

## Academic Publishing Significance and Models of IR in OA Environment

Ning Ouyang<sup>1</sup>, Zhengxing Wang<sup>2</sup> and Jing Zhang<sup>1</sup>

<sup>1</sup>Library of China Pharmaceutical University, Nanjing 210009, China

<sup>2</sup>Huaihai Institute Library, Lianyungang 222005, China

### Abstract

**Institutional repository which is simply called IR is one of the important ways of academic publishing in OA environment. This paper analyzes the academic publishing significance and value of IR. At first, the models of international IR is introduced, then the existing and constructing IR of domestic is discussed and the advantages and disadvantages of each model are analyzed. Finally the patterns of domestic IR with national conditions are proposed.**

### Keywords

**OA, Open Access, IR, Institutional Repository, Academic Publishing.**

### 1. Introduction

Open access referred to as OA is profoundly affects the development and reform of academic publishing. OA in Europe and the United States has always two paths, that is golden and green. Golden library which is called various OA publications is led by the publishers. It leads the traditional publishing industry to the direction of network and opening. Green library is subject knowledge base and Institutional Repository referred to as IR [1]. It is dominated by academic institutions, libraries and scholars. Green library opens the new changes participated by knowledge management and knowledge producers in academic publishing. From the trend of academic publishing, IR is more suitable for OA purpose because it is the catalyst to promote change of traditional academic publishing and reflect the innovation in exchange and communication of academic publishing in the era of Internet+. Therefore, reform in academic publication must flourish OA, prosperity of OA need to strengthen the construction of IR, and the key of IR construction lies in the choice of its mode. This paper discusses academic publishing meaning and value of IR in OA environment. According to analysis the construction mode of IR abroad, the construction model and applicable scope are discussed by combining with domestic IR.

### 2. Construction Mode of Foreign IR

Foreign construction and operation of IR mostly has the support of the government or the project funding, such as Britain and the United States earlier. They studied earlier and their construction levels are also higher. The number of foreign IR has been developed to a large scale. IR in these countries has become a common use of higher education institutions.

#### 2.1 Centralized

Refers to many institutions only established a central server, each IR member are submitted metadata and content directly to this central server. Through a unified service interface provide services or as a data provider, allowing other services provider to collect its metadata, or manage the whole process of construction, including from submitting the papers to setting the user interface [2]. Some developed countries and regions in Europe and America have emerged a lot of centralized IR alliance such as Washington Science Library Alliance institutions. It has established IR alliance Aladin based on the dSPACE software system which rely on to the Washington Research Library Consortium (WRLC). University of Leeds, University of Sheffield and University of York based on the Eprints software, jointly established white rose repositories Federation (the white rose consortium Eprints repository).

## 2.2 Distributed

Refers to the IR members respectively set up their own knowledge base, on the basis of the realization of independent search, build a unified retrieval platform, metadata are collected and stored in a centralized database search, but the original data remains in the local knowledge base, data and resources are distributed and each member is independent, but must ensure knowledge base and comply with the relevant agreement, usually is OAI protocol [2]. However, the OAI-PMH collected metadata can meet the requirements of the minimum standard, so the quality of metadata is uneven, sometimes metadata is not the latest version. But compared to centralized, the cost of distributed in fact is relatively low. Distributed examples of foreign countries such as the IR of the Duke University, funded by the Commonwealth of Australia Education, science and Training Department of the ARROW alliance IR project [2].

## 2.3 Mixed Type

The pattern is hybrid mode of centralized and distributed academic publishing. Its members are divided into two categories. One is construction platform with IR, members of this kind using distributed metadata collection; the other is not IR platform, some members use centralized storage of academic information resources. For example, UK ePrints project are funded by the British JISC.

## 3. Research on the Construction Mode of IR in China

Combined with the traditional publishing system, CNKI basically meet current academic publishing requirements in China, but with the deepening of OA movement, the domestic publishing system must make corresponding changes to keep up with the trend of the world, academic research must be integration with the world [3]. Compared with foreign development of IR, IR in China is still in the construction phase of the case, at present the successful operation of IR mainly, Chinese Academy of Sciences, Institutional Repository of China National Science Library (NSL-IR), China environment and ecological science data center, knowledge base of China Agricultural University, academic archives of Xiamen University, institutional archives of Zhejiang University, China open educational resources sharing Association CORE, scientific database of Chinese Academy of science, Institutional repository database of Shanghai Jiaotong University (OAPs project is already running, which is IR of outstanding student's paper), OAPs of Tsinghua University [4].

### 3.1 Mode of Cooperation

So-called alliance cooperation, just refers to two or more than two institutions share resources of institutions, establish IR by means of cooperation, so that integrate the digital resources and provide centralized academic publishing services, cross-database retrieval and contents exchange between the support organizations[5].

#### 3.1.1 Cooperation based on Theme

Strong professional league. Many domestic universities and research institutes have their own strong professional, if colleges and universities which resource closely linked can be organized together in the construction of IR, it will be a strong professional focus. Knowledge of the rolls are many high-quality goods, utilization rate will be higher. Storage content can be divided into multidisciplinary IR alliance and the specialized IR alliance. For example, the library alliance of national foreign languages college is founded in 2009, 11 members built all kinds of characteristic databases [6]. But the difficulty lies in the type of IR and the use of the term varies in different subjects, different subjects use different metadata configuration; different disciplines have different requirements for the size of file formats.

