

A Preliminary Exploration of Open Access Transition Policies and Practices of Major Global Academic Journal Publishers: Postprint

Authors: Chen Juan, Lin Yuehua

Date: 2024-10-06T00:00:00+00:00

Abstract

[Objective] To provide references and guidance for libraries in mainland China, particularly research-intensive university libraries, in developing open access publishing and transformation strategies. [Method] Based on articles published in the past decade and indexed by WOS, as well as transformation practices disclosed on publishers' websites, this study conducted a survey on open access transformation policies of globally important academic journal publishers through online questionnaires, telephone interviews, and other methods, and systematically reviewed open access transformation practices already implemented in Asia by combining with ESAC registration records. [Results] Over 80% of globally important academic journal publishers have relatively mature open access transformation policies and rich practical experience in developed countries such as Europe and America; however, transformation policies in mainland China currently remain relatively unclear. Transformation practices in Asia are mainly concentrated in Japan and Taiwan, China, with relatively fewer in other countries and regions. [Conclusion] At the current stage, whether university libraries in China have the conditions for open access transformation, whether transformation models are feasible, and whether the timing for transformation is mature require further exploration and practice. DRAA plays an irreplaceable role in the procurement of foreign databases for university libraries in China and should fully leverage its important function in open access publishing and transformation in China in the future. University libraries should promptly adjust their business and service function layouts, and collaborate with multiple stakeholders to jointly explore open access publishing models more suitable for China's national conditions.

Full Text

A Preliminary Study on Open Access Transformation Policies and Practices of Major Academic Journal Publishers Worldwide

CHEN Juan¹⁾ LIN Yuehua¹⁾

¹⁾ Xiamen University Libraries, No. 422 Siming South Road, Xiamen 361005, China

Abstract

[Purpose] To provide guidance and reference for mainland Chinese libraries, particularly research-intensive university libraries, in formulating open access publishing and transformation strategies. **[Methods]** Drawing on articles published over the past decade and indexed by Web of Science (WOS) alongside transformation practices announced on publisher websites, this study surveys the open access transformation policies of major global academic journal publishers through online questionnaires and telephone interviews. It also reviews open access transformation practices in Asia based on the ESAC registry. **[Findings]** Over 80% of major global academic journal publishers have mature open access transformation policies and rich practical experience in developed countries such as Europe and North America. However, their transformation policies in mainland China remain relatively unclear. Transformation practices in Asia are concentrated primarily in Japan and Taiwan, China, with relatively few cases in other countries and regions. **[Conclusions]** At this stage, whether Chinese university libraries possess the necessary conditions for open access transformation, whether transformation models are feasible, and whether the timing is ripe all require further exploration and practice. The Digital Resource Acquisition Alliance of Chinese Academic Libraries (DRAA) plays an irreplaceable role in introducing international databases to Chinese university libraries and should fully leverage its important function in China's open access publishing and transformation in the future. University libraries should promptly adjust their operational and service frameworks, collaborate with multiple stakeholders, and jointly explore open access publishing models better suited to China's national conditions.

Keywords: Academic Journal Publishers; Open Access Publishing; Transformative Agreements; Policies and Practices

Author Contributions: CHEN Juan designed the questionnaire and drafted and revised the manuscript; LIN Yuehua collected the questionnaires and performed data analysis.

Open Access (OA) refers to authors directly publishing their scientific achievements on the internet, allowing the public to freely access, copy, disseminate, or otherwise legally utilize these works without infringing upon the rights retained by authors [1]. Gold open access, also known as immediate open access,

is currently the most familiar type of open access publishing for researchers. It enables free and permanent access to the final version of an article immediately after print publication. Immediate open access articles can be published in either open access journals (hereinafter referred to as gold OA) or hybrid journals (hereinafter referred to as hybrid OA). Over the past decade, global immediate open access has steadily advanced. In 2022, the proportion of gold OA articles indexed by WOS exceeded 29%, while hybrid OA approached 10%, representing a 2-4 fold increase compared to 2012. Open access transformation represents a trend toward the gradual integration of traditional commercial publishing and open access publishing, wherein academic institutions and publishers sign transformative agreements (TAs) that combine subscription fees and open access publishing costs into a single consolidated fee to control academic publishing expenditures. With the implementation of the OA2020 Initiative and Plan S, open access transformation practices have developed rapidly. As of June 12, 2024, the Efficiency and Standards for Article Charges (ESAC) registry recorded 1,053 transformative agreements, with an average annual growth rate exceeding 80%, covering 1.5982 million transformable articles and growing at over 200% annually [2]. The open access transformation policies and practices of global academic journal publishers continue to evolve in developed regions such as Europe and North America, gradually extending to Asian countries and regions including Japan, South Korea, Singapore, and India. In the coming years, these policies and practices will significantly impact mainland Chinese libraries, particularly research-intensive university libraries.

Current research on open access transformation primarily focuses on funding feasibility studies, transformation model and practice analyses, and studies on transformation impacts and influencing factors. No domestic scholars have yet provided a clear definition of the scope and content of open access transformation policies for academic journal publishers. Relevant research mainly manifests in studies on transformation models and practices. The main open access transformation models for academic journals include domain-specific transformation [3], offsetting [3-4], read and publish [4], publish and read [4], multi-payer pay to publish [5], and subscribe to open [6-8]. Studies on publisher transformation practices have concentrated on cases such as the interest game between the University of California Digital Library and Elsevier [9-10], analysis of the cost transaction distribution model in the open access transformation agreement between Germany's Projekt DEAL and Springer Nature [11], price game analysis of the ACM Open transformation model [12], cost calculation for Cambridge University Press's transformation [13], and exploration of the S2O model by EDP Sciences [7].

