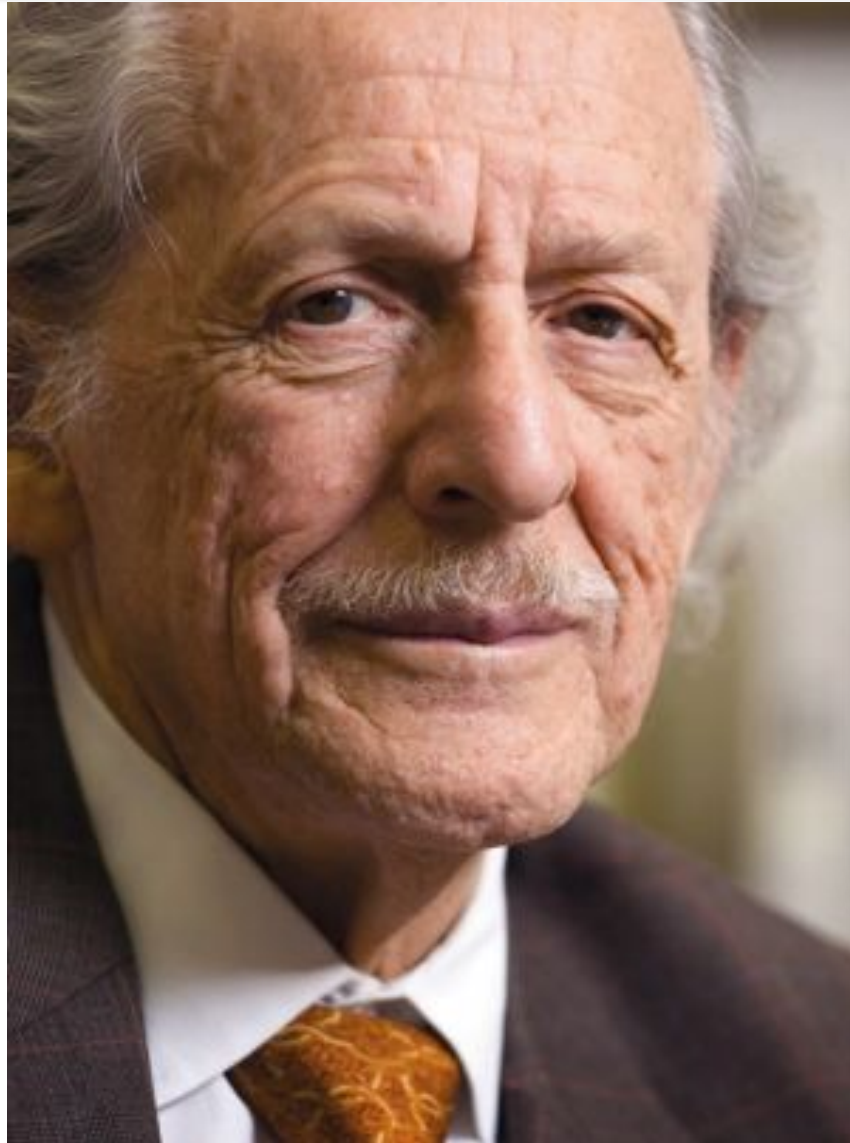


# Open access developments in India, and why India skipped Plan S?

**Muthu Madhan**

**[madhan.m@azimpremjifoundation.org](mailto:madhan.m@azimpremjifoundation.org)**

# Eugene Garfield's 75<sup>th</sup> birthday



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!

[https://www.currentscience.ac.in/Downloads/article\\_id\\_080\\_04\\_0493\\_0494\\_0.pdf](https://www.currentscience.ac.in/Downloads/article_id_080_04_0493_0494_0.pdf)

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

[https://www.currentscience.ac.in/Downloads/article\\_id\\_080\\_04\\_0493\\_0494\\_0.pdf](https://www.currentscience.ac.in/Downloads/article_id_080_04_0493_0494_0.pdf)





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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## MEETING REPORT

### Open access and developing countries\*

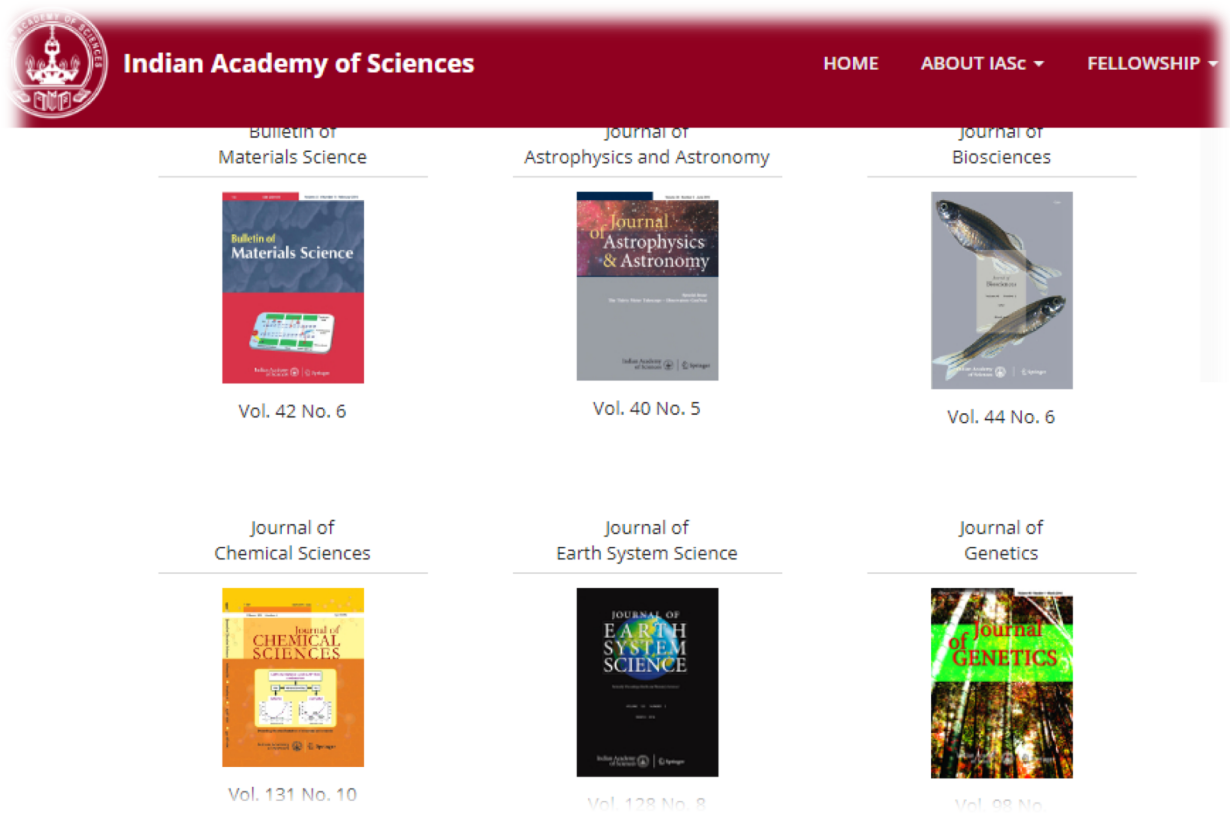
Free access to the world's research literature is the prize that is being sought by all who understand the need for sharing the results of publicly-funded research, without which many solutions to the world's problems will be delayed. To this end, a workshop on 'Electronic Publishing and Open Access: Developing Country Perspectives' was held recently. Some 30 experts met at the workshop for two days of intense discussion.

