Status Quo and Issues of Open Access in Scholarly Research at Japanese Universities

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***Abstract*—This paper analyzes the status quo and current issues of open access (OA) in scholarly research at Japanese universities from governmental policies, the OA mandate for PhD theses, open-access scholarly articles in institutional repositories, and OA journals. The peculiarity of Japan's OA policies are pointed out and a raised awareness on the part of Japanese scholars of the worldwide movement toward OA is called for. The need for a larger framework for OA that covers the particular case of Japan and opens a discussion on ideal scholarly communication in the digital age is proposed, as opposed to the conventionally used green-versus-gold OA framework designed to address the rising subscription costs of scholarly journals and conflicts between academia and commercial publishers.**

Keywords—open access; scholarly communication; subscription cost; visibility; digital age

I. INTRODUCTION

There is a worldwide "open-access (OA) movement" that demands unrestricted online access to scholarly research. This idea is being aggressively pursued by the academic community to cope with the rising subscription cost of scholarly journals, rather than being a natural result of the widespread use of the Internet. From the 1970s and through the following decades, the price of scholarly journals has been steadily rising at a rate far above inflation, and academic institutions have been forced over this period to cancel serial subscriptions—a situation known commonly as the "serials crises" [1][2]. As the high cost of subscriptions is mostly owing to publishers' policies, the OA movement began as an action against commercial publishers by the academic community. In 1994, Steven Harnad made the "Subversive Proposal," which called for scholarly articles to be freely available on the Internet instead of being published in print for the sake of royalties. In 2001, 34,000 scholars worldwide signed "An Open Letter to Scientific Publishers," calling for the establishment of an online public library and pledging to refrain from publishing in traditional non-open-access journals.

In 2002, the "Budapest Open Access Initiative (BOAI)" declaration was released, which provided a definition for OA. It recommended two ways to open access scholarly works: (1) self-archive scholarly work in an open access repository, known as green OA, or (2) publish in an OA journal, known as gold OA. In case of green OA, either the author's final manuscript or the publisher's version after a certain embargo period is archived on a website accessible worldwide. In case of gold OA, a fee that is usually called the article processing charge (APC) is charged to the author, as publication cost can no longer be recovered by subscription fees. This implies a huge business-model change in scholarly publishing.

Related to the rise of the subscription cost of scholarly journals, but with a different aim than the academic community, governments in several countries also began to pursue OA of scholarly works. In the US, a medical patient argued that it is unfair that taxpayers do not have access to academic articles and thus cannot study their own medical condition, as the price of academic journals is exorbitant. This induced governmental bodies, especially funding agencies, to adopt an OA policy that mandates OA of scholarly articles from publicly funded research. In 2008, the National Institute of Health (NIH) announced the "NIH Public Access Policy" that required all peer-reviewed NIH-funded articles to be made publicly available within 12 months of publication on PubMed Central, which is a digital repository of biomedical and life sciences. Following the NIH, several major funding agencies, including Wellcome Trust, which is a nongovernmental charity in the UK, adopted similar policies. From 2013, governments' moves on OA policies have only accelerated. Among them, the Research Councils UK (RCUK) announced block grants for universities to fund APCs. While policy changes by the NIH can be perceived as opting for green OA to drive the open access of scholarly works, the policy implemented by the RCUK can be perceived as pursuing gold OA. Moreover, apart from funding agencies subsidizing the APCs, there is a growing number of universities that support their own researchers with APCs [3].

Aided by this series of governmental policies, the number of openly accessible scholarly articles on the Internet has grown. However, this has also caused some adverse reactions. It appears that APCs of open-access journals have become another revenue source for commercial publishers. Many new journals have been launched; among them are low-quality and predatory journals that only aim to collect money from needy researchers to publish their work. Furthermore, some traditional peer-reviewed journals have begun to offer an option where an author could choose to pay APCs to make a scholarly article openly accessible. As these so-called hybrid journals also contained articles that were not openly accessible,

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university libraries could not cancel their subscriptions, meaning that commercial publishers received subscription and APC revenues for these journals. Thus, gold OA turned out to be an ineffective way to cope with the high price of scholarly journals. In contrast, with green OA, which would have had an influence on the cost issue, self-archived scholarly articles remain below a certain limit because of the difficulty of self-archiving and the low incentive for scholars to do so [4].

