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

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Abstract

[Objective] To provide reference and guidance for mainland Chinese libraries, especially research-intensive university libraries, in formulating open access publishing and transformation strategies. [Methods] Drawing upon articles published in the past decade and indexed by WOS, as well as transformation practices disclosed on publishers' websites, this study investigates the open access transformation policies of major global academic journal publishers through online questionnaires and telephone interviews, and systematically reviews the open access transformation practices implemented in Asia based on ESAC registry data. [Results] Over 80% of major global academic journal publishers have established relatively mature open access transformation policies and accumulated rich practical experience in developed countries such as Europe and the United States; however, their transformation policies for mainland China remain relatively ambiguous. Open access transformation practices in Asia are primarily concentrated in Japan and Taiwan, China, with relatively fewer implementations in other countries and regions. [Conclusion] At the current stage, whether university libraries in China possess the necessary conditions for open access transformation, whether transformation models are feasible, and whether the timing is appropriate require further exploration and practice. DRAA plays an irreplaceable role in the procurement of international databases for university libraries in China and should be leveraged to its full potential in promoting open access publishing and transformation in the country. University libraries should promptly adjust their operational and service function frameworks, collaborating with multiple stakeholders to explore open access publishing models better suited to China's national context.

Full Text

Preamble

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

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Abstract

[Purpose] To provide guidance and reference for developing open access publishing and transformation strategies for libraries in mainland China, especially for research-intensive universities. **[Methods]** Starting with articles published in the past 10 years that are indexed by WOS and the transformation practices announced on publishers' websites, this study conducts a survey of the open access transformative policies of major academic journal publishers worldwide through online questionnaires and telephone interviews. Additionally, it reviews the open access transformation practices carried out in Asia based on the ESAC registry. **[Findings]** Over 80% of globally important academic journal publishers in developed countries such as Europe and the United States have relatively mature open access transformative policies and rich practical experience. However, the transformative policies in mainland China remain relatively unclear, and open access transformative practices in the Asian region are mainly concentrated in Japan and Taiwan of China, with relatively fewer in other countries and regions. **[Conclusions]** At this stage, whether university libraries in China possess transformative conditions for open access publishing, whether the transformative model is feasible, and whether the timing is mature all require further exploration and practice. The Digital Resource Acquisition Alliance (DRAA) plays an irreplaceable role in introducing international databases for Chinese university libraries. In the future, it should fully leverage its significant role in China's open access publishing and transformation. University libraries should promptly adjust their roles and service functions, learn from domestic and international experiences in open access publishing and transformation, and collaborate with publishers, researchers, and research management departments to jointly explore a healthy and sustainable open access publishing model that is more suitable for China's national conditions.

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

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 the authors [1]. Gold open access, also known as immediate open access, is currently the most familiar type of open access publishing for researchers.

It allows articles to be freely and permanently accessible to everyone immediately after print publication. Immediate open access articles can be published in 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%, and hybrid OA approached 10%, representing a 2-4 fold increase compared to 2012. Open access transformation refers to transformative agreements (TAs) signed between academic institutions and publishing organizations that combine subscription and open access publishing into a single consolidated fee to control academic publishing costs, reflecting the gradual integration of traditional commercial publishing and open access publishing. 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 an average annual growth of over 200% [2]. The open access transformation policies and practices of global academic journal publishers continue to develop in developed countries such as Europe and North America, and are gradually advancing to Asian countries and regions including Japan, South Korea, Singapore, and India. In the coming years, the open access transformation policies and practices of major global academic journal publishers will significantly impact libraries in mainland China, especially those at research-intensive universities.