Participants from India, China, Brazil and South Africa were joined by other experts from Ethiopia, Germany, Japan,

emy of Sciences, Bangalore), N. Balakrishnan (Indian Institute of Science (IISc), Bangalore) spoke about the exciting 'million books' initiative, partnered with China, which aims to preserve valuable publications for posterity, using new technologies such as artificial intelligence to overcome language problems. He asserted 'What we need to do is change the "developing country" rhetoric to a world perspective'. This was followed by a thought-provoking keynote address by Lawrence Liang (Alternative Law Forum), who discussed the knowledge commons and the need to protect

suasive recent statistics that showed the rapid growth in the quantity of material currently available free to all. Alma Swan of Key Perspectives, a consultancy that has carried out a number of basic studies on the use and impact of open access policies, showed how the digital age is changing how science is recorded, evaluated and assessed. She had analysed the way scientists choose to communicate their results, their reasons for doing this and how they are responding to the open access development. Open access allowed science to progress faster, provided new

Abel Packer described the established SciELO system that provides open access to the content of 350 journals from Latin America, the main aim of which was to raise the visibility of research from this region. The system is publicly funded, based on a network of partners, has achieved a great increase in citations, and



The screenshot shows the website for the Indian Academy of Sciences journals. At the top left is the IASc logo. The main header is a dark red bar with the text "Indian Academy of Sciences" and navigation links: "HOME", "ABOUT IASc", and "FELLOWSHIP". Below the header is a grid of journal covers:

- Bulletin of Materials Science**: Vol. 42 No. 6. Cover features a blue and red design with a microchip.
- Journal of Astrophysics and Astronomy**: Vol. 40 No. 5. Cover features a starry space background.
- Journal of Biosciences**: Vol. 44 No. 6. Cover features two fish.
- Journal of Chemical Sciences**: Vol. 131 No. 10. Cover features a yellow and orange design with chemical structures.
- Journal of Earth System Science**: Vol. 128 No. 8. Cover features a dark background with a globe.
- Journal of Genetics**: Vol. 98 No. 6. Cover features a green background with a forest scene.

Since 2007, ten of IASc journals are co-published with Springer [Springer Nature, since 2015].

<https://www.ias.ac.in/Journals/Overview/>

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Vol. 117, No. 10  
25 November 2019

### IN THIS ISSUE

Special section: Shipwrecks

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Transcription factors for plant resistance

### Guest Editorial

Remote sensing is a powerful tool, but not a panacea in itself  
*Ranganath Navalgund*

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October 2019 | Vol 150 | Issue 4

#### Editorial

##### Indian suicide data: What do they mean?

India is a vast country with a population of 1.37 billion. China has 1.42 billion. Together their populations add to nearly 40 per cent of people alive today. If we accept the World Health Organization...

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**Edited by:** Gopal Guru

**Publisher:** Sameeksha Trust ([India](#))

**First issue date:** 1949

**History:** 1949-present

**Discipline:** [Social science](#)

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The **csircentral.net** is a main domain under which sub domains for each laboratory's IR are created like ncl.csircentral.net, npl.csircentral.net etc. This serves the purpose of 'One CSIR'.

The csircentral server is hosted and maintained by CSIR-Unit for Research and Development of Information Products, Pune.



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Single Interface for search in IRs across CSIR Labs

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CSIR - Advanced Materials and Processes Research Institute, Bhopal

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## India unveils new open access policy

26 Dec 2014 | 07:34 GMT | Posted by [Subhra Priyadarshini](#) | Category: [Policy](#), [Publishing](#), [Science administration](#)

Pre-Christmas, India's department of science and technology (DST) and department of biotechnology (DBT) played Santa to the Indian scientific community when they unveiled the country's [new open access policy](#) this month.

The new policy will help researchers working on funding from either of these two departments under the ministry of science and technology to publish in journals of their choice. The departments hope that researchers will publish in "high quality, peer-reviewed" journals. The authors of such papers will have to deposit copies of the final papers and supporting data in institutional repositories where the information can be accessed by the public.

In essence, it is a big leap for the open access environment in the country. The policy intends to "enhance public exposure of



The Department of Biotechnology and Department of Science and Technology believe that maximizing the distribution of these publications by providing free online access by depositing them in an institutional repository is the most effective way of ensuring that the research it funds can be accessed, read and built upon.