Japan has been isolated from all these worldwide movements. During the 1980s and 90s, when universities in other countries were facing serials crises, the Japanese yen's value was steadily strengthening, which canceled almost all of the cost increase of subscriptions. In 1985, one dollar was 250 yen, and in 1995, one dollar was 75 yen, meaning that the Japanese yen's value more than tripled during this decade.

In the late 1990s, some Japanese universities began to face a Japanese version of the serials crisis, and university libraries began to cancel subscriptions to seldom-used scholarly journals [5]. Nonetheless, there were several interventions that alleviate the crisis. In the 2000s, commercial publishers started selling online subscriptions to large bundles of electronic journals at a discount price, the so-called "Big Deal." This increased the number of serials available at smaller universities with little resources. In fact, in 1991 larger universities had 2.55 times more serials available than smaller universities. In 2011, this number shrunk to 1.18 [6]. During this period, Japanese university libraries began to form a consortium, which was a common worldwide practice, to negotiate with major commercial publishers. This also kept the university administration from being bothered by rising subscription costs.

As a result, Japanese university administrations and faculty members have very little idea of the issue of rising subscription costs and the worldwide OA movement as most of them have not faced the situation where they could not access articles they required. Japanese researchers, especially in the STEM fields are aware of the term "open access" through open-access or hybrid journals, where they submit their work. For them, the term means an enhanced visibility for their work, not the provision of access to their work to needy people worldwide, nor action against rising subscription costs and commercial publishers. As such, not many researchers are aware of the value of self-archiving their scholarly articles in institutional repository, and many have never heard of the OA movement being conducted by academic communities worldwide.

In recent years, Japanese universities have begun to face pressure on their library budgets; the yen has weakened as a result of the national economic policy called "Abenomics" and the overall budget of the university is continuously shrinking. Additionally, the government began introducing several OA-related policies, prompting universities to deliberate on this matter (details provided in section II-A). Nevertheless, these are passive, and not serious, deliberations on scholarly communication.

This article describes and analyzes the status quo of open access of scholarly work in Japan, providing some basic information so that Japanese universities may deliberate on university library subscription to serials. It also clarifies the unique situation of open access unique to Japan and points out the issues to be deliberated on.

II. The Status quo of OA of scholarly work in Japan

This section describes the status quo of OA for scholarly work in Japan, focusing on governmental OA policies, OA for PhD theses, and OA for scholarly articles. Governmental OA policies are described first, as the OA movement in Japan has been initiated by the government and not the academic community. OA relating to PhD theses is described next. The government has mandated OA for PhD theses from 2013, which attracted the attention of the academic community in Japan to the issue of OA. After having described government-induced OA policies, the OA for scholarly articles are described.

A. Governmental OA Policies

Although the awareness of OA is generally rather limited in Japan, the Japanese government has long been aware of these issues, as they were in position to obtain information both from international society and the library community. In Japan, the Ministry of Education, Culture, Sports, Science and Technology (MEXT), which handles education and science and technology policies, is in charge of addressing OA issues. A committee set up under the Council for Science and Technology to deliberate on scholarly communication and research environment, discussed the issue of OA and scholarly works intensively in 2011–2012, the final report being released in July 2012 [7].

Based on this report, the following policies are being implemented.To enrich the institutional repositories that have been in gradual deployment since 2003, it was stated in "The 4th Science and Technology Basic Plan (FY2011-FY2015)" that repositories shall be further deployed, scholarly works be digitized, and OA promoted to establish a research environment on an international level. Based on this basic plan, institutional repositories are now in further deployment and being enriched in their contents. There is also now a platform called the "JAIRO cloud," whereby universities can set up repositories, and a database that makes the repositories in Japan interoperable.

To make scholarly articles that have been funded by public money available through OA, the Japan Science and Technology Agency (JST) released the "JST Policy on Open Access" in April 2013. The policy states the clear intention of the JST to promote OA for scholarly works completed through its funding. As for the means to make the scholarly works openly accessible, it allows the researchers both to deposit their scholarly articles in institutional repositories (green OA) as well as publish them in an OA journal (gold OA). This is the first OA policy adopted by a major funding agency, although it encompasses only researchers in the science and technology area working on innovative, large-scale projects.

