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India needs legislation for accessing publicly funded research

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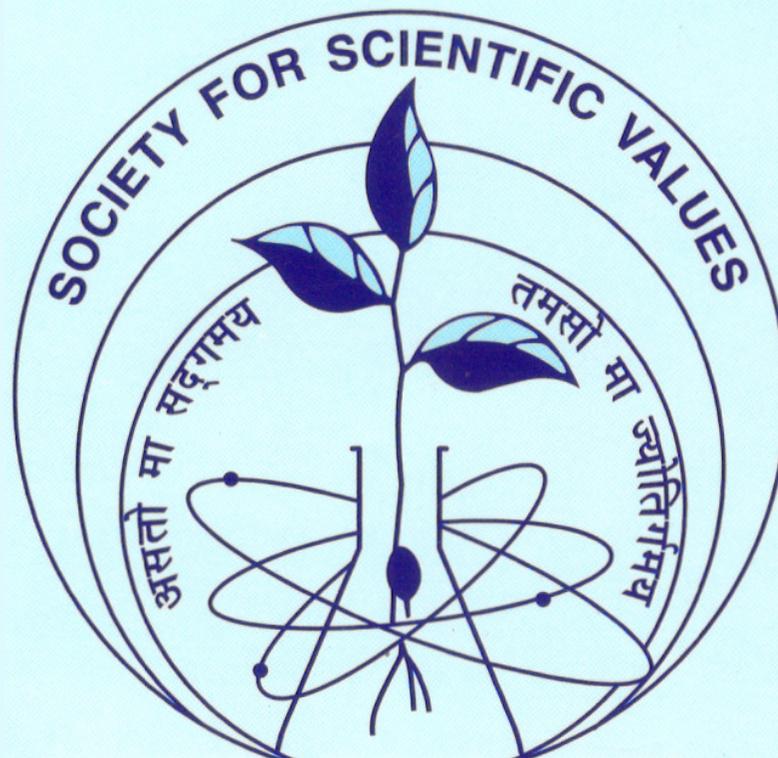
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Let Truth Prevail

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India Needs Legislation for Accessing Publicly Funded Research

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The Union Ministry of Science and Technology has introduced the Protection and Utilization of Public Funded Intellectual Property Bill, 2008 in Rajya Sabha. After the enactment of this bill, any recipient of government grants for the purpose of research and development shall seek patent protection of the intellectual property generated and commercialize the same within the stipulated time. This bill is being discussed by various intellectuals and agencies in India and abroad. I am not going to discuss about it in the paper but wish to discuss more about the access to the output published in peer-reviewed publications from publicly funded research.

The open access advocate from India, Prof. Subbiah Arunachalam (1998), said in a conference in Egypt that a researcher in the developing countries needs to achieve a lot more to win recognition than in the developed countries. This is true when we compare the working conditions and access to the latest technologies, methodologies in today's unequal world. The international or foreign scientific journals, which are vehicles of scholarly communications, are becoming too expensive to be subscribed by Indian academic institutions. There are 559 research institutions and universities (DSIR Directory, 2007) in which great amount of research and development (R&D) activity are taking place and all of them need access to the scientific developments of the world. However, this is not happening because, the institutional libraries are not able to afford for the procurement of foreign journals. On the other hand, in the country, there is no proper and faster mechanism to communicate between the research institutions and universities. This lack of communication would lead to the duplication of the work and may not get more deliberations on the R&D output. There is no doubt that the scholars are publishing their articles in peer-reviewed journals but they are not widely reaching to the other scholars in the same disciplines or various other disciplines though we all are aware that R&D tasks are better accomplished by multi disciplinary approach. Added to this, the promotion and recognition policy of the academic and the research institutions in India compels the scholars to publish in so called high impact journals which are closed and toll access journals. Instead of citation of the publication, the institutions are relying on the impact factor which may not be the true representation of the recognition of the work. Any one has to pay about USD 10 to USD 40 per article to access the papers in high impact factor journals. These journals, apart from the cost, impose lots of copyright restrictions for using and sharing with peers resulting in negligible dissemination of the knowledge among peers and public. The most

