

# CREATING KNOWLEDGE-BASED SOCIETY AND KNOWLEDGE ECONOMY: THE MAIN PRINCIPLES AND PHENOMENA

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**Abstract.** *Theoretical problems and priorities of the scientific research on creating knowledge-based society and knowledge economy are described and analyzed in the article.*

*A new concept of knowledge-based society and knowledge economy creation and development processes is described. The main idea is that knowledge-based society and knowledge economy creation and development processes may be attributed to the category of global transformation processes, therefore, all general phenomena and characteristics of global transformations are absolutely typical of the creation and development of knowledge-based society and knowledge economy.*

*The processes of creating knowledge-based society and knowledge economy are analyzed in the general context of global transformations processes.*

*The main principles of creating knowledge-based society and knowledge economy, as well as the main phenomena of knowledge-based society and knowledge economy creation processes are described.*

*Creating and modernizing knowledge-based society and knowledge economy are very complicated processes oriented to the formation of a new quality of society and a qualitatively new lifestyle. These processes may be described as especially complicated, because they pursue a new quality in two aspects:*

- knowledge-based society and knowledge economy, compared to "traditional" society and economy, are in all cases described as qualitatively new;*
- creation and development of knowledge-based society and knowledge economy take place under conditions of global changes, which means that qualitative changes take place in all global space, the essence of those changes being creation and spread of knowledge-based society and knowledge economy.*

*The universal principle of the "new quality creation" is characterized. This principle shows that new quality always forms itself or is formed on the ground of conjugation when elements of different origin, which have never before belonged to the same system, merge into a common interaction system, and that the conjugation processes may be of two types –those of integration and synthesis. The general and some specific phenomena of creating knowledge-based society and knowledge economy are characterized.*

**Key words:** *knowledge-based society, knowledge economy, principles and phenomena of creating knowledge-based society and knowledge economy*

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## Introduction

Scientific research on the processes of creation and modernization of knowledge-based society and knowledge economy could be defined as a promising direction of modern

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theoretical research on economics and other social sciences, as well as an important priority of practical activities in various areas of economic, political, social life and technological progress. Creating and modernization of knowledge-based society and knowledge economy are very complicated processes oriented to the formation of a new-quality society and lifestyle.

A lot of new phenomena and circumstances show up under contemporary conditions of global changes as well as under social, economic, political development and progress of science and technologies in general. In order to understand and react to them, it is necessary to consider the problems of creating knowledge-based society and knowledge economy, and ensure that these problems are solved adequately with regard to the new challenges in the life of society. Of course, the importance and significance of the problems related to the creation and modernization of knowledge-based society and knowledge economy are indicated by the fact that the understanding and solution of these problems are among the main priorities implemented in the contemporary practice of scientific research.

Modern attitudes to the creation and modernization of knowledge-based society and knowledge economy, as well as to the understanding and solution of these problems can be characterized by an extremely wide *variety*. Such a variety implies that the phenomena, problems and topicalities can be analyzed by:

- including *spaces of different extent* (various regions, countries or their groups, the world in general), as well as including *different systems* (various organizations, their groups, other systems);
- involving *different combinations of processes, phenomena, factors and circumstances of social, economic, political development, and progress of science and technologies* into the unit of developmental processes;
- giving preference to *different social, economic, ecological, technological, political as well as other manifestations, consequences or circumstances of the different changes and development processes*;
- regarding the *government, management and administration features* of various processes of development and progress as well as the *multiplicity of different subjects and their interests* that take place in government, management and administration.

The research of the problems of creation and modernization of knowledge-based society and knowledge economy is *multi- and interdisciplinary* by nature, it must inevitably consider social and economic development, progress in technologies, environmental protection and changes in modern society and its life, which reflect various areas of science, integrated in them. An important aspect of such research is its *regional feature*, since various social, economic, technological, ecological factors are assessed *in variously identified regions* by trying to reveal the interaction of processes and changes of different nature in various regional systems.

The problems of creating and modernizing knowledge-based society and knowledge economy are analyzed through various aspects in a number of scientific works. Traditional attitudes to these problems emphasize the necessity to ensure the intercompatibility and compensation of developmental processes and changes of different nature. Also, they emphasize the priorities such as the necessity to ensure the *harmony of technological, economic, political development and social changes*, as well as *changes in culture*, the needs to avoid *negative social, cultural and ecological consequences* that arise or may show up under conditions of *technological progress*, the needs to comprehensively protect natural resources and cultural heritage, avoid a negative impact on man and his health, the need to orient development processes, various changes and technological progress to stricter standards of cultural, ecological, social and environmental protection (Melnikas, 1990, 2002). Despite the fact that traditional attitudes to the creation and modernization of knowledge-based society and knowledge economy are characterized by a wide variety, extensive coverage of processes and problems and considerable possibilities of practical application, it is still possible to claim that nowadays there appear many new circumstances, conditions and phenomena, the impact and role of which are *insufficiently* reflected in most of the traditional attitudes. For this reason, traditional concepts of the creation and modernization of knowledge-based society and knowledge economy and the related problems become more and more *inadequate* to the modern needs and challenges and require essential supplements and specifications.

