

---

## Opinion

---

### The Dual Role of Peer-Review Systems in Developing Countries

*“Innovation is one of the key goals of China’s current five-year plan, and the country’s universities have come under tremendous pressure to improve and apply their research. This has contributed to an apparent epidemic of fraud, as professors falsify or plagiarize their research to gain promotion or simply to meet societal expectations and political goals.... Critics point out that such fraud is easy to perpetrate and hard to detect because China does not have a rigorous peer-review system: academic boards are often composed of nonexpert officials, and universities are frequently run by administrators whose primary qualification is Communist Party loyalty.”<sup>1</sup>*

The above sums up the roots of a problem now confronting the governments and teaching institutions of Third World countries. These countries have come to realize that they have no choice but to embark upon the path of science. Ignoring for the moment the high attrition rate of their total reservoir of scientists in the form of brain drain,<sup>2</sup> these countries have yet to learn some basic facts, only one of which is scientific misconduct. In this respect, it might be helpful to focus on a number of differences between developed and developing countries. This might lead to an understanding as to how managing scientific misconduct can be used as a leverage in advancing sciences in Third World countries.

A major problem now faced by many scientific journals in industrialized countries, is the sinister efforts of pharmaceutical companies in terms of displaying the good side while suppressing the bad side of their new products when publishing their research results. This difficulty does not, fortunately, exist at the moment in developing countries. Here the principal problem is to detect and control plagiarism in articles submitted by university faculty members, as the situation in China indicates. The immediate question is whether a strong stand should be taken by developing countries against scientific misconduct,

or ignore it as just another unavoidable evil of the development process?

Developed countries have a vast reservoir of experienced scientists, developing countries do not. Lack of a sufficiently large cadre of scientists is a major stumbling block in creating new and good ones. It is the old problem of how to build the machines that build the machines that build the machines.... It can be argued that if developing countries were to take a strong stand against scientific misconduct in the early phases of the game, might they not dampen the spirit of scientific inquiry in their countries, even further retarding the expansion of the number of their scientists?

There is no entrenched culture—as distinct from the history—of science in developing countries. This may explain why interpersonal relationships among scientists readily surface, either in the form of misplaced protection of a colleague’s blunder, or unnecessary obstructionism rooted in jealousies. How would one instill and spread rapidly proper cultural attitudes as regards the sciences in developing countries?

Universities and other higher educational institutions in developing countries are government supported and controlled. This influences their research production in a number of ways. Most important is the fact that knowledge transfer is no longer the only responsibility of faculty members. There must also be an innovative spirit and drive to succeed in competition. When there is no fear of being dismissed on grounds of poor (or even zero) academic performance, there is no impetus to excel academically. Civil service status provides life-long protection, but also blurs the distinction between poor, mediocre, barely adequate, and good teaching. In-built deficiencies of state controlled universities have come to light, now that globalization dominates our lives. How can developing countries even think of globalization when their system of higher education is archaic?

Scientific fraud in technologically advanced countries, seriously and permanently damages the

reputation of the culpable. In developing countries scientific misdemeanor does not carry a lasting and disabling stigma. The individual is protected at the expense of the society. How can one create in developing countries the needed consciousness about scientific fraud, and lower the threshold of its acceptability by society?

Securing research grants is now a major activity among academicians in universities and research institutions of industrialized countries. This has become a serious problem in the clinical disciplines where faculty members devote more time to research and teaching at the expense of patient care. What would be the situation when research activity really takes off in developing countries?

Strange as it may seem, well functioning peer-review systems might just be the solution to problems confronting developing countries that are struggling to enter the science battle ground. They might solve many, but certainly not all, of Third World troubles in this arena:

To begin with: *"Since the beginning of the Industrial Revolution, technological change has been the principal source of economic growth and a rising standard of living. But in the past half century, technological progress has become dependent on scientific advances and their translation to practice."*<sup>3</sup> What is not fully conveyed in this terse message, nor can be fully appreciated by those in a hurry to catch up, is that innate aptitude, hard work, and absolute honesty is absolutely essential in advancing science. These requirements are to science what the four Baconian principles of observation, recording, analysis, and testing are to scientific discovery. To these latter four steps has now been added the final stage of "publishing." And, it is in the preparation phase of a manuscript that scientific misconduct is likely to creep into the picture. Peer-review systems rest on the proven principle that the scientific value of research project and the scientific paper that emanates from that research is more correctly assessed by a group of unbiased experts, than upon the opinion of a single authority. The validity of a scientific work no longer depends on the imprimatur of the commanding professor or head of department. This one function of a peer review undermines the sacrosanct status of many faculty members in traditional institutions.

Traditionally, European universities started off essentially as government agencies. In time, continental Europeans came to believe that it is

their inalienable right to have access to higher education, just like basic public health, public services, and elementary education. These notions were transplanted to their colonies where people now expect, in fact demand, free higher education. This attitude will have to change when it is realized that their governments cannot afford the very high expense of research necessary to be competitive on an international scale. There must be some other body besides the university faculty itself that has to decide objectively as to which research projects should, and which ones should not receive financial support. This line of reasoning leads again to the function of a peer review system operating outside the university system.<sup>4</sup> Looked at from a slightly different perspective, there is no secret behind the fact that unlike governmental universities, private universities can do a much better job at finding, funding, and when necessary, firing faculty members. Professional security of many faculty members at public universities is maintained at the expense of quality of performance. European universities find it hard to relinquish their traditional outlook. This will be even harder for developing countries. Eventually, of course, governmentally supported and controlled universities will come see that to stay competitive in the ever tightening economic ring, they will have to overhaul their system of governance. Pasteur's law of chance favoring the prepared mind, appears to be equally applicable to institutions.