popular impact factor analysis is done by Thomson Reuters Inc. However, in its master journal list, many of the Indian journals are not included as they are not fitting into their criteria of evaluation. To address this issue, National Academy of Agricultural Sciences (NAAS) had rated 1600 journals of India and abroad on 1 – 10 point scale. However, NAAS has rated 6 and above for the impact factor journals and below 6 were given to Indian journals which are not having any impact factor. The scholarly journals which are published by various scientific societies formed for advancing the interest of their discipline are not into the master journal list. A survey on scientific societies in agricultural sciences by Aneja and Sridhar (2009) reported that only few societies have websites and all of them publish peer-reviewed journals as 'print only journals' and some of them are making them online but, as closed & toll access in association with commercial content publication and managers. The scholarly societies are not embracing the latest Internet and web technologies for the publication online and to cut shot the printing expenditure.

The NAAS has bought guidelines for the improvement in the management of the society and quality of the publications. The scholarly societies are not aware that when journals are electronic, they are easily accessed and shared with peers and everyone in the world on the Internet. The articles when enriched with the hypertext links for the references and other figures and table, will enhance the quality of the information. In one of the study by Lawrence (2001), it was shown that the articles which are freely available online are cited more frequently than those which are traditional print and closed access. The members on the executive council (EC) of scientific societies are not giving much attention to information technologies which may be due to lack of technology infrastructure for hosting and maintenance of the online publications. Many of the societies' EC members had expressed that they would like to go with print journals only as they have to distribute to the institutional subscribers and it costs the same if they print one or 1000 journals. They had also expressed that the authors would prefer to see their paper printed in a printed copy and own that printed copy with pride. This argument might not be true when we seek the authors' preference. Everyone wish to see that his/her paper is cited more. The members of the societies should understand that embracing the open source technologies and Internet would remove all the restrictions and barriers for the wide distribution of the journals and make the peer-reviewed literature immediately accessible, searchable, and reusable to anyone in the world which is what called as Open Access (OA).

"The scholarly literature which is digital, online, free of charge, and free of most copyright and licensing restrictions is known as Open Access" (Suber 2004).

The OA can be provided in two ways: By placing one's copy of each article in an Open Access Repository (OAR) which is regarded as Green OA or by publishing articles in Open Access Journals (Gold OA). Societies for the

present time may keep aside the question of how feasible to alter their journals' access policies. There is now a broad consensus that widespread open access to scientific publications is good for scientists and good for science (Doyle et al., 2004). Richard Stallman (2002) in his collections of essay says that when copyright impedes the progress of science, science must push copyright aside. The transition to electronic publishing from print will certainly reduce the gap between the developed countries and the developing countries. Now in most of the developing countries, there are efforts being done for the increase in the necessary infrastructure (computer terminals, networks, communication channels, bandwidth, etc.). This should give an opportunity for the world wide distribution of knowledge produced.

According to TRAI (2006) report, there are 153 Internet service providers (ISPs) in operation today in India, giving the broadband facility up to 4 mbps and there are free & open source software for the online journal publication and management. With an estimated forty-eight million users, the Internet community in India is the fifth largest in the world. The number of internet users worldwide is expected to touch 2.2 billion by 2013 and India is projected to have the third largest online population during the same time, (IGF report, 2008). An estimated 38 percent of all Internet users in India are "heavy users" and spend an average of 8.2 hours per week on the Internet (IAMA Report, 2006). A number of journals now are receiving manuscripts by E-mail but it is sent to reviewers as hard copy by post. As a result, there is a considerable time lag between the submission and publication.

