Emerging Regional Co-operation. Southeast European Academies of Sciences and Humanities in the ERA

ALLEA | All European Academies

2008

Content

Summary

Scope and goals

The Royal Netherland Academy of Arts and Sciences (KNAW) and All European Academies – ALLEA organised a conference on Emerging Regional Co-operation – Southeast European Academies of Sciences and Humanities in the European Research Area in the premises of KNAW, Amsterdam.

The goals of the conference were to strengthen the scientific and scholarly co-operation between the Academies in Southeast Europe and the other Academies of the ALLEA family, to share experience from regional co-operation in other regions, and to address common scientific and societal topics.

Participation and sessions

Participants represented 21 European Academies and several European institutions (EC, ERC, ESF) – see the list of participants (Annex 1). The programme included general talks on European issues and the following sessions (Annex 2):

1. Programmes and ideas;
2. Central European co-operation;
3. Nordic-Baltic co-operation;
4. Views from the SEE Academies.

Outcomes

1. The papers on the general science policy of the EC, excellence in research supported by the ERC and the activities of the ESF revealed also the challenges faced by Academies in general, not only by Academies in SEE countries. The challenges for ALLEA include activities in peer review, forward-looks, science communication, career perspectives and certainly also in fostering research integrity. Acting together under the umbrella of ALLEA, the voice of Academies is strengthened. This is also recognized by the EC.

2. The activities of Academies in Western and Central Europe and in Nordic-Baltic area were discussed. It was shown how Academies are modernizing their structures in the changing environments in order to fulfil their main tasks: fostering excellence, elaborating policy for science, working on science-society relations and advising the governments. In this way, the conference gave much more to participants than had been planned.

3. Regional co-operation in many European areas is well organized. The network „Euro Mediterranean Academic Network (EMAN)" initiated by the French Academy of Sciences is an excellent example how the co-operation involves also non-European countries. The Agency Nordforsk has gained strength in the Nordic-Baltic area. The ERA-NET called SEE-ERA is of importance for the integration of SEE countries to EU research.

4. There is a concern to improve regulations for mobility and to strengthen the research structures in the SEE countries. Clearly there is no fixed model for research structures and every country follows national experiences and traditions in order to enhance the synergy of national and international research.

5. The problems of peer-review and research integrity concern the whole scientific community, and ALLEA continues to work in these areas together with partners (ESF, IAP) in order to unite efforts and maximize the outcome.

6. It is clear that co-operation is one of the instruments for enhancing R&D in European regions which still face economic and societal problems. ALLEA welcomes the ideas of the Slovenian Presidency of the EU (Jan.-June, 2008) where regional co-operation is one issue in the R&D agenda. Given their knowledge, experience and commitment, Academies can be the prime movers of society towards the Lisbon and Barcelona goals and partners to Government as advisors.

Jüri Engelbrecht

Introduction – The Europe of Knowledge

Jüri Engelbrecht[*]

We live in an extremely dynamical period of changes, new ideas and challenges. In Europe, we usually speak about the ERA but in much wider context we should think about Europe of Knowledge That means that research results and scientific knowledge are the driving forces for all the society.

We all know the EU is in the process of analyzing the Lisbon and Barcelona goals. The recent Green Paper issued by the EC is widely discussed not only in the member states but by all who are interested in promoting research.

Europe is a very rich continent. May be not by natural resources but by people, rich traditions and cultural heritage. And certainly research traditions have a long history in universities,
academies and research institutes. However, Europe is not homogeneous, some parts of Europe have witnessed peace for a long time, but some regions still bear the pressure of the history wheels of the past. But the only way to go ahead is to learn from lessons and use our knowledge.

ALLEA is the Federation of European Academies of Sciences and Humanities and unites today 53 academies from North to South, from West to East, altogether from 40 countries. In this sense ALLEA is wider than the EU - 27. And we are extremely pleased to welcome today here the representatives of the SEE academies. The host Academy, KNA W has long tradition of scientific activities, next year the KNA W will celebrate its 200th anniversary and this is now the best place to thank KNA W for the generous support for our conference.

The goal of the conference is to strengthen the scientific and scholarly co-operation between the Academies in South-East Europe and the other Academies of the ALLEA family, to address common scientific and societal topics and to share experience from the EU and the regional collaboration. I would like to thank very much all the speakers who accepted our invitation to come and to give a talk. So we are going to listen the ideas from the EC, ERC and ESF, from larger and smaller EU countries and certainly also from the SEE countries. We hope that

[*] President of ALLEA and past President of the Estonian Academy of Sciences

such a discussion could give new impetus to collaboration. Certainly the present conference is not the only step. Much more is to come. In the Framework of ALLEA, many activities are planned for the future together with other umbrella institutions like ESF and IAP. In Europe, in general, the debate on the *Green Paper* has been lively. Many organizations have issued their opinions - ESF and EUROHORCs, EUA, CERU, etc. ALLEA has collected the opinions of the Academies even before the Green Paper was issued and we are now in process to compare our ideas to the Green Paper. Very detailed analysis by Academia dei Lincei, Swedish Royal Academy of Sciences and Czech Academy of Sciences are already submitted and I was pleased to get also the opinion from the Academy of Sciences of Bosnia and Herzegovina. These opinions form the backbone of the future ALLEA Statement. ALLE A has intensified collaboration with partners like ESF, EASAC, IAP, ICSU, NASAC and works together with the partners in the PESTO.

Just recently a conference was organized by the Portuguese Government and EC "The future of Science and Technology in Europe". The plenary and parallel sessions addressed many important questions, like ERA Rationale, new challenges, promoting human resources, governance issues and optimizing the programmes, etc. A clear message from the conference was that the ERA is not just a business for the EC but Member States must act! And in Member States, Academies are important institutions, based on knowledge and excellence. Clearly the message to Member States is also the message to Academies: how we could promote better science and scientific thinking. This is a challenge for all of us.

And one point more. As you know, next year from January to June - the Presidency of the EU moves to Slovenia. One of the focal points on the Slovenian R&D activities agenda is the cooperation in the SEE region. I met the Slovenian Minister for Higher Education, Science and Technology recently in Lisbon and promised to send her the materials of our Conference and be in touch in 2008. The ideas of Slovenian Presidency are in line what was said in Lisbon - Member States should act I

During the final discussion, I would like first to summarize the ideas and to bring up some questions for the future debate.

Just now I wish you fruitful discussions in this beautiful old house which has been a seat for the KN A W for a long time.

The Europe of Excellence as seen from the European Research Council

Norbert Kroo[*]

The recognition of excellence has a long history in Europe going back to Roman or even Greek times. It has benefited from the interaction with other excellences (like Arab mathematics) and has developed through the interaction of all excellences. As a result, a net of excellence what we may call the intellectual Europe has been formed.

Excellence can develop only in competition and by receiving consumer excellence e.g. sponsorship is also needed.

And on this basis, a series of questions have to be answered. Our future relies on the proper answers to them. Let me list the most important ones:

Do we have the wit today in Europe
- to recognize and support excellence,
- to support it if it is not immediately useful, and
- select from the richness of available excellences?

How can we keep excellences at home?
How can we compete with other excellences (*e.g.* in the US, China or India)?
What attracts excellence?
Can we breed excellences?
Are we not treating excellences in a mediocre way?
Are our politicians excellent and what if not?

It should be recognized that one of the key elements of competitiveness is research and development and if so, proper actions should be performed. For that, an increased research potential is needed based on excellence criteria concentrated on human capital, research infrastructure, a proper institutional system. Without a proper level of spending and a supportive, understanding society this development can not happen.

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[*] Vice President of the Hungarian Academy of Sciences and member of the Scientific Council of the European Research Council

European political actors seemed to recognize the need to strengthen European R and D by accepting the European Research Area (ERA) concept and its financial back up (Lisbon and Barcelona) but things have happened slower than needed. That is why the concept is being refreshed based on the Green Paper published recently by the European Commission.

I do think that there is a chance to strengthen the European research base since

- European R and D structures and institutions evolve rapidly;
- the newly founded European Research Council (ERC) is hoped to significantly influence the European research scene;
- the efforts to dynamize the European Research Area should bring positive developments to the field;
- there are some hopes to increase research funding both on the European and national levels, and
- to a higher share of Structural Funds in the R and D budgets.

European research has several shortcomings:

- Cooperation along strategic priorities is weak.
- Research is fragmented.
- There is a lack of finances for training, mobility, and research infrastructure.
- We suffer from the lack of scientific-technological cohesion.
- There is a strong feeling at EU level against basic research.

These shortcomings, together with a set of paradoxical situations, need to be overcome. These paradoxes can be summarized as

1. The knowledge paradox: while the significance of science increases, the interest of the young generation to go into research decreases.
2. The time paradox: the time needed to acquire knowledge increases while its obsolescence time decreases.
3. The innovation paradox: while research in Europe is reasonably good we are loosing ground in competitiveness.
4. The competitiveness paradox: the role of R and D in competitiveness increases, but decision makers are often tempted to forget about it.

5. The governance paradox: while the share of governments financing R and D activities is decreasing, their role in the remaining contribution is increasing.

The central idea of European science policy is excellence. It is supplemented by the drive to reduce gradients between regions, to mobilize the existing R and D potential on all levels, to increase mobility of researchers and strengthen cooperation between regions. It is believed that competition on a European level is the basis of excellence. The ERA vision has been re-visited in this spirit.

- Carrier development and mobility of researchers;
- World class research infrastructures;
- Excellent research institutions;
- Effective knowledge sharing;
- Well coordinated research programs and priorities and
- The opening of ERA to the world

are the issues discussed Europe-wide and in expert groups. The recommendations of this work are expected to form the basis of future actions.

The main instruments for the development of a more competitive ERA are the Framework Programs. FP7 is built on 4 specific programs, namely on cooperation, ideas, people, and capacities. The cooperation program is the continuation of the program based on cooperative research in former FP-s. The people program continues the Marie Curie program with more cooperation with national granting agencies. The capacities program concentrates on research infrastructure.

The basically new program is on ideas with the aim to boost European excellence in frontier research,

- by investing into the best ideas and researchers,
- through competition at European (or even global) level,
- on the basis of scientific excellence as the pole criterion,
- raising incentives towards quality and aspirations of individual researchers and
- providing benchmarks and leverage towards broader (structural) improvements in European research.

It is expected, that the “Ideas” program is one of the key instruments to realize the ERA concept. The expected benefits are

- new knowledge, ideas, and discoveries;

- higher quality by raising competition to a European level;
- stronger efforts in European research;
- minimalized duplication of efforts and resources;
- a decreased level of fragmentation; and
- the European Commission may have a better view of research in Europe.

Being in charge of the Ideas specific program, the European Research Council is promoting excellence in all fields of science by competitive funding solely on the basis of excellence. It supports individuals and their groups to realize their ground-breaking ideas with special attention to high risk, inter- and multidisciplinary research.

The ERC has been created by the Union and its heads of states with the final decision made in January 2007. It is accountable to the European Commission through its governing body. It is autonomous in scientific decisions made by the Scientific Council (ScC) consisting of 22 well-respected researchers reflecting the full scope of European research and scholarship, proposed by an independent identification committee and appointed (for 4 years) by the Commission. The ScC establishes overall scientific strategy, defines annual working programs including calls for proposals on evaluation criteria, defines peer review methodology, and ensures selection and accreditation of experts. It controls quality of operation and management, ensures communication with the scientific community, and secures the preference to high risk and interdisciplinary research in the selection process.

All fields of science and scholarship are eligible for grants and excellence is the only valid criterion to select the individual teams and research projects granted. These grants are considered to be investments into research talents, offering attractive and flexible grants for up to five years' duration under the control of the lead researcher (principal investigator). Any scientist from the world may apply for a grant but a host organization is needed in an EU member country or in one associated to the Framework Programs.

ERC pays special attention to talented young scientists. Therefore, the ERC Starting Independent Research Grant was the first to be launched with a call in December 2006 to support researchers at the beginning of their careers, to help them establish or consolidate their own independent research teams and to provide them a structure for the transition from working under a supervisor to an independent research

leader. The grant could be up to 2 M euros for an up to 5 years' period. 20 panels with 12-13 members in each were formed for the selection process. More than 9 000 applications came in and nearly 300 young scientists were selected to be granted. The selection was done in 2 steps. In the first, 569 were chosen. These were personally invited. There were only 2 criteria in the process, excellence of the applicant and originality of the proposed project.

The second (Advanced) grant is for senior researchers and the deadline for applications is spring next year. An even higher number of applications is expected. This grant is designed to support excellent investigator-initiated research projects by established independent research leaders. It is targeting researchers who have already established their independence as team leaders and are exceptional leaders in terms of significance of their research achievements (in the last 10 years). Here, the grant is also for up to five years' and 2.5 M euros (in exceptional cases *e.g.* if expensive instruments are needed, up to 3.5 M euros).

What are the expected benefits from these prestigious ERC grants?

