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India, Open Access, the Law of Karma and the Golden Rule

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ABSTRACT

India needs to adopt a national Open Access self-archiving mandate for all of its research institutions and funders. The principle is simple, it is already embodied in India's Law of Karma as well as in the West's 'Golden Rule': 'Self-Archive Unto Others As You Would Have Them Self-Archive Unto You'. If India sets the example, by officially adopting and implementing this rule, India's own research access and impact will be maximised, the rest of the world will follow India's example, and research progress worldwide will be the beneficiary.

Keywords: OA, self-archiving, S&T, citation impact, OAI, India

India is peculiarly well positioned to help herself while helping the entire planet as well, insofar as scientific research is concerned (Arunachalam 2006; Suber & Arunachalam 2005). There are Haves and Have-Nots in every domain, and research is no exception: Some have more access to laboratories, equipment, grants, and research literature, and some have much less. Laboratories, equipment, and even research funding are *analog*. They are physical resources that are finite and unequally distributed. But the research literature is *digital*; hence, both in principle and in practice, it could be made freely and equally accessible to one and all (Harnad 1995). And very much hangs upon its equal distribution, because research productivity and progress depend critically

on researchers' having full access to current and past research findings. Those are what current and future research is built upon, and from (Houghton & Sheehan 2006).

About 25,000 peer-reviewed research journals exist across all fields of science and scholarship, the world over, in all languages (Ulrichs Directory). They publish about 2.5 million articles a year. Access to those articles is very unevenly distributed. There are Haves and Have-Nots among the planet's universities and research institutions, but even the Haves can only afford a fraction of the whole. Even Harvard, the university with the largest journals budget of all, cannot subscribe to all journals, and most other universities have far smaller journal budgets (ARL Statistics).

Yet the irony is that the authors of all those articles (researchers) have always given them away for free (Harnad 2001). Researchers give their articles to their publishers, asking for no fee or royalty from their sales in return; researchers also give their articles away for free to anyone who writes to them requesting a reprint: In paper days this requesting and sending was done by mail (Swales 1988); in online days it is increasingly done by email.

To Indian researchers, requesting reprints by mail has always been vital, as India is of course very much on the Have-Not end of the world's journal subscriptions. Requesting and sending reprints certainly comes nowhere near solving the problem of providing equal access to all for all, but it has been a godsend for some, and as a result, India is not just a net consumer of research from the rest of the world, but also a significant provider of research to the rest of the world. The question to be asked in the online age, however, is whether emailed reprint requests are enough to provide the research access that India needs, and whether India's research output is getting all the impact it deserves. The answer to both questions is No: India can do far better than that (Chan, et al. 2005; Harnad 2006a).

Research impact means research uptake, applications and citations (Garfield 1955; Harnad & Carr 2000). Researchers should always ask themselves: to what extent are my findings being read, used, and built upon, in further research and research applications? We are accustomed to thinking of the lack of access to research as being a handicap for the research *user*, but it is a handicap for the research *provider* as well. Less accessible research is also research that is failing to achieve its full potential impact. And research impact brings visibility, funding, new collaborations and further research progress (Harnad 2006b).

Yet the online age has already provided the means to solve both the research access problem and the research impact problem, completely: Instead of having to mail or email authors to request reprints of articles, one by one, researchers can access the 'eprint' of the article directly, free for all ('Open Access', OA), on the web—or at least they could do so, if the 2.5 million annual articles were all being deposited (self-archived), free for all, on the web (Garfield 1999; Drenth 2003). The problem is that only about 15 per cent of them are currently being self-archived spontaneously by their authors.

OA has been demonstrated to increase research impact dramatically (Hitchcock 2007): the percentage increase in citations for articles published in traditional (subscription-only) journals that are made OA through self-archiving by their authors (compared to articles in the same journal and year that are not) is shown in Fig. 1 for a number of disciplines (Harnad & Brody, 2004; Hajjem, et al. 2005).

India spends about 170 billion rupees of public money annually on science and technology research. The return on this investment must be maximised: it is the duty of research administrators to ensure this. Let us take the data in Fig. 1 to indicate that Open Access increases citations to published research on average by over 50 per cent. Since only 15 per cent of research is available on this basis, this means that the remaining 85 per cent stays hidden away in subscription-based journals that only a minority of libraries can purchase; they thus remain largely unread and unused. That 85 per cent could be getting

