

## **“World Conference on Research Integrity”**

16-19 September, 2007

Calouste Gulbenkian Foundation, Lisbon, Portugal

### **Concluding Remarks by Manuel Heitor**

Secretary of State for Science, Technology and Higher Education  
Government of Portugal

I would like to start these concluding remarks by acknowledging all those individuals and institutions that helped in various ways to bring this Conference to fruition. The organizers (the European Science Foundation and the National Institutes of Health), the partner institutions (the ICSU, the OECD, namely through the Global Science Forum, and NATO), the very important contributions from the various funding agencies and research councils (including the National Science Foundation and Portuguese Science and Technology Foundation), and the various Academies represented in the Conference (namely ALLEA and the US National Academies). Also, I'm very proud to acknowledge all the speakers and the institutions represented in the Conference for their effort in making this event a very successful one. Last, but not least, we must also applaud the Planning Committee, the Conference Chairs and the secretariat that made the conference venue a reality.

This conference was organized for good reasons: IN BENEFIT OF SCIENCE AND IN RECOGNITION OF THE INCREASED ROLE SCIENTIFIC KNOWLEDGE IS PLAYING IN MODERN SOCIETIES.

In this regard, I would like to recall Karl Popper (1996), **“Optimism is our duty. We all are co-responsible for what is coming”**.

It is in this context that I believe, if any conclusion can be taken at this final moment, is that the theme of research integrity must be seriously discussed and analysed from a **science policy perspective**, certainly emphasizing the need to strengthen autonomous scientific institutions, as well as to deepen a policy research agenda on “research integrity”.

Professor Menon has reminded us last Monday in a rather elegant way that **“research integrity”** is an old theme, but one that **needs to be revisited in a rapidly changing environment**, which is particularly influenced by three main emerging factors: i) the convergence of science and technology commercialization; ii) a new paradigm of public perception of science, where trust in scientific institutions may be increasingly questionable in the near future; and iii) an increased uncertainty in scientific development, as well as in the markets for technology commercialization, which may lead to a lack of credibility in science. It is in this context that we must ask ourselves: **Why and where is research integrity needed? Where is it threatened and in which domains?**

To answer these questions, it is useful to highlight cases in which scientific institutions may choose to overlook facts or results, or to suppress issues from the scientific agenda because of direct external pressures (e.g. from funding entities, governments, or the media), leading in extreme cases to falsification of information. Equally relevant are the contextual pressures that bear on the process of undertaking research, most importantly the structure of incentives (including direct funding, intellectual property laws, and political pressure) that may threaten research integrity.

But this conference has also shown us that we must look, and very carefully, to emerging issues associated with the publishing industry and its relation with authors and all those individuals that should have free access to knowledge. The paper by João Lobo Antunes, which was presented in the first day of the Conference, was particularly relevant in this respect. In addition, Paul Caro remembered us yesterday that, above all, we need to foster “**publishers’ integrity**” and clearly differentiate it from the broader issues of “research integrity” that may affect scientific knowledge.

In addition, let me follow a significant suggestion made also by Paul Caro and propose that we call for **our universities and research institutions to foster “open libraries”, namely open to everyone (and not exclusively to students and researchers)**, in a way that will promote the role of universities and scientific institutions as active centres for the dissemination of scientific culture.

We certainly should also acknowledge the issues referred by, among others, the Nobel Laureate Peter Medawar in his book of 1986 with reference to ethical behaviour of scientists and the integrity of the processes of vetting and validating scientific results. But the Conference has shown that it is critically important to emphasize that beyond the traditional way of looking at research integrity from an individual dimension, there are **systemic and institutional dimensions**, including organizational, governance and legal issues, that may be as or more important determinants of behaviour than those related with individual characteristics. In fact, lack of personal integrity is a human failure manifested in myriad professional activities. They should be clearly differentiated from research integrity and dealt by adequate professional societies and practices. Again, this is an old question and you may want to look in the Portuguese National Library, here in Lisbon, to one of the world first treaties of medical doctors, “Tratado del Perfecto Médico”, as written in 1595, more than 400 years ago, by the Portuguese Henrique Jorge Henriques, M.D. and Professor of the University of Salamanca and of the University of Lisbon.

It has been referred several times in this conference that **we do NOT need any more codes** to foster research integrity. Let me repeat, **we do NOT need any more codes**. This has been an important voice that we must consider.

In this respect, and following some of the issues raised by John Ziman many years ago and also noted by Nobel Laureate Richard Ernst (2003), as well as very much stressed in the course of this conference, one critically important and emerging institutional issue refers to the **training of students and young scientists** in order to provide them with core competencies that help them to become successful researchers and prepare them with the adequate “transferable skills” for the job market outside research and academia. But please note that the data presented yesterday by Melissa Anderson, University of Minnesota, has shown us that it is inappropriate to launch training programs for responsible research without their careful assessment, in that they do require to consider at least four main critical issues: i) good instructional practices; ii) adequate collective mentoring; iii) proper preparation of survival in science; and iv) collective openness in research culture.

