
Passing on the Lessons of the Great East Japan Earthquake to Future Generations—The National Diet Library Great East Japan Earthquake Archive

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Abstract:

In the aftermath of the Great East Japan Earthquake, which struck on March 11, 2011, the Japanese government recognized an urgent need to create a national archive of information about this unprecedented natural disaster, so that the learned lessons from this experience would not be lost. Having an obligation as a national library to collect, preserve, and share materials that record all aspects of Japan's cultural heritage, the [National Diet Library](#) (NDL), in cooperation with other Japanese government agencies, has responded to this need by creating a portal site, called [HINAGIKU](#), through which researchers can search and access a wide variety of earthquake archives. In this paper, I will report on our achievements as well as the challenges we face in configuring HINAGIKU to facilitate access to documentation published or archived primarily by the national and municipal government agencies.

At present, HINAGIKU enables access to materials documenting both past experience and current disaster prevention planning via an integrated search functionality of multiple digital archives established by municipal governments, academic institutions, the [Ministry of Internal Affairs and Communications](#), and other organizations as well as the NDL. Visitors to HINAGIKU are able to search records stored at the NDL and other institutions, and new knowledge generated from such research can also be integrated into HINAGIKU as new content.

Over time, as interest in earthquake-related materials decreases, it becomes imperative that the NDL acquire and preserve these materials before such archives disappear. The NDL also has a role to play in handing down these most valuable records to future generations by managing issues related to copyright, personality rights, and secondary use, thereby making HINAGIKU even more useful.

Keywords: Great East Japan Earthquake Archive, disaster archive, portal site, metadata, rights handling

Introduction

First of all, as a Japanese citizen, I would like to express the gratitude felt by all Japanese for the support we received from around the world after the Great East Japan Earthquake on March 11, 2011.

In the aftermath of the earthquake, the Japanese government recognized an urgent need to establish a nationwide organization for the collection, preservation, and sharing of information about this unprecedented natural disaster, so that the lessons learned from this experience would not be lost. Some two months after the earthquake, an advisory panel of experts organized by the government published its [*Seven Principles for the Reconstruction Framework*](#),¹ which advocated strongly that information related to the earthquake be collected and preserved. In fact, municipal governments in disaster affected areas and other organizations including libraries had begun to collect such information almost immediately after the disaster. This helped prevent the loss of much valuable material and also encouraged professionals and volunteers alike to interview survivors about their experiences. In July 2011, the government published its [*Basic Guidelines for Reconstruction in Response to the Great East Japan Earthquake*](#),² in which it committed itself to establishing an integrated mechanism for enabling anyone to access records and other relevant information from either in or out of Japan and broadly communicate the accumulated information domestically and internationally.

The NDL, in cooperation with the Ministry of Internal Affairs and Communications, responded by configuring and launching in March 2013 the [*National Diet Library Great East Japan Earthquake Archive*](#), nicknamed HINAGIKU, as a platform for accumulating and linking disaster records. At present, the NDL is solely responsible for the operation of HINAGIKU. The most current version of the [*Basic Guidelines for Reconstruction*](#)³ states that the government will promote HINAGIKU as a means to consolidate other initiatives that were implemented during the reconstruction, thus highlighting the significance of the NDL's role in this process.

In this paper, I will present an overview of HINAGIKU and explain how the NDL acquires metadata, digitized materials, and other documentation related to the Great East Japan Earthquake. I will also touch on how users perceive HINAGIKU and future issues related to the handling of copyright issues.

HINAGIKU and its current status

As of May 2018, HINAGIKU operates as a portal site which enables users to search and access metadata to more than 3.7 million record related to not just the Great East Japan Earthquake and subsequent Fukushima Nuclear Accident but also past earthquakes and tsunamis. This includes academic research as well as disaster prevention and mitigation programs created before and after the earthquake. The materials themselves are available in a variety of formats, including written reports, research papers, articles, photographs, videos, audio recordings, and fact data. In this sense, HINAGIKU functions as a national archive of seismic information, through which both public and private institutions collaborate by contributing efforts in their fields of expertise. The NDL is able to increase the volume of information available via HINAGIKU primarily by configuring an interactive connection with databases operated by other organizations, receiving donations of digital data from other organizations, and collecting new library materials in accordance with the provisions of the [*National Diet Library Law*](#). Let me describe these three means in greater detail.

