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Mokslas ir visuomenė

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12th Baltic Conference on Intellectual Co-operation

Science and Society

4–5 November 2010, The Lithuanian Academy of Sciences

PROGRAMME and ABSTRACTS

MOKSLAS • EKONOMIKA • SANGLAUDA
EUROPOS SĄJUNGA
EUROPOS SOCIALINIS FONDAS
Kuriame Lietuvos ateitį

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ABSTRACTS

Session I

The Development of Latvia's Science and the EU Structural Funds

Juris EKMANIS
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Latvia is among the few European countries which during the global economic recession have dramatically decreased government funding of science. Science in Latvia actually survives due to the EU Structural Funds. Funding from the Structural funds is distributed through open competition, and is intended for particular activities and for supporting eligible researchers. Currently the competition for funding is fierce and a lot of projects are rejected, that elevates complaints and mistrust towards the existing scheme, and makes the evaluation of the submitted proposals too bureaucratic and too slow. The involvement of foreign scientists as experts in evaluation of applied research projects of national relevance is seen as a controversial issue. The cutbacks in government funding of science have aroused different attitudes in society and science community. Therefore, it is essential that these issues – the role of the state and the contribution of science and technology to society – are discussed.

Beginnings of the Intellectual Entente of the Baltic States (1920–1935–1940)

Jānis STRADIŅŠ
Latvian Academy of Sciences

The first important event in establishing of the intellectual cooperation of the Baltic States was a conference held in Jurmala (Bulduri), Latvia, in August–September 1920. Conference participants discussed cooperation in cultural, social and health-care affairs, proposed convention on the arts among the three Baltic countries, communication among universities and scientific institutions (main organizers and participants from Latvia were Z. Meierovics, J. Rainis). However, individual efforts by artists, universities and scientists, as well as friendship societies were put on national plane only after the establishment of the political Baltic Entente (in Geneve, 1934).

Baltic congresses of intellectual cooperation became a regularly schedules event; the first one was organized in Kaunas, Lithuania (29–30 October 1935). The rector of the Vytautas Magnus University Prof. Mykolas Roemeris, a well-known Lithuanian lawyer, initiated negotiations, and because of this persistence, a conference of delegates from the national intellectual cooperation committees of four countries (Lithuania, Latvia, Estonia and Finland) could take place in Kaunas. The main participants were Prof. A. Långfors (Helsinki), Prof. A. Piip and L. Puusep (Tartu), L. Adamavičs and Prof. E. Blese (Riga), Prof. S. Lozoraitis, Prof. J. Baltrušaitis and Prof. M. Roemeris (Kaunas). The idea that the intellectual cooperation is not just a supplement to the political rapprochement, but rather a necessary condition for it has been advanced.

The progress of debates and the resolutions of this first Kaunas conference in this lecture have been discussed in details; the next conferences until 1940 have been mentioned. In 2010 we commemorate the 75th anniversary of the emergence of the Baltic intellectual cooperation conferences, their tradition, which has been reestablished in 1999 in Riga by the three academies of sciences of the Baltic States.

Strategy of the Baltic Countries' Research while in the European Research Area

Zenonas Rokus RUDZIKAS
Vilnius University Institute of Theoretical Physics and Astronomy

After accessing the European Union (EU) the new opportunities have opened for the scientists of the Baltic States. Accelerating globalization, enlargement of the EU, its strategic challenge to create the European Research Area gives the strong impetus for the further fostering of the research and development in every EU member country.

However, the reality is not so optimistic. Now it is already obvious that the goals of the Lisbon strategy will not be achieved by the majority of the EU countries. Particularly embarrassing is the situation in the Central and East European EU states. Some countries suffer seriously from the emigration, "brain drain".

What to do, how to improve the situation, to create the better education and research climate, to transform the "brain drain" at least into "brain circulation" or even into "brain gain"? How to make the better use of existing political and scientific structures and organizations, e.g., European Economic and Social Committee (advisory body to the European Commission and the European Parliament, representing the organized civil society of the EU), the European Research Council, the EU Joint Research Centre, the European specialized scientific societies, EASAC, ALLEA? How the FP8 must look like, what priorities, methods and tools will be chosen? Let us discuss these urgent problems, because the leading role of Europe in science and technologies depends strongly on the answers to these questions, on the strategic decisions agreed.