The old university system whereby every faculty member would become a full professor if he (very rarely she) lived long enough without unnerving the chief of department, is no longer tenable. When Tehran University was established some 73 years ago, its chancellor, Professor Charles Oberling from France, established a faculty appointment scheme whereby those professors with a chair, were "permanent," meaning they could not be removed until they died. Instructors, even now, feel insecure until they are assistant professors who develop an inferiority complex until they become associate professors who will then do everything possible to reach the rank of a full professor. This, as we all know, calls for being on good terms with authorities, whoever they might be. What has not evolved over past seven decades is a better and more rational system of controlling passage through academic ranks. Whether it is securing and appropriating research

funds, or appointing faculty members, it should not be the university chancellor, the dean, the head of department, or the minister of education who decides on these issues. A different ranking system should be invented to replace the outmoded patronage system for academic advancement in developing countries. And the real bonus, when a more logical system has been adopted, is that there will no longer be a pressing need to dismantle the old system of government-public university system which is an impossible task to begin with. A workable compromise will have to be reached.

But, that is not all that a peer-review system in developing countries can do to promote and facilitate forward and upward movement of science in their countries. All sorts of options and avenues have been suggested whereby resource-poor countries can contribute to the total sum of scientific knowledge in the world.<sup>5</sup> All of these proposals are in very general terms. The one specific step peer-review organizations in developing countries can take in getting science off the ground in their country, is to identify, expose, and censure scientific misconduct. There are only two caveats: one is that peer reviewers not be appointed by a governmental agency, and the second is that they do not receive any remuneration for their efforts. The second stipulation needs explaining. A judge who never receives any money is less likely to be bribed than one who is on a meager salary.

Can one say that what faith is to religion, honesty is to science? Intellectual integrity in developed countries came after science had been established. Now, intellectual integrity has to be introduced from the very start in developing countries, or else whatever in the sciences takes off into a flight, will promptly crash to the ground. There can be no shortcuts and no foppery. Much worse, of course, is blatant cheating, usually in the nature of fabrication, falsification, or plagiarism. The origin of this last word goes to show that such misconduct has a history of at least 20 centuries behind it. And doping, as practiced by athletes goes to show that this behavior is second to human nature when people are under stress to succeed in competition. While in sports, the doping athlete commits self-elimination; in the sciences such misconduct harms countless innocents. Hence the need to detect and punish guilty faculty members from the very start.

Now, the concept of ranking of faculty members is too widespread and too deeply

ingrained to be disregarded. What has become archaic is the pre-World War II system whereby the most senior professor would arbitrarily decide who is going to have a promotion and when. Sooner or later that system will have to be replaced by a more objective and valid one. There is no other logical arrangement except through scientific publication.

Some years ago I heard the apocryphal story of the selection committee of a Swedish teaching institution using a simple weighing scale in deciding which candidate had the greater number of publication—the assumption being, perhaps, that a more prestigious journal would use heavier glossy paper! If appointment rests on the number of published articles, promotion is soon to follow the same trend. It is here that a rigorous and vigorous peer review system, once its integrity and objectivity has been recognized, can be of enormous help in separating honest scientific work from not-so-, or even dishonest, work.

In the final analysis, peer-review organizations in developing countries will have to assume a dual role: a) passing judgment on the scientific merits of submitted articles, and b) catching falsification, fabrication, and plagiarism. Both are difficult and onerous tasks. But both can be enormously helpful in allowing developing countries to advance as rapidly as possible along the path of international science.

---

Farrokh Saidi MD

Department of Surgery, Modarress Hospital, Shaheed Beheshti University of Medical Sciences, Tehran, Iran.

Telefax: +98-212-293-8051,

E-mail: saidif@ams.ac.ir.

Accepted for publication: 12 April 2007

## References

- 1 Melvin S. China's college revolution. *The Wilson Quarterly*. Autumn 2006; 37 – 44.
- 2 Wooldridge A. The battle for brainpower. *The Economist*. October 9, 2006. Available from: URL: [http://www.economist.com/surveys/displaystory.cfm?story\\_id=7961894](http://www.economist.com/surveys/displaystory.cfm?story_id=7961894).
- 3 Levin R. World of knowledge. *Newsweek*. August 21, 2006. Available from: URL: <http://www.msnbc.msn.com/id/3032542/site/newsweek>.
- 4 David, P. The knowledge factory: a survey of universities. *The Economist*. 1997; **345**: 1 – 22.
- 5 Gupta V. Research, publications, and the developing world. *Lancet*. 2007; **369**: 273.
- 6 Smith R. Research misconduct: the poisoning of the well. *J Roy Soc Med*. 2006; **99**: 232 – 237.
- 7 Hall GM, Editor. *How to Write a Paper*. London: BMJ Publishing Group; 2003: 154.