NABUNKEN

a walk around the institute

Nara National Research Institute for Cultural Properties

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Contents

Preface and Acknowledgments

The current volume presents edited and translated versions of a series of articles originally published in the official blog of the Nara National Research Institute for Cultural Properties under the series title *Junpō Kenkyūshitsu*. The order of the articles, except the newly added introduction, follows the order of the blog entries. Unless otherwise noted, the photographs and illustrations used in this book are copyrighted by the Nara National Research Institute for Cultural Properties.

The articles were translated by Congrès Global Communications, Inter Group, Rebekah Harmon (WritingWise), and Peter Yanase and edited by Peter Yanase and Xiuzhe Wu. Additional copy-editing and proofreading were provided by Shaun I. Mackey. In preparing this book, the editors received invaluable assistance and advice from the original authors and other researchers eager to help, too many to name individually. Finally, the editors would like to express their gratitude to the heads of the respective sections for providing the final revisions of the texts to ensure their high quality.

About Our Institute

The Nara Research Institute for Cultural Properties (NABUNKEN for short) is a member of the National Institutes for Cultural Heritage, which also includes the Tokyo National Research Institute for Cultural Properties, the four national museums, and the International Research Centre for Intangible Cultural Heritage in the Asia-Pacific Region. NABUNKEN is one of the only two national research institutes conducting interdisciplinary research on cultural properties in Japan.

Our Institute was established in 1952 as an auxiliary organization under the National Commission for Protection of Cultural Properties (the later Agency for Cultural Affairs) for the *in situ* study of movable and immovable cultural properties in Nara. We have conducted excavations in the Nara and Asuka/Fujiwara areas since around the 1960s. Both of these regions are crucial in understanding the formative years of the Japanese state. Our empirical approach to research is renowned and has significantly contributed to the interpretations of the history of this period. The results of our investigations are showcased at the Nara Palace Site Museum, the Exhibition Room of Fujiwara Imperial Site, and the Asuka Historical Museum.

We are also working on developing and enhancing methods of preservation, restoration, and maintenance of cultural properties to help protect and utilize such assets both in Japan and abroad. Furthermore, we conduct domestic and international training sessions and joint research projects. For example, we are currently engaged in collaborative projects with China and Korea. In addition, we operate several databases on Japanese cultural heritage, many of which are widely used by experts and non-experts alike. In recent years, we have been actively involved in preserving cultural heritage damaged or in fear of being damaged by natural disasters or degradation. Since 2020, the Institute has joined forces with the Cultural Heritage Disaster Risk Management Center, Japan for such efforts.

Department of Planning and Coordination
Planning and Coordination Section

First, let us briefly introduce the Department of Planning and Coordination. The Department consists of the Planning and Coordination Section, the Exhibition Section, the Data and Information Section, the International Cooperation Section, the Photography Section, and the Curatorial Section of the Asuka Historical Museum. Broadly speaking, the Department is responsible for disseminating research results, handling domestic and international joint-projects, and translating. Although the Department's name and job description sound eerily administrative, make no mistake, we are engaged in research as well. The tasks of each section are varied and will be covered in turn.

What We Do

The Planning and Coordination Section currently only has one staff member, me, and I also serve as the director of the Department of Planning and Coordination. My Section's main activities are (1) handling external inquiries, (2) planning and coordinating training programs for cultural heritage experts, and (3) editing the academic journal *NABUNKEN Ronso*.

Figures 1.1 & 1.2. FY 2019 training program on historical documents and materials.

The Section handles external inquiries sent to the Administration Division and the Collaboration Promotion Division. When possible, I respond directly. When not possible, I forward the inquiry to the department that seems best suited to respond. Our Institute receives a significant number of inquiries over the course of a year, and these responses are one of the ways we interact with the public.

As such, each response requires a considerable amount of time and thought.

The Section also collaborates with the Administration Division's training personnel to plan and coordinate training programs. We hold meetings for the Training Planning Committee, develop basic guidelines for training programs to match our five-year plans, and devise more specific plans for annual training programs. Together with the research departments involved, we adjust the content of each program to accommodate requests from local organizations and the Agency for Cultural Affairs.

Figure 2. FY 2019 training program on wetland archaeology.

As for the Section's third task, *NABUNKEN Ronso* is a new academic journal that was launched in 2019 to help publish individual research papers. The journal uses a peer-review system to maintain a high standard of academic scholarship. Researchers can publish on any topic and at any length they wish. The journal serves as a vehicle for them to share their research freely. Though challenging at times, I shepherd the publication through every step of the editorial process, from calling for papers to shipping each new issue.

I would like to see the Planning and Coordination Section contribute more as a core component of the Department, and I regret that I am not able to do more. I am grateful for everyone's continued support and hope you will bear with us under our current staffing limitations.

Figures 3.1 & 3.2. Editing *NABUNKEN Ronso*.

Figure 4. Completed first volume of *NABUNKEN Ronso*.

Department of Planning and Coordination
Data and Information Section

Responsibilities of our Institute include collecting, organizing, and publishing information on Japanese cultural heritage, including those generated by the Institute during excavations and research projects. Our Section helps securely manage, organize, and publish such data. Our goal is to create an environment where data can be easily accessed and used by anyone, not just a few select scholars. Our Section's responsibilities include: (1) aggregating and disseminating data produced nationwide on Japanese cultural heritage; (2) digitizing materials produced at the Institute; (3) holding training sessions for cultural heritage experts employed by local governments; (4) promoting digitization and digital data, and researching the possible applications of such data; and (5) internationalizing information on Japanese cultural heritage.

Aggregating and Disseminating Data

Our Institute manages several databases. Let us look at a few that are closely related to our Section. A notable common feature is that they are freely accessible to anyone.

The *Historical Site Database* aggregates information on Japanese archaeological sites. This database was constructed as one part of a planned, centralized network specializing in information on immovable cultural properties. The plans for the database were set out in 1988, but it was not until November 1996 that it went public. Initially, the database contained about 190,000 entries, but over the years, the number of sites registered grew to 480,000.

Figure 1. An example search screen showing where wooden tablets with the word "*sake*" (rice wine) have been found near the Office of Sake inside the Nara Palace Site. The information is layered over a satellite image and an archaeological map of the Palace.

Another notable database previously managed by us was the *Site Summary Database*. This database contained the metadata—such as bibliographic information, artifacts found, or site location—printed at the end of fieldwork reports. The information was added to the database by the publishers of the reports through a web interface. In June 2019, the database and its functions were merged into *SORAN*.

SORAN (*Comprehensive Database of Archaeological Site Reports in Japan*) is a database in which users can search through and download fieldwork reports in PDF format. Additionally, *SORAN* users can also search for videos, show-and-tell events, or academic papers related to archaeological sites. In July 2021, we added GIS functionality. With it, users can overlay more than 610,000 entries of cultural heritage data over various maps, thus adding extra spatial layers to the information they seek.

Figure 2. A map showing cultural properties around the Imperial Palace, Tokyo.

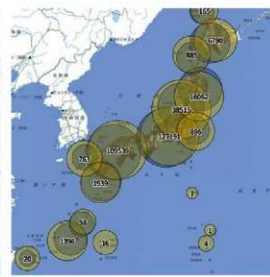


Figure 3. Distribution map of the cultural heritage data registered in *SORAN GIS*.

Digitizing Materials Produced at the Institute

Our Section is also in charge of digitizing and archiving research records made by our Institute. To protect information and mitigate risks, we consolidate all data produced at our Institute on a central data platform. Data is divided into two: frequently accessed "hot data" and rarely used "cold data." We store data differently depending on which category it falls under. This approach significantly improves the efficiency of our data management.

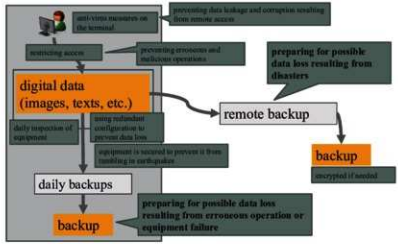


Figure 4. Risks and countermeasures (Adapted from *Maizōbunkazai hogo gyōsei ni okeru dejitaru gijutsu no dōnyū ni tsuite 1*).

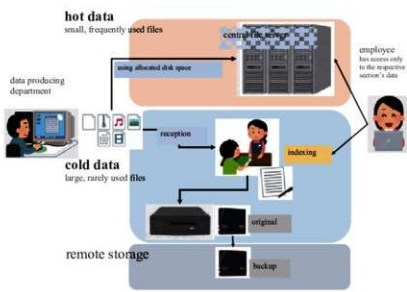


Figure 5. A diagram showing how data is handled at our Institute.

Training for Cultural Heritage Experts

We disseminate our know-how in training sessions aimed at cultural heritage experts employed by local governments. We offer one of the following two training programs every year: (a) digital archiving and (b) GIS for archaeological sites. The curriculum covers such topics as GIS, open data, and copyright and is held by experts in the respective fields. The courses are well-received every year. Past training session materials are available, both in hardcopy and online, in the edited volumes of *Recording and Utilization of Cultural Property Information via Digital Technologies*.

Figure 6. Attendees collecting and inputting metadata at the FY2019 training session for digitizing fieldwork reports.

Promoting Digital Data

As a national research center, our Institute attaches great importance to international collaborations. Since 2019, our Institute has partaken in ARIADNEplus, an international project aiming to aggregate archaeological information from various countries to improve data accessibility and findability. We joined this project to enhance cross-lingual access to information on Japanese cultural heritage.

Figure 7. Core members of ARIADNEplus in 2019.

Understanding intellectual property rights and copyright is essential if one plans on using cultural heritage data. In the digital age, cultural property experts must be well-versed in such topics to be able to provide public content. Fieldwork reports are copyrighted, but if appropriate steps are taken, research institutions can release their data online to reach a wider audience.

Internationalizing Information

At our Institute, we internationalize information so those who cannot understand Japanese can also access it. Such tasks are included in this project as translating databases, websites, museum labels, and catalogs; proofreading and editing abstracts; or constructing a multilingual thesaurus for Japanese cultural heritage terminology. The staff in charge of internationalization actively shares its accumulated know-how through the edited volumes of *Japanese Cultural Heritage and Global Audience*, containing glossaries, best practices, and papers.

Figure 8. English, Chinese, and Korean brochures explaining wooden tablets to museum visitors. The content and design of the brochure are different for each language.

Figure 9. Discussing the challenges of developing foreign-language materials with colleagues from the national museums of Nara and Kyoto.

Cultural heritage information evolves following the progress of society and technology. However, one thing remains the same: the current generation's responsibility to pass on its cultural heritage to the next one. We at the Data and Information Section are always thinking about how to incorporate new technologies into current data management practices to help preserve Japan's rich cultural heritage.

Department of Planning and Coordination
International Cooperation Section

Our Section is conducting international joint research in Cambodia and Kazakhstan while providing support and coordination for the various international research projects and exchange programs of our Institute. We also co-organize training sessions with the Asia-Pacific Cultural Centre for UNESCO (ACCU) Nara, cooperate with the Tokyo National Research Institute for Cultural Properties in their international joint research projects, and coordinate activities of the Japan Consortium for International Cooperation in Cultural Heritage. In addition, we accept renowned researchers from overseas as international research fellows and serve as a contact point of our Institute for foreign experts and visitors.

Our Institute collaborates with partners from various countries and regions, including China, Korea, Cambodia, Kazakhstan, the U.S., Taiwan, the U.K., Kyrgyzstan, and Mongolia. In this article, we introduce (1) a research and restoration project in Cambodia, (2) an academic exchange project in Kazakhstan, (3) an academic exchange project in Myanmar, and (4) a joint research project with the Sainsbury Institute for the Studies of Japanese Arts and Culture in the U.K.

Research and Restoration of the Western Prasat Top Site in Cambodia

During the civil war that broke out in Cambodia in the 1970s, many archaeological sites were destroyed, and a great number of archaeological researchers were killed. As a result, sites were abandoned and fell into disrepair. In 1993, immediately after the civil war was over, international efforts to restore these sites were launched at the initiative of UNESCO. Our Institute, too, started joint research and capacity-building projects to preserve the Angkor site in the same year. Since 2002, our Section has been working with the Authority for the Protection of the Site and Management of the Region of Angkor (APSARA)—a Cambodian national agency responsible for protecting cultural properties—to study the Western Prasat Top site in the ancient capital city of Angkor Thom. With the help of other sections of our Institute, such as the Department of Imperial Palace Sites Investigations, the Architectural History Section, and the Conservation Science Section, we have made many significant findings at the site.

As the Western Prasat Top site began deteriorating rapidly in 2008, we started full-scale research and restoration of it in 2011. The southern and northern sanctuaries were in such poor condition that we had to dismantle and rebuild them entirely. During the excavations, we made many significant discoveries about how these sanctuaries had been constructed. Specifically, the underground brick structure found while dismantling the northern sanctuary became big news, as this type of structure had never been found at the Angkor site before. Since 2019, we have been engaged in the research and restoration of the central sanctuary.