They are believed to encourage and support the best talents and the best ideas in frontier research. They should strengthen the status and increase the visibility of research leaders. It is hoped that the grants will have a dynamic structural effect on the European research system and will nurture European science-based industry. It will encourage investors to spend quickly to improve the knowledge base. These investments will be efficient only if there is parallel public (and private) investment into the European research infrastructure and into ERA-NET type cooperative arrangements. Furthermore, if we succeed, to build up proper synergy with the other specific programs of FP7.

To conclude, on the basis of a well-tailored ERA realized in the not too distant future Europe may come back to its traditional leading role in research, development and technology, those being the basis of a competitive economy.

To achieve this goal we have to speed up our efforts to strengthen our knowledge base. The "Ideas" specific program, run by the Scientific Council of the European Research Council should contribute significantly to this process. Research infrastructures, namely the large ones listed in the Roadmap of ESFRI and the networks of small and

medium size unique ones have to be built. E-infrastructures (GEANT, GRID) and digital libraries and repositories should form the bases of all-European cooperation and dissemination of research results.

But there is a lot of room to improve efficiency in using available finances and intellectual capacity. But if we fail to spend more on R and D, our vision can not be realized and the competitiveness of Europe on a global scale will continue its decline.

Collaboration Activities of the 'Academie des Sciences'

Jacques Fröchen[*]

Since the Akademia founded by Plato in the suburbs of Athens, not to mention the first academies in Italy, the Royal Society, the French Academie des sciences, born along the 17th century, the academies have been given two core missions :

* spread knowledge in the whole mankind, and societies where men live,
* advise Princes or Governements about the best policy dealing with humanities, scientific and technical issues in order to better people's everyday's life and nurture economical growth and general prosperity.

In this context and given the matter raised by the current session, i.e. Inter-Academic Regional Co-operation, what can be said and discussed as far as the French Academie des sciences is concerned. ?

Let us first remember the questions raised today :

1. Examples from cooperation programmes of the Netherlands and French Academies.
2. What are the advantages of regional cooperation for these countries?
3. What do academies do on the wider scale of cooperation?
4. What are the strengths of the academic structures in these countries (see NASAC programme)?
5. What are principles of Academies to follow?

Examples

Examples from cooperation programmes of the Netherlands and French Academies. And in the sense of with of course:

* joint Boards meeting (the last one 19 March 2007) ;
* Descartes-Huygens Prize (sciences and human sciences are concerned which lead the French Academie des sciences to collaborate with the Académie des sciences morales et politiques, Institut de France (Moral and Political Sciences Academy), and other Academies on the aegis of the Institut de France (April 2007).

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[*] Member of the Académie des Sciences – Institut de France

* a special mention must be made of the meeting organised in May 2005 at the French Académie des sciences in Paris with the Academies or the Scienctific representatives of the 10 « newcomer » countries in the European Union: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia. Common recommandations have been worked which are still on the agenda as far as a common European scientific policy is concerned.
  And strictly considered: regional cooperation programmes in keeping with the Millenium Development Goals emphasized by the United Nations, are initiated by the French Academy such a s

* Women Health Education Programme (WHEP) lead by Pr. André Capron along with the Académie Nationale des Sciences et Techniques du Sénégal (Vice-President Dr. Alassane Dialy Ndiaye) since 2004; western Africa is implied through the WHEP collaborative website in a bottom up way, associating the top down access to cutting edge science and scientists :besides Senegal, other Academies were involved: Morocco, Brasil, Philippines, Sweden, Cuba, India, IAMP, a total 24 academies in the world, without mentioning IAP, which funded the Programme till now (please refer to www.whep.info).

Science Academies have a major role to play in the development of knowledge in societies.

Decision-makers and indeed any member of the community can turn to them for expertise and advice on scientific aspects of worldwide issues, notably health.

Health is the basis of each individual's physical and intellectual wellbeing, and plays a decisive role in the economic development of nations. Yet, despite considerable efforts, the control of public health continues to decline dramatically in a number of developing countries where phenomena such as contagious diseases, mother and child mortality, and malnutrition continue to take a heavy toll.

Women play a prime role in the field of health and hygiene, and are consequently key players in the development of societies. Their involvement is a major issue and underpins the WHEP initiative as a whole.

WHEP's goal

WHEP's goal is to promote health via women by prioritizing and adapting all available methods of education. WHEP's goals are part of an innovative approach based on lessons drawn directly from field experience.
WHEP recognizes cultural identities and strives to enable communities to assimilate sustainable knowledge by implementing scientific methodologies that enable the successful pursuit and evaluation of concrete action.

WHEP's actions

At the initiative of local, domestic and international authorities, WHEP oversees practical education and health projects integrated with basic education policies. It is important too for WHEP to evaluate these actions and lay the foundations for the further expansion of their scope and application.
Educational documents, posters, leaflets, and the present Web site are produced to ensure transparent processes, gain support from partners involved in similar initiatives, and facilitate the appropriation, improvement, and circulation and extension of the processes.

* Euro-Mediterranean scientific area (EMAN)

Please see the mini-poster of EMAN available in French and in English; a website has been reserved (e-m-a-n.net)

The project has been presented to ALLEA Istanbul meeting (April 2007) and approved.

The French Commission at the Unesco has approved it as well as the Arab World Institute in Paris (IMA) which joined EMAN as well as Bibliotheca Alexandrina.

"Uniting scientific development and bridging communities" on the shores of the Mediterranean Sea without exception, is crucial for Europe and the S&T as well as social growth and development - sustainable indeed- of the whole region.

The objectives :

* promote and foster a scientific identity of the Mediterranean region;

* use science -as an essential part of culture- as a permanent vector of development as well as for social and economical growth in keeping with national priorities;
* enhance continuous collaboration in the Mediterranean area through EMAN between northern and southern countries, Maghreb and Machrek (Middle East)- playing a S&T bridging role towards Africa and the Middle East;
* seek for excellence in science.

A scientific inter-academic network all around the Mediterranean shores from Spain and Portugal to Turkey, without exclusion.
A 'Sciences, Professions, Societies' shared programme was launched including 3 steps:

1. a formal inter-academic session regarding a S&T topic chosen by the host academy,
2. a meeting with representatives of the civil society, the media and so forth,
3. a « knowledge sharing » workshop with officers and civil servants involved in the matter of fact aspect of the chosen S&T topic, including a follow-up in terms of networking.

La création d'un espace scientifique euro-méditerranéen réunissant les instances académiques ou d'expertise scientifique de tous les pays des rives nord et sud de la Méditerranée sans exclusive, serait un élément essentiel d'un développement partagé, scientifique, technologique et social de la région euro-méditerranéenne.

Cet espace favoriserait la diffusion et l'appropriation des savoirs S&T dans les pays et les sociétés méditerranéens, notamment par l'animation de programmes scientifiques de développement et de formations d'excellence, sous la forme d'initiatives coordonnées, sur des thèmes à définir en commun relatifs, par exemple, au développement durable, à la question de l'eau, au soutien à apporter aux chercheurs dans cette région et cetera.

What are the advantages of regional cooperation for these countries?

* First give them the floor and share initiatives;
* Help the S&T national communities to get a critical mass and weight in the countries; for instance help the creation of new academies (see Lebanon recently);
* foster their scientific identities through visibility and legitimacy and thus contribute to peace through shared development in the world;
* co-ordinate and share the Academies core missions, and in particular expertise for Governments and decision makers;
* e.g. The Mediterranean region is an old and common melting pot, a part and a neighbour of Europe.

What do academies on the wider scale of cooperation?

* try and participate in the UNO various bodies such as UNESCO, the next General Conference taking place in Paris theses days;
* play an influent role for Governments whose scientific knowledge and awareness is not always clear;
* consolidate as a first step the smaller group of initiating academies (for the concerned projects or programmes);
* work out a common strategy through ideas sharing;
* set up a real legitimacy apart from money or power influences.

What are the strengths of the academic structures in these countries (see NASAC programme)?

* Youth, very often;
* strong needs, such as improve well being, food facilities, health and welfare, which can turn into a strength;
* see former point; going too fast on bases which could not fully be shared leads to inflation and un-efficiency;
* communication is facilitated;
* Academies and ALLEA network added value: excellence, how to get it, excellence as a shared process;

What are principles of Academies to follow?

* the core of their missions (French Académie des sciences, KNAW, Royal Society, British Academy etc) :
* contribute to excellence in science;
* spread knowledge and science in society; lighten social and political debates;
* contribute to international scientific life and progress for the well being of humanity and the economic and social progress;
* play correctly the role of the 'Cortegiano' (16th Century in Italy and Europe) and the role of the “Philosopher” since the Sovereign cannot always be a 'philosopher';
* more abstractly: facilitate science appropriation by mankind at every step in order to think together (Norbert Kroo) , get rid of conformism and let in new and original ideas we all need.

Scientific Integrity: Recent Developments

Pieter J. D. Drenth[*]

Scientific Integrity: Definition and Prevalence

In the discussion on scientific integrity, the emphasis is often placed on negative aspects such as misconduct, dishonesty, threats, sanctions, punishment. I think it is better to start with stressing the *positive* side: what are the values that should be pursued and the norms to be complied with? In this vein, I conducted a modest survey on the ideals and positive values to be found in responsible scientific conduct among the ALLEA member academies[1]. General consensus was found on the following four principles:

- Honesty and scrupulousness (precision and nuance, conveying information truthfully)
- Reliability (accuracy in performing research and in reporting the results)
- Objectivity (reliance on facts, verifiability, and transparency)
- Impartiality and independence (from commissioning or interested parties, from political or economic interests).

Further suggestions were made, the following quite a few times:

- Justified goals (does the research have an ethically sound objective, does it aim at common knowledge?)

Positive scientific values, such as expressed above, will have to form the key elements in the directions for appropriate scientific behaviour.

Empirical information on (inappropriate) research behaviour has only become available since the 1980s and early 1990s. Before that, the world of scientists had always been rather closed and defensive and only anecdotal evidence of research misbehaviour had been available in the form of a few cases – some of which subsequently became notorious due to media coverage that they received. Suggestions that these cases were only the tip of a large iceberg were countered by the asser-

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[*] Pieter J.D. Drenth is former President and Honorary President of ALLEA | All European Academies.

[1] I conducted this survey in preparation for a paper delivered at the ESF-ORI First World Conference on Research Integrity: *Fostering Responsible Research.* Lisbon, Portugal, 16-19 September, 2007.

tion that self-regulation and the system of peer review would keep matters under control.

Over the last 25 years or so, new and more systematic evidence has suggested that the earlier optimistic assumptions and reassuring explanations were incorrect. At the recent World Conference on Research Integrity[2], Nicholas Steneck[3] summarised the findings from various surveys and observations by concluding that the frequency of serious misconduct in research ranges from 0.1% to 1.0 %, which means that in the US there are 150 – 1500 cases per year, in the EU between 100 and 1000, in Japan between 60 and 600 and in the other OECD countries between 40 and 400. Misconduct seems anything but rare!

These conclusions are in line with the perceptions of the European Academy Presidents, as expressed in the above mentioned survey, which also inquired into the occurrence and handling of scientific misconduct. All admitted that hard data are difficult to get, and that impressions may be biased given the increased openness and attention in the media. Some of the respondents pointed out that more openness, more awareness and the definition of stricter rules may have an decreasing effect. A large majority, however, perceived a clear increase of misconduct, due to pressure to publish, commercialisation, harder competition for funds, diminishing prestige of science, more opportunities (internet), inadequate peer review system in complex research projects.

Violating these basic norms leads to research misconduct, which, according to a recent OECD report[4], is the crux of inappropriate behaviour in science. It encompasses fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results. *Fabrication* is making up results and recording or reporting them. *Falsification* is manipulating research processes or changing or omitting data. *Plagiarism* is the appropriation of another person's ideas, research results or words without giving appropriate credit. The stipulation that research misconduct does not include honest errors or honest differences of opinion is noteworthy. Then there are *borderline cases*, which usually do not lead to formal allegations and investigations, but are just as alarming given their probable frequency. Tamper-

[2] See footnote 1

[3] The principal advisor of the US Office of Research Integrity (ORI)

[4] Based on a workshop on *best practices for ensuring scientific integrity and preventing misconduct*, held on 22-23 February, 2007, in Tokyo, Japan.

ing with data, cutting a corner here and omitting an unwelcome observation there, picking an idea of a colleague or graduate student… This is not outright fraud, but still harmful and unacceptable. As the medical researcher Piet Borst once observed: it is like lower back pain; it is there, but difficult to detect and to prove.

Research misconduct is damaging to *science*, because it may create false leads for other scientists or the results may not be replicable, resulting in a continuation of the deception. In addition, as the OECD report points out, it is also harmful to *individuals* and *society*: fraudulent research may result in the release and use of unsafe drugs, in the production of deficient products, inadequate instruments or erroneous procedures. If policy or legislation is based on these fraudulent insights, harmful consequences are most certainly conceivable. But above all, damage is done to science through the subversion of the public's *trust in science*. The credibility of science could decline further and trust in science as a valid source of information and advice in respect of numerous important decisions (environment, health, security, energy) diminish even more.

It is therefore important that the scientific community regard this misconduct as serious, that credible allegations are investigated and corrective actions taken if allegations are confirmed. As concluded at the first World Conference on Scientific Integrity in Lisbon, counteracting misconduct should always find a balance between a *value-based* approach (internalising integrity through training, role modelling, self-regulation) and a *compliance-based* approach (define rules and procedures, deal with allegations, apply sanctions).

