

The cover features a decorative design with concentric arcs. A light green arc is at the top left. A larger, dark arc with a nebula-like pattern in shades of orange, red, and purple is at the bottom right. A thin white arc is also visible.

ISSN 1674 – 3393

A Peer-reviewed International Scholarly Journal

中国文献情报(季刊)

CHINESE

JOURNAL OF LIBRARY AND INFORMATION SCIENCE

(QUARTERLY)

Volume 5 Number 3 2012
National Science Library, CAS

Chinese Journal of Library and Information Science (CJLIS)

(Quarterly)

Sponsored by the Chinese Academy of Sciences

Volume 5 Number 3, 2012

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Published by: National Science Library, Chinese Academy of Sciences
No. 33, Beisihuan Xilu, Zhongguancun, Haidian District, Beijing 100190, P.R. China

Edited by: Editorial Office of *Chinese Journal of Library and Information Science* (CJLIS)
No. 33, Beisihuan Xilu, Zhongguancun, Haidian District, Beijing 100190, P.R. China

Printed by: Beijing KEXIN Printing Co. Ltd., Beijing 102208, P.R. China. Tel: 86-10-62903036. Fax: 86-10-62805493

Editor-in-Chief: Prof. Xiaolin Zhang

Typesetting: Beijing Charlesworth Software Dev. Co. Ltd. (Beijing Modern Palace Building)
No. 20 Dongsanhuan, RD(South), Chaoyang District, Beijing 100022, P.R. China. Tel: 86-10-67791601. Fax: 86-10-67799806.

Distributed by: Editorial Office of *Chinese Journal of Library and Information Science* (CJLIS)
No. 33, Beisihuan Xilu, Zhongguancun, Haidian District, Beijing 100190, P.R. China

Subscription: RMB ¥ 200/Issue, RMB ¥ 800/Volume domestically per year; US \$ 199/Volume outside of China (including air shipping)

Distributional Code (邮发代号) 82-563

Issue's Handling Editor: Jing CAO

ISSN 1674 – 3393

CN 11-5670/G2

Defining an open access resource strategy for research libraries: Part III—The strategies and practices of National Science Library

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Received Nov. 11, 2012

Revised Nov. 13, 2012

Accepted Nov. 15, 2012

Abstract

Purpose: This paper describes the strategies and practices of National Science Library (NSL), Chinese Academy of Sciences (CAS) in promoting open access (OA) and developing OA resources.

Design/methodology/approach: Multi-facet frameworks are devised to guide the development of OA strategies and practices. Key OA initiatives are briefly described along the main aspects of the strategies as they contribute to implementation of the OA strategies.

Findings: NSL defined its role as the Chief OA Officer for CAS and a key OA promoter for China. Accordingly, NSL has engaged in multiple fronts of promoting OA, including development of OA strategies for CAS, establishment of itself as an OA knowledge & promotion center, development of the CAS IR system, and support for OA publishing by CAS authors.

Research limitations: OA is still evolving, so are the strategies and practices as many actions are experimental and explorative in nature. Open books, open data, and open educational resources are yet to be covered. Comparative studies are needed, so is the evidence-based impact analysis.

Practical implications: Institutions can adopt, adapt, or compare with examples and lessons learned are described here.

Originality/value: The multi-faceted frameworks, working principles, and lessons learned are based on NSL's practices which can be valuable to the overall OA development.

Keywords Open access; Strategy and policy; Open repository; Open publishing

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CJLIS
Vol. 5 No. 3, 2012
pp 1–11

National Science Library,
Chinese Academy of
Sciences

<http://www.chinalibraries.net>

1 Introduction

Open access is fast becoming a main part of scientific scholarly communication. Part I of this study^[1] summarized the fast growth of OA scholarly resources. The converging forces of open access development are making OA close to the tipping point of being the main stream.

However, we recognize the complexity in an OA world. There are disruptive changes and unexpected challenges, as analyzed in the Part II of this study^[2]. We can no longer rely on the traditional library or publishing models. We have to define, create, and compete for new roles and contributions to cope with the digital, open and networked environment. But we are facing uncharted territories with uncertainties and risks, and need make sure, their fair share of failures and dead ends.

