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# INFORMATION ECONOMY: THE FORMATION OF SPECIAL-PURPOSE CATEGORICAL FRAMEWORK

*The system of modern science categories as a whole has more or less clearly defined structure. The top-level general scientific and philosophical categories are supported by the regional ones, with a large set of special-purpose scientific categories being at the bottom of pyramid. Thus, it is appropriate to separate the main categories of information economy and to structure its relevant characteristics. At the same time, the authors have made an attempt to find clear definition of general features of special-purpose scientific categories as distinctive class of cognitive-methodological forms. Given the importance of social functions of information economy and prospects for its development the authors have contributed to study its features, peculiarities of object, subject, means, and branching of its conceptual and categorical framework.*

*Keywords: information sphere, information products, social communication, and information security.*

The current stage of world community development has been defined in scholarly literature as postindustrial society [1—6], information society [2, 7], and third wave society [8]. All these conceptions are focused on structural changes in the economy and priorities of its development. The researches have agreed that information and knowledge are the main resource of social and economic formation that has been taking place since the second half of the 20th century. The preindustrial society relied upon raw materials, the industrial one was based on capital, whereas the postindustrial society has absolutely new underlying resource, information and knowledge. The preindustrial society employed manual labor, the industrial one used machine production, while the industrial society is formed under the influence of intellectual technology. The capital and labor underlay the industrial society, the information and knowledge underlie the postindustrial one. The researchers state the products manufactured in the postindustrial society embody R&D potential based on knowledge.

In the opinion of leading economists, sociologists, and philosophers, on the verge of 20th—21st centuries the key factor of economic growth in the most advanced economies is the intellectual component rather than the tangible one. This intellectual component is information and knowledge that eventually have led to growing labor productivity and become the key factor of economic development under the present-day conditions. At the same time, economic disparity between both countries and certain social strata of population in some countries has aggravated [9]. *Knowledge-based economy* categories have got widespread since the end of the 1990s and are largely associated with new priorities in the economy and politics of leading western countries. Conventionally, the *knowledge-based economy* comprises three spheres: the R&D, the education and learning that promote the formation of human capital, and the information technology. The conception of content of knowledge-based economy category evolves based on perceiving the ne-

cessity to form socially just society, the importance of R&D factor for the economic growth, and the disclosure of essence of information and knowledge [10; 11, 41—86].

Given all these factors, studying the information market and information-based economy is of crucial importance. The *information market*, in its narrow sense, is the sphere of formation of demand and supply for information from the manufacturer, the seller, and the buyer and their joint efforts towards organizing the information retrieval. In the broad sense, it is a complex of social, economic, organizational, and legal relations, rules, and institutions targeted towards ensuring continuous retrieval and effective use of information, information technology, goods, and services [12; 13, 26]. Respectively, the *information-based economy* has such properties as network type of economy and society, global character of world evolution, information asymmetry, etc. New conceptions have been introduced to define tools of interaction (for instance, e-money, e-stock exchange, etc.). Due to this such conceptions as information economy, information market, and network economy have arisen. As Albert Einstein and Leopold Infeld put it, science forces us to create new ideas, new theories. Their aim is to break down the wall of contradictions which frequently blocks the way of scientific progress. All the essential ideas in science were born in a dramatic conflict between reality and our attempts at understanding [14].

The exceptional character of scientific and social role of initial category, *information*, should be stressed particularly. It has been steadily ranked among top ten principal categories of science. The technological revolution has consistently transformed the heretofore secondary conception (in addition to *system*, *structure*, *function*, and *model*) into the *general scientific category* [15, 16]. Indeed, the information category and respective general scientific approaches to the cognition of reality have occupied its ultimate place in studying various phenomena of nature, society, human being, thinking, knowledge, and, finally, science itself, and social practice, as well. Naturally, based on information (and other general scientific categories), many special scientific disciplines have generated their specific conceptions, including the categorical ones. The information economy is one of manifestations of this noticeable trend in the development of modern science. Hence, *the information economy* is social and economic relations associated with interaction of the state (its authorized bodies), the economic entities, and the individuals with respect to creation, dissemination, and consumption of information products received from processing of structured and non-structured information as basic renewable resource.

It is important that information and knowledge have been perceived not only as newest resources in terms of the human society evolution, but also as components of information sphere, which effect both the society and the individuals and change traditional boundaries and principles of social relations. Therefore, they need to be analyzed in order to design effective means of management and regulation. This specific feature explains the necessity of theoretical interpretation of principles of existence of information sphere and its categorical framework. These phenomena are criterial signs of positioning of certain country in the international environment in the context of global social and economic relations.

