goods competitive in the global market. The epistemology of innovative education in Japan and China, defined by viability philosophemes, aggregates different forms of knowledge in the process of an intelligent man formation living in harmony with the environment (Japan), and also develops systematic national research and development (R&D) structures, while extending the science and technology (S&T) system (China).

A universal viability theory (Khalina, 2014) shall manage the network knowledge production in culture-generating educational environment of Asian schools.
The universal viability theory studies the viability as an ability of a living creature, an artificial system or an idea to exist and restore its functions in different environments. Any system, which organization makes it possible to survive in changing environment, can be treated as vital. E. Bir defines normative aphorisms, principles of organization, axioms, the recursion unity law, and recursive theorem as system viability regulations (Bir, 1993).

Educational process in Asian schools, in accordance with global requirements to its organization, shall be structured basing on the KSC modeling frame (knowledge, skill, competence). Given the network nature of knowledge production, and the development of a network base, this frame in Asian schools shall be represented by several components to regulate the viability knowledge production, catching, and literacy (Khalina, 2014). The “literacy” term, according to Theo Hug (2010), professor at the Institute of psychological correction and Communication Studies at the University of Innsbruck, Austria, is more preferable in European studies rather than the term “competency”.

We consider the following terms as markers of educational discourse in the universal viability theory in Asian schools: process knowledge, condition schools, factor schools, intellectual capital, networked production manager, self-management, Network knowledge production, intellectual production system, accumulation of intellectual capital, human character forming, self-education, extended education system (Khalina, 2014).

Network and epistemological management in Asian schools makes it possible to reveal conceptual constants, which form what R. Barnett (2008) calls the ability to react to uncertainties, unpredictability of the modern world, and reproduce it in new forms relevant to the knowledge society.

10. Configuring knowledge and national innovative systems in academic environment

The most important economic determinants in the knowledge society is the configuration of national innovation systems, which includes the cooperation of industry, government, and academic institutions in the development of science and technologies.

Economic performance requires the distribution of knowledge by formal and informal networks. The knowledge becomes more codified and systemized, and is distributed through communication networks in the developing information society. Tacit knowledge is also required, including the ability (skills) to use and adopt codified knowledge, which emphasizes the importance of continued education by individuals and companies.

In the knowledge-based economy, innovations are managed through the producer and user interactions towards the change of both codified (systemized) and tacit knowledge. Interactive model of innovation production replaced traditional model.

Knowledge-based economy, including knowledge production, assumes the process of transfer and replacement (Brinckley, 2006). The OECD scientific system (Organization for Economic Cooperation and Development) faced with the need to reorganize traditional functions of new knowledge production through fundamental research and training of new generations of researches and engineers with new tasks to cooperate with the industry in terms of knowledge and technologies transfer. Research institutes and academic science began looking for industrial partners to fund innovative developments, and they are also to consider their important role in more general research and education activities.

The institutional matrix in the economy society is the basic structure of intellectual property, and, as a result, of the human capital (Antosova & Csikosova, 2011).

The Interstate Dissertation Council (Kulapin, Khalina, Manskov, 2015) contributes to the configuration of national innovative systems, modernization of Asian and Shanghai Cooperation Organisation (SCO) University educational discourse; it carries out network managing of intellectual production and the reproduction of intellectual capital.

The formation of The Interstate Dissertation Council in the transboundary Altai territory addressess several issues in the process of national innovative systems development: 1) human capital integration; 2) creation of infrastructure to control the quality of educational process, suggest quality and compliance standards for the modern market; 3) transfer of knowledge and human capital within the Asian confederation; 4) modernization of Asian educational environment by the development of network knowledge production; 5) forming a market for the production and realization of knowledge as a network product of Asian confederation (Kulapin, Manskov, Khalina, 2015).
By carrying out network management of knowledge, the Interstate Dissertation Council contributes to the transformation of individual knowledge to an intellectual product, which meets the needs of the network production of knowledge, and takes its place the configuration of national innovative systems. Asian schools hold a special place in the configuration of national innovative systems, which conceptual constants of development form what R. Barnett (2008) calls ability to react to uncertainties, unpredictability of the modern world, and reproduce it in new forms.

11. Conclusion

Quality engineering is a modern society trend. That is why the attempt to develop a set of the industry assessment means through the TQM practices is so important.

The authors of this article suggest that the tentative theory of the knowledge economy synthesis, knowledge management system, industry TQM practices, and linguistic theory play an important role in the process of knowledge distribution and functioning in modern universities. Modern universities in Eurasian countries, as the authors of this article believe, create a special educational environment based on knowledge engineering, analysis and distribution.

The central knowledge analysis method we consider is epistemological management, which is to optimize business processes, and make it easier for companies to produce their product competitive in global markets.

The Interstate Dissertation Council of the Asian university, as a special institutional form of national innovative system, contributes to the involvement of regions in the knowledge society; facilitates the development and distribution of methods for measuring costs and success of projects, which include management systems; has a system for measurement, management, and promotion of intellectual capital of the Asian region; strengthens the role of human, intellectual and social capital in the knowledge management and transfer; develops structures, models and theories relevant to the economy of knowledge management and transfer within the national system configurations.

References