There is a strong sense of urgency for libraries to take actions, not waiting for a failure-proof or trouble-free plan. On one hand, we see the fast progress of new paradigms of digital research and learning^[3,4], which call for an open knowledge infrastructure and services to support data-intensive scientific discovery. On the other hand, scholarly communities are pushing even stronger for OA. The Budapest Open Access Initiative (BOAI) recommendations^[5] call to set the default to open, and advocating the new goal that, “within the next ten years, OA will become the default method for distributing new peer-reviewed research in every field and country”. The research funders are getting their acts together, too. Global Research Council Summit 2013^[6] will discuss actions to implement OA as the main stream mechanism for publicly funded research results, partly by transferring library subscription budgets to OA publishing funding.

Libraries have to be actively involved, otherwise will be left behind^[7]. If they act decisively and quickly, libraries can play important or even indispensable roles, by helping to guide the emerging paradigms for the benefits of research and society, utilizing the expertise they have to develop better policies and services, and competing for market leadership and rule setting. Many institutes are already experimenting with initiatives, as illustrated by activities in Coalition of Open Access Policy Institutions^[8], the Compact for Open Access Publishing Equity^[9], and the UK Open Access Implementation Group^[10]. The challenge is to re-context the library, to capitalize on the complexity and to shape the future, not just for themselves but for research and learning.

2 Reframing the needs and roles for libraries in an OA-world

NSL looks at the needs of OA from three different but closely related perspectives, as shown in Fig. 1. What is needed for and enabled by OA from research & learning institutes? It will be an open knowledge infrastructure (OKI) capable of supporting



data intensive discovery, embedded into research and learning processes. What is needed for and enabled by OA for scholarly communications? It may need a whole new set of measures for organizing, sustaining, evaluating, as to make best out the transformation. Then, what would be libraries' roles and services contributing to the transformation? Figure 1 itself is more a thinking tool than a definitive plan, but what is important here is to think 'out of box', out of just collections or search & retrieval of information items, out of being a passive and reactive partner or follower.

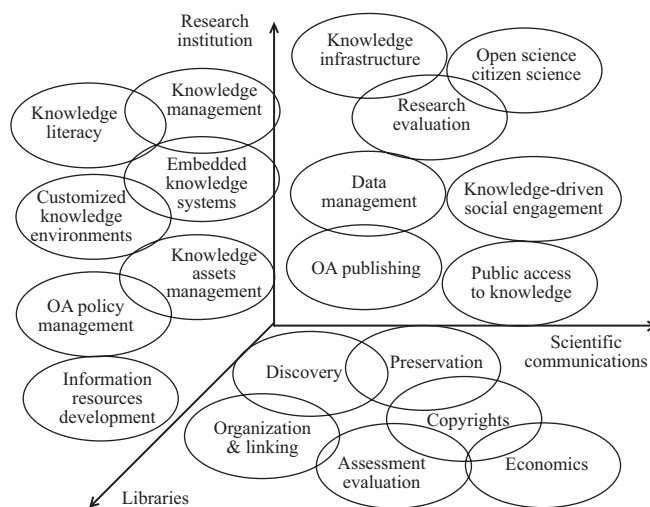


Fig. 1 Perspectives for libraries' roles in OA.

Starting from the perspectives, NSL re-purposes its roles in a coming OA world:

- **The chief OA officer and chief OKI manager of CAS.** The tasks include: 1) Developer of OA strategies and policies for CAS; 2) developer and manager of key OA initiatives of CAS; 3) developer and manager of key underlining OKI components; 4) key coordinator in OA/OKI collaboration for CAS; and 5) chief advisor for OA/OKI strategies and policies for CAS institutes.
- **A leading OA promoter and leading OKI developer for China.** The tasks include: 1) Key developer of OA/OKI strategies and policies for Chinese R&L communities; 2) key developer of OA/OKI standards, services, systems for Chinese R&L communities; 3) key organizer, and coordinator of OA/OKI advocacy for Chinese R&L communities; and 4) key representative in political, cross-domain, and international dialogs on OA/OKI.