The fact that Ukraine has officially joined several international decisions on sustainable development is also of paramount importance [17—23]. The signature of EU-Ukraine Association Agreement [24] became an effective push towards the adoption of *Ukraine — 2020* strategy for Sustainable Development [25]. The strategy implementation shall lead to ensuring sustainable development of the state, implementing structural reforms and, consequently, raising the living standards... To this end, first of all, it is necessary to restore macroeconomic stability, to ensure sustainable growth of the economy in environment friendly manner, to create favorable conditions

for doing business. Among the most important, a vector has been selected, the specification of which is foreseen via implementation of the Program for popularizing Ukraine throughout the world and promoting Ukraine's interest in the global information space [25], which is naturally realized through modernizing the national information sphere on the principles of sustainable development with globalization processes in the course of mentioned transformations taken into consideration.

Under present-day conditions it is crucially important to reach a balance between the accessibility of information resources for population and protection of information sovereignty of the country from external threats. Numerous Ukrainian and foreign scholars (I. Aristova, O. Baranov, A. Briggs and P. Cobley, Yu. Burylo, N. Garnham, V. Gorovyi, J. Doyle, M. Castells, V. Konakh, P. Lemeschenko and O. Shumskykh, M. McLuhan, F. Machlup, A. Moles, V. Mosco, T. Olianyshen, O. Onyschenko, M. Senchenko, A. Ursul, D. Hesmondhalgh, A. Shtangret, etc.) have been studying the information sphere. In the most cases, they have only outlined its actual status not always identifying correctly what exactly belongs to this sphere of social relations and outcomes of respective business activities. This complicates the formation of tools for managing the branch and ensuring its sustainable development.

Information economy as special science has its own conceptual framework that corresponds to its content. Special concepts of science always have clearly defined content within certain discipline and collectively constitute its conceptual framework. It is just that that together this subject of certain science enables to distinguish it other sciences and to recognize it as independent field of knowledge [26, 127]. Special scientific categories are important part of the conceptual framework of cognition. Not all scholars and experts always believe that the use of term *category* is justified with respect to concepts of special sciences. In some cases, its use is directly or indirectly limited to the sphere of philosophy.

In this context it is advisable to separate main categories of information economy and to structure the respective characteristics. At the same time, it is necessary to specify more exactly what are special scientific categories as particular (and very important!) class of cognitive and methodological forms.

The conceptual and categorical framework of science is organically related to a wider problem of reflective study of scholarly cognition — the problem of *scientific language*. It is in no way identical to national language of any nation and has long been possessing its own well-branched system. Among its elements there are special concept, symbol, formula, equation, axiom, theorem, model, matrix, diagram, chart, table, scheme, drawing, sketch, figure, photographic picture, description, conceptual and theoretical statement, category, wording of law, etc. Naturally, they are very different language components. Among them there are both the widespread ones used generally in science and the specific intrinsic to certain types of knowledge only. It is advisable to start analyzing this system with *special concept*.

However, it should be noted, that *conception* (*notion*) as such is one of the main forms of human logical cognition in general, by definition, its initial form. It is a mental image of phenomenon (subject, process, property, etc.) or class of phenomena through their most common, necessary, essential features. Word is the language shell of concept (as character element of any natural language). The most important thing is that each word has certain meaning, the mental image of object it describes. The problem of specific, adequate definition of concept meaning is of historical nature: the level of knowledge the society has reached always depends on specific period of human history, condition and peculiarities of social practice and, therefore, on the maturity of human being himself. Different languages use different words, but the concepts are common for various societies since they have global logic character.

Unlike the universal concepts that are common for all mankind, *the special scientific notions*, as a rule, have narrower and more specific meaning that is defined by peculiarities of scientific cognition and character of certain field of science. The language shell of this form of thinking is *scientific term* as specific word bearing a sign of purely scholarly origin and respective semantics. Above, quite branched system of diversified scientific language components has been described. Logically, that role of its foundation, without exaggeration, is played by the network of special concepts of respective fields of science reflected by dictionary of terms as means of linguistic. The special scientific notions are the basis that other linguistic elements and more complex forms rely on, if necessary.

It should be stressed once more: *the content (meaning) of concepts*, not their linguistic shell plays the logical and gnoseological role in the science. The terminology where the pure language (not semantic) form of these components is realized has a subordinated significance. In this context, it is necessary to emphasize the global (i.e. international) nature of science as very important social institution, which main function is to enrich the content of human knowledge of the world for its use by mankind. The international character of science and meaning of all components of scholarly knowledge (concepts, ideas, conceptions, theories, principles, and laws) was stressed by V. Vernadskyi and the second president of the Club of Rome Alexander King, supporter and ally of Aurelio Peccei, at different times. Hence, meaning of scientific notions is international, while terminology depends on peculiarities of specific language. However, this does not exclude international lexicon based on the use of words from old Greek and Latin.