It should be noted that modern attitudes to the creation and modernization of knowledge-based society and knowledge economy should deeper reflect the role and influence of the *new transformation processes* that are taking place in the world. The most important role and influence belong to the transformations that reflect *the global creation of knowledge-based society and knowledge economy* as well as the *global spread of values and ideas* of knowledge-based society, namely the global creation of knowledge-based society and the spread of its values and ideas in the global environment ensure new transformations in modern society and its life, as well as help to understand the necessity *to react to the needs of creation and modernization of knowledge-based society and knowledge economy and solve new problems of the creation and modernization of knowledge-based society and knowledge economy in a new way*.

It is possible to claim that the essential *priority* of creation and modernization of knowledge-based society and knowledge economy is the fact that their modern concept must reflect both *the global transformation processes in general* and those that reflect *the global creation of knowledge-based society and knowledge economy and the global spread of the related values and ideas*.

It is purposeful to refer to certain *theoretical attitudes* that could be used when *analyzing various phenomena of the creation and modernization of knowledge-based society and knowledge economy* in complex with *various phenomena of social, economic, political, technological changes* as well as *solving different government, management and*

*administration issues of the creation and modernization of knowledge based society and knowledge economy.* The so-called “*power*” *concept* should be distinguished among those theoretical attitudes.

### **Knowledge-based society and knowledge economy creation processes: the main definitions and a new theoretical approach**

Recently, the creation and development of knowledge-based society and knowledge economy are perceived as one of the most important *priorities* of modern society and its lifestyle development, as well as of social, economic, political development, scientific and technological progress. The creation and development of knowledge-based society and knowledge economy are assessed as *the most important assumption* and *the main way* to solve most of the social, economic, technological, even security and defense problems worldwide as well as in various countries or regions of the world and of the European Union (Boldrin, Canova, 2001; Cohendet, Stojak, 2005; Currie, 2000; David, Foray, 2002; Dicken, 1998; Ein-Dor, Myers, Raman, 2004; Farnsworth, 2005; Garrett, Mitchell, 2001; Goeransson, Soederberg, 2005; Grace, Butler, 2005; Hayo, Seifert, 2003; Hunt, 2000; Huseman, Godman, 1999; Leydesdorff, 2004; McNally, 1999; Melnikas, 1990, 2002, 2008; Melnikas, Reichelt, 2004; Merrill, Sedgwick, 1997; Munasinghe, Sunkel, de Miguel, 2001; Olsen, Osmundsen, 2003; Parker, 1998; Perraton, 2001; Redding, Venables, 2004; Sangmon, 2002; Steinmueller, 2002).

Creation of knowledge-based society and knowledge economy reflects *essential qualitative changes* in all the areas of social, economic, political life, science and technological progress, and interaction with nature. It deeply influences the content of *globalization* processes and the situation in the modern world.

The processes of creating knowledge based society and knowledge economy are perceived and assessed as an *essential worldwide transformation*, which determines a number of *breakings and sallies* important to all the humankind.

The *concepts* of knowledge-based society and knowledge economy as well as their creation processes are very multiple. Therefore, it is obvious that the concepts of knowledge-based society and knowledge economy may be defined and described differently.

In order to substantiate the appropriate definitions and descriptions, it is necessary to consider the following:

- when describing a certain *society*, attention must be focused on highlighting *the most important values typical of society itself*,
- when describing a certain *economy*, attention must be focused on highlighting *the most important factors of economy growth*.

Regarding the above-mentioned attitude, it is possible to claim that it is purposeful to describe the concepts of *knowledge-based society and knowledge economy* as follows:

- knowledge-based society is characterized by the *values* of the *predominance of creativity and creative activity*, as well as the *values* that express the *generation*,

*spread and use of new knowledge*. In knowledge-based society, the *underlying interests* express the objectives to *create, spread and use new products of art, technical, business and other creation*, as well as *initiate, generate and implement multiple creative ideas and innovations* in all areas of life;

- the knowledge economy is the economy for which the *underlying growth factor* is the *potential intended for the generation, spread and use of the new knowledge, as well as the activation of creativity*. The *raising and possession of abilities to create, spread and use new knowledge, ideas and innovations* in all areas of life, as well as the *incessant rise of economic efficiency with the acceleration and activation of science and technological progress* are the *underlying conditions* for economic growth and modernization in the knowledge economy.

The provided descriptions of the concepts reflect the *main orientations of values*, which express the objectives of creativity, its activation and new knowledge generation, typical of *knowledge-based society*, as well as the *main features* that characterize the significance of the *new knowledge generation, innovation and science and technological progress* typical of the *knowledge economy*.

In order to describe society and the economy reasonably, it is necessary to account for the fact that there are *internal contradictions* that appear in every society and in every economic system, and which operate as a *propulsion stimulating the progress of society and economy*, as well as the *cause* that determines certain *destructive processes* able to “destroy” or destabilize both society and the economy. For example, the modern “western” type democratic society and the modern market economy are typical of various *property-oriented capitalist economy contradictions* which may be assessed as *essential*. The *property-oriented capitalist economy contradictions* which express the *priorities of consumption* reflect the *preconditions for progress* (especially for the increase of competitiveness, potential growth, modernization and effectiveness), as well as *preconditions* for the various *inadequacy* to appear for the future needs and challenges (it is obvious that the expression for inadequacy needs and challenges may affect society and economy and determine certain “destruction” processes and *needs for essential qualitative changes*).