In my view the positive scientific values and the core categories of perpetrating fabrication, falsification and plagiarism, as defined above, refer to both fundamental and universal norms for proper research behaviour. We do not need cultural or regional adaptations or compromises. These norms should constitute an international Code of Conduct that needs to be developed.

Good practices

In addition to the big three – fabrication, falsification, and plagiarism – there are many other forms of objectionable practices that deserve attention, which could be typified as 'bad practice'. Some of them have

serious moral or legal consequences, others may create nuisance, discontent or procedural dissension. The following four types may be distinguished:

(1) Bad *data practices*, including bad data management and storage, withholding data from colleagues who want to replicate the findings, not preserving original data.
(2) Bad *research procedures*, including insufficient care for research subjects, violating protocols, a lack of informed consent, insufficient privacy protection, and improper use of laboratory animals. The choice of a highly improper research design, carelessness in experimentation and calculations, which lead to gross errors, may also be classified under this heading, although the walls between dishonesty and incompetence are rather thin here.
(3) *Publication-related* misconduct: authorship issues (both claiming or granting undeserved authorship and denying deserved authorship), publishing issues (repeated publications, salami-slicing of publications, insufficient acknowledgement of contributors or sponsors), as well as reviewing and editorial issues (conflict of interests, personal bias and rivalry, stealing ideas, in short, issues that are on the agenda of the Committee on Publication Ethics (COPE)).
(4) Insufficient or objectionable *communication*. Trust in science has eroded over the last decades. In the Eurobarometer survey of 2005[5] many people expressed fear of scientists whose high degree of knowledge may make them too powerful. People are concerned that scientific research might cross ethical boundaries, which is difficult to control. Incorrect and discreditable communication on research and its results has aggravated the problem. Some researchers claim that their research has important policy and practical implementations when this is obviously not warranted. Other scientists comment on political and social issues, wrongfully suggesting that their words have scientific justification; there may not be empirical evidence available or not at their disposal (because, for instance, it is not their field of expertise). Again others promise too quick results in order to acquire financial support for their research, to garner public honour, or secure an appointment or promotion. Sometimes the public is simply misled for political

[5] http://europa.eu.int/comm/public_opinion/index_en.htm

> reasons by scientific arguments being misused or misinterpreted. It has become clear that scientists need to develop an ability to communicate their findings and ideas with policy makers at all levels and with the public at large. A recent ESF[6] report states: "Given that the public sector is the principal sponsor of research there is an increasing onus on all of us to devote more time to explaining, listening and debating".

In the OECD report 'personal misconduct' too was listed. Examples are intimidation of students or assistants, harassment, inadequate mentoring or counselling of students, insensitivity to social or cultural norms in doing research, and the like. Although we are certainly dealing with undesirable and, at times, unacceptable conduct here, I hesitate to subsume this under the heading 'scientific misconduct'. It is rather behaviour in breach of general social and moral principles, but the concept 'scientific integrity' would be overstretched if such actions were to be categorised under this heading.

Unlike the fundamental values and FFP, which have, as said, a universal character, good practices as outlined above may be subject to cultural differences: definitions, traditions, legislative regulations and institutional provisions may vary over nations or regions. A required system of regulations of good practices in research should, therefore, not be part of a universal Code of Conduct. It should rather be developed in the form of national or institutional *rules of procedure*, recognising the legitimate differences between national systems. In international collaborative research, these rules should of course be harmonised and be made explicit in the form of bilateral or multilateral agreements or memoranda of understanding. In respect of external funding, these rules should be stipulated by the (principal) sponsor (*e.g.* ESF, NSF, and Framework Programmes EC).

Some further questions

In spite of the above given descriptions and specifications there are still open and debatable questions with respect to the definition of scientific integrity, and the way to handle cases of misconduct. Some of these

[6] European Science Foundation (2003). *Science Communication in Europe.* Strasbourg, ESF briefing.

issues were also raised in the survey. The following points in question can be listed:

(1) There is too much emphasis on the individual. Individual scientists are members of a larger system, and it can be argued that this whole science system, including the institutes of research and learning, the grant system and the publication system, qualifies for careful scrutinisation.

(2) The borders between acceptable and unacceptable scientific behaviour are not always clear. There are unmistakably grey zones, such as:

- The deliberately selective use of citations and data to make a point in the context of a scientific debate (the notorious Danish 'Lombok case' may serve as an example).
- Rules for citation and plagiarism in the popular literature: do we apply the same norms as in scientific literature? If not, what are the rules?
- In the pursuit of hypotheses it may be desirable to select data or to 'correct' observations on purpose; it was only through such 'manipulations' that Mendel was able to formulate his genetic laws.
- It has to be acknowledged that there is a scale of decreasing seriousness in scientific misbehaviour: from 'forgery' through 'selective use' and 'corrections' to 'fudging' and 'malpractice'. And it is not always easy to exactly pin down certain actions on this scale.

(3) One has to keep in mind that scientific norms and rules may differ from those of other important reference groups for the researcher. Professional organisations (medical, psychological) may employ different standards with respect to the protection of privacy and accessibility of data than scientific rules would require. Employers' interests (to use data for other purposes, to keep outcomes secret) and scientific norms may be discordant. National security requirements may conflict with scientific requirements (respect for privacy, informed consent, anonymity). The appropriate behaviour will depend on the specific context and employment conditions of the researcher.

(4) Do not forget the 'psychology of the researcher'. From the history of science we are all acquainted with the dedicated, fanatic scientist who keeps trying to find evidence, including selective use or

adaptation of the data, for his or her theory, sometimes against all odds and against the peer's joint repudiation. Yet, he or she may finally succeed (and get a Nobel prize). Popper's requirement to search for falsification of one's theory and hypotheses is not quite compatible with the psychology of the dedicated, passionate researcher.

Dealing with allegations of misconduct

In the following I will discuss the responses of European Academies to the question worded in this heading: who is dealing – and how - with allegations of misconduct?

A large majority of the respondents maintained that the primary responsibility for handling cases of misconduct lays within the institute or university where the accused researcher works. Very often these institutions have a standing committee, or establish an ad hoc committee in case a serious allegation is brought forward. In only a few countries the case is handled by a central national body, for example an ethics committee of the National Academy of Sciences (Estonia, Moldavia), or an independent national committee (*e.g.* in Norway and Sweden, after a recent new legislation). Only rare cases are brought to the legal court, and then only if clear civil or criminal misdemeanour is involved.

In many European countries there is a national body, either within the National Academy, or within the National Research Council (or in some cases both), often composed of members of the Academy and/or the Research Council and with outside experts, that has an advisory role, or functions as a court of appeal. In some countries also the association of universities is a partner in this national body.

As far as the procedure is concerned there is a general consensus on the need for a due and fair process, that is sufficiently rapid, and leads to proper penalties. This is important for both the accused and the accusing person. Furthermore, all agree that protocols, science courts, confidants, ombudsmen, and various kinds of sanctions are noteworthy and useful, but that of essence is the development of a matured scientific conscience and a basic sense of responsibility within the researcher. A positive, preventive approach and the development of responsibility through conscience building, education and role modelling is consid-

ered more effective in the long run than fear of sanctions or the risk of being caught.

The opinions on the issue of openness or secrecy of cases of misconduct are divided. Some respondents favour public disclosure (after the closure of the case), for its educative or deterrent character, and in accordance with the institute's accountability vis-à-vis the society. Others are more reluctant because of the severe consequences for the individual and the institute, and probably for science in general. They would make only serious cases public, or those cases which the media have identified.

Code of Conduct

In the previous sections we have already referred to a Code of Conduct (CoC) as an important standard for both the stimulation of appropriate scientific conduct and the denunciation and prevention of scientific misconduct.

The question on the existence - and if not on the desirability - of a Code of Conduct in the different countries lead to diverging answers. In some countries such a code does exist already (Nordic countries, Baltic countries, the Netherlands), mostly resulting from an agreement between the National Academy of Sciences, the National Research Council and the National Association of Universities, and in some countries even enforced by law (Norway, Sweden). In most Central or Eastern European countries such a CoC does not exist. Sometimes it is being developed. In most European countries the picture is: No national CoC, but (obviously varying) codes at the level of institutes or of professional organisations.

On the question on the desirability of a central Code of Conduct the reactions were unanimously affirmative. On the question whether such a Code should be national or international three quarters of the Academies declared: international or at least European. They used as argument the international character of science, and the increasing number of international research projects. A national CoC should, then, be in accordance with such an international CoC. A minority of the Academies indicated that such a CoC should be primarily national; the legal and cultural differences would be prohibitive to reach consensus. It is my interpretation that here the norms for scientific integrity and those

for good practices are insufficiently distinguished. The former are based on universal scientific values, and the latter on culturally and legally varying procedures.

On the question of who should develop a national Code of Conduct, most Academies agreed on the desirability of a joint effort of National Academies of Sciences and National Research Councils, in consultation with the (Association of) universities. It was often proposed that the Academy should write the first draft. It was further suggested that a Code of Conduct at the European level be developed by the European Commission, or by the European Council, with ALLEA and/or the ESF in an advisory role (drafting, coordination). For the development of a CoC at the world level, the Academies think of UNESCO or the OECD, with, analogously, IAP and/or ICSU in an advisory function.

International research projects

International scientific collaboration is increasing sharply, not only because of the growth of international funding (e.g. through the European Framework Programmes), but also because science itself has developed into a truly collaborative and international activity. Also modern communication technologies have made international collaboration much easier, being another stimulus for research proposals and activities to become increasingly international in nature. At the same time a difficulty presents itself: proper dealing with integrity and its obverse misconduct in an international context is particularly difficult if principles, definitions, procedures and rules differ between the collaborating countries or if in one or more of the collaborating countries no Code of Conduct exists. Still it is self-evident that common agreement on standards of scientific integrity, and on rules and procedures to deal with cases of misconduct, is a necessary precondition for a proper and responsible project management.

I, therefore, strongly recommend developing an international Code of Conduct, consisting of two levels:
(1) Universal Principles, emphasising both positive science values, and unacceptable misconduct (FFP).
(2) Rules of Procedure, with options recognising legitimate differences between national systems.

This Code of Conduct should be developed by an authoritative international governmental body (OECD, UNESCO), and advised by international associations of Academies of Sciences (IAP, ALLEA) and international associations of research councils (ICSU, IUA)

For the time being, and as long as such an international Code is not yet available, collaborating researchers should comply with the following rules:

1. In sponsored research norms for scientific integrity and rules and procedures for dealing with misconduct, as employed by the main sponsor, should be observed. Such a sponsor could be international (e.g. European Commission, United Nations, European Science Foundation) or national (*e.g.* a National Research Council). The sponsor should be requested to formulate and to provide such norms and rules. These standards should be made known to and be discussed among the collaborating partners.
2. In cases of no external funding, or separate funding of national (teams of) researchers, such norms, rules and procedures should be formulated ad hoc, and be discussed and agreed upon by the partners on beforehand. They should be laid down in bi- or multilateral Memoranda of Understanding, and should function as strict guidelines for the duration of the project.

Slovak Academy of Sciences

Ivan Zahradnik[*]

The view I can offer on these topics is rather a personal reflection than a general or representative view of SAS. My colleagues from presidium SAS who are more involved in international affairs could not come here for their other duties. I am pleased to pass best regards from prof. Stefan Luby, prof. Jan Slezak, prof. Dusan Kovac and prof. Lubomir Faltan to all of you.

My view is influenced by the relatively short period I dwell in Presidium of the SAS. As prof. Sylvester Vizi, will provide us with a thorough overview, of the history of cooperation among the academies of the V4 countries I take a favour to present my personal experience.

I may stress that the cooperation with our neighbours was vital to us for several reasons. First of all, an important aspect of regional cooperation was that we had friends in need! It sounds like a cliché, but frankly, informal relations were and still are very important. To support this statement, I may proclaim that in spite of a shrinking budget for science in my country, we would not cut expenditures for our collaborations. Our colleagues share with us the understanding and the know-how, as many of our problems and cures to them were common. Probably as everywhere, the following major tools are used in SAS.

Exchange of researchers for short and intermediate visits.

This tool is based on long-term bilateral agreements on exchange quotas. These are signed almost exclusively with partner academies. I miss, however, agreements with foreign universities. It is very likely a kind of relict from older times, when in the east-block countries the academies were specialized in research and universities in teaching. The consequence in this epoch is that, in spite of many pragmatic agreements between SAS and universities in our country, we are competitors and not partners, to the shame and loss of both. Now it seems that it was not the right policy and that it led to separation of the major scientific bodies. As a result we lost common voice in disputes with gov-

[*] Vice President of the Slovak Academy of Sciences

ernments for support of science. It should not be forgotten that this tool is slowly replaced by the project-based mobility schemes, where planning and directing of finances can be better controlled.

Bilateral and multilateral projects, regional and trans-regional

These are supported for a specified period until the aim is fulfilled. Here participation of foreign university teams is more common.