There are now three policies in process to make Japanese scholarly journals open access. A new funding scheme to publish an open access journal was added in 2013 under the grants program "Grant-in-Aid for Publication of Scientific Research Results" provided by the Japan Society for the

Promotion of Science (JSPS). This can be also viewed as a clear statement that the Japanese government is pursuing open access journals [9]. There is also a platform called "J-STAGE," created by the JST to make Japanese scholarly journals available through open access. Additionally, even more departmental bulletins published by departments at Japanese universities are being archived at institutional repositories (details provided in section II-C).

Apart from all these policies, it has been mandated to make all PhD theses openly accessible on the Internet beginning from FY 2013. This will increase the number of open access contents in institutional repositories in large blocks every year (details provided in section II-B).

It should be noted that all these policies imply that they are targeted toward enlarging the sheer number of OA contents and that they do not distinguish whether green or gold OA are to be preferred to promote OA to scholarly works. These policies are set apart from the issues of the rising subscription cost of scholarly journals and the conflict between academia and commercial publishers.

B. OA of PhD theses

The policy to mandate that all PhD theses be made available on the Internet on a national level is an approach unique to Japan. Elsewhere, there exist universities that mandate the open access of PhD theses, but nowhere else is this done on a national level. This can be checked on the "Registry of Open Access Repository Mandates and Policies (ROARMAP)," which is a searchable international registry charting the growth of open access mandates adopted by universities, research institutions, and research funders.

The mandate to make all PhD theses in Japan available on the Internet was enacted by the amendment of "Theses Regulation," in force since FY 2013. Before the amendment, all PhD theses were obligated to be made openly available in print form at university libraries or at the National Diet Library (NDL). Now, however, an electronic version of PhD theses must be submitted to the university institutional repository. If there are problems in making the full-text available, it also allows that only the summary of the PhD thesis be made available, with the special reasons requiring this noted. This policy, in the first place, aims to widen access to PhD theses. However, it also aims at enhancing the quality of PhD theses through increased transparency, and enriching institutional repositories deployed by Japanese governmental policy [10].

This policy produced a great deal of confusion at universities as it was announced just one month before its enforcement came into effect (in reality, the ministry called for public comment several months prior to enforcement's taking effect, but only few universities noticed the announcement). The concerns raised by universities reveal the lack of awareness of the worldwide OA movement among Japanese scholars. In the following paragraph, arguments by faculty members of the University of Tokyo are presented. The University of Tokyo was the most affected through this amendment as it is the largest research university in Japan awarding approximately 10% of all the nearly 12,000 PhD theses awarded yearly in Japan.

The first reaction was outrage on the part of the faculty members. There were protests that such an important policy was released just a month prior to enforcement, and that the ministry had made the decision in a top-down manner, without understanding the impact of the policy; furthermore, there were concerns that Japan's international competitiveness would be damaged through this policy. There were also concerns that doctoral students would be unable to publish further research based on their PhD theses, or that the publishers would not agree to make PhD theses openly available on the Internet for already published work. Arguments about the use of third-party figures in PhD theses were also raised. All these concerns are summarized in Table 1. Doctorate students are allowed to use these as reasons for only open accessing the summary of their PhD theses.

TABLE I. SPECIAL REASONS FOR ONLY MAKING SUMMARIES OF PHD THESES OPEN ACCESS AT THE UNIVERSITY OF TOKYO

1. Future plans to publish the work,
2. Work already published,
3. Future plans to patent the work,
4. Use of figures of third party, and the proprietor does not allow,
5. Work contains personally identifiable information (PII),
6. Co-authors do not allow to make the work public,
7. PhD dissertation is three dimensional,
8. Other reasons.

The University of Tokyo has many faculty members with strong voices; therefore, it is natural that such protests broke out. Other universities in Japan were more obedient in the face of these regulations. However, similar concerns were also widespread at other universities.