We have been conducting research projects at the Angkor site for more than 25 years, funded by a management expense grant from the Japanese government, and with the support of many private entities, including Asuka Construction Ltd., Tadano Ltd., and the Asahi Shimbun Foundation. Through collaboration among industry, government, and academia, we will keep working to preserve the Angkor site, a valuable world heritage asset, as part of our contribution to international cultural cooperation.

Figure 1. The Western Prasat Top site before restoration. The leaning tower could have collapsed at any time.

Figure 2. The northern sanctuary before (left) and after restoration (right).

Figure 3. An underground structure discovered while excavating the northern sanctuary. Gold items and other recovered artifacts had been burnt in a fire.

Figure 4. The surface of a stone structure is being restored. The technique is passed down from an experienced stoneworker to a younger one.

Figure 5. The tower is being dismantled for investigation with a crane donated by a company.

Academic Exchange Project in Kazakhstan

In 2010, our Institute launched an academic exchange project with its counterparts in Kazakhstan. Since then, we have been working together to preserve and restore cultural properties and investigate prehistoric sites. In April 2019, the tenth year of the project, our Institute was commissioned by the Agency for Cultural Affairs to open a local office in charge of protecting cultural heritage. Thus, we initiated an academic exchange with the National Museum of the Republic of Kazakhstan (NMRK) to investigate, record, and preserve archaeological artifacts. Under this project, we organized a workshop titled "Contemporary Research Methods on Pottery Research" in November 2019 at NMRK. We also held an international seminar titled "Investigating, Recording,

and Preserving Archaeological Artifacts in Kazakhstan" and a matching training session for Kazakhstan experts, in January 2020 at our Institute.

The National Museum of the Republic of Kazakhstan is one of the largest museums in Central Asia, and it holds and exhibits many valuable cultural properties, including the "Golden Man." We will continue to promote academic exchanges among experts in various fields.

Figure 6. Workshop "Contemporary Research Methods on Pottery Research" held at NMRK.

Figure 7. International seminar "Investigating, Recording, and Preserving Archaeological Artifacts in Kazakhstan" held at NABUNKEN.

Academic Exchange Project in Myanmar

For six years, from FY 2013 to FY 2018, we conducted an academic exchange project on behalf of the Agency for Cultural Affairs in the field of archaeology with the Department of Archaeology and National Museum of the Ministry of Religious Affairs and Culture (former Ministry of Culture) of Myanmar. We sent our researchers to the Field School of Archaeology in Pyay (a city located in the center of Myanmar), and Mawlamyaing (a port town in the coastal area), where they, with researchers from Myanmar, conducted field surveys and investigated ceramic artifacts recovered from ancient kiln sites. This project is detailed in a report published in 2019.

In Myanmar, public interest in investigating and preserving archaeological sites has been growing since the ancient cities of the Pyu period (200 BCE to 900 CE) were inscribed on the UNESCO World Heritage List in 2014. While the above academic exchange project ended in FY 2018, we remain in touch with our partners in Myanmar for research exchanges.

Figure 8. Hands-on training on the exhibition of excavated ceramic artifacts at the Mon State Cultural Museum in Myanmar.

Joint Projects with the Sainsbury Institute for the Studies of Japanese Arts and Culture in the U.K.

In December 2015, our Institute and the Sainsbury Institute for the Studies of Japanese Arts and Culture (SISJAC) in Norwich, U.K., signed an agreement on joint projects to promote Japanese archaeological research internationally. Projects conducted under this agreement include the joint development of online resources relating to Japanese cultural properties; and the publication of an English guidebook about a Japanese archaeology exhibition held in Germany in 2005. Furthermore, Japanese and English researchers travel to each other's countries yearly to attend academic seminars and visit excavation sites and museums. We also worked together in organizing a special exhibition, "Arrival of Belief," held at the Sainsbury Centre for the Visual Arts of the University of East Anglia.

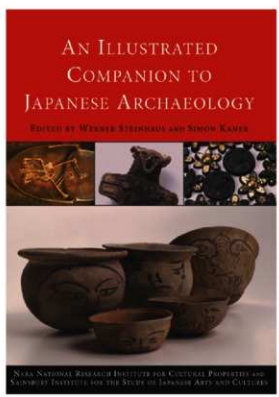


Figure 9. *An Illustrated Companion to Japanese Archaeology*, a visual guide to Japan's archaeological record, published jointly by NABUNKEN and SISJAC.

Department of Planning and Coordination
Exhibition Section

Our work at the Exhibition Section is like that of the curatorial staff of museums. Our primary task is to raise public awareness of the value of our cultural heritage by disseminating the Institute's research results through exhibitions and educational programs.

The duties of the Section include: (1) managing special exhibitions and the permanent exhibits of the Nara Palace Site Museum and the Heijokyu Izanai-kan; (2) administering outgoing loans; (3) responding to inquiries from volunteer exhibition guides and the general public; and (4) seeking out and disseminating novel ways of presenting exhibitions. The bulk of our work, however, as the Section name implies, is planning exhibitions.

Figure 1. The Exhibition Section.

Let us explain how we arrange a special exhibition. The contents and design of a special exhibition depend on its theme and target audience; therefore, these are the points we discuss first. After formulating a rough concept, we turn to the literature to identify suitable objects. We are not simply reading into the topic but are actively looking for artifacts connected to the latest research results that may attract public interest. Then, we discuss with members of the Department of Imperial Palace Sites Investigations the feasibility of displaying the identified items and whether there are any conflicting interpretations. At this point, we will start working on marketing

Figure 2. Exhibits are selected after consulting literature.

Figure 3. We start planning the arrangement of the venue as soon as the exhibits are chosen.

materials. When we design posters and flyers for an exhibition, we ensure they are attractive to visitors and true to archaeological knowledge and the exhibition's concept. Once the exhibition's theme, the exhibits, and the venue's overall layout are all settled on, we move on to compiling the accompanying booklet.

Figure 4. To ensure we produce readable text, we are making arrangements to the typography and design of the booklet as we write it.

After finishing the manuscript for the booklet, we turn our attention to captions and labels. The label texts are based on the booklet, but we re-write them to make the *in-situ* interpretive materials deliver just the right amount of information needed at the venue. Once the texts are finalized, we print them all out in-house with a large plotter and then cut and paste the labels onto the respective panels.

Figure 5. Preparing wall labels and captions for an exhibition involves a lot of cutting and pasting.

Figure 7. Wall labels in position.

Figure 6. Everyone in the Section helps with hanging up the handmade wall labels.

Once all the wall labels are in place, we carry the exhibits to the venue and place them in their respective cases. At this stage, we ask for assistance from the Photography Section to set up the lighting. Finally, we hold a press conference and a training session for the exhibition guides, and then the exhibition is ready to open its doors.

Figure 8. Exhibits and labels are placed carefully with consideration for the visual balance between objects.

Figure 9. Training session for the exhibition guides.

Let us breeze through some of the other tasks performed by our Section.

For starters, one important role is to hold training sessions for, and provide answers to inquiries from the 152 exhibition guides who work for our Institute. The *in-situ* explanations the guides provide to our visitors are invaluable. It is not an exaggeration to say that the volunteers are who truly connect the museum visitors to our Institution.

Our work also includes planning enjoyable educational experiences for children in which they can familiarize themselves with archaeological research and their cultural heritage. As children bear the future of our cultural properties, we always strive to influence them positively.

Another task is the daily inspection of the state of exhibits and exhibition facilities, for example, checking degradation, temperature, and humidity. We must be especially

Figure 10. Developing educational materials and experiences for visitors is another important part of our job.

Figure 11. Monitoring temperature, humidity, and the condition of exhibits with members from the Conservation Science Section and sections in charge of the respective objects.

careful with objects we borrow from other institutions.

Furthermore, our work includes listening to feedback from visitors and exhibition guides and then finding ways to improve exhibitions based on this.

As mentioned earlier, we also serve as a contact point when the Institute receives requests for loaning objects or granting the right to use pictures owned by the Institute. Our job is to liaise between the requester and the relevant sections of the Institute.

Figure 12. We receive as many as ten communications a month from other institutions seeking to use our artifacts or images.

Figure 13. Our schedule is always filled to the brim with appointments and deadlines.

This completes the review of the tasks of our Section. We hope we have managed to convey how extensive our work here is, and now you are more inclined than ever to make a trip to Nara and visit our exhibitions. We are waiting for you with easy-to-understand explanations of the latest research results.

Figure 14. Booklets and brochures of past exhibitions.

Department of Planning and Coordination
Photography Section

When people imagine photographers, they often imagine the glamorous side of the photography industry. But the work of cultural property photographers is a little less exciting. Our job is to take photographs of cultural properties over and over again to produce visual records of these objects.

Six out of the seven institutes in the National Institutes for Cultural Heritage employ professional photographers. Our Institute's Photography Section has four staff members and is part of the Department of Planning and Coordination. This article will introduce our Section's core activities.

Photographic documentation has played a central role in our Institute's research activities since its founding in 1952. Initially, the Institute arranged for a short-term contract with a photographer proficient in large-format photography. The photographer's task was to document cultural properties. Soon thereafter, the Institute hired its own full-time photographer. When excavations began on the Nara Palace Site in 1959, the Institute hired even more photographers, as it became apparent that far more would be needed to document the excavations and the artifacts.

Today, the Photography Section's purpose is to create a visual archive of the cultural properties handled at our Institute.

Figure 1. First photograph recorded by the Institute, showing the main gate of the temple of Okadera, 1952.

Figure 2. Photographic documentation of the Nara Palace Site excavation, 1960.

Documenting Research

Our Institute's researchers work in many different fields, and each field is handled by different sections. Although the researchers in each field handle different kinds of cultural properties, one thing is common: they all need visual records of their subjects. Our Section has the important task of taking, storing, and managing the photographs they need for their various research projects.

Figure 3. Photographing historical documents.

Figure 4. We use raised platforms to take photos from higher vantage points. We can also use high-precision cameras.

Figure 5. We use special lenses and other devices to photograph tall buildings head on.

Figure 6. Using a strong strobe flash helps us photograph buildings with dark shadows.

Figure 7. We can take photographs at high vantage points remotely using an extendable pole. We can use this method even in tight spaces.

Figure 8. We use bucket trucks when we need an even higher position—up to a height of 20 m.

Figure 9. Photographing artifacts. We adjust the height and lighting to best capture the different aspects of each object.

Figure 10. A photograph of excavated roof tiles. It is important to accurately capture the width and depth of each object.

Figure 11. We take photographs of the murals of Takamatsuzuka Tumulus annually to document their degradation.

Photographing for PR Purposes

Posters and pamphlets play an important role in promoting our Institute's projects and results to the public. For our regular work in photo documentation, we adjust the viewing angle and lighting to best pull information from the artifacts. For PR materials, our goal is to take photos that capture each artifact in its entirety and also spark interest.

For this kind of photography, we first hold in-depth discussions with PR staff to better understand the themes and objectives of each exhibition. Then, we adjust the lighting and select the photographic techniques necessary to create photographs that will best complement the objectives and overall design of a given exhibition.

Figure 12. Creating a poster for a special exhibition. We select methods and materials that complement the purpose of the exhibition.

Figure 13. The poster with the final photograph. It captures the feel of an excavation.

Figure 14. We use a rich selection of photos to create visually-appealing designs for catalogs for the Asuka Historical Museum.

Training Sessions

Many kinds of cultural properties exist in each region of Japan, and local cultural heritage experts study these items. Sometimes people who have never used a camera must take crucial photo documentation in the course of their research into these objects. To help them do this, one of the many training programs our Institute offers is specifically for photographing cultural properties. In this program, people learn the photography techniques they need for cultural property research. The training program lasts for two weeks and caters to participants with a range of experience, from those who have never touched a camera to those who have studied photography on their own for many years. We use hands-on training and guest lectures by photographers from diverse fields to teach basic knowledge and photography techniques.

Figure 15. Hands-on photography training.

Managing Photographs

If you were to go through the storage areas of your house, you would probably find piles of memorabilia from when you or your children were young. There would be old rolls of film, printed photographs, and albums. You might lose yourself in memories for a while as you gaze at the old photographs.

Even shut away in storage, memorabilia remain accessible for a certain period of time. But the visual archives described in this article are meant to convey information to your children, grandchildren, or even later generations. It is important that future generations be able to retrieve information from our photographs whenever they need to.

There has been a recent movement to classify photographs themselves as cultural properties and to preserve and actively utilize them. In our Section, part of our work includes managing an information database to ensure photos can be used effectively. We store photographs in the optimal conditions for each type and take equal measurements to preserve both analog and digital photographs.

Figure 16. A portion of our film storage. Film can be stored for a long time in rooms or storage boxes that have stable temperatures and humidities and are free from harmful gases.

Figure 17. In 1952, the capture medium for photographs was glass plates. Glass breaks easily and protective measures against earthquakes are essential.

Figure 18. Our database for managing photographs. We continue to digitize old rolls of film to allow photographs to be accessed whenever necessary.