Visegrad group

The Visegrad group is a well known political conglomerate of countries with common recent history that have common interests. Although not very strong, it still exists. Of importance to us is the Visegrad fund and regular meetings of the presidia of academies of these countries.

- Visegrad fund is an important tool developed by the governments of V4 countries for support of common projects in trans-regional cooperation and in activities of common interest. There are many schemes, including support of scientific projects and mobility of young scientists. The common feature is that there should be participation of at least 3 countries of V4 group.
- Meetings of V4 academies were started relatively recently, only 7 years ago. I think they are very useful, although the collaboration is not yet as productive as we all would like to have it. In my view, the problem might be that we had not created a common executive body that would follow the progress in adopted tasks. This function is on shoulders of our offices of foreign affairs that function more like a diplomatic sector than a scientific team. Nevertheless, many important goals were achieved. Just to name some of them:
  - The Central European Journal of Social Sciences and Humanities, which publishes in English the abstracts of papers published in national languages. This journal is supported by all V4 academies and, in my opinion, it could spread its coverage to all SEE countries;
  - Organization of conferences of young researchers and establishing the prize for young researchers;
  - Creation of a common web site that increases visibility of our academies;

- Adoption of the common project *Between West and East: Four national narratives in Central Europe*, a publication of the history of these four nations as seen by their historians, written in national languages and in English to improve knowledge of European citizens about their new partner states.

Other agenda is still open. Of importance is the recent proposal of prof. Vaclav Paces, President of AS CR, to create European forum for promoting and support of non-university science institutions that are under unreasonable pressure from some politicians and universities. Of importance, also to new SEE member states, I see agenda that was devoted to themes I call for myself 'How to survive joining the Europe'. These include the problem of the *brain drain* that now involves also university students, not only the best scientists; the problem how to succeed in EU Framework programs and especially how to manage with the bureaucracy and not to be broken, both in the psychological and economical sense. Other agenda included an interesting proposal such as the system of EU Centers of excellence; the floods, their control and consequences in CE countries; the status of academies; the regional R&D programs; the joint projects in humanities; the joint policy in applying for posts in international organizations like ICSU; the European Institute of Technology; the regional research infrastructures, etc. Moreover, very important were common declarations of the presidents of V4 academies towards governments on topics of common interest.

In addition to annual meetings of V4 academies, our presidium meets once a year with the presidium of the Czech Academy of Sciences. I have to stress especially the strong mutual intellectual support that, in spite of division of Czechoslovakia, keeps the tradition of the Czechoslovak academy of sciences, and was often much stronger than from any other institution, even within our countries. The common aspects of political problems were important, of course. The hot topics we discussed frequently at the level of presidia were the assessment and evaluation of our scientific institutes, the support schemes for excellent science, and the adaptation to changes in the system of doctoral studies that resulted from the Bologna process. Although we often adopted different schemes, discussions were always very fruitful and inspiring.

We have also traditional meetings with Polish academy of sciences. We are going to have the first meeting with the new presidium PAS in

a few days were we will try to establish specific collaborative projects in physics and chemistry with potential for 7FP.

To mention all our neighbours, I am sorry to say that we have very little contacts with Ukraine Academy of Sciences. We have nice collaboration with many Austrian scientists based on recently renewed treaty with Austrian Academy of Sciences that, we hope, will be basis for even more intense collaborations in near future.

I would like to point to important aspects of close cooperation among our academies as I see them:

1. International recognition of our achievements at the personal, institutional, national, and European level.
2. Exchange of experience and ideas, how to deal with common obstacles brought about by turmoil of breathtaking societal and socio-economical development, specific for our part of the world.
3. Evaluations and quality assessment of our professional and institutional activities. Serving as peers to each other as due to common history we have better understanding of local aspects of our work. Consulting evaluation methods, help in graduate studies by serving as tutors, opponents, etc.
4. Surviving unification with EU. Brain drain is real and long lasting problem not only for science but for presence and future of our countries. In this aspect ALLEA ought to do more, and, I believe, it still can do much more.
5. Publishing activities by all means should be strengthened to increase visibility, influence and credits. We may easily collaborate in creating space for our scientists in editorial boards, reviewing or expert panels, etc.

I asked myself a question – Is there real interest to build strong science in Central and South-East Europe? Our academies are under pressure to transform or better to say to dissolve their institutes to universities. We believe that, specifically in Europe, the non-university research provides many extra-added values with respect to research conducted at universities and therefore should be better promoted. At this time, to dismount academies in CE and SEE countries would have long lasting negative effect on science there as universities are not ready to take over the high quality research.

Suggestions instead of Conclusions

We would welcome mechanisms that would give better institutional support to our organizations. For instance, EU money could be aimed to institutional projects in our countries to stabilize perspective scientists in their home countries. This might have a protective effect on brain drain. There is too much stress on regional projects that are not so effective and durable. The idea could be better fulfilled through stable institutions in our part of the world. In this direction, for instance, a program for senior researchers of EU15, who instead of retirement, may prefer to come to our institutions and help to transform them towards western standards could be helpful.

Academy of Sciences – A View from Austria

Bernhard Plunger[*]

The Austrian Academy of Sciences (AAS) is the leading organisation promoting non-university academic research in Austria. More than 1000 employees carry out extensive research projects. Highly qualified researchers from Austria and abroad are included among the members of the AAS and guarantee the 'community's' excellence in the sciences and the humanities.

The AAS runs worldwide close contacts to National Academies of Sciences. On the basis of at the moment 43 bilateral agreements with foreign partner academies the AAS plays an important role as crystallization point of foreign relations for the Austrian scientific community. In a common Europe bilateral contacts play a decisive role to strengthen and to link the national research interests, and to support the mobility of researchers. Subsequently the AAS contributes considerably to the establishment and realisation of the vision of a European research area.

Within the frame of the bilateral agreements the AAS operates a scientific exchange programme; every year on average 250 foreign guests are coached. Those guests are invited to collaboration in projects of the AAS research units, to participation in conferences, workshops, and symposia organised by AAS research units and are nominated on the basis of invitations of members of the AAS by the respective partner academy. Furthermore on average more than 100 visits of co-workers of the AAS, of participants in projects of the AAS research units, and of members of the AAS are realised per year.

The AAS has intensified during the last years the official bilateral contacts with national Academies of Sciences in the central and eastern European neighbouring countries. Against the background of a specific focus of the AAS on co-operation with partner academies in the succession states of the former Soviet Union a number of new bilateral agreements have been concluded.

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[*] Director International Relations of the Austrian Academy of Sciences

The AAS continues with her bilateral activities a tradition that has been followed since the foundation of the Academy and that has become politically indispensable for Austria in the international relation network for building bridges and opening doorways.

Inter-academy Cooperation in the Baltic Sea Region

Juris Ekmanis[*]

This paper will deal with scientific cooperation, which has been developing in the Baltic Sea region during the past 18 years. At the beginning of the 1990's the countries on the southern shore of the Baltic Sea, namely Latvia, Estonia and Lithuania, wittnessed radical transformation of the academies of sciences into classical academies, which unite elected members, and the restructured academies found their new place in the scientific communities.

Direct cooperation between the Estonian, Latvian and Lithuanian academies of sciences was officially launched when the first communiqué on cooperation between the three academies of sciences was signed in Tallinn on 28 June 1990.The Royal Swedish Academy of Sciences played a not insignificant role in fostering this process, and also attended the Tallinn meeting, which was held to discuss the ecological problems of the Baltic Sea. Since then the meetings of the Estonian, Latvian and Lithuanian academies of sciences were held regularly. During the 1990's the delegations from the three academies met annually in Tallinn, Riga and Vilnius to discuss the topical problems and issues of research cooperation. In 1996, the geography of participating academies was extended beyond the southern part of the Baltic Sea Region, and the delegations of the academies of sciences of the Nordic countries started attending these meetings. Until 2000, the delegations of the three Baltic academies of sciences and the Nordic academies of sciences met regularly, and Baltic-Nordic meetings were held on a rotational basis. The major topics of the first decade of the academies' meetings were:

- scanty budgetary funding of science in the Baltic countries,
- upholding of the positions of the Baltic and Nordic academies of sciences internationally (ALLEA, ICSU, IAP, etc.),
- three joint research programs of the Baltic Academies of sciences; the scientific basis of the Baltic energy system,
- establishing a Baltic academies' webpage and databases on internationally recognized experts of the Baltic countries,
- joint publishing (*Revue Baltique*, others).

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[*] President of the Latvian Academy of Sciences

Already in 1998, during the regular meeting, which was held in Tallinn it was agreed to broaden the discussions, to step beyond the internal matters of the academies of sciences, and a couple of decisive decisions were made. It was then decided to hold the next meeting of the Baltic Academies of Sciences in conjunction with a scientific conference to be organized in Riga in 1999. Besides, the presidents of the three Baltic academies agreed to establish a joint Medal of the Baltic Academies of Sciences to be awarded in recognition of distinguished contribution to the advancement of collaboration among scientists of the Baltic countries and for performing joint research. Today, we can proudly say that this idea has been beautifully realized.

Thus, hitherto the progress in cooperation among the academies of sciences in the Baltic Sea region may be subdivided into 3 periods (Figure 1).

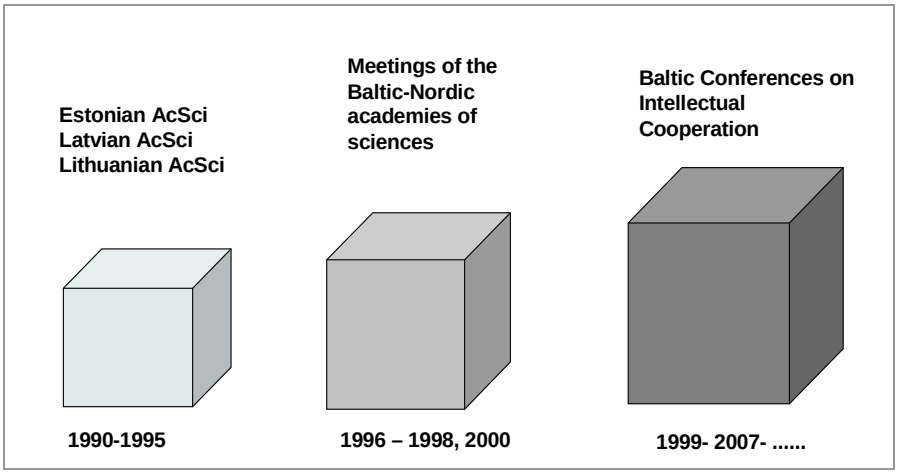

Figure 1. Progress in inter-academy relations (presidential meetings, collegial exchange of information, joint conferences) in the Baltic Sea region, 1990-2007

In parallel to the meetings of academy delegations, during the 1990's the academies of sciences around the Baltic Sea entered into bilateral agreements aimed at enhancing mobility of scientists and facilitating scientific networking. The Estonian Academy of sciences, the Lithuanian Academy of sciences and the Latvian Academy of sciences, established in 1938, 1941 and 1946 respectively, established close and friendly contacts with a number of the academies of sciences in Sweden,

Norway and Finland, namely: The Finnish Academy of Science and Letters, The Royal Swedish Academy of Sciences, The Royal Swedish Academy of Letters, History and Antiquities, the Royal Swedish Academy of Agriculture and Forestry, the Royal Swedish Academy Engineering Sciences and the Norwegian Academy of Science and Letters. Either of the Baltic academies of sciences or all three academies have signed bilateral agreements on scientific cooperation with the above academies of Sweden, Norway and Finland. The long history of the friendly academies of sciences of the northern Europe has been really valuable in sharing experiences during the academy delegations' meetings. Different historical backgrounds, understandably, have their effect upon the academies' main activities and mission: science policy and advice, awarding prizes for scientific and educational achievement (international and national), representation of country's science internationally (ALLEA, EASAC, ESF, ICSU, UAI, IAP, IAMP, etc.), publications, research support from own foundations and source of funding (own funds created through gifts & legacies and/or governmental funds).

Over the years the inter-academy cooperation, particularly among the Baltic academies of sciences, has been realized in the following forms: exchange of information, exchange of scientific visits, joint meeting/conferences and mutual consultations to represent internationally the views and positions.

With the 7th Baltic Conference on Intellectual Cooperation, which was held in Riga in 1999, a different pattern of academy meetings was launched.

