

Advances in information access and science communication*

A conference on the advances in information access and science communication was held to pay tribute to Eugene Garfield, information scientist extraordinaire and lover of music, on his 75th birthday, on 16 September 2000. Fittingly, it began with a recorded invocation song by M. S. Subbulakshmi, one of world's greatest musicians, whose birthday also falls on the same day!

P. C. Kesavan (M. S. Swaminathan Research Foundation, MSSRF) who welcomed the gathering dwelt upon the ever-increasing difficulties in obtaining the information one needs, especially in developing countries, thanks to tremendous increases in journal subscription prices and database costs and pleaded for urgent steps to be taken to bring down barriers to accessing scientific and scholarly information.

M. S. Swaminathan (MSSRF), in his presidential address, recalled his association with Garfield and *The Scientist*, the newspaper for scientists founded by Garfield. Paying rich tributes to Garfield for the many contributions he has made over the past five decades in creating the tools that help scientists and scholars alike in finding the information relevant to their work, Swaminathan expressed hope that the conference would come up with some concrete suggestions towards meeting the challenges faced by scientists and scholars, especially in developing countries, in getting the information they needed. Subbiah Arunachalam, the conference coordinator, introduced the theme of the conference. He said that scientists and scholars in India faced two major problems: getting the information they need at a reasonable cost and getting their work noticed and used by others around the world.

Inaugurating the conference, P. Balaram (Editor, *Current Science*), spoke about what information access and science communication meant to him as a scientist and teacher and how changes in technology are transforming

both of them. Poor quality information and information overload, he said, might eventually result in much scientific work remaining unnoticed. Balaram was concerned with the improper use of citation and impact factor data by many in the library profession in India and the harm it could do to scientists, when such an exercise is adopted by funding agencies and research councils.

Alan Gilchrist (Editor, *Journal of Information Science*) traced Gene's multifaceted life from early childhood in New York to his current status of an accomplished world leader and elder statesman in the fields of librarianship, information science and scientometrics. He narrated Garfield's many professional achievements and brought out the greatness of the man and the significance of his accomplishments. Gene Garfield, he said, has contributed both to the theory and practice of information science and to solving the problem of information overload. From humble beginnings, Gene gained three degrees (in chemistry, information science and structural linguistics), created real innovations in information science, established a successful business, founded a newspaper unlike any other, and enriched the field of study now known as informetrics.

V. Balaji (MSSRF) spoke about how state-of-the-art information and communication technologies could be used to provide information that the rural poor need and could use to empower themselves. He narrated his group's experience in working with people in a cluster of villages in the Union Territory of Pondichery in the past two years.

S. Venkadesan (Library and Information Services, IGCAR, Kalpakkam) explained the different initiatives he and his team had taken in the past couple of years. The library is automated to a large extent, the scientists could access much of the information they need from their own desktops, and they have subscribed to electronic access to a large number of journals (through *Science Direct*).

A. Ratnakar (Raman Research Institute, Bangalore) narrated how he has been serving users belonging to three

different areas, viz. astrophysics, theoretical physics and liquid crystals, with a limited budget. Ratnakar spoke about interlibrary cooperation among a number of science libraries in Bangalore and how keeping in constant touch with one's clients could enhance one's capacity to serve them better.

N. V. Sathyanarayana (Informatics India Ltd) spoke about the important role played by intermediaries such as publishers of journals and databases, vendors and subscription agents and said all the talk about deintermediation was misleading. This was hotly contested by Steven Harnad, a champion of the Self Archiving Initiative and a professor of cognitive science at the University of Southampton. Sathyanarayana gave several business models operating in the transfer of information from the creators of information to the ultimate end users and said which models would be successful depended on multiple factors, such as people and technologies. Harnad had other views. He said that currently information created by scientists, refereed and edited by scientists and used by scientists is virtually held as hostage by commercial publishers and their cohorts. He was indeed on a crusade to free the information so that all scientists can have free and unhindered access to all relevant information.