Existing domestic research on open access transformation policies and practices of academic journal publishers primarily adopts the perspective of libraries and librarians, with no empirical survey cases targeting publishers themselves. Therefore, this study analyzes the current status of open access publishing and transformation among major global academic journal publishers based on articles published over the past decade and indexed by the Web of Science Core

Collection (hereinafter referred to as WOS, including SCI-E, SSCI, and A&HCI) and transformation practices announced on publisher websites. Through online questionnaires and telephone interviews, we investigate publishers' open access transformation policies and, combined with publisher websites and ESAC registry data, review transformation practices implemented in Asia. This provides reference and basis for colleagues to further understand the current status, policies, and practices of open access publishing and transformation among major global academic journal publishers and to formulate corresponding strategies.

2.1 Current Status of Open Access Publishing Among Major Global Academic Journal Publishers

From 2012 to 2022, WOS indexed 26.3535 million articles from 3,852 publishers. The top 42 publishers by article volume collectively published 21.2204 million articles, accounting for 80.40% of the total. Using the cumulative 80% method [14], we selected these 42 publishers as representative of major global academic journal publishers. Ranked by article volume from highest to lowest, they are distributed across eight countries: the United States, the Netherlands, the United Kingdom, Germany, Switzerland, Singapore, Greece, and New Zealand. The group comprises 16 traditional commercial publishers (accounting for 71% of articles), 19 society publishers (16% of articles), 5 open access publishers (8% of articles), and 2 university presses (5% of articles) .

From 2012 to 2022, the proportion of gold OA articles among these 42 major publishers was approximately 16%, hybrid OA about 5%, and immediate open access roughly 21%. Excluding open access publishers, NATURE PORTFOLIO, OSA, and Spandidos Publishing had relatively high gold OA proportions, all exceeding 40%. APS, Amer Geophysical Union, Natl Acad Sciences, and Spandidos Publishing had relatively high hybrid OA proportions, all surpassing 10%. NATURE PORTFOLIO, Spandidos Publishing, OSA, APS, and Springer Nature had relatively high immediate OA proportions, all exceeding 25%. In contrast, Thieme, Mary Ann Liebert, World Scientific, Emerald, Pleiades Publishing, Amer Assoc Cancer Research, Amer Soc Hematology, Amer Thoracic Soc, Amer Soc Clinical Oncology, and Federation Amer Soc Exp Biol had immediate open access proportions below 5%.

Currently, immediate open access articles published by major global academic journal publishers and indexed by WOS are predominantly gold OA, accounting for over three-quarters of the total. Gold OA articles primarily originate from open access publishers (approximately 52%), followed by commercial publishers (about 38%), with society and university presses contributing roughly 10%. Hybrid OA articles mainly come from commercial publishers (approximately 74%), with society publishers accounting for 19% and university presses less than 8%. Overall, university presses have a gold OA proportion of about 5%, three percentage points lower than commercial and society publishers. Commercial and society publishers have hybrid OA proportions of about 5-6%, two percentage points lower than university presses. Apart from open access pub-

lishers, all types of publishers have similar immediate open access proportions, approximately 13-15%.

2.3 Current Status of Open Access Transformation Among Major Global Academic Journal Publishers

Excluding open access publishers, we surveyed the official websites of the remaining publishers. Among them, Amer Thoracic Soc does not currently offer immediate open access publishing but makes all articles freely available after one year. All other publishers have dedicated open access publishing sections on their websites, though only 23 publishers list their currently signed open access transformation agreements .

Based on the 1,771 transformation agreements announced on these 23 publishers' websites, we conducted a comparative analysis from the perspectives of transformation models, agreement quantities, types of transforming institutions, and ESAC registration status. Ten publishers have publicly disclosed their transformation models (highlighted in bold in Table 2), while the rest have not yet specified their agreement types. In terms of agreement volume, the 23 publishers announced a total of 1,771 transformation agreements on their websites. Wiley, Taylor & Francis, IEEE, IOP, Cambridge Univ Press, Karger, and Walter De Gruyter have relatively large numbers (exceeding 100 agreements each), while APS, OSA, World Scientific, European Respiratory Soc, and Natl Acad Sciences have relatively few (fewer than 10 agreements each). Regarding types of transforming institutions, approximately 28% represent direct agreements between publishers and large academic institutions or library consortia. Elsevier, Springer Nature, Oxford Univ Press, Lippincott Williams & Wilkins, Sage, RSC, APS, OSA, World Scientific, Emerald, and European Respiratory Soc have relatively high consortium agreement proportions (exceeding 50%), while IEEE, Karger, and Thieme have relatively low proportions (below 10%). In terms of ESAC registration, the average registration rate is about 20%. Springer Nature, Oxford Univ Press, APS, OSA, and Emerald have relatively high ESAC registration rates (exceeding 50%), while IEEE, Karger, and Thieme have relatively low rates (below 10%).