The 1999 Conference took place at the time when the Baltic states were gradually moving towards accession to the European Union (EU) and with the concept of the Baltic region as a building bloc of the New Europe, the conference concentrated on two key issues: historic aspects and future perspectives for the cooperation of Baltic States and protection of intellectual values and science through mutual cooperation of legislators, governments, mass media and scientists. The 8th Baltic Conference on Intellectual Cooperation was held in Tallinn in 2001, and at this conference three subjects were taken to the foreground: the message to the world aimed at raising the awareness about the historical experience of the Baltic States, research strategies in small countries, and the humanities during the past decade. The 9th conference took place in Vilnius in June 2003, and the dominant theme was "Globaliza-

tion, Europe and National Identity", and a lot of attention was given to the science and culture of small countries. The 10th Baltic Conference on Intellectual Cooperation (BCIC) was held in Helsinki in 2005 by the Finnish Academy of Science and Letters and the theme was „The Baltic: Past, Present and Future". The conference was divided into four sessions, which dealt with history and politics, the Baltic Sea as a body of water and scientific collaboration around the Baltic Sea. The latest 11th Baltic Conference on Intellectual Cooperation (BCIC) "Academic Views on the National Development Strategies of the Baltic States" was held in Riga in October 2007. The Conference plenary speakers highlighted all dimensions of sustainable development: environmental, social and economic, whereat the latter was primarily related to the energy sector, which is vitally essential for the three Baltic States. Further, the conference discussed the ways how *academia* could contribute to closer collaboration between scientists of our countries in the frames of European Commission research programs and to collaborative research within the programs realized by various European research organizations. The 11th BCIC (2007) passed two significant documents dealing with the advancement of science and scientific cooperation:

- Resolution on Baltic Energy Issues;
- Resolution on the advancement of science and the humanities in the Baltic countries.

The tradition of holding the Baltic Conferences on Intellectual Cooperation appears to be a heritage left by the International Institute on Intellectual Cooperation (replaced by UNESCO) set up the League of Nations. Nowadays the academies of sciences have become the main attraction point in organizing these events. Quite naturally we pose the question: "Will the tradition of holding conferences on intellectual cooperation remain a privilege of the academies of sciences in the future?" The success of the conferences in Riga, Tallinn, Vilnius, Helsinki and again in Riga in 2007 makes us trust in this biannual conference's continued tradition. With holding these conferences a new level of quality in the collaboration among our academies has been achieved.
Besides, since the year 1999, the Medals of the Baltic Academies of Sciences are awarded for contribution to promoting cooperation of the Baltic States and for achievements in science. Hitherto, the awarding ceremonies of this special international award of the Baltic academies of sciences have taken place five times and nineteen medals have been awarded. During the latest ceremony in 2007 the Medals of the Baltic

academies of sciences were presented to Dr. Olof G. Tandberg (Sweden) and professors M. Saarnisto (Finland), R. Pullat (Estonia), A. Silins (Latvia) and Z.R. Rudzikas (Lithuania). Although the wording on each Medal diploma is different, one feature they all have in common is the great contribution to fostering cooperation among the scientists in the Baltic region and to carrying out joint research (Fig. 2).
Thus, the academies of sciences contribute to the development of regional cooperation between the Baltic and Nordic countries in a united space of science, which forms a united Baltic Sea region as a dynamic part of the future Europe.

Figure 2. The Medal of the Baltic Academies of Sciences. As of 31 December 2007 the recipients of the Medal are as follows:

1999 - Janis Stradins (Latvia), Evald Ojaveer (Estonia), Juras Pozela (Lithuania),
2000 - Jarmo Visakorpi (Finland), Juri Engelbrecht (Estonia), Juris Ekmanis (Latvia), Jurgis Vilemas (Lithuania),
2001 - Carl-Olof Jacobson (Sweden), Benediktas Juodka (Lithuania), Talis Millers (Latvia), Mikhel Veiderma (Estonia),
2003 - Jonas Kubilius (Lithuania), Peter Tulviste (Estonia), Janis Kristapsons (Latvia),
2007 – Olof G Tandberg (Sweden), Matti Saarnisto (Finland), Raimo Pullat (Estonia), Andrejs Silins (Latvia), Zenonas R. Rudzikas (Lithuania).

R&D in Estonia: Changes and Aspirations

Jüri Engelbrecht[*]

Estonia has reinstated its independence in 1991. Since then, the society has undergone considerable changes and the scenery and goals of the R&D has certainly been changed with the society. In the first stage of changes (1992-1996), the international evaluation has taken place and the legislation and science structures were renewed. These changes are evident from the „Act on Organisation of Research and Development" adopted by the Parliament in 1997. During the second stage (1997-2001), the instruments of funding took their present shape and the legal basis was laid down for the regular international evaluation. The most important factor is that starting from that period, all the research funding is based on the peer review. The present stage (2002 onwards) is characterized by consolidation and attainment of a qualitatively new level. The R&D strategy „Knowledge-Based Estonia 2002-2006" was adopted in 2001. An important step was initiating the National Programme of the Centres of Excellence in Research. It covered the period 2000-2007 with 10 Centres and in 2007; a new call is being prepared. The second strategy „Knowledge-Based Estonia 2007-2013" was adopted in 2007, paying also a lot of attention to innovation.

Although the level of the R&D funding is still small (about 1% of the GDP), the plans are to increase it. The trends are obvious, although hindered by political debates. The structural funds, open for Estonia since joining the EU have already been used for improving the R&D infrastructure and in future plans their role will be considerable. There is an impressive increase of participation of Estonian scientists in international programmes, related to fundamental problems in science as well as to applied research. Many fields like astrophysics, molecular biology, material science, chemistry, solid state physics are of high international level. The studies in folkloristics, history and nature of the Baltic Sea area, etc should also be stressed. However, due to various reasons, the National Programmes which should meet social needs are still not launched as planned.

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[*] President of ALLEA and past President of the Estonian Academy of Sciences

The Estonian Academy of Sciences (founded in 1938) has been actively engaged in shaping the science structures, research and R&D policy in Estonia. Although after reforms Academy is not a research performing organization (with one exception in literate studies), the role of Academy is important. The Academy has been actively involved in preparing the both R&D strategies, the advisory role of the Academy is essential, especially in energetics, Code of Ethics for Estonian Scientists was proposed by the Academy, etc. Academy runs the series of conferences like 'New Trends in Science', 'From Science to Society', publishes the series of books like 'Scientific Ideas in Estonia' and 'State Research Awards in Estonia', and publishes also the peer-reviewed scientific journals.

Estonia has approved the Lisbon Strategy for the EU. The vital aspect is that although there is still much to be done because of our recent past, Estonia is not alone. The role of knowledge in society is growing; the general understanding stresses the need for good education, which is a basis for competitive economy and culture in its wider meaning. The general vision of Estonia is to become a node of knowledge.

The Role of the Macedonian Academy of Sciences and Arts towards European integration

Momir H. Polenakovic[*]

The Macedonian Academy of Sciences and Arts (MASA) was established by the Macedonian Assembly on 23rd February 1967 as the highest independent scientific and artistic institution in the country.

At present, MASA has 42 full members, 42 foreign members and 2 honorary members, all elected for life. The basic activities of the Academy are undertaken under the auspices of its five departments: the Department of Linguistic and Literary Sciences, the Department of Social Sciences, the Department of Mathematical and Technical Sciences, the Department of Biological and Medical Sciences and the Department of Arts, as well as in five research centres: the Research Centre for Energy, Informatics and Materials (ICEIM), the Research Centre for Genetic Engineering and Biotechnology (RCGEB), the Lexicographical Centre (LC), the Centre for Strategic Research (CSR) and the Centre for Areal Linguistics (CAL).

In the course of the virtually forty years of its existence, several hundred scientific and artistic projects have been realised, funded either from state or international resources or, to a lesser extent, from commercial ones. Thus in 2005 work was carried out on 63 projects of which 11 received international funding. The spectrum of the scientific research and the artistic interest of the members of the Academy is indeed a broad one - from the ancient past to the most current problems of the present day.

Over the last four decades the Macedonian Academy has organised more than a hundred scientific conferences, symposia and other meetings, as well as a great number of launchings and promotions. They cover the activities of all its scientific departments and research centres.

The Macedonian Academy of Sciences and Arts holds regular exhibitions in its Art Gallery. It has organized more than 70 exhibitions of various artists, members of the Academy or members of other academies. It has also presented the work of the founders of the contemporary visual arts in Macedonia. In addition, the Academy has exhibited

[*] Vice President Macedonian Academy of Sciences and Arts

the works of a number of foreign artists and members of other Balkan and European academies.

Its publishing activity plays a very important part in the work of the Macedonian Academy of Sciences and Arts. More than 400 titles have been published since the foundation of the Academy. The majority of these are monographs, research project reports and the proceedings from scientific conferences and symposia, re-issued older editions, anniversary editions and joint editions with other academies. In addition, the scientific journal *Prilozi – Proceedings* (the departmental periodicals) has been issued twice a year. Since 2001 the international journal *Balkan Journal of Medical Genetics* has been published by MASA and its Genetic Engineering and Biotechnology Research Centre.

More details on the scientific conferences and cultural events organized by the Macedonian Academy, as well as a selective list of the Academy's publications, can be found on the website[1]

Inter-academy co-operation

In 1991 the Republic of Macedonia became an independent state. At the same time it entered upon a period of transition, a period full of economic and political difficulties, the struggle for the country's democratisation, the consolidation of a legal state and the struggle against unemployment and corruption. There is unanimity in the Republic regarding its reforms and its entry into the European Union where the future lies.

The members of the Macedonian Academy, with invention and enthusiasm, have contributed and continue to contribute to the development of the country within the framework of possibilities. They have endeavoured to provide answers and solutions to certain problems and have created a strategy for and vision of the future based on the latest scientific findings and technological development. Inter-academy and international cooperation is considered to be the main tool toward this aim.

The Macedonian Academy of Sciences and Arts collaborates with a number of European national Academies: the Slovenian Academy of Sciences and Arts, the Polish Academy of Sciences, the Academy of Sciences of the Czech Republic, the Royal Society of London, the Croatian Academy of Sciences and Arts, the Slovakian Academy of

[1] www.manu.edu.mk

Sciences, the Russian Academy of Sciences, the Austrian Academy of Sciences, the Serbian Academy of Sciences and Arts, the Montenegrin Academy of Sciences and Arts, the British Academy, the Belarus Academy of Sciences, the National Academy of Sciences of Ukraine, the Hungarian Academy of Sciences, the Estonian Academy of Sciences, the Roman Academy, the Bulgarian Academy of Sciences and the Albanian Academy of Sciences.

The agreements on inter-academy scientific and artistic collaboration which have been signed encompass cooperation on the level of joint research projects, participation in scientific conferences and symposia and artistic events and presentations, and study visits, as well as an exchange of research experience, publications and other information. Some recent results of this activity are presented in[2], [3].

The Macedonian Academy of Sciences and Arts is a full member of the Inter-Academy Panel on International Issues (IAP), the Association of European Academies (ALLEA), the *Union Académique Internationale*, and the Mediterranean Academy. It also collaborates with the European Academy of Sciences and Arts in Salzburg, under whose initiative the Central and Eastern European Network has been established.

The Macedonian Academy of Sciences and Arts is a founding member of the Inter-Academy Council for South-East Europe (SEEA). It was host to the First Meeting of the Programme Committee of SEEA, held in Skopje on November 24, 2004[4].

The Macedonian Academy's contribution to EU integration

At present, international projects are being carried out in two of the Academy's research centres, nine of them in the ICEIM, the Research Centre for Energy, Informatics and Materials, (financed by the EU FP6, EU/ESF COST, UNDP/GEF, IAEA and the Austrian Government) and

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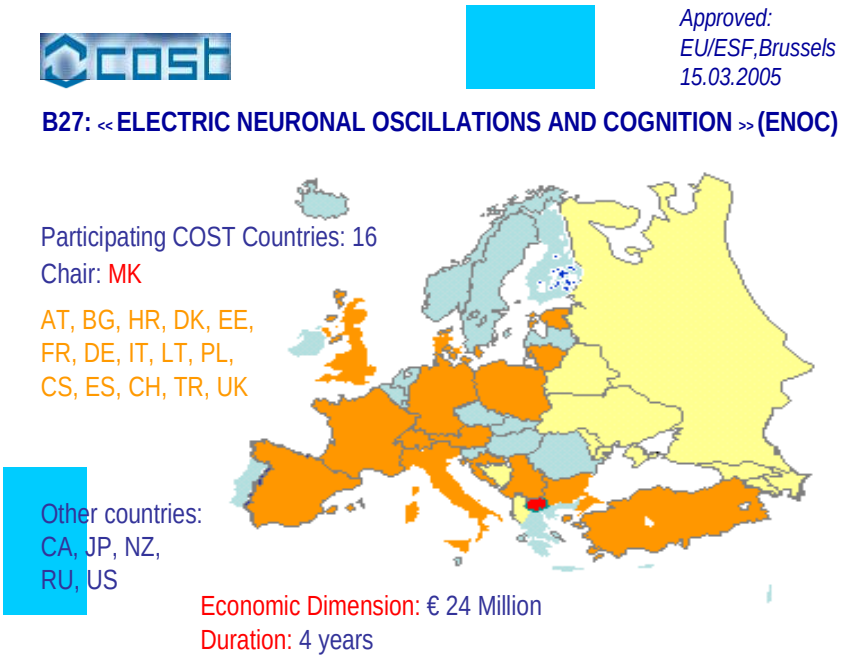
[2] *The Balkans in the New Millennium, Science and Culture in a Joint Action for Peace and Development*, Proceedings of the International Conference, 25 and 26 May 2001, Skopje, Macedonian Academy of Sciences and Arts, MASA, Skopje, pp. 1-341.

[3] *Ukrainian-Macedonian Scientific Collection*, Issue 1, National Academy of Sciences of Ukraine and Macedonian Academy of Sciences and Arts, NASU and MASA, Kiev 2005, pp. 1-342.