Science in Society: ALLEA Role in Uniting Academies

Jüri ENGELBRECHT
ALLEA and Estonian Academy of Sciences

The European Federation of National Academies of Sciences and Humanities, shortly ALLEA – ALL European Academies – was launched in 1994 as an independent non-profit organisation and in 2009 ALLEA had 53 members – academies from 40 countries. ALLEA assembles the institutions in Europe that bring together the best researchers across all disciplines in all nations. The membership of ALLEA is diverse: from learned societies to research-performing organisations; from grant-givers to think-tanks; from leading G8 nations to emerging economies. This reflects also the diversity of Europe. In short, ALLEA activities address the framework conditions that enable European research to perform at its best: exchange experiences and develop best practice, changing regulatory and educational and publication cultures; address issues of (science) policy advice at European and trans-regional level; foster excellence in science and scholarship and high ethical standards in the conduct of science; support efforts ensuring the freedom of science and enhancing access to good science education; interact with policy makers, the media, and others for the benefit of science at large.

Currently, ALLEA functions on the basis of its two Standing Committees (on Intellectual Property Rights and on Science & Ethics) and two Working Groups (on Science Education and on Evaluation), but more needs to be done. ALLEA has participated in the discussions about restructuring the ESF/EuroHORCs by stressing the interests of researchers in addition to the interests of research funders. ALLEA is establishing a new Task Force on monitoring science policy in Europe in order to activate Academies to contribute critically and constructively to the process of building the ERHEA: topics to be treated will include such questions as the restructuring of the research landscape in Europe, the meeting of "grand challenges", the launching of the next FPs, the funding format of the European Research Council, the optimizing of partnerships between science organisations in Europe and worldwide, the analysis of EC and ERAB strategy documents, and of the role of Academies, the various dimensions of the project "innovation union" etc. The role of young scientists and scholars in the shaping of future science policy must be enhanced – here the concept of Young Academies, supported by ALLEA, is vital. Many activities of National Academies have a wider area of influence than just one country – witness the clustering of neighbouring academies to focus on projects in one or another geographical area, on infrastructures, on research management, on science publishing, etc. The potential of academies as generators of "knowledge regions" must also be harnessed within the wider context of the ERHEA, just as the better integration of the neighbourhood regions into the ERHEA needs further support.

All these are also areas for which, in the course of the past year, ALLEA has been called upon by the European Commission and others for its input, be it on research integrity, IPR, research infrastructures, science education, joint programming, or support for young researchers.

In line with the principles outlined in the text on the ALLEA Strategic Plan discussed in Stockholm (April, 2010), ALLEA aims to fulfil a triple role: to engage with the scientific communities, across all fields and borders, on European processes of science policy; to strengthen the role of Academies in European science policy debates, also by facilitating the mutual sharing of best practice among its members; to interact with European intergovernmental and non-governmental organisations as the independent voice of science.

Science Publishing – Viewpoint of a Small Publisher

Olli MARTIO
Finnish Academy of Science and Letters

The changes in science publishing and their effects on small academic publishing companies are discussed. We concentrate on journals. The situation of scientific monographs published by small companies is similar.

1. Technical changes

Technical development lies behind the changes in the publishing business. Most important is the role of computers and internet, which has created new possibilities like the open access. However, the traditional printing has also been affected.

2. Work as usual

The usual editorial work like the referee selection, correspondence with referees and editorial decisions seems to continue in a traditional way with small technical changes. Technical editing (work with manuscripts, web pages, DOI-codes) has changed a lot and now requires new abilities.

Small publishers seem to use the same printing, distribution and marketing procedures as before.

