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PEER REVIEW IN THE EUROPEAN CONTEXT: THE ROLE OF EUROPEAN SCIENCE FOUNDATION

Peer review is one of those umbrella terms which are almost meaningless unless their content is specified. Peer review has been practiced as long as there has been science, if not formally then informally. The practice has grown with the evolution of universities in which the defense of the theses was an early form of peer review expanding into a systematic comparison by the external reviewers of the competence of candidates to professorial positions. In the university system, peer reviewing is, of course, still the central instrument of quality assurance, and of academic politics. However, in the universities, peer reviewing remains still mostly *ad hoc* in the sense that it mostly concerns individual candidates applying to a given position.

True, it has become more and more common to evaluate the scientific quality and performance of individual academic departments and centers and, indeed, of entire universities. In Finland, so far four universities have organized large-scale external evaluations (and the University of Helsinki has done it twice). Personally, I served last spring as one of the many assessors of Uppsala University in Sweden. Such large-scale evaluations can certainly be useful, but they can also be highly problematic, especially if their results are, as they in principle should be, used as tools to reallocate resources. The selection of assessors in a balanced manner is not easy and

the reliable and fair comparison of results by individual disciplinary panels is almost impossible.

In addition to the practice of peer reviewing in and of the universities, it is a standard procedure in scientific publishing when the merits of the manuscripts submitted are assessed. We all know that the review process in scientific publishing is in a kind of crisis, largely because of the multiplication and diversification of the publication fora as a result of the rapid development of communication technology. The evaluation process is now much more diverse and instant than it used to be, even to the point that in the open review process the paper is available online for any interested person to comment on.

Today, the system of peer reviewing has expanded much beyond the universities. The main factor fueling that growth has been the expansion of the national funding systems, especially in basic research. In many ways, peer reviewing has lost in a way its innocence as it has become an instrument of science policy and funding. In that task it can also be a blunt instrument.

The noble element in the peer review comes from the first part of the term; in addition to hinting in general to the people of the same rank or qualities it also refers to members of one of the five degrees of British nobility (duke, marquis, earl, viscount, and baron). The term “review” has more practical connotations and in this context perhaps its most appropriate meaning is the critical discussion, based on examination, of a book or other publication, as in “book review”. So, peers are reviewing scientific publications, and probably other merits as well, for their quality.

At least in Finland, the peer review system has evolved through three different stages. The Academy of Finland was set up in its present form in 1970. In the first decade of its existence, the applications for research grants were mainly reviewed, and decided, by the members of a research council. In the 1980s and much of the 1990s, the standard solution was to send out the applications to external Finnish, and in some cases

Scandinavian reviewers, who could master the two languages of the country. The big transformation in the 1990s in the peer review system was due to two factors; the breakthrough of English as the *lingua franca* of science even outside medicine and natural sciences, and the dissemination of the idea that research makes progress through national and international competition for excellence.

As scientific research moves forward so quickly, the past performance of scholars cannot be the only yardstick by which excellence is measured, but also the quality and the innovativeness of the research proposal matter greatly. I have witnessed bouts of embarrassment and anger when the external reviews of a proposal by a renowned scholar offer only mediocre ratings (it is perhaps even more likely that this applicant gets higher ratings than the proposal would merit because of his fame). In a more general sense, the question is about the impact of peer reviewing on the development of science.

It is, indeed, important to realize that the peer review is not only a method to allocate research funds, but also a tool of science policy, both national and European. If used by a stagnant research community, peer review can support *status quo* and prevent the emergence of new fields of research, new researchers, and new ideas. Instead, declining fields of research may receive a disproportionate share of always scarce funds.

On the other hand, if designed in a clever manner, peer reviewing can promote the renewal of science and encourage breakthroughs. It could often be useful if the review is not conducted by a “peer”, i.e. a person equal in age and formal competence, but by a scholar from younger generation and with different life history in science. A good peer review can contain fruitful scientific confrontations.