Current research on open access transformation primarily focuses on funding feasibility studies, transformation models and practices, 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 focuses on transformation models and practices. The main open access transformation models for academic journals include domain-based transformation [3], offsetting [3-4], Read & Publish [4], Publish & Read [4], Multi-Payer Pay to Publish [5], and Subscribe to Open [6-8]. Studies on transformation practices of academic journal publishers have concentrated on the interest game in the transformation agreement between the University of California Digital Library and Elsevier [9-10], analysis of the cost transaction distribution model for open access transformation between German Projekt DEAL and Springer Nature [11], price game analysis of the ACM Open transformation model [12], cost calculation for Cambridge University Press 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 is primarily based on the perspective of libraries and librarians, with no empirical survey research cases targeting academic journal publishers themselves. Therefore, this study begins with articles published in the past 10 years that are 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 publishers' official websites. It analyzes the current status of open access publishing and transformation among major global academic journal publishers, conducts a survey of open access transformation policies through online questionnaires and telephone interviews, and reviews transformation practices in Asia based on publishers' official websites and ESAC registry data. This provides reference and basis for peers to further understand the current status, policies, and practices of open access publishing and transformation among major global academic journal publishers, and to develop open access publishing and transformation 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 published a combined total of 21.2204 million articles, accounting for 80.40% of the total. Using the cumulative 80% method [14], this study selected these 42 publishers as representative of major global academic journal publishers. Ranked by article volume from highest to lowest, as shown in , these publishers are distributed across eight countries: the United States, the Netherlands, the United Kingdom, Germany, Switzerland, Singapore, Greece, and New Zealand. Among them are 16 traditional commercial publishers (accounting for 71% of articles), 19 learned society publishers (16% of articles), 5 open access publishers (8% of articles), and 2 university presses (5% of articles).

From 2012 to 2022, the 42 major global academic journal publishers had approximately 16% gold OA, 5% hybrid OA, and 21% immediate open access in their WOS-indexed articles. 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 exceeding 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 relatively low immediate open access proportions, all below 5%.

Currently, immediate open access articles indexed by WOS from major academic journal publishers are primarily gold OA, accounting for over three-quarters of the total. Gold OA mainly comes from open access publishers (approximately 52%), commercial publishers (approximately 38%), and learned society and university presses (approximately 10%). Hybrid OA primarily comes from commercial publishers (approximately 74%), learned society publishers (19%), and university presses (less than 8%). Overall, university presses have a gold OA proportion of approximately 5%, three percentage points lower than commercial and learned society publishers. Commercial and learned society publishers have

hybrid OA proportions of approximately 5-6%, two percentage points lower than university presses. Excluding open access publishers, the immediate open access proportions of various publisher types are similar, at approximately 13-15%.

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

Excluding open access publishers, this study investigated the official websites of the remaining publishers. Among them, Amer Thoracic Soc does not currently offer immediate open access publishing, but all articles become freely accessible after one year. All other publishers have established open access publishing sections on their official websites. However, only 23 publishers have listed currently signed open access transformation agreements, as detailed in .

Based on the open access transformation agreements published on the websites of these 23 publishers, this study conducted a comparative analysis from the perspectives of transformation models, agreement quantities, types of transforming institutions, and ESAC registration status. The findings reveal that 10 publishers have publicly announced their transformation models (highlighted in bold in), while the rest have not yet specified the types of transformative agreements. In terms of agreement quantity, the 23 publishers have published a total of 1,771 transformation agreements on their websites, with Wiley, Taylor & Francis, IEEE, IOP, Cambridge Univ Press, Karger, and Walter De Gruyter having relatively large numbers (over 100 agreements each), while APS, OSA, World Scientific, European Respiratory Soc, and Natl Acad Sciences have relatively few (less than 10 agreements each). Regarding the types of transforming institutions, approximately 28% are 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 proportions of consortium agreements (over 50%), while IEEE, Karger, and Thieme have relatively low proportions (less than 10%). In terms of ESAC registration, the average registration rate for agreements is approximately 20%. Springer Nature, Oxford Univ Press, APS, OSA, and Emerald have relatively high ESAC registration rates (over 50%), while IEEE, Karger, and Thieme have relatively low rates (less than 10%).

This study also investigated the functionality of relevant web pages from the aforementioned publishers in terms of the scope of open access transformation applicability and promotional efforts, with results shown in Appendix 1. Regarding the disclosure of open access transformation scope: all 23 publishers clearly identify eligible institutions, 17 publishers indicate applicable journals, 8 publishers indicate applicable funding sources, and 7 publishers indicate applicable article types. Most publishers only disclose this information through text, while a few provide platforms that support queries on transformation agreements and APC discount policies. Publishers still need to improve their open access transformation promotion efforts: only 12 publishers advertise the benefits of open

access publishing on their websites, 11 publishers offer APC waiver and membership discount policies, 10 publishers publish workflows and have FAQ sections, and 7 publishers provide contact information. This study applied equal weighting to all 12 service options in Appendix 1 for comprehensive scoring (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 disclosure and promotion of open access publishing and transformation information, while AIP, OSA, and Natl Acad Sciences scored relatively low and have room for further improvement.