During the deliberation on this matter, no one made an argument on the basis of the understanding of the worldwide OA movement, nor did anyone comment on the issues of commercial publishers and rising subscription costs; furthermore, no one supported the value of making scholarly works openly accessible. The chair of the workgroup specially set up to deliberate on this matter, began the discussion by announcing that the ministry formulated "a new policy using the unfamiliar term 'open access.'" This illustrates the low awareness of worldwide OA issues. In addition, the chair is a professor of law and was not even aware of OA journals, whereas most STEM-related faculty members are.

Although all these protests reveal a lack of awareness of OA on the part of Japanese academia and the need of government to act on this, making a breakthrough in OA policy with PhD theses instead of scholarly articles might have been extremely audacious of the ministry. Scholarly articles are written to make work public, and if there are concerns about making them open access on the Internet, it is only a conflict between academia and commercial publishers. On the contrary, PhD theses are written, in the first place, to be reviewed as a prerequisite for its author to be awarded a PhD degree, and although they have generally been openly available at university libraries prior to the policy change, this was restricted to print, and thus to very limited circulation. Doctorate students used to transfer their research to their PhD

theses rather freely without being strict about intellectual property rights, which may cause major problems when research is made open access on the Internet.

The procedure for making PhD theses from FY 2013 open access is still in progress, and the exact number of full-text PhD theses made open access remains unknown. The interim number at the University of Tokyo shows that less than half were made full-text open access, which is still a higher proportion than prior to the amendment. As for PhD theses where only summaries were made OA, more than half claimed "future plans to publish the work" as the reason for restricting access.

C. Green OA of scholarly articles

In this section, open access contents in institutional repositories are discussed. The scholarly works on other websites, such as the personal website of the scholar are not included, as these are not readily locatable.

Institutional repositories at Japanese universities began to be deployed based on the report "New Wave in Digital Libraries" in 2003 by a special committee on the enhancement of libraries by the Japan Association of National University Libraries (JANUL). The report stated that digital libraries in the 21st century have "the added capability of linking people who post information and those who consume it." Ever since, the number of institutional repositories has grown, and Japan is now ranked 4th by number of repositories, with 145 in total (among which 139 are institutional), and having a 5.3% share of total repositories in the world. The share of the US is 16.7%, that of the UK is 8.3%, and Germany is 6.2%, according to the Directory of Open Access Repositories (Open DOAR) (last accessed February, 2015).

Looking into the details of the archived contents of these Japanese institutional repositories, it can be said that they have a distinctive amount of departmental-bulletin papers when compared to other countries. Actually, more than half of the archived contents are departmental-bulletin papers (Fig. 1). These contents were easy to be acquired by the libraries; even departments producing them were worried that these bulletins would become lost over time. These are so-called gray literature, which are not commercial printings, only intended to be circulated within a closed community. They are sent to different universities and scholars in related disciplines and tend to be lost after a certain period.

(Departmental bulletins are scholarly journals published by the departments of Japanese universities. In principle, only scholars or students of the department are allowed to publish in the bulletin. It is a place where research ideas or research at an interim stage are presented and graduate students post their research. Thus, the submission criteria of those departmental bulletins are not usually so strict, some not requiring peer review. In the case of humanities and social sciences, articles are mostly in Japanese.)

Although it is laudable that such a large amount of department bulletins are archived at institutional repositories, it is an issue that so few journal articles are being archived to cope with commercial publishers. Librarians are faced with the difficult task of asking faculty members for their scholarly articles, as the awareness on OA issues among faculty is very low, and they do not understand the value of self-archiving.

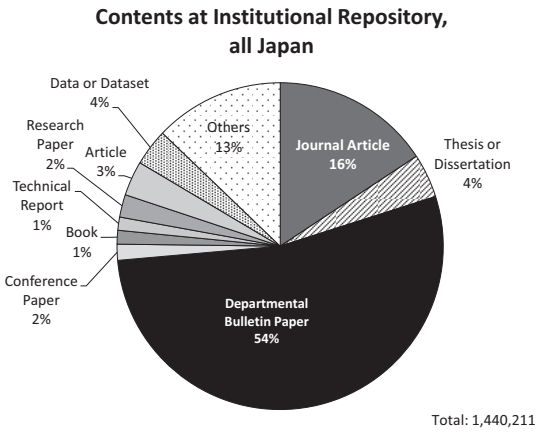

Fig. 1. Contents at institutional repositories at Japanese academic institutions

[a.] Source: NII Institutional Repositories Data Base (IRDB) Contents Analysis (Last Accessed: Jan. 2015)