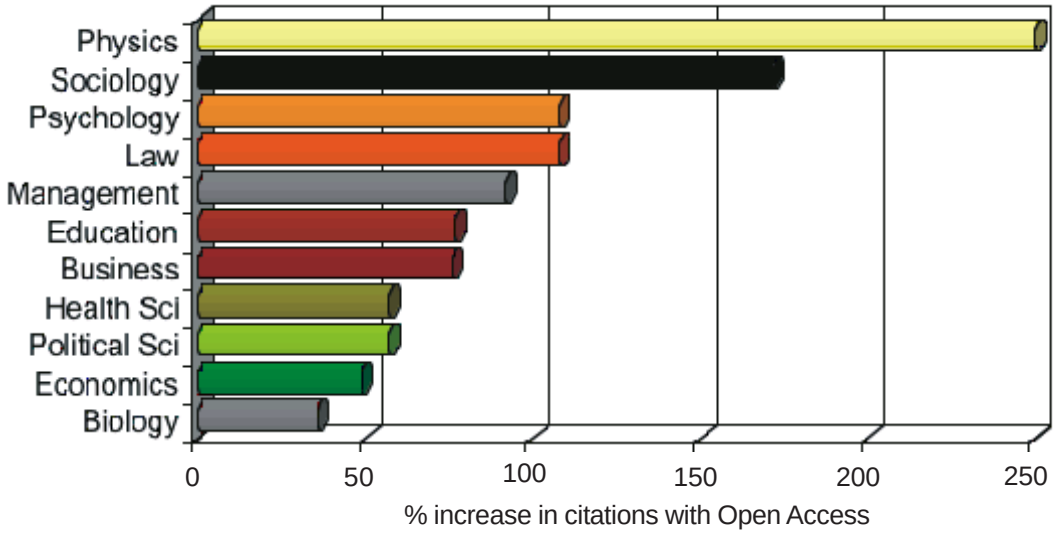

Figure 1. Percentage gain in citations for Open Access articles compared to Closed Access counterparts in the same issue of the same journal (from Harnad & Brody, 2004; Hajjem, et al., 2005).

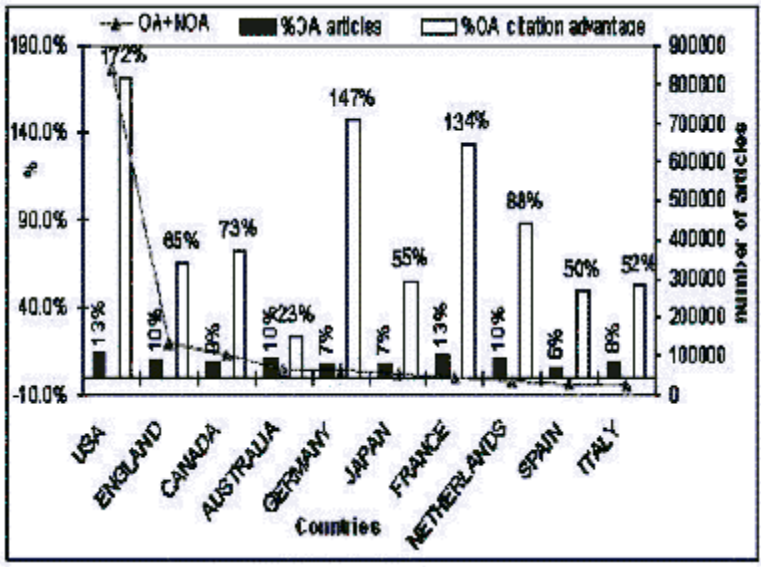

Figure 1 (a). Open access citation impact advantage by country.

far greater visibility and use if it were all Open Access. In other words, India would have to spend a further 70 billion rupees on research in order to get the same uptake, usage and impact for its research output worldwide as it could currently get, without spending any more money at all, by simply making all of her research output Open Access (Harnad 2005; Swan 2005).

For the individual researchers at India's universities and research institutions, the personal increase in visibility and impact for their work is also there to be gained. Open Access Institutional Repositories (Registry), established using the free Eprints software available, would collect and display the work of India's researchers to the world. Every time a researcher has a completed manuscript that has been peer-reviewed they deposit it in the repository and as soon as this is done it becomes visible and usable by all. Authors will be able to check the number of times an article has been downloaded

and read from the repository because the software can report these figures, as well as indicating the institutions that readers are from. A new world of personal management of research dissemination and monitoring becomes possible for Indian researchers once a repository is available to them *as long as an official institutional deposit mandate is adopted* (Registry of Open Access Repository Material Archiving Policies).

So what is India currently doing about Open Access? India has already made important contributions to the growth of OA, thanks to the efforts of its tireless advocate, Subbiah Arunachalam (2006; Suber & Arunachalam 2005), as well as the invaluable initiatives of Prof. N. Balakrishnan and the late T.B. Rajashekar, who created one of India's first OA repositories at the Indian Institute of Science, and did a great deal to encourage self-archiving by IISc's researchers (Arunachalam 2007). Articles are self-archived into digital repositories maintained by research-based institutions. Open Access repositories are either centralised subject-based depots or are broad-based institutional depots for electronic articles. They comply with a shared set of standards (OAI: Open Archives Initiative) that make them interoperable, forming in effect a worldwide database of research. Google and Google Scholar index Open Access repositories so any articles in them are assured of the best visibility. There are around 1000 Open Access repositories across the world. India already has 24 repositories, 19 of them institutional (ROAR). The biggest is IISc's, with around 7500 documents deposited to date.