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

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

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

Currently, 86% of publishers have relatively mature open access transformation policies and rich practical experience in developed countries such as Europe and the United States, while 14% indicate that their global open access transformation policies remain unclear and transformation practices are relatively limited.

Publishers’ open access transformation models are shown in [Figure 2: see original paper]. Approximately two-thirds of publishers offer Read & Publish transformation, about half offer APC discounts, while fewer offer Publish & Read transformation, Subscribe to Open, or subscription fee deductions. Two publishers selecting “Other” specified ACM Open and IGI Transformative Model respectively.

The types of journals and articles applicable for transformation at each publisher are shown in [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 open access transformation also applies to third-party cooperative journals. Research and review articles are

the main types of transformed articles, with over 95% of publishers including research articles and nearly 46% including review articles. A few publishers also include letters, conference papers, case reports, and communications. Among publishers with existing open access transformation policies or practices, 80% use the CC-BY license for open access publishing, approximately 40% each offer CC BY-NC and CC BY-NC-ND licenses, and about one-quarter offer CC BY-SA, CC BY-NC-SA, and CC BY-ND licenses. Regarding open access publishing and transformation management platforms: 57% of publishers already use comprehensive platforms such as the Copyright Clearance Center's (CCC) RightsLink and Chronoshub, which can automatically verify corresponding author identities and streamline APC payment, copyright agreement signing, and other processes with full lifecycle management. Approximately 7% have relevant platforms but believe their functionality needs further improvement, while 36% have no such platforms.

Regarding transformation costs, BMJ and Bentham Science stated that overall institutional expenses under current global open access transformation policies or practices have not increased compared to original subscription fees. Karger indicated that transformation cost increases are below 5%, Cambridge University Press and World Scientific fall between 5-10%, ACS, Bentham Science, and Brill between 10-20%, and Wiley between 20-50%. The remaining publishers selected "Other." Further interviews with publishers selecting "Other" revealed that most indicated transformation agreement cost increases are primarily based on article output, with significant variations in required cost increases across different institution types. Some publishers noted that different countries/regions, new versus existing customers, and transformation stages are all important factors influencing transformation policies and costs, making it impossible to calculate uniform cost increase rates. Regarding the proportion of publishing fees in transformation agreements, Edward Elgar Publishing, IWA, and BMJ reported less than 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%. The remaining publishers selected "Other." Further 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.

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

In terms of 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 the next five years, with ACM and RSC explicitly planning to achieve complete open access publishing by 2025 and 2028 respectively. Cambridge University Press, Karger, Springer Nature, Brill, World Scientific, and BMJ indicated they will focus on open access publishing and gradually transition to complete open access. Emerald, Bentham Science, IEEE, Taylor & Francis, Wiley, and Oxford University Press stated they will still primarily use subscription publishing in the next five years while gradually shifting toward open access. John Benjamins, Sage, and IOP indicated their open access transformation is still in the exploratory stage and hope to work with Chinese university libraries to develop open access publishing models suitable for China's national conditions. Regarding suggestions and opinions on open access transformation: most publisher representatives who participated in the survey believe open access publishing is the general trend and will work with libraries to actively promote open access policies and secure funding support from relevant university departments. A few publisher representatives believe some subscription journals should be retained 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 published on the websites of the 23 publishers, 300 agreements were signed with Asian institutions, accounting for approximately 17%. Asian transformation agreements are mainly distributed across China, Japan, India, South Korea, and other countries, with 111 in China (31 in mainland China, 61 in Taiwan of China, 16 in Hong Kong of China, and 3 in Macau of China), 107 in Japan, 27 in India, 26 in South Korea, 13 in Thailand, and relatively few in Indonesia, Singapore, and Malaysia (all fewer than 10). Except for Lippincott Williams & Wilkins, Sage, BMJ, OSA, World Scientific, Emerald, European Respiratory Society, and Natl Acad Sciences, the remaining 15 publishers have signed open access transformation agreements with Asian institutions, as shown in [Figure 5: see original paper]. Among them, Thieme and Karger have relatively high proportions of Asian agreements on their websites, exceeding 30%. RSC, Cambridge Univ Press, ACS, IEEE, Springer Nature, APS, Elsevier, and Wiley follow at 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 have implemented open access transformations in Asia with significant variations in countries and agreement numbers, as detailed in . Wiley has signed open access transformation agreements with 8 Asian countries, ranking first, followed by Cambridge Univ Press, Karger, Elsevier, and Springer Nature, each having signed agreements with 5 or more Asian countries. Al-

though Thieme has signed numerous transformation agreements in Asia, they are currently limited to Japan. While Springer Nature and Elsevier have signed transformation agreements with 5 or more Asian countries, the number of agreements is relatively small, with fewer than 10 each. Oxford University Press, AIP, and APS have relatively few countries and agreement numbers in Asia.