Figure 19. We use dedicated servers to safely store digitized and born-digital photos.

That concludes our brief introduction of the work we do in our Section.

Despite the glamour associated with professional photographers, we mostly work behind the scenes to document the various cultural properties studied at our Institute. We hope this article provided a glimpse into the critical role photographers play in supporting research into cultural properties.

Department of Cultural Heritage
Historical Document Section

A great many cultural properties are preserved in the old temples and shrines of the Kansai region. Investigating these has been one of the primary tasks of our Institution since its establishment in 1952. Our Section (see fig. 1) focuses on historical documents. As research on such materials is carried out in a relatively low-key manner, we would like to take the chance provided by this publication to turn the spotlight on our humble endeavors.

Famous Japanese historical documents are well taken care of, often used by researchers, and frequently displayed at exhibitions. However, these constitute only a tiny portion of the whole. Most are documentations of temples and shrines that, after having served their purpose, were tucked away in boxes in the deepest corners of storehouses. Our Section has spent more than half a century investigating and cataloging these untapped materials, but there are still many we have yet to see. The great wealth of written sources held by the temples and shrines in the region is truly astounding.

Figure 1. Our Section is one of the oldest in the Institute. Even though we are located in a new, modern building, we prefer to use the antique desks and shelves received when our Section was established nearly seventy years ago.

The process of investigating and cataloging these materials itself is simple: (1) we inspect the contents of the boxes (see figs. 2 and 3), (2) sort and number the documents (see figs. 4 and 5), (3) record the details of the items on datasheets (see figs. 6 and 7), (4) take photographs (see fig. 8), and finally, (5) check the datasheets against the photos, and if any questions arise, we re-examine the documents for clarification.

Figure 2. Examining boxes taken out from the storehouse of a temple.

Figure 3. Spreading out the contents of boxes. Documents come in all sizes and shapes.

Figure 4. Reading and sorting documents.

Figure 5. Sometimes, we attach handwritten *washi* labels to the materials. India ink on *washi* paper is easily readable and long-lasting but quite troublesome to produce.

Sorting these historical documents and publishing catalogs and full-text corpora is part of our mission to help preserve and utilize them.

Of course, not all historical documents are equally important; many are in poor condition, riddled with wormholes, or covered in dust. Still, there is nothing like the exciting thrill of opening a box that has remained untouched for generations. Also, examining these materials one by one eventually leads us to greater insights into Japanese history. Ultimately, it is very motivating that the more we study these unexplored documents, the deeper our understanding of history becomes.

Figure 6. We record the details of each document on a datasheet. Determining when a document was written or naming untitled ones can be challenging.

These documents bear testimony of the long and often troubled history of these temples and shrines, and they are still with us today only because previous generations took great care of them. When we conduct our day-to-day work, it is done with a sense of duty to shed light on and help preserve and utilize these precious materials.

We want to express our sincerest gratitude to Tōshōdaiji, Kōfukuji, and Yakushiji temples, as well as Yasushi Nakamura for their kind permission to publish the photos presented in this article.

Figure 7. Some documents are written in very difficult-to-read cursive.

Figure 8. Taking photographs of materials. Nowadays, we can easily check the results *in-situ* on a laptop screen.

Figure 9. Scholars only truly gain easy access to these historical sources once we compiled catalogs and full-text corpora of them.

Figure 10. We hope our work will help these documents to be preserved and used for many centuries to come.

Department of Cultural Heritage
Architectural History Section

Our Section is focused on historical architectural structures, including shrines, temples, private houses, public buildings, and civil engineering structures. Our aim is twofold: (1) to obtain new academic findings; and (2) to collect information necessary for preserving such cultural assets. Tasks involved in a project depend on the project's goal, which can be anything from assessing the value of architecture through preserving a streetscape to making a list of traditional buildings.

To assess the value of a building, we must take precise records of it first. To prepare these, we first sketch a plan and elevation of the building, then measure its dimensions, and, finally, write those dimensions on the plan and elevation on-site (see figs. 1–4). While doing so, we also inspect and note the various marks left on the structures to determine when the building was renovated and how it was used (see fig. 5). After taking these notes back to our lab, we prepare proper archaeological illustrations based on them. These drawings will serve as the basis for the final assessment of the value of the building further down the line.

Listing all the traditional buildings in an area is a pretty monotonous task. First, we mark the location of a building on a map, then describe the details of the building, next take some photographs, and then rinse and repeat this process a hundred times a

Figure 1. Two people working together on a shrine, one measuring the dimensions and the other writing the dimensions on the sketch.

Figure 2. If necessary, we measure the dimensions of elements in hard-to-reach areas.

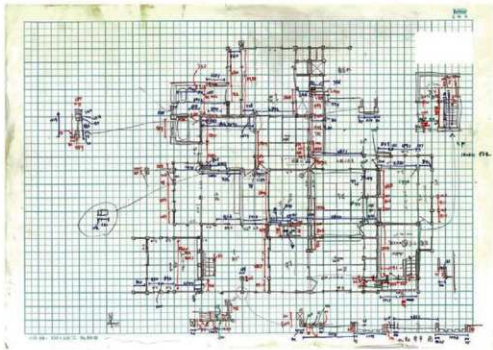


Figure 3. Plan recorded in a field book. We observe the building, draw a plan in pencil, and write the dimensions with a ballpoint pen.

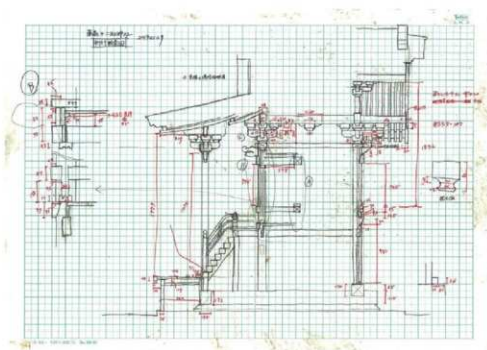


Figure 4. Section recorded in a field book. Drawing a section on-site requires a good understanding of how the structure is assembled.

day. Sometimes we have to climb up and down a long mountain path just to inspect a small deserted shrine (see fig. 6)—on such occasions, I encourage myself by thinking that I'm saving others from having to climb that route themselves.

We conduct similar research projects overseas as well. For example, we have studied four settlements in Vietnam (see fig. 7). We are also involved in an investigation underway at the Western Prasat Top site in Cambodia, where restoration is being carried out by our Institution (see fig. 8).

For our job, it is crucial to observe the structures with our own eyes and make the records on-site. Therefore, we make full use of our eyes, brains, hands, and feet; day after day, whatever the weather conditions may be.

A research project is completed with the publication of a report on the results (see fig. 9). While each report is a valuable academic resource, I think the most important data we produce is the raw data we collect on-site. Therefore, preserving these notes and photographs for future generations is one of our most important tasks (see fig. 10).

If you come across people in uniforms with drawing boards looking around, writing things, and taking photos of buildings, that may be our team. We may look suspicious, but don't worry, we're just taking notes on historical buildings.

Figure 5. Working together to examine the informative marks left on the surfaces of objects.

Figure 6. Walking a mountain path leading to a shrine. Our research often covers shrines and private houses that are accessible only on foot.

Figure 7. Research in a Vietnamese settlement. Vietnam is extremely hot. Exposure of the skin to the burning sun causes us to quickly run out of energy, and so we always wear long-sleeved work clothes outdoors.

Figure 8. Investigation at the Western Prasat Top site. Investigation of stone structures not found in Japan is a valuable experience.

Figure 9. Reports on results of research conducted in my Section have uniform green covers.

Figure 10. Data collected on-site are filed and stored carefully in the repository of our Institute.

Department of Cultural Heritage
Cultural Landscape Section

Introduction

Our Section is focused on cultural landscapes. In Japan, the term "cultural landscape" (*bunkateki keikan*) encapsulates regional networks of ways of life shaped by the surrounding natural and socio-historical conditions as a single cultural property. Typical examples of cultural landscapes include rice terraces or riverside districts.

With an aging population, the preservation and utilization of local cultural properties in Japan are believed to be key factors in the economic revitalization of the countryside. By and large, Japanese people feel nostalgic toward rural areas and consider traditional ways of life more humane than living in cities. Reappraising local heritage can also help residents restore positive feelings toward the region they live in.

This article will focus on two of our activities: research meetings and fieldwork.

Research Meetings

We hold research meetings on cultural landscapes almost every year (see fig. 1). In these meetings, various specialists, such as local cultural heritage experts or university researchers, come together to present and discuss relevant case studies and results. Interdisciplinary collaboration is essential in researching cultural landscapes because it incorporates numerous fields as varied as municipal engineering, geography, ecology, ethnography, civil engineering, architecture, archaeology, or landscape architecture. Cooperation with local governments is also indispensable.

Figure 1. The tenth research meeting.

Fieldwork

In the past, we have done fieldwork in Kyoto's Okazaki area, Sado (Niigata Prefecture), Gifu (Gifu Prefecture), Uji (Kyoto Prefecture), and the Shimanto River basin (Kōchi Prefecture).

Our two most recent fieldwork efforts were in Chizu (Tottori Prefecture) and Kyoto's Nakagawa area. Both aimed to investigate how residents' lives were interconnected

with local forestry. We investigated how the land was utilized; visited hamlets, farmhouses, and forestry facilities; and interviewed the locals about their lives. Based on this, we summarized the socio-historical and environmental factors defining life in these areas.

Figure 2. Fieldwork in Chizu. Investigating the Edo period (1603–1868) town plan and canal system.

Figure 3. Nakagawa, Kyoto.

Figure 4. A detailed illustration of the cultural landscape of the Nagara River basin, Gifu.

Conclusion

It was not until recently, in the face of rapid changes in the countryside, that the Japanese government devised policies to protect cultural landscapes. Long before this, however, the preservation of local heritage, including the landscape, had been a hotly debated topic among experts, both inside and outside Japan.

In our Section, we strive to build on both theoretical discussions and data gathered by fieldwork to devise, together with local governments, effective strategies for the protection of cultural landscapes.

If you can read Japanese, you can find more information about our research results and a complete list of Important Cultural Landscapes of Japan, as designated by the government, on our website.

Department of Cultural Heritage
Sites Management Research Section

Our Section studies scenic gardens and the management of historical sites through the lenses of landscape architecture and horticultural history.

Site Management

The majority of Japan's historical sites consist of buried architectural features and artifacts. To preserve these sites, they are typically reburied after archaeological excavations have been completed. Therefore, without talking to a specialist, you cannot tell what is buried underground or how the site looked in the past. Specialists were keenly aware of this issue when the full-scale excavation of the Nara Palace Site began in 1955. Thus, they chose to build reconstructions of some of the reburied structures in their original locations (see fig. 1). For other parts of the site, they tried to convey the scale of the original structures by using physical markers to indicate the original dimensions and layouts (see fig. 2). The goal of site management is to utilize sites in such a manner while making sure they are properly preserved.

Historical sites are valuable assets for promoting regional economic growth and studying local history. In recent years, capitalizing on cultural heritage has become a key government initiative, including the promotion of municipal development projects that use cultural heritage as a focal point.

Figure 1. Reconstruction of the East Palace Garden at the Nara Palace Site.

Figure 2. Physical markers indicating the scale of the Latter Imperial Audience Hall and Royal Residence at the Nara Palace Site.

Workshops

Our Section studies site management principles, plans, designs, and technologies to help us preserve and make the most of historical sites. Although our research focuses

mainly on domestic sites, we also keep up with international trends in site management. Each year, we host a workshop and publish a report that includes a record of the previous year's workshop along with related case studies and discussions.

Figure 3. FY 2018 workshop.

Some recent themes of our annual workshop were: "Utilizing Historical Sites with Digital Content" (2015), "Early Modern Castles in the Modern Period" (2016), "Utilizing Historical Sites to Promote Regional Tourism and Development" (2017), and "Planning the Utilization and Preservation of Historical Sites: Historical Layers and Diverse Values" (2018) (see fig. 3).

Practical Research on Utilizing the Nara Palace Site

In addition to being the subject of our Institute's excavations for many years, the Nara Palace Site has served as a site for field studies to identify optimal site management practices. In March 2018, a national park called the Nara Palace Site Historical Park opened. The park is centered around the plaza to the south of the Suzaku Gate and also encompasses the grounds surrounding the Former Imperial Audience Hall and the State Halls Compounds. To meet expectations for the site's continued contribution to tourism and promoting the study of local history, we are investigating other practical applications of our research as we look for ways to enhance public interest in the Nara Palace Site (see figs. 4 and 5).

Figure 4. An augmented reality application showing the seven poles of imperial insignia.

Figure 5. Receiving the "Red Rice Offering Delegation" (Yabu Municipal Yōka Elementary School).

