Journal cost vs quality

The correspondence on 'cost of journals vs quality' by Rajagopal[1] was interesting to read. There has been much debate on the rising costs of subscribing to high impact factor journals and publishing quality research papers in them. It is an undisputed fact that when an institution reels under fund crunch undoubtedly the library budget is axed first. This is more so in the case of privately funded institutions and libraries. As for publishing quality research papers in high-impact journals that are obviously the 'pay for publishing' models, when preparing a project proposal scientists should have sufficient budget under 'publications' rather than under 'contingencies'. The cost of getting a research paper published in high-impact journals is sometimes as high as 4–5 lakh rupees, which cannot be covered by the contingency budget. Then again, when one has to read papers published in such journals, one will have to subscribe to the journal. In this process, it is the publisher who makes a huge profit out of someone else's intellectual property/products. The modern philosophy of library profession is free and open access to knowledge resources. This philosophy has given rise to the Open Access Movement (OAM) and Open Access Publishing (OAP) models[2]. Sharing resources in consortium mode is also one of them. There are a number of consortia functioning in the country. After studying most of the existing consortia, we, at Tocklai Experimental Station, felt that the plantation crops research institutions in the country can join hands to form a special consortium[3] to subscribe to a set of core journals and save substantially. A saying goes 'Coming together is a beginning; keeping together is progress; working together is success'. We have mooted the idea to form a Consortium of Plantation Crops Research Libraries, viz. PCRL Consortium[4]. In our maiden effort we contacted, to solicit the views, about 20 research institutions which are engaged in plantation crops research. CPCRI, ISPC, IISR, NRCC, RRI, CCRI, SPOPRD, ICRI, NRCOP and ICAR, were also contacted and invited to join hands in this venture. However, except a few, others did not respond.

1. Rajagopal, V., *Curr. Sci.*, 2008, **95**, 148.
2. Joshi, G., In Open Source Movement: Asian Perspective, IASLIC XXII National Seminar, IIT Roorkee, 13–16 December 2006, pp. 91–106.
3. Joshi, G., In *PLANNER 2005*, 10–11 November 2005, pp. 288–293.
4. Joshi, G., In International Conference on Semantic Web and Digital Libraries, DRTC, Bangalore, 2007; https://drtc.isibang.ac.in/handle/1849/377

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Meeting goals of a Ph D degree

Two obvious options after earning a Ph D degree are to stay in academia as a research scientist or faculty, or to leave academia for a position in industrial research or elsewhere. Today working in either of the sectors is equally challenging. It is helpful to have a clear idea a priori of one's long-term goal after completion of the Ph D. This is important in view of the current refrain that most degree holders are unemployable[1,2]. With the opening up of the economy in India, the scope for a Ph D holder in different disciplines is limitless.

As far as possible career goals should be planned and calibrated during graduate studies. One should ponder over one's interests and motivations, talk to peers and mentors, weigh the skills and aptitudes, assess the various options and then design the ultimate goal. Choice of the laboratory for a Ph D degree is critical. If there are a couple of options one must opt for the institution which has a strong record of regularly publishing in high-impact journals. It is better to have one publication in a high impact journal rather than many in nondescript or low impact fora.

When it is about time to finish the third year of a Ph D programme, one should consider critically the career algorithm after earning the Ph D degree. This helps itemize skills and strong points, both academic and non-academic. By putting oneself in the chair of a potential job candidate, professional profile, personality and suitability for a position can be gauged to equip for the job. For example, even while working for an academic institution, one can equip oneself to some extent for an industrial position by taking initiatives in non-scientific as well as scientific matters, even if it means being a little pushy. It is a good idea to take on some responsibility to feel what it is like to manage a research group.

It can be difficult to have a clear idea in the beginning of Ph D research, especially when there is little exposure to the various options. To make the best out of the training, there has to be a joint effort by the Ph D candidate as well as the supervisor and the institution. Institutions can foster career development by providing opportunities to learn about career options through courses and seminars. Should one choose academia or industry? That is a question that only an individual can answer. Mike Owen, Senior Vice President at GlaxoSmithKline, states in the *New Scientist*, 'the mentality that the industry is meant for people who cannot cut it in academia, no longer holds true'. Both the sectors are driven by high-class science. Transition from academia to industry and back again is possible, with few barriers. In academia, one has the freedom to explore unusual or controversial ideas with less economic pressure. However, the current climate of shrinking budgets has ended the 'ivory tower academic'. All research must be justified and is competitive. In the industry, economics comes to the forefront.