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- **A lading OA/OKI promoter for libraries.** The tasks include: 1) A leading developer of OA/OKI strategies and policies for libraries; 2) a leading developer of OA/OKI standards, recommendations, services, systems for libraries; 3) a chief promoter, organizer, and coordinator of OA/OKI activities for libraries; 4) a leading representative in multi-stakeholder dialogs on OA/OKI for libraries; and 5) a leading test-bed for innovation and experimentation in OA/OKI services.

NSL aims for a proactive but yet prudent taking-up in its OA/OKI strategy, such as: 1) Taking full advantages of Internet and market forces; 2) engaging in proactive experimentation with emerging opportunities; 3) having options open, and preparing for multiple opportunities; 4) taking evidence-based steps; 5) keeping guard of possible vicious outcomes; 6) combining new moves with reforming old approaches; and 7) ensuring political support and economic sustainability. This is partly illustrated in Fig. 2, again more an explorative tool than a definitive plan.



Fig. 2 NSL positioning in OA/OKI. Note: OKI, Open knowledge infrastructure.

3 Working as the chief OA strategy & policy developer

Figure 3 is the current framework of efforts in OA strategies and policies. We recognize multi-layered strategies and policies, and the needs for rich information and solid research. Several initiatives were started to support the role as the chief OA strategy and policy developer:

3.1 Tracking the trends

NSL has set up a team of staff and graduate students to monitor international development of OA. The results, including translations of important OA documents



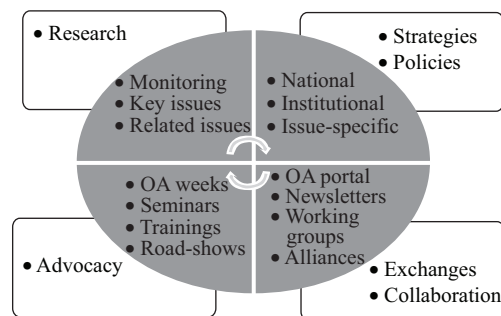


Fig. 3 NSL framework for the OA strategy and policy.

and research, are reported in a monthly newsletter deposited into NSL IR for open access^[11].

3.2 Research on major issues

NSL has been supporting staff research into the key issues of OA. So far, it produced major reports on trends in open access development^[12], OA policies and practices of traditional publishers^[13], rights management of IR content deposit and distribution^[14]. With the first China OA Week in October of 2012, NSL issued studies on OA publishing support policies of research funders and R&L organizations^[15], the criteria for selection and evaluation of OA journals^[16], and current state of OA journal publishing in China^[17]. Issues on copyright, information literacy, and e-publishing are also included in the OA research agenda.

3.3 Strategy & policy development

Armed with continuous research, NSL worked as the major researcher and drafter to help formulate the CAS OA Strategy Statement issued during the 8th Berlin Conference on Open Access in Beijing in 2010, declaring CAS' support for public access to publicly funded research, with plans for institutional repositories in CAS institutes, OA publishing experiments, and international collaboration in OA. NSL issued the first Chinese guidelines^[18] for IR deposit and distribution policies of publicly funded research. NSL's studies on OA publishing support policies and the criteria for evaluation of OA journals are being incorporated into NSL's work for recommendations for CAS and national policies.

3.4 Advocacy and promotion

NSL has set up an Open Access Promotion Portal to distribute news, reports, and research about OA^[19]. A series of OA-focused international conferences were



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organized by NSL, including the 2005 International Conference on Trends and Strategies of Open Access to Scientific Information, the 2007 International Seminar on Knowledge Commons and Copyrights, and the 2010 8th Berlin Conference on Open Access. In 2012, NSL organized the first China OA Week with rich activities in presentations, panel discussions, and road shows of OA repositories and OA journals.

Further efforts will be focused on policy studies for governmental, funder, and CAS, in the areas of IR and OA publishing. A core team was established to sustain the work.

4 Support of OA publishing

Figure 4 gives the NSL framework of activities in support of OA publishing (where OAJ stands for OA journals). Current efforts concentrate on the following:



Fig. 4 NSL framework to support OA publishing. Note: OAJ, Open access journals.

