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## **Grey Literature in Japanese Academia—Efforts by the National Diet Library to Acquire and Provide Access to the Journals and Conference Proceedings of Academic Societies and Associations**

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### **Abstract:**

*The ongoing trend of digitization, open access, and open government has improved availability and accessibility to many documents that until now had been regarded as grey literature. This does not mean, however, that grey literature no longer exists nor that there are not new problems to solve in the digital era. This paper describes the results of a questionnaire survey conducted by the National Diet Library (NDL) of Japan, in which some 2,000 academic societies and associations in Japan responded to questions about the publication, digitization, and distribution of their journals, conference proceedings, and other materials. The survey found that some materials are still difficult to locate and access, that they are not fully under national bibliographic control, and that long-term access to such documents is not assured, because they are not deposited to the national library. This paper also describes current trends in academic publishing in Japan, the NDL's efforts to acquire and provide access to these publications, some of the challenges that are likely to be faced in the future.*

**Keywords:** Grey Literature, Academic Publications, Academic Society, National Library, Legal Deposit

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### **1 Introduction**

Grey literature was once defined as "produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial

publishers, i.e., where publishing is not the primary activity of the producing body”<sup>1</sup> (So-called New York and Luxembourg definition). This rather broad definition reflects the difficulty to define grey literature today. With the progress of digitization and changes in the manner of information distribution, many of these literatures that have been regarded as “grey” in the past are becoming easier to find and access. However, there are still literatures that are difficult to identify and obtain, and the digitization creates new problems for libraries to collect and provide. As an example, this paper takes up the grey literature published by the academic societies and associations in Japan, and discusses the efforts of collection, preservation, and access provision of those literature based on the analysis of the questionnaire surveys conducted by the National Diet Library (NDL).

## **2 Survey results on the situation of publication and collection of Japanese academic societies’ literature**

### **2.1 Overview of the survey from 2012 to 2018**

#### 2.1.1 Background

The NDL has been involved in the acquisition and organization of both printed and electronic information on science and technology as part of a national effort to improve the science and technology information infrastructure. As the only national library of Japan, the NDL has collected domestic publications, including books, serials, pamphlets, CD-ROMs and DVD-ROMs under the legal deposit system and it also has collected doctoral dissertations.<sup>2</sup> In addition to tangible format materials, digital information published on the Internet have been collected. Online publications published by private publishers, including many academic societies, which is equivalent to books or serials (electronic books, electronic journals, etc.) has been collected and preserved under the NDL Act from July 1, 2013.<sup>3</sup> For the time being, they are limited to those which are free of charge and without DRM (Digital Right Management). However, unlike commercial publications, academic societies’ publications are difficult to collect even in printed materials, and in particular, conference proceedings are difficult to grasp even the facts of publication, and extra efforts for collection are required.

#### 2.1.2 Surveys from 2012 to 2018

Therefore, in order to grasp the publication and collection status of academic societies’ publications, the NDL conducted questionnaire surveys on the status of publication, deposit to the NDL, digitization, distribution route and access channels, etc., five times during the period from FY2012 to FY2018.<sup>4</sup> The survey target was selected based on *Gakkai Meikan* [Directory

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<sup>1</sup> Schöpfel, J. and Farace, D.J. (2010), “Grey literature”, in Bates, M.J. and Maack, M.N. (Eds), *Encyclopedia of Library and Information Sciences*, 3rd ed., CRC Press, London, pp. 2029-2039.

<sup>2</sup> Domestic doctoral dissertations are held by the National Diet Library and libraries of universities that have awarded degrees. The former Imperial Library began collecting domestic doctoral dissertations in 1923, and its successor, the NDL, has continued to do so since 1948. Doctoral dissertations have ordinarily been published on the Internet by the university that granted the degree since April 2013. The NDL collects doctoral dissertations issued in electronic form and makes them available on the Internet with the permission of the issuing university. The NDL also has digitized doctoral dissertations issued in paper form and made them available on the Internet with the permission of the issuing university. As of 2018, about 140,000 dissertations issued from 1991 to 2000 have been digitized. Of these, roughly 10,000 were published on the Internet and 50,000 were collected in electronic form.

