Is there really a ‘road map’ to the ERC, or is it just a talking shop?


Since the original proposal for an ERC was advanced, as a natural consequence of the European Research Area, a lot of enthusiasm for the idea has developed amongst researchers. The concept of a European agency, whose sole mission would be to fund basic or fundamental research, and whose activities would be complementary to the EC programme of targeted scientific research, has proved very appealing. So far, there exists no European granting agency for fundamental research able to operate in a purely responsive mode. This creates a strangely European paradox. Whereas targeted research is by its very nature more specific and local, and basic research is essentially universal and international, we do it the other way round. In Europe, the funding mechanisms support basic science at the local, or national level, and targeted research at the European, or international level. Small wonder, then, that our scientists are frustrated by this unique balkanisation of basic science, which is a most discouraging feature for aspiring young researchers. Europe, to catch up with the rest of the world, needs an agency capable of operating on the same scale as agencies in North America or in the large markets of Asia. Otherwise, the aims enshrined in the Lisbon declarations will remain pious and rather unrealistic hopes. Thus far, there is wide agreement.

Matters become more complex when the mode of delivery is discussed. As usual, the devil is in the detail. To this, one can add the usual European habit of having too many cooks and an infinite number of excellent dishes to choose from. Thus far, there have been not less than four international meetings since the Copenhagen Conference (held under the Danish Presidency of the EU) It was followed by a meeting in UNESCO (Paris) and another at UNESCO (Venice), culminating this October in the international gathering at the Irish Academy of Sciences (Dublin) organised jointly by the ELSF and EUROSCIENCE.

What is the view of the rank and file? The eyes of all researchers, and especially of all young scientists, are upon this process. What is to be the outcome? How significant will the decisions be? The budget of the ERC should be at least 5% of the total European expenditure on science, to match what the EC is already spending on targeted research. Otherwise, all this flurry of excitement will be taken as another example of European sound and fury, followed by no effective action.

The ERC should also come soon. How long will the talking last? The Commission comes to the end of its mandate in 2004. This, of course, also happens to be the year of ESOF2004. It would be a great shame to miss this opportunity to announce significant progress at the very first pan-European forum on all the sciences. That is the challenge, but can our leaders deliver in time?

Jean-Patrick Connerade
President of EUROSCIENCE

1. See also detailed report by Peter Timedams at www.euroscience.org Ed.

“Early Stage Researcher Mobility in Europe: Meeting the Challenges and Promoting Best Practice”
Gulbenkian Foundation, Lisbon, 25-27 February 2004

International mobility is vital to the career development of researchers, as it gives them the chance to acquire important new skills, while at the same time experiencing cultural diversity. Training stays abroad provide an excellent way of expanding international networks that are decisive in the competitive world of research. Unfortunately, mobile researchers still encounter numerous obstacles: financial, administrative, as well as social and cultural.

The conference aims at identifying good practice regarding the facilitation of mobility of young researchers. It will provide a forum for the exchange of ideas on how to overcome the obstacles that still exist. A large number of young researchers will talk about their own experiences and present their ideas on how to improve the current situation. They will give direct feedback to policy-makers, administrators and representatives from funding agencies participating in the event.

The conference is jointly organised by the EUROSCIENCE, the Marie Curie Fellowship Association, Eurodoc and Pi-net. The outcome of this conference will be the basis for one of the sessions of the MCFM Mobility Seminar that will be held in Stockholm as a satellite event to the EUROSCIENCE Open Forum (ESOF2004).

For more information, visit the conference web pages at www.mariecurie.org/esrm2004. The organisers can be contacted via email at esrm2004@mariecurie.org.

Christine Heller del Riego
Romanian section hosts EuroScience Board Meeting

The Governing Board of EuroScience held its second biannual meeting for 2003 at the New Europe College, Bucharest, on September 27-28. This was preceded by a Workshop (held on September 26) on “Regional Scientific Co-operation in Southeast Europe”, organised by Board members Eugen Gheorghiu and Simeon Anguelov (see report, p3). In tandem with these events, EuroScience Local Section representatives from Central and Eastern Europe met with members of the Board to give an update of their activities, particularly in relation to the theme of cooperation and networking within their region (see report, p4).

President Connerade opened the Board meeting by thanking Rector Plesu for hosting the meeting and proposing that the New Europe College be offered a two-year free membership as Corporate member of EuroScience. He also proposed co-opting Jens Degett (ESF), an active member of the ESOF2004 steering committee, to the Governing Board. Both proposals were unanimously accepted. Eugen Gheorghiu, the local organizer, was thanked for all the work he had put in to making the Bucharest meeting such a successful event.

Key points that emerged from the Board meeting are summarised below:

ESOF2004
– The good news that the EU Commission has awarded EuroScience 380k euros, plus 100k euros to partner organisations, and that some 300 proposals have been received, from which 55 will be selected to fit the slots available in the programme.
– Peter Tindemans agreed to coordinate the search for a suitable venue for ESOF2006.