3. Market changes

This is the area where the changes have been substantial. Many of the major commercial publishers sell their journals in "bundles", also known as "the big deal". These are not intended to be sold to a library or to an individual university but to larger units like to a whole country. Also the traditional exchange of journals has decreased. The open access has had a profound influence although its role is often misunderstood. The public support for scientific journals is declining which makes the financial situation for small academic publishers difficult. The modern attitude is that the researchers themselves, instead of the users, should carry the expenses of publishing.

4. Options for a small publisher

In the current market situation options are limited: Publish and perish, switch to the open access, merge to the big ones, find new reasons for public support or a combination of these. Local conditions and these options are often non-compatible.

Complex Systems in a Society

Leo MÕTUS
Estonian Academy of Sciences

EXTENDING THE NOTION OF "SOCIETY" TO CAPTURE THE INFLUENCE OF RECENT DEVELOPMENTS

The true success in understanding the functioning of society cannot be guaranteed only by the quality and effort of conventional social scientists. The usual practice to study a variety of society's aspects – e.g. anthropology, economics, history, linguistics, political sciences, sociology, psychology, etc. – and to neglect the impact of interactions between society and the artificial world cannot provide an adequate model for functioning of the modern society.

Nowadays, different aspects of society (e.g. relations, structure, customs, interests etc.) are strongly influenced by increasing number of smart artefacts that have gained a perennial role in society by assisting and advising humans in managing parts of the society. The increasing presence and influence of smart, proactive artefacts mould human consciousness, their behaviour, and their social networking patterns. It would be unwise to neglect the impact of technology in attempts to comprehend and control the society. On the other hand, the artificial world itself is becoming smarter due to increased share of networked software-intensive components (and stand-alone smart devices). The questions related to achieving appropriate (or preferred) "social" behaviour of artefacts in self-organised systems, and providing proactive swarm intelligence in a group of autonomous artefacts have become truly acute and are not easier to resolve than the similar questions in natural societies.

Efforts have been made to develop a joint approach that would fit for handling social problems in human society as well as social problems in the society of artefacts. In a longer perspective this approach would lead to capability of handling (i.e. analysing and controlling) interactions between the "natural" (e.g. human and animal) societies and existing "societies of artefacts".

A UNIFIED MODELLING TECHNIQUE APPLICABLE TO "NATURAL" SOCIETIES AND TO "SOCIETIES OF ARTEFACTS"

Researchers in social sciences have introduced computational sociology – based on advances in computer simulations, artificial intelligence, swarm intelligence, network analysis, autonomous and proactive computing – as a tool that supports studying the emergence of complexity in social processes through bottom-up modelling of social interaction. Studies of processes taking place in "artificial society" have been used to validate the models developed for operation of natural societies, as a side effect of the computational sociology.

Technically the computational sociology is operating on agent-based models. Agent-based models form a class of computational models built on the quintessence of autonomous and proactive computing, swarm intelligence, networking, simulation and many other disciplines. Agent-based models are characterised by multiple

simultaneous actions and interactions of autonomous proactive agents, and by the ability to re-create and predict the appearance of complex phenomena, and detect (and partially control) emergent behaviour.

Agent-based models are being widely applied for modelling natural world phenomena as well as artificial world phenomena. In addition, increasing number of the smart artefacts and their networks are physically built following the architecture of agent-based models. Explicit difficulty in applying agent-based models is caused by the necessity to verify dynamic properties (occurring only during operation of the model) whereas most of the research in verification has, so far, dealt with analysis of static properties.

BUILDING AND USING A "MIRROR-UNIVERSE" FOR COMPREHENSION AND REASONING ABOUT THE ORIGINAL UNIVERSE

The problems of interest in societies tend to be globally influenced and involve resources and impacts which no single entity in the society controls, although they affect all members of the society. A reasonable strategy for handling a society would be to start from monitoring and reasoning about the state-of-the-art of the society (or most influential processes in the society), followed by attempts to forecast the future evolution of the monitored objects and processes. In a long run the goal is to study ways of mitigating harmful trends in society, and for fostering preferred trends.