Garden Research

The Japanese government has designated over four hundred locations as "Places of Scenic Beauty." Of these places, over half are historical gardens dating to at least the modern period and some much earlier. Unlike other types of cultural heritage, gardens are made up of trees, rocks, soil, water, and other natural materials that are constantly changing. To understand a garden's value, we have to accept its ever-changing nature. We cannot simply study a garden as it exists in its present state. Learning about how gardens have changed over time requires an all-encompassing approach that investigates materials such as related architecture, historical documents describing garden construction and management, and old drawings and photographs depicting previous examples of garden cultivation and landscaping. To protect gardens, we also have to predict future changes and adjust garden management appropriately. The techniques for managing traditional gardens are designated as "Selected Conservation Techniques" by the Japanese government.

Surveying Gardens and Taking Censuses

Since its founding, our Institute has been researching gardens through field walks and surveys to highlight their inherent value. In recent years, we conducted a comprehensive census of all the gardens in the city of Nara and surveyed the garden at the temple of Hokkeji to help create a conservation and utilization plan (see figs. 6 and 7).

Figure 6. Surveying Hokkeji's garden.

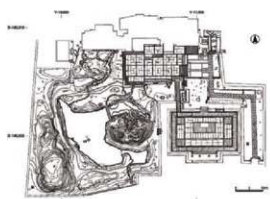


Figure 7. Site plan of Hokkeji's garden (surveyed in 2017).

Research on the History of Gardens

Our Institute holds workshops for specialists in landscape architecture, architectural history, art history, history, archaeology, and other disciplines to study the history of gardens from diverse viewpoints. We compiled the findings from these workshops in the research reports *Research on Heian Gardens* (2011) and *Research on Japan's Medieval Gardens* (2016).

The Collections of Dr. Mori Osamu and Dr. Muraoka Tadashi

Dr. Mori Osamu (1905–1988) was the first head of our Institute's Architectural History Section. Our Section has been cataloging both his and his close associate Muraoka Tadashi's (1926–1990) collections of scale drawings, landscape plans, and other materials related to gardens. Many of the historical gardens they surveyed and helped renovate from the 1950s to 1980s are again in need of conservation and management measures. We are digitizing their files to make them available for such activities (see figs. 8 and 9).

Figure 8. Photographing a site plan based on a garden survey by Dr. Mori.

Figure 9. Site plan of the garden of Enjōji Temple made by Dr. Mori.

Visit our website to learn more about our publications and the materials in Dr. Mori's collection (Japanese only).

Department of Imperial Palace Sites Investigations (Heijo)
Archaeology Section 1

What comes to your mind when you think of artifacts? In Japan, most people associate domestic archaeological sites with pottery, stone tools, and roof tiles. An interesting aspect of the Nara Palace site and its environs is that the soil, because of the high groundwater level, also contains many organic materials. Studying these—especially wooden artifacts—is one of the responsibilities of our Section. (Besides organic materials, we also handle metal artifacts, but that is a discussion for another article.)

"But how do you excavate wooden artifacts?" you might ask. Well, most of the time, we find wooden materials in ditches, abandoned wells, and trash pits. In such environments, the artifacts are often waterlogged. To preserve the materials, we take the soil back to our labs without further on-site processing. Some ten years ago, we collected 2,800 containers of soil from an excavated trash pit in the Eastern Government Offices sector (see fig. 1). We are still sorting and classifying the materials contained in them.

Figure 1. Excavating the trash pit in the Eastern Government Offices sector. A thick deposit of wood chips was found in the 11 × 7 × 1 m pit.

Figure 2. Cleaning unearthed materials is part of our daily routine.

When recovering wooden materials from the soil, we first thoroughly clean them and sort them into broad categories (see figs. 2 and 3). Next, we classify them according to a more specific typology (see fig. 4). If an object is thought to be manufactured, we produce scale drawings of it (see fig. 7). From the trash pit mentioned earlier, we have found various wooden objects, including chopsticks, ladles, folding fans, dice,

and spools (see fig. 5). We have also found large amounts of wood waste believed to have been generated during the production of household items and building materials. Other noteworthy finds include hygiene sticks and seeds (see fig. 6).

Figure 3. Removing mud from the materials and separating them from each other in running water using ink brushes and bamboo skewers.

Figure 4. Classifying cleaned materials.

Figure 5. Wooden artifacts from the trash pit.

Figure 6. Hygiene sticks and melon seeds.

The conservation of these unearthed objects is another important responsibility of our Section. Conserving wooden materials has its peculiar challenges. For example, they must be kept wet since they have been immersed in water for more than a thousand years (see fig. 8).

Next, let us take a moment to think about the materials unearthed from the trash pit. One interesting find is that, judging from the artifacts, the governmental area was more homely than expected. The fact that hygiene sticks and seeds were found in

Figure 7. Drawings are produced following careful measurements and observations.

Figure 8. Most wooden items get sealed in a bag containing a small amount of boric acid and borax solution, but there are some that, after having received conservation treatment, are stored in a dry condition.

the pit deserves special attention as it contextualizes the remains of what looks like a latrine below the trash pit. From the latrine, we unearthed melon, akebia, eggplant, raspberry, and perilla seeds, among others (see figs. 9 and 10). These seeds were not only discovered together with hygiene sticks, but closer analysis also revealed parasite eggs, confirming that they were present in human feces. Finds like these are important because they help us figure out the diet of the people who lived and worked here.

Figure 9. Using a microscope to identify seeds.

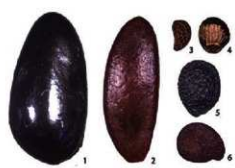


Figure 10. 1: akebia, 2: melon, 3: raspberry, 4: perilla, 5: hardy kiwi (*Actinidia arguta*), 6: eggplant.

Finds from the Nara Palace, be they dice, seeds, or hygiene sticks, are fascinating because they reveal many aspects of the daily activities of the people living and working here that were considered too trivial to be mentioned in written records. For us in Archaeology Section 1, figuring out how people spent their days inside the Palace is more than a job, it is what makes our research worthwhile.

Department of Imperial Palace Sites Investigations (Heijo)
Archaeology Section 2

Pottery Was a Tool Integral to Everyday Life

Our Section studies pottery and other clay objects excavated from the Nara Palace and Capital sites. Back when materials such as plastic and vinyl were unavailable, people used pottery to make various household items. In the eighth century, two kinds of pottery were used in Japan: *haji* and *sue*. The former was fired at lower temperatures, while the latter was fired at higher temperatures in kilns. They were primarily made as eating utensils, containers (like water jars), and cooking utensils. Sometimes inkstones, ritual implements, or even toys were made of clay objects. If we can figure out how these pottery and clay objects were used, we can get a more detailed picture of people's lives in those days.

Figure 1. Our Section handles all kinds of clay objects except roof tiles and bricks.

Creating a "Yardstick" of Time

One of the important objectives of researching excavated pottery is to use them for dating. Pottery differs slightly in shape, size, and production techniques depending on when they were made. If we can identify the ages of excavated pottery, that will provide us with strong clues about the age of the strata and features from where the pottery was unearthed. Therefore, we constantly strive to improve our "yardstick."

Figure 2. Every day starts with washing pottery.

Figure 3. The water-proof cards are important information with the provenance of the pottery.

Pottery Research Starts in the Sink

Pottery is brought to our Section with little cards stating where it was discovered. Our work starts with washing off the dust and mud while being careful not to lose the card attached to the pottery. While washing, we must also be careful not to overlook lacquer or charred residues. This is because there might be features that could help us figure out what the pottery was used for. After we finish washing pottery, we dry it and copy the provenance information from the card unto the object in tiny letters.

Figure 4. Provenance information is written with tiny letters on the pottery.

Figure 5. Datasheets for pottery found during more than sixty years of excavation.

Figure 6. Broken pottery is restored by piecing together fragments and filling in the spaces with plaster or cement.

Figure 7. Preparing a full-size measured drawing of pottery.

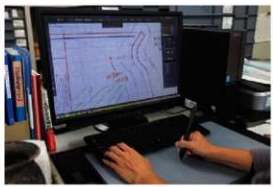


Figure 8. Digitally tracing a measured drawing.

Figure 9. Atypical artifacts are photographed and recorded in a database.

Piecing together pottery is like a three-dimensional jigsaw puzzle. We replace missing fragments with plaster or the like and color them. After a piece of pottery is restored to a certain extent, we produce a measured drawing. This measured drawing enables researchers to understand how large the pottery was and how it was made. You could say these measured drawings are like plans for pottery. Also, there is pottery with India ink inscriptions and imported pottery from Tang and Silla. We record such atypical objects in a database.

A Treasure Trove of Interesting Personal Projects

Many pottery and clay objects besides eating utensils are excavated from the Nara Capital Site. There are four researchers in our Section. Each has interesting personal projects related to pottery and clay objects besides their main research concerning the Nara Palace Site. Let us give a nickname to each member and introduce their research projects here. First is "*haniwa* collector" Osawa. He is restoring cylindrical *haniwa* by piecing together fragments unearthed from the Uwanabe Mound (Nara) to date burial mounds. Thus far, he has restored as many as a hundred *haniwa*! "Become a Game King!" Oda discovered that eight-century court officials had recycled pottery as gaming boards. Lately, he has been looking for wooden dice (?) used in this game. "Unconventional mold researcher" Niwa studies ancient clay molds used for casting

Figure 10. There are many burial mounds in the Nara Capital, with many *haniwa*.

Figure 11. This board game, resembling Korean Yut Nori, was called *kariuchi* in eighth-century Japan.

metal artifacts. He also carries out casting experiments. The one who plays too much with fire lately is "shot-firer" Jinno. She lights oil lamps to observe how soot is formed in the lamp dishes.

Figure 12. Molds and other tools used for casting metal were made of clay.

Figure 13. Many oil lamp dishes with soot and oil residues have been excavated, dating to various periods from the ancient to the early modern.

In our Section, we would like to continue our research closely related to the lives of ancient people through the study of pottery and clay objects and accumulate research that will answer simple questions that come out of our daily lives today.

Figure 14. Studying pottery every day amongst pottery.

Figure 15. Being assisted by archaeology students.

Department of Imperial Palace Sites Investigations (Heijo)
Archaeology Section 3

Going through Mounds of Rubble

As you can see in fig. 1, the Nara Palace and Capital Sites yield many roof tiles. Ancient people dumped these tiles as useless rubbish. However, we take pride in investigating this rubbish! You may wonder why there is an independent section that does nothing but study such tiles. This is because of the tremendous quantity of tiles we recover from the Nara Palace and Capital Sites. From a 1,000 m^2 wide area inside the Palace, as much as two tons of roof tiles may be recovered if the area includes remains of large-sized buildings. A similarly sized excavation for large temples in the southern section of the Capital might yield as much as ten tons! All these roof tiles must be cleaned, sorted, and stored, which requires considerable labor, time, and storage space.

Figure 1. A great many roof tiles are found at the Nara Palace Site.

Figure 2. A container for roof tiles weighs about thirty kilograms. We store more than a thousand such containers.

Lotus Flowers Blooming in the Mud

While the roof tiles you see in museums are complete and clean, most of the tiles we recover are fragments and are covered with so much mud that we cannot even tell their shapes! Unearthed roof tiles are taken from the excavation sites to the sorting room and cleaned in water. In the hot season, the mud covering the tiles becomes so hard that it cannot be removed easily. However, the tiles cannot be scrubbed with a hard brush as they are vulnerable after being buried underground for more than a thousand years. So, we first soak them in water to loosen the mud and then remove the mud carefully using a soft brush. Surfaces with decoration engraved require careful handling: we gently stroke the surface with an ink brush to remove the mud. As we gradually uncover these floral motifs, it is like seeing a lotus flower blooming in the mud—such a heavenly sight!

Figure 3. Fragments are soaked in water to loosen the mud.

Figure 4. As the surface of a flat eaves tile is stroked gently with an ink brush, the ornamentation hidden by the mud begins to emerge.

Documenting the Old-School Way

Eaves tiles are engraved with various different motifs. To record these, we take ink rubbings rather than drawing pictures of them. The ink-rubbing technique has a long history and is considered to have been in widespread use by at least the Tang Dynasty in China (618–907). Photographs can record far more information than rubbings, but the photographing process takes much time and cost. Because of the enormous number of tiles we have to process, it is more effective, even today, to take rubbings instead.

Figure 5. Taking a rubbing using paper and India ink.

Figure 6. Most of the tools used for ink-rubbing are hand-made.

Recording in 2D

Ink-rubbings and photographs alone are not enough. We also produce actual-size illustrations based on precise measurements to document the size and shape of the tiles. We draw plans and profiles of the tiles using rulers and compasses to record information such as their profile and thickness. As roof tiles are not designed to be laid on a flat surface, it is quite challenging to keep them steady on a desk during this process!

Figure 7. A profile gauge is used to record the depth of a motif.

Figure 8. The profile is carefully transferred to a sheet of graph paper.

Building a Monumental Database

Eaves tiles with engraved patterns, decorative ridge-end tiles, and roof tiles with inscriptions are especially important research materials. For each of these tiles, we produce an ID card recording the name of the site where the tile was discovered, the exact location and date of discovery, and other related information. Then, we attach the tile's rubbing or photograph to the card. The production of these ID cards is the starting point of our research. Next, we enter the data on the cards into our database, which had just over a hundred thousand tiles registered as of 2020. This database allows us to instantly find out where tiles with the same pattern were recovered, and how many varieties of tiles were unearthed from one site.