It should be noted that far from every element of the scientific notion multitude has equal value in conceptual and semantic context. Among them, there are more and less important ones, and the scale of their scientific and heuristic value in various fields of knowledge can differ.

*The categories* as fundamental notions having the broadest scope and the most important significance in terms of the development of theory and practice and necessary for formulating the content of basic principles and laws of science occupy particular, even unique, place among the all scientific notions. The categories are the most common, fundamental concepts reflecting the most essential, consistent relations between the reality and its cognition. The reproduce the existence and cognition in the universal and most concentrated form.

In our opinion, the criterion of belonging of scientific notions to the categories is the necessity of their use for the development and effective implementation of functions of scientific knowledge as determined by the needs of social practice, the fundamental character of their logical and gnoseological role in the cognition as associated with a quite high level of generalization of reality phenomena in them, their properties and relations. Unfortunately, these properties of scientific notions still have only qualitative nature. They have not been accurately estimated in terms of quantity, although proceeding from the dialectic relation between the qualitative and the quantitative characteristics, this issue is raised absolutely logically. Hence, the underdevelopment of this problem is one of the reasons for diverging opinions of scholars when they discuss whether one or another specific concept belongs to category. However, at the proper time, the scientific practice will enable assessing the status of each concept in the science, which would be generally accepted due to its adequacy to the objective state of things. The computer ontology framework proposed in modern IT science is a sort of attempt to introduce some scientific formalization into this problem (this concept is created certainly under the influence of philosophic theory).

Historically, the categories are known to originate from philosophical knowledge. For a long time, it was deemed its peculiarity. However, we agree with researchers who believe the basic

concepts of special sciences long before should have been logically classified as *special scientific categories*. This should help distinguish them in functional aspect from larger array of concepts of special sciences. Similar relationship exists in philosophy where in addition to a relatively small number of categories there are many philosophical concepts denoting less important phenomena and, consequently, having a limited significance [27, 88—89]. Therefore, it is necessary to proceed from difference of the philosophical and the special scientific categories as well as respective concepts.

Thus, categorical character can be inherent not only to philosophy, but also to any scientific discipline. It neither belongs exclusively to philosophical knowledge nor describes its logical and methodological specificity in any way. Indeed, fundamental concepts that cover the largest scope and have the most important significance, the categories, inevitably distinguish themselves out of numerous concepts of special sciences in the same way as in philosophy. Obviously, different special scientific notions are in no way equivalent in terms of their properties and heuristic capabilities in relation to cognition by their logical, gnoseological, and methodological significance and capacity. Only the concepts of social sciences, which are necessary for the development of respective fields of knowledge as particular scientific disciplines reach the category status.

Despite being more important and fundamental concepts within their field of research the special scientific categories remain limited in terms of their cognitive role and significance for the whole science. The subject of each special discipline separates the range of studied objects (or certain aspect of their existence) from the diversity of reality manifestations and thereby determine the specificity of forms and means of cognition used by special sciences and their inevitably limited logical and methodological role. The mentioned specific features are explicitly reflected in the name, the *special scientific* categories.

The categories of non-philosophical sciences arise and evolve in line with the field of science solving its problems. Naturally, the conceptual and categorical framework of special sciences have changed cardinally during many centuries of science history [28, 220—242; 29, 71—166], with its evolution in the 20$^{th}$—21$^{st}$ centuries being notable for unusual dynamism.

Which specific processes have occurred in this sphere during recent decades under complicating and intensifying social and economic relations and accelerating implementation of innovations based on dynamic scientific and technical advance? In our opinion, the approach to studying this problem is based on the understanding of relationship between differentiation and integration in the scientific cognition of the world as well as on the perception of not only simultaneousness and commonness of action of these diametrically opposite trends, but also their dialectic mutual diffusion, when one of them evolves, in a specific way, into the other that seems to be just the opposite. Continuity of interrelation between the content and the shape in scientific knowledge means that respective controversial trends necessarily emerge in the scientific language as well, in particular, in the development of its conceptual framework and this is directly related to the type of changes in all system of categories of special sciences.

Indeed, on the one hand, today, the science is expanding its horizons with the number of scientific disciplines swiftly increasing (for the time being, they have counted over two thousands). The existing sciences have been branching, formulating new problems, differentiating more and more new research segments and directions, which often evolve into independent fields of science. In other words, specialization of scientific knowledge shows a persistent trend to deepening. This process is multifaceted and versatile, it covers almost all aspects of scientific development in both objective and subjective contexts, since it is interpreted in the psychology of scientific creativity and notably effects the evolution

of scientific interest and inquiry of both individual scholars and entire teams of researchers (laboratories, departments, institutes, etc.).