Skipping the discussion on hard theoretical and technical problems of building models that support recursive monitoring of societies and capture complex phenomena, this presentation focuses on describing a method for forecasting and assessing possibly reachable alternative futures – by building a model (a "mirror-universe") and simulating a variety of future scenarios on this model. Hence, we exploit a continuously running, continually updated mirror model of a society and use it to predict and evaluate future events and courses of action in a real society. Such a methodology is known as Synthetic Environment for Analysis and Simulations (SEAS) – and has been applied in several real-life applications.

The conventional analytical reports about social processes are produced by human experts and can be considered as snapshots of the state-of-the-art, the future is explained as a straightforward extrapolation pending a subjective interpretation of the experts. The simulation-based approach uses the conventional reports for fine-tuning of the model, and provides forecasts that are outcome of the simulation of possible futures, hinting also at the necessary preconditions for a particular forecast to come true.

The presentation provides some more facts about the methodology, its applications, and about some of the pits hindering the application of the methodology.

Democratic Governance of Science = Socially Responsible Science + Scientifically Active Public

Anda Ādamsone-FISKOVIČA
Latvian Academy of Sciences

The paper looks into the topic of the governance of science in modern society in the light of the increasing call for its democratisation voiced by both academic circles and society at large. The sociologists of scientific knowledge or more generally representatives of social studies of science – a discipline having evolved since the second half of the 20th century and treating science and scientific activity as a social phenomenon strongly embedded in culture – have been arguing for the need for a new social contract between science and society, which challenges the former status of scientific autonomy and monopoly over decision making in science. Proponents of this concept speak about a more responsible approach to the production of scientific knowledge and development of accountability culture in science vis-a-vis society with the latter seen as demonstrating an increasing persistence in articulating public expectations and concerns with regard to various aspects of scientific development. Yet, an actual and practical reorientation towards greater public engagement in science requires, on the one hand, an initiative on the part of the present scientific community in opening up the decision making process, taking the public views seriously and providing appropriate fora for their articulation. But, what is no less important, is the willingness and readiness of citizens themselves to define their position with regard to specific scientific issues and to stand up for those. While developed democracies feature comparatively high rates of public awareness of and belief in the importance and power of civil engagement and participation, societies of post-socialist countries like Latvia are much more reserved with regard to their self-perceived role and capacity in influencing different processes taking place in our society (including the field of science) that for the time being strongly inhibits the development of an active and constructive dialogue between the scientific community and the public.

Session II

Comparative Literature in the Baltic States

Benedikts KALNAČS
Latvian Academy of Sciences

In my paper I intend to focus upon several aspects of recent comparative literature studies, with emphasis on Estonian, Latvian, and Lithuanian scholarship.

First, there is a question why study. The raising development of comparative research in our area at the beginning of the 21st century proves that it is important to concentrate on typological parallels, similarities and differences, both regional and more global, which simultaneously provide a more relevant framework for understanding local problems. The co-operation among Estonian, Latvian, and Lithuanian literary scholars has also been useful as tools of providing up-to-date information about trends and personalities of our literatures for a wider audience.

The second question is how to study. I will briefly discuss the recent developments in the relevant fields of literary scholarship. A special attention will be paid to the tendency towards writing regional literary histories (one of the major studies of recent years being that of comparative analyses of East-Central European literatures) as well as the intriguing link between the field of postcolonial studies and Baltic literatures. I will argue that the terms postcolonialism and the postcolonial are relevant to the realities in our region thus also reflecting global trends. This means that the methodology of postcolonial studies provides an opportunity for new insights into Estonian, Latvian, and Lithuanian literary and cultural history.

I will conclude my paper with some case studies focusing upon specific features of particular research projects during the recent years. The chosen examples reveal a wide spectrum of theoretical approaches including comparative analysis of particular texts, discussions of specific historical periods within relevant methodological framework, as well as an attempt of a regional literary history.