[4] www.iacsee.cg.ac.yu

two in the RCGEB, the Genetic Engineering and Biotechnology Research Centre, (financed by UNESCO-ROSTE). As can be seen from their titles, these projects (listed in[5], [6]) correspond to most of the thematic priority areas of the EU's Sixth Framework Programme.

The COST Action project *Electric neuronal oscillations and cognition*, accepted by EU/ESF in 2005, in which 16 European and 5 non-European countries are taking part, deserves particular attention[7]. The project will last for 4 years with an economic dimension of 24 million euros and is headed by the MASA member Academician Jordan Pop-Jordanov.



At the invitation of the relevant ministries, the Academy made a contribution to the completion of the responses to three chapters of the

[5] www.manu.edu.mk/icei
[6] www.manu.edu.mk/rcgeb
[7] www.cost.esf.org/index.php?id=213&action_number=B27; www.manu.edu.mk/costb27

European Union's questionnaire: on *Energy*, *the Environment* and *Science and Research* in the country's endeavour to gain candidate status and later integration within the EU.

Further scientific and artistic affirmation and a correct evaluation of achievements of the Republic of Macedonia are of great significance to entry to the EU.

The two research centres of Macedonian Academy, the RCGEB and ICEIM, are included in the five most significant international academic scientific centres in the Republic of Macedonia, as centres of excellence, i.e. centres of high scientific quality within the framework of the SEE-ERA.NET project, whose aim is the integration of the member-countries of the EU and the countries of South East Europe, with special emphasis on the countries of what is known as the Western Balkans, into the European Research Area (ERA). This is both recognition of the Academy and a challenge to it [8].

Fruitful cooperation among member states' and future member states' research communities has been established through the International Network of Centres for sustainable development which includes: the Jozef Stefan Institute (Slovenia), the Rudjer Boskovic Institute (Croatia), ICEIM of MASA, the Academy of Sciences of Bosnia and Herzegovina and the Albanian Academy of Sciences. As a result, several joint proposals to the EU FP6 have been prepared.

With the aim of contributing to the more efficient incorporation of Macedonia's scientific potential within the European Union's RTD programmes, the Macedonian Academy, in collaboration with the Macedonian Ministry of Education and Science, organised and hosted three Information Days devoted to the EU Framework Programmes.

In addition, for three years now periodic forums on *Challenges and Shadows of Science* have been held, the 2005 session being entitled *What Kind of Science is the EU Asking For?* The *Trifun Kostovski Fund*, concerned primarily with research into and affirmation of the cultural heritage, the *Zafir Sarafov Fund*, concerned with the bioinformatic infrastructure and the *Vita Pop-Jordanova* Fund, donor of the Young Scientist of the Year Award, all based at the Macedonian

[8] Pop-Jordanov J., Markovska N. and Todorovski M.: *International Research Competitiveness in the Interestsof Sustainable Development*, Proceedings of the International Workshop on Implementation of the Sustainable Development Concept in South East Europe, ASO, Austrian Federal Ministry of Education, Science and Culture, Dubrovnik, 3-4 June, 2005.

Academy, have contributed to the creation of conditions favourable to the integration of Macedonian scientific potential within the European Research Area (ERA).

Still, the importance of science for the growth and development of the country and its European integration has not been grasped to the full in Macedonia. In this connection, the members of the Macedonian Academy recently prepared a *Declaration on Science,* in which they point to the problems, and possible solutions, concerning science in Macedonia.

Conclusions and recommendations

Because of its own vital interests, the country should be predominantly concerned with ensuring conditions for the development of science, which is decisive for economic growth, job-creation and social cohesion. Investment in the infrastructure for scientific research and in the education of personnel (human resources) is essential. The development of trans-national education, research and technology, a strategy for innovations and the creation of recognisable products from the country are an imperative for successful integration into the EU. This is the starting point for an economy based on knowledge and on the creation of new work-places, and for the provision of conditions which will produce appropriate social, educational and health services.

All of this cannot be achieved with a very low allocation of means to science, which in the last decade has amounted to about 0.2% of GDP annually. We ought to be striving for amounts such as are allocated in the EU countries and which are ten times as much. In this percentage a good part should be provided by the private sector, whose part is currently minimal in Macedonia.

Means also need to be invested in enabling every scientist to have free access to the internet and to the necessary scientific literature, and to participation in international gatherings.

Means for the infrastructure and projects should be allocated according to criteria that are accepted worldwide. These should be provided from all the relevant ministries and not merely the Ministry of Education and Science, as well as from the private sector.

The employment of young, talented personnel is an essential condition for the success of this strategy. In Macedonia there is insufficient employment for such young people, so that they go abroad in search of work which results in an impoverishment of the country.

In the scientific sector in Macedonia, including here the Academy, in addition to the need for larger funding for scientific projects and other research activity, it is also essential to employ young educated personnel of all profiles (including those from information technology, to strengthen electronic publishing and to affirm Macedonian science through the internet).

On the other hand the growth and development of science also depends crucially on the quality, ability and activity of the scientists themselves. Scientists must be experts in their own field, teachers and educators of the young innovators. Their appointment and promotion should be in accordance with internationally accepted criteria and relevant innovations and products. Their results should be published in international journals and monographs so that this domestic knowledge is deposited in the world treasury of knowledge, in this way affirming their own country.

The media should report regularly on scientific and technological events in the country, in order to stimulate and promote the achievements, while also pointing out the shortcomings in research and in technological growth and development. Taken as a whole, the media should devote much greater time and space to scientific activities and the popularisation of science.

The Macedonian Academy considers that, in addition to the universities and specialised scientific institutions, private companies should also be stimulated for research and technology development, including patented products, with the aim of creating an efficient and competitive economy.

Science in Serbia

Nicola Hajdin[*]

Following the signature of Memoranda of Understanding with the European Commission, the Republic of Serbia joined the Seventh Framework Programme (FP7) on June 19, 2007, and is eligible to compete on an equal basis with EU Member States in FP7.

Serbian science and research organisations participated in more than 80 projects within the 6th EU Framework Programme. Moreover, taking part in the Special Support, also within FP6 in 2006 for Western Balkan Countries, Serbia has achieved very good results; in fact 16 of the 30 projects were from Serbia.

During this year within the FP7 REGPOT3 call, Serbian scientific and research organisations had great results: 7 out of 11 projects are coordinated by Serbian institutions. Serbian institutions are also taking part in three out of four other projects that we are not coordinating.

In SEE ERANET results from the Pilot call, out of 320 projects, Serbia is in second place with 51 project applications. Out of 32 projects that will be financed, Serbia's research teams are taking part in 15; and Membership in FP7 is an additional tool for improving the quality of research in general.

A rather large amount of important and expensive equipment has been provided during 2006/7 from the National Investment Plan Funds; and, the Ministry is planning to procure 'smaller' equipment from its regular resources – mostly IT equipment for scientific and research organisations – but will also apply for new funds for more equipment in the beginning of 2008 from the National Investment Plan Funds.

The application for FP7 projects considers not only very high scientific quality but also a large and demanding administration. For that reason, the Ministry of Science will, in cooperation with the Serbian Academy of Sciences and Arts (SASA), organise an office with a prior objective to help researchers in applying to FP7. This office will inform our scientists about European procedures and rules in gaining justification of scientific results.

[*] President of the Serbian Academy of Sciences

Today SASA maintains normal relations with practically all European academies and performs over 50 bilateral projects in the fields of science and culture. At the same time SASA has become a member of associations of academies at internationl European and regional levels. Of particular interest for SASA is collaboration with academies of neighbouring countries, sharing common problems in their approach to the European Union.

From the beginning, SASA was very active in creation of the InterAcademy Council for South-East Europe (IAC SEE) formed of academies of Albania, Bosnia and Herzegovina, Croatia, Greece, Kosovo, Macedonia, Montenegro, Romania, Serbia and Turkey (www.iacsee.cg.ac.yu). This body coordinates efforts of member academies in establishing joint projects in the fields of science, technology and culture, preferably those specific for this region.

With the help of the next level organisation of European academies – Central and Eastern European Network of Academies (CEEN) – these projects are further elaborated to conform to the requirements of the priorities of the EU's Framework projects.

In this sense SASA is proposing a set of projects devoted to the development of different elements of a modern society, having common interest for countries of the region. Examples of these projects include: the study of the competitiveness of economies of the countries of the region; the programme of further studies and preservation of rich cultural heritage and biodiversity of the region; fighting endemic diseases.

National Academies' Relations to Policymakers

Momir Djurovic*

There are still no enough experience and knowledge to act on behalf of a coming future. There is even lack of understanding of important aspects of our institutions and societies. In fact, the societies are often confused by the move from our past positions. There, still, remain many who are confused with today's fact-based understanding and even more with prediction-based future. Has modern science provided us with such a deep understandings that are sufficient to enable us to predict what is likely to happen in the future, such providing this civilization to continue living on the Earth? This (none) ability to predict is what makes science so important for policy-makers, and it should be the central point to most of national academies efforts.

The important aspects of science are heavily loaded with values, but we need to distinguish which of them are, and which not important. The science, in large, reflects the values of particular times and places and applications of scientific knowledge bear the signature of social and political reality. In this process, there is obligation of the scientific community to communicate with the public and decision makers such to explain its activities and need for scientifically-based decision making. This dialogue between researchers and the general public has in recent years been seen as an integral part of the scientific process and one of the most important duties of national academies of science. In this process, the scientists have to give their opinion to the political or social issues speaking as scientists not intending to talk such to satisfy the policy or decision-makers.

The amount of scientific discoveries continues to accelerate very fast. Our societies are not prepared for such changes. Different cultures, often, require different answers, and our diverse societies will suffer greatly from intolerance. It is now clear that we will need a 'scientific character' for every nation and region, if the diversity of our world is going to be kept not destroying civilization as we know it now. To overcome this uncertainty, many states and in particular regions will

* President of the Montenegrin Academy of Sciences and Arts

require their own organizations and cooperation such to provide the science advice they need.

To achieve full effect with scientific advice firstly is required that everyone of policy makers, on both sides of any argument, has to believe in science. Secondly, the media should pay close attention to scientific work that would help to guarantee that the advices of national academies have a major impact on decision makers.

What should the national academies, in this process, do to provide advices to policy makers and to keep the society moving in the right direction? One of the very important issues is to set codes for improving research abilities of scientists, especially of young people and those who are passing through the educational or training process. In particular this would mean:

- *Stimulating Better Research,* what means preparing and supporting teachers to teach science as inquiry rather then preparing them to teach science as memorizing 'facts' from textbooks;
- *Improving Science Tests.* It is crucial that we develop and apply the right kind of science tests. The young scientists should be tested for science understanding rather than for mere knowledge of scientific facts;
- *Improving the Teaching of Science at University level.* All students must be taught how to learn, so that they can solve new problems and overcome the many challenges that they will encounter in their adult lives. Presumably, this means a society that practices the creativity, openness, competitiveness and tolerance;
- *Using knowledge to generate new products.* This means producing more patents, what would create new jobs and better economy.

Moreover, the ethical issues in general and the initiation of discussions on good scientific practice is of great concern, too. In December 2000, *European Scientific Foundation* published the policy briefing on this issue under the *Good scientific practice in research and scholarship,* in which it has been recommended explicitly that:

- National academies should draw up codes of good scientific practice in research and scholarship where those do not yet exist; and
- National academies should initiate discussions on the most appropriate national approach to procedures for investigating allegations of scientific misconduct, whether by means of an independent national body,

state or independent institutions, and formal procedures at each university and research institution, or by other means.

One has to bear in mind that this does not effect purely national problems although tradition and culture, as well as legislative, may have an influence on the ways those problems are handled in practice in particular state. Research on many problems that needs to rise behind the limits of one nation-state and has region-state character should be studied from the common perspective primarily. The same is true for the collaboration with respect to infrastructure point and facilities. Since each country in SEE can not be involved in all scientific fields, since many SEE countries experience the same problems and have a lot of common in history, there is strong need for high regional collaboration by strengthening the appropriate institutions.

The process of regional cooperation would help national academies of sciences in many facts to act as key actor in the process of advising policy makers and strengthening appropriate institutions. In particular, this process can be helped by:

- Providing useful integration of sectoral expertise, disciplinary science, technical know-how, and informal knowledge in response to priorities of development as a complex process;
- Local decision makers and managers who often 'make do'… but with limited skills;
- Need for RD&T Regional Centers/Institutions, by building experienced teams in trusted institutions, networking them to IACSEE, CEEN, ERA or similar networks;
- *Solution-focused* campaigns to meet targets of the highest priority goals for sustainable development by applying what is known;
- Programs of fundamental RDT&I on the underlying questions of sustainability science;
- Capacity building through acquiring *knowledge systems for sustainable development*;
- Participating in current European scientific, NATO security for peace and other relevant funds.