In his talk, Harnad asserted confidently that all refereed journals would soon be available online. Most of them already are. The entire literature will be interconnected by citation, author and keyword/subject links, allowing ease of access and navigability. Successive drafts of pre-refereeing preprints will be linked to the official refereed draft, as well as to any subsequent corrections, revisions, updates, comments, responses and underlying empirical databases, all enhancing the self-correcting and interactive nature of scholarly and scientific research and communication in remarkably new ways. New scientometric indicators of digital impact are also emerging (<http://opcit.eprints.org>) to chart the online course of knowledge. But there is still one last frontier to cross before science reaches the optimal and the inevitable: Just as there is no longer any need to be constrained by the

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access-blocking restrictions of paper distribution, there is no longer any need to be constrained by the impact-blocking financial fire-walls of Subscription/Site-License/Pay-Per-View (S/L/P) tolls for this give-away literature that its authors have always donated for free (and its referees have refereed for free), with the sole goal of maximizing their impact on research (by accessing the eyes and minds of fellow-researchers) and hence on society. Generic interoperable (OAI-compliant) software is now available for institutions to install, so their authors can self-archive their refereed papers publicly in Auto-Archives (<http://www.eprints.org>) for free. This will usher in the optimal and the inevitable: Journal publication will down-size to just implementing the service of Quality-Control and Certification (QC/C, through peer review and editing), which will be paid for up-front at the author-institution end, out of only a small portion of the annual savings from the cancellation of all S/L/P tolls at the reader-institution end. Journal publishers are best advised to prepare for and accommodate the optimal/inevitable solution for science in the new era of 'Scholarly Skywriting', rather than try to delay or block it via restrictive submissions and copyright policies that merely amplify the conflict of interest inherent in the revolutionary possibilities for scholarly and scientific communication, opened by the Post-Gutenberg Galaxy.

Aparna Basu (NISTADS, New Delhi) and Subir Sen (Calcutta University) gave talks in the area of scientometrics, an area in which Garfield has played a central role. Basu suggested the creation of bibliographic and full-text databases

of Indian science. Such databases are not only important for research evaluation, but are also a memory bank for increased cohesiveness. Sen attempted to model the citation process, indeed a difficult task. In an overarching effort Sen attempted to synthesize the ideas of Gerald Holton (themata), Richard Dawkins (memes) and Leo Egghe (IPP).

Three papers were concerned with the use of information in medicine, government and industry, respectively. V. Mohan (M. V. Diabetes Specialities Centre) spoke about the development of an electronic database on diabetic patients' history and medical records that his group had created in collaboration with a Danish group and showed how such data could be of immense use in designing large-scale programmes to deal with growing incidence of diabetes. S. Vaithianathan (Larsen & Toubro Ltd, Chennai) gave an account of how a small group of librarians could support the technical staff of a major engineering and construction company. V. S. R. Krishnaiah (National Informatics Centre, New Delhi) discussed the steps being taken in India to bring about greater transparency in governance through creation of databases based on government information such as land records.

The conference ended with a panel discussion. Harnad emphasized that Open Archives (or self-archiving) can solve at once, both the problem of inadequate access to information and poor visibility of work done in developing countries. He urged India to take up Open Archives initiatives. Gilchrist said that there is much confusion in what is meant by information. He said that with all the new arrivals – Internet, the World Wide Web, knowledge manage-

ment, etc. – one has realized the importance of the basic tools of the librarian's trade, viz. classification, cataloguing and organizing large collections. He stressed the need for information professionals to adapt themselves to the changes that are taking place. Sunder Singh listed the different initiatives DSIR and NISSAT have taken and told that NISSAT was keen to work together with scientists and information professionals.

The conference is likely to lead to self-archiving by many Indian scientists and the establishment of an Open Archives server in India.

The conference recommended that: (i) Communication between scientists, technologists and industrialists, and between science administrators, sociologists and economists be strengthened through such means as improved information and communication technologies, social networks, collaboration between academia and industry, incentives to work on applied research, and introduction of specialized gateways on the Internet; and (ii) Self-archiving (of preprints), with OAI compatibility, by both individual scientists and institutions be encouraged and facilitated.

It is clear that the government has a powerful role to play in all of these initiatives, and in devising and supporting a national information policy to advance such initiatives.

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Himalayan Biodiversity 2000: Options for development*

In order to take stock of existing knowledge and gaps on biodiversity-related issues and to maintain a continuum in

interaction among various stakeholders on the subject matter, a three-day National Workshop on 'Himalayan Biodiversity 2000: Options for Development' was organized. Information management, recognition of interface between scientific research and peoples' interest, disseminating packages, peoples' participation, policies and implementation were major issues addressed during the workshop. These issues were broadly

categorized into the following objectives: (i) to develop information management systems catering to scientific community and stakeholders; (ii) to develop state-of-the-art methods and approaches for assessment and maintenance for evolving sustainable use strategies; (iii) to develop approach of biodiversity conservation compatible with development; (iv) to involve stakeholders in better understanding of poli-

*A report on the three-day National Workshop on 'Himalayan Biodiversity 2000: Options for Development', organized by Conservation of Biological Diversity Core Group of the G. B. Pant Institute of Himalayan Environment and Development at Kosi-Katarmal, Almora during 2–4 November 2000.