<sup>3</sup> See <https://www.ndl.go.jp/en/aboutus/laws.html> for the text of the current NDL law.

<sup>4</sup> Details of the survey results. <https://rnavi.ndl.go.jp/kaigi/questionnaire.php> (Japanese only)

of academic societies in Japan], which covers almost all major academic societies in Japan.<sup>5</sup> The focuses are on academic journals and conference proceedings (including abstracts and handouts) published by academic societies. The number of target institutions and the response rate for each year are as shown in **Table 1**. The number of recipients has increased since FY2016 because, in addition to the societies on science, technology and medicine (STM), societies on humanities and social sciences (HSS) have also been added to the list. No surveys were conducted in FY2015 and FY2017.

Table 1 Outline of the society survey

Year	Recipients	Responses	Response rate	Questionnaire methods
FY2012	1017	330	32.4%	Web
FY2013	1095	673	61.5%	Web and post
FY2014	1096	665	60.7%	Web and post
FY2016	1913	1128	59.0%	Web and post
FY2018	2007	1207	60.1%	Web and post

## 2.2 Summary of 2018 survey results

### 2.2.1 Publication form, access conditions, and digitization

The types of periodicals issued by academic societies area as follows in **Table 2**.

Table 2 Types of periodicals (2,364 titles)

Types of periodicals	STM n=1,505	HSS n=859	Total n=2,364
Journals	1,008 (67.0%)	573 (66.7%)	1,581 (66.9%)
Newsletters	84 (5.6%)	157 (18.3%)	241 (10.2%)
Proceedings	295 (19.6%)	89 (10.4%)	384 (16.2%)
Others	64 (4.3%)	9 (1.0%)	73 (3.1%)
N/A	54 (3.6%)	31 (3.6%)	85 (3.6%)

Print is still the most popular publication form with 81.3% of academic societies' publications such as academic journals, newsletters and conference proceedings (**Table 3**), while online publications such as websites and email delivery is the second with 38.5%. HSS are behind in digital publishing compared to STM. However, compared to the FY2016 survey result, online publications are increasing in both fields (STM from 34.8% to 45.9%, HSS from 17.2% to 25.5%). The responses filled in Others category, shows the diversity of publication form, including pamphlets and stapled papers, which is changeable depending on the year or occasions of academic conference, etc.

<sup>5</sup> <https://gakkai.jst.go.jp/gakkai/> (Japanese only) It contains various data of major academic societies in Japan. The listed society is a "cooperating academic research organization" that cooperates with the activities of the Japan Science Council (2033 societies, as of March 4, 2019). <http://www.scj.go.jp/en/scj/index.html>

Table 3 Publication form of periodicals (multiple choices allowed) (2,364 titles)

Publication form	STM n=1,505	HSS n=859	Total n=2,364
Printed media (including booklet)	1,180 (78.4%)	742 (86.4%)	1,922 (81.3%)
Online publications (Website, email delivery, etc.)	691 (45.9%)	219 (25.5%)	910 (38.5%)
Tangible electronic media (CD / DVD- ROM, USB memory, etc.)	89 (5.9%)	19 (2.2%)	108 (4.6%)
Others	27 (1.8%)	18 (2.1%)	45 (1.9%)
N/A	72 (4.8%)	53 (6.2%)	125 (5.3%)

Of the cases of publications on the websites, 70.9% of the documents are partially or completely accessible without restrictions, which reflects the open access movement. On the other hand, however, 19.1 % are available only for a fee basis (including paid membership registration) and there are many cases where public access is limited (**Table 4**). As for difference in fields, STM has a higher percentage of restricted access on a fee basis (23.4%) than HSS (5.5 %).