D. Gold OA of scholarly articles

The publication rates of OA journals were investigated using the "Web of Science Core Collection" which allows searches by OA status of host journal. Open-access articles in hybrid journals are not counted by this search tool. Thus, this analysis focuses only on the penetration rate of gold OA. The analysis was performed for articles published in 2013, as it is possible that some articles published in 2014 are still not archived in the database. Also, document types other than articles—such as letters, reviews, editorials, meeting abstracts—were included, but all documents are hereinafter referred to as "articles."

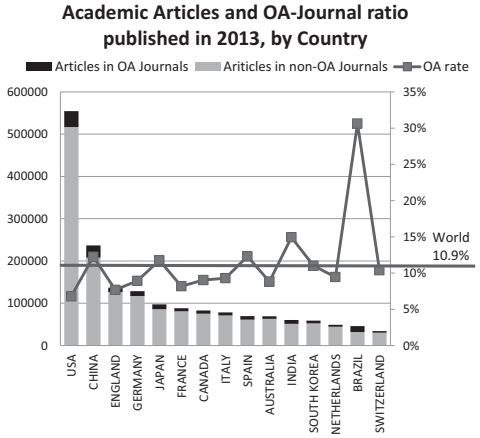

Fig. 2. Number of academic articles and OA-Journal publication ratio by country and ranked by number of articles in 2013

[b.] Analyzed by the author using data from the Web of Science Core Collection (Last Accessed: Jan. 2015)

Analysis shows that 10.9% of all articles in the world in 2013 were published in OA journals. The following countries, ranked by their number of articles, had a rate of OA publication above the world average: China (12%), Japan

(12%), Spain (12%), India (15%), and Brazil (31%). The following countries were below world average: US (7%), England (8%), Germany (9%), France (8%), Canada (9%), and Australia (9%) (Fig. 2). Although the latter countries are known to be proactive in the OA movement, the penetration of gold OA has gone further in less-developed or non-English speaking countries; in many cases, scholars in less-developed countries can only get published in OA journals. As for the high OA rate in Brazil, this comes from the fact that Brazil has been pursuing open access of scholarly works at the national level since 1997 [12].

Analysis by discipline shows that the OA journal rate in Japan is much higher than the world average or that of other major developed countries in several disciplines (Fig. 3). The proportion of OA publications in disciplines such as "Medicine General, Internal" (73% in Japan to 22% world average), "Pharmacology, Pharmacy" (32% to 10%), "Mathematics" (35% to 17%), and "Genetics, Heredity" (47% to 18%) are far beyond world average.

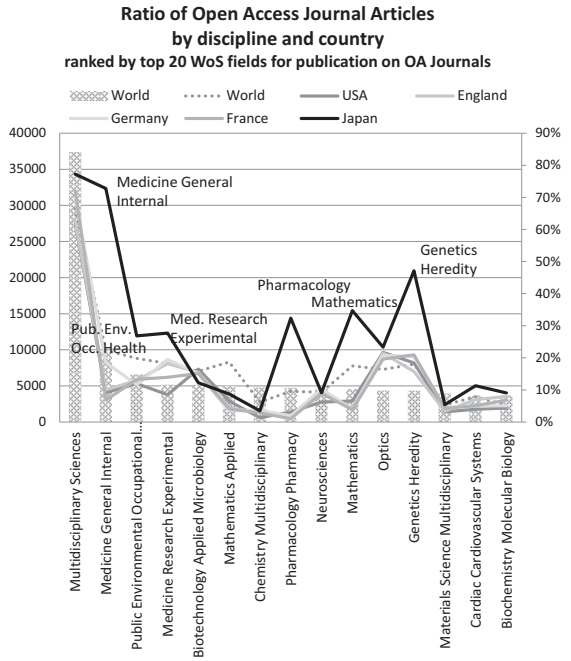

Fig. 3. Number of academic articles on OA journals and OA-Journal publication ratio by discipline and country, and ranked by number of articles on OA journals in 2013

a. Analyzed by the author using data from the Web of Science Core Collection (Last Accessed: Jan. 2015)

As described in Section II-A, there is a funding scheme to publish OA journals to enhance international scholarly communication, and many of the journals listed in Table 2 are supported by this funding scheme. This means that the high gold OA penetration rate in Japan is a corollary to the policy of Japanese government, and not a result of scholars' having paid APCs to be accepted or to enhance their international visibility. Nor does the high OA rate show an understanding on the part of Japanese scholars of the worldwide OA movement.

