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Research and Analysis of the Current Status of Open Academic Resources from University Presses Based on Discovery Systems: Postprint

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Abstract

[目的/意义] This study investigates the current open access status and development trends of academic resources from university presses in discovery systems. [方法/过程] Taking academic resources from 15 university presses covered by two mainstream discovery systems—PRIMO and SUMMON—as the research object, we tested the indexing depth of these resources within the discovery systems. We statistically analyzed the indexing depth and scale of university press academic resources, as well as the changing trends in the number of university presses and resources covered by these systems. Using Tsinghua University Press as a case study, we discuss the need to accelerate open sharing of academic resources from domestic university presses. [结果/结论] The results show an upward trend in the number of foreign university presses and academic resources in discovery systems; however, the indexing depth for both subscribed journals and OA resources has not universally reached the full-text level. Open sharing of Chinese-language resources warrants increased attention.

Full Text

Investigation and Analysis of the Current Status of Open Scholarly Resources from University Presses Based on Discovery Systems

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Abstract

[**Purpose/Significance**] This study investigates the current status and development trends of open scholarly resources from university presses within

discovery systems. [**Method/Process**] We examined the indexing depth of academic resources from 15 university presses covered by two mainstream discovery systems, PRIMO and SUMMON, through sampling tests. We analyzed the indexing depth and scale of these resources, as well as trends in the number of university presses and their resources covered by discovery systems. Using Tsinghua University Press as a case study, we discuss the need to accelerate the open sharing of scholarly resources from domestic university presses. [**Results/Conclusions**] The findings indicate that both the number of foreign university presses and the volume of their scholarly resources in discovery systems are increasing. However, the indexing depth for both subscription-based and open access resources has not universally reached the full-text level. The open sharing of Chinese-language resources warrants greater attention.

Keywords: university press; scholarly resources; indexing depth; open access
Classification: G250

Universities serve as centers of knowledge production, and university presses function as bridges for cultural exchange between universities and society, supporting teaching and research [1]. With the implementation of China' s "Culture Going Global" strategy, disseminating Chinese knowledge and cultural achievements internationally and enhancing their global influence has become a shared responsibility of universities and their affiliated presses and libraries. Open access represents the most effective means of knowledge dissemination. The maturation and application of metadata exchange and open linking technologies constitute core drivers of knowledge openness in the digital network era. Resource discovery systems collaborate with content providers such as publishers to collect massive amounts of heterogeneous resource metadata through metadata exchange technology, provide resource search services to end users through preindexing, and enable final resource acquisition through open linking technology. To date, over 7,000 publishers worldwide [2–3] have partnered with mainstream resource discovery systems to enhance resource visibility by opening metadata and even object data. University presses are actively integrating into this open scholarly communication ecosystem, exploring various channels to increase their dissemination impact.

Serials Solutions launched the first web-scale resource discovery system, SUMMON, while Israel' s Ex Libris company released the unified resource discovery system PRIMO. As two mainstream discovery systems (the two companies merged in 2015, though the systems continue to operate independently), they have incorporated substantial resources from university presses. For example, HighWire, operated by Stanford University Press since 1995, collaborates with 708 institutions including academic publishers, societies, and university presses, hosting over 3,000 electronic journals, books, and conference proceedings with a total of 7,659,003 articles, of which 2,434,604 are freely accessible [4]. In 2010, Oxford University Press moved 1.2 million online journal articles to the HighWire 2.0 platform, and in 2013, Duke University Press partnered with HighWire

to build a new e-book platform. HighWire has become the world' s largest academic publisher providing free full-text access, posing strong competition to traditional commercial publishers driven by profit [5]. Cambridge University Press, founded in 1534, publishes more than 360 full-text electronic journals, with nearly 72% indexed in SCI/SSCI/A&HCI and over 30 ranking in the top 10 within their disciplines [6]. Oxford University Press publishes 220+ peer-reviewed electronic journals, 60% of which are published in partnership with societies and international organizations, covering broad academic fields and including many of the world' s most highly cited journals and articles [7]. Both Oxford and Cambridge University Presses launched open access initiatives in 2004 and 2006, respectively [8]. Evidently, university presses are increasingly embracing openness, advancing scientific achievement dissemination through partnerships and open access models.

Unified resource discovery systems are now widely adopted by universities and research institutions, helping users search for and access resources through one-stop retrieval. Current library science research on discovery systems focuses on platform comparisons and metadata evaluation [9-10], with no reported studies examining the degree of openness of scholarly resources within these systems. This paper investigates the indexing depth of university press resources in discovery systems and the number of university presses covered, using the practice of Tsinghua University Press' s open access journals to infer trends in resource openness.

1.1 Selection of Notable University Presses

The former Proquest company' s SUMMON discovery system covers 84 university presses [3]. Since 2011, Tsinghua University Library has employed Ex Libris' s PRIMO discovery system, whose backend resources cover over 20 university presses including Cambridge University Press, Duke University Press, Edinburgh University Press, Oxford University Press, University of Chicago Press, and MIT Press. Based on world university rankings [11], we selected 15 notable university presses ranked in the top 30 that focus primarily on journal publishing and are covered by both discovery systems. Through website testing, we analyzed the current status of metadata openness for these publishers' resources in PRIMO and SUMMON.