On the other hand, in the last century, *the science integration* has got more and more noticeable. As V. Vernadskyi put it, the growing scientific knowledge in the 20th century rapidly washes out boundaries between the separate sciences, with researchers specialized by the *problems* rather than by the sciences. This allows them, on the one hand, to deepen as much as possible into the phenomenon studied and, on the other hand, to cover it from all standpoints [30, 54]. One of such very broad and undoubtedly, general scientific problems is *the problem of information*. Vernadskyi's noosphere theory that has become an important component of global sustainable development strategy is directly linked to it. Not only the formation of general scientific categories, but also the creation of less general categories, *the regional* ones, whose categorical capacity is limited to certain region of science, for instance, publishing or economical field of knowledge are a quite noticeable manifestation of synthetic and integrative trends in the conceptual framework of science [27, 212—223; 31, 63—64]. This level is an intermediate one between the separate special sciences (of respective complexes of disciplines) and general scientific research. The formation of regional and general scientific categories (as well as other forms and methods of world cognition) has become an important methodological phenomenon in the science of STR time [32].

It should be noted that at the special scientific level of studying various phenomena of the reality, the integration is always blended with the differentiation: they are dialectically opposite and do not exist separately. If, sometimes, we emphasize the differentiation as trend, this means a logical focus on specialization (qualitative difference) of conceptual and categorical framework of the information economy, while the integrative content and sense are incorporated into the social and economic conception.

In addition, it should be noted that there are two main directions of differentiation in the science [33, 34]. In the first case, the particular object of cognition is the absolutely new phenomena that have not been studied before by the science, whereas in the other case, it is new deeper levels of structure, new properties and relations in the phenomena that have been known and studied. Both directions can be a push for forming new segments in the conventional fields of science and even particular scientific disciplines, their theoretical, methodological, and content-categorical framework.

An explicit trend towards differentiation of scientific knowledge and deepening of its specialization leads to the necessity of more specialized scientific language — the advanced scientific terminology framework. The specific problems arising from scholarly research, which can be perceived, constituted and effectively studied only in corresponding forms of thinking and language to which, first of all, the categories and other scientific notions belong. Hence, this trend causes unstoppable expansion, extensional enrichment, widening of its conceptual framework based on deepening differentiation and specialization of concepts. It means continuous increase in information capacity of scientific notions, deepening of their content, and, according to the law of inverse correlation between the concept scope and content, decrease in their scope.

Recently, deepened differentiation and specialization of the conceptual framework (in organic synergy with peculiarities of current stage of scientific integration) have been clearly noticeable, in particular, in social science. For instance, as a result of information approach expansion [35—37] numerous specific concepts have appeared in many special sciences. The development of structural research in linguistics has entailed the appearance of such new concepts as realemma, syntagmatic and paradigmatic approaches, semantic multiplier, and so on.

Naturally, progress in branching and specialization of conceptual framework is especially

rapid in new fields of knowledge, which now are formed as individual scientific disciplines. The establishment of each such discipline is accompanied with the creation of its conceptual framework. It covers both new concepts for which before there were only preconditions, and radical reinterpretation of old concepts, assignment of new specific meaning to them, with rapid development of conceptual framework by splitting the general concepts into many narrower and more special ones.

The formation of IT science, firstly, as a theory of scientific information, and wider, as the science of information as a whole [38] was related to appearance of many concepts denoting various types and kinds of information: primary and secondary; factual and bibliographic; retrospective, online, and prognostic; documentary, signaling, discrete; economic, sociologic, ecologic, and so on. At the same time, based on the concept of information many other derivative concepts have emerged: data medium, information traffic, information analysis and synthesis, search system, etc.

In the mid-20$^{th}$ century, at the beginning of present-day STR, the society well perceived the importance of not only natural-science and technical information, but also social and humanitarian one. Moreover, heuristic value of integration of various branches of scientific knowledge, which intensifies their interaction and mutual penetration of ideas, information received, and means of information capacity accumulation has been assessed. In addition to scientific information, other kinds of the uniform system of social information describing a very sophisticated social organism with all its diversified manifestations and functions have been widely studied [39]. All this has contributed to deepening the understanding of information as resource necessary for the development of society. To avoid confusion, it should be noted that information is often interpreted not only as resource, but also as *information product*.

While perceiving the importance of information as resource it is necessary to emphasize the two aspects: firstly, the role of information in the general system of resources have undergone historical changes. At the beginning, it was almost unnoticeable as compared with tangible (matter and energy) natural resources. As Norbert Wiener put it, information is neither matter, nor energy. Now, the most often information is interpreted as complex, controversial blend of tangible and intangible objective and subjective factors, and given this, it is clear that as the role of conscious human activity and spiritual component in the society strengthened the social information was transformed into a particular and more important resource of human evolution.