Among the 300 Asian open access transformation agreements published on the websites of these 15 publishers, 19 agreements are registered with ESAC, representing a registration rate of approximately 6%, which is 15 percentage points lower than the global average ESAC registration rate for open access transformation agreements. The 19 ESAC-registered Asian transformation cases involve 10 publishers and cover 14,000 transformable articles, as detailed in Appendix 2. Regarding agreement types: Karger and RSC signed Publish & Read agreements, Elsevier signed a Pilot Agreement (PA), and the remaining 7 publishers signed Read & Publish agreements. Concerning applicable journals: ACS, Cambridge University Press, Elsevier, IEEE, and Karger impose no restrictions on journal types for publishing transformation, including both gold and hybrid journals in the transformable scope. Wiley's 2022 agreements with South Korea's National Research Council of Science & Technology (NRCST) and Japan's Tohoku University specified that transformable journals only include hybrid OA journals, while its 2023 agreements with Japan's Japan Alliance of University Library Consortia for E-Resources (JUSTICE) and Hong Kong of China's The Joint University Librarians Advisory Committee (JULAC) expanded the publishing transformation scope to include gold OA journals. Oxford University Press, RSC, Springer Nature, and Taylor & Francis explicitly stipulate that agreements apply only to hybrid OA journals, excluding gold OA journals from transformation agreements. Regarding the number of transformable articles: only Cambridge University Press's agreements with JULAC (2020-2025) and JUSTICE (2021-2023), and Karger's agreement with JULAC (2021-2023) do not limit the number of transformable articles. The remaining 16 agreements all impose limits, representing partial transformation agreements.

Among the 300 Asian open access transformation agreements signed by these 15 publishers, only 31 are consortium agreements, accounting for approximately 10%, which is 18 percentage points lower than the global average level. Currently, open access transformation consortia in Asia are mainly distributed in Japan, China, South Korea, Singapore, and India. The major library consortia and their signed transformation agreements are as follows: 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 signing, managing, providing, and ensuring continuous access to electronic resources, and cultivating professional technical teams to enhance national academic information infrastructure construction. It currently has over 560 member units [15] and has signed transformation agreements with Elsevier, Wiley, Taylor & Francis, Oxford Univ Press, and Cambridge Univ Press. Taiwan of China's Consortium on Core Electronic

Resources in Taiwan (CONCERT), established in 1999 with nearly 200 member units, assists Taiwanese academic institutions in introducing electronic resources through collective procurement and negotiation to enhance the effectiveness of information resource introduction. It receives database procurement subsidies from Taiwan of China's science and education authorities, with member units paying subscription fees and membership fees according to agreements [16], and has signed a transformation agreement with Elsevier. Hong Kong of China's JUILAC, established in 1967 and composed of eight university libraries funded by the University Grants Committee of the Hong Kong Special Administrative Region Government, aims to discuss, coordinate, and cooperate on information resource sharing services and other matters [17-18], and has signed transformation agreements with Springer Nature, Wiley, Cambridge Univ Press, and Karger. South Korea's Korean Electronic Site License Initiative (KESLI), established in 1999 with over 400 member units, is a digital resource consortium procurement alliance covering Korean universities, research institutes, public institutions, enterprises, and medical institutions. It entrusts agencies to handle consortium digital resource procurement, develop reasonable pricing models, integrate consortium resources, and build a one-stop retrieval platform [19], and has signed transformation agreements with Cambridge Univ Press and Walter De Gruyter. Singapore's Singapore Alliance of University Libraries (SAUL), composed of six universities funded by the Singapore government (National University of Singapore, Nanyang Technological University, Singapore Management University, Singapore University of Technology and Design, Singapore University of Technology and Design, and Singapore University of Social Sciences), aims to promote cooperation and resource sharing among these university libraries to improve service quality, strengthen information technology and digital resource development, and provide broader academic support and resources for the academic community. It has reached transformation agreements with Elsevier and Cambridge Univ Press. India's University Grants Commission-INFONET Digital Library Consortium (UGC-INFONET DLC), established in 2004 and funded by the University Grants Commission (UGC) and executed by the INFONET Digital Library Consortium (INFLIBNET), aims to promote information sharing and cooperation among Indian universities by providing access to academic electronic resources, and has signed a transformation agreement with RSC. India's E-Shodh Sindhu Consortium for Higher Education Electronic Resources (E-Shodh Sindhu) merged the functions of UGC-INFONET DLC, National Library and Information Services Infrastructure (NLIST), and Indian National Digital Library in Engineering, Science & Technology-All India Council for Technical Education (NDEST-AICTE) to continue providing digital resource access to member units including nationally funded research institutions and universities [20], and has signed a transformation agreement with Cambridge Univ Press.