The underlying rationale for peer reviewing organized by a research council is simple; by relying on the impartial judgement of outside experts, the council can pick up the best research proposals for funding. In a small country, in which every scholar in a particular field knows each other, for

good and bad, it is advisable to use foreign experts who can “objectively” evaluate and rank the candidates. This is an impeccable argument which cannot be defeated except by saying that it is too an easy solution.

As said, peer review is an umbrella concept that is used in research funding, universities, scientific publishing , and elsewhere. Even in research councils, it can be organized in a number of different ways. The most primitive solution is, of course, to send the proposals, with appropriate instructions, out to selected experts and ask them to return their comments within a few weeks. The electronic application process has made this procedure even more convenient as the proposals can be sent to reviewers in a few seconds; their physical location does not matter. One can argue that this is the most effective way of soliciting reviews from foreign experts as they do not need to spent time on traveling.

This may not be true, however. In particular in small countries, it seems to be more and more difficult to recruit high-quality experts to review proposals. The reason is simple; the demand exceeds the supply. The practice of international reviewing has spread to most of the EU countries, not to speak of North America, though to an unequal degree and in different forms. Together with the new demand of reviewers generated by the European Commission and the European Research Council, this has multiplied the number of proposals that need to be evaluated. The Academy of Finland recruits annually some 300 foreign reviewers who account for some 80 per cent of all reviewers used. According to my own experience, the growing demand of external reviewers has increased considerably the work load of the staff in research councils as they have to chase the dwindling number, in relative terms, of high-quality reviewers. Occasionally you have to settle at less excellent reviewers as there are few alternatives left.

Money is no solution because most research councils pay very little, if at all, for the review work. Contrary to the common belief, on-site review has its attractions. Even academic people want to meet each other and visit such

remote places as Helsinki. The evaluation process organized in panels has the merit of making the review more reliable as the experts have to sit around the same table for a couple of days and compare notes.

I still think that the panel evaluations, combined with prior written statements, are the most effective way of organizing the peer review process, in particular in the case of multidisciplinary applications that might otherwise be “lost in translation”. On the other hand, the members of the research council may resent the situation if the panels make too specific suggestions on who should be funded and who not. Therefore, the research council might instruct the panel that they are expected “to rate but rank the proposals”.

The assessment of multidisciplinary applications is often considered a major challenge to peer reviewing, and it truly is. The situation may not, however, be as problematic as sometimes argued. For a couple of years ago the Academy of Finland commissioned from Professor Janne Hukkinen and his team an external empirical study on how the Academy has treated multidisciplinary applications. By their criteria as much as 40 per cent of all applications directed to the Academy could be considered multidisciplinary in nature. The happy news was that these proposals fared in the tough competition about as well as unidisciplinary applications; there was no significant difference between them.

While international cooperation is important, the national solutions to peer reviewing are still needed. To alleviate the imbalance between the demand and supply of good reviewers, research councils should carefully assess which funding instruments deserve international reviews. Some types of grant proposals could be evaluated domestically, or even in house, without much harm done for the quality and relevance of research. In the case of the shortage of good assessors, international peer reviewing should be reserved primarily to the “crown jewels” of the research council, such as choosing the centers of excellence.

Yet the national organization of peer reviewing , even if it relies on foreign experts, is becoming partly outdated. There is clearly a major need to start organizing the peer review process in the European scale. This was very much the sentiment in the conference organized by EUROHORCs, ESF, and Czech Science Foundation in Prague in October 2006. The ESF Membership Organization (MO) Forum is one of the concrete results of this conference. It may be too much to say that the Prague conference created a model on how the European peer review system should be organized. But the conference certainly produced an agenda of ideas that need to be weighted and implemented in a pragmatic manner.

I do not quite believe in the possibility to establish a European-wide organization for peer reviewing as there are both political, organizational, and linguistic obstacles to such a solution. There are many intermediary solutions, however. For instance, the Academy of Finland has compiled lists of Finnish experts whose names have been sent, of course by their own consent, to other national research councils which have requested such information. This type of collaboration is obviously a first step to establish a European-wide data base on peer reviews that the research councils and other funding agencies could utilize. There is also the possibility of organizing subregional systems of peer reviewing. The German-speaking region is an obvious candidate for such cooperation, as is also the Nordic region. In effect, the Nordic research councils have decided to start a pilot project on the joint peer reviewing exercise that is coordinated by the Danish Agency for Science, Technology and Innovation.