The other important aspect is that information has an advantage over other resources that inevitably decrease: vice versa, it can grow as it is used. Under conditions when almost all matter and energy (tangible) resources are limited and decrease at a high pace, information is an unlimited factor that has not tended downwards. Information is likely the only resource showing a trend towards raising effectiveness of its use in economic and social aspects [40, 86—87].

Logically, the question arises whether information can be referred as goods? *Information* is any data that can be stored in tangible medium or presented in electronic form [41]. Thus, despite widespread opinion, the information itself is not a good in the full sense of the word, inasmuch as the *goods* are tangible objects for which there is demand and property rights can be established. The goods are suitable for transportation, they can be exchanged, purchased and sold. These can be mass-produced goods, unique items or tangible means for provision of services [42], i.e. information products[1] that are the embodied information not the abstract one. This is a hidden moment of integration of two semantic aspects of the concept — the information and the economic ones.

*Information product* is tangible result of information activities to be used for meeting the needs

[1] Products are result of economic activities. This is a general term covering both goods and services.

of parties to information relations. This means the consumer value of information products manifests itself in the external shape, while the shape itself is a means of transferring primary consumer value. The real function and value of information product lie in its content and manifest themselves while viewing, listening or reading, i.e. as a result of perception and decoding by consumer (recipient). Its other features typical for goods are cultural worth and possibility of unlimited physical use. The main feature of information product is its non-commodity value that gives it meaning of cultural goods, i.e. goods of special typ

Perception of information products characteristics is necessary for their successful inclusion in the processes of economic exchange. In determining the specific features of this product, in addition to studying its social impact and profile of organizations that carry out the information and analytical work, it is conceivable to perform the research of this kind of product and its impact on the development of information sphere by means of internal and external methods of analysis [43, 40—42].

Thus, the concept of «information products» is a vivid manifestation of enrichment of conceptual framework of modern science (in this case in the economy) based on the deepening of information approach problems to the knowledge of reality.

As seen from the above, the trend of differentiation and specialization of conceptual framework is of general scientific nature. It is an important method to improve the adequacy of representation in the scientific notion of specific events, parties and interrelations of reality. Which one of the special concepts (newly born or those that already existed) acquire the status of categoriality? We have already noted that in each case the issue is solved ambiguously, but in general, one can make some observations on this occasion.

First of all, the deepening of differentiation of scientific knowledge significantly increases the total number of special scientific categories. One of the most common directions of the development is in the concept, which was not categorical within fairly wide range of knowledge (even if it existed before), when allocating a narrow area to a separate discipline, can be a special category of this new science.

The formation of *the information sphere economy*, for example, led to the fact that a set of economic science categories was supplemented with the concept «the information sphere», which had previously played a modest role in the development of economic knowledge. The information sphere should be considered as an economic system, which should include the following items (according to the life cycle of information products): authoring environment, information and analytical activities, information services, social communications and information products consumers [12; 43, 51—52; 44, 44—58; 45; 46]. The combination of these elements, combined with one program and one purpose, forms one of the economic complexes. Existing elements (or subsystems) of information sphere provide relatively closed nature of the system and determine its effectiveness (ability to act appropriately), in other words, create conditions for the successful solution of the challenges they face and those which constantly arise over time.

It is not difficult to see that in the process of establishing a new scientific discipline many categorical concepts come into being. Study of the most important properties of fundamentally new objects of cognition, discovery of laws specific to the respective spheres of reality, requires the introduction of a certain number of concepts that can serve as a kind of reference points, the strongholds of the knowledge of the unknown. Attempts to summarize and scientifically explain the social phenomena of rapid and controversial real life inevitably suffer from the historical limitations, which is, to some extent, connected with a specific level of development of social consciousness. The most advanced of these efforts, bringing the humanity closer to the knowledge of truth, serve only as a step and support for the next efforts, enriched with new developments in the objective

reality and developed according to a new level of scientific knowledge. However, the logical thinking cannot cover quite exhaustively and adequately the subtle effects of new shoots until they reach a certain maturity, become apparent, such that they can be distinguished from others and separated out for the analysis and synthesis.

Therefore, categories are not only completely new ones, those that had not existed before, (although this path is certainly not excluded), but such things which have already gone some way in science, but, so to speak, were on the periphery of scientific progress rather than on its main directions. For example, the actual development of the information sphere associated with the upward trend of communication processes in the society and the need to formulate a logically clearer definition of *communication* concept, known in science for a long time, it gradually develops into a category as its need for the theoretical analysis of central problems of social disciplines, scientology and computer science comes to be deeper perceived [47—50]. In particular, when talking about the distribution of *information products*, in other words, about *the social communication*, we mean publishing the information in the press and broadcasts over radio and television, using other mass media, as well as in the other form to a certain number of people or even to one person [43, 60—62].