We also investigated the functionality of relevant webpages concerning the scope of open access transformation and promotional efforts, with results shown in Appendix Table 1. Regarding the disclosure of transformation scope: all 23 publishers clearly identify eligible institutions, 17 annotate applicable journals, 8 annotate applicable funding sources, and 7 annotate applicable article types. Most publishers reveal this information through text only, though some platforms support queries on transformation agreements and APC discount policies. Publishers' promotional efforts for open access transformation require improvement: only 12 publishers advertise the benefits of open access publishing on their websites, 11 provide APC waiver and membership discount policies, 10 publish workflows and maintain FAQ sections, and 7 provide contact information. We applied equal weighting to all 12 service options in Appendix Table

1 (1 point for each service provided, maximum 12 points). The average score for the 23 publishers was 5.17. Thieme, Walter De Gruyter, and World Scientific scored relatively high, demonstrating more mature information disclosure and promotional efforts for open access publishing and transformation, while AIP, OSA, and Natl Acad Sciences scored relatively low, indicating room for improvement.

3.1 Survey on Open Access Transformation Policies of Major Global Academic Journal Publishers

On September 20, 2023, we launched the “Global Academic Journal Publishers Open Access Transformation Policy and Practice Survey” targeting academic journal publishers. The online questionnaire comprised three parts: respondent background, basic information, and transformation policy investigation, with specific items detailed in Table 3.

By October 20, 2023, we had collected 28 valid responses from 28 academic journal publishers worldwide. Over 58% were major global academic journal publishers (ranked in the top 42 by WOS-indexed article volume from 2012-2022), and nearly 80% were primary global academic journal publishers (ranked in the top 100). The respondents included 13 commercial publishers, 13 society publishers, and 2 university presses. Other respondent characteristics are shown in Figure 1 [Figure 1: see original paper]. Over half of the respondents had worked at their publishers for more than three years, and all had varying degrees of understanding of their publishers’ open access policies, indicating good representativeness.

Currently, 86% of publishers have relatively mature open access transformation policies and rich practical experience in developed countries such as Europe and North America, while 14% indicated that their global open access transformation policies remain unclear with relatively few transformation practices. Publishers’ open access transformation models are illustrated in Figure 2 [Figure 2: see original paper]. Approximately two-thirds of publishers offer read and publish transformations, about half provide APC discounts, while fewer offer publish and read transformations, subscribe to open models, or subscription fee deductions. Two publishers selecting “other” specified ACM Open and the IGI Transformative Model respectively.

The applicable journal and article types for transformation at each publisher are shown in Figure 3 [Figure 3: see original paper]. Over 90% of publishers’ open access transformations apply to hybrid OA journals, 75% include gold OA journals, and only BMJ explicitly stated that transformation also applies to third-party cooperative journals. Research and review articles constitute the main transformation article types: over 95% of publishers include research articles, nearly 46% include review articles, and a minority include letters, conference papers, case reports, and communications. Among publishers with existing transformation policies or practices, 80% adopt the CC-BY license for

open access publishing. Approximately 40% each offer CC BY-NC and CC BY-NC-ND licenses, while about one-quarter provide CC BY-SA, CC BY-NC-SA, or CC BY-ND licenses. Regarding management platforms: 57% of publishers use established open access publishing and transformation management platforms such as the Copyright Clearance Center's RightsLink and Chronoshub, which can automatically verify corresponding author identities and streamline APC payment and copyright agreement signing processes. About 7% have relevant platforms but believe their functionality needs improvement, while 36% currently lack such platforms.

In terms of transformation costs, BMJ and Bentham Science stated that overall institutional expenses under their global open access transformation policies or practices show no increase compared to original subscription fees. Karger indicated transformation cost increases below 5%, Cambridge University Press and World Scientific between 5-10%, ACS, Bentham Science, and Brill between 10-20%, and Wiley between 20-50%. Other publishers selected "other." Further interviews with these publishers revealed that most indicated transformation agreement cost increases are primarily based on article output volumes, with significant variations across different institution types. Some noted that different countries/regions, new versus existing customers, and transformation stages are all important factors influencing transformation policies and costs, making unified cost increase calculations impossible. Regarding the proportion of publishing fees in transformation agreements, Edward Elgar Publishing, IWA, and BMJ reported below 10%, World Scientific between 10-20%, Cambridge University Press, Karger, ACS, Brill, and RSC between 20-30%, while Bentham Science and Wiley reported approximately 30-50%. Other publishers selected "other." Follow-up interviews revealed that some publishers do not clearly distinguish between reading and publishing costs, while others noted that this proportion is closely related to institutional article output and cannot be uniformly calculated.

Concerning the greatest challenges to implementing open access transformation in China, over 65% of publishers identified the lack of national-level policy support and insufficient funding for libraries to implement transformation as the primary obstacles. More than half believed that libraries have not yet reached consensus on open access publishing and transformation. Some publishers also pointed to researchers' concerns about open access publishing quality, the need to optimize open access publishing management workflows, and suboptimal transformation proposals as important factors affecting transformation, as detailed in Figure 4 [Figure 4: see original paper].

