

DINNER/DISCUSSION SUMMARY

Partnership in research in Europe

Held at The Royal Society on Tuesday 13th July, 2004

Sponsor: **Particle Physics and Astronomy Research Council**

In the Chair: **Sir Richard Sykes DSc FRS FMedSci**
Rector, Imperial College London

Speakers: **The Lord Sainsbury of Turville (represented by Jeremy Clayton)**
Minister for Science and Innovation, DTI

Dr Reinhard Grunwald
Secretary-General, German Research Foundation

Professor Ian Halliday FRSE
Chief Executive, PPARC

Professor Julia Higgins DBE FRS FREng
Foreign Secretary, The Royal Society

DR REINHARD GRUNWALD contrasted the roles of competition and co-operation with a cartoon of the beautiful bull and the bureaucratic donkey. The objectives were to achieve centres of excellence, technological initiatives, basic research and more attractive outcomes. Under existing systems money followed the researcher and lines of co-operation. Existing European funding institutions were complex. The need was to meet future challenges and an increasing complexity. The concept of a European Research Council (ERC) embraced basic research in all areas of science and innovation, scientific excellence with a rigorous system of peer review and feedback, scientific self-organisation and partnership involving the Commission and the scientific community, the funding of individual teams, a mechanism for best practice, professional but lean, and better co-operation between national research councils.

Different levels of interaction already existed within the European Research Area, multi-agency interaction, bilateral agency interaction where the money follows the researcher, or alternatively forms of co-operation. Seeking funding from outside the Community would have smaller repercussions on existing national budgets, but such repercussions might improve the efficiency of those budgets.

The most desirable positioning of an ERC compared with existing institutions would be for it to have a universal scope and to be politically independent. The legal authority for such a Council was to be found in Articles 163, which set out the objective of strengthening science and technology, and 171, which empowered the Commission to set up joint undertakings. Under these the ERC might be an executive agency (regulation 58/2003), a European agency, a joint undertaking or a foundation. The only criterion should be scientific quality. Such a Council's autonomy should derive from a constitution comprising a senate, on which researchers should be highly represented and institutions not at all, overseeing a CEO and Board, the whole receiving advice through a machinery funneling input from the scientific community, universities, laboratories, national research councils, and European research organisations. The prob-

lems to be overcome in creating this structure were how to create an international peer-review system, how best to balance the interests of national research with those of an ERC and how best to integrate international research outside Europe.

PROFESSOR JULIA HIGGINS, noting the consensus about the desirability of establishing an ERC, took as her starting point the importance of funding following the Barcelona recommendation that this should rise from 2% to 3% of GDP. Understanding the implications of this was hampered by the lack of reliable data. Such macro-indicators as there were exposed misconception about the comparison between European and US research. Europe produced more papers and employed more researchers in more laboratories than the US and provided an equivalent level of university funding. The problems were that the total funded by European business fell far short of that in US, US produces more top-cited papers and authors, within Europe there were wide variations in output from researchers and in output per unit funding and much less mobility around Europe between countries and sectors: universities, government and industry.

The aims of an ERC would be to increase the visibility of research, its mobility and effectiveness. To avoid overburdening a new institution the initial priorities should be a highly selective grants system, an equally selective scheme of European fellowships lasting from 5 to 10 years and the assumption of responsibility for collecting consistent data on research funding. Decisions about the governance of a new ERC were crucial. It was essential that it should entail peer-review and be independent of the Commission and individual countries. In accordance with the Haldane principles the Commission and the European Parliament should set the guidelines, researchers having day to day independence, with the ERC answerable to the European scientific community. It was crucial to Europe's future development that it should increase its impact and become globally competitive. The essentials of an ERC were peer-review, autonomy and quality as the prime criterion.

PROFESSOR IAN HALLIDAY illustrated the need and the feasibility for an ERC from the history of CERN, established in 1954 as a result of the need to compete with California and the absence of adequate resources to do so in any individual European country. For the UK it had been an act of faith to invest taxpayers' money in CERN. A similar act of faith was needed now to embark on an ERC. CERN had had its problems, e.g. budget overruns. Existing European facilities, such as CERN, DFG, universities and laboratories had working methods which differed from each other and from those in the UK. In US it had taken 50 years to construct the National Science Foundation (NSF). An ERC would be a similar and serious attempt to reconstruct the European system. In this context the HM Treasury report *Science and Innovation Framework, 2004-2014*, was particularly timely.