To publish prestigious international journals has always been the ardent desire of the Japanese government, to be able to influence the international academic society from Japan, whereas now it is dominated by western countries. To achieve this aim it has been conventional to fund scholarly journals in English and invite international eminent scholars to review boards. Now, an additional means of influencing international society is through making journals open access. Nevertheless, international journals published in Japan are not always successful in having many submissions from outside the country, and it is a sad reality that the majority of submissions to these journals are from Japanese scholars.

Existing criticisms of OA journals in general is that they allow commercial publishers to collect money both from libraries as subscription fees and from the scholars as APCs, and that they have become a hotbed of low-quality and predatory journals. This does not apply to Japanese OA journals. Japanese OA journals are published by Japanese academic societies and university departments, and they have been in publication for long before having become OA journals. Furthermore, these Japanese publishing entities are usually very small and operate on such weak financial foundations that they even collected APCs prior becoming OA journals.

TABLE II. TOP THREE JOURNAL TITLES IN JAPAN AND THEIR PUBLISHERS IN DISCIPLINES WHERE JAPAN'S OA JOURNAL PUBLICATION RATE WAS EXCEPTIONALLY HIGH IN 2013

MEDICINE GENERAL INTERNAL *(710)*
* Internal Medicine *(469)*
by The Japanese Society of Internal Medicine
* Tohoku Journal of Experimental Medicine *(75)*
by Tohoku University Medical Press
* Journal of Nippon Medical School *(67)*
by The Medical Association of Nippon Medical School
PHARMACOLOGY PHARMACY *(1258)*
* Journal of Pharmacological Sciences (982)
by The Japanese Pharmacological Society
* Yakugaku Zasshi Journal of The Pharmaceutical Society Of Japan *(175)*
by The Japanese Pharmacological Society
* Drug Metabolism and Pharmacokinetics *(54)*
by The Japanese Society for the Study of Xenobiotics
MATHEMATICS *(134)*
* Osaka Journal of Mathematics *(24)*
by Departments of Mathematics of Osaka University and Osaka City University
* Kyushu Journal of Mathematics *(18)*
by Faculty of Mathematics at Kyushu University
* Proceedings of the Japan Academy Series A Mathematical Sciences *(17)*
by The Japan Academy
GENETICS HEREDITY *(417)*
* Genes Genetic Systems *(246)*
by The Genetics Society Of Japan
PLoS Genetics *(42)*
BMC Genomics *(38)*

a. Note: The "*" denotes scholarly journals by published in Japan. Number in bracket denotes number of articles. Publishers outside Japan are not displayed.

b. Analyzed by the author using data from the Web of Science Core Collection (Last Accessed: Jan. 2015)

III. DISCUSSION

The analysis of the status quo of OA in Japan reveals the following.

There is an apparent lack of awareness of the worldwide OA movement among Japanese scholars, and we can see the determination of the Japanese government to promote OA to catch up with the rest of the world. Nonetheless, the policies of Japanese government seem to be confused, as they are not directly targeted at coping with rising subscription costs. The Japanese government is deploying institutional repositories and archiving gray literatures such as departmental bulletins and PhD theses from the perspective of collecting as many digital contents as possible. The open access policy of the JST to mandate all funded research articles to be made OA is in line with the worldwide OA movement but does not distinguish between green and gold OA; furthermore, the JSPS, the largest funding agency in Japan, has still not adopted this policy. In addition, countries such as UK or US support APCs on the governmental or university level, but Japan has no such policy.