Regarding future open access publishing plans: Microbiology Society, ACM, ACS, Company of Biologists, IWA, RSC, IGI Global, and Edward Elgar Publishing stated they will fully transition to open access publishing within five years, with ACM and RSC explicitly targeting 2025 and 2028 respectively for complete open access. Cambridge University Press, Karger, Springer Nature, Brill, World Scientific, and BMJ indicated they will focus on open access pub-

lishing while gradually completing the transition. Emerald, Bentham Science, IEEE, Taylor & Francis, Wiley, and Oxford University Press noted they will maintain subscription-based publishing as primary while gradually shifting toward open access. John Benjamins, Sage, and IOP stated their open access transformation remains in the exploratory stage and hope to discuss models suitable for China's national conditions with Chinese university libraries. On suggestions for open access transformation, most publisher representatives believe open access publishing represents the general trend and will work with libraries to actively promote policies and secure funding support from relevant university departments. Individual representatives argued for maintaining some subscription journals to ensure fair publishing rights for authors from institutions lacking financial support.

3.2 Major Transformation Practices in Asia by Global Academic Journal Publishers

Among the 1,771 open access transformation agreements announced on the 23 publishers' websites, 300 agreements (approximately 17%) were signed with Asian institutions. Asian transformation agreements are distributed across China, Japan, India, South Korea, Thailand, Indonesia, Singapore, and Malaysia, with China accounting for 111 agreements (31 in mainland China, 61 in Taiwan, 16 in Hong Kong, and 3 in Macau), Japan 107, India 27, South Korea 26, Thailand 13, and fewer than 10 each in Indonesia, Singapore, and Malaysia. Fifteen publishers have signed open access transformation agreements with Asian institutions, excluding Lippincott Williams & Wilkins, Sage, BMJ, OSA, World Scientific, Emerald, European Respiratory Society, and Natl Acad Sciences. As shown in Figure 5 [Figure 5: see original paper], Thieme and Karger have relatively high proportions of Asian agreements (exceeding 30% of their total announced agreements). RSC, Cambridge Univ Press, ACS, IEEE, Springer Nature, APS, Elsevier, and Wiley follow with proportions of approximately 10-20%. Taylor & Francis, Walter De Gruyter, IOP, Oxford Univ Press, and AIP currently have only individual transformation cases in Asia, below 10%.

The 15 publishers' 300 Asian open access transformation agreements show significant variation in participating countries and agreement numbers, as detailed in Table 3. Wiley leads with transformation agreements signed across 8 Asian countries, followed by Cambridge Univ Press, Karger, Elsevier, and Springer Nature, each with agreements in 5 or more Asian countries. Although Thieme has signed numerous transformation agreements in Asia, they are currently limited to Japan. While Springer Nature and Elsevier have agreements in 5 or more Asian countries, they have signed relatively few transformation agreements (fewer than 10 each). Oxford University Press, AIP, and APS have signed transformation agreements involving relatively few countries and small numbers in Asia.

Of the 300 Asian transformation agreements announced by these 15 publishers,

only 19 (approximately 6%) are registered with ESAC, 15 percentage points lower than the global average registration rate of 20%. The 19 ESAC-registered Asian cases involve 10 publishers and cover 14,000 transformable articles, as detailed in Appendix Table 2. Regarding agreement types: Karger and RSC signed publish and read agreements, Elsevier signed a pilot agreement, and the remaining 7 publishers signed read and publish agreements. Concerning applicable journals: ACS, Cambridge University Press, Elsevier, IEEE, and Karger impose no restrictions on journal types for transformation, including both gold and hybrid OA journals. Wiley's 2022 agreements with South Korea's National Research Council of Science & Technology (NRCST) and Japan's Tohoku University limited transformable journals to hybrid OA only, while its 2023 agreements with Japan's JUSTICE and Hong Kong's JULAC expanded the scope to include gold OA journals. Oxford University Press, RSC, Springer Nature, and Taylor & Francis explicitly restrict transformation to hybrid OA journals, excluding gold OA journals. Regarding transformable article numbers: only Cambridge University Press's agreements with JULAC (2020-2025) and JUSTICE (2021-2023), and Karger's agreement with JULAC (2021-2023) impose no limits on transformable article numbers. The remaining 16 agreements are partial transformation agreements with restricted article quantities.

Only 31 of the 300 Asian transformation agreements (approximately 10%) are consortium agreements, 18 percentage points lower than the global average. Asian open access transformation consortia are currently distributed mainly in Japan, China, South Korea, Singapore, and India. Major library consortia and their signed transformation agreements include: JUSTICE, established in 2011 under the cooperation framework of the Japanese University Library Coordination Committee and the National Institute of Informatics, aims to provide stable and continuous academic information resources and services to Japanese universities. Its mission includes contracting, managing, providing, and ensuring continuous access to electronic resources, cultivating professional technical teams, and enhancing national academic information infrastructure. With over 560 member institutions, it has signed transformation agreements with Elsevier, Wiley, Taylor & Francis, Oxford Univ Press, and Cambridge Univ Press [15]. CONCERT, established in 1999 in Taiwan with nearly 200 member institutions, assists Taiwanese academic institutions in introducing electronic resources through collective procurement and negotiation, with funding from Taiwan's science and education authorities and member subscription fees. It has signed a transformation agreement with Elsevier [16]. JULAC, founded in 1967 and comprising eight university libraries funded by Hong Kong's University Grants Committee, discusses, coordinates, and cooperates on information resource sharing services. It has signed transformation agreements with Springer Nature, Wiley, Cambridge Univ Press, and Karger [17-18]. KESLI, established in 1999 with over 400 member institutions covering Korean universities, research institutes, public institutions, enterprises, and medical institutions, is a digital resource consortium procurement alliance that delegates procurement to agencies, develops reasonable pricing models, integrates resources,