It had to be recognised that science was changing. Big facilities were no longer enough and needed better support. The consequential concentration of resources made decisions about funding even more important. Looking at US, the Commission had been impressed by the qualities there of fitness for purpose, resilience and adaptiveness. These needed to be written into the constitution of the ERC. The success of CERN was attributable to its creation of a level scientific playing field of excellence where scientists competed on equal terms. An ERC would provide the opportunity for competition at the scientific level in a strategic framework of transparent funding and quality of the highest order. It was important to note the contrast with the US where a physicist might be funded from a number of different sources each having a different mission. ERC would be bound to affect the work of individual research councils. There would be real challenges but expectations had been raised to such a degree that a determined long-term process, involving alterations of perspectives, now needed to be embarked on.

In his unavoidable absence on parliamentary duties, Lord Sainsbury's contribution was read by an official. The development of research policy had been one of the less publicised successes of the Community. Over two decades, through a series of framework programmes, funding had steadily increased bringing European scientists together in centres of excellence, complemented by the Marie Curie programme facilitating scientists' cross-frontier careers. This had led to the creation of a genuine internal market in science and technology. Consultations for the 7th framework programme were in progress. The UK saw the main challenges as: matching US, in quality and quantity; applying the results to the creation of products, services and jobs; and increasing the R&D input of industry to achieve the Barcelona target of 3% of GDP to be reached.

The EU budget contribution, and UK believed it should be increased, would still be a small part of the total and had therefore to be deployed to the highest effect. UK saw ERC as a means of matching US basic research. The record of top-cited researchers in US had attracted scientists there who needed to be persuaded to return. An ERC would need to encourage excellence to this end. Similarly it would need to be independent of all pressures, based on international peer-review of the highest quality and run by an un-bureaucratic light-weight structure - run by scientists for scientists.

Europe, with a significantly larger population than that of US, contributed only about the same level of government

funding, but significantly less in business and industrial funding. It was crucial to improve applied research in Europe and business funding. A possible way forward lay in the Framework Programmes and the Commission's work on Technology Platforms. To help management and evaluation it would be desirable to separate programmes addressed to basic and applied research respectively.

In discussion the following points were made:

- Different views were expressed as to whether or not funding would be obtainable by an overall growth in the EU budget or from a larger share of the existing budget, e.g. at the expense of agriculture.
- It was suggested that higher remuneration would be needed to attract scientists of sufficient calibre and the example of China was quoted.
- The inclusion of reference to the humanities and social sciences was welcomed.
- Doubt was expressed as to whether concentration might not be at the expense of national infrastructure, but the thought was that the ERC percentage would be too small to have this effect..
- In the training of post-graduate students, access limited to fees and not extending to maintenance presented an obstacle. Ph. D. students were not instinctively mobile, but improved communications through IT rendered this less of a problem. The Marie Curie programme to support female researchers also helped.
- The CERN precedent was cited with approval but doubts were expressed whether it would be possible to replicate it. Emphasis was given to the need to overcome barriers and to inculcate new ways of thinking based on trust and faith and a high level of flexibility.
- The balance between collaboration and competition was welcomed, reinforced by peer-review which needed to be rigorous.
- Changes in science involved greater complexity. In Germany, where elitism had formerly been frowned on, attitudes had completely changed. DFG now played a vital role in building up excellence through training centres, now numbering five but planned to increase to thirty and encouraging universities to review their vision of their own future.
- It was observed that earlier Framework Programmes had delivered successfully in the field, not of science, but of social engineering. This had paved the way for a return to science in the latest, but industry's share had dropped from 80% to 50%. It was important to use the Framework Programme 7 consultations to increase industry's share again, and any other mechanisms which might serve.
- One speaker expressed surprise at the unanimity, arguing that Brussels's record of financial management was poor, the Commission had no sense of policy, was wedded to collaboration at the expense of competition and required changes in its attitude to science. A better policy would be to find other fields for development such as genomes and taxonomy.

Sir Geoffrey de Deney

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