Under the Right to Information Act 2005, information including commercial confidence, trade secrets or intellectual property is exempted from the disclosure unless the competent authority is satisfied that larger public interest warrants the disclosure of such information. However, in the case of public funded research, the information already published could be made available for the public good. As said earlier, there are now many free & open resources available to make research results freely available online to the whole research community. The author pay model has been implemented by various other societies whose journals were printed only traditionally and subscription based and transformed themselves into online and open access journals. Adaptation of such model would bring back the eroded revenue if they transform into online and open access. The societies can generate funds from other activities and initiatives at their annual meetings. They should understand that the revenue is not solely dependent on subscription. However by making use of recent innovations in online journal production and dissemination, the publishing costs could be reduced dramatically. The Public Knowledge Project (PKP), Canada, had developed Free & Open Source Software, Open Journal System (OJS) which would increase the efficiency of electronic journal publication and management. The OJS software is free and has online support. There are societies formed such as Open Knowledge Society, for assisting the societies in transformation of

their traditional print journal into online open access journal. The OJS journal management and publishing system and Open Archives Harvester (OAH) metadata indexing system, the scholarly communications could be used for expanding and improving the access to research. There are currently about 1300 repositories around the world. The contents of all repositories are being indexed by Web search engines such as Google and Google Scholar and creating online Open Access databases of freely-available global research.

On the other hand, to make easy for sharing the copyright material legally, the Creative Commons (CC) provides free tools that let authors and scientists to easily mark their work with the freedoms they want it to carry and can use CC license to change their copyright terms from "All Rights Reserved" to "Some Rights Reserved". The Science Commons apply the philosophies and activities of Creative Commons in the realm of science. It aims to clear the legal and technical pathway for accelerating discovery worldwide with its open licenses for copyrighted works, building open source platforms for knowledge management and data visualization. Current publisher policies on self-archiving and copyright are detailed on the SHERPA project of United Kingdom, OAKList project of Australia and SCPJ of Japan. As per the ROMEO colour, the journals with archiving policy, 'Green' can archive pre-print and post-print or publisher's version/PDF, 'Blue' can archive post-print (i.e. final draft post-refereeing) or publisher's version/PDF, 'Yellow' can archive pre-print (i.e. pre-refereeing) and 'White' archiving not formally supported. A similar kind of database for the societies' copyright policies had to be developed in India with the assistance from National Informatics Centre (NIC).

The open access (OA) movement gained momentum with the Budapest Open Access Initiative (February 2002), Bethesda Statement on Open Access Publishing (June 2003), and Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (October 2003); these were the most central and influential milestones in the OA movement. The epicenter for the Open Access movement is Bangalore, India. The Indian Institute of Science and Indian Academy of Sciences Bangalore were in the forefront of OA movement in the country. In the country, researchers have generated extensive information. This information is to be of optimal use by all scientists working; all this data must be collated and made accessible. Therefore, a major focus should be to develop information management systems for providing the required data capture, storage query and access interfaces to meet the demands of scholars. For this, Data Portability project is working to reuse the said data across interoperable applications. We all know that the scientific innovation depends on finding, integrating, and re-using the products of previous research. Recent developments in Web technology particularly those related to the publication of data and metadata can very well be used to provide semantic enhancements to journal articles for 'lively' interactive access to content within the mainstream process of scholarly journal publishing. This semantic enhancement of scholarly

journal articles is being undertaken by leading publishers like PloS Computational Biology. Provision of live Digital Object Identifiers (DOI) and hyperlinks, semantic markup of textual terms, with links to relevant third-party information resources, interactive figures; a re-orderable reference list, a document summary containing a study summary, a tag cloud, and a citation analysis and with published downloadable spreadsheets containing data from within tables and figures can enrich the provenance information.