and builds one-stop retrieval platforms. It has signed transformation agreements with Cambridge Univ Press and Walter De Gruyter [19]. SAUL, comprising six Singapore government-funded universities, promotes cooperation and resource sharing to improve service quality, strengthen IT and digital resource development, and provide broader academic support. It has reached transformation agreements with Elsevier and Cambridge Univ Press. UGC-INFONET DLC, established in 2004 and funded by India's University Grants Commission and executed by INFLIBNET, promotes information sharing and cooperation among Indian universities by providing access to academic electronic resources. It has signed a transformation agreement with RSC. E-Shodh Sindhu, merging UGC-INFONET DLC, NLIST, and NDEST-AICTE, continues providing digital resource access to nationally funded research institutions and universities [20] and has signed a transformation agreement with Cambridge Univ Press.

4.1 Publisher-Dominated Research Publishing Models Face Unprecedented Challenges

Major global academic journal publishers are concentrated primarily in Europe and North America. Non-profit academic publishing institutions such as society and university presses aim to promote global academic exchange and dissemination, actively exploring sustainable open access publishing and transformation solutions. Meanwhile, profit-maximizing commercial publishers seek new market development and profit margins through the game and competition between traditional subscription and open access publishing, attempting to lock in existing subscribers' open access publishing needs through transformative agreements to increase their market share. Authors remain in a weak position in the academic publishing market, lacking reasonable judgment and bargaining power regarding article processing charges. Funding agencies and research management departments, having never participated in academic publishing market pricing and negotiation processes, cannot exercise supervisory functions over public funds in the publishing market. Open access transformation incorporates both subscription fees and publishing fees into a single agreement, with libraries representing authors in the open access publishing demand market. This leverages libraries' accumulated experience and professional expertise to enhance public interest bargaining and balancing capabilities. However, the existing pay-to-publish system risks further widening research gaps between high-income and middle-to-low-income countries, creating imbalances in academic information production and consumption structures and resulting in a weak and fragile academic information ecosystem [21]. With the development of academic communication communities featuring preprints and open peer review, the emergence of public welfare academic resource service platforms, and growing skepticism from scientific communities and funding agencies about APC-based open access publishing models, calls for returning academic communication dominance to the academic community to achieve academic autonomy are increasing. Consequently, publisher-dominated research publishing models face unprecedented challenges.

4.2 Exploration of Open Access Publishing and Transformation Models in Mainland China Requires Further Investigation

When entering the Chinese market, major global academic journal publishers offered relatively favorable subscription prices based on economic development levels. However, current APC pricing in the global academic publishing market fails to adequately consider countries' economic development levels and actual purchasing power. Compared with steadily developing Europe and North America, China's academic publishing demand is substantial and growing. Mainland Chinese universities face challenges including massive academic publishing demand, weak public funding coordination capacity for academic publishing, "double payment" for both subscriptions and article processing fees, and inability of existing subscription budgets to cover additional publishing costs. In December 2022, the All European Academies criticized new academic publishing "big deals," noting that large-scale transformation agreements would further increase already excessive academic publishing costs and disadvantage researchers from the Global South, underfunded researchers in social sciences and humanities, and early-career researchers [22]. In November 2023, the Swedish Association of Higher Education Institutions published recommendations for Sweden's path beyond transformative agreements, making the cessation of read and publish agreements involving hybrid journals a fundamental strategic direction and recommending that Bibsam negotiate publishing agreements with pure OA publishers and develop a national independent publishing platform with peer review functions [23]. In March 2024, the UK's Joint Information Systems Committee (Jisc) released a review of transitional agreements, concluding that while the UK has exceeded global averages in open access achievement, originally transitional agreements risk becoming normalized, leaving substantial important research behind paywalls [24]. In the same month, the Bill & Melinda Gates Foundation announced its 2025 Open Access Policy, stating it would no longer support APCs or open access fees per article and that all funded researchers must publicly post their manuscripts as preprints from January 1, 2025, regardless of journal acceptance or peer review status [25].

Currently, major global academic journal publishers still control high-level research output: from 2012-2022, the five major commercial publishers—Elsevier, Wiley, Springer Nature, Taylor & Francis, and Sage—accounted for over half of WOS-indexed articles. Moreover, their ESAC-registered transformative agreements cover over 1.32 million transformable articles, representing more than 80% of all publishers' transformable articles. Although these mega-commercial publishers have signed numerous transformation agreements in Europe, North America, and some developed Asian countries, their open access transformation policies in mainland China remain unclear and will significantly impact Chinese university libraries in the coming years. In our survey of publishers' five-year open access policies and plans: Springer Nature indicated it will focus on open access publishing; Wiley and Taylor & Francis stated they will maintain sub-

scription publishing as primary while gradually shifting toward open access; Elsevier and Sage did not provide direct answers but expressed interest in discussing open access publishing models suitable for China's national conditions with Chinese universities. With the deepening development of open science concepts, funding agencies such as the European Research Council and Human Frontier Science Program explicitly state that preprints with DOI registration can be included or cited in funding applications [26]. In recent years, open peer review services including Peer Community In (PCI), Sciety, Pubpeer, and PREREview have emerged, with peer review-based publishing and manuscript-based preprint exchange mutually reinforcing each other and accelerating the reconstruction of academic publishing and communication ecosystems. Therefore, how to explore open access publishing and transformation models adapted to local institutions in this new environment, drawing on domestic and international experiences, requires further investigation and practice.