Russia
– Following President Connerade’s recent consultations with Russian colleagues, it was agreed to base the main office of the Local Section for Russia in St Petersburg, with Nelli Didenko as overall coordinator, and to create an additional section in Moscow, as well as an internet-based section to cover all other areas across the rest of Russia.
– President Connerade reported that although Y Bandazhevsky’s situation had slightly improved, EuroScience would continue to support his human rights case. However, it was not felt appropriate for EuroScience to support a proposal to put his name forward for the Sakharov prize, since our support for him is a matter of human rights.

EUROSCIENCE Office
– Raymond Seltz (RS) and Laurence Nottellet (LN) described how a major proportion of their work concerned the preparation and servicing of grant applications (and reports), e.g. to the EU (for ESOF2004), to UNESCO and the Stifterverband (for the Workshop in Bucharest) and to NATO, for the forthcoming conference in St Petersburg on “Tension in Society”.
– RS also reported on the successful conference that was jointly organized by the Balkan Physics Union and EuroScience (with support from UNESCO), which took place in Serbia-Montenegro on August 25-29, bringing together some 600 scientists (including many young scientists) from the Balkan region (see photo below).
– He also reported that EuroScience is co-organiser, with MCFA, Eurodoc and PI-net, of the conference on “Early Stage Researcher Mobility” that will be held in Lisbon in February 2004 (see p1).

Membership
– Members of the Board discussed a detailed document, prepared by B.Hoffman and Laurence Nottellet, which analysed the membership of EuroScience over the last few years and outlined a strategy for increasing membership.
– It was agreed that membership-related costs could be significantly reduced in future by restricting the posting of hard copies of EuroScience News to full-paying members, with the exception that members not paying the full fee (e.g., those from Eastern and Central Europe) will be able to download – and reproduce – electronic versions of ES News from the EuroScience website. This would obviously involve restricting Internet access to the newsletter to paid-up members.

Work Groups
Technology Transfer
Sam Vaseghi was invited to report on the activities he has developed within the ES Technology Transfer Work Group (ESWGT), of which he is Convenor, as well as on his own consultancy activities. While recognizing its contributions, especially within Central and Eastern Europe, it was felt that the Board’s continued support of the activities of this WG would be conditional on the establishment of clear principles under which it proposes to operate in future. Sam Vaseghi agreed to provide the Board with a list of customers/partners over
the last twelve months, together with the name, date and location of the corresponding projects.

Science policy
EUROSCIENCE’s active participation in discussions on the ERC provides a good example of how a grass-roots structure, representative of all disciplines, can contribute to informing official bodies on such issues. Thanks to EUROSCIENCE, the ERC conference in Dublin was widened so as to include the participation of European scientific bodies beyond those representing life scientists.

Collaboration and integration in Europe
See report (this page) and earlier article by S.Anguelov in ES News 25, page 10.

Research and Development in Industry
This is a new Work Group created by F.Sgard. The goal is to interest more industrial companies in the activities of EUROSCIENCE.

ES NEWS
The Board agreed to the new layout for ES News proposed by the editor, but deferred discussion about his suggestions for changing the ES logo until recent problems regarding copyright of the name of our association have been resolved. It was agreed to change the sub-title of the newsletter to “EUROSCIENCE: The European Association for the Promotion of Science and Technology”, or to replace it by “The Voice of Science in Europe”. It was further agreed to continue using EUROSCIENCE, in small caps, or EuroScience, in the text.

Other business
As a gesture of welcome, the Board decided to offer a 2-year membership to corporate members from Central and Eastern Europe, at the reduced fee of 1500 euros.

Raymond Seltz
and John Lagnado

EuroScience encourages regional scientific co-operation

History teaches us that stronger regional collaborations were a significant driving force behind the construction of the EU. Let us recall, for example, the classic case of the French-German ‘engine’, and the roles of the Benelux and the Nordic Council. And why not add the more recent example of the so-called Visegrad group, which was so effective in helping central Europeans preparing to join the EU: indeed, it was just this experience which inspired the Governing Board of EUROSCIENCE to invite members of the newly-founded Bulgarian and Serbian Local Sections to a Workshop on “Regional Scientific Co-operation in Southeast Europe”.

The workshop, which was hosted by the Romanian Local Section, took place in the New Europe College in Bucharest on September 26 2003, preceding the regular autumn meeting of the Board (see p2). Discussion focused on how regional scientific co-operation in Southeast Europe might contribute to construction of the European Research Area, and on possible pathways for stabilizing and developing the RTD potential of the region. Taking part in the workshop were the President and Secretary-General of EUROSCIENCE, representatives of the Bulgarian, Romanian and Serbian Ministries for science, together with Local Section convenors and members representing local scientific communities in astronomy, life sciences and informatics. Representatives from the Local Sections of Georgia, Russia, and Ukraine were also present as observers. The workshop was enlivened by contributions from the Director of UNESCO’s European Bureau for Higher Education (CEPES, Bucharest) and a senior representative of its European Bureau for Science (ROSTE, Venice), organizations that are well known for their work in promoting regional co-operation in higher education and science. Three main themes were considered: (i) the current state of the national S&T systems in each of the three countries, and the extent to which they were being adapted (by governments) to the new economic and political realities; (ii) the role of the scientific communities and their organizations, including EUROSCIENCE, in the transition process; and (iii), the scope for developing regional scientific networks for selected, high-priority fields, that could provide distributed centers of excellence and a source of national and regional expertise.