Table 4 Scope of disclosure and conditions of periodicals published on the websites (multiple choices allowed) (910 titles)

Scope of disclosure and conditions	STM n=691	HSS n=219	Total n=910
Everything is unconditionally available on the Internet	302 (43.7%)	111 (50.7%)	413 (45.4%)
Partially unconditionally available on the Internet	171 (24.7%)	61 (27.9%)	232 (25.5%)
Available to free membership registration	14 (2.0%)	4 (1.8%)	18 (2.0%)
Available on a fee basis (including paid membership registration)	162 (23.4%)	12 (5.5%)	174 (19.1%)
Other [free description]	79 (11.4%)	20 (9.1%)	99 (10.9%)
N/A	37 (5.4%)	20 (9.1%)	57 (6.3%)

As for the publication method, a large number of publications have been published on Japan's major academic information platform, J-STAGE<sup>6</sup> (developed by the Japan Science and Technology Agency, JST<sup>7</sup>) or CiNii<sup>8</sup> (developed by the National Institute of Informatics, NII<sup>9</sup>).

<sup>6</sup> J-STAGE is a platform which JST has built to promote electronic journal publishing of Japan's science and technology information. It publishes more than 2,800 journals and conference proceedings. <https://www.jstage.jst.go.jp/browse/-char/en>

<sup>7</sup> Japan Science and Technology Agency (JST) is a funding agency related to science and technology, and is a national research and development agency that maintains a foundation for the distribution and promotion of science and technology information. <https://www.jst.go.jp/EN/>

<sup>8</sup> CiNii is a database service operated by NII. You can search for articles, collections from university libraries, etc. and doctoral dissertations with CiNii. <https://ci.nii.ac.jp/en>

<sup>9</sup> National Institute of Informatics (NII) is Japan's only integrated research institute in informatics. As an inter-university research institute corporation, they are working on construction and operation of academic information

This indicates that J-STAGE and CiNii have been established as major platforms for publishing academic journals (**Table 5**). On the other hand, 37.5% of periodicals are provided on the academic societies' own websites without DRM, especially in the HSS field. There are not many cases published on the websites of foreign publishers such as Springer or Wiley.

Table 5 Methods for publishing periodicals on the website (multiple choices allowed) (910titles)

Methods for publishing periodicals	STM n=691	HSS n=219	Total n=910
Society's website (without DRM)	235 (34.0%)	106 (48.4%)	341 (37.5%)
Society's website (with DRM)	77 (11.1%)	18 (8.2%)	95 (10.4%)
NDL Digital Collections	24 (3.5%)	15 (6.8%)	39 (4.3%)
J-STAGE or CiNii	370 (53.5%)	100 (45.7%)	470 (51.6%)
Institutional Repository	24 (3.5%)	6 (2.7%)	30 (3.3%)
Paid database (Medical Online, etc.)	40 (5.8%)	1 (0.5%)	41 (4.5%)
Websites of foreign publishers	79 (11.4%)	3 (1.4%)	82 (9.0%)
Other	26 (3.8%)	4 (1.8%)	30 (3.3%)
N/A	14 (2.0%)	6 (2.7%)	20 (2.2%)

As for the status of digitization of periodicals originally published in print form, 63.3% are digitized all or parts of volumes. Digitization was slightly advanced compared to the previous survey (57.8% in 2016) (**Table 6**).

Table 6 Digitization of periodicals in print (1,922 titles)

Digitization situation	STM n=1,180	HSS n=742	Total n=1,922
Digitized all	462 (39.2%)	159 (21.4%)	621 (32.3%)
Partially digitized	357 (30.3%)	238 (32.1%)	595 (31.0%)
Not digitized	310 (26.3%)	332 (44.7%)	642 (33.4%)
N/A	51 (4.3%)	13 (1.8%)	64 (3.3%)

However, more than half titles of periodicals in print form have no plans for future digitization, with 57.6% in STM and 52.6% in HSS filed. (**Table 7**).

