

A new digital platform to open up Chinese university journals: publishing, communication and some OA initiatives

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There has been a rapid increase in science and technology research in China over the last ten years, and an upsurge in STM papers is bound to follow. This will seriously challenge the traditional model for publishing and communication through academic journals. This presentation analyses the difficult situation that Chinese university journals are commonly confronted with today. It suggests that new online repositories should be set up to make currently scattered information integrated, and provide open access to it. The proposed digital platforms will improve the visibility and impact of the university journals within both the domestic Chinese and the international scholarly communities. Some open access initiatives such as *Sciencepaper Online*, *E-journal Archives of Chongqing* and *PaperOpen.com* are introduced in this article.

Introduction

As a representative of The Society of China University Journals in Natural Sciences (SCUJNS), I should like to give a picture of the current publishing and communication activities of its members, the challenges they face in the fast changing digital era and some reform initiatives they are making in response to the challenges. The purpose of this paper is to enable the international scholarly publishing community to know more about us and to help Chinese scholarly journals open up more, and faster and better, to the world.

Four months from now, the 28th Olympic Games will be convened in Beijing, and its spirit is just the same as ours: faster, higher and stronger; one world, one dream.

The growth and development context and general publishing conditions

Over the last ten years there has been a rapid increase in science and technology research in

China. An upsurge in STM papers and publishing is bound to follow.

The numbers of STM papers and journals

In December 2007, China's Ministry of Science and Technology (CMOST) made known to the public that 405,000 STM papers were published domestically in 2006.¹

Internationally, 172,000 papers produced in China were included in the Serials Citation Index (SCI), Engineering Index (Ei) and Index to Scientific and Technical Proceedings (ISTP) in 2006. This made China the second-ranking country in the world according to that system.

By 1 May 2005, there were 5,387 STM journals registered in China. The total number of STM titles was smaller only than that in the USA.

Research productivity in universities

In recent years many of the Chinese universities have been changing from a purely teaching type of institution to a teaching and research type, and thus the central and local governments have increased financial support for research in universities. Universities have been playing a major role more and more in STM research in China:

- 60% of national laboratories and key laboratories were set up in universities²
- China's Ministry of Education (CMOE) has invested in 160 key laboratories in universities²
- the number of graduate students was 978,600 in 2005; of these, 191,300 were PhD candidates³.

The statistics above tell us the reason for the recent explosion of research papers in the universities of China. Of the STM papers published domestically, 60.1% were produced in universities, while 83.5% of the papers from China included in SCI, Ei and ISTP were produced by university authors in 2006¹.

The number of STM journals published by universities had risen to about 1,495 titles by 2005⁴. This was almost one third of the total in China. The other two biggest sponsorships groups, with about 1,300 titles for each, are the Chinese Academy of Sciences (CAS) and China Association for Science and Technology (CAST).

Two concepts need to be differentiated: STM journals published by universities, and the university

journals in natural science. The first is a broader concept than, and contains, the second.

STM journals are divided into several categories. Within these categories, academic journals have the largest number of titles (77.6%). (See Table 1).

category	number of STM journals published by universities	percentage
technological	158	10.9%
academic	1,129	77.6%
popular science	27	1.9%
general and policy	128	8.8%
indexing/abstracting	13	0.9%
not clear	40	2.7%
Total	1,495	100%

Table 1. Percentages of titles in different categories of Chinese university STM journals in 2005⁴

Within the 1,129 titles in the academic category, the 'university journal in natural science' is the most numerous type. There were 668 of these titles in 2005⁴, almost half of the university STM journals. They have a common feature, in that the names of the titles tend to follow a pattern, such as: *Journal of [university's name]*, as in *Journal of Chongqing Normal University (Natural Science)* and *Journal of Tsinghua University (Natural Science)*. Since the authors of this paper all come from the Chinese university community, we will make more analysis of the university journals' publishing system.

There are some further characteristics common to these journals too. First, they are all academic and general in subject-matter. Secondly, they each aim at revealing the research achievements of the sponsor university; many universities thus each have at least one of this kind of journal. Thirdly, they are all non-profit and supported by the relevant university financially, to the extent of from 0.2-1 million CNY for each title annually including staff salaries. In a survey the average number of staff for each editorial office was shown to be 3.7.⁴ Fourthly, typically most contributions were derived from within their campus. For example, 95.6% of papers published in *Journal of Beijing University* were from its own faculty and students during the year 2002-2003.