It was felt that the heterogeneity of the region, in terms of each country’s standing vis-à-vis the European Union (i.e. with member, candidate, or other type of status), may well hinder the process of opening up national S&T systems to more active schemes for regional collaboration. The countries of SE Europe will certainly need some special ‘cohesion measures’ to help maintain and upgrade their research infrastructure, given that they do not have access to EU funds specifically designated for that purpose. It was generally agreed that the sharing of existing facilities, and their use in regional collaborative projects, should be encouraged as part of a wider strategy to consolidate the science enterprise in SE Europe.

I hope that the nice feeling of success experienced by participants at this one-day workshop will encourage EUROSCIENCE to continue its support for regional collaboration in SE Europe.

Simeon Anguelov
sanguelov@mateos.com

1. Visegrad group: Czech Republic, Hungary, Poland, Slovakia, and more recently so, Slovenia.
2. New College Europe is an independent Romanian institute for advanced study in the humanities and social sciences. It was founded by Professor Andrei Plesu (philosopher, art historian, writer) in 1994, following the pattern of the Wissenschaftskolleg in Berlin and the Collegium Budapest. Professor Plesu was also Romania’s Minister of Culture (1990-91) and Minister of Foreign Affairs (1997-99).
3. Since its founding, the community of fellows and alumni of the New Europe College has enlarged to over 200 members.
Local Sections of Central and Eastern Europe Get Together in Bucharest

The recent EUROSCIENCE Board meeting and the workshop on “Regional Scientific Co-operation in Southeast Europe” organised in Bucharest by the Romanian Local Section provided an ideal opportunity to set up a first meeting between the representatives of ES Local Sections from Central and Eastern Europe (see boxed list).

At this meeting, representatives were able to give members of the Board a concrete picture of their section’s structure and activities and to engage in an exchange of views regarding their experience of running local sections. Thanks to their enthusiastic commitment to an enlarged Europe of Science and Technology, they are now in the process of consolidating the structure of their local sections (e.g. by putting them on a legal footing), recruiting new members and of launching local events with a European flavour. And in spite of some differences in approach, linked to local conditions, all sections (including the ones very recently created in Serbia, Moldavia and Estonia) showed the same high motivation in gathering momentum within the EUROSCIENCE movement.

Since their official appointment by the Board (in spring, 2003), representatives of each section have been entitled to collect the special fee of 5 euros from members in their area, as was agreed for CEE countries (non EU-candidate countries) at the last General Assembly in November 2002. Interested individuals can register directly with the EUROSCIENCE central office in Strasbourg (see: www.euroscience.org), but should then get in touch with their local section representative in order to finalise their registration, i.e. through payment of the annual membership fee. In this way, they too become part of our community of individual scientists committed to the construction of science and technology in Europe – that, after all, is what our grass-roots association is all about!

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Science Cafes in Belgrade!

The newly-created Serbian Local Section of EUROSCIENCE got off to a brilliant start in the autumn of 2003, when it organised lively and well-attended science cafes, on “50 Years of DNA” and on “Science in Schools: When? How? and How Much?”, both of which were reported on the national TV channel (Belgrade) and in local newspapers. Both events were chaired by Stevan Jokic, Convenor of the Local Section.
Report of Working Group: Ethics in Science

The Working Group on Ethics in Science aims at promoting integrity, responsibility and solidarity within the scientific community, including its relationship with society at large. In keeping with the high priority that EUROSCIENCE gives to supporting a European Research Area, we aim to promote the development of a common perception of the cultural, ethical and legal values of science and research within Europe.

During the period 2002-2003, the Working Group made major contributions to the following meetings and publications:

- An International Workshop on “Ethics in the European space” co-organised with ALLEA (All European Academies), which took place on April 4-8, 2003 at the Fondation des Treilles (Tourtour, France) (as reported in ES News 24);


- A conference entitled “Gouvernance of the European Research Area: The Role of Civil Society”, Brussels, June 12-13 2003 (contact: philippe.galiay@cec.eu.int);

- The Pugwash Workshop on “Science, Ethics and Society”, Paris, June 27-29 2003 (see http://www.pugwash.org/reports/ees/paris2003-precis.html);

- A Report of the International Committee of Bioethics (IBC) UNESCO Working Group on “Pre-implantation Genetic Diagnosis and Germ-line Intervention”, 2002 (convenor: Hans Gaulyard). This report, together with that on “Solidarity and International Co-operation between Developed and Developing Countries”, and draft reports on the follow-up of the International Symposium on “Ethics, Intellectual Property and Genomics” and on “Collection, Treatment, Storage and Use of Genetic Data”, are available on the IBC website (see www.unesco.org/ibc/en/actes/index.htm);

- A chapter entitled “Science, morality and quality – some outline queries” (authors: Ene Ergma, Lydie Koch-Miramond & Beat Sitter-Liver) in the biennial ALLEA Year Book for 2002, p77;

- A Memorandum on Scientific Integrity (2003; see http://www.allea.org);

Lydie Koch-Miramond
Convenor of Ethics in Science
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New Academic Journal

Members of EUROSCIENCE may be interested to learn of a new peer-reviewed on-line academic journal, New Thesis. This is a trans-disciplinary journal and its primary objective is to enable researchers specialised in a particular field to bring their work to the attention of experts in other, not necessarily related, fields to whom the work may be of interest. To this end a generous page allowance is made to enable authors to include within their papers the necessary introductory material to make the subject accessible to readers from other disciplines, as well as an example application.