Table 7 Future digitization plan of periodicals in print form (1,237titles)

Plan	STM n=667	HSS n=570	Total n=1,237
Digitization ongoing or planned to start	219 (32.8%)	230 (40.4%)	449 (36.3%)
No plans to digitize	384 (57.6%)	300 (52.6%)	684 (55.3%)
N/A	64 (9.6%)	40 (7.0%)	104 (8.4%)

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infrastructure including academic information network (SINET5), and also provide academic content and service platform. <https://www.nii.ac.jp/en/>

## 2.2.2 Deposit to the National Diet Library

76.0% of the respondents answered that they have deposited all the printed materials, CD-ROMs and DVD-ROMs they published to the NDL. Meanwhile, as much as 56.2% of the respondent answered that they have never deposited their online publications. (**Table 8**)

Table 8 Status of deposit by 1,207 organizations

Status of deposit	Printed materials, CD / DVD-ROM	Online publications
We deposit all of our publications	917 (76.0%)	166 (13.8%)
We deposit some of them	149 (12.3%)	86 (7.1%)
We deposit none of them	67 (5.6%)	678 (56.2%)
N/A	74 (6.1%)	277 (22.9%)

Regarding the reasons why they do not deposit online publications, many of them answered “The publications have already been made public on J-STAGE, CiNii or Institutional Repositories (IRs)” or “We do not publish online publications that are required to be deposited to the NDL’s e-legal deposit system.” This is because online publications on the platforms for academic information including J-STAGE and CiNii are not subject to the deposit system (described later).

About 20 respondents also said, “We had not taken over the tasks of depositing materials from the predecessor” or “We did not know how to deposit materials to the NDL.” This is because, in Japan, the secretariat of academic associations is often performed by turns among member institutions or by different subcontractors.

### 3 Efforts to collect, provide access to and preserve and provide access to grey literature

The survey results revealed that there are still “grey” literature in Japanese academia. A steady number of academic journals and conference proceedings are not deposited to the NDL even in the case of print form. Moreover, access to digitized materials are often limited to the members. The NDL is making efforts in cooperation with related institutions to ensure the collection, access to and preservation of those academic grey literature.

#### 3.1 Checking the conference schedule beforehand to collect the proceedings

Conference proceedings contain latest research developments and it is important to collect them timely. As the deposit library of Japan, the NDL is actively engaged in prevailing the deposit system to the public and reminding publishers to deposit their publications when they miss it. However, it is hard to know whether the proceedings are published since the secretariat office frequently changes as mentioned above, then acquiring proceedings becomes more difficult as time passes.

Therefore, we think it is effective to catch the conference information in advance and make a request for deposit beforehand. In FY2018, we started a test approach in which we use online directories of medical academic associations to collect future conference information and ask for the associations to deposit their proceedings.

### **3.2 Enhancing acquisition of online publications**

The NDL is also engaged in collecting and preserving online publications and websites. As mentioned earlier, it is legally required for private publishers to deposit free-of-charge online publications (corresponding to books or serials) without DRM to the NDL. As for online publications of academic societies with DRM or available for a charge, which are not subject to the current legal deposit, the NDL asked for voluntary deposit after the survey. As a result, 14 titles are voluntarily deposited in 2018.

Also, the NDL has been archiving websites published in Japan regularly by robot since 2002 (Web Archiving Project, WARP)<sup>10</sup>. Since FY2010, websites published by public agencies, including national or municipal governments and public universities, have been archived following a legal basis. Websites of private organizations, including private universities and academic societies, are collected by permission. For this reason, some of the conference presentations, posters, flyers, etc. of the academic societies published on their websites have been archived and made accessible by WARP.

Those collected online publications and archived websites are available onsite within the NDL premises, and if permissions allow, they have been made available via the Internet.

### **3.3 Collection and preservation in cooperation with related institutions**

As described above, academic journals and conference proceedings are becoming increasingly published on Institutional Repositories and public publishing platforms including CiNii and J-STAGE under the influence of trend of open science and open access. Those online materials are not subject to the NDL deposit system as they are intended to be continuously available to the public for a long period of time and which are assumed not to be lost without special circumstances.