An important concern is to meet the expectations of hiring authorities in the industry, if one prefers to move to industry after a Ph D. Pharma and biotech industries in India are trying to compete with the best in the world. So, they are

trying to have the most stringent norms for hiring human resource for R&D.

Industry expects the prospective candidates to have the following skills:

- A sound research base, including capacity for troubleshooting, problem-solving skills and systematic approach towards any problem. They are expected to be able to come up with specific examples demonstrating each of these skills.
- Effective communication and lucid presentation skills.
- Another important desirable attribute is openness to accept or reject an idea, on the basis of sound logic and ability to put forward an idea in the light of facts and figures to make it cogent.
- Ability to work in a team or coordinate and collaborate with different institutions is highly desirable, which can be judged from the individual's role in publications.
- They are expected to be resourceful. They should have demonstrated their ability to do the job or get it done. They should have the knack for 'finitiative' that is, taking things to a logical end in a time-frame.
- They should have a drive and instinct for initiative.
- The most important characteristic that a candidate should possess and demonstrate to the prospective employer is an insatiable curiosity and a burning desire to learn and deliver.

1. http://nihongobashi.blogspot.com/2007/11/indian-youth-are-simply-unemployable.html
2. Krishnamurthy, V., *Business Line*; http://nmcc.nic.in/pdf/business_line_30apr2007.pdf

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Multiple cropping to increase agrobiodiversity and sequester carbon dioxide

The use of chemical fertilizers in the past 6–7 decades has left the soils less fertile and filled with residual pesticides and other inorganic chemicals. Before the advent of chemical fertilizers we were happy with organic agriculture. One of the main practices in organic agriculture is that this system does not believe in monoculture but strongly advices mixed crops. The advantage of mixed cropping is that it will ensure some income even if one of the crops fails due to pests, diseases, drought or any other natural calamity. If no damage occurs, additional income could be generated from the trees. A few trees planted intermittently or along the borders is part and parcel of mixed cropping and the same would provide some additional income, a boundary, and could harbour birds and other predatory organisms which could check pests. Mixed cropping also promotes agrobiodiversity[1].

Mixed cropping would also absorb more carbon dioxide as higher plant diversity in the form of trees and the main crop would mean more efficient conversion of carbon dioxide to organic form during photosynthesis, thus reducing the chances of global warming and climate change. A few vegetables, fruit-producing trees, legumes, climbers, etc. could all be grown in a unit area with trees providing a boundary. Different designs on the distribution of this kind of plant diversity can be formulated, but the basic idea is to maintain high agro-biodiversity and absorption of carbon dioxide in the atmosphere. Is it not prudent to try this method, i.e. mixed cropping with trees and other plants instead of surrendering to unwanted genetically modified crops? If we can do wonders with existing varieties, is it necessary to pump in money unnecessarily for genetically engineered crops just to show that we have a Department of Biotechnology and that it needs to be kept busy with some fashionable research activities?

1. Shiva, V., Pande, P. and Singh, J., *Principles of Organic Farming. Renewing the Earth's Harvest*, Navdanya, New Delhi, 2004, p. 189.

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Variables unaccounted for in global warming and climate change models

From a personal perspective, Balaram's editorial on 'Carbon dioxide, climate change and geoengineering'[1] resonates at several levels. There is no replacement for wisdom tempered by long experience and deep understanding. His introduction of the subject by describing the activities of Charles Keeling reminds me of lessons learned from my association with Hans Suess in the 1970s, which connect quite strikingly to Balaram's statement,' . . . based entirely on simulations'.

Suess made numerous discoveries of note. For non-exhaustive examples, he co-discovered the shell structure of the atomic nucleus, which won for his colleague, Jensen, a share of the Nobel Prize in physics[2]. In 1957, Revelle and Suess published one of the seminal papers warning of the inability of the oceans to absorb carbon dioxide at the rate being produced, thus leading to the possibility of global warming[3]. Although radiocarbon (^{14}C) dating was the Nobel-Prize winning