4.1 Sponsoring CAS authors' OA publishing

NSL is the first Chinese institutional member for BioMed Central (BMC), to pay 50% of the article processing charge (APC) for any articles with a CAS corresponding author for all BMC OA journals, after an institutional discount. NSL insists on a negotiated discount to achieve higher cost-effectiveness in OA publishing with a committed central fund, requires co-payment from authors so they will be sensitive too to the levels of APCs, and demands additional services from BMC, including road-shows at institutes, provision of training materials, and reports on CAS submissions, publications, and usage data. A local archive of all BMC OA journals, already in operation, is also part of the NSL conditions for sponsorship. Along the



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same line NSL sponsors CAS authors to publish in the OA journal *New Journal of Physics* (NJP), and includes NJP in its local archiving agreement with the Institute of Physics Press which publishes NJP. NSL is talking to other high impact full OA publishers for possible institutional sponsorship with the same requirements, but still refrains itself from hybrid OA publishing unless there is a transparent mechanism for reduction of subscription fees.

4.2 Sponsoring collective OA publishing initiatives

NSL signed, on behalf of CAS, the Expression of Interest to join the Sponsoring Consortium for Open Access Publishing in Particle Physics (SCOAP³)^[20]. NSL works with other SCOAP³ partners to transfer subscription funds to support OA publishing in high energy physics (HEP) to achieve full OA for peer-reviewed articles in HEP. NSL is now a member in both SCOAP³ Steering Committee and SCOAP³ Technical Working Group, and is coordinating major Chinese HEP authoring institutes to develop a national consortium for SCOAP³^[21]. NSL is willing to participate and contribute to similar efforts.

4.3 Experimenting with policies for supporting authors' OA publish

NSL recognizes the complicated challenges if the NSL sponsoring policy scales to the national level. NSL has conducted research on selection and evaluation of OA journals for authors and funders; rights requirements for depositing, re-use, and value-added services, etc., in OA publishing for authors, authoring institutes, and funders; and OA publishing sponsoring mechanisms that achieve better cost-effectiveness and more balanced APCs. Based on these and continuing research and experiments, NSL is also working on recommendations for possible national policy guidelines.

4.4 Experimenting with policies for supporting OA journals

The challenges to transform subscription journals into OA ones are real and imminent. As a publisher of 16 journal titles, NSL is at a unique position in study of the challenges by combining with its experience in sponsoring authors' OA publishing. Issues at hand may include the APC calculation models of OA journals, multi-channel income modes with value-added services without sole dependence on APCs, and improvement of operational efficiency by re-structuring the workflow and by development of value-added services. What is important here is to re-context journals really as a digital media and networked service platform.

In addition, NSL is engaging in cooperative policy development with international partners, in areas such as proactive licensing practices, good quality control requirements for OA journals, and good service requirements for full OA and hybrid OA journals.



5 Development of CAS IRs

One of the major efforts in NSL's promotion of open access is the development of institutional repositories for CAS institutes^[22]. NSL has purposed IRs not as a passive repository but an institutional knowledge management mechanism and knowledge service platform, as illustrated in Fig. 5. NSL started IR development in CAS institutes in 2007, and has now more than 70 IRs in operation and more than 20 IRs in construction^[23]. By October 2012, the number of full-text papers deposited are over 265,000 and the total downloads extend over 4 million while half of downloads occurred in 2012 alone. More than 20 papers each has attracted more than 200 international downloads. In the international registries like DOAR^[24] and ROAR^[25] CAS IRs count for more than two thirds of Chinese IRs.

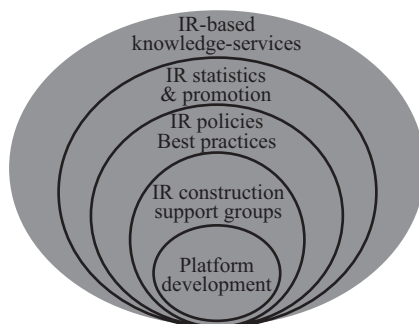


Fig. 5 NSL IR development framework.

Several considerations stood out for the relative success of the CAS IR implementation:

- Focus on the institute, where the authority and effectiveness rest to mandate and support deposit, and where the impact of preservation and promotion are best felt and appreciated.
- Position IR for knowledge management to address the institutional concern for preservation and utilization of its own research output, and position IR for research impact management to answer the institutional need to promote its research results.
- Develop an integrated approach to IR, not just providing a free IR platform, but also helping institutes with tech assistance teams, implementation assistance teams, a policy team, and frequent training and consultation enhanced with an online support forum.