Social Integration or Disintegration? Education of Non-citizens in Latvia

Mirosław JANKOWIAK
Institute of Slavic Studies, Polish Academy of Sciences

The policy of Soviet authorities aiming at provoking as large migration of nations in the USSR as possible resulted in making Latvia, after gaining its independence, one of the most nationally diverse countries in Europe. Latvian authorities, afraid of Russian excessive interference in the matters of the state, passed laws which confine the role of national minorities. These include the Citizenship Act (22.07.2004) and Official Language Act (01.09.2000). They determined the legal, social end economical existence of the Russians, Belarusians and Ukrainians.

All residents who arrived in Latvian lands after 1940 as well as their children and grandchildren became non-citizens of Latvia. Their education appeared to be one of the aspects of the problem. On the one hand, the minorities fight for maintaining as many national schools as possible. In these schools most subjects would be conducted in Russian or Ukrainian (which supports ignorance of the official language – Latvian). On the other hand, inability to use Latvian restricts the opportunities on the labour market or obtaining citizenship (it is obligatory to pass the exam of the official language). The choice of the educational path results in either social integration with Latvian citizens or further isolation, often for political reasons.

Research on National Identity

Nils MUIŽNIEKS, Ilga JANSONE
University of Latvia, Latvian Academy of Sciences

Research on various aspects of national identity in Latvia stretches back for centuries, when various foreign travellers described Latvia and Latvians in their diaries and in the accompanying drawings. Later, Baltic German writers, publicists and scholars sought to describe the Latvian mentality. The most ancient marker of identity is undoubtedly Latvian dainas, ancient folk wear, architecture and crafts. With the 19th century and the Latvian national awakening, issues of national identity were at the centre of debates and research, particularly in the fields of ethnology, linguistics, folklore, philosophy and religious studies.

Since the beginning of the 1990s, issues of national identity in Latvia have been the subject of significant research in the social sciences and humanities. In the humanities, the state funded research programme Letonika helped create a wide base of data, information and analysis on Latvian culture, the Latvian language and Latvian history. In the social sciences, much relevant survey research has been conducted, often in the context of global, European-wide or Baltic research (e.g., ISSP, World Values Survey, New Baltic Barometer, Eurobarometer, Baltic Institute of Social Sciences, etc.). Moreover, political scientists, sociologists, sociolinguists, and communications specialists have analyzed various aspects of ethnic relations and integration in some detail.

An opportunity to raise research on national identity to a qualitatively new level is provided by the State Research Programme "National Identity (language, Latvian history, culture and human security)" covering 2010 to 2013. Academician Jānis Stradiņš heads a research consortium that includes several universities and a host of institutes that is investigating various aspects of national identity, including its interplay with cultural diversity, its links with human capability and human security, language dynamics, the influence of history and memory, and the role of cultural resources (e.g., traditions, literature, art, music, architecture and theatre) in national identity construction and maintenance in a globalized world.

Endless Process of the Completing the *Scientist's Code of Ethics*

Vija Zaiga KLUŠA
Latvian Academy of Sciences

The first version of the SCIENTIST'S CODE OF ETHICS (abbrev. Code) was accepted by Senate of the Latvian Academy of Sciences, and the Latvian Council of Science in 1997, November. The content of the Code involves eight main topics: 1. General principles of scientist's ethics; 2. The scientist as creator; 3. The scientist as teacher and creator of scientific school; 4. The scientist as referee; 5. The scientist as expert; 6. The scientist as partner of scientific discussion; 7. The scientist as propagator of science; 8. The scientist as member of society. The Code serves as the guide-book for the Ethics Committee of scientists (since 1998). The Code was updated from 2007 to 2010, taking into account two major reasons: firstly, rapid development of life sciences and technologies; secondly, the increased frequency of problems the Ethics Committee of scientists has met with, such as scientific misconduct (fabrication/falsification of data); plagiarism, theft of intellectual property; conflict of interests; involvement of scientists in political activities and advertisement; criteria required for the eligibility of expert. These questions have been discussed and commented in the scientific community, universities, young scientists' association. Responsibility of researchers and the heads of institutions involved in scientific practice; respect for human rights and dignity; high criteria for expertise, as well as recommendations to abstain from self-publicity have been added to the new version of the Code. However, this version cannot be considered as the last one, since the progress of science and ethics is inevitable.