Configuring an interactive connection with databases operated by other organizations

The majority of items available via the HINAGIKU are those collected through databases that are connected interactively with HINAGIKU. Administrators of these databases, such as municipal governments, acquire earthquake-related material, create metadata, digitize the material if possible, and then add it to their own web-based archive. NDL has contracted with these administrators to configure interactive connections between HINAGIKU and their databases via either an Application Programming Interface (API) or manually receiving metadata and associated URLs in advance. This enables HINAGIKU's search functionality to retrieve the metadata of content from other databases and provide links to the content via HINAGIKU's user interface. HINAGIKU users click on a link in their search results to access the content and to obtain detailed information about the content or to view it directly if available in digital format. The use of content found in this manner must conform to the rules of the originating database, and inquiries received by the NDL about such content are forwarded to the administrator of the originating database.

Many municipal governments have archived records of their response to the Great East Japan Earthquake and documents related to present disaster-prevention measures. Additionally, they reach out to institutions and individuals in the community to acquire material that can be used as content for web-based regional archives. HINAGIKU collaborates with these municipally operated regional archives to acquire access to such content, which often includes highly realistic depictions of the aftermath of the earthquake through photographs or video recordings of evacuation centres and emergency aid as well as the demolition of collapsed houses and other buildings. Also, many municipal governments archive documentation of disaster mitigation programs that were instituted to conform to the recommendations of the [*Disaster Countermeasure Basic Act*](#) (in Japanese), and this information is relevant to the formulation of future disaster-prevention measures. Municipal governments also receive and make available via the Internet videos and photos from citizens or volunteer organizations as well as articles from local newspapers.

Receiving donations of digital data from other organizations

There are many cases which are similar to how libraries traditionally acquire library materials, such as when the NDL receives donations of a relatively small size from an organization which created or collected records and reports on the earthquake. Such data, including digitized records and their metadata, are stored on the NDL's servers and made available via HINAGIKU's user interface. Such donations generally require that a contractual agreement be reached to elucidate terms of use prior to the NDL accepting the data. Naturally, these conditions must also take into account any conditions stipulated by the original right holders of the material and agreed to by the donating organization.

The NDL also receives donations of a variety of materials created by private enterprise as part of their business operations, although these materials comprise a mere 1% of all searchable items. Examples include Archived Information on the Fukushima Nuclear Accident donated by [Nuclear Regulation Authority](#),⁴ videos of the Fukushima Nuclear Accident donated by the [Tokyo Electric Power Company, Incorporated](#),⁵ aerial photos of the affected areas taken by cartographic companies, and records of reconstruction assistance activities kept by participating contractors. Additionally, in cases where the NDL identified relevant content available on corporate websites, this material was also collected to supplement existing content.

Collecting new library materials in accordance with the provisions of the National Diet Library Law

The provisions of the *National Diet Library Law* afford the NDL great latitude in collecting material related to earthquake disasters. In addition to printed matter submitted by publishers under the traditional Legal Deposit system, born-digital materials such as websites and online publications are also recorded and preserved by the NDL.

The NDL regularly acquires and preserves the websites of national and municipal government agencies, and in fact has increased the frequency with which this information is collected in order to acquire as much of it as possible. We also collect information that is published on the web and made available free of charge in an electronic form that corresponds to books, magazines, or other printed matter. These materials are stored in the [Web Archiving Project \(WARP\)](#) (in Japanese), the [National Diet Library Digital Collections](#), and other NDL-operated databases and are accessible via HINAGIKU. In addition, the NDL collects earthquake-related videos and other content that cannot be captured automatically by WARP-operated bots by requesting that such data be delivered on portable media. Such materials include videos of National Diet deliberations after the disaster, aerial photos taken by the [Geospatial Information Authority of Japan](#), and videos of committee deliberation and briefing by Fukushima Nuclear Accident Independent Investigation Commission (NAIIC).⁶

Printed matter and content published on CD, DVD, or other electronic media are collected exhaustively under the Legal Deposit system and preserved permanently by the NDL. Of these, printed matter related to earthquake disasters is digitized in accordance with the NDL's [Basic Plan for Digitization of National Diet Library's Collections](#) (in Japanese) and made searchable via HINAGIKU in the hope that this material can be made available via the Internet in the future. Electronic media does not require digitization, and the NDL is currently working with the copyright holders so that this information can be published on the Internet and made available via HINAGIKU.