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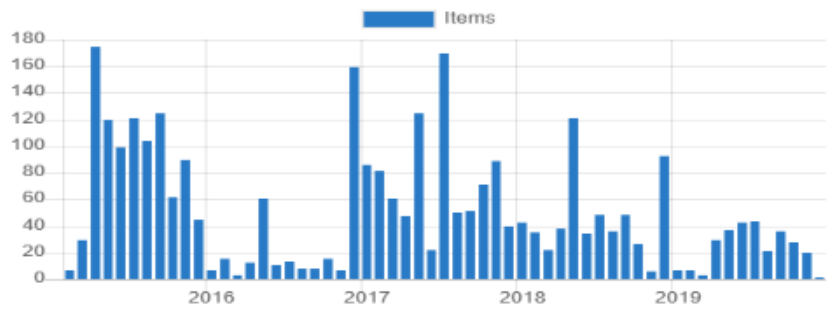


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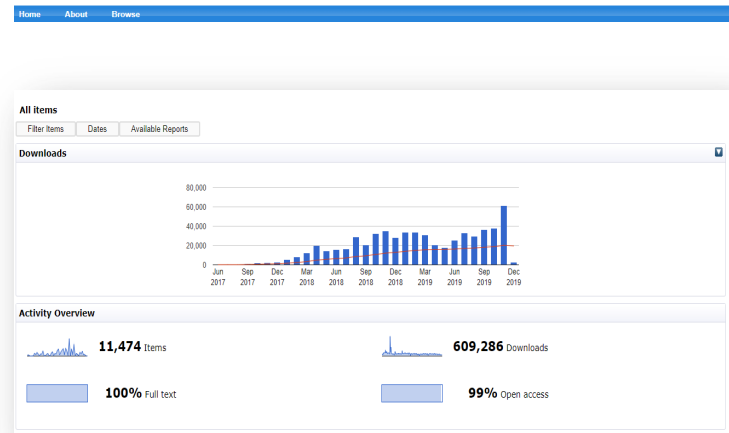
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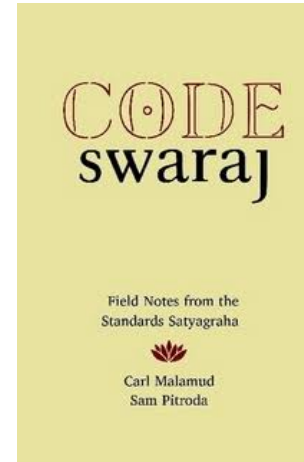
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## THE PLAN TO MINE THE WORLD'S RESEARCH PAPERS

**C**arl Malamud is on a crusade to liberate information locked up behind paywalls — and his campaigns have scored many victories. He has spent decades publishing copyrighted legal documents, from building codes to court records, and then arguing that such texts represent public-domain law that ought to be available to any citizen online. Sometimes, he has won those arguments in court. Now, the 60-year-old American technologist is turning his sights on a new objective: freeing paywalled scientific literature. And he thinks he has a legal way to do it.

Over the past year, Malamud has — without asking publishers — teamed up with Indian researchers to build a gigantic store of text and images extracted from 75 million journal articles dating from 1847 up to the present day. The cache, which is still being created, will be kept on a 576-terabyte storage facility at Jawaharlal Nehru University (JNU) in New Delhi. “This is not every journal article ever written, but it’s a lot,” Malamud says. It’s comparable to the size of the core collection in the Web of Science database, for instance. Malamud and his JNU collaborator, bioinformatician Andrew

*A data store in India could open up vast swathes of science for easy computerized analysis.*

BY PRIYANKA PULLA

Lynn, call their facility the JNU data depot.

No one will be allowed to read or download work from the repository, because that would breach publishers’ copyright. Instead, Malamud envisages, researchers could crawl over its text and data with computer software, scanning through the world’s scientific literature to pull out insights without actually reading the text.

The unprecedented project is generating much excitement because it could, for the first time, open up vast swathes of the paywalled literature for easy computerized analysis. Dozens of research groups already mine papers to build databases of genes and chemicals, map associations between proteins and diseases, and

generate useful scientific hypotheses. But publishers control — and often limit — the speed and scope of such projects, which typically confine themselves to abstracts, not full text. Researchers in India, the United States and the United Kingdom are already making plans to use the JNU store instead. Malamud and Lynn have held workshops at Indian government laboratories and universities to explain the idea. “We bring in professors and explain what we are doing. They get all excited and they say, ‘Oh gosh, this is wonderful,’” says Malamud.

But the depot’s legal status isn’t yet clear. Malamud, who contacted several intellectual-property (IP) lawyers before starting work on the depot, hopes to avoid a lawsuit. “Our position is that what we are doing is perfectly legal,” he says. For the moment, he is proceeding with caution: the JNU data depot is air-gapped, meaning that no one can access it from the Internet.

Users have to physically visit the facility, and only researchers who want to mine for non-commercial scientists text mines.

PHOTO: JNU/ANIL KUMAR

Asked directly whether some of the text-mining depot’s articles come from Sci-Hub, he said he wouldn’t comment, and named only sources that provide free-to-download versions of papers (such as PubMed Central and the ‘Unpaywall’ tool). But he does say that he does not have contracts with publishers to access the journals in the depot.

# India and Plan S

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1/2 India joining cOAlition S: Journal subscriptions, publishing charges block access to publicly funded knowledge. Access, dissemination, use of knowledge should be free; allowing all to build on research funded by the Indian government, other publicly funded research.