The readership will cut across all academic disciplines: science, arts and humanities, so authors should expect to find readers for their paper no matter how diverse the subject matter.

The journal will be published annually in the first instance, and the first issue will be published at the beginning of 2004. The editor would particularly like to encourage submissions from members of EUROSCIENCE.

The editorial policy, authors’ guidelines, and a sample peer review form can be found on the New Thesis web site at: www.newthesis.org

The editor welcomes your comments and enquiries.

Danny Banks
(Editor, New Thesis)
danny@dbanks.demon.co.uk

Human Rights Appeal: Professor Yuri Bandazhevsky

The EUROSCIENCE Working Group “Ethics in Science” urgently appeals for your support in its ongoing campaign for the release from prison of Prof. Yuri Bandazhevsky. Please see our website (www.euroscience.org) for more information, and advice on how you can contribute.
news & views

An Indian and a European look at the future of Research

A seminar held in New Delhi in March, 2003, looked critically at a 15-year experiment in Indo-French cooperation. The experiment is a novel one, where evaluation of projects and fund management is entrusted to a private association operating under Indian law; it involves relatively substantial grants funded on an equal basis by the Minister of Science and Technology of India and the French Ministry of Foreign Affairs. Participants attempted to determine what future there could be for such forms of cooperation in the globalized landscape of science and technology, and how the Indo-French experiment might catalyze access of Indian institutes and universities to European cooperation schemes. The meeting also gave Dr R.A. Mashelkar, Director General of the Centre National de la Recherche scientifique (CNRS, France), an opportunity to compare their perception of the challenges ahead. Some highlights of the discussion are as follows.

Mashelkar expressed his conviction that supporting curiosity-driven research remains a key issue, observing that “There is no high tech without high science”. In his view, the most successful approach to create wealth is to capitalize on the scientific community’s strengths and to make bets on which scientists are the most likely to become leaders in their field.

Moreover, there can be no ‘high science’ unless education is given high priority. Tertiary education, for which there is now a great demand, should aim at developing competence rather than subject-specific specialization. “It is the quality of mind which makes cutting-edge science”. In order to make ‘lands of opportunities’ out of our ‘lands of ideas’, we will need to attract more students to science and to devise new policies, which encourage young scientists to work together, and to take responsibility for strategic decisions earlier in their career.

Coordination of global knowledge, as required for example to meet global challenges in environment or health, relies on “cooperation rather than competition”. This can be implemented by facilitating access to knowledge pools and shared infrastructures, as well as by encouraging networking between private and public research institutions. Such coordination could not only bring about economic returns, but also improve “social welfare in a universal perspective”, commented Mégie. India and France are currently experimenting with this approach in their collaborative projects on water management. India is also seeking to increase societal returns of space research, for instance, through hydrological surveys or tele-teaching. To achieve these objectives, “glue money” is sometimes as effective as large investments; and closer links with the social sciences are also needed.

Interestingly, the conclusions of this dialogue emphasized a real commonality in the concerns of scientists and science managers from India and France, despite the many differences in their historical, cultural and economic backgrounds; such conclusions could well extend to cooperations amongst other, European cultures.

Claude Kordon
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ENRIC BANDA
New Distinguished Honorary Member of EuroScience

The President and the Secretary-General of EUROSCIENCE met with Professor Enric Banda on December 8, 2003, on the occasion of his retirement as Secretary-General of the European Science Foundation. They thanked him, first, for his indefatigable efforts on behalf of European science and secondly, for the very effective support he has given to EUROSCIENCE, both at the time it was created, in 1997, and during the initial period of growth, which led to its Head Office being established in Strasbourg. Indeed, it was very much thanks to Enric Banda’s efforts that the ESF was able to contribute so significantly to the beginnings of the Euroscience Association.

On behalf of EUROSCIENCE, both the President and Secretary-General wished Professor Banda well for the future, and as a token of their appreciation, they invited him to join the Committee of Distinguished Honorary Members of EUROSCIENCE, which acts as an Advisory Council and provides the President with guidance on matters of European scientific policy.

“We need EUROSCIENCE if we want to make sense of the European Research Area”, said Professor Banda in his response.

Raymond Seltz

Enric Banda (left) with the President and Secretary General of EuroScience in Strasbourg
The audited accounts show a significant increase in the general budget, as compared to the figures for 2001; this is mainly linked to sponsorship of the conference on “New Science and Technology based professions in Europe” that was organised by the ES Working Group “Young Scientists” in November 2002. This upward trend in the budget reflects the growing activity of EUROSCIENCE and should continue in 2004, with the organisation of the EUROSCIENCE Open Forum – a pan-European event, with a (pan-)European budget.