4.3 University Libraries Should Fully Leverage Their Important Role in Open Access Publishing and Transformation in Mainland China

As hybrid OA article proportions grow among major global academic journal publishers, the “double payment” problem of subscription fees and article processing charges becomes increasingly prominent. Among the top five countries by WOS-indexed article volume, China's hybrid OA proportion has remained stable at 5%, lower than the UK, Germany, the US, and Japan. However, in 2023, WOS-indexed hybrid OA articles from China exceeded 34,400, with APC costs surpassing €108 million. Current publisher transformation policies show significant gaps with China's actual needs: from 2012-2022, three-quarters of China's WOS-indexed articles were gold OA and only one-quarter hybrid OA, yet 25% of publishers' transformation agreements still do not apply to gold OA articles. Moreover, most publishers exclude high-value third-party journals from transformation agreements, further limiting the usable scope of transformation quotas. Additionally, only six publishers explicitly stated that transformation agreement cost increases would be below 20% compared to subscriptions; the rest indicated that transformation pricing would be determined based on subscription costs and article output volumes. Currently, open access transformation practices in Asia primarily involve read and publish or publish and read models, with only a few agreements imposing no limits on transformable article numbers, while most restrict both article quantities and transformable journals. Although most major global academic journal publishers have established open access publishing sections on their websites, only two-thirds publicly disclose transformation practices, with relatively low proportions of consortium agreements and ESAC registration, leaving room for improvement in promotional efforts and publishing management. In 2022, China ranked first globally in WOS-indexed article output, with numbers increasing annually. If the academic journal supply market shifts from traditional subscription to APC-based open

access publishing, China's research-intensive institutions will face enormous financial pressure and policy risks.

As research-intensive academic institutions, universities are the main producers of high-level global research output. Mainland Chinese university libraries should fully utilize their accumulated experience and professional expertise from traditional subscription practices, leveraging their institutions' hybrid OA article APC payment data to negotiate compensation rights regarding "double payment" issues with major global academic journal publishers. They should closely track the characteristics, implementation effects, and shortcomings of existing transformation cases, exploring new strategies beyond traditional transformative agreements such as supporting diamond open access, developing new tools for national knowledge base networks, and promoting innovative practices in research assessment [27]. Simultaneously, libraries should actively promote the importance of open access publishing in facilitating academic exchange and dissemination and enhancing research impact to researchers, providing training and consulting services on journal quality, APC payment, and copyright management. Furthermore, they should collaborate with institutional research management offices to study local open access publishing status, existing problems, and development directions, formulate institutional open access policies, standardize academic publishing quality review, and build integrated academic achievement service platforms encompassing journal recommendations, quality review, APC payment, copyright management, preprint posting, and academic exchange and dissemination, coordinating public academic publishing funds to ensure high-quality, sustainable open access publishing development.

4.4 Actively Promote DRAA's Important Role in Open Access Publishing and Transformation in Mainland China

Currently, global open access publishing transformation is dominated by national, regional, and disciplinary consortia. Among the 194 transforming institutions registered with ESAC, 111 are national, regional, or disciplinary consortia, with consortium agreements accounting for nearly 78% of all agreements and covering over 97% of transformable articles. Our survey shows that the proportion of consortium agreements in Asia by major global academic journal publishers is far below that in Europe and North America, at only one-third of the global average. In the academic journal subscription and publishing supply market, buyer quantity, buyer concentration, availability of substitute products, and uniqueness of offered products or services all determine buyer bargaining power, while information transparency also benefits institutions during negotiations. Consortium-led negotiation with publishers offers clear advantages, while individual institutions have limited space to secure their own interests [13]. Through university library alliance negotiations for transformation agreements, individual institutions can maximize their benefits. Germany's Projekt DEAL, UK's Jisc, and Sweden's Bibsam have determined transformation agreement scales and expected benefits through government-funded centralized pro-

curement or total price agreements with member cost-sharing [28], enabling consortia to negotiate the most favorable prices and services, implement effective supervision and management of transformation processes, and maintain relatively smooth information sharing channels through timely publication of post-transformation information on ESAC and consortium websites.

Since 1998, the China Academic Library & Information System (CALIS) and the Digital Resource Acquisition Alliance of Chinese Academic Libraries (DRAA) have represented mainland Chinese university libraries in procuring introduced digital resources, playing crucial roles in standardizing group procurement behaviors and securing optimal prices and services. DRAA is a digital resource procurement alliance jointly initiated by mainland Chinese university libraries, comprising member libraries, a council, and a secretariat, with seven working groups: encyclopedia, statistics, portal, evaluation and utilization, long-term preservation, open access, and standardized metadata. DRAA reaches group procurement agreements with publishers on behalf of member libraries but does not actually execute group procurement; member libraries independently decide whether to participate. Currently, DRAA has reached open access transformation agreements with Cambridge Univ Press, Karger, ACM, IWA, and Microbiology Society, with some universities including Tsinghua University, Shanghai Jiao Tong University, Fudan University, Wuhan University, and Xiamen University already implementing transformation practices based on DRAA agreements. However, no unified domestic information platform exists for these transformation plans and practices, and information sharing remains insufficient. In recent years, the Open Access Working Group has continuously tracked transformation progress domestically and internationally, conducted implementation effect tracking and evaluation, and provided decision-making support for DRAA transformation negotiations. In the future, it should leverage its advantages to secure policy and funding support from the Ministry of Education, the National Natural Science Foundation of China, and other relevant departments for open access publishing. Simultaneously, it should recommend that the DRAA Portal Working Group establish registration and publication channels for open access publishing and transformation information to strengthen information sharing among mainland Chinese university libraries.