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THE SCIENCES

## Six Concerns Over India Joining the Plan S Coalition for Science Journals

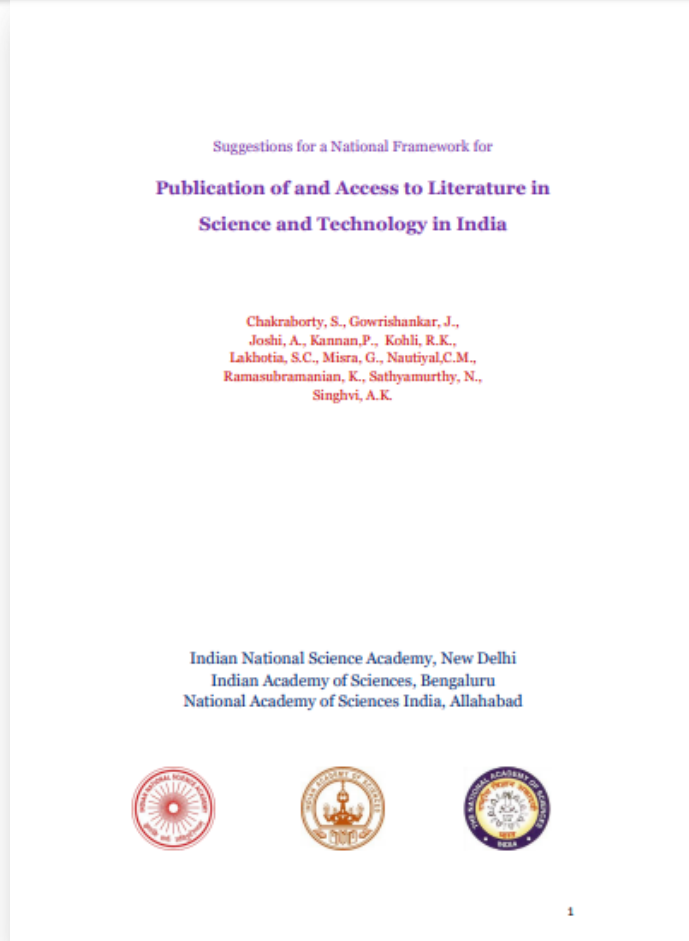
Plan S's participants want to set up a global commons of scientific knowledge. But the publishing scheme it proposes presents a distinct set of problems that, if not addressed, could capsiz this Titanic reform of scientific publishing.

.....So Plan S will effectively expect society publishers to 'flip' their publishing model towards gold OA starting 2020. And society publishers might not be ready to do so by then, especially since Plan S also doesn't offer any helpful suggestions on this front.....

# Should India adopt Plan S to realise Open Access to Public-funded Scientific Research?

There is plenty that can be done in the interim to realise the vision of OA, as we continue to ponder and debate the feasibility of Plan S in the global scheme of scientific publishing as well as India. For starters, **it would be ideal to conduct a nationwide consultation** with the research community in India. Strengthening the infrastructure underlying institutional repositories – in terms of developing more powerful search tools for IRs, linking IRs, making deposited articles more discoverable over the Web are steps that do not require relatively large funds (vis-à-vis APCs), yet stand to contribute to improving visibility of our research. The government must also look out for authors' interests by actively negotiating stricter terms with publishers, so that authors aren't coerced into signing away their copyright (or by fait accompli).

# Indian Science Academies on Open Access



- All scientific literature arising from public-funded research should be available in public domain.
- Use of the diverse free and immediate OA preprint archives may be considered.
- National repositories ...synergized, strengthened, and harmonized into a single national institutional system dealing with National archival system with proper. Financial and administrative support
- OA Journals published by established academies and societies in India, should be further supported ..through sustained and appropriate resource augmentation to make them internationally competitive

Research grants from all public sources will carry an explicit provision for Publication charges with the PIs having the choice of final destination for the publication of their work.

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Speaker



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**Prof. K. VijayRaghavan**  
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IOAW 2019 Lecture by Prof. VijayRaghavan - "Unlocking the doors to knowledge repositories"

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## Should Indian researchers pay to get their work published?

Muthu Madhan\*, Siva Shankar Kimidi, Subbiah Gunasekaran and Subbiah Arunachalam

*Paying to publish is an ethical issue. During 2010–14, Indian researchers have used 488 open access (OA) journals levying article processing charge (APC), ranging from US\$ 7.5 to 5,000, to publish about 15,400 papers. Use of OA journals levying APC has increased from 242 journals and 2,557 papers in 2010 to 328 journals and 3,634 papers in 2014. We estimate that India is potentially spending about US\$ 2.4 million annually on APCs paid to OA journals and the amount would be much more if we add APCs paid to make papers published in hybrid journals open access. It would be prudent for Indian authors to make their work freely available through interoperable repositories, a trend that is growing in Latin America and China, especially when funding is scarce. Scientists are ready to pay APC as long as institutions pay for it and funding agencies are not ready to insist that grants provided for research should not be used for paying APC.*

**Keywords:** Article processing charge, hybrid OA journals, institutional repositories, OA policy, open access journals.

MORE than two decades ago, Harnad posted his subversive proposal to a mailing list in which he called on researchers 'to make copies of all the papers they published in scholarly journals freely available on the internet'<sup>1,2</sup>. Many researchers now make their papers freely available either by publishing them in open access (OA) journals, or by placing them in repositories or websites. Indeed, a 2013 report asserted that by 2011 'free availability of a majority of papers has been reached in general science and technology, in biomedical research, biology, and mathematics, and statistics', and that the number of OA papers has been growing by about 2% a year<sup>3</sup>.

Journals make papers open access in two ways: OA journals make all papers open access immediately on publication, and hybrid OA journals make selected papers open access. Most OA journals listed in the Directory of Open Access Journals (DOAJ) do not charge to make a paper open access. Current Science is one such journal. Many OA journals – about 26% according to Solomon and Björk<sup>4</sup> – and all hybrid OA journals levy an article processing charge (APC) to provide OA to a paper. However, according to Crotty<sup>5</sup>, the majority of OA papers are published by paying an APC. The APC levied by journals

used by Indian researchers is in the range INR 500 (~US\$ 8)–US\$ 5000.

OA journal publishing, particularly by commercial publishers and in the field of biomedicine, is growing rapidly. According to DOAJ, as of 2 September 2016, there are 9192 OA journals published from 130 countries and one can access more than 2.27 million articles. Currently, DOAJ is growing at a net rate of six titles per day<sup>6</sup>. The Directory of Open Access Scholarly Resources (ROAD) lists 14,031 OA journals published from about 140 countries<sup>7</sup>.

Repositories, where full texts of research publications are deposited and made available on-line, are of two kinds: (i) central repositories, such as arXiv and Social Science Research Network (SSRN), and (ii) distributed (or institutional) repositories, such as the University of Southampton institutional research repository, eprints.soton.ac.uk.

Here we are concerned only with the OA journals which make all content open access immediately on publication. Further, our interest is in papers from India that are published in journals levying APC. The question we are particularly interested in is as follows: 'is paid open access affordable for India?' And, even if it is affordable, should we go for it?