The 15 university presses include: Cambridge University Press [12], Coimbra University Press [13], Cornell University Press [14], Duke University Press [15], Edinburgh University Press [16], Johns Hopkins University Press [17], Massachusetts Institute of Technology Press [18], Michigan State University Press [19], Oxford University Press [20], Purdue University Press [21], RMIT Publishing [22], University of California Press [23], University of Chicago Press [24], University of Toronto Press [25], and University of Massachusetts Press [26]. These are all prestigious university presses with high academic reputations. Their publication scopes and resource types vary: Cambridge University Press publishes both journals and books across humanities, social sciences, sci-

ence and technology, and medicine, while MUSE focuses on literature, history, and area studies. Some presses, such as Princeton University Press and Stanford University Press, publish only books. This study focuses primarily on these publishers' journal resources.

1.2 Investigation and Implications of Indexing Depth for University Press Resources in Discovery Systems

Discovery system metadata can be relatively "thin" or "thick." Thin metadata contains minimal fields—basic information such as title, author, collaborators, source, and identifiers. Thick metadata includes not only these basic fields but also subjects, abstracts, and other enriched information. While thick metadata shows no particular advantage in basic searches by title, source, or author, it demonstrates clear benefits in data analysis, reorganization, reuse, and mining [27].

This study focuses on journal articles, testing indexing depth to determine indexing scale (the proportion of full-text, abstract, and bibliographic records). The specific methodology involved randomly selecting three different journals from each publisher, then randomly selecting one article from each journal. We extracted the title, abstract, and partial text fields, then conducted retrieval tests on Tsinghua University's "Shuimu Search" platform (using PRIMO) and Peking University's "Weiming Search" platform (using SUMMON). If an article could be retrieved using title, abstract, and full-text fields, its journal's indexing depth was classified as "full-text." If retrievable by title and abstract but not by full-text fields, the depth was "abstract." If retrievable only by title, the depth was "bibliographic." The test results for the 15 publishers are shown in Table 1 , which lists the various indexing depth scenarios encountered.

Based on the survey results, we draw the following conclusions:

1. **Indexing Scale Statistics:** We calculated the indexing scale for these publishers' journals (indexing scale = (number of publishers exhibiting a given indexing depth / total number of publishers) × 100%). In PRIMO, the full-text indexing scale reached 62.5% and the abstract indexing scale reached 75%. In SUMMON, the full-text indexing scale reached 56% and the abstract indexing scale reached 69%. Detailed results are shown in Table 2 .

2. **Inconsistent Indexing Depth Across Platforms:** Testing revealed that the same journal from the same publisher showed different indexing depths across the two discovery platforms, and different journals from the same publisher showed inconsistent depths within a single platform. These discrepancies occur because articles are simultaneously indexed in multiple databases that provide metadata of varying thickness to PRIMO or SUMMON. If a data source provides full fields to PRIMO and PRIMO indexes all fields, the indexing depth reaches full-text; otherwise, it does not. This mechanism creates variations in indexing depth.

3. **Subscription Journals Not Fully Indexed at Full-Text Level:** Testing found that subscription-based journal resources were not all indexed at full-text depth. For example, our library subscribes to journals from Cambridge University Press, Oxford University Press, and Johns Hopkins University Press, yet these publishers have not opened metadata for all journal full-texts. Oxford University Press journals, for instance, are indexed only at abstract or bibliographic levels. Additionally, some university press journals indexed in commercial databases remain constrained by those databases' openness policies.

4. **Open Access Development:** The growing trend of open access has prompted scholarly journal publishers, including university presses, to join the open access movement rapidly. Many internationally renowned academic publishers have implemented open access [28]. This study found that Oxford University Press, MIT Press, and Purdue University Press all have independent OA journal platforms. Testing of these presses' OA and free journals revealed indexing depths at either abstract or full-text levels, falling short of the ideal state where all would be full-text.

5. **Domestic Press Exclusion:** Discovery systems independently cover only foreign university presses, with no inclusion of notable domestic presses. This may be partly because platform developers are foreign companies that prioritize well-known foreign presses, and partly because digitization efforts at domestic university presses lag behind their foreign counterparts.

6. **Metadata Accuracy Concerns:** Testing revealed that some extracted test fields failed to retrieve results while others succeeded, suggesting metadata inaccuracies that could impact retrieval quality.

1.3 Trends in the Number of University Presses and Scholarly Resources in Discovery Systems

We investigated the coverage of university press journal resources in the PRIMO discovery system in September 2015, September 2016, and April 2017. The number of independently covered presses grew from 10 in 2015 to 12 in September 2016, and to 21 by April 2017 (see Figure 1 [Figure 1: see original paper]).