But creating archives and 'archivangelising' (advocating) are not enough. Researchers the world over are still largely unaware of the advantages of Open Access. They need to be informed and encouraged by their employers and funders. In several international, interdisciplinary surveys (See Fig. 2), researchers have indicated that they will willingly self-archive their articles *if their institutions and/or their funders mandate it*–but not if they do not (Swan, 2005). Hence there is now a worldwide movement toward mandating OA self-archiving.

Most of the UK Research Councils, the Wellcome Trust, the National Institutes of Health, the European Research Council, the Deutsche Forschungsgemeinschaft (German Research Council), and other funders and

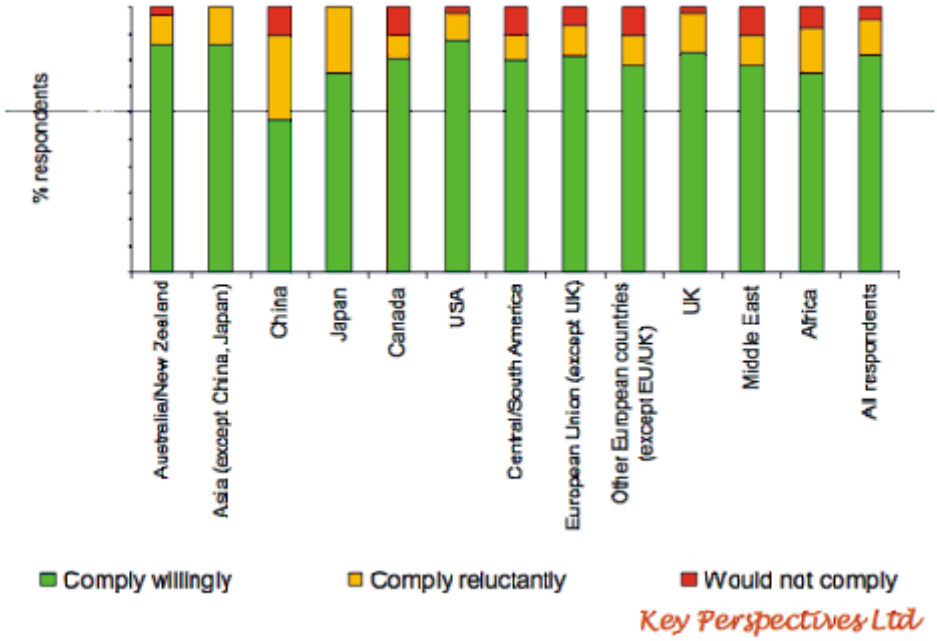

Figure 2. Based on international, interdisciplinary surveys, over 90% of researchers would comply with an OA self-archiving mandate–and the vast majority would do so willingly (Swan, 2005). (Spontaneous, unmandated self-archiving, in contrast, hovers at about 15 %).

universities now have or plan such mandatory policies (32 mandates have been adopted and 8 more have been proposed to date; ROARMAP). India is well represented among these pioneering initiatives. Two of the 14 institutional OA self-archiving mandates that have so far adopted worldwide are Indian (National Institute of Technology, Rourkela and Bharathidasan University). And of the 18 funder mandates so far adopted and the 5 more proposed, worldwide, one of the proposed mandates is from India's National Knowledge Commission and applies to all the research output it funds. India has also hosted the workshop that produced the Bangalore Policy Statement, a draft National OA Policy for Developing Countries (National Open Access Policy for Developing Countries 2006).

This is already an impressive record, but India could do so much more, so easily. India needs to adopt a *national* OA self-archiving mandate for all of its research institutions and funders. The principle is simple (Brody et al. 2007; Harnad 2007); it is already embodied in India's Law of Karma as well as in the West's 'Golden Rule': 'Self-Archive Unto Others As You Would Have Them Self-Archive Unto You' (Harnad 2003). If India sets the example, by officially adopting and implementing this rule, India's own research access and impact will be maximised, the rest of the world will follow India's example, and research progress worldwide will be the beneficiary.

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Prof. Stevan Harnad (Hernád István, Hesslein István) did his undergraduate work at McGill University and his graduate work at Princeton University. He is currently Canada Research Chair in Cognitive Science at Université du Québec à Montréal (UQAM) and Professor of Cognitive Science at the University of Southampton. He is also an External Member of the Hungarian Academy of Sciences. His research is on categorisation, communication, cognition and consciousness. Harnad was the founder and editor (1978-2003) of *Behavioral and Brain Sciences*, a journal published by Cambridge University Press, *Psycoloquy*, an electronic journal sponsored by the American Psychological Association, and *CogPrints*, an electronic preprint archive in the cognitive sciences hosted by University of Southampton. He was also the founder and moderator of the American Scientist Open Access Forum (since 1998).