To cope with such a variety of demands and with a continuously changing environment, we argue that the higher education system, in particular, needs to be diversified. But the challenge of integrity in research requires effective university networks and a platform of research universities, notably for stimulating the political debate among the various stakeholders and for assisting in the networking of national constituencies fostering integrity in higher education.

In addition, recognizing **scientific knowledge as a “public good”**, as also explicitly introduced many years ago by John Ziman and discussed by Paul David in his inaugural lecture, introduces the need to consider new policy dimensions in science and technology policy. Fostering the development of new knowledge for large public issues calls us for a focus on the institutional integrity of science producing organizations. This raises questions such as:

- Public risks – when there are critical risks of a public nature (e.g. public health; security) coming from missing out or neglecting information or research;
- Security and defence strategies – integrity issues in security (including terrorism related) aspects and in situations of conflict or war;
- Economic competition – omitting information as a competition tool;
- Proprietary knowledge – ignoring and “depleting” the science commons hindering the fostering of new knowledge

Following Gerard Toulouse, former Chairman of the ALLEA Standing Committee on Science & Ethics and member of the Planning Committee of this Conference, this is relevant because “every mature scientist has acquired a strong sense of proper vs improper conduct, which guides his/her personal behaviour. However this is not enough. Scientists have both individual and collective responsibilities and many are best discharged collectively, i.e. via scientific institutions. Indeed, concerning research integrity, that is where most of the effort has to be done presently: raising awareness, carefully analysing root causes, setting the problems in a wider context, in order to keep a sense of proportions, and avoid hasty counterproductive measures”.

To sum up, we argue that institutional integrity requires science policies that are designed and implemented in a way that fosters independent scientific institutions, among which the way in which transnational organizations are organized may provide a useful framework. It is clear that individual responsibilities should not be minimized, but it is the collective nature of institutions that determines in the end research integrity.

Overall, **it is clear that there is no need to rush towards the establishment of a new discipline, or a new profession, or even a new consulting business around scientific integrity or misconduct.** Rather, Alex Quintanilha yesterday, among others, called our attention in a very eloquent way for the need to promote “intelligent accountability” as a way to foster good governance practices in our scientific institutions. He has explicitly acknowledged the need to avoid the micro-management of scientific institutions and to foster their autonomy as the single measure able to **build societal trust** in them.

To be sure, compliance with and enforcement of basic ethical standards needs to be monitored – because science is always a human endeavour, subjected to the inherent flaws of human nature in this as in all other human activities. Some degree of professional monitoring in science is perhaps indispensable. But this cannot evolve into an atmosphere of suspicion or very heavy-handed policy and professional intervention. What is required, to be sure, is the need to deepen a research-based view of research integrity to deal with its various dimensions. Special emphasis should be given to the presentation and discussion of case studies and specific debates should be organized in terms of empirical evidence provided. But the building-up of a policy research agenda on “research integrity” requires consideration of a systemic and holistic view covering the following two key issues and associated questions:

- Strengthening knowledge institutions:
  - What can we learn from transnational and network organizations in order to set standards for research integrity?

- How to monitor organizational and governance dimensions, namely size and structure of scientific organizations and their networks, in order to foster integrity in research?
- How to assess policies for intellectual property protection and the boundaries of open science?
- Promoting research autonomy and independence:
  - How to better assess the conditions for independence of scientific expertise, as well as the institutional factors affecting independence and autonomy?
  - Which tools to easily monitor and assess individual versus collective expertise?

In addition, it has become clear from our discussion that a third issue is increasingly relevant, as follows:

- Fostering science culture, by looking at the grassroots:
  - How to raise the science culture beyond current status?
  - How can we promote and foster science education through project-based learning and other “hands-on” methodologies that consider how people learn?

The analysis on the basis of these questions will certainly convey a dynamic view of research integrity centred on the grounds for credibility of science and leading to responsible research worldwide.

Let me conclude with a new and further challenge to the institutions that have organized and promoted this conference. Following the initial speech of Minister Gago, we are addressing a controversial issue and should not underline or minimize all our different opinions about research integrity. Rather, we should foster and open the debate at a world scale and do not rush in taking unrealistic actions. In addition, taking the seminal intervention of Professor Menon and the emerging role of Asian science for the coming decades, I would like to propose the organizing institutions to consider the organization of **a second World Conference on “Research Integrity” in Asia to be organized in two years time** and before the end of 2009. In addition, and following very much the issues raised by many of you during this Conference, let me also propose that it is focused and announced with a subtitle considering the following question: **“How to build trust in scientific institutions?”**. The subject should be carefully discussed and assessed together with The Third World Academies and I would like to suggest it is considered by the Governing Boards of ESF and the NIH, together with the OECD Global Science Forum, the ICSU, the ALLEA and the US’s National Academies, as well as the various funding agencies involved in this Conference, including the National Science Foundation.

Recalling again Karl Popper (1996), **“Optimism is our duty. We all are co-responsible for what is coming”**.

Thank you very much for your attention.

Manuel Heitor

Calouste Gulbenkian Foundation, Lisbon, Portugal  
19 September, 2007