The highlighting of the *underlying values* typical of knowledge-based society and expressing the domination of creative activities, generation, spread and use of new knowledge, allows realizing that the *essential internal contradiction* of knowledge-based society is the *contradiction* among society members, groups, layers and variously identified management subjects belonging to *two different categories*:

- society members, groups, layers and subjects who become leaders able to initiate creation of new knowledge, ideas and innovations, participate in multiple creation actively, intensively and productively, develop creative activities, generate, spread and efficiently use the new knowledge and ideas. The society members, groups, layers and subjects that belong to this category generally *take over* the real

*management of society* and carry out the *functions of guiding its development and progress*. What is more, the creation and spread of the new knowledge, ideas and innovations generally express the *prerogative of making management decisions, especially strategic ones*;

- society members, groups, layers and subjects who *lose or have no real possibilities* to initiate the creation of new knowledge, ideas and innovations, *have no real conditions and skills* to participate in the creation actively and intensively, to develop creative activities independently, or to generate, spread and efficiently use the new knowledge and ideas. The society members, groups, layers and subjects that belong to this category generally become just *ordinary effectors* who have a *very limited power* and only perform the *functions of effectors*, including even those areas where huge innovation changes take place.

The above-mentioned contradiction reflects the *internal differentiation logic* typical of the knowledge-based society when the position of its different members, groups, layers or subjects is determined by the *role and place when initiating, generating, spreading and using new knowledge, ideas and innovations*. Besides, the manifestation of the above-mentioned contradiction is *universal*: this contradiction may be perceived as appearing in the lives of separate countries and regions, and as the one that appears in separate groups or layers of society, as well as the one that may appear globally in the future.

The above-mentioned contradiction reflects the meaning of the *propulsions* that determine and will determine the *development and progress of knowledge-based society*, as well as the preconditions for various *threats and dangers* to appear, which may inevitably arise in knowledge-based society. It is obvious that the *internal differentiation of society*, which expresses a *different* role and place of various society members, groups, layers and subjects when initiating, generating, spreading and using new knowledge, ideas and innovations, may show itself *in two ways*:

- as a *propulsion* which determines the further development and progress of knowledge-based society, because the *objectives to activate and effectuate creative processes* when initiating, generating, spreading and using new knowledge, ideas and innovations become the underlying *stimulus* of the development and progress and the *potency* that activates the processes of development and progress;
- as a precondition for new *threats and dangers* to appear, because when society differentiation exceeds certain critical limits, there inevitably appear various *destructive tendencies*, including the tendencies to integrate various means based on the use of the latest scientific and technological results into destructive processes.

The internal contradictions, typical of knowledge-based society, influence the processes of *knowledge economy* creation and development. The underlying conditions for economic growth and modernization, typical of the knowledge economy, which include



education and possession of the abilities to create, spread and use new knowledge, ideas and innovations, as well as increase economic efficiency with the accelerating and activating means of science and technological progress, may be assessed *in two ways*:

- as the *propulsion* typical of the development and progress of the knowledge economy, which reflects the influence of the initiation, generation, spread and use of the new knowledge, ideas and innovations, as well as of the results of scientific and technological progress, on the growth and effectuation of the economy itself;
- as the *precondition* for the new threats, dangers and risks to appear, which are characteristic of knowledge-based society and knowledge economy and which may cause various *undesirable negative results* of the knowledge economy development and progress, which appear or may appear in various sectors of economic life as well as in various areas of society's life and development in general.

Besides, the perception of the importance of internal contradictions typical of knowledge-based society and knowledge economy determines the necessity and needs to analyze and assess the creation, development and progress of knowledge-based society and knowledge economy in the context of the ideas and attitudes of *sustainable development*. Namely the observance of the sustainable development attitudes and the objectives to implement the ideals of the sustainable development create real preconditions for developing knowledge-based society and creating modern knowledge economy single-mindedly and efficiently.

### **The main principles of knowledge-based society and knowledge economy creation and modernization**

For the sake of the scientific cognition and purposeful management of creation and modernization processes in knowledge-based society and knowledge economy, it is necessary to consider the *essential principles* that reflect *qualitative changes* in society in general as well as in the *economic life* of society (Melnikas, 2002, 2008).

It must be emphasized that the *essential principles* to be implemented while creating and modernizing knowledge-based society and knowledge economy reflect the *aim* to create favourable conditions for *getting synergetic effects and using them*, as well as favourable circumstances for *generating new synergetic effects*. In general, the creation and modernization processes of knowledge-based society and knowledge economy may be assessed as a *complex expression of synergetic effects*.

Creation and modernization of knowledge-based society and knowledge economy are *very complicated processes oriented to the formation of a new-quality society and lifestyle*. Moreover, these processes may be described as especially *complicated* because they are oriented to the *pursuit of new quality in two aspects*:

- knowledge-based society and knowledge economy, compared to “traditional” society and economy, are in all cases described as qualitatively new;
- creation and development of knowledge-based society and knowledge economy

take place under conditions of *global changes*, which means that *qualitative changes* take place in *all global space*, the essence of those changes being creation and spread of knowledge-based society and knowledge economy.

