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# ABSTRACTS

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**Z. A. Popovych. Could Market, Planning and Administrative Economic Mechanisms Co-exist in the Economic System of the USSR?**

The analysis of works by soviet and foreign authors shows that in spite of the assurances of soviet theoreticians that private property and market-based relations have been uprooted, this kind of property, in fact, never disappeared and the economic mechanism of the USSR represented a symbiosis of planning and administrative system with semi-legal market of resources. Drawbacks in planning and resource imbalances in economic plans entailed the need for this market; if its capacities were not used, a major part of the enterprises would fail to fulfill the commanded plans. An essential feature of this mechanism is merging of the soviet bureaucracy with the so called “entrepreneurs” from the shadow sector of the soviet economy, in order to have the mercenary interests of these two strata of the soviet society satisfied. The reasons behind fostering of the entrepreneurial strata in the soviet industry, the so called “pushers”, are explicated; their peculiar functions at the soviet enterprises are shown; it is proved that “pushers” activities were ones compensating for blunders of the system of planned distribution of resources in times of the USSR.

Keywords: *market, plan, industrialization, “pusher”, bureaucracy, funds, entrepreneur, production program, barter, private capital.*

**V. I. Onopriyenko. Risk Threats of the Society Based on Knowledge and Megatechnologies**

The background for the occurrence of the risk society is laid by the increasing scientific knowledge and the expanding capabilities of science & technology activities as a foremost factor for social transformations. An attempt is made to evaluate risk threats in the newly emerging knowledge-based society, especially its megatechnologies that change in a radical way the ontological characteristics of the socio-cultural reality, human ideology and world outlook.

Keywords: *risks, risk threats, safety, knowledge, knowledge-based society, technologies, megatechnologies, ontological characteristics, socio-cultural risks.*

**S. G. Boublyk. Applicability of Linguistic-Statistical Approach to Analysis of National Science and Technology Policy**

Methodological capabilities of linguistic-statistical approach based on ‘Zipf law’ for the analysis of legal acts are studied. It is shown that use of this approach for the analysis of the legal framework allows for estimating the relevance of rank- frequency distribution for words in texts of legal acts to this document’s purposes (linguistic analysis) and the optimality of distribution of words in the text to Zipf law that determines the logic and semantic structure of a text (statistical analysis). It is thereby confirmed that this method can be appropriately used as an analytical tool for the scientific analysis of public policy in S&T.

Keywords: *public policy in S&T, legal act, legislation, linguistic-statistical approach, Zipf law.*

**O. S. Popovych, O. P. Kostrytsa. Structural Change in the Research Personnel in Ukraine in 1995–2013**

Change in absolute numbers and disciplinary structure of the R&D personnel in Ukraine is analyzed on the basis of official statistical data for Ukraine. It is shown that the unprecedented (more than four times) reduction in the total number of researchers was accompanied by considerable disciplinary restructuring of the Ukrainian researchers. While the heaviest losses occurred in technical sciences, the numbers of researchers in social sciences and humanities have notably increased. The structural analysis of the R&D personnel gives evidence on weakening of their focus on building up the innovation-driven economy.

Keywords: *R&D personnel, research institution, researcher, field of science, doctor of sciences, candidate of sciences.*

**O. V. Zhyvaga. Social Effects and Risks of the Biotechnology Revolution**

The study covers the history of creating and disseminating the genetically modified organisms (GMO) worldwide, the discourse about social effects and risks involved in the use of new biotechnologies, the peculiarities of regulatory acts on GMO in various regions and specifically in the EU. Data reflecting the situation with GMO use in Ukraine and beyond are given, by which the conclusion is made that

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Ukraine has neither proper control over GM products nor adequate research facilities for investigating effects of GMO or their components for life and health of humans and ecosystem. The legal documents in this sphere enforced in Ukraine are analyzed; recommendations are given on the extending of the relevant legal framework through enforcing a series of special laws, and on introducing the system of strict control over the use of GM products.

Keywords: *genetically modified organisms, genetically modified products, genetic engineering, biosafety, biotechnology, biodiversity.*

#### **S. V. Dobrovska. Development of National Abstracting System**

The 20-years old history of creating the Ukrainian Abstract Journal (UAJ) “Djerelo” and the Reference Data Base (RDB) “Ukrainika Naukova” is discussed. A review of international reference resources is made, and the significance of UAJ “Djerelo” is shown. Information is given about principles for their construction, obtaining and registration of periodical publications for abstracting, the scopes of registered information in RDB “Ukrainika Naukova”, capacities for users, publication of thematic series of UAJ “Djerelo”. The above information allows for conclusion that by information and technical components the national abstracting system consisting of UAJ “Djerelo” and the RDB “Ukrainika Naukova” has no analogues in Ukraine.

Keywords: *Ukrainian Abstract Journal “Djerelo”, Reference Data Base “Ukrainika Naukova”, abstract information, scientometric analysis.*

#### **O. A. Grachev, V. I. Khorevin. Contemporary Performance of National Academies of Sciences in the United States, Canada and the Countries of Latin America**

A comparative analysis of National Academies of Sciences in U. S., Canada and 16 countries of Latin America was performed on the basis of the current data displayed on their web sites. The analysis covers history of creation, present status, structure, objectives, thematic priorities of National Academies of Sciences, membership in National Academies of Sciences, awards to members of National Academies of Sciences, participation of women in their work, position of National Academies of Sciences in scientific and education systems of the counties under study. The data and facts used in the analysis give evidence that National Academies of Sciences in Latin American countries, contrary to U. S. and Canada, have been undergoing the varying phases of formation, which is related with peculiarities of the development of these countries.