Means of dissemination of information products are of various types. Therefore, the communication processes relevant to this problem can be classified according to the various criteria. The essence of this kind of social communications lies in the expediently organized systematic dissemination of information products among the dispersed audiences with the use of technical means. Such technical means that mediate a communication device with its audience are radio, television, cinema, print media, the Internet. Overall, the hardware can be described as the mass media, which differ in the time needed for receiving and delivery of information products, and in larger audience (Fig. 1) [51, 104; 52, 197].

The press, for example, requires of the consumer, first, free time, but the timing of reading is not rigidly fixed within the day. The appeal to the radio and, to some extent, to the television, does not exclude other parallel activities: you can, for example, do housework and comprehend text and music. On the other hand, it is necessary to distinguish between a book that is read with any degree of regularity at a convenient time, and the mass media, which operate on a strict schedule (in many cases at a certain time, defined as beginning or end of the day or week, in other words, as it were, sets constant framework for the daily activities). The appeal to the media is the constant and regular activities characterized by the given social rhythm while reading of books is more selective, individualized process [53, 42].

With the development of science, some concepts that even before could be considered categorical sometimes are filled with a new content, as a result of which their importance in the process of learning increases, the scope is significantly expanding and it somehow transforms their status. Thus, *the concept of sustainable development of information sphere and information security* has acquired the entirely new meaning in the process of formation of information sphere economy.

It is believed that the development becomes unstable when, because of aggravation of the internal contradictions there is a crisis of the system, associated with the possibility of its destruction or conversion to a new, significantly worse qualitative state [54]. The known definition of sustainable development made by the International Commission on Environment and Development (ICED) [55] combines two main components: needs (provision of which is objectively necessary for the existence of the poorest population groups, which are to be a priority) and restrictions (because of the state of technology and organization of society) which, in its turn, are imposed on the environment capacity to meet the present and future needs of the population. In other words, the sustainable develop-

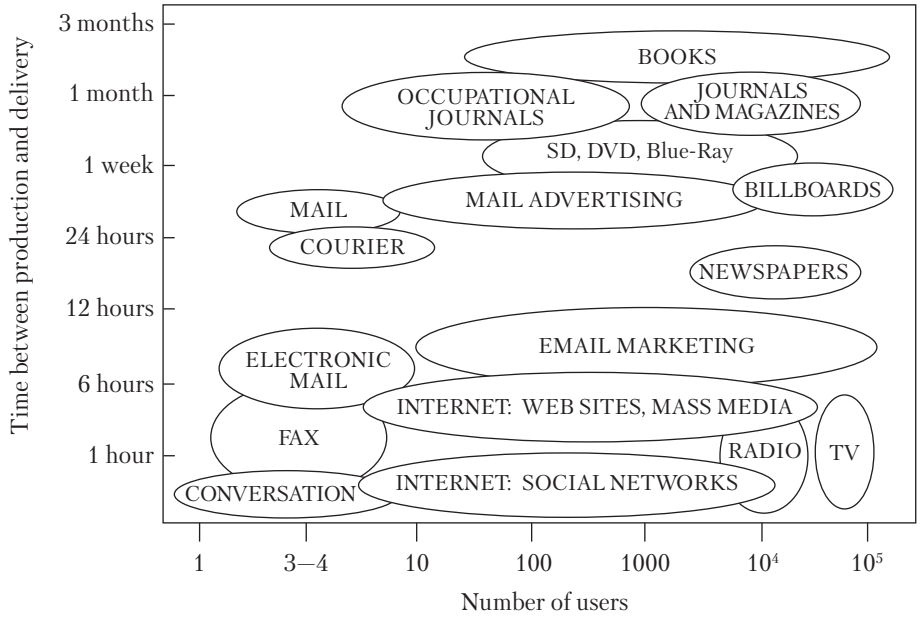


***Fig. 1.*** Means of social communications depending on information (product) relevance and potential number of users

ment refers to all resources, providing the improved quality of life for the present and future generations, and aims to eliminate poverty, as well as gives priority to the needs of the poorest segments of the population [56].

Analyzing the report of ICED *Our Common Future* (1987), the researchers point out that the preservation of the world society requires the growth of opportunities to meet the needs both today and in the future, and changes should relate to the intensity of exploitation of resources, technological excellence, directions of investment, quality control and regulation, etc.