Factors Influencing Research Behaviour and Integrity

Ain-Elmar KAASIK
Estonian Academy of Sciences

Today the financiers, publishers and research institutions play an important role both in the research behaviour and integrity. Investigative research is sometimes contrasted with socially and economically driven research and development. However, the latter is hardly attainable without indispensable basic investigative research.

The term *integrity* emphasizes the wholeness or intactness of a moral creed or attitude. It derives etymologically from the Latin word *intactus*, meaning untouched. The integrity of research relies on the scientific method which includes a great variety of procedures and data collecting practices. However, a general consensus has been reached for the reliability and transparency of the results, and also for the independence, honesty and non-biased interpretation of the scientific evidence. Fortunately, misconduct in research is not a common occurrence. Nevertheless, there are several temptations and pressures to misbehave. Competition for the research funds and especially for the positions is definitely a great stimulus and challenge but competition as a major factor in the research environment can engage the early-career researchers in the different forms of misconduct. It does not necessarily mean any of the worst forms, *i.e.* fabrication, falsification, and plagiarism – there are several other possibilities of objectionable activities that deserve attention, which could be combined under the term of "bad practice".

The rules for funding research and for promoting academic careers are predominantly based on the "past performance" of the applicants, *i.e.* solely on the bibliometric data. This creates questionable practices of "salami slicing" of the results to make more publications or issues of self-plagiarism, especially for the early-career researchers. However, even old professors are not immune to the scientific behaviour that does not correspond to the best scientific practices. Those who witness misconduct face difficult decisions. Nevertheless, fostering frank debate about the misconduct at the institutional level is a basic mission of both the tutors and the early-career researchers. Competition for funding and for positions should not be ignored but the financiers ought to pay adequate attention to the concept and aims of the research project even if the "past performance", reflected in the bibliometric data, is somewhat less distinguished. Opening more tenure track positions to the adequately qualified early-career researchers should be considered by the financiers and institutions. However, this is justified only if there is enough tight competition for these positions.

A working group set up by the Estonian Academy of Sciences drafted a *Code of Ethics for Estonian Scientists.* After broad consultations with the scientific community in Estonia, the code was adopted in December 2002 by the EAS General Assembly [*]. The code lists a set of principles to which Estonian researchers must adhere to in their

[*] Estonian Academy of Sciences (2002). Code of Ethics for Estonian Scientists http://www.akadeemia.ee/_repository/File/ALUSDOKUD/Code-ethics.pdf

activities. The code is divided into six parts, each addressing a specific aspect of research ethics: 1) general principles; 2) scientific research; 3) self-regulation in the scientific community; 4) the scientists as a mentor and as a student; 5) the scientist as an expert; and 6) the scientist in society.

The Code of Ethics for Estonian Scientists does not foresee any formalized mechanism to deal with individual cases of research misconduct. Nevertheless, the principles listed in the code require researchers to adhere to the highest professional standards and preserve integrity in all steps of research process.

National Academies in Europe and Policy Advice: National, Regional, European and Global Perspectives

Rüdiger KLEIN
ALLEA

This short contribution intends to highlight some of the opportunities and responsibilities of National Academies of Science and Humanities in Europe to inform science policy and policy making. It argues that while identical assets – excellence and independence – equip Academies to play an advisory role at all levels, different modes of interaction with political and societal actors and sister academies may be necessary to avert potential conflicts of interest, but also to make use of different opportunities arising out of cross-border cooperation.

Examples briefly presented include:

- Advice work of national academies of social sciences and humanities (example: British Academy), technology (example: acatech), sciences (France), sciences and arts (examples: KNAW; Swiss Academies).
- Regional Networks of ALLEA Member Academies and their policy interventions (example: ISCAR – Alps; EMAN – Mediterranean Sea)
- Scientific policy advice of Academy networks in Europe (Sciences: EASAC; Technology: EuroCASE; Medicine: FEAM)
- The European science system under scrutiny: advice on the framework conditions (the role of ALLEA)
- Global science foresight and assessment (examples: IAC assessment of the IPCC; ICSU visioning).