Figure 9. Information on an unearthed roof tile is directly written on the tile with India ink. This ink does not fade even after a thousand years.

Figure 10. All information about a roof tile is recorded on its ID card.

Digital Technologies and 3D Measurements

Recent advances in digital technologies bring various benefits to archaeological research. For example, film-based photographs are now being replaced by digital photographs. We have started three-dimensional measurements of roof tiles using a digital camera that enables us to record their three-dimensional data. After taking photographs of a tile from all angles, we combine all these photographs using computer software to reconstruct its three-dimensional image, which enables us to define the size of the tile and draw its profile. Also, digital images can precisely record complicated patterns engraved on eaves tiles and ridge-end tiles. Three-dimensional measurement is an innovative technique that combines the advantages of conventional methods of recording—ink rubbing, photographing, and measurements.

Figure 11. A roof tile is photographed from different angles dozens of times.

Figure 12. The photographs are automatically combined on a PC.

Comparing Patterns

The patterns of eaves tiles were not engraved one by one by hand, but a single wooden mold was used to impress a pattern on hundreds of tiles. To classify unearthed eaves tile fragments, we have conventionally compared the pattern of each fragment against our reference collection by eye. Recently, however, we have been developing a method to compare three-dimensional images of eaves tiles on a PC to streamline this process. When tiles recovered from different sites several kilometers apart are found to have the same pattern by such comparison, we can assume that the sites were associated with each other in some way. In particular, the presence of eaves tiles with the same pattern indicates that the sites date to almost the same period. It also helps us figure out where the tiles were produced and how far they were distributed. Thus, research on eaves tiles enables us to reconstruct history.

Figure 13. Wooden molds were used to impress the same pattern on many tiles. The eaves tiles in the photograph are ancient, while the wooden mold is a modern replica.

Figure 14. A fragment is compared against the samples not only for the number of lotus flower petals and dot patterns, but also for the spacing between pattern elements.

Let Flowers Bloom on Mounds of Rubble

By collecting and investigating tons of rubbish dumped by ancient people, we are restoring the roofs of long-lost palaces and temples and elucidating how the production and distribution of roof tiles changed over time. We will continue shedding light on various aspects of history by introducing 3D measurements and other advanced technologies, combined with the conventional techniques of ink-rubbing and manual measurements, thus turning rubble into treasure.

Department of Imperial Palace Sites Investigations (Heijo)
History Section

In Charge of Letters

Our Section focuses on texts. Our work, related to excavations, is two-fold: (1) collecting written information associated with a given site and (2) deciphering text on artifacts. We are also in charge of managing excavated wooden tablets. In fact, handling wooden tablets is the core of our work.

Recent results of our work include identifying a large building inside the Nara Palace Site as the office of either the Ministry of the Left or Right (Nara Palace Survey Nr. 615). Another result of our efforts concluded that, during the eighth century, the belfry of Kōfukuji tower had a flared, skirt-like lower section (which may be the oldest example of this type)—based on a cross-check of the structural remains with historical documents (Nara Palace Survey Nr. 625).

Figure 1. Office of either the Ministry of the Left or Right.

Figure 2. Remains of Kōfukuji's belfry.

Regarding the utilization of wooden tablets: every autumn, since 2007, we have arranged a special exhibition called *Treasures From Underground*, where we display real wooden tablets. To preserve the artifacts, we normally use replica tablets in

Figure 3. The *Treasures From Underground* exhibition in 2019.

Figure 4. Wooden tablets on display.

exhibitions, so this special exhibition provides a rare opportunity to see real tablets.

Additionally, we are publishing several databases of tablets as well.

Acting as the National Authority on Wooden Tablets

Our Institute stores the largest number of wooden tablets in Japan, 80% of which is from in and around the Nara Capital. Therefore, (1) we are the foremost authority on wooden tablets in Japan, and (2) we take part in many international projects.

As the national authority, in cooperation with the Mokkan Gakkai, we collect information on wooden tablets excavated nationwide. With our database, you can do a nation-wide search for information on wooden tablets. We also help other organizations decipher tablets.

As for international projects, we have released the *Multi-database Search System for Historical Chinese Characters*, in which you can search for high-definition images of texts from around the start of the common era to the nineteenth century, managed by

multiple institutions in Japan and overseas.

Wooden tablets found at the Nara Capital include the Wooden Documents from the Nara Palace Site (National Treasure) and the Wooden Documents from Prince Nagaya's Residence (Important Cultural Property). We strive to make more people realize how interesting these finds are.

Figure 5. Wooden Documents from the Nara Palace Site.

Department of Imperial Palace Sites Investigations (Heijo)
Architectural Feature Section

In our Section, we are engaged in many different tasks. In this article, we will focus on our duties involved in the excavation process and the subsequent reconstruction efforts of historical structures.

Decoding Features

When we say features, we usually mean archaeological evidence left in the soil, like ditches, pits, or traces of pillars and foundations. Deciphering these provides insights into historical architecture. For example: from post holes, we can figure out the plan and size of a building; with ground-channels, we can calculate roof dimensions.

Mapping Features

To place architectural features in the correct context, we must make precise records of them. (Another reason it is important to produce accurate documentation is that archaeological evidence is often disturbed in development projects.) To accurately map features, we need to get their vertical and horizontal coordinates. For the horizontal plane, we use mapping equipment like GPSs (see fig. 1) and Total Stations. For the vertical plane, we employ levels (see fig. 2). Using such equipment to make these seemingly dull but ultimately very important measurements is one of the many responsibilities of our Section.

Figure 1. Using a GPS to record coordinates.

Figure 2. Using a level.

Preserving Data

Data produced by our Department is managed by our Section. As already mentioned, these plans and measurements often have to act as "replacements" for perished archaeological evidence. As such, we must ensure they are kept secure. However, we also have to make sure they are easily accessible and usable. To achieve this, we store our data in an organized manner in a dedicated storehouse inside the Institution. Managing this data also involves digitizing analog data for publications, merging past data, and maintaining a digital database of survey summaries.

Reconstructions

Our Section is made up of architectural historians. The part of our work where we can truly utilize our expertise is when we need to devise plans for physical reconstructions of historical buildings. (Such reconstructions in the Nara Palace Site include the Former Imperial Audience Hall [see figs. 3 and 4], the Suzaku Gate, the East Palace Garden, and the Ministry of the Royal Household.)

The process leading to the reconstruction of a building starts with a careful analysis of the site plans. Next, we try to determine what kind of building it was based on similar sites and buildings and written historical sources. In the following step, we extrapolate information from extant eighth-century buildings, noting especially the construction techniques employed, to figure out how the superstructure might have looked. Finally, we work out the details, such as how the roof was made or the shapes of ornamental elements (see fig. 5).

Currently, we are working on the reconstruction plans of the East Pagoda of Tōdaiji and the compound encircling the Former Imperial Audience Hall. As of March

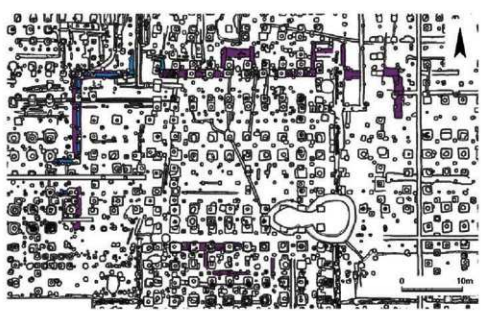


Figure 3. Site plans for the Former Imperial Audience Hall. The construction and the demolition trenches of the stone podium's footing are marked in purple and blue, respectively.

Figure 4. The reconstructed Former Imperial Audience Hall. The road from the original site plans to the unveiling of the building in 2010 was a long one.

2020, the south-central gate to the compound is in the middle of being built (see fig. 6). Once that is complete, the twin pavilions flanking the gate and the corridor surrounding the compound will be next.

Reconstructed historical architecture is the culmination of many years of research built on an enormous amount of data gathered by many experts. For us, there's nothing quite like seeing a historical building coming alive before our very eyes, based on the results of our extensive research.

Note: The reconstruction of the southern gate of the Former Imperial Audience Hall Compound is now complete. The entrance is now called Daigoku Gate.

Figure 5. Researchers inspecting a metal fitting. Each reconstructed element is the result of careful analysis.

Figure 6. The southern gate of the Former Imperial Audience Hall in the middle of being reconstructed according to the research results.

Department of Imperial Palace Sites Investigations (Asuka/Fujiwara)
Archaeology Section 1

Excavations of Japanese palaces and temples often yield large amounts of pottery and tiles. When conditions are favorable, organic, metal, or stone materials are found as well. Our Section handles non-ceramic materials. This article will focus on our recent investigations of metal and stone artifacts.

Wind-Bell from Asukadera

Last fiscal year, we found a rusty green metal object among a pile of tile fragments. It had an unusual shape, but when it was initially brought to our Section, we had no idea what it could be. Ceramic objects are cleansed in water, but to prevent rust from progressing, metal objects are cleansed with ethanol. After we carefully washed away the soil, we found that it was a bell-shaped bronze object with a hanger on top and a thin layer of gold coating (see fig. 1). Most of the body was lost, but another hanger found inside suggested it was a wind-bell. Such bells were used to hang from the

Figure 1. The wind-bell from Asukadera.

Figure 2. X-ray photograph of the wind-bell.

Figure 3. Taking an X-ray photograph.

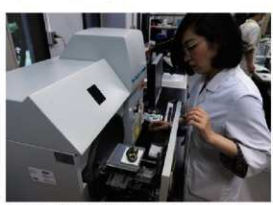


Figure 4. Using an XRF spectrometer to analyze the wind-bell.

corners of the roofs of palaces and temples. The inner hanger was used for the clapper, to which a fan-shaped copper plate was attached to catch the wind. The wind caught by the plate moves the clapper to generate sound (see fig. 6). In pagoda architecture, these bells are hung on the finial ornament as well as on roof corners. The wind-bell from Asukadera is small and has no decorative patterns, leading us to believe that it was used on the finial.

Analyzing the Wind-Bell

Because the wind-bell was buried in the soil for so long, it had significantly deteriorated, and we had to chemically treat it as soon as possible. However, before performing such treatments, it is essential to make illustrations and take photographs of the artifacts to record their condition as found. It is also important to investigate what kind of material and techniques were used to make the artifact before deciding on the right way to conserve them. Often, such investigations reveal useful information about the provenance of the raw materials used or the production place of the objects themselves. Our Section has specialists in conservation science helping during such processes. As for the wind-bell, we took X-ray photographs (see figs. 2 and 3) to gain insight into its structure and how it was cast, XRF analysis to identify the materials used (see fig. 4), and lead isotope ratio analysis to identify the production site of said materials.

To put the wind-bell in context, we have also analyzed a similar wind-bell excavated from the remains of Daikandaiji's pagoda. Daikandaiji was the leading state-managed temple in the Fujiwara Capital and was built by Emperor Monmu. It was later moved to the Nara Capital and renamed Daianji. The wind-bell fragment found at Daikandaiji was not big enough to help determine its full size and shape. After careful investigation, we found that its size and shape closely resembled the huge wind-bells of Daianji's west pagoda (see figs. 5.1 and 5.2). (By the way, the wind-bells seen on the reconstructed Former Imperial Audience Hall inside the Nara Palace were based on Daianji's wind-bells. If you visit the Former Imperial Audience Hall, you will see how enormous Daikandaiji's wind-bells were [see figs. 6.1 and 6.2].)

Figures 5.1 & 5.2. Using a polystyrene foam replica of the wind-bell from Daianji to examine the fragments found at Daikandaiji. With this method, we could identify where the fragments belonged.

Figures 6.1 & 6.2. Wind-bells on the reconstructed Former Imperial Audience Hall.

As a result of our analysis, we found that the materials used for the wind-bells of Asukadera and Daikandaiji originated from different places. We believe this is not merely a result of having been made at a different time but also by different workshops. However, we need to do further comparative studies to establish such a view.

Metal and Stone Artifacts from the Ishigami Site

Additionally, our Section is currently organizing and analyzing the excavation results of the Ishigami Site from Asukamura. This site has yielded unheard-of amounts of iron artifacts, including arrowheads, sword ornaments, axes, and sickles. Iron products were usually reused as bullion, so they are rare finds, even in such central cities as the

Figure 7. Discussing the nature of the iron implements and whetstones from the Ishigami site.

Figure 8. Drawing illustrations based on the X-ray photographs.

capitals of Asuka and Fujiwara. The fact that the site had such large amounts of iron artifacts provides important hints on the nature of the site.

Iron artifacts are usually covered in a thick layer of rust, making it difficult to know their original shape. Therefore, we base our drawings on X-ray photographs of the objects (see fig. 8).