### Income

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<td>Bosch Stiftung</td>
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### Expenditure

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(1) 75% of this amount concern costs related to specific subsidized projects

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**EuroScience on the Web:** [www.euroscience.org](http://www.euroscience.org)
New European Community Patent: The Challenge Ahead

Introduction
After years of debate Ministers of EU Member States finally agreed, in March 2003, on a Community patent, i.e. a single patent effective throughout the EU. Its implementation, however, seems unlikely until the end of this decade. Two main barriers have still to be overcome. The first is that every national patent office of an EU Member State requires the submitted patents to be filed in its national language. This means that patents will need to be translated into 15 languages. The second, and more complex problem is that court jurisdiction is restricted to national borders. Consequently, defending or contesting the validity of patents is likely to be cumbersome, expensive and, in some cases, unattainable.

Jurisdictional and linguistic matters
Back in the early 1970s, the ‘European Patent’ was established under the provisions of the European Patent Convention, whereby a central application, submitted at the European Patent Office (EPO), results in a package of national patents in various member countries. Now, 33 years on, the European Community (EC) has signed up to the European Patent Convention to replace national patents by a single Community Patent.

It is further planned that a Community Patent Court will be set up. As a division of the European Court of Justice, this new court will govern all litigation with respect to validity and infringement of EC patents. However, it seems premature, at this stage, to attempt giving a realistic estimate (or benchmark) for the operational efficiency and costs of litigation processes within the jurisdiction of the Community Patent Court, in comparison with what currently happens in relation to the ‘European Patent’, or patents from other OECD countries, e.g. US and Japan.

The March 2003 agreement envisages that patents submitted to the EPO in any Community language will then be processed in only one of the EPO working languages (English, French or German). Subsequently, only the so-called Claims of the patent, which express the core of the patent that is subject to protection, would be translated in all Community languages. Although the Commission estimates that the average cost of translating a Community Patent would be far less than half that for the European Patent, the real cost structure involved and operational efficiency of the process (which depend on patent type and volume) will only become apparent once the Community Patent is up and running, i.e. in about 2010.

Thus, there are a number of serious challenges regarding ‘jurisdictional’ and ‘linguistic’ aspects of the new scheme.

New frontiers and new Challenges
Despite low processing costs, high operational performance and the quality of Europe-wide protection will be significant issues of concern to European innovators. Moreover, the Community Patent roadmap towards 2010 is likely to be challenged with regard to various aspects of intellectual property rights (IPR) versus innovation: The most prominent issue is likely to be “patenting of both digital and biological information”. As Tinne Van Der Straeten, an activist of the Belgian Young Greens puts it, “patenting software is like patenting an onion and then forbidding its use in recipes!”

The existing EU Directive (91/250/EC) still rules out software from patentability and yet, a total of 30,000 software-related patents have already been granted by the EPO. On September 24 2003, following public protest and months of intensive debate, MEPs finally voted in favour of a legislative resolution on the patenting of computer-implemented inventions. “The aim of the Directive is neither to abolish nor to extend the patentability of pure [my italics] computer programmes, but it is to first clarify the scope of patentability and to harmonize on the basis of existing practices”, said EU Internal Commissioner Frits Bolkestein, adding that “Nothing would become patentable which is not already covered by existing patent law!”

The critical question is what will be labelled as “pure”, and to what extent? For example, which parts of the programmes for genetics-related bioinformatics, or e-government, or research software would count as a pure? A turning point will soon arise, when researchers and other IPR stakeholders start asking: “What is pure? and why is it pure?” The crucial question – “When is digital information pure?”– is likely to remain unanswered for some time yet; hopefully, the answer to this question will take account of the logic behind the attempts to resolve parallel issues concerning the patenting of biological information in the life sciences.1

Patents relating to sequences or part-sequences of genes isolated from the human body on one hand, and of the patentability of human stem cells (and cell lines derived from them) on other hand, basically test the limits of patentability in our society.

Interestingly, a recent report by the UK Nuffield Council on Bioethics (2002)2, which looked at the issue of patenting new DNA sequences over a period of two years has suggested that “patents may be stifling innovation rather than stimulating it”. The report found that “although newly discovered DNA sequences were eligible in principle for patenting, they did not satisfy the three legal tests common in applying for a patent: that the discovery should be novel, inventive and useful”. The report highlights that a single gene may lead to more than one product, that further uses may be found for a gene after it has been patented or that if a patent protects all uses of a sequence, the researcher may receive unjustifiable rewards.

Some of these concerns were voiced during the recent protest organized by IT professionals on August 27 2003, calling for “a free Europe without software patents”. They demonstrated the potential consequences of software patentability by temporarily blocking access to websites. “We wanted to show what would happen if a patent owner forbids the use of a specific piece of software – all websites connected to that software would go down”, explained Dr. Gerwinsky, an IT professional from Germany.

It seems to me, that beyond the matter of cost and control of operational performance, what is missing from the Community Patent roadmap is an integrated, fundamental and tangible concept of “biological and digital information”.

Achieving the challenging goals of an information society is still a long way ahead!