Difficulties and challenges for university journals

The publishing model is out of date

For many years, the ‘one university, one journal’ pattern (by and large, still at a typical ‘planned-economy’ stage) caused the following results.

The number of subject fields studied in the university determined how many subject fields had papers published in the journal of the university, since the journal was based mainly on the campus as a source of contributions. Compared with specialized journals, these university journals cannot focus on one or a few subjects, but rather, they have to be like a mixture of dishes. In fact, none of the 668 university journals differ very much from each other, coming from the same mould. For example, many of the journals publish papers in mathematics, physics, chemistry, biology and geography, the five traditional natural science subjects, as the main body of their journal. This phenomenon, known as ‘thousands of people have the same face’, not only decentralizes information and thus decreases the effect of communication, but also wastes resources.

Labelled with the university’s name and aimed at serving the sponsor university, the journals usually do not attract authors from outside the campus.

So the ‘one university, one publisher’ business model does not compete strongly enough in the market economy.

Lower circulation and impact

For more than half the journals, the domestic circulation is much less than 500 copies per issue. The circulation abroad is very small.

Overall, the impact of university journals is unsatisfactory, except for a few top-echelon university journals. Compared with relevant specialized journals, their impact factor is much lower (See Table 2).

Difficulty in getting high-quality contributions

Although there is an explosion of research papers in the universities of China, there is a lack of high-quality papers for their journals. The reasons are as follows.

Over the last ten years, Chinese scientific policies have been encouraging publication in foreign journals, and especially in journals indexed, for example, by SCI, Ei and ISTP.³ As a result, many good papers are contributed to journals outside mainland China.

The university journal is also in a disadvantageous position when competing with domestic specialized journals for good papers². Due to the dramatic contrast between, on the one hand, the high productivity in research papers in Chinese universities and, on the other hand, the shortage of contributions for their own journals, they have to lower their standards for acceptance. Generally, university journals are becoming a publishing service for their junior faculty and graduates who are still far from showing the advanced research achievements of the sponsor universities, even though every journal take this as its goal.

Lack of digitization and internationalization

A survey showed that, of 220 university journals, only 89 (40.5%) have their own homepage linked to their sponsor university’s website. Only 29 (13.2%) make the full text of their papers available online.

Only 40 of the university journal titles are published in English. Few university journals have

Type of journal	Average impact factor	Type of journal	Average impact factor	Type of journal	Average impact factor
university journal in natural science	0.258	medical university journal	0.334	basic medical science	0.508
journal of mathematics	0.295	medical college journal	0.165	clinical medical science	0.592
journal of physics	0.549	agricultural university journal	0.435	basic agricultural science	0.684
journal of chemistry	0.621	industrial technology university	0.248	general industrial technology	0.337
journal of biology	0.658	chemical engineering university journal	0.261	chemical engineering	0.394
journal of geography	0.827				

Table 2. The impact factor of relevant specialized journals and university journals in 2006

international editorial boards, few have any established international peer-review system, authorship, and co-operation with foreign partners in editing and publishing.

What are their strengths?

Historically, 32% of Chinese university journals started before 1980, and some of them have more than 60 years of history⁴. They have accumulated plenty of experience in scholarly publishing and have developed a specific culture which can be seen as a useful resource.

A distinctive characteristic of the university journal is that it is expert in publishing articles in basic subjects or theoretical research.

Sponsored by universities, they do not have to struggle to increase their income by subscription or other means, but are free to concentrate on increasing their impact in the scholarly community. The other side of this non-market economic model is the advantage of being able to introduce open access, which has been proved to be a good way to improve the impact of journals.

Hundreds of the publishers have similar business models and similar editorial organizations. Thousands of editors all over the country are members of SCUJNS, and they often have opportunities to exchange ideas and share feelings. They have the experience of their editorial careers in common, and such common experience gives people common wishes for the future. To some degree, they are therefore able to act as a team under the leadership of SCUJNS.

This situation suggests that information resources can be integrated in a new digital environment, where human resources can be brought together to achieve this aim.

Integration and opening up of university journals

Challenged by the predicaments university journals were facing, a number of people began to think about possible strategies to improve the situation. About ten years ago, they started to put these strategies into action. For example, it was suggested that all the general university journals should be divided up into specialized ones, and then fewer, new journals established. The *Chemical*

Journal of Chinese Universities was a successful attempt at this, and has become a high-quality and high-prestige journal in China now. However, the proposed journals for other subjects, such as mathematics, physics and biology, have been aborted. In general, this proposal failed to unify the wills of the hundreds of university journal publishers into one, or it did not have enough power to persuade them to give up ownership of journal publishing.