- Facilitate IR development with value-added services to authors and institutes, such as automatic author profiling and knowledge mappings within an institute or cross-institute.
- Support sustainable IRs by extending institutional library services into IR operations and institutional knowledge management, while the transformation of institutional libraries is facilitated at the same time. A key lesson learned is never to position IR development as just a library issue, an archiving issue, or even an OA issue alone.

One important factor contributing to the fast development of CAS IRs is the careful clarification of the copyright laws and regulations on management of intellectual properties of publicly funded research. A rights chain is built based on the clarification, as shown in Fig. 6 and documented in Ref. [14], to guide the understanding of the permissions and limitations of the rights for all stakeholders. In addition, a further analysis is applied as for the factors enhancing support for deposit and distribution, and to the factors alleviating resistance. Recommendations are given to measures strengthening those factors.

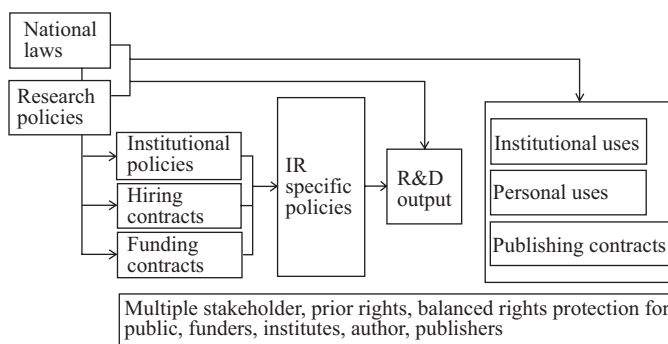


Fig. 6 NSL IR development framework.

6 Future work

NSL is committed to lead the OA revolution for research and for libraries. In addition to the efforts outlined above, NSL has been experimenting with harvesting and organizing open access conferences materials and educational resources, long term preservation of OA journals with full metadata and XML files, and linked open data engines to enable open exploration of open content. At the same time, NSL has taken the open way to promote OA, by issuing its IR software CSpace as an open source software^[26], and by initiating organizing two collaborative groups with other libraries to promote the arXiv repository^[27] and to coordinate efforts in IR



development^[28]. NSL will strengthen its OA strategies, policies, and implementations, to meet the challenges of the fast evolving OA environment.

NSL recognizes the disruptive nature of OA to traditional libraries^[29], and admits the uncertainties for itself in the OA world even with its current efforts. However, the complexity and risks are more reasons for initiative and strategic innovations. We cannot afford to wait because that is simply “opt out” in the time of great opportunities and “hand-over” our destiny in a competitive world. We take this time as ours to re-develop information services and to create and shape the future for the better of research, learning, and society.

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- **For electronic journal article**

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Submission Guidelines

◆ Aims

Chinese journal of Library and Information Science (CJLIS), being sponsored by the Chinese Academy of Sciences (CAS) and published quarterly by the National Science Library of CAS, is a scholarly journal in the field of library and information science (LIS). Its aim is to provide an international communication link between researchers, educators, administrators, and information professionals.

With the publication of the research results both from China and from other foreign countries, the Journal *CJLIS* strikes a balance between theory and practice. With its goal to provide an open forum for Chinese and international scholars in this field to exchange their research results, *CJLIS* also offers new possibilities in the advancement of Chinese library operations. The *CJLIS* tries to establish a platform for LIS students, researchers and library staff all over the world to engage in intellectual dialog and also to improve library services so as to promote even more quickened and substantial development of LIS in China.

◆ Scope

Striving toward academic excellence, innovation, and practicality, the *CJLIS* mainly includes research papers both on the theoretical as well as on the practical fronts in all aspects of the field. More specifically, it includes but not limited to informatics, library management, information technology application, knowledge organization system, knowledge management, archives, permanent preservation of library resources, LIS education, and so on.

◆ Refereeing Process

Articles and papers covering the topics or themes mentioned above, will be refereed through a double-blind peer review process.

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CHINESE JOURNAL OF LIBRARY AND INFORMATION SCIENCE (QUARTERLY)

Volume 5
Number 3
2012

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ISSN 1674 – 3393
CN 11-5670/G2