We assessed the current status of use of OA journals by Indian researchers using bibliometric analysis of data gathered from the Web of Science (WoS) – Science Citation Index Expanded (SCIE). We used this analysis to obtain the number of papers Indian researchers have published in OA journals charging APC, leading to an estimate of the amount the country as a whole would have

## Evaluation of research in India: Are we doing it right?

MUTHU MADHAN, SUBBIAH GUNASEKARAN, SUBBIAH ARUNACHALAM\*

### Abstract

*The evaluation of performance in scientific research at any level – whether at the individual, institutional, research council or country level – is not easy. Traditionally, research evaluation at the individual and institutional levels has depended largely on peer opinion, but with the rapid growth of science over the last century and the availability of databases and scientometric techniques, quantitative indicators have gained importance. Both peer review and metrics are subject to flaws, more so in India because of the way they are used. Government agencies, funding bodies and academic and research institutions in India suffer from the impact factor and h-index syndrome. The uniform use of indicators such as average and cumulative impact factors and the arbitrary criteria stipulated by agencies such as the University Grants Commission, Indian Council of Medical Research and the Medical Council of India for selection and promotion of faculty have made it difficult to distinguish good science from the bad and the indifferent. The exaggerated importance given by these agencies to the number of publications, irrespective of what they report, has led to an ethical crisis in scholarly communication and the reward system in science. These agencies seem to be unconcerned about the proliferation of predatory journals and conferences. After giving examples of the bizarre use of indicators and arbitrary*

*recruitment and evaluation practices in India, we summarise the merits of peer review and quantitative indicators and the evaluation practices followed elsewhere.*

This paper looks critically at two issues that characterise Indian science, viz (i) the misuse of metrics, particularly impact factor (IF) and h-index, in assessing individual researchers and institutions, and (ii) poor research evaluation practices. As the past performance of individual researchers and the funds they seek and obtain for subsequent projects are inextricably intertwined, such misuse of metrics is prevalent in project selection and funding as well.

This study is based on facts gathered from publicly available sources such as the websites of organisations and the literature. After explaining the meaning of impact factor and h-index and how not to use them, we give many examples of misuse in reports by Indian funding and regulatory agencies. In the next two sections we give examples of the arbitrariness of the criteria and indicators used by the agencies for the selection and promotion of faculty, selection of research fellows, and funding. We follow this up with the evaluation practices in use elsewhere. If we have cited only a few examples relating to medicine, it is for two reasons: one, medicine forms only a small part of the Indian academic and research enterprise; and two, what applies to research and higher education in other areas applies to medicine as well.

### Misuse of metrics

The regulatory and funding agencies give too much importance to the number of papers published and use indicators such as average IF, cumulative IF and IF aggregate in the selection of researchers for awards, the selection and promotion of faculty, awarding fellowships to students and grants to departments and institutions, and thus contribute to the lowering of standards of academic evaluation, scholarly communication, and the country's research enterprise.

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To cite: Madhan M, Gunasekaran S, Arunachalam S. Evaluation of research in India: Are we doing it right? *Indian J Med Ethics*. 2018 Jul-Sep;3(3): NS-221-9. DOI: 10.20529/IJME.2018.024

Published online on March 23, 2018.

Manuscript Editor: Sanjay A Pal

© Indian Journal of Medical Ethics 2018

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THE SCIENCES

## India Will Skip Plan S, Focus on National Efforts in Science Publishing

The government's "directions will be entirely determined by the interests of Indian academia and of India", according to K. VijayRaghavan, the principal scientific adviser to the Government of India.

Hypothesising (generously) that 75% of the ~170,000 papers Indian scientists published in 2018 were done so in a journal that charged \$1,100 per paper and 25% were published without incurring an APC or other publishing charges, the sum is around Rs 985 crore. (140 million USD)

**“There is nothing to stop any institution from changing. Zilch.”**

<https://thewire.in/the-sciences/plan-s-open-access-scientific-publishing-article-processing-charge-insa-k-vijayraghavan>

# Web of Science journals (SSCI, and SSCI)

Journal publishing country	No. of journals	No. of papers	No. of OA papers	%
BRAZIL	122	26009	22791	87.62736
CROATIA	38	4402	3641	82.7124
HONG KONG	10	2962	2400	81.02633
GREECE	17	16847	12881	76.45872
CHILE	36	3707	2675	72.16078
SERBIA	22	6213	4445	71.54354
SWITZERLAND	274	190441	133966	70.34515
TURKEY	57	9743	6232	63.96387
MEXICO	40	3879	2459	63.39263
POLAND	142	21742	12731	58.55487
BULGARIA	14	3048	1781	58.43176
SOUTH AFRICA	52	4947	2857	57.75217
LITHUANIA	23	2531	1445	57.09206
CZECH REPUBLIC	50	5239	2985	56.97652
SAUDI ARABIA	14	5680	3118	54.89437
ARGENTINA	18	2442	1154	47.25635
SPAIN	121	13457	6224	46.25102
SLOVAKIA	21	2918	1320	45.23646
JAPAN	247	50198	21934	43.69497
NEW ZEALAND	51	15642	6827	43.64531
TAIWAN	37	8375	3578	42.72239
SWEDEN	24	3375	1425	42.22222
INDIA	102	24252	10140	41.81098

## AFRICA Totals      **101,119 33% (33,370)**

Name	Web of Science Documents	% All Open Access Documents
SOUTH AFRICA	28328	37.5141203
EGYPT	25397	24.9596409
TUNISIA	9304	16.98194325
ALGERIA	7406	16.48663246
NIGERIA	6331	35.99747275
MOROCCO	4790	25.51148225
KENYA	3885	58.71299871
ETHIOPIA	3613	53.39053418
GHANA	2720	48.63970588
MALAWI	1097	70.8295351