Science, Society and Environment: the Case of *Nord Stream*

Tarmo SOOMERE, Ivar PUURA
Estonian Academy of Sciences

Development of large-scale infrastructures that affect environmental conditions and ecosystem services in large areas and have trans-boundary impacts involves often controversies and hidden risks.

In society, the attitudes towards the environment translate into the actions through the use of precautionary principle, *in dubio pro natura*. Different approaches to this principle in decision-making will eventually lead to different solutions in prevention and management of environmental and health risks.

The project of *Nord Stream AG* plans to build two pipelines with the length of 1200 km each, from Vyborg, Russia, to Greifswald, Germany. Discussions on the environmental impact assessments and risk analyses of the *Nord Stream* gas pipe system are used as examples of communication of environmental problems to the public and to the authorities. Potential risks related to the successful or non-successful usage of precautionary principle are discussed.

Representation of Science to Society – Relevant & Irrelevant Issues

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According to Sergio Sismondo ("An Introduction to Science and Technology Studies", 2004) journalists reporting on research and science are the closest allies of scientists. Editors of newspapers and other publications are interested in generating excitement. Doubts, questions, objections, limitations and failures are of low priority. There is a science (non-fiction) popularization model called the "dominant model of dispersion". By the means of this model scientists provide public with real scientific knowledge which is too complicated to be widely understood. Simplified treatments are useful to middlemen, who translate authentic scientific knowledge for wider consumption.

Are we satisfied with inputs to society from the partnership between scientists and science journalists? The keyword – "wider cooperation" between scientists and science journalists.

Demos think-tank: scientists need to find ways of listening to and valuing more diverse forms of public knowledge and social intelligence. Only by opening up innovation processes at an early stage can we ensure that science contributes to the common good.

Debates about risk are important. But the public also wants the answers to more fundamental questions at stake with any new technology: Who owns it? Who benefits from it? For what purposes will it be targeted?

On 29 July 2004 a unique theatrical experiment with nanotechnology as the theme was held in the headquarters of the Royal Society

http://changethis.com/manifesto/12.SeeThroughScience/pdf/12.SeeThroughScience.pdf . The immediate audience was a group of journalists, policy-makers, scientists, business leaders and campaigners.

The nanotechnology report represents a change in the scientific community's approach to the risks, uncertainties and wider social implications of new and emerging technologies. In many ways, it redefines the genre. But to fully appreciate its significance, we need to place it in the wider context of science and society relations.

"Upstream engagement". What is relevant and/or irrelevant in the so-called upstream engagement activities for 2 closest allies – science journalists and scientists? Here, in the Baltics – "stem cells" and "gene therapy" are among the themes still on the table. They are relevant issues for upstream engagement. Do we realize this or remain in a somewhat sleepy position?

The Challenge of the Knowledge Society for Professional Studies

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There is an ongoing debate about the demands of the knowledge society for specialist knowledge, a creative way of its application and knowledge production. Researchers keep reminding us that professionals with wide background education (the so called 'generalists'), who are capable of self-depended and permanent learning of relevant specialised knowledge, are more promising for contemporary jobs than professionals of narrow specializations educated in hundreds or thousands of specialized study programmes at different institutions of higher education. Dale T. Mortensen, the Nobel Prize winner in 2010, has also noted this with reference to another problem – the global economic crisis. He has come up with evidence that larger numbers of specialists of different fields in the labour market are directly related to higher unemployment rates in the period of crisis.

However, employers have been demanding this kind of specialists who are able to immediately perform 'here and now'. This is particularly true with reference to the so-called 'late-comer' countries that tend to overestimate the demands of the market which penetrates the field of education, including universities. Lithuania is among those countries.