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Russian Science in transition

The acute shrinking of the science base in post-1991 Russia
What is the situation of science in Russia since the collapse of the Soviet Union and what is the fate of structural reforms attempted over the last decade to adapt it to current economic conditions? For more than a decade Russia has been engaged in a vast process of socio-economic transformation that has profoundly affected one of its greatest assets – science and technology. The 1991 break-up of the Soviet Union resulted in an economic crisis that led to a major reduction in the federal budget for science. There ensued a mass exodus of its scientists – both internal and external – due to a reduction of salaries to subsistence levels, and growing frustration at the lack of well-maintained, modern equipment or well-stocked libraries. In addition, basic science and education remained poorly integrated, and professional scientific societies were practically inactive.

Science is no longer regarded as a highly desirable and prestigious career in Russia, pushing many talented young people to move into other sectors of the newly-developing economy (banks, private enterprises, joint ventures), or to universities and research centres in the West. Today, the population of scientists in Russia has stabilised to about one-third of what it was 20 years ago [1]. It is of course important to provide young S&T personnel with opportunities to work abroad, so as to enhance their integration in the international scientific community and to help them compete internationally for research support. However, this should be done in ways that encourage their return to Russia, so as to avoid the risk of losing them for good and there is little alternative but to take this risk, given the current conditions for science in Russia.

By Western standards – in terms of employment, number of institutions and the resources committed in proportion to the gross national product (GNP) – the science and technology (S&T) base of the former Soviet Union had been extremely large, even if over half of the total federal budget for science was earmarked for military purposes. The dramatic reduction in federal funding for science that occurred in 1992 was accompanied by the virtual disappearance of other sources of funding, following the collapse of traditional practices in planning and of state orders. Faced with such acute problems for short-term survival, enterprises had (and still have) no interest in innovation, nor the financial resources required to support R&D. According to L. Graham, a historian of Russian science at the Massachusetts Institute of Technology, Russian science “suffered the most precipitous decline in financial support known in modern history” [1].

Attempts to end to the isolation of Russian scientists
Much as the former Soviet economy was relatively closed to the outside world, its scientists and technologists were also isolated from the international community. There were some notable exceptions, e.g. the cooperation, albeit strictly state-controlled, of nuclear physicists with CERN, but many scientists, especially those working in strategically sensitive fields (or simply, those not currying favour with their superiors) remained cut off from their colleagues abroad. During the Gorbachev period, some new possibilities for international collaboration were opened, a process that accelerated after the collapse of the USSR. However, negative echoes of the past can still be heard, e.g., the 2001 directive from the Russian Academy of Sciences (RAS) requiring that all researchers should report in detail – to the head of their institution – any contacts they make with foreign scientists [2]. Moreover, while the opening up of Russian S&T offered new opportunities for international collaboration, and better integration of Russian science in the global economy, there remain justifiable concerns that some foreign companies are exploiting the country’s S&T capabilities unfairly – through paying Russian researchers too low salaries, or by acquiring advanced Russian technologies at prices well below their international market value. In spite of the extensive brain drain, the Russian Federation still retains a well-educated population with considerable intellectual and cultural talent, giving hope that the acute transitional problems facing the country can be overcome. However, budgetary stringency means that the educational system is being starved of support, just as it is striving to adapt and respond to the new demands made upon it. As a result – and because of the general decline in the prestige of science in Russian society – many young people are still turning away from science and technology in order to train for work in the emerging market economy.
funding, it is now responsible for meeting the soaring costs of maintenance and development.

A notable exception is nuclear weapon research, which benefited from the recent shift in federal funding from civilian research to the defence sector, with a four-fold increase in spending on defence research, bringing it up to US$10 billion in 1999. According to a recent statement by the Russian Finance Minister, A.Kudrin, the budget for weapon research now stands at US$1.37 billion and is scheduled to increase by 35% in 2004 [3].

Education

The serious imbalance created by maintaining a large number of institutes in the RAS, while failing to develop university-based research, further undermines performance in R&D. In order to promote a better integration of research and education and a more dynamic higher education sector, a federal programme was established by Presidential decree in 1996. But with few exceptions, e.g. co-operation programmes with the RAS, involving the universities of Moscow, St. Petersburg and Nizhny Novgorod, this integration process has been disappointingly slow, largely due to the deep-rooted tradition of isolating scientists of the Academy from their counterparts in the university sector, and to the persistence of outdated and inefficient bureaucratic structures dating from the Soviet period.

A deep-rooted conservatism still pervades the scientific community in Russia [4] and is reinforced by the expectation that the state will continue to guarantee the resources needed to keep research institutes afloat. Such traditional forms of state support have fostered attitudes favouring a distribution of resources that is primarily based on status, rather than on real merit; this makes it difficult to progress towards selective and competitive forms of funding, based on genuine peer review. Moreover, the structural reforms needed to cope with the catastrophic decline in science funding have failed to take place and Russia still has too many research establishments. Indeed, the number of scientific organisations in the RAS actually increased (by 44%) between 1990 and 1996, reaching a total of 429 [4], through the fragmentation of large institutions into smaller units and the creation of new units. In contrast, the total number of S&T organisations decreased by some 13% over the same period. The new structural reforms of the RAS introduced in 2002 in response to President V. Putin’s call for a more focused approach to funding [5] did little to improve the situation: the Academy simply reorganised its 18 existing departments into nine large divisions as a way to steer more funding to the cream of its 400 or so institutes. Observers viewed this as a “shuffling of chairs on the deck of the Titanic” [6]. By avoiding the unpleasant decision of downsizing institutes, except through a process of natural ‘wastage’, a unique opportunity for major structural changes was lost, leaving scientists increasingly bitter towards the government, and to reform in general.