Analyzing the creation possibilities and perspectives of knowledge-based society and knowledge economy, it is purposeful to refer to the *universal principle of the “new quality creation”* (Melnikas, 2008). This principle is applied in various cases of life in all areas: it is suitable for the analysis of knowledge-based society and knowledge economy spreading processes typical in the conditions of modern globalization and of the political, social and economic development and progress taking place in the globalizing environment.

The *universal principle of the “new quality creation”* may be formulated as follows: *new quality always forms itself or is formed on the grounds of conjugation when elements of different origin, which have never before belonged to the same system, merge into a common interaction system*. This principle expresses the abstraction and use of the *synergetic effect* and shows that *qualitative changes* always require actions and means necessary to *merge elements of different origin into a common system*.

When applying the *universal principle of the “new quality creation”*, it is necessary to account for the fact that *new quality* is always formed as a result of conjugation. Besides, *conjugation processes* may be very different, and in the most general case they may be of two types: *integration processes* and *synthesis processes*.

In *integration processes*, during the conjugation, the interacting and conjugating elements *do not lose their natural important features*; it means that the *new quality, typical of the integration result, may later be disintegrated according to the previous features of the conjugated elements* (i.e. the result of integration may be later *disintegrated* and the *previous state* that existed before the merging may be *restored*).

In *synthesis processes*, during the conjugation, the interacting and conjugating elements *lose their natural important features*; it means that *new quality, typical of the integration result, may not be disintegrated according to the previous features of the conjugated elements* (i.e. the synthesis process is irreversible).

Thus, *qualitative processes based on synthesis* are irreversible, meanwhile *qualitative processes based on integration* in certain cases may be reversible.

The perception of the essence of integration and synthesis processes as the processes of new quality creation allows applying the *universal principle of the “new quality creation”* quite widely when analyzing very different phenomena, including the creation of knowledge-based society and knowledge economy. Analyzing these phenomena, it is important to assess *to what extent* various changes, development and progress are based on the *integration processes* and *to what extent* the *synthesis processes* determine the changes.

The above-mentioned propositions reflect the essence of the *universal principle of the “new quality creation”* and allow revealing the significance of this principle when creating knowledge-based society and knowledge economy.



It must be noted that, under the creation and modernization conditions of knowledge-based society and knowledge economy, besides the mentioned *universal principle of the “new quality creation”*, other principles are also implemented, including the very important *principle of universal innovativeness*.

The *universal innovativeness principle* allows perceiving the *initiation, generation, spread, use and further renewal logic* of *innovations and new knowledge* in general. The essence of this logic is that the processes of initiation, generation, spread, use and further renewal of innovations and new knowledge in general are treated as an expression of certain *cycles* and perceiving the *two* preconditions of these processes:

- the generation, spread and use cycles of any innovations, new ideas and new knowledge is started by a certain subject performing *the function of a generator of a new idea or innovation*, who must dispose of a *creative potential* necessary for the generation of a new idea or innovation, be able to use this creative potential properly, and tangibly *generate* appropriate innovations, new ideas and knowledge. It must be noted that in the course of generating innovations, new ideas and knowledge, an *opposition* is usually expressed towards the established attitudes, traditions, perceptions, models and stereotypes; therefore, the *subject carrying out the functions of a generator* may be assessed as having the *opponent* abilities;
- any innovations, new ideas or new knowledge may be tangibly spread and used in practice only in cases when a certain *critical mass* necessary to “accept” and assimilate *newly generated innovations, ideas and new knowledge* is formed in an appropriate cultural, social, economic, political environment. Also, the *critical mass* shows the environment’s ability to tolerate appropriate innovations as well as initiate and activate *change processes* and stimulate the *adaptation to changes* based on *self-regulation*.

The abilities to adequately perceive the essence of the above preconditions and of the universal principle of innovativeness are a very important condition to cognize scientifically and influence purposefully the creation and modernization processes in knowledge-based society and knowledge economy.

Summarizing the above propositions, it is possible to note that the *universal “new quality creation” and innovativeness principles* allow not only to perceive the creation and modernization essence of knowledge-based society and knowledge economy as a complex, but also to reflect the possibilities of influencing and managing certain processes of their development and change.

In turn, in order to influence and manage the creation and modernization processes of knowledge-based society and knowledge economy single-mindedly, including the needs to implement the ideas and attitudes of the *sustainable development*, it is necessary to cognize the *phenomena* typical of the creation, development and progress of knowledge-based society and knowledge economy, and to perceive the *expression* peculiarities of these phenomena.

## **The main phenomena of knowledge-based society and knowledge economy creation: the new global challenges**

The processes of creating and developing knowledge-based society and knowledge economy are characterized by a wide *variety* and significant *phenomena*.

These processes may be attributed to the category of *global transformation processes*, therefore *all general phenomena*, and the characteristics of *global transformations* in general, are unconditionally typical of *creating and developing knowledge-based society and knowledge economy*. The perception of the essence of these phenomena and their adaptation allows to adequately diagnose and effectively solve topical modernization problems of society and its economic life, including the ones in the context of *sustainable development*.

Besides the above-mentioned *general phenomena*, certain *specific phenomena* appear, or may appear, while creating and developing conditions for knowledge-based society and knowledge economy.