The Ishigami site also yielded a large number of whetstones, most likely used for sharpening the iron implements. Some were big, and some were small. Large whetstones are mostly made of coarse sandstone, while the small ones are often made of fine rhyolite. Just as how sandpaper is used today, the coarse whetstones were used for shaping the objects while the finer ones were used for finishing and maintenance (see figs. 9 and 10).

Figure 9. Analyzing how the big whetstones might have been used.

Figure 10. Trying to figure out how the small whetstones were used.

Some researchers believe that the iron implements and whetstones hint at either a workshop or an armory at the Ishigami site. However, we need further clarification to settle that question.

Balancing Preservation and Public Display

Metal artifacts can deteriorate rapidly once they are excavated. Therefore, for materials in a bad state, we remove whatever substance is causing the deterioration and/or strengthen their surface. The wind-bell from Asukadera mentioned earlier is currently being chemically treated (see fig. 11). Metal artifacts that have been sorted and treated are placed in a temperature-controlled storage room. Some of them are stored in sealed packages with agents that remove oxygen and moisture (see fig. 12).

Figure 11. Impregnating the wind-bell with resin.

Figure 12. Vacuum-sealing iron artifacts.

We take extra care to preserve these fragile artifacts for the future. Therefore, we often have to resort to replicas for exhibitions. Replicas are faithfully reproduced so that visitors can feel the texture and see the shape of the originals (see fig. 13). Additionally, we are considering preparing 3D models of some objects so they can be easily examined on computers (see fig. 14).

Figure 13. Coins from the Imperial Audience Hall of the Fujiwara Palace.

The left is the actual artifact; the right is the replica. The replica is made of resin and is, therefore, light. You could easily tell which one is the replica if you held them in your hands, but as far as their appearance goes, they are identical.

Figure 14. Examining the wind-bell from Asukadera using a 3D photograph.

With 3D photographs, objects can be easily examined from various angles. For example, we can inspect the wear marks on the aforementioned wind-bell's hanger with this method.

The Asuka and Fujiwara areas are full of mysteries, and we often encounter unexpected goosebumps-inducing discoveries at both the excavations and back in the lab. We strive to convey the excitement these objects bring to us to as wide an audience as possible while also making sure to preserve the objects for the future.

Department of Imperial Palace Sites Investigations (Asuka/Fujiwara) Archaeology Section 2

Large quantities of pottery sherds are found at excavations in the Asuka/Fujiwara area. Our Section focuses on these artifacts. This article will introduce a new approach in pottery research we have recently adopted.

Drawing Pottery With the Aid of a 3D Laser Scanner

In July 2019, we installed a 3D laser scanner in our Section to improve our efficiency in preparing pottery drawings.

Figure 1. The 3D scanner.

The machine we use was designed to be used in testing the quality of manufactured industrial parts. Therefore, we had to figure out how to adapt the device for archaeological pottery. After much trial and error, we settled on the practical workflow described below.

Preparations

Scanning artifacts in 3D with the device require prior arrangements. Our new scanner collects surface data and color information to generate 3D images of scanned objects. However, unfortunately, the resulting 3D models are not always able to fully recreate the subtle details of ancient pottery. To remedy this, we mark any decorative patterns and traces of surface treatments (such as smoothing and scraping) with removable writing materials before scanning an artifact.

Creating the 3D Models

The scanner's turntable is thirty centimeters in diameter. Pottery smaller than this can be easily scanned without further arrangements. Vessels larger than that, however, require several scans that need to be merged into a single model later.

Potsherds need to be scanned twice: from front and back. The number of scans for complete vessels depends on their shape. Pottery with open profiles, like bowls, need two scans. However, receptacles with closed profiles, such as jars, must be scanned several times from different angles to capture their whole interior surface. Placing a piece of pottery inside the scanner is very simple: one just has to put the artifact on the turntable in a stable position.

Our device requires about three minutes for a full 360° scan. Consequently, capturing the necessary data for relatively simple objects, such as potsherds or dishes, requires six minutes.

After finishing the scans, we merge the captured data into a single 3D model. Next, we set the horizontal plane to align with the mouth of the vessel and transform the model's coordinate system to one suitable for pottery drawings.

Figure 2. A potsherd placed on the turntable.

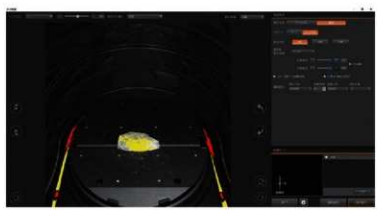


Figure 3. An image generated during the scanning process.

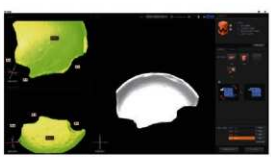


Figure 4. Merging data.

Figure 5. Transforming coordinates.

Acquiring the Data Needed for the Illustrations

The following three are needed to create pottery drawings: (1) the cross-section of the vessel's wall, (2) visual information on the surface treatments applied to the interior and the exterior of the pot, and (3) the (reconstructed) rim diameter. We can obtain all of these from the 3D models. The extracted information from the models is stored in a suitable place so we can use it later for illustrating pottery.

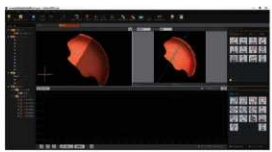


Figure 6. Acquiring a cross-section.

Figure 7. Measuring rim diameter.

Creating Digital Illustrations

Our original plan was to print out the acquired cross-sections in full size, copy those manually to graph paper, then hand-draw the pottery, as usual. However, we quickly realized it was more efficient to do the whole process on the computer.

Accordingly, now we export the cross-section to an Adobe Illustrator vector file (.ai) and fill in the additional details inside Illustrator. Additionally, to take full advantage of digital data, we save relevant information into the files' metadata.

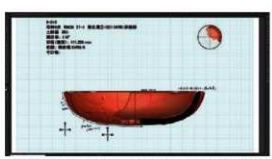


Figure 8. Images of the interior and exterior surface and the cross-section overlayed in a single image.

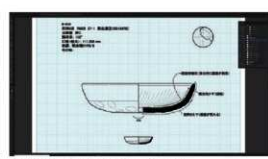


Figure 9. Completed pottery drawing.

Figure 10. Metadata input screen.

Summary

It requires roughly forty minutes to complete the illustration of a relatively simple piece of pottery if we employ the 3D scanner. It would require about twice as much time to draw the artifact manually and then digitally trace it. Forty minutes may sound like a lot of time for finishing a single illustration, but because drawings made from 3D scans are print-ready, this approach is actually very time-efficient. Additionally, with careful planning, two to three pieces of pottery can be scanned in one go, leading to further improvements in efficiency. Therefore, we can safely conclude that we have achieved the goal we set out when we installed the 3D scanner. As an added bonus, because this method preserves both the acquired raw data and each step of its transformation, it is easier to verify and reproduce drawings later.

The challenge going forward is to make sure anyone can create pottery illustrations with the aid of the machine. While the device mechanically follows orders and takes care of the scanning, users of the instrument must know how to create pottery drawings to produce usable data. Consequently, we are now teaching the assistants working in our Section both how to handle the device and how to illustrate pottery. Training will take years, but once more people can use the device to create drawings, our workflow can be further improved by dividing up the process between the workforce. We believe such improvements in the workflow will advance research on ancient pottery itself.

In the future, wider adoption of 3D scanning technology will eventually bring a turning point in archaeological data production. However, we are still in the middle of accumulating technical and practical knowledge of such technology. As such, for the time being, we will prepare pottery illustrations both in the conventional, fully manual way and with the aid of the 3D scanner. We will also continue to explore and practice 3D scanning technology further to find new ways to realize better the possibilities provided by detailed 3D models.

Department of Imperial Palace Sites Investigations (Asuka/Fujiwara)
Archaeology Section 3

Our Section has unearthed an enormous number of early roof tiles dating from the sixth century onward during excavations of temple sites, like Asukadera and Moto Yakushiji, as well as the Fujiwara Palace and Capital Sites. These roof tiles once sat atop the buildings that used to line the streets of these districts. When we excavated East Hall No. 6 of the State Halls Compound at Fujiwara Palace, we found enough roof tiles to fill over four thousand boxes (Excavation No. 136, 2004–2005). Our Section catalogs, stores, and analyzes these tiles. This article will introduce the unique characteristics of the sites in the Asuka and Fujiwara districts while highlighting our Section's recent findings.

Reference Samples as a Timeline of Tile History

In 588, the Korean kingdom of Baekje sent four roof tile-makers to Asuka to help construct Japan's first Buddhist temple, Asukadera. This event marks the beginning of roof tile making in Japan. These early tile makers constructed roofs made of several different types of tiles, but made mostly plain rectangular tiles molded to curve either slightly up or down to a half-pipe shape. These were arranged in a configuration similar to ancient Greek imbrex and tegula roof tiles. The edges of the roofs were lined with round eaves tiles set between thin, concave eaves tiles (shaped like upside-down rainbows), both of which often featured designs visible from ground level. At Asukadera, we found twenty distinct kinds of round eaves tiles, ten of which were from the time of its original construction. We create shelves of reference samples to help identify the specific types corresponding to the tiles we find.

Figure 1. Eaves tiles found at Asukadera. As seen here, we have identified many different types.

Figure 2. We installed nets to protect the reference collection from earthquake damage.

We generally find several types of eaves tiles when excavating temple sites in the Asuka and Fujiwara districts. Our reference samples include nearly all the distinct types found from our Institute's excavations of temple sites, including Yamadadera, Kawaradera, and Moto Yakushiji. Beginning with the tiles from Asukadera, these reference-sample shelves provide a bird's-eye-view of the history of tile-making in Japan and play a critical role in our research. You could even call these shelves the heart of Archaeology Section 3.

The Production Sites of Fujiwara Palace's Roof Tiles

Among our excavations in the Asuka and Fujiwara districts, we find the most tiles at the Fujiwara Palace Site. The majority of the tiles we find are unadorned, curved rectangular tiles, but we have also excavated a number of decorated eaves tiles. We analyze these eaves tiles one by one to determine which types of tiles were found in which locations of the Fujiwara Palace Site.

Figure 3. Reference-sample shelves of eaves tiles from the Fujiwara Palace Site. Identification of the origins of these tiles is ongoing.

In parallel, we also try to identify the production sites of each eaves tile. Over the years, our Section has divided the eaves tiles from Fujiwara Palace into two categories: those produced in the Nara Basin and those produced elsewhere (some of which came from as far away as Ōmi, Sanuki, or Awaji Provinces). Our research indicates that the eaves tiles made in the Nara Basin were used in the central sectors of the Fujiwara Palace Site. In contrast, those from other locations were used on the outer wall.

Figure 4. Taking samples to analyze the paste.

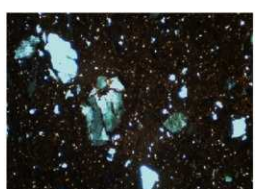


Figure 5. We analyze the tiles from the Fujiwara Palace Site in minute detail using microscopes (the photo shows paste from a concave eaves tile, type 6647D, found at the Fujiwara Palace Site).

To identify the production site, we have to compare the paste—i.e., the characteristics of the clay—and the production methods of the tiles found at Fujiwara Palace with those found at different kiln sites. Nowadays, we can also scientifically analyze paste to support observations made by the naked eye. We have yet to identify the production sites of all the eaves tiles found at the Fujiwara Palace Site, so it is necessary to continue this research.

Finding the production site alone is not the end of our research. The photo below shows the excavation of the Hidakayama Roof Tile Kiln Site in 1978—located directly south of the Fujiwara Palace Site. Our Section is currently re-examining the tiles from this kiln and analyzing what kind of production system was in place at the time. We are also preparing to re-excavate the kiln and hope to use the new findings to further our research.

Figure 6. Excavation of the Hidakayama Roof Tile Kiln Site in 1978.

Figure 7. Making a scale drawing of an excavated tile.

Reconstructing and Studying Roof Ornaments

Over the past few years, our Section has also been studying *shibi* roof ornaments. These roof ornaments are a special type of decorative tile placed on the ends of the roof ridges of large buildings. Today, glittering roof ornaments sit atop Nara Palace's Former Imperial Audience Hall and Tōdaiji's Great Buddha Hall in brilliant splendor. Yet, very few examples of roof ornaments have been recovered from the Nara Palace and Capital sites. We believe that the gilt-bronze used to make such ornaments was recycled in later periods to make other metal objects. In contrast, the roof ornaments in the Asuka and Fujiwara districts were made of clay, and we have been able to recover them in excavations.

The photo below shows the fragments of a roof ornament found at the temple of Sakatadera. Even among decorative tiles, roof ornaments are extremely large and are usually found broken into small fragments. We rarely find all the pieces of these ornaments during excavations. Trying to reconstruct the complete, original form of these tiles is part of our job and is exactly like trying to solve a 3D puzzle.

In the end, we created the drawing below for the reconstructed *shibi*. Judging from the illustration, the original ornament was probably about one meter tall. Making a

drawing of the reconstructed ornament is only the first step. Next, we research how the roof ornament was made and how it relates to other tiles.