The situation of young scientists

Several state programmes were recently introduced to support young scientists, e.g. through grants from the Russian Foundation for Basic Research (RFBR) and the RAS, and prestigious fellowships for Doctors of Science (ScD). However, without a major reform of the system, these programmes offer too few opportunities for young scientists to enter careers in the basic sciences and cannot, by themselves, alleviate the current situation. Many graduate students from prestigious Russian universities (especially mathematicians and physicists) are continuing to leave the country: according to statistical data published in 2002, about 100,000 scientists – mostly young and middle-aged – left the country since 1991. This brain drain has, in effect, lost Russia some 50 billion US$ over the last decade [7]. Nevertheless, there are also some positive aspects to this exodus: it helps to re-integrate Russian scientists in the international community and to bring back to Russia valuable cutting-edge knowledge and techniques they acquired while abroad. For this reason, it is important that government agencies and universities in the EU countries should continue to develop programmes that help repatriate high-level emigrants, viz. the recent fellowship scheme of the Alexander von Humboldt Stiftung for research fellows from Central and Eastern Europe.

A related concern is the age profile of researchers within the RAS. A majority of the scientists working in institutes of the Academy institutes are over the age of 50. A few years ago the Academy attempted to renew its ranks by introducing a special membership for younger scientists (below 50). However, this has had little effect on the age profile of the Academy; given the limited number of positions available, many of our most talented and productive scientists continue to work abroad, either temporarily or permanently. As a result, many of our institutes are predominantly staffed by older scientists. The current pension and retirement laws – which discourage senior scientists from leaving – will clearly have to be revised to allow more young specialists to fill the ranks of the Academy. The situation of young scientists

Some recent changes in government policy towards science

The attitude of the Russian government toward science continues to be capricious and unpredictable. For example, in the autumn of 2001, the Russian government abruptly dissolved the Ministry of Science and created a new Ministry of Industry, Science and Technology, where basic science was seen as playing a secondary role. “The government wants science to provide not only new knowledge, but knowledge useful to industry”, explained Mikhail Affimov, President of the RFBR and a former Board Member of EUROSCIENCE [1]. At the same time, President Putin set up an Advisory Council for Science to help revive Russia’s science and high-technology sectors [8]. The principal aims of this Council were to prioritise policies on science and innovation, to report on developments worldwide in S&T, to promote co-operation with foreign scientific organisations and to recommend measures to ensure the welfare of Russian scientists.

More recently (in January 2003), the government increased the wages of Members of the Academy five-fold [9], I believe that many members of the Academy deserve to receive an even higher salary, which should be paid from the Institutes where they work, rather than directly through the government. Otherwise, a situation similar to that of trade unions in the 19th century may develop, when the administrators/owners of enterprises paid the union leaders high salaries... for strike-breaking.

While the Academy of Science played a key role in the development of basic research, the main responsibility for industrial and applied R&D, which was largely oriented towards the military, remained within the Ministry for Industry, Advanced educational institutes and universities were traditionally the responsibility of the Ministry for Education; but this separation between science and education meant that research in universities was very limited.

In the past, the various disciplines were organized into branches, overseen by separate ministries, which were endowed with their own research institutes and design bureaus. Now, national S&T programmes as well as programmes for international co-
operation are the responsibility of the new Ministry for Industry, Science and Technology. In 1994, about a hundred Russian scientific institutes were given the new status of ‘State Scientific Centres’ in 1994 (by Presidential decree), with responsibility for carrying out basic and applied research in nuclear physics and energy, chemistry and new materials, engineering, biomedicine and biotechnology, earth sciences, and information technology. But this new system is still seriously under funded.

International support and collaborations
Grants and donations from foreign foundations are currently a major source of S&T funding in Russia. The first and most important of these was the International Science Foundation, set up by George Soros, which has actively co-operated with the Russian Federation to award grants to the Russian scientific community. The Soros Foundation has spent some US$100 million over a three-year period, using a competition system based on peer review. In the past decade, several other international and national non-profit organisations and foundations have supported science and higher education in Russia via special co-operation programmes. These include: the International Association for the Promotion of Co-operation with Scientists from the former Soviet Union (INTAS), the International Science and Technology Centre (ISTC), NATO, the U.S. Civilian Research and Development Foundation (CRDF), European and US national science agencies, and the MacArthur Foundation which, together, have already invested several billion US dollars to support research in Russia and other countries of the former Soviet Union [1].