The NDL has also established a special cooperative framework in cooperation with prefectural and other libraries in affected areas to ensure the comprehensive acquisition of earthquake materials. To this end, an electronic mailing list has been established that enables library staff to exchange information on available materials.

Usability of HINAGIKU

HINAGIKU users can utilize a one-stop search service of items held by the NDL and other organizations, which could be used in conducting research on or studying earthquake disasters. It takes a great amount of time and energy to access the different archives scattered around the web and search for items in each database. The meta-search of HINAGIKU makes it possible for users to efficiently find materials, even in archives they did not know of.

Users can also conduct a cross-search of specialized databases such as [e-Gov](#) and [CiNii](#). E-Gov is a comprehensive portal site of government-generated information managed by the Ministry of Internal Affairs and Communications. It enables access to legal information as well as information on organizations, institutions, and governmental procedures published via websites of executive agencies. CiNii is a database service which enables search of academic information from articles, books, journals and dissertations, managed by the [National Institute](#)

[of Informatics](#).⁷ General search services such as [Google Scholar](#) and [Microsoft Academic](#) are also included in the cross-search. The NDL makes sure that HINAGIKU functions as an entrance to various kinds of information resources.

These features of HINAGIKU make it very convenient to use for research and study. It is suitable not only for scholars and researchers seeking technical data and resources on earthquakes and disaster prevention, but also citizens and students who are not familiar with these resources and willing to learn about disaster prevention. The NDL is aiming for HINAGIKU to be used in classrooms, and conducted a model lecture at Tagajo High School in Miyagi Prefecture in 2016. From this experience, the NDL published a [disaster prevention study manual](#) (in Japanese) for junior-high and high-school students via the HINAGIKU website, as well as a [leaflet](#) (in Japanese) introducing how to make use of HINAGIKU in school libraries which was published last year. The NDL will continue to promote the use of HINAGIKU in various situations.

Future issues

Responding to archives which are shutting down and copyright issues

As mentioned above, the NDL has established a one-stop system in which users can access information scattered in different databases using HINAGIKU. The system takes advantage of the expertise of municipal governments, which can collect and preserve a wide range of regional materials. At the same time, each organization can devote themselves to maintaining their own archive, which leads to efficient digitization and online availability at a relatively low cost.

However, it is likely that some of these archives will be discontinued in the future, and if that happens, the NDL would face the problem of taking over the materials provided via those archives. Seven years after the Great East Japan Earthquake, municipal governments and related institutions have mostly finished acquiring primary resources in disaster affected areas. However, their archives were established and have been operating mainly on budgets and subsidies allocated right after the earthquake, or donated funds. Therefore, as interest towards the earthquake fades over time, it will be difficult for municipalities to secure the budget to maintain the archive. Some archives have actually begun to be closed, and in the days ahead, the NDL will be expected to take over the materials which can no longer be provided via those archives to ensure access by users.

In order to take over materials which have originally been collected in digital format or have been digitized for online access, the NDL will have to find a way to clear the copyright issues. The Japanese [Copyright Act](#) allows libraries to digitize their materials for preservation purposes without asking for permission from the right holders, so that municipal governments can cooperate with public libraries⁸ to implement digitization. However, in order for the NDL to take over those materials digitized by other libraries, include them in HINAGIKU's storage, and make them accessible online, the NDL will have to get permission from all the right holders when receiving the digitized data from closing archives, except if the closing archive has been permitted to transfer the ownership of digital copies in advance. Institutions other than libraries have already been granted permission for digitizing and providing materials online. However, the permission seldom includes transferring the ownership of the material to another archive in the future, although this is recommended in the [guideline](#) (in Japanese) for earthquake archives issued by the Ministry of Internal Affairs and Communications.⁹ For non-published content in

particular it is difficult to even find out who holds the rights, unlike published materials for which the publisher has a clear grasp of the rights. It is a great burden for a closing archive to get permission from all right holders for its contents, and they might have to give up donating their content to the NDL, even if they wanted to do so. Even if the NDL was able to receive physical items before digitization, the NDL cannot provide them online without permission.

There are also issues related to personality rights, since materials archived by municipalities often include content other than documents, such as photos and videos. It is practically impossible to get permission for Internet publishing from every individual appearing in photos and videos. To deal with this matter, the NDL implemented a means to block materials for which a request for privacy is made.