However, not all IRs and platforms exist permanently even though they seem reliable at present. If these were to close, the NDL would be the last storehouse for the publications which the closing organization stored. At the end of March 2017, NII's digital library service, NII-ELS,<sup>11</sup> ended operation, and the articles stored in there were no longer accessible from CiNii Articles<sup>12</sup>, so they were transferred to JST's J-STAGE and the NDL Digital Collection.<sup>13</sup> Approximately 600,000 articles have been transferred to the NDL Digital Collections by the end of 2018, most of which can be accessed by anyone on the Internet. In addition, NII has made it possible to browse these articles from the search results of CiNii Articles by linking them to the articles in the NDL Digital Collections.

### **3.4 Metadata, standardization and improvement of discoverability**

The NDL is, in cooperation with NII, JST and other related institutions, working to make once “grey” literature more discoverable by standardizing metadata, assigning identifiers, improving interoperability, and establishing integrated discovery systems.

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<sup>10</sup> [http://warp.ndl.go.jp/?\\_lang=en](http://warp.ndl.go.jp/?_lang=en)

<sup>11</sup> NII-ELS was a dissertation and publication service for academic societies that NII has conducted. It ended in March 2017.

<sup>12</sup> <https://ci.nii.ac.jp/en>

<sup>13</sup> NDL Digital Collections is a database that provides access to the digitized materials collected and stored by the NDL. [http://dl.ndl.go.jp/?\\_\\_lang=en](http://dl.ndl.go.jp/?__lang=en)

The NDL has developed a descriptive metadata standard, “National Diet Library Dublin Core Metadata Description (DC-NDL).”<sup>14</sup> DC-NDL is implemented in the NDL Digital Collections, WARP, and the National Diet Library Search (NDL Search)<sup>15</sup>. NDL Search is an integrated search service of catalogues and digital archives of libraries, archives, museums, academic institutes and the NDL. NDL Search also gives access to J-STAGE, CiNII and IRDB<sup>16</sup>, a database of IRs in Japan. By exchanging metadata with these systems via NDL Search and enabling integrated searches, the possibility of discovering scholarly information is enhanced nationwide.

The NDL also promotes the use of digital object identifiers (DOIs). The Japan Link Center (JaLC), the only Japanese Registration Agency (RA) accredited by the International DOI Foundation, is jointly administered by the NDL with JST, NII and other related institutions. The NDL has assigned DOIs to digitized dissertations, books, journals and other materials since 2014. Until 2018, almost all of the 2.54 million digitized materials stored in the NDL Digital Collections were assigned DOIs, and their permanent accessibility are ensured through DOIs by providing a resolvable persistent network link to the current information. Furthermore, JaLC also assigns DOI to research data, and the NDL cooperates in the promotion of research data sharing in Japan through joint administration of JaLC.

The NDL has also been active as the Japanese national centre of International Standard Serial Number (ISSN) since 1976. In addition to tangible serials such as printed materials, ISSNs have been assigned to serials of online publications since 1998.

#### **4 Challenges for the future**

The distribution of scholarly information has been changing in the digital network era. While commercial publishers’ platforms provide e-journals, the trend of open science has led to improve the access of once “grey” literature. They can now be increasingly visible and available on academic societies’ websites, IRs, and other public digital publishing platforms. In addition, huge research data are now being opened. However, there are still serious problems than ever before in preserving them for a long term and providing them to users. Unlike print publications, paid online publications are still not sufficiently collected under the current law in Japan, and thus not guaranteed national bibliographic control and long-term preservation by the national library. Research data is not only large in size but also extremely diverse in nature and difficult to handle.

The NDL, which is responsible for the collection, preservation and provision of publications in Japan, including what is called “grey literature,” continues to make every effort to ensure the present and future access to these materials, in consistent with the current global trends, and trying challenges in collaboration with academic societies, other related institutions and publishers.

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<sup>14</sup> <https://www.ndl.go.jp/en/dlib/standards/index.html>

<sup>15</sup> <https://iss.ndl.go.jp/?locale=en>

<sup>16</sup> <https://irdb.nii.ac.jp/en>



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