USA	813521	38.10325732
CHINA MAINLAND	702060	26.19434236
UNITED KINGDOM	244942	55.15183186
GERMANY (FED REP GER)	218754	34.54382548
ENGLAND	214903	55.29424903
JAPAN	157653	33.04282189
FRANCE	149884	31.66782312
ITALY	143226	32.29651041
INDIA	141435	17.34294906
CANADA	141156	31.92283714
AUSTRALIA	133504	29.71746165
SPAIN	121059	36.90431938
SOUTH KOREA	115979	29.21304719
BRAZIL	98240	39.62846091
NETHERLANDS	82936	50.14468988
RUSSIA	76251	16.55584845
IRAN	74954	14.57694052
SWITZERLAND	63720	43.92498431
TURKEY	58137	27.04989938
POLAND	58066	39.6772638
SWEDEN	57068	44.83423285
TAIWAN	46777	31.28460568

## So did it work? Considering the impact of Finch 5 years on



### View / Open Files

- [Presentation to London Information International \(PDF, 4Mb\)](#)
- [Scheduled tweets with all links in presentation \(Microsoft Word, 190Kb\)](#)

### Authors

Kingsley, Danny

### Publication Date

2017-12-06

### Citation

Kingsley, D. (2017). *So did it work? Considering the impact of Finch 5 years on* [Presentation file]. <https://doi.org/10.17863/CAM.16788>

### Abstract

Looking at different open access policies it becomes clear that the institutions and funders behind them 'believe' that open access will benefit research and society. With the publication of the Finch Report in 2012, the UK embarked on one of the most expensive open access experiments in the world with the RCUK Open Access Policy. This was with the goal of increasing access to UK research and acting as a transition for journals 'flipping' to an open access model. So how has it gone? Certainly more UK research is openly accessible but publishers are no closer to flipping. In fact, it could be argued that the main outcome of the RCUK policy transition period is that it has given large publishers time and space to adapt their practices. Manipulation of embargo periods, confusing information, and a graduated charging system for different licenses all work towards ensuring a second income stream. Far from moving to an open access future we seem to be trapped in a worse situation than we started. It is time to move away from belief – let's consider the evidence.

### Keywords

Finch Report, hybrid publishing, article processing charges, embargoes, offsetting

In fact, it could be argued that the main outcome of the **RCUK policy transition period** is that it has given large publishers time and space to adapt their practices.

Manipulation of embargo periods, confusing information, and a graduated charging system for different licenses all work towards ensuring a second income stream.

**Far from moving to an open access future we seem to be trapped in a worse situation than we started.** It is time to move away from belief – let's consider the evidence.

# Embargo: The real battle ground

The evidence fails to justify publishers' demand for longer embargo periods on publicly-funded research.



*Due to disciplinary differences in the "half-life" or relative demand of a scholarly article, some publishers are looking to enact longer embargo periods before an article can be made openly available on archives and repositories, in order to protect against profit losses. Peter Suber finds there is insubstantial evidence to suggest embargo length affects profit margin. Furthermore, the premise that public policies should maximize publisher revenue before maximizing public access to publicly-funded research is unfounded and should equally be rejected.*

<https://blogs.lse.ac.uk/impactofsocialsciences/2014/01/14/suber-embargoes-on-publicly-funded-research/>

## OA's Real Battle-Ground in 2014: The One-Year Embargo Open Access Archivangelism

Journal publishers also know that it is the first year of sales that sustains their subscriptions. (The talk about later sales is just hyperbole.)

Publishers have accordingly been fighting tooth and nail against Green OA mandates, by lobbying against Green OA Mandates, by embargoing Green OA, and by offering and promoting hybrid Gold OA.

Embargo....insurance against losing control of their content, more and more publishers are releasing online access themselves, on their own proprietary websites, a year after publication: [Delayed Gold](http://openaccess.eprints.org/index.php?/archives/1084-.html)— Stevan Harnad (<http://openaccess.eprints.org/index.php?/archives/1084-.html>)



# Heads I Win, Tails You Lose

Proc Indian Natn Sci Acad 80 No. 5 December 2014 pp. 919-929  
© Printed in India.

DOI: 10.16943/ptinsa/2014/80i5/47965

### Commentary

## Heads I Win, Tails You Lose: The Intransigence of STM Publishers

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(Received on 31 October 2014; Accepted on 5 November 2014)

A few commercial publishers dominate provision of access to scientific and technical information sought after by researchers around the world. Increasing subscription prices of journals at rates higher than general inflation caused librarians to think of forming consortia, but publishers started selling online journals as bundles, and librarians ended up with many journals their researchers have very little use for. Scientists and librarians adopted open access, but publishers came up with hybrid journals and article processing charges to beat any adverse effect on their profits caused by the fast-spreading open access movement. We compare the steps taken by scientists and librarians in the West to reclaim ease of access to research findings with what is happening in India. We end with a few suggestions.

**Key Words:** Article Processing Charges; Big Deal; Double Dipping; Hybrid Journals; Library Consortia; Open Access Movement; Rising Cost of Journals; STM Publishers

### Introduction

Scientists in India, as elsewhere, will be happy if their libraries provide them access to thousands of journals. Librarians, even in the most affluent institutions, have only limited budgets and they have to balance between journals on the one hand and books, monographs and reference material on the other, and can subscribe to only a limited number of journals. In the past decade and a half, thanks to generous funding by several government agencies (e.g., UGC, CSIR), librarians formed consortia so they could access online journals at more attractive prices and in large numbers. Also, during the same period, many open access (OA) journals became available and some subscription journals came forward to make articles OA if the authors paid a fee. There also came up a large number of repositories, both institutional (such as the ones at Indian Institute of Science and Central Marine Fisheries Research Institute) and subject-based central repositories (such as PubMed

Central). As a result, scientists now have much easier access to a much larger volume of current literature. But, it appears that publishers seem to profit far more than scientists. They keep increasing the subscription prices at a rate higher than general inflation. Even affluent institutions like Harvard University are forced to cut down the number of journals they subscribe. The Association of Research Libraries (ARL), a group of about 125 research libraries in North America, is concerned about this crisis in scholarly communication (or 'serials crisis' as they call it) and is working to promote open access as one way to counter it. The publishers continue to make their unusually large profits unmindful of the hardship researchers are put to. In business circles, publishing scientific, technical and medical (STM) journals is considered to be one of the most profitable businesses. Efforts made by groups of researchers to make scholarly communication more cost effective have not met with expected success levels. For example,

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### OPINION

## Scientific publishing: Rising cost of monopolies

Giridhar Madras

A recent editorial in *Current Science*<sup>1</sup> discusses the issues of access to research journals. This article examines the issue of cost rise and discusses a study undertaken at the Indian Institute of Science (IISc), Bangalore.