5 Conclusion

Open access publishing represents the general trend. Formulating national open access policies that clearly define scope, responsible entities, and implementation pathways, supported by national regulations, policies, and fiscal funds, constitutes the fundamental and effective measure for promoting open access publishing in China [29]. At this stage, whether Chinese university libraries possess the necessary conditions for open access transformation, whether transformation models are feasible, and whether the timing is mature all require further exploration and practice. Faced with the transformation of academic publishing and communication ecosystems, university libraries should promptly

adjust their operational and service frameworks, actively track publisher open access policies and developments, rationally draw on domestic and international experiences—particularly from the Asia-Pacific region—in open access publishing and transformation, and conduct in-depth promotion and popularization of open access knowledge. They should secure institutional policy and funding support for open access publishing, strengthen cooperation and exchange with domestic peers, publishers, researchers, and research management departments, and jointly explore healthy and sustainable open access publishing models better suited to China's national conditions. WOS indexes relatively few humanities and social sciences journals, and using its indexed article volume to identify major global academic journal publishers may inevitably have omissions. We look forward to future researchers further improving and deepening this work to more comprehensively and multidimensionally reflect the open access transformation policies and practices of major global academic journal publishers.

References

- [1] BUDAPEST OPEN ACCESS INITIATIVE[EB/OL]. [2024-06-25]. <https://www.budapestopenaccessinitiative.org/read/>
- [2] ESAC. ESAC Transformative Agreement Registry [EB/OL]. [2024-06-25]. <https://esac-initiative.org/about/transformative-agreements/agreement-registry/>
- [3] Zhao Y, Zhang X, Zheng J. Transforming library subscription funds to open access publishing funds: Objectives, challenges, and strategies[J]. *Library and Information Service*, 2016, 60(1): 5-11.
- [4] Xu L, Feng L, Chen Z, et al. Research on the development status and trends of global open access transformation models[J]. *Publishing Reference*, 2022(1): 20-28.
- [5] Tian X. Analysis and implications of negotiation elements in the open access transformation agreement between the University of California System Libraries and Elsevier[J]. *Library Journal*, 2022, 41(11): 85-93.
- [6] Cui L, Liu C. “Subscribe to Open” (S2O): An emerging model for transitioning subscription journals to OA journals[J]. *Library and Information Service*, 2021, 65(22): 65-73.
- [7] Liu Y, Liu Y, Van Rooyen C, et al. The origin and development of the “Subscribe to Open” (S2O) model: A case study of EDP Sciences[J]. *Chinese Journal of Scientific and Technical Periodicals*, 2024, 35(1): 1-8.
- [8] Yu L, Kang Y, Yao S. Research and analysis of the “Subscribe to Open” (S2O) model[J]. *Chinese Journal of Scientific and Technical Periodicals*, 2024, 35(1): 9-16.
- [9] Yu L. Exploration of open access models in the global open access movement[J]. *Science-Technology & Publication*, 2020(8): 109-117. DOI:10.16510/j.cnki.kjyeb.20200807.008.
- [10] Zhou Q, Li J, Ren H. Research on strategies for transforming electronic journal subscriptions to open access at the University of California[J]. *Digital Library Forum*, 2021(11): 37-41.