The stability of system in technology is defined as its ability to retain the value of design and operational parameters within the certain limits, despite all possible effects on the system. Feedback, typical for the information sector as an economic system, leads to the appearance of irregularity, instability of its development which is manifested in slowing down or unacceptable accelerating pace of its development, laying the foundations of information asymmetry as the institutional problems of macro and micro level [43, 71—72]. Reducing the rate of growth usually leads to the stagnation of socio-economic system, but it is not always a sign of instability. Sometimes deterioration of separate index for a certain period of time is connected with the need to accumulate resources for the future of its advanced development. The sustainable development involves maintaining a balance between the interrelated elements of the system. In other words, the sustainable development means the ability of any system to restore equilibrium after the termination of influence of certain external and internal factors of perturbations.

All systemic formations are, undoubtedly, developing, however, this or that economic system can possess or not possess the capacity for the sustainable development. Such ability of information sphere is defined by its typical economic and scientific-technical potential and relations with the environment (Fig. 2). In other words, *the sustainable development of the information sphere* involves creating the right conditions for the sustainable growth in the production of information products that can provide benefits to the

present and future generations, subject to an appropriate state of information security [58]. Speaking about the sustainability of information sphere, it should be understood that it lies in promoting the achievement of specified parameters of development at a macro-level.

*The information security* is considered to mean provision of access to a person at any time to the information products necessary for his all-round development (subject to the principles of completeness, timeliness and availability of information) [43, 65; 59].

Thus, *the interests of citizens* in the information sphere lie in the realization of their constitutional rights to free access and use of information products for the activities, not prohibited by law, and for their own physical and intellectual development. Accordingly, *the public interest* in the information sphere covers ensuring the interests of a man and a citizen in this area, continuation of democratic development, achieving and maintaining the social cohesion; and *the interests of the state* is to create conditions for the sustainable development of information infrastructure, ensuring the constitutional rights and freedoms of citizens for the access and use of information products in order to maintain the inviolability of the constitutional order, sovereignty and territorial integrity of Ukraine, as well as political, economic and social stability in the state.

A characteristic feature of recent decades is steady increasing the interest of science in studying a human being, his personality and spiritual world, social orientation and so on. The original splash of science humanization appears both in the fact that disciplines of science and technical profile further increasingly take into account a human factor and in the detachment of new disciplines of humanitarian and social nature, directed to study those aspects of human life and activities which previously remained in the shadow or were minor and did not form the object of deep research. This factor greatly accelerates the development of conceptual framework of social sciences and humanities, including the creation of new categories. Development and complications of socio-economic relations, the progress of sociology and social psychology, scientific organization of labor, etc. largely contribute to the gradual maturation of new categories in the sphere of human and society sciences, including those that due to the information sphere and information products provide the basis for the further improvement of organizational and theoretical, and methodological knowledge as a driving force for the technological progress and innovative modernization of socio-economic sphere of the national economy.

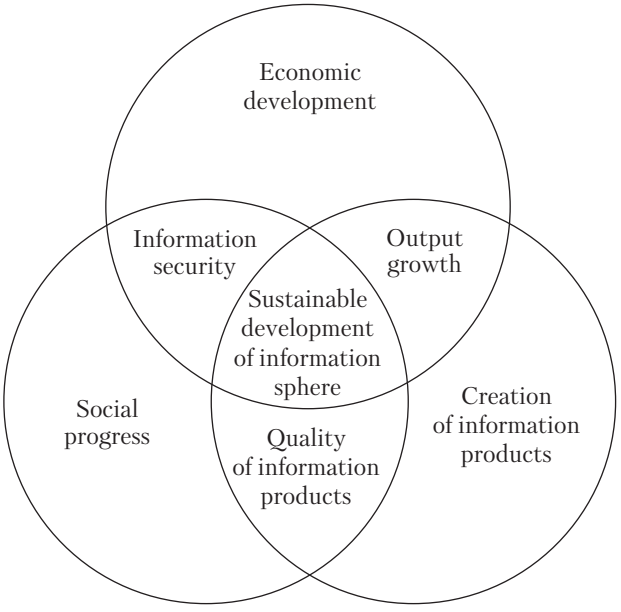


***Fig. 2.*** Components of sustainable development of information sphere

Thus, the steady growth, branching of the categorical framework of science and increasing the specialization of individual elements result from the in-depth differentiation and simultaneous accelerated integration of scientific knowledge. The information sphere economy is one of those new, non-traditional spheres of modern science and social practice, very important for the society, where these processes (and yet the essential trends of development) are intertwined in a

unique way, which inevitably has led to the ambiguous, in something internally contradictive consequences.