4.1 The Publisher-Dominated Model of Research Publication Faces Unprecedented Challenges

Major global academic journal publishers are mainly concentrated in developed countries in Europe and North America. Non-profit academic publishing institutions such as learned societies and university presses, aiming to promote global academic exchange and dissemination, are actively exploring sustainable open access publishing and transformation solutions. Meanwhile, commercial publishers seeking profit maximization are searching for new market development and profit space in the game and competition between traditional subscription and open access publishing, attempting to lock in the open access publishing needs of existing subscription users through transformative agreements and increase their market share in academic journal publishing through the open access publishing market. Authors are 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 the publishing market with public funds [21]. Open access transformation incorporates both subscription fees and publishing fees into the same agreement, with libraries representing authors in entering the open access publishing demand market. This will fully utilize libraries' accumulated experience and professional capabilities to enhance public interest participation in bargaining and checks and balances. However, the existing pay-to-publish system will further widen the research gap between high-income and middle- and low-income countries, posing risks such as imbalanced academic information production and consumption structures, and a weak and less resilient academic information ecosystem [21]. With the development of academic communication communities such as preprints and open peer review, the emergence of public welfare academic resource service platforms, and increasing 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 growing louder. The publisher-dominated model of research publication faces unprecedented challenges.

4.2 Open Access Publishing and Transformation Models for Universities in Mainland China Require Further Exploration and Practice

When major global academic journal publishers entered the Chinese market, they provided relatively favorable subscription prices for mainland Chinese universities based on economic development levels. However, current APC pricing in the global academic publishing market does not fully consider countries' economic development levels and actual purchasing power. Compared with Europe and North America, which have entered steady development, China's academic publishing demand is large and growing. Mainland Chinese univer-

sities face challenges in developing open access publishing strategies, including massive academic publishing demand, weak coordination capacity for academic publishing public funds, “double payment” for both academic subscriptions and publishing, and the inability of existing subscription funds to cover additional publishing expenses. In a December 2022 statement, the All European Academies criticized the new “big deals” in academic publishing, pointing out that large-scale transformative agreements would further increase the excessive costs spent on academic publishing 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 released “Recommendations Regarding Charting Sweden’s Path Beyond Transformative Agreements,” establishing that Bibsam would no longer sign Read & Publish agreements involving publishing in hybrid journals as a basic strategic direction for open access work. It recommended that Bibsam develop publishing agreements with pure OA publishers and build a national independent publishing platform with peer review functions [23]. In March 2024, the UK’s Joint Information Systems Committee (Jisc) released the “Review of Transitional Agreements in the UK,” concluding that although the UK has exceeded the global average in achieving open access, the originally transitional transformative agreements risk becoming normalized, leaving large amounts of important research results still trapped behind paywalls [24]. In the same month, the Bill & Melinda Gates Foundation released its “2025 Open Access Policy,” announcing that it would no longer support article processing charges or open access fees charged per article. Starting January 1, 2025, all scholars funded by the foundation must publicly post their manuscripts as preprints before journal acceptance or peer review [25].

Currently, high-level global articles are still primarily controlled by traditional commercial publishers. From 2012 to 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 giant commercial publishers have signed numerous transformation agreements in Europe, North America, and even some developed Asian countries, their open access transformation policies in mainland China remain unclear. Their open access publishing and transformation policies will significantly impact mainland Chinese university libraries in the coming years. In the survey of major global academic journal publishers’ open access policies and plans for the next five years: Springer Nature indicated it will focus on open access publishing; Wiley and Taylor & Francis stated they will still primarily use subscription publishing while gradually shifting toward open access; Elsevier and Sage did not provide direct answers but expressed hope to explore open access publishing models suitable for China’s national conditions together with Chinese universities. With the deepening development of the open science concept, funding agencies such as the European Research Council

and Human Frontier Science Program have explicitly stated in their policies that applications may include or cite preprint articles with registered DOIs [26]. In recent years, open peer review services such as Peer Community In (PCI), Society, Pubpeer, and PREREview have emerged successively. Peer review-based article publishing and manuscript-based preprint exchange promote each other, accelerating the reconstruction of the academic publishing and communication ecosystem. Therefore, how to explore open access publishing and transformation models suitable for individual institutions in the new academic publishing and communication environment, drawing on domestic and international experiences, requires further exploration and practice.