Keywords: *National Academy of Sciences of the USA, Royal Society of Canada, National Academy of Sciences of the Latin America countries, objectives, structure, membership categories.*

#### **B. A. Malitsky. Foreign Grant Support for Projects in the Context of R&D Structure and Performance in Ukraine**

Information about peculiarities and trends of grant form of R&D financing in Ukraine is given. It is emphasized that it was developing in Ukraine along with rapid decline in R&D financing, which entailed mainly “utilitarian” view of foreign grants, although they should be regarded as, first and foremost, as an effective means for internationalization of the national R&D system. Main reasons for intensification of grant form of foreign support to national R&D are highlighted. Factors determining participation of Ukrainian researchers in international projects with grant financing are outlined: the performance of domestic research potential and the thematic conformity of R&D conducted in Ukraine and beyond Ukraine. Estimates on publication activity of Ukrainian researchers, derived using domestic and international databases, and results of a comparative analysis of the publication activity of researchers from Ukraine and selected European countries are given. The problem of grant R&D financing inside Ukraine is discussed.

Keywords: *grant, research and development (R&D), R&D financing, R&D potential, publication activity, database “Ukrainika naukova”, database Scopus, grand form of R&D support.*

#### **V. Yu. Gryga. Opportunities for Financing Basic Research in Austria**

The paper is devoted to the Austrian experience in building up basic research funding system. It is based on the Austrian annual research and technology report and annual reports of major R&D funding institutions. The latest trend shows that R&D expenditures in Austria have been grown faster than GDP, with public sector investing even more in R&D. Public R&D investments are distributed in Austria through the system of R&D funding institutions. There is a special Fund, oriented mainly on basic

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research, the Austrian Science Fund. Special focus in the paper is given to the process of competitive selection of programs operated by this Fund. The experience of Vienna Science and Technology Fund operating at regional level is also analyzed. It is concluded that Austria has been performing well in implementing the objectives of domestic policy in research, technology and innovation for the benefit of economic growth.

Keywords: *research and development, innovation, basic research, financing, program, Austrian Science Fund, Vienna Science and Technology Fund.*

*L. I. Kostenko, A. I. Zhabin, A. Yu. Kuznetsov, T. H. Lukashevich, E. A. Kukharchuk, T. V. Simonenko.*  
**Scientometrics: A Tool for Monitoring and Support of Research**

The origins of scientometrics (research metrics) are discussed. The approaches to research evaluation are reviewed, and the tendency to replacing formal quantitative indicators by expert review based on bibliometric indicators is emphasized. The principles of “Leiden Manifesto of Scientometrics” are set out, providing for transparent monitoring and support of research and encouraging constructive dialog between the scientific community and the public. The methodological framework and the peculiarities of implementation of the information and analytical system “Bibliometryka Ukrayinskoyi Nauky” (“Bibliometrics of the Ukrainian Science”), constructed by the Vernadsky National Library of Ukraine, are shown. The proposals on creating advisory councils, responsible for formulating conclusions on the research effectiveness of institutions, are given. The feasibility of building a common platform for expert evaluation of research for the Eastern Partnership Countries by launching similar bibliometric projects in these countries and their further convergence is considered.

Keywords: *research, scientometrics, bibliometric data, monitoring, research performance evaluation, expert evaluation, “Bibliometrics of the Ukrainian Science”.*

*O. F. Hloba.* **Acarologie: History of Rise and Development**

The article shows the historic background for systemization of mites and contribution of scientists in studying of Bryobiidae family and Bryobia species. The information is given by the three periods of research. The first period, named as pre-Koch period, begins with the work of Scopoli (1763), who described Bryobiidae from linden by calling it *Acarus telarius*, and ends with the publishing a series of works by Koch (1836–1842), devoted to this species. The second, the so called Koch period, begins in 1836–1842, with publication of Koch’s works, and ended at early 40s of 20 century after coming out of the work of *Geyskes* (1939) with revision of Bryobia species. This period is marked by descriptions of many species by use of merely morphological criteria. The third and current period begins with the work of Reck (1947) on comparative morphology and the work of Maris (1954), devoted to studies of trophic links of biological forms within praetiosa.

Keywords: *acarologie, history, classification, herbivorous mites, Bryobiidae family, Bryobia species.*

*I. B. Grushitska, L. I. Sukhoterina.* **E. A. Kirillov: Founder of Odessa School of Scientific Photography**

The account of life and scientific work of the first director of the Research Institute of Physics of Odessa University, Doctor of Physical and Mathematical Sciences, Professor E. A. Kirillov is given. The leading role of E. A. Kirillov in creating Odessa school of scientific photography is shown, its members are determined. It is shown that the team of Odessa school of scientific photography could be effectively built on the stable institutional entity and personal qualities of Kirillov as its scientific leader. Information is given about main fields of research in Odessa school of scientific photography in the current period.

Keywords: *E. A. Kirillov, scientific photography, scientific school, scientific leader, research.*

*H. L. Zvonkova.* **Interbranch Science and Technology Complexes in Ukraine: History of Creation, Fields and Results of Work (1960–1980)**

Factors behinds creating Interbranch Science and Technology Complexes (ISTC) in Ukraine, peculiarities of their organizing structure, their legal rights and functions are analyzed. Main fields of work of large ISTC such as “Paton Institute for Electric Welding” and “Powder Metallurgy” are outlined; information about the performance of ISTC in Ukraine and their contribution in solving science and technology problems of national significance is given. Reasons for decline in the ISTC performance are shown.

Keywords: *Interbranch Science and Technology Complex, science and technology program, scientific center, applied research, design bureau, Institute for Electric Welding, Institute for Material Science.*