European Science Foundation approved in its General Assembly in 2006 a new strategy for the period 2006-2010 (so we are, in fact, time wise in the middle of its implementation). The strategy focuses on the goals and activities of the Foundation and streamlines its organization. A new body, Scientific Advisory Board (SAB), was established to improve further the quality assurance work of ESF and integrate more closely the Member Organizations (MOs) and Standing Committees into the mainstream of its activities. The Board, which has met twice so far, comprises the chairs of

the Standing Committees and seven independent members from all main fields of research; many of the members have had close connections both with ESF and Member Organizations. The President and Chief Executive of ESF attend and contribute to SAB meetings.

The general task of SAB is to assess the strategic goals and procedures of ESF and make proposals to the Governing Council on how to improve them. On a more practical level, SAB assesses proposals concerning the topics of Forward Looks and EUROCOREs programs. In both cases, the Standing Committees, representing both scientific expertise and Member Organizations, have a central role to evaluate in the first phase the proposals coming from MOs or the scholarly community. Sometimes, but not nearly always, do the Standing Committees consult external experts. In addition to its practical tasks, SAB is expected to strengthen the quality assurance system of ESF. This requires, in reality, an effort to develop a European peer review system. SAB has only started its work on these issues and there is not much yet to report on the results. Any good ideas are more than welcome.

It is clear that peer review cannot, in any organization, be separated from its other key activities. True, peer review has, in promoting and assuring scientific excellence, a certain value of its own. For the most part, however, it is an instrument to advance the key goals of the organization which, in addition to scientific excellence, may contain such objectives as societal relevance of research and the promotion of careers of young and female scholars. Scientific panels, composed of external experts, often cannot, and perhaps should not, take such factors into account. Their consideration belongs primarily to the decision-making bodies of the funding agencies. Therefore, the evaluations carried out by external experts cannot be necessarily converted directly into funding decisions.

This caveat applies to some extent also to ESF. It goes without saying that scientific excellence should be a necessary condition for funding decisions, but is it also a sufficient one? The emphasis on scientific excellence, judged

by peer reviews is important for the reason that it assures legitimacy of funding decisions in the research communities as it communicates a commitment to fairness and transparency. Other considerations have to be taken into account, however. For instance, Forward Looks are not intended only to promote excellent science, but also explore emerging areas of research where new initiatives would be useful and where research could make a difference in society. The ongoing consultations on Forward Looks between ESF, EUROHORCs, and the European Commission further underline their practical functions.

My personal impression is that for ESF, Forward Looks are an important instrument and need to be strengthened in the future. However, there seems to be also a need to develop a more coherent and effective concept of Forward Looks than we have today. SAB has started to work on this issue to create such a new concept. Today they face at least two challenges. First, the number of proposals for Forward Looks received from MOs and the research community are too few; it is an underutilized instrument. Second, their character varies considerably and many proposals seem to aim at a research program than foresight. These two factors also make it difficult to develop a solid system to review proposals for Forward Looks.

Neither are EUROCOREs an unproblematic instrument in ESF's work. A common complaint is that the cycle from the original proposal to the final decision takes too a long time. While the duration of the cycle has been recently shortened, the process can still be significantly improved. Recent evidence suggests that the interest of MOs in EUROCOREs is declining, especially in some bigger member states, as there are fewer proposals and a weaker commitment to fund projects associated with the program. The problem is not primarily related to the review of proposals, as its quality is considered adequate, but more to the complicated and time-consuming process of arriving at the final decisions and the competition arising from the expansion of ERA-NETs and even European Research Council. Clearly, ESF needs a more flexible instrument to promote research collaboration

among the MOs and research communities. In that effort, it needs close contacts with the MOs and perhaps novel types of collaboration with ERC.