Separation of new branch or directly a section of scientific knowledge is always a typical manifestation of differentiation in the single body of world learning (immanent unity and world as such, in itself, and, correspondingly, for instance, such different in the nature of their contribution to the treasury of Science the thinkers like I. Franko, Max Planck, V. Vernadskyi once declared about their learning the world). However, when this new, non-traditional structural subsection of science (as a result of the latest stage of its differentiation) clearly is synthetic-integrative in its nature and content of tasks, one inevitably will have to talk about the effect of integration. In particular, this is precisely the specificity of the information sphere economy. In terms of methodology, its basic contradiction can be seen in the organic combination of two meaningful semantic planes: economic and informational.

To this we can add as a significant point the important fact that the economy of the information sphere is being formed at a time when the international community has set itself a large-scale task of gradual transition to the sustainable development. The immanent unity in its three main aspects — economic, environmental and social — (which was specifically confirmed in the final document of the World Forum «Rio + 20») significantly increases the cumulative effect of integration. It is necessary to take into account that the noospheric strategy of sustainable development provides a heuristic synthesis of achievements of the most diverse sectors of science: natural, social, humanitarian, technical, mathematical, medical, etc. The purpose of this huge work is not limited, in any way, to purely cognitive, only scientific plane of integration of a giant array of social information obtained by the scientists of various profile, its main meaning is in the practical implementation of results obtained in the life of the world community. Undoubtedly, all this will have a direct relation to the functioning and further development of the information sphere economy.

Special scientific, in their nature, categories of this unconventional direction of research (information products, information sphere, information sphere economy, social communication, sustainability of information sphere, information security) combine, in a unique way, the information issues with the essential specifics of particular socio-economic disciplines. By their appearance all such concepts as the most important, fundamental in this latest section of science are obliged, primarily, to the general problem of information and to the appropriate category. These are precisely the concepts which determined the development of information approach to understanding of reality as a general scientific phenomenon. An extremely high methodological role of these constructs of scientific theory and social practice per day STR is a cause of the rapid enrichment of conceptual-categorical framework of many sectors of learning the world based on the information.

The system of categories of modern science as a whole organism has more or less clearly defined structure. Its highest level is general scientific and philosophical categories, somewhat lower is a layer of regional categories. And there is the numerical multitude of special scientific categories in the foundation of the pyramid. The value of all assets of specific sciences is not diminished by the fact that their use in learning is just determined by their place and role in science.

Given the importance of the social functions of the information sphere economy and prospects for its development one can surely assert: studying of its characteristics, specifics of object, subject, means, as well as branching of its conceptual and categorical framework, undoubtedly, has to be continued and to deepen.

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## ЕКОНОМІКА ІНФОРМАЦІЙНОЇ СФЕРИ: ФОРМУВАННЯ СПЕЦІАЛЬНОНАУКОВОГО КАТЕГОРІАЛЬНОГО АПАРАТУ

Система категорій сучасної науки як цілісного організму має більш-менш чітко визначену структуру. Найвищі її щаблі – це філософські та загальнонаукові категорії, дещо нижче розташовано шар регіональних категорій. А у фундаменті цієї піраміди лежить численна множина спеціальнонаукових категорій. Відповідно, доцільним є виокремлення основних категорій економіки інформаційної сфери та структурування відповідних характеристик. Водночас автори роблять спробу точніше визначити, що взагалі являють собою спеціальнонаукові категорії як особливий клас пізнавально-методологічних форм. З урахуванням важливості соціальних функцій економіки інформаційної сфери і перспектив її розвитку автори спробували дослідити її особливості, специфіку об'єкта, предмета, засобів, а також розгалуження її понятєво-категоріального апарату.

*Ключові слова*: інформаційна сфера, інформаційна продукція, соціальні комунікації, інформаційна безпека.

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## ЭКОНОМИКА ИНФОРМАЦИОННОЙ СФЕРЫ: ФОРМИРОВАНИЕ СПЕЦИАЛЬНОНАУЧНОГО КАТЕГОРИАЛЬНОГО АППАРАТА

Система категорий современной науки как целостного организма имеет более или менее четко определенную структуру. Самые высокие ее ступени — это философские и общенаучные категории, несколько ниже расположены региональные категории. А в фундаменте этой пирамиды лежит множество специальнонаучных категорий. Соответственно, целесообразным является выделение основных категорий экономики информационной сферы и структурирование соответствующих характеристик. В то же время авторы делают попытку точно определить, что вообще представляют собой специальнонаучные категории как особый класс познавательно-методологических форм. С учетом важности социальных функций экономики информационной сферы и перспектив ее развития авторы попытались исследовать ее особенности, специфику объекта, предмета, средств, а также разветвление ее понятийно-категориального аппарата.

*Ключевые слова*: информационная сфера, информационная продукция, социальные коммуникации, информационная безопасность.