One should point out at the end the last, but not the least, questions: What should be the role of 'small academies' in this process and what would be responsibility of 'big academies', what are the abilities of small countries, and what should be responsibility of developed coun-

tries in the process of building equally strengthened and reliable advice to policy makers? What should be responsibility of nation-state and what of region-state? What should be limits and, more important, bridges, even administrative, in this process between developed and non developed countries? Obviously, the difficult, in many sense, questions that can not be uniquely answered, but which should be permanently asked if we want to strengthen the role of national academies for the benefit of all countries and region in large. Might it be the answer to this question in building regional cooperation more intensive.

References:

1. www.nationalacademies.org

2. www.royalsoc.ac.uk

3. Djurovic M. (2006). *RD&T in Montenegro*. CEEN

4. Djurovic M. (Ed) (2004). *The Interacademy Council for South East Europe.* Podgorica: MASA

5. Djurovic. M. (2006). *Whose reponsibilty is greater. The meeting of SEE National academies*. Tirana.

6. Drenth P.J.D..*Scientific integrity and social responsibility: The role of Academies of Sciences* in: Drenth, P.J.D. and Schroots, J.J.F. (Eds.) (2006). *ALLEA Annual report 2005*. Amsterdam: ALLEA.

7. WSF 2005, Budapest

Bulgarian Academy of Sciences in the European Research Area

Ivan Havezov[*]

The main organization in Bulgaria carrying out both frontier and applied research is the Bulgarian Academy of Sciences (BAS). As many other Academies of Sciences in the countries of Central and Eastern Europe, BAS is the community of the academicians, corresponding members and foreign members together with a set of autonomous research units supported by some auxiliary ones. Having only 16% of the Bulgarian human potential involved in scientific research, this entity-playing both the role of learned society and that of national multidisciplinary research center, like C.N.R.S. in France or CNR in Italy - provides more than 60 % of publications authored or co-authored by Bulgarian scientists, which are kept and referred in the world scientific archive (according to ISI's databases).

No	SCIENTIFIC INSTITUTION	PAPERS 10 years
1	Bulgarian Academy of Sciences	10131
2	Sofia University	4051
3	Medical Academy Sofia	968
4	Chemical Technology University Sofia	751
5	Hospitals Sofia	709
6	Plovdiv University	383
7	Technical University Sofia	329
8	University "Assen Zlatarov" Burgas	320
9	University Stara Zagora	280
	All Institutions	16783

There are more than 50 other Universities in Bulgaria but their contribution to the number of publications in international journals is virtu-

[*] Scientific Secretary of the Bulgarian Academy of Sciences

ally negligible. It is interesting that the total number of indexed papers from all Bulgarian scientific institutions was growing in the last year.

Year	All fields	Social Sciences	Arts & Humanities
2005	2080	33	19
2006	1871	52	23
2007	2242	50	10

The field ranking of elite papers of Bulgarian scientists (in journals listed in Thompson Scientific's Web of Science) both overall and in specialty papers is given in the next table:

FIELD RANKINGS FOR BULGARIA

View	Field	Papers 10 years	Citations	Citations Per Paper
1	Molecular Biology & Genetics	259	2,503	9.66
2	Neuroscience & Behavior	252	2,269	9.00
3	Clinical Medicine	1,002	7,494	7.48
4	Psychiatry / Psychology	57	390	6.84
5	Physics	2,937	18,963	6.46
6	Chemistry	3,570	19,674	5.51
7	Microbiology	222	1,089	4.91
8	Geosciences	421	2,046	4.86
9	Pharmacology & Toxicology	385	1,868	4.85
10	Environment. Ecology	261	1,198	4.59
11	Agricultural Sciences	223	983	4.41
12	Biology & Biochemistry	1,477	6,380	4.32
13	Space science	380	1,427	3.76
14	Plant & animal science	946	3,354	3.55
15	Engineering	1,384	4,333	3.13
16	Materials science	1,626	5,061	3.11
17	Multidisciplinary	14	39	2.79

18	Mathematics	773	1,892	2.45
19	Social sciences, general	97	177	1.82
20	Economics & business	49	58	1.18
21	Computer science	354	357	1.01
	All fields*	**16,783**	**81,969**	**4.88**

Here are the data for the Bulgarian Academy of Sciences:

Field Ranking for Bulgarian Academy of Sciences

View	Field	Papers	Citations	Citations Per Paper
1	Physics	1,683	11,494	6.83
2	Chemistry	2,100	12,357	5.88
3	Biology & Biochemistry	914	4,831	5.29
4	Plant & animal science	473	1,912	4.04
5	Engineering	788	2,695	3.42
6	Materials science	1,067	3,613	3.39
	All fields*	**9,060**	**45,353**	**5.01**

Scientific research at the Academy has been oriented towards serving the national priorities listed below, to facilitate the closer integration with the European scientific establishments. This is the purpose of the 4 programs included in this policy:

Program 2.1: Technological development, based on scientific expertise and new knowledge. The program includes:

- Acquisition of new knowledge and technological development of new fields that will directly influence the development of the country's industry and economy in the forthcoming decades, such as: new materials for the everyday life and the industry, optical and electronic technologies, non-waste and environmentally-friendly power generation technologies, biotechnologies, nanotechnologies;
- Development of studies, oriented towards acquisition of new knowledge in traditionally strong fields of Bulgarian science: in the mathematical, physical, chemical and engineering sciences.

Program 2.2: Modern methods and approaches for the study of the Earth, the atmosphere and the near space.
The program involves:

- Maintenance, development and scientific provision of hydrological and meteorological observations and forecasts for the needs of Bulgarian national institutions, society and media and in the framework of the agreements with the World Meteorological Organization;
- Active scientific participation in the studies of the global climate changes and development of remote sensing methods for the investigation of the Earth from space and their implementation in the Bulgarian economy;
- Lithosphere and hydrosphere studies and related risk factors with direct applications in civil engineering and public needs.

Program 2.3: Interdisciplinary studies of man, living nature and quality of life. This program is aimed at:

- Contemporary medico-biological studies and further implementation of the results achieved in the development of new diagnostic and therapeutic approaches and tools in human and veterinary medical practice;
- Contemporary agro-biological studies and application of the results in plant growing and stockbreeding;
- Development of new technologies for the needs of medicine and public health services, creation, testing and manufacture of new apparatus and materials for the needs of medicine, pharmaceuticals and healthful, high-quality and wholesome foods.

Program 2.4: Scientific and technological foundations of the information society.
This program involves:

- Development of computer, communications and information systems and technologies;
- New approaches in the field of intelligent management systems;
- Development of new technologies for e-learning, e-government, e-economy, e-commerce, etc.
- Application of information technologies in the humanities.

The Academy is internationally recognized, takes an active part in the international scientific cooperation, keeps up relations with many partner organizations and represents Bulgaria in a large number of interna-

tional institutions and organizations. Presently the Bulgarian Academy is in bilateral partnership with more than 45 foreign academies, national research institutions and universities, and is an active member of 27 GO's and NGO's. In all bilateral agreements high priority is given to joint research projects, which in 2006 amount to about 500. Besides, research scientists from the Academy's institutes are involved in about 300 institute-to-institute joint projects, out of which in 117 EU projects and in more than 40 NATO Science for Peace projects. Annually about 2500 scientists and scholars from the Academy's research institutes travel abroad in order to do research under joint projects, to participate in conferences and symposia, or to study abroad. The number of joint publications with foreign partners, which have appeared in international scientific journals or delivered at conferences totals about 1000 per year since the early 2000's.

These few lines characterizing shortly BAS make clear why its responsibility is so high in preparing Bulgaria for active participation in European Research Area (ERA). In what follows, we shall elaborate on three aspects of the huge task to be solved by the Academy in the forthcoming years:

1) Strengthening of the national Centers of Excellence by smart use, among other things, of the European fund for regional development,
2) Active participation in the transformation of the science research system in Bulgaria,
3) Promoting the creation of co-operative networks throughout ERA, but more specifically, in Southeast Europe.

Speaking about the integration into ERA, we understand, of course, that this is a process, which has been launched several years ago with opening the framework program of the European Commission to Bulgaria. This created the necessary conditions for reorientation of the most active Bulgarian researchers towards the leading scientific institutions in the European Union as partners in advanced research. In the same time this new frame of co-operation permitted to identify the most vital, competitive, and viable sectors in the Bulgarian scientific potential. It led to the certifying of some Centers of excellence in Bulgaria, the great majority of them (eight out of eleven) being units of BAS.

The main issues that have been addressed included:

- The re-organization of the research systems;
- Setting-up of multi-annual programs and research financing procedures;

- Evaluation/Assessment procedures for projects, programs and institutions;
- Innovation issues in S&T policy.

Specific challenges the Southeast European Academies face in terms of the re-organization of research systems. As regards systemic reforms and challenges in the EEC countries, successive reforms have taken place in the countries which affected S&T priority setting in all countries – but also organizational changes in terms of division of labor among the dominating RTD facilities (for example Academies of Sciences, Industrial Application Institutes, public and independent research institutions and others) and the higher education system. However, the reform processes are far from being complete and several aspects of critical importance for the further enhancement of the research systems of the SEEC countries were identified. Still a strong vertical segregation of teaching (universities), fundamental research at the academies of sciences, and applied research in industrial R&D institutes are at place in most of the SEEC countries. This raises demand for stronger integration of actors of the research systems.

Behind the political motives for these re-organizations there were the interests of stakeholders who were not in favor of the usual functional triangle of administration, science and business. Other reform processes were launched in order to overcome poor financing and also lack of interaction between education and science. This refers not only to the organization of the science performing organizations but also to the political institutions (division of labor between ministries). Intermediary structures that are coping with the co-ordination of the several actors of the national innovation system are still a lacking element in the analyzed innovation systems. The enterprise sector in most SEE countries is still under-represented in RTD performance and there are only limited joint RTD initiatives between the public and the private sectors. Unfortunately, so far also international RTD collaborations with Western countries are limited. This raises needs at the level of intermediary organizations and there is still a need to develop and implement mechanisms that support public-private research co-operations which aim at increasing the capabilities of both knowledge producers and knowledge users. Public initiatives have to be integrated in science policy to encourage public private partnerships.

The good scientists in the countries with fragile RDI systems, as the SEE countries are, are very vulnerable. They are under double moral

pressure: on the one hand, keep the pace with the developments in their own narrow academic fields, make valuable contributions to their evolution and receive the recognition of their peers, and on the other hand, to respond to the society demands for solving even more complex practical problems. Brain Drain in the RTD sector should be seen as a two-fold problem:

- Emigration of researchers to other countries;
- Re-allocation of researchers to non-technology related activities in the private and public sectors due to higher income opportunities.

However, the emigrating researchers could be seen as a bridging factor to enhance/foster international co-operation.

Aging was identified as a consequential core problem. Here the establishment of long-term perspectives for researchers and the encouraging of scientific careers need to be tackled.

In general for the SEE countries public funding is the main source of S&T development financing. The volume of public funds for RTD, often combined with general funding of the education system, has been reduced in Bulgaria during the last decade and is nowadays quite small. Financing of RTD in several SEE countries often provides only institutional funding covering salaries of permanently employed researchers and basic operational costs. Eventually, limited funds are available for financing RTD projects via programs. This reduces also the steering power of governments.

For existing national funding RTD priority formulation is often not clearly defined or observable and funds are distributed less selective in a manner of scientific quality criteria's among actors of the research systems. But progress can be observed in several cases where national science foundations have been set up for distributing project funding via peer review mechanisms. This follows common international standards.

The existence of competitive funding schemes operated largely by national science foundations, which assure fair and transparent allocation procedures would help to contribute to quality improvement according to the international standards.

The creation of long-term funding strategies according to well-defined priorities at the political level would contribute to stability and would allow shaping the development of science in the countries. This requires the inclusion of analytical processes and strategic planning. If

the role of the applied science in developing the economy in regions like Southeast Europe has not yet been translated in clear and concrete policies, the building of expertise on a regional scale is obviously mandatory, *e.g.* in health care, the environment problems, weather forecasting and the prevention of local natural catastrophes, clean and sustainable energy production, efficient transportation systems, etc. Scientific co-operation among regional academic institutions, working on collaborative projects in some fields of regional interest, can and should contribute to acquiring the problem-solving experience that is needed to provide regionally relevant expertise. Some elaborations on the same theme are proposed in other papers of the series. These consider, among other things, the development of a regional Technological institute as a network of the most prominent university and research institutions throughout the region.

There is a general impression of a weak demand from industry for RTD results produced in the publicly supported research institutions. In many cases, industry is not in a position to give much importance to innovation, which is a long-term endeavor. Moreover, there are few natural meeting points between publicly funded RTD and industry, such as collaborative projects, public – private partnerships, etc. in the current context of most countries.

A good benchmark for how funding schemes favor the integration between science and industry can be the structure of the Collaborative projects of the Seventh Framework Program (FP7) of the European Union, where there is an imperative of integrating a mix of research institutions, universities, established corporations and technology ventures. In particular there will be a strong preference for projects integrating technology users.

In Bulgaria there are dedicated programs set up for supporting RTD projects in SMEs. These can be managed by development agencies controlled by government. It is a challenge how to evaluate proposals, monitor the projects and evaluate the outcomes. This is because these projects cannot be evaluated with the criteria more widely accepted for RTD projects. Hence, specific evaluation bodies have to be set up with a mix of RTD Managers, engineers, experts from Research institutes and academics.