Nowadays, the concept of integration that we propose is not the same as it was then. It will let publishers retain ownership of the university journals they publish, but will integrate the information on a digital platform.

First, it is suggested that we set up a general online repository to publish preprints for every journal, but with each relevant journal retaining copyright. Some successful cases in the international community, such as arXiv, Citeseer and many institutional repositories, have proved that repositories can coexist well with the relevant journals.⁶ And Chinese university journals would not be affected unduly by circulation decrease due to OA repositories⁷ for the reasons stated above.

This proposed initiative will have at least five advantages: 1) it will integrate the scattered information and put it into specialized groups; 2) it will attract more readers; 3) it can act as an exchange platform, to allocate some contributions to subject-specific university journals so that the resource can be mutually complementary; 4) it will improve the level of digitization; and 5) it will be open access and, by being OAI-PMH compliant, will improve international accessibility and visibility.

Some Chinese OA initiatives

There are currently a number of initiatives aimed at increasing open access, and three of these – Sciencepaper Online, Electronic Journal Archives of Chongqing (EJAC) and PaperOpen – will be looked at in more detail.

Sciencepaper Online (<http://www.paper.edu.cn>) This non-profit repository, sponsored by the Centre for Science and Technology Development of CMOE, is committed to providing open access services for scientific or scholarly articles.

It provides a platform for convenient and immediate communication between researchers. Beyond the traditional publishing models, it

speeds up the publishing of scholarly articles and expands the dissemination of scientific research.

The articles published cover 43 subjects, ranging over many fields of science and engineering. Due to the 'publish before review' policy, researchers can firstly publish their research results as a short cut and free of charge. Articles published will receive peer review if the authors request it.

Since its launch in October 2003, it has made substantial achievements: the number of registered users has reached 139,000; the website receives 8,000 visits per day; more than 17,000 papers have been published here first; 30-50 papers are published here per working day.

Electronic Journal Archives of Chongqing (EJAC) (<http://www.ejac.org.cn>) Sponsored by some universities in Chongqing, EJAC will be a non-profit repository committed to providing open access services for scientific and scholarly journal articles. Initially, it will cover about 100 academic journals from Chongqing, as well as some journals from other cities in China.

It will have some special features: 1) Chinese-English bilingual interfaces; 2) immediate publication of preprints of journal papers, followed by publication of postprints by issues; 3) an English abstracts database to open up a window to Chinese scholarly articles for overseas users; and 4) some local special theme databases such as *Environmental and ecological research on the Three Gorges Reservoir Area*; and *The strategy of coordinate development of urban and suburban areas in Chongqing Municipality in an overall manner*. Planning is at an exploratory stage.

Generally, Chinese academic journals have poor impact in the international community owing to lower visibility, poor accessibility, language barriers, and so on⁸. It can be said that expanding communication channels and overcoming the language barrier are two wheels that will carry Chinese academic journals to the world.

Recently, Elsevier and Springer have both initiated new projects, whereby they signed contracts with some Chinese university journals that they considered of high quality, to republish some papers they selected from these journals on their websites. In the process of co-operation, the international publishers take responsibility for language improvement and overseas distribution.³

PaperOpen (www.paperopen.com) To enter international academic communication, the Chinese

academic community needs both to export and to import information. The open access movement provides the best opportunity for this exchange. However, Chinese researchers have shown lower awareness of OA than international scholarly authors, although they expressed a positive attitude to OA in an investigation⁹. As academic communicators, we have a responsibility to introduce OA to China and to open up China to the world. With this aim in mind, one of the authors of this paper, Dr Jianli Qian, has developed with his colleagues an initiative called PaperOpen, which is an open access paper search engine. Launched on 8 January 2008, its goal is to collect OA papers from all over the world by spider and then provide a free service to the teachers and students of their university as well as to the public. More than 400,000 OA papers, including about one third Chinese OA papers, are indexed in the beta version of the database. After its load and performance have been tested, PaperOpen will hopefully hold six million papers in total.

Conclusion

We have good grounds for believing that in the not-too-distant future, Chinese university journals will have developed good digital platforms to open them up to the world, and they will be better, faster and stronger.

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