There is a hard notion that IPR had tried to block the further innovation and research and development. This is somewhat true and many researchers who are engaged in creation of new knowledge had to look at gaining access to research tools which are protected by patent rights and various other licensing terms. Falling in the line with Free Software Movement and GNU Manifesto/Philosophy, an open source movement in biology, called the Biological Innovation for an Open Society (BiOS), was initiated by molecular geneticist Dr. Richard Jefferson, founder and CEO of the CAMBIA in Canberra. Dr. Richard Jefferson has shared his discovery of enabling technology “GUS gene” (beta-glucuronidase gene), an indicator for gene expression, for the research and development in biomedical and agricultural biotechnology. BiOS provide biotechnology with its own free ‘operating system’: a public-domain toolkit and associated patents, aimed at freeing researchers worldwide to innovate without restriction, and without being forced into partnerships or unfavorable royalty agreements. These patented techniques in core toolkit are into a protected ‘commons’, protected by licenses and other contracts, as biotechnology researchers and agencies around the world contribute new ideas and refinements. The CAMBIA – BiOS’ Protected Commons (PC) provides a secure platform where discussion concerning an invention or improvement can take place without the invalidation of future patent applications, or the misappropriation of information by third parties. By placing patented and patentable technology in a protected commons, patents can be exploited for enabling use of technology by others instead of preventing it. Under this, both patent owners and licensee users of the technology share improvements whether patented or not. Owners of improvements may patent them under confidential, non-public disclosure of improvements under the agreement in legal condition of maintaining the improvements accessible to all other licensees. Under BiOS agreements, technology is made available royalty-free for use in research or in creating products, by anyone in any country, based on a legally binding agreement. The Open Source Drug Discovery (OSDD) of CSIR is also under the Protected Commons.

All the journals of the Indian Academy of Sciences (IAS) and Indian National Science Academy (INSA) are open-access journals. Recently, Council of Scientific and Industrial Research (CSIR) nationally and International Crops Research Institute for Semi-Arid Tropics (ICRISAT), Consultative Group on International Agricultural Research (CGIAR) internationally, has adopted Open

Access Policy and this should lead the way in adopting a policy on Open Access by all the Publicly Funded Research Institutions (PFRIs) in India. In the special session on Open Access held during the 93rd Indian Science Congress at Hyderabad, proposed "Optimal National Open Access Policy" by which the authors of research papers resulting from PFRIs such as Department of Science and Technology, (DST), Council of Scientific and Industrial Research (CSIR), Department of Biotechnology (DBT), Indian Council of Agricultural Research (ICAR), Indian Council of Medical Research (ICMR) etc. shall make their results available for free by depositing into an institutional open access repository immediately upon acceptance for publication. This should be high on the agenda of leading institutions that are concerned with putting intellectual worth of the country on the world map. The second vehicle of achieving OA, Institutional Repositories (Green OA) is an important vehicle for the developing country like India through with the research institutions and universities can show case the R&D output to the world. However, the adoption of this green route OA in India is slow; out of the 1300 repositories of the world, only 33 are in India (OpenDOAR) There is a great need for the legislation in India on the terms of National Institute of Health (NIH) policy of USA without which, the order of making open access to the public funded research is slow to achieve. The Bayh-Dole Act of 1980 of United States of America (USA) gave inspiration to the government of India for the introduction of the "Protection and Utilization of Public Funded Intellectual Property Bill 2008" in the Rajya Sabha. Now with the recently introduced "Federal Research Public Access Act 2009" in USA should inspire the government for introduction of a similar kind of bill or incorporation of "Open Access" into the draft of Protection and Utilization of Public Funded Intellectual Property Bill, 2008 which will make mandatory open access to all the peer-reviewed publications that had emerged funded the projects funded by government/public grants in the Institutional Repositories of Public Funded Research Institutions in India. The Organization of Islamic Conference (OIC) had proposed for the creation of Islamic Citation Centre (ISC) to manage the science citation and to analyze the research performance with aim to improve the research performance and output (Sawahel, 2008). This would help science policymakers in assessing the return for research and development investment by measuring key research performance indicators such as number of publications and patents per researcher, as well as number of publications and patents relative to GDP and amount of money spent on R&D. The Ministry of Human Resources Development (MHRD) had already approved for the deposition of Ph.D. thesis in the open access repository and gave guidelines for the assessment of the researcher on the performance of research output.

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