Science and technology have a pervasive influence over a wide range of issues confronting the nation. Decisions on how much funding is

needed to invest in research and development (R&D), and determining what programs have the highest priority, for example, may have implications for homeland security (counterterrorism), new high technology industries, government/private sector cooperation in R&D, and many other areas (weather forecasting, earthquake warning, to cloning and stem cell research, to ocean policy and global climate change).

Romanian Academy – Academia Romana

Ionel Haiduc[*]

The Romanian Academy was established on 1/13 April 1866 under the name of *Romanian Literary Society*, most of the 21 founding fathers being writers and philologists. It changed name on August 1st 1867, becoming the *Romanian Academic Society*, and again in 1879 when it became the *Romanian Academy (Academia Romana*).

In the beginnings the Academy was mostly preoccupied with the Romanian language and history, but in time it extended its object and now it covers practically all sciences and humanities, literature and arts.

The Academy is organized in 14 sections (divisions): Philology and Literature; History and Archaeology; Mathematics; Physics; Chemistry; Biology; Geonomic Sciences; Technical Sciences; Agriculture and Forestry; Medical Sciences; Economics, Law and Sociology; Philosophy, Theology, Psychology and Pedagogy; Arts, Architecture and Media; Information Science and Technology. The academy has regional branches in Cluj-Napoca, Iasi (Iassy) and Timisoara.

According to its by-laws the academy is a learned society, also a promoter of science and an active participant in the life of society. The Romanian Academy has 181 corresponding and full members, and a number of honorary members (mostly foreign). It has 65 research institutes and research centers. Two institutes (Cell Biology and Mathematics) are recognized as European Centers of Excellence.

The Academy prepares studies and analyses of the country's economy, organizes debates and expresses its views about important matters for the country (*e.g.* demography, state of the economy, rural development, *etc*.). The relations with the government and Parliament are very good to excellent. This statement is reflected in the support received when laws concerning the Academy (*e.g.* the increase of the salaries of its research workers in 2007 or the annual budget for 2008) were discussed in the Parliament.

The Academy publishes 80 scientific journals, covering all areas of science and humanities. The Library of the Academy has about 3 million books, 6 million pieces of periodicals and a series of special collections (manuscripts, personal archives, musical notes and records, maps,

[*] President of the Romanian Academy

coins, *etc*.). It has connections with many national libraries and exchanges publications, mostly books and journals published by the Academy Publishing House (Editura Academiei).
The Academy grants every year a number of Academy Prizes, which are considered very prestigious. Research grants offered by the Academy support basic research not only in its own institutes but they are opened for any research group from the country.

The Academy is a member of several international organizations (ALLEA, ICSU, CEEN, etc.) and has a large number of bilateral agreements with academies of other countries. In recent years the Academy paid much attention to its international relations and tried to extend the exchanges of researchers on a bilateral basis.

The Academy promotes mainly basic research and is a main contributor to the international visibility of Romanian science. About 15 % of research papers published by Romanian scientists in international journal every year come from Academy institutes. The Academy organizes scientific meetings and conferences, at national and international levels. The Academy is an active participant in the European projects (*e.g.* Framework Programs 6 and 7) and has a list of fundamental and priority projects. Examples are: Interdisciplinary Program of Risk Assessment and Prevention; Thesaurus-dictionary of the Romanian Language; The Grammar of the Romanian Language; Linguistic Atlases; Romanian History; History of Romanian Language; Evaluation of the State of National Economy; etc. There are also priority programs for research in mathematics, chemistry, material sciences, biology, geophysics, technical sciences, demography, political sciences, etc.

After admission of Romania as a member of the European Union the science and education in the country faces new challenges and the Romanian Academy is prepared to be an active participant.

The Academy of Science and Arts in Bosnia and Herzegovina

Boris Tihi*

The Academy of Sciences and Arts of Bosnia and Herzegovina (ANUB&H), the highest scientific and artistic institution in the country, was founded by the Law on the Academy of Sciences and Arts of Bosnia and Herzegovina in 1966, under the terms of which the Scientific Society (founded 1951), became an institution with the status of Academy.

Organizational structure of the Academy of Sciences and Arts of B&H: Pursuant to the provisions of the Law and Bylaws, ANUB&H is composed of six departments established in line with selected branches of the sciences and arts. Each Department is headed by a secretary, elected by the Department members and verified by the ANUB&H Assembly. The work of the Departments is coordinated by the Assembly and the Presidency of the Academy.

The Departments are authorized to form working groups (Committees and Commissions) that initiate, study and evaluate various aspects of scientific and artistic activities. The working groups consist of ANUBIH members as well as other prominent persons from the relevant fields. The working groups are chaired by members of the Academy.

Academy Membership

ANUBIH members are chosen from among the most eminent persons actively engaged in different fields of sciences and arts. They are elected by the ANUB&H Assembly in compliance with the provisions of the Law and Bylaw, pursuant to proposals submitted by those authorized to do so by the Bylaw: departments and scientific units of ANUB&H, two ANUB&H members, and the scientific and artistic institutions of B&H (universities, faculties, higher education establishments, scientific research institutions, academies of art, and relevant associations of creative artists in the field of literature and art).

* Secretary of the Department of Social Sciences, Academy of Science and Arts in Bosnia and Herzegovina

The active complement of the Academy consists of full members (Academicians) and correspondent members of ANUB&H.

In addition, pursuant to current regulations, the Academy has domestic and foreign members and honorary members. Domestic members are citizens of Bosnia and Herzegovina living outside BH, while foreign members are foreign citizens.

The Academy's Electoral Assembly elects full and correspondent members by secret ballot, and domestic and foreign members by acclamation.

Upon a motion by the Presidency of ANUB&H, pursuant to a prior submission by a Department, honorary members are elected by acclamation.

The current active complement of the Academy consists of 48 members: 34 full members and 14 correspondent members of ANUB&H.

Unlike the academies in other SEE countries, the political and economical environment in BH after the war in the process of transition has not instigated the development of sciences and arts.

The BH Constitution did not define the responsibilities of the State within the area of science, which resulted in two repercussions for the

Academy of Sciences and Arts of B&H

Academy of Sciences and Arts of B&H, in line with the Dayton peace agreement, operates by the Statute that cannot be changed or improved, as the body that adopted it, Assembly of SRBiH, does not exist any more, while the new body, Parliamentary Assembly of BH, is not responsible for this area. So Academy of Sciences and Arts of B&H actually functions with the “petrified” Statute.

The State has not yet solved the funding of the Academy, so that the Academy is funded by the local community – Canton of Sarajevo. The scarcity of resources has serious implications on adequate involvement of the Academy in European scientific activities.

All above mentioned reasons result with the fact that this Academy cannot fully comply with the demands for international cooperation promoted by international associations of academies of sciences.

The best illustration of such state is the fact that only Bosnia and Herzegovina, from all states established after the collapse of former Yugoslavia, is not yet the member of COST, which could ensure us

better cooperation with all academies in Europe, and provide opportunity to our scientists to take participation to international conferences all around the world.

Also, before the war in Bosnia and Herzegovina, our Academy performed the role of cofounder of 6 very good and efficient institutes. In the same time we had several centres inside the Academy. Because all the mentioned institutes have been destroyed during the war, in this moment, we have not institutes. Therefore, the Academy of Sciences and Arts of B&H has no basic preconditions to offer adequate project management, which could meet the quality level and requirements for being funded by ERA funds.

Considering concept for funding research and development activities within EU (European goal to ensure the investments in the science till 2010 of 3% of GDP, some countries even more), Bosnia and Herzegovina (with current investment in science reaching only 0,05% of GDP), in order to achieve more quality inclusion to such R&D must ensure more adequate funding within the state (raising funds for the science at all levels of government), to secure conditions for undisturbed participation in the EU programmes, and economic capacities for development of unique R&D area in B&H capable to enter to EU R&D areas.

Having in mind all above mentioned, we can see the chance for the improvement of the actual situation only through the regional cooperation of academies from SEE countries. Through our participation in joined projects in different areas of science, and their funding from ERA funds, we could quicken and keep pace with other countries of the Region and Europe, and partly, at least, impact the development of our research institutes.

ANNEX - Programme

Thursday 18 October, 2007

09.00 Coffee

09.30 Welcome, Frits van Oostrom, President KNAW
09.40 Opening, Jüri Engelbrecht, President ALLEA – the Europe of Knowledge
09.50 Point of view of the European Commission – the European Research Area, Robert-Jan Smits
10.20 Point of view of the European Research Council – the Europe of Excellence, Norbert Króo

10.50 Coffee break

11.20 **Session 1: Programmes and ideas**
Chair: Nicholas Mann

Frits van Oostrom, KNAW
Jacques Fröchen, Académie des Sciences
Pieter J.D. Drenth, ALLEA / KNAW

Examples from cooperation programmes of the Netherlands and French Academies. What are the advantages of regional cooperation for these countries? What do academies do on the wider scale of cooperation? What are the strengths of the academic structures in these countries (see NASAC programme)? What are principles of Academies to follow?

13.00 Lunch

14.30 **Session 2: Central European cooperation**
Chair: E.Sylvester Vizi

E. Sylvester Vizi, Hungarian Academy of Sciences
Ivan Zahradnik, Slovak Academy of Sciences

Several Central European Academies collaborate in the Vyšehrad group. What are particular topics for this group and how is mutual advice implemented? Relations with the neighbouring countries

15.30 Tea break

16.00 **Session 2** (continued)

Bernhard Plunger, Austrian Academy of Sciences – a view from Austria

Friday 19 October, 2007

09.30 **Point of view of the ESF**, John Marks

10.00 **Session 3: Nordic-Baltic cooperation**
Chair: Jüri Engelbrecht

Gunnar Öquist, Royal Swedish Academy of Sciences
Juris Ekmanis, Latvian Academy of Sciences

The Nordic-Baltic Academies meet regularly to discuss regional topics. What can be learned from their conduct and the discussed topics? What are the academic structures, how academies advise the Governements?

11.00 Coffee break

11.30 **Session 3** (continued)

Jüri Engelbrecht, ALLEA / Estonian Academy of Sciences

12.30 Lunch

13.30 **Session 4: View from inside – SEE point of view**
Chair: Jan Palous

Momir Polenakovik, Macedonian Academy of Sciences
Momir Djurovic, Montenegrin Academy of Arts and Sciences
The Academies from Southeast Europe regularly meet in different fora, *e.g*. under the umbrella of IAC (InterAcademy Council of SEE). What are the common topics and how can regional collaboration be structured and enforced? How the better links to the whole Europe should be enhanced?

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15.00 Tea Break

15.30 **Session 4** (continued)

Ivan Havezov, Bulgarian Academy of Sciences
Eduard Sulstarova, Academy of Sciences of Albania
Ionel Haiduc, Romanian Academy
Boris Tihi, Academy of Sciences and Arts of Bosnia and Herzegovina

16.45 Discussion

17.15 Closing remarks – United Europe of Knowledge, Jüri Engelbrecht

ANNEX - List of Participants

Academy	Representative	Country
Academy of Sciences of Albania	E. Sulstarova	Albania
Academy of Sciences of Albania	S. Bushati	Albania
Austrian Academy of Sciences	B. Plunger	Austria
European Commission	R.J. Smits	Brussels
Academy of Arts and Sciences of Bosnia and Herzegovina	B. Tihi	Bosnia and Herzegovina
Bulgarian Academy of Sciences	I. Havezov	Bulgaria
Academy of Sciences of the Czech Republic	J. Palous	Czech Republic
ALLEA / Estonian Academy of Sciences	J. Engelbrecht	Estonia
Académie des Sciences	J. Fröchen	France
European Science Foundation (ESF)	J. Marks	France
Hungarian Academy of Sciences	E.S. Vizi	Hungary
European Research Council (ERC) / HAS	N. Króo	Hungary
Kosova Academy of Sciences	R. Ismajli	Kosova
Kosova Academy of Sciences	E. Basha	Kosova
Latvian Academy of Sciences	J. Ekmanis	Latvia
Macedonian Academy of Sciences	M. Polenakovik	Macedonia
Academy of Sciences of Moldova	T. Konstantinov	Moldova
Montenegrin Academy of Sciences and Arts	M. Djurovic	Montenegro
Montenegrin Academy of Sciences and Arts	P. Vucotic	Montenegro
Royal Netherland Academy of Arts and Sciences	F.P. van Oostrom	Netherlands
ALLEA / Royal Netherlands Academy	P.J.D. Drenth	Netherlands
ALLEA	J.J.F. Schroots	Netherlands
ALLEA	M.G. Langemeijer	Netherlands
Romanian Academy	I. Haiduc	Romania
Serbian Academy of Science and Arts	N. Hajdin	Serbia
Serbian Academy of Science and Arts	Z. Kovasevic	Serbia
Slovak Academy of Sciences	I. Zahradnik	Slovak Rep.
Royal Swedish Academy of Sciences	G. Öquist	Sweden
Turkish Academy of Sciences	T. Çelik	Turkey
ALLEA / British Academy	C.N.J. Mann	UK