4.3 Fully Leveraging the Important Role of University Libraries in Mainland China in National Open Access Publishing and Transformation

As the proportion of hybrid OA articles from major global academic journal publishers grows, the “double payment” problem of subscription fees and article processing charges becomes increasingly prominent. Among the top 5 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 already exceeded 34,400, with APC costs surpassing €108 million. Current open access transformation policies developed by publishers have significant gaps with China’s actual needs. From 2012 to 2022, among China’s WOS-indexed articles, gold OA accounted for three-quarters while hybrid OA only one-quarter. However, 25% of publishers’ transformation agreements still do not apply to gold OA articles, and most publishers also exclude high-value third-party journals from transformation agreements, further limiting the use scope of open access transformation quotas. Additionally, only 6 publishers explicitly stated that transformation agreement cost increases would be below 20% compared to subscriptions, with the rest indicating that transformation pricing would be determined based on a combination of subscription costs and article output. Currently, open access transformations implemented in Asia primarily use Read & Publish and Publish & Read models, with only a few having no limits on transformable article numbers, while most impose restrictions on both article numbers and transformable journals. Although the vast majority of major global academic journal publishers have established open access publishing sections on their websites, only two-thirds have published open access transformation practices on their official websites. The proportions of consortium agreements and ESAC registration rates for published transformation practices are relatively low, with room for further improvement in promotion, publishing management, and other aspects. In 2022, China’s WOS-indexed articles already ranked first globally and continue to increase 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 force in producing high-level global articles. University libraries in mainland China should fully utilize the experience and professional skills accumulated in traditional literature subscription practices. Based on their institutions' hybrid OA article APC payment data, they should negotiate compensation rights with major global academic journal publishers regarding the "double payment" issue of subscription fees and article processing charges. They should closely track the characteristics, implementation effects, and shortcomings of existing transformation cases, and explore 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, they should actively promote the important role of open access publishing in facilitating academic exchange and dissemination and improving academic impact to researchers, and provide training and consulting services on journal quality, APC payment, and copyright management. Furthermore, they should collaborate with institutional research management offices (such as science and technology offices and social science offices) to study their institutions' 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 that include journal recommendation, quality review, APC payment, copyright management, preprint posting, and academic exchange and dissemination, coordinating academic publishing public funds to ensure high-quality, sustainable open access publishing development.

4.4 Actively Promoting the Important Role of DRAA in Open Access Publishing and Transformation for Universities 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. Survey results show that the proportion of consortium agreements by major global academic journal publishers in Asia is far lower than in developed countries in Europe and North America, at only one-third of the global average. In the supply and demand market for academic journal subscriptions and publishing, buyer quantity, buyer concentration, availability of substitute products, and uniqueness of products or services all determine buyer bargaining power, while transparent information flow also benefits institutions in negotiations. Negotiating transformation agreements with publishers under the leadership of national, regional, or disciplinary consortia offers clear advantages, while individual institutions have limited space to protect their interests [13]. Negotiating through university library consortia is an important way for individual institutions to maximize their interests with

publishers. Germany's Projekt DEAL, UK's Jisc, and Sweden's Bibsam have determined the scale and expected benefits of transformation agreements through government-funded centralized procurement or total agreement price allocation among members [28]. Based on this, transformation consortia can negotiate the most favorable prices and highest quality services from publishers, implement effective supervision and management of the transformation process, and promptly publish information on ESAC and consortium websites after transformation completion, maintaining relatively smooth information sharing channels.