The seemingly-high OA penetration rate of Japanese universities is just a result from passive reaction towards the governmental policies. Japanese scholars are using opportunities provided by the government just to store or publish their scholarly work—they archive departmental bulletins on institutional repositories so that they do not get lost, they use J-Stage as a platform to archive and disseminate their scholarly journals, and they apply for funding to publish scholarly journals. It does not matter if these venues require OA or not. The fact that such decisions are made by very small and weak entities such as academic associations or university departments, and not by the universities themselves, reinforces this tendency. Japan is known as a country which has astonishing high number of academic societies compared to other major countries; Japan has approximately 1,800 academic societies which are very small and ran by just a handful of scholars. They have such weak financial foundations that they cannot have agile management [13].

That being said, it is about time that Japanese universities began to make decisions with the worldwide OA movement in mind. Policies are being implemented for OA around the world since 2013; furthermore, subscription fees in Japan are staggering. Some of the top universities in Japan have started to cancel several subscriptions to major scholarly journals. Presently, decisions are made on impromptu bases by the administration of individual universities, but commercial publishers are on such strong financial foundations that universities should work together to cope with publishers. Fortunately, university libraries have already formed a consortium to negotiate with the publishers. But they need the consent of university administrations to move forward, whereas the awareness of the administrations, including that of faculty members, is quite low at this time. According to ROARMAP there are already more than 440 institutions in the world which have mandated OA for their scholarly works; among them is only one Japanese institution. To make more Japanese universities aware of the OA movement, more communication is needed on the situation of rising subscription costs, various aspects of OA, and the development of OA the world has experienced in the last decades.

Setting aside the need to raise awareness in Japan, the world needs to have some enhanced framework for OA. There are different types of OA beyond those that can be understood from the dichotomy between green and gold OA. There are cases where OA is pursued to enhance the international visibility, raise international competitiveness, and just to enlarge the sheer number of digital contents, as seen in countries such as Japan and Brazil. Moreover, as described in the introduction, green and gold OA are not an any more effective way to cope with rising subscription costs and the oligopoly of commercial publishers. A larger framework that encompasses all the various aspects of OA and defines OA from the perspective of the ideality of scholarly communication in the digital age—not just from the conflict between academia and commercial publishers—is required.

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REFERENCES

[1] B. Dingley, "U. S. Periodical Prices – 2005," U.S. Periodical Price Index 2005, American Library Association, 2005.

[2] S. White and C. Creaser, "Trends in Scholarly Journal Prices 2000-2006," LISU Occasional Paper no.37, March 2007.

[3] "Compact for Open-Access Publishing Equity," since 2009.

[4] Science-Metrix, "Proportion of Open Access Peer-Reviewed Papers at the European and World Levels—2004-2011," 2013.

[5] S. Tutiya, "Electronic Journals and University Libraries," Lecture Meeting at National Institute of Informatics, 2001. *(in Japanese)*

[6] Committee on Scholarly Communication, Japan Association of National University Libraries, "Report to summarize the status quo and issues of scholarly communication (Part 2 of FY2012 Report)," 2013. *(in Japanese)*

[7] Research Environment Infrastructure Group, Subdivision on Science, Council for Science and Technology, "Infrastructure Development for Strengthening the Capacity of International Scholarly Communication," July 2012. *(in Japanese)*

[8] Japan Science and Technology Agency, "Open Access Policy at JST," 2013. *(in Japanese)*

[9] Y. Anzai, President of Japan Society for the Promotion of Science, "New Funding Scheme for Scholarly Journals under Influence of Open Access," presentation material at the forum "'The World's Open Access Policy and Japan'—Impact on Research and Scholarly Communication," March 2014. *(in Japanese)*

[10] S. Tatematsu, Official at Higher Education Bureau, Ministry of Education, Culture, Sports, Science and Technology (MEXT), "On the Amendment of Theses Regulation—Making PhD Theses openly available on the Internet," Presentation Material at the Open Access Summit 2013. *(in Japanese)*

[11] National Institute of Informatics, "New Horizon of Scholarly Communication," First term report on NII Institutional Repository Program, 2008. *(in Japanese)*

[12] C. Adams, "Open Access in Latin America: Embraced as key to visibility of research outputs," SPARC, 2013.

[13] S. Yamamoto, "Interim Report on 'The Strategies to Strengthen Academic Societies,'" Mitsubishi Research Institute, Inc., 2007. *(in Japanese)*