Figure 8. Reconstruction of a gilt-bronze roof ornament atop Nara Palace's Former Imperial Audience Hall.

Figure 9. Fragments of *shibi* found at Sakatadera. It looks like a jigsaw puzzle.

Figure 10. We will reconstruct this three-dimensionally.

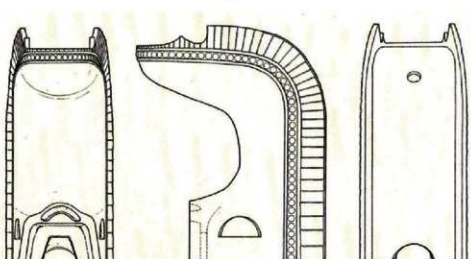


Figure 11. After reconstruction, we determined that the original roof ornament was shaped like this.

A Younger Generation Making Its Mark

As a result of personnel transfers and new hires, the average age of the four researchers in our Section this spring (April 2021) is 32.5 years old. This makes our Section one of the youngest among the Archaeology Sections of our Institute.

One member of our team (also the youngest archaeologist in the Department of Imperial Palace Sites Investigations) specializes in roof tiles from the Heian period (794–1185). You might find it strange that we have a specialist in Heian tiles assigned to the Asuka and Fujiwara districts. But many of the long-standing temples built during the Asuka period (592–710) replaced their roof tiles in the Heian period (e.g., Kawaradera). Therefore, it is important to analyze and examine such tiles to determine how they were made and distributed. We have high hopes for this young team to find answers to these questions.

In Japan, roof tiles remain a familiar architectural feature; all you need to do is look up to see them. Perhaps early Japanese people gazed up at roof tiles in the same way. Through our research, we hope to catch a glimpse of how early Japanese people felt when they looked at roof tiles.

Figure 12. Our young team having a discussion. New ideas are beginning to take root.

Figure 13. A Heian-period tile from Kawaradera. What kind of things will it tell us?

Department of Imperial Palace Sites Investigations (Asuka/Fujiwara) History Section

Digging up the *Nihon Shoki* and the *Shoku Nihongi*: Archaeological Research on the Asuka Period

In our Section, historians and archeologists work together on excavations. This is because historical documents provide important clues for archaeological research on periods of recorded history. As one example, a description in *Shoku Nihongi*—an eighth-century chronicle—led to the discovery that the seven pillar holes found in the Fujiwara Palace Site were where the imperial banners had been set up for a court ceremony held on January 1, 701 (see fig. 1).

Figure 1. The scene of the court ceremony held on January 1, 701, is restored, with banners set up near the pillar holes discovered by excavation. The Imperial Audience Hall of the Fujiwara Palace was located in the forest to the rear.

Figure 2. Some of the more significant wooden tablets recovered from the Asuka/Fujiwara district. From right to left: a shipping tag; a tablet with the characters for *tennō* (emperor) on it; and an official correspondence.

Our Daily Routine: Sorting Tablets

Our Section is responsible for sorting *mokkan*, or wooden tablets with ink inscriptions unearthed in excavations. Approximately 468,000 such tablets have been discovered from archaeological sites across Japan, which date to various periods ranging from around the seventh century to the turn of the twentieth century. About 45,000 tablets predate the Nara period (710–794). Of these, more than 39,000 are held in the Asuka/Fujiwara district (as of 2019), including: the oldest shipping tag with a clear date (665); the oldest wooden tablet with the characters for *tennō* (emperor); and an administrative document used at the Fujiwara Palace (see fig. 2). The process of sorting these tablets is as follows.

Discovery

In general, wooden tablets are protected by abundant underground water and remain in a stable condition while they are buried. They are often excavated together with pieces of wood and other organic objects, and thus, they emit a special odor like that of a rotten ditch but also strangely alluring. Buried underground for more than 1,300 years, these tablets are laden with moisture, but when exposed to air, they quickly dry out and deteriorate. Ultraviolet light can also severely damage wooden tablets, as it

Figure 3. Washing tablets.

Figure 4. Brushes and tools used for washing. The black brush with only one hair is a hand-made tool—we call it Namihei, which is a reference well-known middle-aged fictional character with only a single strain of hair on his scalp.

Figure 5. Observing a tablet using an infrared apparatus. The wood surface reflects infrared light and appears white, while the ink absorbs the light and appears black.

Figure 6. An image captured by a stereomicroscope. Recently, we are trying to identify timber and wood species on our own under the guidance of experts on wood.

does our skin. For this reason, unearthed wooden tablets are usually stored in water. At our Institution, we use a light aqueous solution of boric acid and borax to protect them against deterioration.

Washing

Wooden tablets are highly vulnerable, so they are taken to our Section together with the soil around them and washed in a sorting room. Too much scrubbing may remove characters written on them: we wash them gently and carefully using ink brushes with soft tips, taking care not to break them (see figs. 3 and 4).

Recording and Deciphering

After washing tablets, we record their shapes and any characters written on them, while also closely observing the tablets. This is the most fundamental step for deciphering inscriptions. While we examine the tablets with our own eyes, we often use an infrared apparatus to read the characters (see fig. 5). A microscope is indispensable for identifying timber and wood species (see fig. 6).

Photographing

Next, staff of the Photography Section take photographs of the tablets (see fig. 7). These photographs are enlarged to the actual sizes, then mounted on boards and filed. As these photographs are often used in books and museum catalogs, we frequently receive borrowing requests from authors and museums in various parts of Japan.

Publication of Transliterated Texts

After recording the details of the tablets, photographing them, and deciphering the characters, we publish the more important transliterated texts in our bulletin and the Institute's public databases.

Figure 7. Photos are taken by staff of the Photography Section. To make high-resolution records of wooden tablets, large black-and-white photos used to be taken, but color infrared digital photos are now used.

Storage

Wooden tablets that have been made public are then carefully stored in water-filled trays in a warehouse that is usually inaccessible (see fig. 8). After placing the tablets in the warehouse, there are few chances to see them directly again: we use their records and photographs for further investigations. Once a year, we inspect the state of preservation. We check that sufficient water remains in the trays and that it is clean, and we inspect the cushioning materials that protect the tablets to ensure they have not rotted. We use all our five senses to detect any abnormalities such as slime, unusual odor, and dirt (see fig. 9). This inspection is like a comprehensive health checkup of the tablets.

The Long-Term Task of the Section: Preserving and Utilizing the Wooden Tablets

Publishing Reports

We introduce every tablet with at least one deciphered character in our reports (catalogs). These reports include full-sized photographs as well. Since 1978, we have published four reports on the wooden tablets from the Fujiwara Palace Site and two reports on those from the Asuka/Fujiwara Capital Site (see fig. 10). It requires careful preparations and detailed research to complete one catalog: in fact, the wooden tablets we are working on for future publications include those unearthed almost thirty years ago.

Exhibition

The "Early Wooden Tablets" exhibition held in 2010 at the Asuka Historical Museum showcased wooden tablets from the seventh century unearthed in various parts of Japan. The exhibition and its catalog were well received by the public. We also make available wooden tablets preserved in water for public viewing from time to time (see fig. 11).

Figure 8. The warehouse where wooden tablets are stored.

Figure 9. Inspecting a batch of wooden tablets. We inspect each of the trays. If the water is not clean, we carefully remove the tablets and replace the water and cushioning material.

Figure 10. Publications issued by our Section. With the issuance of the most recent report in 2019, we have completed official reports on about 70% of the tablets kept in this district.

Figure 11. The brochure of the exhibition held in April 2019.

Preservative Treatment

Wooden tablets recorded in official reports are then chemically treated for preservation. This process is indispensable to keep them in a more stable condition, and we work with specialist preservation experts. The preservative treatment requires many preparations and a long time. So far, preservative treatment has been applied to only eighteen percent of the tablets recorded in reports and only three percent of all the tablets kept in our Section.

Recent Research Projects

Our Section is currently in charge of the following three research projects.

Research on tablets from the Nishitachibana Site (Asukamura)

This project is commissioned by the Asukamura municipal government, in which we are investigating about 270 tablets unearthed from the Nishitachibana site. We first apply preservative treatment to these wooden tablets and then decipher the characters written on them to shed light on the nature of the site. Pottery items recovered from this site are considered likely to have been produced collectively and thus could serve as an important reference collection for late-seventh-century ceramics. Our investigation of wooden tablets is important for determining the exact age of these pottery items. A detailed picture of the Nishitachibana Site is beginning to take shape through a series of meetings with external experts.

Research on Unearthed Artifacts with Inscriptions Related to Tajima Province

This joint research project with the Toyooka municipal government in Hyōgo Prefecture aims to shed light on the ancient Tajima Province by investigating all related artifacts with inscriptions. We have completed the investigation and photographing of 459 wooden tablets and some 1,200 ink-inscribed pottery items so far and are now preparing a report on the results.

Collecting Ink-Inscribed Pottery Unearthed from the Kansai Buddhist Cultural Area

Funded by a Grant-in-Aid for Scientific Research, this project involves collecting artifacts with inscriptions, such as ink-inscribed or engraved ceramics and tiles, excavated in Kansai, thereby providing a foundation for subsequent investigations. Currently, we are preparing to make public more than 12,000 artifacts unearthed in Nara Prefecture.

In addition, our Section conducts various other research activities, such as: deciphering wooden tablets and pottery items in cooperation with research institutions in various parts of Japan upon request; collecting historical documents as part of the Imperial Audience Hall Compound restoration project; and investigating wooden tablets with incantations. However, there is only one permanent staff in our Section—me. Therefore, the progress of these activities has been very slow, and I have been working on these tasks with the assistance of many people.

Closing Words

I greatly enjoy deciphering wooden tablets in my Section. It is a huge privilege to receive these "gifts from underground," which were left, even if unintentionally, by people of the Asuka/Fujiwara period, and to be the first person since that period to read their messages. In my daily work, sometimes a "eureka" moment suddenly comes after hours of struggling with incomprehensible characters, which gives me a special sense of euphoria. Such moments are the most rewarding part of our research for those of us trying to decipher wooden tablets.

Department of Imperial Palace Sites Investigations (Asuka/Fujiwara) Architectural Feature Section

The Architectural Feature Section is under the jurisdiction of the Department of Imperial Palace Sites Investigations, which, as its name suggests, is focused on investigating historical capitals, especially governmental and religious facilities. The core of the Department is a team of archaeologists and historians with specialized knowledge of historical documents, garden design, and architecture. Our Section consists of architectural historians who specialize in excavating, documenting, and analyzing architectural features, particularly timber constructions. This article will explain how we handle and analyze elements of such structures and what makes them so exciting.

Our research is focused on wooden architectural elements like posts and large-sized wooden artifacts such as pieces of well frames.

When such wooden elements are found on an excavation, sometimes, after careful inspection, they are re-buried on-site, but usually, they are removed for further analysis and conservation. Once extracted, the timbers are first cleansed in water, then submerged in water tanks (see fig. 1). Each object has a label attached with a number that helps us identify where and when they were excavated (see fig. 2). If the

Figure 1. Timber elements submerged in water. The longest element in this tank is 7.6 m.

Figure 2. Each element is labeled.

Figure 3. Objects in poor condition are wrapped in nonwoven fabric.

element is particularly fragile, we wrap it in nonwoven fabric (see fig. 3).

There are twenty-six water tanks in the Asuka/Fujiwara district. The tanks are covered with tarpaulins all year long to minimize the exposure of the submerged timbers to air. These tarpaulins are lifted only when we need to check on the materials. Once a year, however, we remove the covers to replace the water in the tanks. This is also when we take out or replace items for analysis or conservation. As this process requires us to be in the water, we schedule the task for summer. To finish this enormous project in under a week, we hire part-time workers to help.

Replacing the water in the tanks is not easy, and it goes without saying that the objects are of historical importance and need to be handled with care. On top of that, because the elements have absorbed a lot of water, moving them requires considerable physical strength (see fig. 4).

Many of the timber elements are too big and heavy to be put on a table for measurements. Instead, we place them on the floor, on top of wooden boards with 10 cm box-grids drawn on them, and prepare scaled drawings this way (see fig. 5). During

Figure 4. Timber components must be handled with care because they are both fragile and heavy.

Figure 5. Preparing a scale drawing.

Figure 6. A well frame from the Fujiwara Palace Site. Toolmarks, made by an adze, can be seen on its surface.

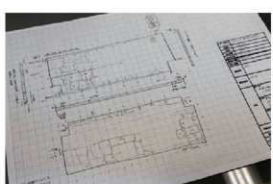


Figure 7. The scale drawing of the well frame from fig. 6. Measurements and marks are noted in the illustration.

this process, we also take note of any wear or toolmarks (see figs. 6 and 7).

Sometimes a single timber element can lead to drastic changes in interpretation. For example, a column found at the Fujiwara Palace Site in FY 2005 suggested that the carpenter shaved off the log's surface along a circle drawn with a compass at its base (see figs. 8 and 9). Previously, it was thought that round timber columns from the Palace were made by first turning them into a square, then an octagon, and finally into a sixteen-sided piece. This approach required a much bigger log which produced more waste than shaving the log round from the start. As it turns out, the approach taken by the carpenters was much more rational than we initially thought.