Same industry alliance. Author thinks that IR union according to the industry concentration is a good topic. For example, according to the publication system, IR want to break through the bottleneck in the process of academic publishing, need support of publishing, publishing experience of copyright can provide guidance to avoid risks in the construction of IR, and each publishing house has its own knowledge base. On the other hand, the traditional publishing house needs based on the experience of IR's academic publishing, so publishing system alliance is a win-win mode.

### 3.1.2 Cooperation based on the Construction of Subject

Education system. Universities has been one key of academic publishing in OA environment [7]. Many domestic universities and colleges have different disciplines. China Academic Library and Information System (CALIS), since construction began in 1998, introduce and build a series of domestic and foreign literature database, including two library and a large number of full-text database, using the independent developing combined with digestion, formed a relatively complete the literature information service network of CALIS. In 2012, CALIS construction and promotion project of IR--CHAIR formally adopted, try and practice the construction of IR in University. Domestic colleges and universities of 985 and 211, is a symbol of the domestic first-class university, if these schools can form a coalition in the construction of IR, can achieve the combination of powerful. But the difficulty lies in: because of the differences in their own situation, there are differences in the process of building IR, it is impossible for all the participants to develop the same implementation strategy.

Hybrid alliance between research institutes and libraries. Library is a service organization, but with the advent of digital publishing, the function of library has not been perfected in time. And scientific trend analysis, intelligence gathering and communication service, should not only public results in the digital publishing era, should be more valuable[8]. Library should be a valuable resource in the efforts of grey literature experimental records, lesson plans, courseware, etc. These are important knowledge products, through scientific research institutions and the library alliance, Library should be from knowledge service change into knowledge producers. The road of China's IR academic publishing, not only need Chinese Academy thinkers such as Zhang Xiaolin, but also need more practitioners.

### 3.1.3 Cooperation of the Regions

Alliance between the inner regions of the country. Natural geographical natural ties, regional institutions alliance or the library alliance will provide a reasonable basis for the implementation of IR structure. If regional or systemic IR alliance develop to a certain stage, can establish the alliance rise to the national level or the central level, the service model will more realistic and easy to run, because it can guarantee a high degree of consistency and reduce unnecessary duplication of metadata. For example, Finland is a developed country attach great importance to the construction of information infrastructure, as early as the end of 1990s began the construction of IR, it is significant in building the union IR, especially the construction of models, practice of exploration, integration and shared services of Doria and Theseus, has an important reference to the industry system, and the construction of regional alliance IR in our country[9].

International alliance. Current alliance of IR between states did not appear, the purpose of two website, OAster and ROAR is mainly the development of monitoring the situation of global IR, but from the data reflect, it is in its search for more detailed data. By 2014, OpenDOAR included more than 1600 knowledge bases, but only 38 registered in domestic [10]. And in 2008 China's CALIS and Elsevier finally failed to reach agreement to buy, also revealed that the gap with foreign scientific research in resource acquisition at present, etc. However, the author believes that in the current era of big data, if there can be a tool or a platform of cooperation between states, the IR alliance is undoubtedly authoritative and international influence.

### 3.1.4 Alliance cooperation based on technical means

Centralized and Collection model, two models are similar to the foreign IR types, but this is not an absolute division, and some IR content will appear crossover and mixed. The advantages of IR alliance is very obvious, it is the main mode of foreign IR construction, can achieve sustained and extensive collection, long-term preservation and sharing utilization, can alleviate the problems of domestic IR construction such as funds shortage, lack of technology, lack of resources and content. and further, promote the development of IR in china. Therefore, China can develop IR alliance step by step, from bottom to up, eventually make IR become Chinese knowledge preservation and publication infrastructure [11]. But the drawbacks of the alliance is also very obvious, the first is when it makes policy, must consider the current situation, management, structure and culture

difference of each organization at the same time, need coordination and overall planning, in order to avoid contradiction between alliance members, this will reduce the efficiency of IR coalition policy formulation and execution. Secondly, in the acquisition and integration of metadata, the different agencies of the union may adopt different standards, different software and even different platform, which makes the cross-database retrieval at the conversion of metadata, it is not conducive to the seamless connection and integration. Third is the quality of submitted content of different agencies, scope, auditing standards, there are many differences, also can make the content of IR shows uneven.

### 3.2 Independent Model

Standalone mode refers to the scientific research institutions as the core, this institution of scientific research personnel to collect, store and organize academic information resources, in order to realize its long-term preservation, spread and open access, to achieve the goal of academic publishing. This model is usually based on the institutions of the departments, research departments and other research results submitted to the construction of the knowledge base [5]. At present, most of the domestic IR uses this model, and most of them are based on IR academic publishing model of the Academic Digital Library. Digital resources of colleges and universities is rich in content, forms, especially some unpublished grey literature is indispensable important to academic publishing, so it is necessary to establish IR to achieve academic publishing.