*Specific phenomena* reflect the *exceptional peculiarities* typical of these processes. Among such phenomena, the following should be emphasized:

- phenomena that characterize the *continuation* of creating and developing knowledge-based society and knowledge economy, including the continuation with regard to the previous forms of society and its economical life;
- phenomena that express the significance of *culture and mentality factors* and the *efficiency of the education systems*;
- phenomena that express the *inequality* of the processes of creating and developing knowledge-based society and knowledge economy;
- phenomena that express *globalization and internationalization circumstances* typical of creating and developing knowledge-based society and knowledge economy.

*The continuation phenomena* show that knowledge-based society and knowledge economy may be created only under the conditions when:

- society itself nurtures social, economic, political, cultural and mentality *assumptions* in order to form a *critical mass* to ensure the *domination and spread of values* typical of knowledge-based society: knowledge-based society may be created and further developed if a *high level of creative potency and a tendency to innovations* are achieved, and if this level is realized as a *sufficient starting position* for the further development,
- society achieves a *very high level of material welfare and social comfort* enough to create *economic assumptions for miscellaneous sallies* for the sake of the further development
- *an adequate economic potential* is created in the economic system.

The above-mentioned phenomena reflect the *tendency* which shows that the creation and further development of knowledge-based society and knowledge economy are a

*continuation* of the previous development, progress and change processes that took place and persist in various areas of social, economic life, and scientific and technological progress.

*The phenomena that reflect the significance of culture and mentality systems as well as the systems of education* show that various circumstances influencing *cultural and mentality changes*, as well as *changes in the areas of education*, gain *underlying importance* under conditions of the creation and development of knowledge-based society and knowledge economy. The *phenomena that reflect contradictory tendencies* are especially emphasized among the above-mentioned phenomena.

One of the phenomena reflecting contradictory tendencies is the *phenomenon of real and imitational change interaction*, typical of culture and mentality. *Two different tendencies* are expressed by this phenomenon:

- a tendency of a *decreasing* significance of the *values oriented to consumption* and an *increasing* significance of the *values oriented to creativeness and innovativeness*. The result of this tendency is that society members, groups, layers and subjects that prefer the *values oriented to creativeness and innovativeness* gradually gain more and more possibilities to create a certain *critical mass* necessary to develop knowledge-based society and knowledge economy further;
- a tendency of an increasing *imitation* of the *significance of values oriented to creativeness and innovativeness*, when actually the significance of these values *does not increase*, whereas the significance of *values oriented to consumption increases*. This tendency partially reflects a tendency to *imitate* real preparation and maturity, typical of modern society, to develop knowledge-based society and knowledge economy and *declare the aims inadequate for the reality quite gratuitously* in the area of creating knowledge-based society and knowledge economy.

Another phenomenon reflecting *contradictory tendencies* is the *phenomenon of increasing efficiency of the education systems*. This phenomenon also expresses several *different tendencies*:

- a tendency which reflects the increasing role of *education systems* and the *needs to effectuate the education of human resources* by giving priority to the creative and innovative abilities and orientation to a rapid progress of science and technologies. This tendency, by nature, is adequate to the significance of the creation and development aims of knowledge-based society and knowledge economy and reflects the necessity to increase the role of education;
- a tendency which reflects the increasing *superficiality* and in *imitation of modernity and high quality* in various links of education. There is an increase of links that are tangibly oriented to *quite a superficial yet “externally” modern education and caliber* (this tendency also reflects a leaning towards the artificial *prominence of formal assessments and “external” attributes* typical of educational systems, when actually there is not a strive for a qualitative education and caliber, especially in the

shape of real quality knowledge as well as creativeness and innovativeness abilities, but a strive for “externally” impressive positive assessments);

- a tendency of an *increasing gap* among the links of education oriented to a tangibly *elite* education and caliber, and among the links oriented to *mass* education and caliber. This tendency reflects assumptions to increase differentiation inside society as well as differentiation among different economy sectors and different regional economy systems, the base of differentiation being the different quality of education and caliber as well as different skills necessary to generate, spread and efficiently use new ideas and innovation in knowledge-based society.

The phenomena that characterize *cultural and mentality factors as well as the efficiency of human resources education systems* and that reflect the *contradictory* tendencies confirm the ambiguity and complexity of creating and developing knowledge-based society and knowledge economy.

The phenomena that reflect the *inequality of the creation and development processes of knowledge-based society and knowledge economy* reflect also the *multiple tendencies of unequal changes*. Among such tendencies, the following ones should be emphasized:

- *inequality* of the creation and development processes of knowledge-based society and knowledge economy *in different countries and regions*;
- *inequality of various social, economic, technological and other processes* characterizing the creation and development processes of knowledge-based society and knowledge economy in separate countries or regional systems, as well as in separate sectors of the social economic life and progress of science and technologies;
- *inequality* of social, economic, political, juridical, cultural, mentality, technological and other assumptions necessary for the creation and development processes of knowledge-based society and knowledge economy.

The above-mentioned tendencies may be assessed in two ways:

- as the ones that reveal the *need* to pay attention to the *sustainable development* in the conditions of creating and developing knowledge-based society and knowledge economy;
- as the ones that reveal the *threats and dangers* that may be caused by various *development and change inequalities*.

Besides, development and change inequalities and their expression are also greatly determined by the circumstances that are attributed to the *globalization and internationalization* processes.