A clear tendency towards a pragmatic side of education, seeking a safe position covered by detailed specifications of qualifications is visible. There are clear attempts to acquire employers' approval of qualification specifications. Is it really so that employers are the most knowledgeable about their employees' needs for knowledge and skills that are required for successful work? Is it possible to educate a future professional of the knowledge organisation drawing on a preset qualification?

Referring to empirical research results, I will argue that employers' understanding of employees' needs for knowledge and skills that are relevant for successful performance and employees' real needs do not coincide. In this context, I will seek to answer the following question: how to educate future professionals?

The article consists of two parts. In the first part, I present the empirical research results that show the impossibility of educating successful professionals of the knowledge economy only drawing on specifications of qualifications. In the second part, I discuss the ways of educating the future professionals.

The Science–Society Interaction: Present-day Situation

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In modern society people more and more come across new achievements in science and apply the results in practical life. The rapid growth of the offer of science results prevent going deep into understanding the new truths which stand behind the practical offers. A breach appears between the modern things people use and a deeper understanding about how these things function. Consequently, in the sphere of mutual understanding, a certain barrier occurs between science and society. Often, scientists do not have a simple explanation to a wider public regarding the essence of their discoveries, because many members of society have not been sufficiently prepared to understand them. The task of scientists to promote achievements of science to the general public becomes increasingly significant, because without wide public support, in no country can science take its due and necessary position.

R E S O L U T I O N (Draft)

The Baltic Academies of Sciences are aware of numerous problems and challenges, which modern scientific society and society at large are facing. We feel obliged and confident to address these issues and provide insights to the society and policy makers, based on scientific approach and recent science findings together with experience of academies.

The most serious problems society is facing in the 21st century, like those arising from pushing the natural environment towards limits of its sustainability and beyond by human activity, should be tackled via strengthening the relationship between science and politics. However, particular developments in science often spark controversy or become condensation points for wider public concern. Whether it is the prospect of new nuclear power stations, or advances at the frontiers of biotechnology and nanotechnology, our capacity to innovate presents us with dilemmas as well as opportunities of discussions and solutions.

The society is changing, with rapid implementation of scientific achievements in the products of industry as well as in new services. Advanced forms of communication, facilitation of global distribution of goods provide – increasingly faster and more – virtually any consumables, spread the new lifestyle, manifest the onset of unprecedented interdependence. The robustness of society and its functions under new conditions deserve new scientific approaches. More to it, we need to generate approaches to the governance of science itself that can learn from past mistakes, cope with uncertainty, and harness new knowledge for the common good.

Science can act as a source of "soft power" by improving a country's reputation and influence on the international stage. And the networks of cooperation that underpin science are ideally placed to broker solutions to regional and global problems. In the Baltic countries, such clearly are the studies in history, linguistics, national identity, which help us to identify common values while respecting the differences and thus consolidating the society. In particular, our scientifics co-operation focused on the environmental problems of the Baltic Sea and surrounding areas supports reduction of the biodiversity loss, maintaining ecosystem services and life quality.

Still another urgent problem we have to deal with is the diminishing numbers of young researchers in our countries as well as in the whole of Europe. We need to educate more engineers, mathematicians and other scientists in physical and life sciences, if we want to ensure our future and well-being of society. In order to maintain competitiveness of our countries in the global market, we need more researchers. Thus we must communicate to young people wonder and excitement of scientific discovery. This is the way to better education and an adequate response of science to society's need in human resources.

European national academies foster synergy through ALLEA for analyzing science policy, for improving science education, for enhancing science evaluation, for establishing a Code of Conduct, etc. The better co-operation with other academies in the European Research Area is important.

The main conclusion of the conference:

Participants of this conference agree that it is vital to strengthen dialogue between science and various interest groups within society: politicians, business leaders, nongovernmental organizations and society at large.

The following immediate targets have been set:

- To influence policymaking with the best scientific advice;
- To engage in the open dialogue with various interest groups over sensitive and controversial issues (cloning, genetic modification, nanotechnology, technoethics and bioethics, environment, social engineering, etc.);
- To educate public through informal means and to strengthen science communication skills of the academies' members;
- To encourage young people to seek their careers in science.

For notes

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