Independent model has the advantages of independence, flexible, easy to manage and achieve personalized service, can give full play to the characteristics of individual IR advantages, to establish the corresponding academic publishing brand. However, with the development of IR, this model also exposed many shortcomings: First, construct this mode of IR must have financial and technical support, this make the construction of IR as a "miles away" to many small institutions. Second, independent agencies collect resources have limitations, because the resource collection is limited to the scientific research personnel, the quality of its resources storage is not high, the collection scope is not wide enough. Apart from some high-profile, highly open access consciousness, most of the IR also is in a state of "warehouse less food". Scholars can get too little from the resources, so their IR awareness is low, thus less willing to contribute their resources to IR, so caught in a vicious circle.

## 4. Advice and Conclusion

With the rapid development of information industry and the Internet, online publications shows a growing trend of geometry, domestic traditional academic publishing model more and more seriously restrict the modern academic exchanges, in urgent need of transformation. As the most academic value of online publishing in OA environment, academic publishing is self-evident. As an important way to realize academic publishing, IR shows strong vitality.

Through the public resources of IR in our country, published articles occupy the vast majority of works, the intermediate data, experimental data published before is less, the languages which can provide are not much, opened tools can be embedded are rarely, undoubtedly reduced the IR academic publishing scope, weaken the IR academic communication function. Of course, many scholars have studied IR resource collection channels. Although our country has also signed the "Berlin declaration", many organizations construct IR, part of IR established alliance, more and more scholars study theoretical research and practice of open access, but this does not represent our country has a high level of understanding with open access. Current domestic IR leader only Xiamen University, Chinese Academy of Sciences, Centre for Documentation and Information of Chinese Academy of Sciences, Zhejiang University, Tsinghua University, and Centre for Documentation and Information of Chinese Academy of Sciences has not officially opened, effect of officially opened IR is not obvious. Institutions do not actively promote, not even known, which greatly limits the IR's development of academic publishing in our country. Through the analysis of various models of IR academic publishing, the author believes that the main body of each institution can choose the relationship between the alliances according to the requirements of their own academic publishing. In the actual construction of IR, as long as it is conducive to academic publishing, can be combined with

a variety of patterns, such as independent and centralized combination, or independent construction, centralized publishing mode; or a IR as the center, radiating from different disciplines such as education or direction. then, Such as education system cooperation, domestic cooperation, industry cooperation, etc. Although China's national conditions are more complex, a lot of foreign successful experience can be used for reference.

IR is a sustainable developing project, lack of corresponding policies and funds is one of the main reasons for the backward development. On the other hand, backward but also a broad space for development, academic publishing model of IR in China will have a huge impact on the publishing industry. But at present, there is a great gap between the reality of IR and the vision of substituting traditional publishing, the development of IR academic publishing also need the traditional publishing industry to fully participate in [12], need the government's policy and financial support, use of rich resources of colleges and universities. Based on the alliance in the era of big data of OA environment, it can realize the research achievements of open access and promote the further development of China's academic and scientific research.

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### References

- [1] Sun Jie, Li Shuyuan. The Practices of Library Publishing Service in Foreign Academic Libraries, Library and Information Service, Vol.1 (2016), p.64-70.
- [2] Deng Jun. Research on Construction Model and Operational Mechanism of Institutional Repositories, Changchun, Jilin University, 2008.
- [3] Zhang Qiaona. The Atudy of Cold Phenomenon of Practice of Institutional Repository in mainland China. Journal of Academic Libraries, Vol.6 (2010), p.48-52.
- [4] Wang Dan. Research on the Development of Open Access Repository, Changchun, Northeast Normal University, 2011.
- [5] Hou Lihui. The Study of Institutional Repositories Model Construction in china. Changchun, Northeast Normal University, 2010.
- [6] Wang Yinjie, Li Daling, Xu Meilian, et al. Research on the Construction Model of Institutional Repository Alliance in Foreign Language Universities, Journal of Information, Vol.10(2010), p.145-148.
- [7] Bankier, Jean Gabriel, Perciali, et al. The Institutional Repository Red is covered: What Can a University Do for Open Access Publishing? Serials Review, Vol.34 (2008), p.21-26.
- [8] Joacim Hansson, Krister Johannesson. Librarians Views of Academic Library Support for Scholarly Publishing: An Every-day Perspective, Journal of Academic Librarianship, Vol.3 (2013), p.232-240.
- [9] Tian Lijun, Zhang Jingpeng. Construction mode and enlightenment of Doria and Thesus consortia institutional repositories of Finland, Researches In Library Science, Vol.5 (2014), p. 37-41
- [10]Huang Xiaojing, Huang Fumin, Wang Qian. Comparative study on the development of institutional repositories in China, Researches In Library Science, Vol.12 (2014), p. 94-97.
- [11]Wu Zhenhuan, The Enlightenment of development of Anglo-American Institutional Repositories to China, Xiangtan, Xiangtan University, 2014.
- [12]Li Xiaohui. Problems in the Vision Accomplishment of Institutional Repositories, Library Development, Vol.4 (2010), p. 2-5.