The phenomena that reflect the *globalization and internationalization circumstances necessary for creating and developing knowledge-based society and knowledge economy* very clearly express *internationalism* and may be assessed as a very important *part of globalization processes*. The following ones are considered as very important:

- the phenomenon that expresses the spread of the creation and development processes of knowledge-based society and knowledge economy in *global spaces*;
- the phenomenon that expresses the possibilities to create and develop the *nuclei* of knowledge-based society and knowledge economy in various *spaces and environments* globally;
- the phenomenon that expresses the *increasing mobility and free movement* of human resources, capital, informational and other resources which participate in the creation and development of knowledge-based society and knowledge economy *globally*;
- the phenomenon that expresses the increasing role of *multicultural and intercultural competencies* and information exchange in response to globalization;
- the phenomenon that reflects the needs to develop international cooperation.

Regarding the fact that the creation and development processes of knowledge-based society and knowledge economy, especially under conditions of active globalization and internationalization, have an increasing variety, it is possible to claim that the described phenomena allow cognizing and assessing the appropriate phenomena *just partially*. It should be also emphasized that exactly the described phenomena as a unit allow having a *complex picture* of the situation in creating and developing knowledge-based society and knowledge economy, as well as of the prospects of changes.

It should be noted that the described phenomena reflect the problems of the *global changes*, which inevitably appear while creating and developing knowledge-based society and knowledge economy and allow highlighting and reasoning the *priorities* in solving these problems.

### **The “power” concept as the theoretical base of the research**

Knowledge-based society and knowledge economy creation processes are a very complicated area in which adequate theoretical attitudes must be used. The attitudes are characterized by orientations to an exceptionally wide and deep scientific cognition and suitability to apply them in the conditions of great uncertainty. With the help of such theoretical attitudes, it must become possible to identify, describe and assess various “cause–effect” relations, to determine the existing subordination among various phenomena and processes, and to foresee development tendencies and possible effects of various management actions.

Among the theoretical attitudes applied for the scientific cognition of the creation and modernization of knowledge-based society and knowledge economy phenomena and the government, management and administration of its processes, the so-called *concept of “power”* may be distinguished. It is intended to help in an integrated assessment and optimization of the interaction among the processes of development and progress and changes of different nature and complexity. Its ideas and application possibilities have been revealed in various studies (Melnikas, 1990, 2002, 2008).

Besides, the concept of “power” may be treated as quite *universal* and suitable to analyze the phenomena of creating and modernizing knowledge-based society and knowledge economy in various systems: this concept foresees that various systems typical of modern society and its development may be identified as *systems that require* creating and modernizing knowledge-based society and knowledge economy. Some of these systems are identified according to various geographical or regional features (countries, regions, continents, the world), according to various features that characterize the structure and changes of society, and according to various features characterizing changes in social, economic and political development, cultural, scientific and technological progress, as well as changes of ecological and other parameters.

The concept of “power” is based on the necessity to express the interaction among different processes of development, progress and change, which take *place to a certain extent in a system*, as well as to express the *influence* of definite processes of development, progress and change *on the situation and system in general*.

The concept of “power” is based on the *assumption* that all systems typical of society development and its lifestyle, which include various areas of social, economic, political development, cultural, scientific and technological progress, ecological changes, can be analyzed using the *logic and instrumentation* that are applied for the analysis of the *material world*. On the basis of this assumption, different processes of development, progress and change, typical of society and its life, are perceived and assessed as *accumulating and “transferring”* a certain “power” (*energy*) which allows to analyze various processes of social, economic and political development, the progress of science and technology as well as their expression and interaction according to an adequate logic of *power and mass interchange*.

It must be emphasized that here the concepts of power, energy, power and mass interchange as well as others should be perceived more widely than in physics or other sciences meant for the cognition and analysis of the material world; here, the concept of “power” is oriented to wider philosophical generalizations allowing to perceive the phenomena acting in the life of modern society, among them the phenomena that reveal the circumstances and peculiarities of sustainable development.

The reference to “power” and the logic of *power and mass interchange* allows treating the *resources* used in social and economic life and various areas of science and technological development, first of all human resources and capital in the form of financial and material resources as well as informational, intellectual and other resources, as certain *power or energy sources* or certain *forms of power, energy or energy potential*. Besides, the reference to the logic of power and mass interchange allows considering social, political, economic, cultural, mental, legal, informational or other environment where processes of social, economic, political development, scientific and technological progress take place as certain fields where *energy transfer* occurs and certain *pull and push powers* play.



The use of the concept of “power” allows modeling as well as analyzing and cognizing the phenomena and processes of social, economic, political development, scientific and technological progress, which take place in large systems, identifying and assessing the compatibility of appropriate processes, the interaction among the processes, also identifying various disproportions which appear in the conditions of uneven changes; all this allows diagnosing the problems of development and foreseeing the means of their solution.

Using the concept of “power”, one should refer to the attitudes meant for:

- modeling the development, progress and change processes typical of the life of society;
- modeling the development situations in various areas of social life.