The average cost<sup>2</sup> of Institute of Scientific Information (ISI - Web of Science)-indexed journals in 2008 is US\$ 1238. However, the average costs of a journal in chemistry, physics, engineering and biology are US\$ 3490, 3103, 1919 and 1810 respectively, with an average increase of 5-9% in cost per year. The consumer price index (CPI) for the US city average for all items is a widely used measurement for the general rate of inflation in USA. The Association of Research Libraries<sup>3</sup> in USA mentions that the CPI has increased by 73% between 1986 and 2004, but the research library expenditure for journals has increased by 273% during the same period. Another study<sup>4</sup> has quantified this effect by representing the buying power of the journal acquisition dollar as a per cent of the CPI dollar value. In other words, a library that has realized increases equal to the rate of inflation from 1967, would be able to purchase only 20% of the journals it could have in 1967. Further, the number of journals published now is dramatically higher than in 1967, increasing the pressures on the budget. These rapidly rising journal prices have thus hampered the ability of researchers, libraries and institutions to access scientific publications.

Global research article output is estimated to be around two million articles per annum<sup>5</sup> in around 18,000 journals (of which 8000 are indexed in ISI). In the US\$ 15 billion market for scientific, technical and medical (STM) journal publishers, the top five are commercial publishers who account for nearly 50% of the revenue<sup>6</sup>, while the rest of 10,000 publishers account for less than 50% (Figure 1). The top publisher (Elsevier) has more than a quarter of the market, while the newly formed combination of Springer and Kluwer Academic Publishers accounts for nearly 15% of the market share. The four major academic societies, namely the American Chemical Society (ACS), American Institute of Physics (AIP), American Physical Society

(APS) and Institute of Electrical and Electronics Engineers (IEEE), publish nearly 200 journals overall and have a market share of 3.6, 2.8, 1.7 and 1.9% respectively.

With a budget of Rs 100 million (US\$ 2.5 million) for journal subscriptions, IISc houses the best library for science and engineering in India. IISc subscribes to nearly 1250 journals from around 200 publishers. An analysis was conducted to determine the journals in which IISc faculty publish. In the five-year period of 2002-06, researchers at IISc published roughly 5000 papers in ISI-indexed journals. Among these, nearly 80% appeared in 250 journals. Considering that 250 journals is 20% of the number of journals that IISc subscribes to, it is interesting that the Pareto's principle and Bradford's law (Box 1) hold. A further scrutiny revealed that nearly 50% of the papers appeared in 125 journals (10% of the library subscription). To examine whether these trends are observed in journal pricing, a list of publishers and the amount paid to them was drawn. This was even more shocking. Nearly 50% of Rs 100 million was paid to a single publisher, while the top ten publishers accounted for 85% of the library budget, and the top 50 publishers accounting for 98.7% of the same.

Another analysis was carried out to determine the total number of journals in which researchers at IISc publish or cite in their work. This number is around 600, indicating that researchers have no 'interaction' with nearly 650 journals subscribed by IISc! Therefore, it was suggested we

examine whether to stop subscriptions to these journals and subscribe to new journals from the amount saved. However, this met with two major obstacles.

The first obstacle was that the publishers had 'bundled' packages known in the librarian terminology as the 'big deal'. This included multiyear subscriptions, cancellation limitation clauses, annual cost increase, incremental cost addition for on-line content and, more importantly, a combination of a highly cited popular journal with several small journals. These additional titles are often journals that the library would not otherwise purchase. However, these schemes are attractive because they reduce the serial unit cost. Increasingly, libraries are making multiple payments for content in different forms and paying for subscriptions that are linked together. Because many journal subscription costs are incremental add-ons to the existing subscriptions for a second format, the unit cost is substantially reduced. When a library starts paying US\$ 10 as an add-on for electronic access to a subscription that formerly cost US\$ 100, the unit cost for the 'two' subscriptions becomes US\$ 55. Without adding new content to the collection, a unit subscription cost based on the 'two' titles has been reduced by 45%. Similarly, when a popular scientific journal is linked with ten less popular journals, the journal unit cost of the 'package' is significantly reduced. These deals bundle the strongest journals with the weakest publisher journals and it is a combination of the essential with the non-essential to

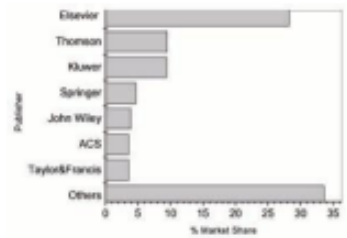


Figure 1. Market share of major STM journal publishers.



Azim Premji University

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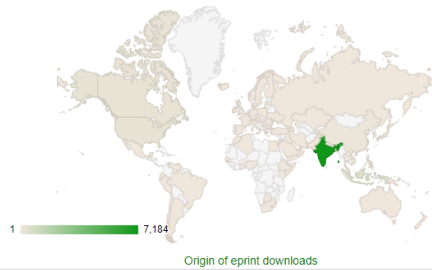
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2. G. R., Veena (2019) *The gap between 'HOW' and 'WHY' in mathematics....* At Right Angles (4). p. 54.
3. Shirali, Padmapriya (2019) *Ratio*. At Right Angles (4).
4. Krishnamoorthy, Usha (2019) *Data, perception and ignorance*. At Right Angles (4). pp. 104-112.
5. (CoMaC), Community Mathematics Centre (2019) *Computing an angle in an equilateral triangle*. At Right Angles (4). pp. 102-103.