- [11] Xie A, Kang Y, Wang M, et al. Study on the open access agreement between Germany's Projekt DEAL and Springer Nature[J]. Chinese Journal of Scientific and Technical Periodicals, 2022, 33(4): 425-432.
- [12] Han Z, Yan Q, Tian J. Analysis of database procurement price game based on open access transformation agreements: A case study of the ACM OPEN model[J]. Journal of Academic Libraries, 2022, 40(5): 48-57.
- [13] Chen J. Case study and implications of Cambridge University Press's open access publishing and transformation[J]. Journal of Academic Libraries, 2023, 41(1):
- [14] Pang P. Statistical analysis of international core academic publishers[J]. Library Development, 2020(S1): 298-300+304.
- [15] JUSTICE. JUSTICE Overview [EB/OL]. [2024-06-25]. <https://contents.nii.ac.jp/justice/overview>
- [16] CONCERT. About CONCERT [EB/OL]. [2024-06-25]. https://concert.stpi.narl.org.tw/page/index_1.
- [17] JULAC. About JULAC [EB/OL]. [2024-06-25]. <https://www.julac.org/>.
- [18] Cai Y, Liao B. Construction and implications of regional shared platforms for university libraries: A case study of JULAC in Hong Kong[J]. Journal of Library Science in China, 2020, 46(3): 102-112.
- [19] KESLI. KESLI history [EB/OL]. [2024-06-25]. <https://www.kesli.or.kr/web/history.do>.
- [20] E-Shodh Sindhu. About E-Shodh Sindhu [EB/OL]. [2024-06-25]. <https://ess.inflibnet.ac.in/about.php>
- [21] Chen J, Lin Y. Global open access transformation practices and their implications for university libraries in China[J]. Library and Information Service, 2023, 67(21): 136-146.
- [22] All European Academies. ALLEA advocates for EU-wide secondary publication rights and better negotiation of future "big deals" [EB/OL]. [2024-06-25]. <https://allea.org/allea-advocates-for-eu-wide-secondary-publication-rights-and-better-negotiation-of-future-big-deals/?cn-reloaded=1>
- [23] SUHF. Recommendation regarding charting Sweden's path beyond the transformative agreements [EB/OL]. [2024-06-25]. <https://suhf.se/app/uploads/2024/01/SUHF-REC-2023-7-Recommendation-regarding-charting-Swedens-path-beyond-the-transformative-agreements.pdf>.
- [24] JISC. A review of transitional agreements in the UK [EB/OL]. [2024-06-25]. <https://zenodo.org/records/10787392>.
- [25] Bill & Melinda Gates Foundation. 2025 Open Access Policy [EB/OL]. [2024-06-25]. <https://openaccess.gatesfoundation.org/open-access-policy/2025-open-access-policy/>.
- [26] Eunice M.L., Greg T., Erin C.M. (2024), Promoting Transparent, Fair, and Inclusive Practices in Grantmaking: Lessons from the Open and Equitable Model Funding Program. Journal of Science Policy & Governance, 23(2):4-21. <https://doi.org/10.38126/JSPG2302CM>.
- [27] Cassella, M. (2024). Beyond Transformative Agreements. Library Strategies towards Open Science. JLIIS.It 15(2):89-100. <https://doi.org/10.36253/jlis.it-592>.
- [28] Lin Y, Chen J. Investigation and implications of open access transformation practices in Australian universities[J]. Journal of Academic Libraries, 2024, 42(3): 90

[29] Jiang Z, Zeng J, Huang Y, et al. Research on the construction of national open access policies from the perspective of research funding differences[J]. Information Studies: Theory & Application, 2022, 45(12): 76-83, 102.

Appendix Table 1: Website Functionality Survey for Open Access Transformation of Major Global Academic Journal Publishers

Publisher	Institution	Journal Type	Article Funding	Advantages	Guides & Tools	Waivers & Discounts	Workflow	FAQ	Contact
Elsevier					author guide				
Springer Nature					author compliance tool				
Wiley					video demonstration; automatic article deposit				
Taylor & Francis					author guide; IOPP Journal Finder				
Oxford Univ Press					waivers & discount checker				
Lippincott Williams & Wilkins					institution & author guides				
Cambridge Univ Press					open publishing service				

Publisher	Institution	Journal Type	Article Funding	Advantages	Guides & Tools	Waivers & Discounts	Workflow	FAQ	Contact
Karger					author guide				
Thieme					author guide				
Walter De Gruyter					author guide				
World Scientific					author guide				
Emerald					author guide				
European Respiratory Soc					author guide				
Natl Acad Sci-ences					author guide				

Appendix Table 2: ESAC-Registered Asian Transformation Cases of Major Global Academic Journal Publishers

Publisher	Agreement Type	Journal Scope	Article Types	Institution	Article Limit
Cambridge University Press	Read & Publish	Gold & Hybrid	Original research articles, Review articles, Letters	JULAC	Unlimited
Cambridge University Press	Read & Publish	Gold & Hybrid	Original research articles, Review articles	JUSTICE	Unlimited

Publisher	Agreement Type	Journal Scope	Article Types	Institution	Article Limit
Cambridge University Press	Read & Publish	Gold & Hybrid	Original research articles, Review articles, case report, Brief report, Rapid communications	Shanghai Jiao Tong University	Limited
Wiley	Read & Publish	Gold & Hybrid	Original research articles, Review articles, Editorials, Report, Short Communication, Case Report, Note, Guest Editorial	JULAC	2020-2022:60; 2023-2025:80
Elsevier	Pilot Agreement	Gold & Hybrid	Original research articles, Review articles	National Research Council of Science & Technology	Limited
Karger	Publish & Access	Gold & Hybrid	Original research articles, Review articles, Proceedings, Letters, Editorials	JULAC	Unlimited

Publisher	Agreement Type	Journal Scope	Article Types	Institution	Article Limit
Oxford University Press	Read & Publish	Hybrid	Original research articles, Review articles, Brief report, Case report	Consortia of Chinese Academy of Sciences	Limited
RSC	Publish & Read	Hybrid	Original research articles, Review articles	Hong Kong Baptist University	Limited
Springer Nature	Read & Publish	Gold & Hybrid	Original research articles, Review articles	Tohoku University, The University of Tokyo, Tokyo Institute of Technology, Yokohama National University, University of Fukui, Osaka University, Kobe University, Okayama University, Waseda University, Tokyo University of Science	Limited

Publisher	Agreement Type	Journal Scope	Article Types	Institution	Article Limit
Taylor & Francis	Read & Publish	Hybrid	Original research articles, Review articles, Letters	JUSTICE	Limited
Wiley	Read & Publish	Gold & Hybrid	Original research articles, Review articles	National Research Council of Science & Technology	Limited
Wiley	Read & Publish	Gold & Hybrid	Original research articles, Review articles, Letters	Tohoku University, Tokyo Institute of Technology, The Graduate University for Advanced Studies, Tokyo University of Science	Limited

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

Source: ChinaXiv — Machine translation. Verify with original.