When *modeling the development, progress and change processes typical of the life of society*, the following should be taken into consideration:

- all development, progress and change processes taking place in the life of society accumulate *kinetic energy* which is conditioned by the dynamics and inertia typical of each process, and *potential energy* which is conditioned by the *results or level* of development, progress and change achieved during the process;
- common energy typical of each process of development, progress or change may be perceived as a unit of the appropriate kinetic and potential energy;
- each process of development, progress and change and its run are determined by the initial energy which appears as a result of the impact of other processes and may be treated as the *energy transmitted or absorbed in the course of other processes*;
- the interaction of different processes of development, progress and change in a certain system manifests itself in *the shape of appropriate energy exchange*;
- *purposeful effects* on certain processes of development, progress and change, with the need to manage those processes, may be implemented by *transmitting or absorbing* appropriate energy;
- certain *pull and push powers* operate among the development, progress and change processes of the same system. With the help of those powers, certain *power and mass interchanges* manifest themselves among the processes;
- interaction among different processes of development, progress and change takes place through certain *fields* through which *push and pull powers* operate;
- the effect on a certain process of development, progress or change *based both on the pull and on the push*, takes place if two essential conditions are satisfied: a) there is an *energy generator necessary for the effect*, which is able to generate energy on the basis of which appropriate pull and push powers may operate; b) a certain *critical mass* must be formed in the fields through which appropriate pull and push powers operate; the mass must be sufficient to make *efficient the effect, based on the pull and push*, on a certain process of development, progress and change.

The former attitudes reflect the *logic* which may serve as a basis when analyzing various processes of economic and political development, scientific and technological progress and their interaction. This logic may be used in cases of *scientific cognition* and in various cases when it comes to searching for the possibilities to *adequately react* to various changes and to *purposefully influence and manage* the change processes.

In the cases when the situation in various systems is perceived and assessed according to the objectives of *sustainable development* and when there is a need to implement the requirements of *sustainable development*, it is purposeful to refer to the attitudes of the “power” concept that are intended for *modeling sustainable development situations in various areas of society life*.

When *modeling sustainable development situations in various areas of society life*, the following must be taken into consideration:

- *sustainable development* is considered to be a state of a system when *all* the processes of development, progress and change, taking place in a system as a *unit*, are oriented to the *implementation of the general system objectives* and are *interrelated*;
- the general aims and objectives, which *reflect humanistic, democratic, moral and environment-friendly attitudes* and which express *common human values*, must be implemented in the systems typical of the modern society life: the orientations to these general aims and objectives must be perceived as *the underlying attitude of sustainable development*;
- the development, progress and change processes taking place in a certain system may be considered as *inter-combined* if in the course of these processes there are no *tensions* among them and if there are no *disproportions* in the system itself: the appearance and expression of tensions and disproportions may be treated as the appearance of and emphasis on the *sustainable development problems* (the appearance of and emphasis on the sustainable development problems determine the perception that these problems must be solved);
- *the problem of sustainable development* reflects the situation which reveals *inter-inadequacy and inadequacy* to certain etalons, standards or expectations of the development, progress and change processes, and in which a certain inadequacy exceeds certain *critical limits* (such inadequacy may appear in the shape of various *deficits and conflicts*);
- the solution of *the problem of sustainable development* may be perceived as a *purposeful action* oriented to the reduction and elimination of inter-inadequacies and inadequacies to certain etalons, standards and expectations of the development, progress and change processes, which appear in a certain system, in order to implement general aims and objectives in an appropriate system and to address all processes of the development, progress and change of a system to the implementation of general aims and objectives;
- the *processes of sustainable development* may be *optimized*. This means that,

through a *purposeful influence* on various processes and changes, it is possible to create a situation which is assessed as *the best* or as *the most adequate to the aims and objectives of sustainable development* according to the criteria applied for the description of a pursued system state.

The former attitudes reflect the *logic* which may serve as a basis when trying to *perceive and solve various problems of sustainable development*, which appear or may appear in the social, economic, political development, scientific and technological progress areas typical of modern society and its life and in the different situations of creation and modernization of knowledge-based society and knowledge economy. It is obvious that these attitudes should not be treated as forthright formulated requirements as these attitudes express only *general ideas* intended for the perception, assessment and purposeful influence of various processes of social, economic, political development, scientific and technological progress, adequately to the *perception of the creation and modernization of knowledge-based society and knowledge economy*. Besides, these attitudes reflect the essence of the “power” concept itself: *the situation of the creation and modernization of knowledge-based society and knowledge economy expresses an effective and optimal use of the potential, including the power potential, in every system*.

Summarizing the propositions intended for the characteristics of the “power” concept, it is necessary to mention that this concept may be treated as very useful when reacting to the *challenges to the creation and modernization of knowledge-based society and knowledge economy*, which arise in the contemporary conditions of *globalization*. The validity of the latter proposition is shown by the fact that a lot of new possibilities and needs to activate multiple processes of the development, progress and change and to seek their harmony and adequacy to the expectations of creating and modernizing knowledge-based society and knowledge economy appear in the globalization conditions and in the environment of global changes.