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 purchasing imported digital resources, playing very important roles in standardizing consortium procurement behaviors for imported resources and securing optimal prices and services. DRAA is a digital resource procurement alliance jointly initiated by university libraries in mainland China, comprising member libraries, a council, and a secretariat, with seven working groups: encyclopedia, statistics, portal, evaluation and utilization, long-term preservation, open access, and metadata standardization. DRAA reaches consortium procurement solutions with publishers on behalf of member libraries but does not truly execute centralized procurement, as member libraries independently decide whether to participate. Currently, DRAA has reached open access transformation solutions with Cambridge Univ Press, Karger, ACM, IWA, Microbiology Society, and other publishers, with some universities including Tsinghua University, Shanghai Jiao Tong University, Fudan University, Wuhan University, and Xiamen University already implementing transformation practices based on DRAA solutions. However, there is currently no unified information release platform for transformation solutions and practices in China, and information sharing remains insufficient. In recent years, the Open Access Working Group has continuously tracked domestic and international transformation progress, conducted implementation effect tracking and evaluation, and provided decision-making support for DRAA transformation negotiations. In the future, it can leverage its advantages to secure support from the Ministry of Education, the National Natural Science Foundation of China, and other relevant departments regarding open access publishing policies and funding. Simultaneously, it should recommend to DRAA's Portal Working Group to add open access publishing and transformation information registration and release channels to strengthen information sharing among mainland Chinese university libraries.

Open access publishing is the general trend. Formulating national open access policies from the national level, clarifying the scope, responsible entities, and implementation paths of open access, and providing guarantees in national regulations, policies, and fiscal funds [29] are fundamental and effective measures to promote open access publishing in China. At this stage, whether university libraries in China possess transformative conditions for open access publishing, whether transformation models are feasible, and whether the timing is mature all require further exploration and practice. Faced with changes in the academic

publishing and communication ecosystem, university libraries should promptly adjust their roles and service functions, actively track publisher open access policies and developments, rationally learn from domestic and international experiences—particularly those from the Asia-Pacific region—in open access publishing and transformation, deeply conduct open access-related knowledge promotion and popularization, secure institutional open access publishing policy and funding support, and strengthen cooperation and exchange with domestic peers, publishers, researchers, and research management departments to jointly explore healthier and more sustainable open access publishing models more suitable for China’s national conditions. WOS indexes relatively few humanities and social sciences journals. This study’s identification of major global academic journal publishers based on WOS-indexed article numbers may have omissions. Future researchers are expected to further improve and deepen this work to more comprehensively and multi-dimensionally reflect the open access transformation policies and practices of major global academic journal publishers.

Elsevier Springer Nature Wiley Taylor & Francis Oxford Univ Press Lippincott Williams & Wilkins Cambridge Univ Press Karger Thieme Walter De Gruyter World Scientific Emerald European Respiratory Soc Natl Acad Sciences

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

Publisher	Fund	Institution	Author	Journal	Article	Guide & Tool
Elsevier						author guide
Springer Nature						author compliance tool
Wiley						video demonstration; aut
Taylor & Francis						author guide; IOPP Jour
Oxford Univ Press						waivers & discount check
Lippincott Williams & Wilkins						institution & author guid
Cambridge Univ Press						open publishing service

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

Publisher	Agreement Type	Journal Type	Institution	Article Type	APC Waiver	Article Limit
Cambridge Univ-Press	Read & Publish	Gold & Hybrid	Hong Kong Baptist University	Original research articles, Review articles, Letters		Limited

Publisher	Agreement Type	Journal Type	Institution	Article Type	APC Waiver	Article Limit
Elsevier	Pilot Agreement	Hybrid	Tokyo Institute of Technology	Original research articles, Review articles, rapid communications		2020-2022:60, 2023-2025:80
Karger	Publish & Read	Gold & Hybrid	JUSTICE	Original research articles, Review articles		Unlimited
Oxford University Press	Read & Publish	Hybrid	JULAC	Original research articles, Review articles, case report, Brief report, Rapid communications		Limited
Springer Nature	Read & Publish	Gold & Hybrid	Shanghai Jiao Tong University, Xiamen University	Original research articles, Review articles		Limited
Taylor & Francis	Read & Publish	Hybrid	National Research Council of Science & Technology	Original research articles, Review articles, Letters, Editorials		Limited

Publisher	Agreement Type	Journal Type	Institution	Article Type	APC Waiver	Article Limit
Wiley	Read & Publish	Gold & hybrid	Hong Kong Baptist University	Original research articles, Review articles, Case study, Commentary, Data article, Education, Lecture, Method and Protocol, Perspective, Practice and Policy, Rapid publication, Short communication, Technical note		Limited

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