These publishers provide open access not only to journals but also to other resource types. For example, Oxford University Press offers journals, books, reports, encyclopedias, reference materials, and more, with metadata delivered to the PRIMO discovery system increasing annually through new resource collections. Oxford University Press and Purdue University Press have also opened their OA resources to discovery systems. The upward trend in university press journal resources in discovery systems indicates that more academic publishing institutions are willing to open metadata and even full-text information through agreements or open access models to drive users back to their publishing platforms through broader discovery.

Current Status of Open Access at Tsinghua University Press

The Tsinghua University Press Journal Center was established in March 2011 and currently publishes 22 journals. The number of English journals indexed in core databases continues to grow, and the academic influence of social science journals has significantly improved, forming a preliminary academic journal cluster encompassing both English and Chinese, science and technology, and social sciences. The center operates 14 independent OA journals and 6 cooperative OA journals, all supported by reliable publishing platforms.

Most Tsinghua University Press journals have established their own websites and submission/review platforms, collaborating with major domestic and international literature databases for journal promotion. The center has also built a portal website (www.tsinghuajournals.com) integrating publicity and service functions, managed by dedicated staff. Leveraging new media advantages, the center operates a WeChat official account (TUP_Journals) to release timely updates about the center and individual journals. The website and WeChat account work in tandem to emphasize overall branding and establish Tsinghua University Press' s academic journal brand [28].

Capitalizing on Tsinghua University' s disciplinary strengths and the cluster advantages of journal publishing, Tsinghua University Press continuously enhances journal academic influence, promotes the internationalization of Chinese resources, and utilizes both domestic and international markets and resources to increase copyright exports and strengthen cooperation with various copyright organizations. The press actively collaborates with internationally renowned digital copyright operators to expand the breadth and depth of digital copyright exports.

In digital platform construction, Tsinghua University Press has established four digital resource service platforms and new technology companies, including the digital publishing portal Wenquan Bookstore. The press strengthens planning and management of official websites and WeChat platforms while actively exploring the transition from traditional to new media publishing. Future plans include building an open access publishing and distribution platform to promote content aggregation and brand building, and developing "Tsinghua Academic Online" as a unified digital platform for academic books and journals. The press will synchronize content and digital construction, using digitization to drive content resource development and achieve full-process, comprehensive online publishing of academic journals [30].

Based on sampling tests of indexing depth for journal resources from 15 university presses covered by two mainstream discovery systems and analysis of trends in university press coverage, we conclude that both the number of foreign university presses and their scholarly resources in discovery systems show an upward trend. Notably, however, the indexing depth for both subscription and OA journals has not universally reached full-text level. The open sharing of

university press scholarly resources represents an inevitable trend driven by publisher development, user demand, and discovery system competition, benefiting knowledge dissemination and discovery [31].

Our investigation also reveals the absence of domestic university presses. As university presses, we must recognize the tremendous impetus of digital publishing for scholarly communication, focusing on exploring profit models and developing products and services to better adapt to the academic communication and publishing market environment under new media and technologies [32]. Simultaneously, university presses should enhance the academic influence of their publications, promote the internationalization of Chinese scholarly resources, actively "go global" to participate in international cooperation, and strengthen their appeal, capacity, and cohesion to drive greater development through win-win cooperation.

Based on our investigation of university press resource openness in discovery systems, we offer several insights:

1. **Prioritize Academic Impact:** Continuously deepen brand building for university presses, expand brand extension, increase brand value, and ultimately enhance core competitiveness by prioritizing journal academic influence as the starting point and endpoint.

2. **Embrace Digital Transformation:** Digitization will inevitably become the mainstream trend in scholarly publishing. University presses should seize the "Internet+" opportunity to explore multidimensional, multifaceted transformation and integration paths suited to their contexts. In practice, they should synchronize content and digital construction, using digitization to drive content resource development, positioning themselves as integrators, suppliers, and service providers of educational, academic, and professional content, and forming an independent digital product development and operation platform [33].

3. **Pursue International Cooperation:** University presses should actively utilize both domestic and international markets, explore cooperation with internationally renowned digital copyright operators, promote the internationalization of Chinese scholarly resources, enhance their own appeal, capacity, and cohesion, and expand the breadth and depth of digital copyright exports.

With the widespread availability of digital scholarly literature, openness and sharing have become trends. Data standardization and protocols supporting data exchange are maturing. We anticipate that more university presses will open metadata and even full-text information through agreements or open access models to drive users back to their publishing platforms through broader discovery. Combining open access concepts with modern information and communication technologies will release flowing knowledge (data) as shared resources, promoting the discovery, openness, and reuse of scholarly achievements, creating a research environment conducive to knowledge sharing, mass innovation, and

economic development, thereby driving scientific and technological innovation [34].

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Author Contributions

Wu Lina: Content investigation and analysis, manuscript writing and revision;
Zuo Yang: Assisted with content investigation and analysis, manuscript writing;
Dou Tianfang: Responsible for proposing research ideas, manuscript review and revision.

Note: Figure translations are in progress. See original paper for figures.

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