Another form of collaboration is the “winning” between Russian and foreign research institutes for exchange programmes and joint projects. For example, the French Ministries of National Education and of Foreign Affairs are supporting a PhD Programme that allows young Russian scientists to carry out three-year research programmes, both in Russia and in France, under the joint supervision of Russian and French academics. The UK Royal Society, the Swedish Royal Academy of Sciences and the Volkswagen also run similar schemes. In 1993, the European Union Framework Programme allocated funds to set up INTAS as a non-profit international association to promote co-operation in S&T among scientists from the former Soviet Union and the European Union. This helped qualified scientists and young researchers to continue working within their own countries, while at the same time supporting their integration with the international scientific community through the funding of East-West collaborative projects. Support for joint projects is also available from similar programmes funded by the ISTC, NATO, and CRDF. Most recently, on 6 November 2003, the EU and Russia signed a new agreement that should lead to the development of co-operative research projects in several branches of science and technology [10].

In science and education, as in the economy, Russia is now at a crossroads. Rebuilding the old centralised state system is certainly out of the question, though the wish to preserve the familiar traditional structures remains strong and will continue to slow the transition to a new system. The alternative of moving rapidly to a highly uncertain, more diverse and more dynamic new system clearly involves a painful and massive re-structuring operation; the only question seems to be whether the pain will be concentrated in a few years, or spread out over decades.

What, then, do Russian scientists consider as urgent priorities for a radical reform of Russian science? Here are some important suggestions:

To thoroughly integrate the RAS (and other state Academies) with the Higher Education sector with regard to research in the basic sciences. This will require that state Universities receive a larger share of the available funding for research.

A radical reform of the organisation of state Academies. This will involve a reduction in the total number of institutions, and the setting up of centres of excellence in basic research (CEBR) that would function as independent bodies, associated with the Academies.

Financial support for institutions, as well as grants to individuals or teams of scientists, should be distributed on a strictly competitive basis. The novel grants scheme recently instituted for the basic biological sciences provides a good model [11], though its system for project selection needs considerable improvements [12].

To encourage Russian industry to invest in science; funding by industrial concerns for science and education in Russia should be made tax exempt.

Professional societies should play an active role in the reform of Russian science.

Let us hope that Russian science will rise again, despite the current difficulties; otherwise, it will only find a place in the kind of books that describe the great scientific achievements of ancient Greek, Arab and other civilisations.

Acknowledgements
Thanks to L. Borkin (St. Petersburg), S. Kostyuchenko (Moscow), and E. Pelinovsky (Nizhny Novgorod) for helpful discussions on problems of Russian science and science policy. I am also grateful to F. Praderie (Paris), J. Lagnado (London) and C. Kordon (Paris) for their thorough review of the initial version of this manuscript.

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Programme for EuroScience Open Forum 2004 takes shape

During the weekend of December 12-14, forty people from across Europe and other parts of the world, of which 45 were finally selected, covering a wide range of themes, from Humanity and Space, Communication of Science, Climate, Nanotechnology and Health, to Dealing with Risk, Science Policy, Careers for Young Scientists and Women in Science.

The plenary speakers now having confirmed participation include André Berger (mathematics/meteorology), Catherine Bréchignac (physics), Philippe Busquin (European Commissioner for Research), Lene Hau (physics), Neal Lane (former science adviser to President Clinton), Luc Lemaire (mathematics) and Hans Wigzell (medicine). For updates of the programme, please see www.esof2004.org.

In addition, over 30 outreach proposals from across Europe are now being considered; these include activities in open streets and parks, in museums, in centres of culture, in cafés and in schools.

Financial support for ESOF2004 has continued to grow over the last few months. Apart from a major contribution from the European Commission (see Report, p2), several science and technology-based European companies have now committed themselves to supporting ESOF2004. It is very important that we continue our efforts to involve industries, foundations and other potential partners from all parts of Europe. We still need your help to identify potential new partners. If you have any ideas or contacts, please get in touch with our fundraising coordinator, Henrik Pompeius (henrik.pompeius@esof2004.org tel. +46 8 5248 6062). As mentioned previously, it would be most helpful if you could also let us know of any sources of travel funds that would enable scientists in your country to come to Stockholm this August.

Core subgroup of Programme Committee meets in Strasbourg (22.09.03) to select proposals for scientific programme of ESOF2004

From left to right: Heide Raddansi, from the Stifterverband für die Deutsche Wissenschaft, J.P Connerade, Board member Christine Heller del Rio, Erica Almberg, from the ESOF Organising Committee in Stockholm and Ingid Wünning, from the Bosch Stiftung.

The editorial in Science (August 29) that dealt with Science in Europe and mentioned ESOF2004 as a novel element was syndicated in several European dailies, which included The Financial Times, El Pais, Corriere de la Sera, Frankfurter Allgemeine Zeitung and Le Figaro. This, together with our own marketing efforts, has certainly increased awareness of the ESOF2004 meeting to a reasonable level, but more still needs to be done on this front. Please contact the ESOF2004 Office (info@esof2004.org) if you have more ideas on marketing, or need help to disseminate information about this most important event. There are several ways of disseminating information at very low cost; for example, short announcements on notice boards and websites and in various types of journal (scientific and professional); posters in labs and mentioning ESOF2004 in your talks to colleagues and others. You can obtain a Power Point presentation from our website.

Welcome to Stockholm in August 2004! Your input is always needed! Please contact us at any time!

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Copy for the next issue should reach the editor, preferably by email to j.lagnado@rhul.ac.uk, by Friday March 26th 2004