Furthermore, presuming that HINAGIKU users are likely to make use of the items they find via HINAGIKU, it is desirable that content be provided in a way that permits secondary use as widely as possible. Even if it may be difficult to grant permission in advance, it is necessary to clarify the terms of use and contact information to ask for permission.

Making HINAGIKU user-friendly

Separately from issues on rights, the NDL is attempting to make HINAGIKU as user-friendly as possible. Japan's experience of and reconstruction from the Great East Japan Earthquake is a critical topic not only for the Japanese, but for people around the world. HINAGIKU is equipped with interfaces in English, Chinese and Korean, and for users living in remote areas, the NDL continuously digitizes and adds materials to HINAGIKU for online access.

With a great number of items available via HINAGIKU, it is essential for the NDL to provide a user-friendly search function to ensure its effective use. We introduced, in 2015, a full-text search function to improve search efficiency, and also provide APIs. SRU and OpenSearch are available for interactive search, and OAI-PMH for harvesting. These enable users to acquire metadata all at once via HINAGIKU from interactively connected databases.

Although the burden of managing and improving HINAGIKU, including the cost for storage to house the constantly growing collection, is not easy to bear, we will continue our efforts to introduce more user-friendly functions to provide users from Japan and the world with easy access to the records and information provided via HINAGIKU.

Conclusion

The NDL will endeavour to find solutions for the issues described in this paper, and will remain committed to passing on the lessons learned from the Great East Japan Earthquake to future generations as a nation. We are also expanding our scope of acquisition to include records and reports related to other major earthquake disasters which occurred in Japan. For example, the NDL built a new interactive connection last spring with the [Kumamoto Earthquake Digital Archive](#), which features the Kumamoto Earthquakes which took place in April 2017. HINAGIKU has increased the number of searchable items since its launch in March 2013. If we keep up with the acquisition of valuable data, HINAGIKU may become an archive with a collection of unprecedented size on the experience of and reconstruction from earthquake disasters.

Japan is a country where natural disasters such as those caused by volcanoes and torrential rains are not rare. Thus, archives for disasters other than earthquakes are starting to be recognized as a national issue these days. The [Cabinet Office of Japan](#), which is working on this issue, published a [report](#)¹⁰ (in Japanese) drawn up by an expert panel which suggests, with reference to HINAGIKU as a best practice, that in the case of wide-area and large-scale disasters, consideration is necessary for building a framework in which relevant public and private institutions collaborate by contributing efforts in their fields of expertise to widely acquire disaster-related information, to serve as a national archive as a whole.

As a practical example of enabling cost-reduction and openness, which are both significant benefits of e-government, and making the most of these benefits in the disaster risk reduction field, we believe that the NDL's experience constructing and managing HINAGIKU would be helpful for those who are considering establishing digital archives in various fields.

Acknowledgments

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Notes & References

¹ The Reconstruction Design Council in Response to the Great East Japan Earthquake, “Seven Principles for the Reconstruction Framework”, 2011.5.10, p. 1 Principle 1

² The Reconstruction Headquarters in Response to the Great East Japan Earthquake “Basic Guidelines for Reconstruction in Response to the Great East Japan Earthquake” 2011.7.29, revised 2011.8.11. pp. 36-37. Chapter 5. (4) 6 (ii).

³ Cabinet decision “Basic Guidelines for Reconstruction in Response to the Great East Japan Earthquake in the ‘Reconstruction and Revitalization Period’” 2016.3.11.

⁴ The Nuclear Regulation Authority was established by the government to absorb and learn the lessons of the Fukushima Daiichi nuclear accident of March 11, 2011

⁵ The company which was managing the Fukushima Daiichi nuclear plants at the time of the accident. At present, the name has changed to Tokyo Electric Power Company Holdings, Inc.

⁶ The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (NAIIC) was established by the National Diet as the first independent investigation commission in the 66 years of Japan's constitutional government.

⁷ National Institute of Informatics (NII) is Japan's only general academic research institution seeking to advance integrated research and development activities in information-related fields, including networking, software, and content.

⁸ Every municipal government has their own library open to the public in Japan.

⁹ Ministry of Internal Affairs and Communications “Guidelines for establishing and managing digital archive related to earthquake disaster” (in Japanese) 2013.3.

¹⁰ Cabinet Office “Direction of measures for acquisition, preservation and utilization of information on wide-scale natural disasters (report)” (in Japanese) 2018.2.