## Conclusions

1. The problems and processes of creating knowledge-based society and knowledge economy could be defined as an important area of practical activities in improving contemporary society, its lifestyle and economic systems, as well as the perspective direction of scientific research on economic and social development and changes. The creation of knowledge-based society and knowledge economy could be defined as an important priority of social, economic and technological changes and development processes.
2. The processes of creating knowledge-based society and generating knowledge economy and its further development should be understood as an indivisible *unity*:
  - they should be perceived as relevant to *all* spheres of life – social, economic, politics, culture, science and technologies and their advancement, interaction with nature in general and with the environment in particular;

- they should be comprehended as the ones providing *economic preconditions* for modernization of society and improvement processes of its life in accordance with the standards, norms and values of knowledge-based society;
  - they should be interpreted as one multi-dimensional and extremely complex and uninterrupted process which manifests itself in *cyclical changes and leaps towards higher quality standards*; the *complex approach* to knowledge-based society and generating knowledge economy and its further development should be implemented in *all* stages of scientific research, studies and practical activities, including prioritizing various programmes on multi- and cross-disciplinary research and studies, as well as strategic solutions of a complex character in various stages.
3. These processes could be analyzed in the context of *the ideas of global changes*: they may be attributed to the category of *global transformation*, therefore, all general phenomena and characteristics of global transformations in general are unconditionally typical of these processes.

While creating knowledge-based society and generating knowledge economy and its further development, *harmonization* should be sought:

- in the fields of social, economic, political development, culture, advancement in science and technologies, interplay with nature and other fields;
  - in the environment of changes in various countries, regions or otherwise geographically or regionally defined systems;
  - in changes occurring in various layers of society.
4. Creation and modernization of knowledge-based society and knowledge economy are *very complicated processes oriented to the formation of a new quality of society and lifestyle*. Moreover, these processes are *double-complicated* because they are oriented to the *pursuit of new quality in two aspects*:
- knowledge-based society and knowledge economy, compared to “traditional” society and economy, are in all cases described as qualitatively new;
  - creation and development of knowledge-based society and knowledge economy take place under conditions of the *global changes*, which means that *qualitative changes* take place *in all global space*; the essence of those changes is creation and spread of knowledge-based society and knowledge economy.
5. The *universal principles of the “new quality creation” and of the innovativeness* could be defined as the main principles of creating knowledge-based society and knowledge economy. The *universal principle of “creating new quality”* expresses the abstraction and use of the *synergetic effect* and shows that *qualitative changes* always require actions and means necessary to *merge elements of different origin into a common system*: a new quality is always formed as a result of conjugation, and the conjugation processes may be of two types – *those of integration and synthesis*. The principle of *universal innovativeness* allows perceiving the *initiation, generation, spread, use and*

*further renewal of the logic of innovations and new knowledge* in general. The essence of this logic is that the processes of initiation, generation, spread, use and further renewal of innovations and new knowledge in general are treated as an expression of certain *cycles*, perceiving that there are *two* preconditions of these processes:

- the cycles of generation, spread and use of any innovations, new ideas and new knowledge are started by a certain subject performing *the function of a generator* who should have a *creative potential*, be able to use this creative potential properly, and tangibly *generate* appropriate innovations, new ideas and knowledge. In the course of generating innovations, new ideas and knowledge, *opposition* is usually expressed to the established attitudes, traditions, perceptions, models and stereotypes, therefore the *subject carrying out the functions of generation* may be assessed as having the *opponent* abilities;
- any innovations, new ideas or new knowledge may be tangibly spread and used in practice only in cases when a certain *critical mass* necessary to “accept” and assimilate *newly generated innovations, ideas and new knowledge* is formed in an appropriate cultural, social, economic and political environment. It is also possible to claim that the *critical mass* shows the environment’s ability to tolerate appropriate innovations as well as initiate and activate *change processes* and stimulate the *adaptation to changes* based on *self-regulation*.

6. The creation and development processes of knowledge-based society and knowledge economy may be attributed to the category of *global transformation processes*; therefore, *all general phenomena* and characteristics of *global transformations* in general are unconditionally typical of the *creation and development of these processes*.

*Specific phenomena* reflect *exceptional peculiarities* typical of these processes. Among such phenomena, the following should be emphasized:

- phenomena that characterize the *continuation* of the creation and development processes of knowledge-based society and knowledge economy, including the continuation with regard to previous forms of society and its economic life;
- phenomena that express the significance of *culture and mentality factors* and the *efficiency of the education systems*;
- phenomena that express the *inequality* of the creation and development processes of knowledge-based society and knowledge economy;
- phenomena that express *globalization and internationalization circumstances* typical of the creation and development of knowledge-based society and knowledge economy.

7. The research of the problems of creating knowledge-based society and knowledge economy is *multi- and interdisciplinary* by nature. It must have attitudes to social and economic development, progress in technologies, environmental protection and changes in modern society and its life, which reflect various areas of science integrated in them. An important aspect of the research on creating knowledge-based society

and knowledge economy is its *regional character*, since various social, economic, technological, ecological factors are assessed within *certain regions* in an attempt to reveal the interaction of processes and changes of different nature in various regional systems.

8. The processes of creating knowledge-based society and generating knowledge economy and their further development should be analyzed and assessed in the context of *processes of globalization and internationalization*. The new priorities in the *development of international cooperation* and in *improving international management* show that:
  - the development of international cooperation and the improvement of international government and management should be based on the promotion and practical application of the *ideas, patterns and technologies of networking*;
  - within international government and management, the key trend should be oriented towards activization and promotion of *creativity, innovation and entrepreneurship*, as well as towards implementation of the ideas of *global harmony*.

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