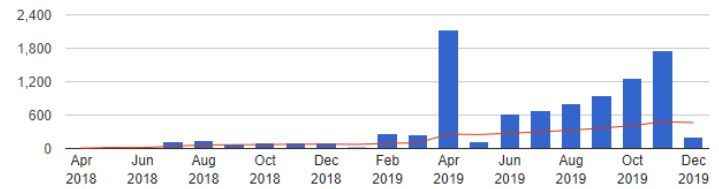
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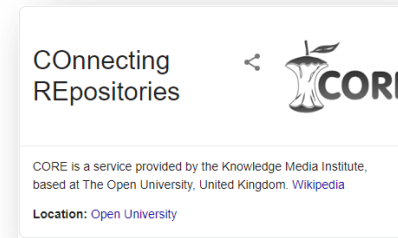
#### Activity Overview




# These are not just burial grounds



The screenshot shows the homepage of the Azim Premji University Publications Repository. At the top left is the university's logo. The main header reads "Azim Premji University | Publications Repository". Below this is a navigation bar with "HOME", "ABOUT", and "REPOSITORY POLICY". A search bar is located on the right. On the left side, there is a "Browse by" menu with options: Year, Subject, Division, Author, Type, Latest Additions, and Usage Statistics. The central feature is a world map titled "Origin of eprint downloads" with a color scale from 1 to 7,184, highlighting India. Below the map is a "What's new" section listing five recent publications with their titles and authors. At the bottom left, there is a logo for "Teachers of India" with the tagline "Free resources, inspiring ideas. Community & connections." The footer states: "Maintained by Knowledge Resource Centre, Library at the Azim Premji University. Powered by EPrints 3".

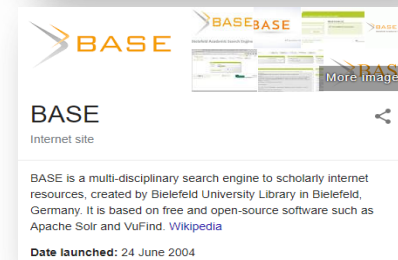


Connecting  
REpositories




CORE is a service provided by the Knowledge Media Institute, based at The Open University, United Kingdom. [Wikipedia](#)

Location: [Open University](#)



BASE



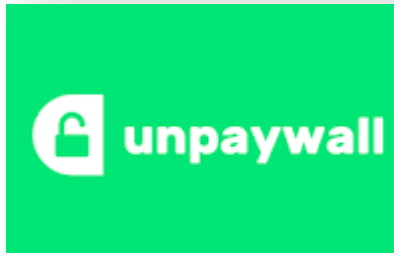
Internet site

BASE is a multi-disciplinary search engine to scholarly internet resources, created by Bielefeld University Library in Bielefeld, Germany. It is based on free and open-source software such as Apache Solr and VuFind. [Wikipedia](#)

Date launched: 24 June 2004



National  
Digital Library  
of India



unpaywall

## Ethiopia adopts a national open access policy

The policy requires universities to ensure that all publications based on publicly-funded research are deposited in the National **Academic Digital Repository** of Ethiopia (NADRE) as well as in an **institutional repository**, if the university has one. NADRE is supported by MOSHE, and also harvests and aggregates deposits from institutional repositories.

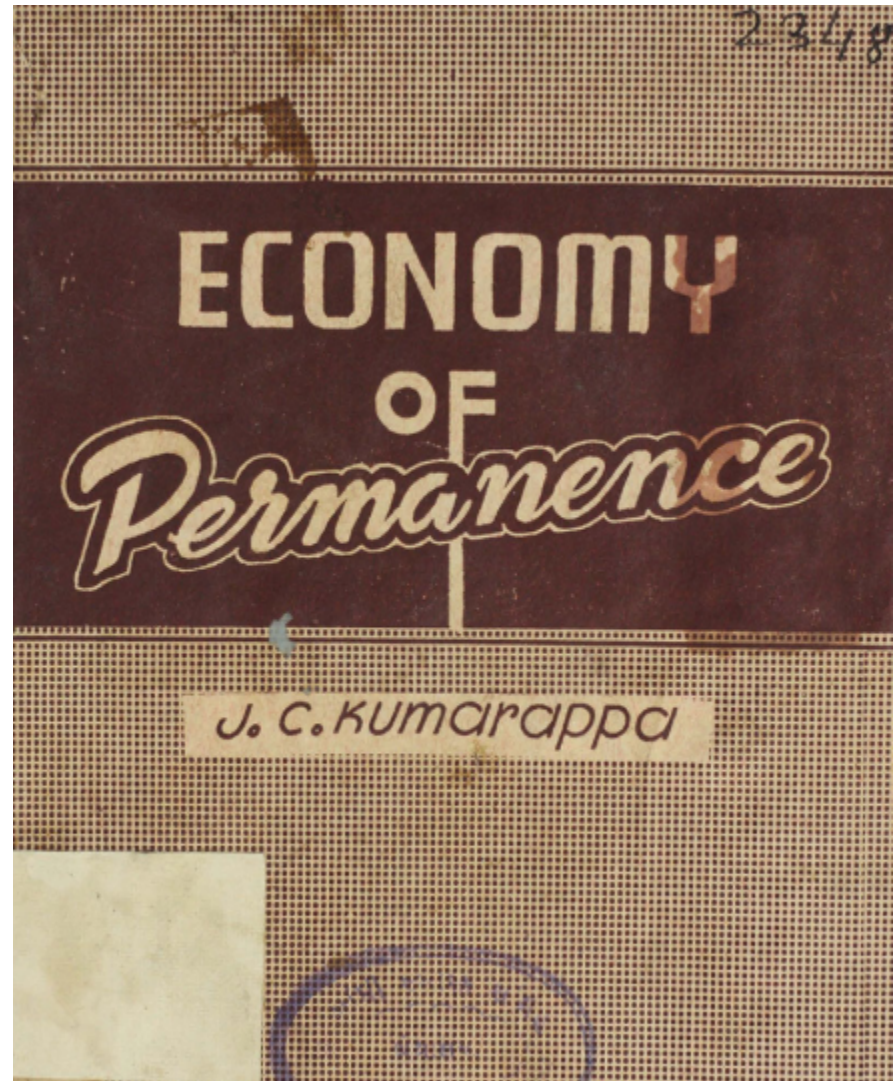
# Open Access through frugal systems

Nesta...

OUR FRUGAL FUTURE:  
LESSONS FROM  
INDIA'S INNOVATION  
SYSTEM

Kirsten Bound and Ian Thornton

July 2012



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