Figure 8. The column *in situ*.

Figure 9. An infrared photograph of the column's base. A hole made by a compass needle can be seen where the ink lines cross.

Of course, not all investigations lead to such significant discoveries, but they always provide insights into the carpenters' work. That alone is more than enough to quicken the heartbeat of an architectural historian.

Center for Archaeological Operations
Conservation Science Section

Introduction

Artifacts excavated from the various archaeological sites that our Institution had investigated include wooden and metal objects (such as wooden tablets or copper coins), stone tools, clay vessels, and eaves tiles. Many of these artifacts are vulnerable to decay and require careful handling. Our Section is responsible for analyzing the properties of these materials and applying treatments to preserve them. Another task of ours is to assess the environmental conditions of archaeological sites. Furthermore, we are also developing methods for preserving and restoring cultural properties and suppressing their deterioration. Here we introduce our work in each of these areas.

Analyzing and Preserving Artifacts

We use different methods and equipment to preserve wooden artifacts depending on their types and sizes. For preserving large wooden artifacts, such as elements of timber structures, we may use our vacuum freeze dryer—which is one of the world's largest dryers used for cultural items. For preserving smaller wooden artifacts, like wooden tablets, we combine the vacuum freeze-drying

Figure 1. Treating wood in the vacuum freeze dryer.

Figure 2. Wooden tablets soaking in preservative solution.

Figure 3. Wooden tablet before preservative treatment.

Figure 4. Wooden tablet after preservative treatment.

method with treatment in fatty alcohol. This combined method helps preventing both the fading of the ink inscriptions and the deformation of the wood.

Metal artifacts deteriorate rapidly. To control this deterioration, we must prevent the formation of rust. The primary cause of rust is salt, which exacerbates the deterioration of metal artifacts. Our Section is currently investigating a ship lying on the seabed at a depth of twenty meters in a very salty environment. To understand such environments better, we conduct experiments to elucidate the mechanism of corrosion by installing experimental apparatus and then patiently measuring and collecting data.

If a metal artifact has severely deteriorated, we remove the rust and reinforce it with acrylic resin to preserve it.

Figure 5. Corroded iron artifact.

Figure 6. Investigating archaeological remains under the sea.

Figure 7. Hand-made experimental apparatus.

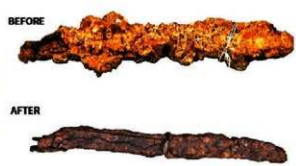
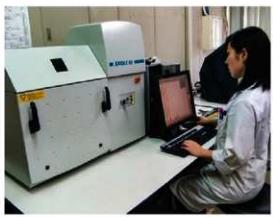


Figure 8. Metal artifact before and after preservative treatment.

The optimal preservation method depends on what the artifact is made of. Therefore, material analysis is another important part of our work. Artifacts that have been buried in the ground for a long time are often so severely deteriorated that we cannot immediately judge what they are made of. Material analysis is crucial for choosing an appropriate preservation method to keep these valuable cultural properties for future generations. Material analysis requires a scientific approach. While there are various scientific methods, cultural properties must be inspected in a

non-destructive, non-contaminating, and non-contact manner. For this reason, X-rays are widely used for such analysis.



Figures 9 and 10. Elemental analysis using X-ray fluorescence.

Figures 11 and 12. Compound identification using X-ray diffraction analysis.

Field Surveys and Preserving Archaeological Sites

Research conducted in our Section covers not only movable objects but also immovable monuments, such as mounded tombs, Buddhist images carved on rock surfaces, and ancient ground-surfaces exposed by excavations. In order to preserve these archaeological sites, we conduct field surveys to collect information, including the types of stone and soil a particular monument is made of and the environment where the monument is located. With the availability of high-performance research equipment, we can now easily obtain meteorological and various other local data without leaving our lab. However, we still visit the sites in person because we believe such direct inspections help us notice small changes in the site conditions.

After returning from a site, we analyze the collected data on a PC. During field studies, we walk around a site all day long, sometimes in the searing sun, but once we return to the lab, we spend days indoors before a PC screen. During this time, we explore the causes of deterioration and use simulation technology to develop

measures to prevent further deterioration. Once we are finished, we go out into the field again to apply the deterioration control measures and then continue to observe and assess the effectiveness of our efforts.

Figure 13. Investigating a mounded tomb in Mongolia below freezing point.

Figure 14. Salt deposited on the surface of a rock with a Buddhist image carved on it. Salt is extremely damaging to archaeological monuments.

Researching Optimal Environmental Conditions for Preservation

To preserve archaeological artifacts for a long time in good condition, they should be kept in an appropriate environment. Our Section works with affiliated museums to monitor their indoor environments and develop measures to improve them to ensure that artifacts are stored and exhibited in appropriate conditions.

As an example of one such research project, we explain here how we work with the Center for Preservation of Kitora Tumulus Mural Paintings ("Preservation Center"). The preservation of these murals requires precise temperature and humidity control, or the paintings could be damaged. If too hot and humid, mold can develop on the paintings, but if it is too cold and dry, the plaster may shrink and eventually crack and flake off the walls. In the room where the murals are preserved, the temperature and relative humidity are set to around 22°C and 55%, respectively. We have installed thermo-hygrometers around the Preservation Center and carefully monitor the indoor environment to maintain optimal conditions.

We must also protect artifacts from bio-deterioration. Various harmful organisms, such as pests and mold, are present in the environment. Under certain conditions, they may spread quickly and cause severe damage. To prevent this, we must stop them from entering and make the environment unfavorable to their survival by controlling temperature and humidity; and maintaining a clean storage space. To detect damage and take prompt measures, we should also find out where these organisms originated and how they behave. At the Preservation Center, we set pest traps in various locations. Each time a pest is caught, we identify the species, keeping accurate records of when and where it was found and how many. In addition, we regularly inspect the air in the room where the murals are kept to check the type and number of bacteria present.

In this way, we monitor the indoor environment closely to detect harmful factors quickly and protect these valuable paintings.

Figure 15. A researcher checking the temperature and humidity.

Figure 16. A pest trap near the entrance.

Preserving Cultural Properties for Future Generations

At our Section, we work hard every day to keep cultural properties in the best possible condition for future generations.

Center for Archaeological Operations
Environmental Archaeology Section

Our Section investigates animal bones and other organic materials recovered from archaeological sites to reveal past interactions between humans and the natural world. We primarily aim to reconstruct ancient environments, diets, and ways of life.

The work undertaken by our Section can be roughly divided into: (1) investigating unearthed materials, (2) managing a reference collection, and (3) organizing training sessions.

Investigating Unearthed Materials

Our Section has analyzed and reported on about 380,000 samples (mainly animal bones and shells) unearthed from 189 Japanese archaeological sites in the past 40 years. As one of the few research labs in the country specialized in the analysis of excavated bones, we often assist local cultural heritage experts and boards of education.

Figure 1. Examining the lower jawbone of a horse recovered from the Fujiwara Palace Site.

Figure 2. Counting tiny shell fragments of *Mytilisepta virgata* collected by sieving the soil taken from a shell mound.

Managing the Reference Collection

Our Section has a reference collection including some 5,000 skeletal and shell specimens of extant animals. We have invested considerable time and effort in collecting and preparing these specimens. The collection is open to both domestic and international researchers and is widely used in many research projects. Managing and preserving this collection is one of the principal tasks of our Section.

We also manage the "3D Bone Atlas Database," a public online database that enables three-dimensional observation of animal bones. While we originally built this database with archaeologists in mind, it can be freely downloaded by anyone and is indeed used in a wide range of fields, including fine art and medicine.

Figure 3. We house many different skeletal specimens.

Figure 4. Bones of an ox, arranged in position.

Organizing Training Sessions

Our Institute offers various training programs for local cultural heritage experts. Our Section organizes training sessions on animal and plant remains as well as geological survey methods annually. The programs have been attended by more than eight hundred people to date. Details of our training sessions are reported in the 170th issue of the CAO News, published by the Center for Archaeological Operations.

Figure 5. Field training on natural sediments, a topic often neglected in Japanese archaeological education.

In 2019, we held a special exhibition titled "The Story of Bones: The Work of the Environmental Archaeology Laboratory" at the Asuka Historical Museum. If you are interested in behind-the-scenes information about our daily work, the Japanese exhibition brochure, containing many photographs, is still sold at the museum.

Center for Archaeological Operations
Dendrochronological Dating Section

The photo below is a microscopic image of tree rings on a wooden artifact.

Most know that trees have "tree rings," which grow at a rate of one ring per year. However, not everyone is aware that the width of tree rings change according to the annual temperature and rainfall. Tracing these variations backward through time allows us to accurately date the wood, leading to many exciting finds. For example, in the '90s, researchers examined a pillar that once supported a large building at the Ikegami-Sone historic site in Osaka. The data they obtained from tree-ring dating prompted a reassessment of the dates used to define the Yayoi period at the time. To give a more recent example, when Yakushiji's East Pagoda was disassembled for conservation purposes, researchers used tree-ring dating to determine when the trees used to build it were cut down. They discovered that most of the timber had been felled after Nara became Japan's capital in 710. This finding was consistent with historical records such as the *Fusō Ryakuki* (*A Brief History of Japan*), which states that the pagoda was constructed in 730.

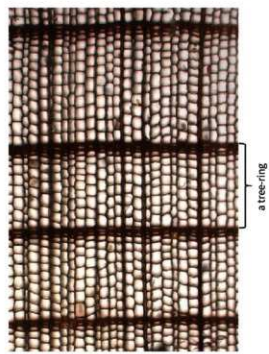


Figure 1. Microscopic image of a wooden artifact.

Figure 2. Measuring and comparing tree rings at the lab.

Figure 3. Investigating the timber of Yakushiji's East Pagoda.

In order to use tree-ring dating to determine the age of artifacts, we have to start with tree rings in living trees with known dates of formation. We can then daisy-chain our way backward to collect data about variations in tree rings over time. Our Section collects a great number of samples from extant trees for that purpose. We also analyze variations in tree rings to reconstruct past changes in climate and collect samples from different regions across Japan to aid in provenance studies.

Figures 4.1 & 4.2. Collecting tree samples.

Wood has been in use for a long time, and many wooden artifacts have been left behind, including everyday wares, building components, and statues. Perhaps precisely because wood is so familiar to us, many lack basic scientific knowledge about it. Cultural heritage experts often tell us that they do not know how to handle wooden artifacts. To remedy this, we offer an introductory training course covering, among others, such topics as wood science, dendrochronology, and conservation practices.

Using tree rings to date objects typically requires the object to have more than a hundred visible tree rings. Therefore, previously, smaller artifacts with less visible tree rings were difficult to date with this method. However, recent attempts at analyzing clusters of wooden objects collectively enabled us to establish them as having been made from the same wood. As a result, the scope of application for dendrochronology is widening to include diverse objects, including the massive number of wooden tablets found at the Nara Palace and Capital Sites. Applying dendrochronology to wooden tablets would allow us, for example, to identify to which tablet a shaving

used to belong, which in turn could help us piece together shavings. Connecting such fragments would allow us to rebuild more texts, leading to new insights into Japanese history.

Figure 5. During a lecture on wood science.

Figure 6. Photographing a wooden tablet for tree-ring research.

Center for Archaeological Operations
Archaeological Research Methodology Section

Our Institute focuses on investigating the history of people and their surrounding environment. We employ a wide variety of approaches. Every new find leads to new questions, and responding to these is what motivates our research.

Our Section focuses on how to investigate and assess what kinds of information can be obtained from archaeological sites.

Collecting and Publishing Information: The Historical Site Database

Information obtained from sites is diverse, and every year brings a wealth of new data. Collecting this information and transforming it into entries in a database is essential for archaeology. Therefore, our Section has been managing such a database for a long time.

Figure 1. Taking a sample of the soil layers.

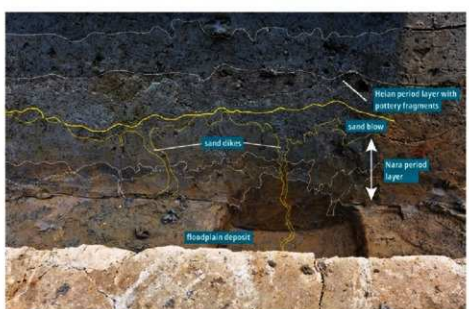


Figure 2. Traces of earthquakes (sand boils) found at a site.

Predicting the Future Based on the Buried Past: Geological Surveys and Disaster Mitigation

If we proceed with research from the viewpoint of geology, we can see how people used the land and how they faced past disasters. Knowing this will not only help us understand the history of the land and its people but also gain knowledge that could help mitigate the effects of future disasters. Such an approach can pave the way for utilizing archaeological knowledge, not only to gain insights into our history but for the safety of contemporary society.

Looking through the Ground: Developing and Propagating Geophysical Approaches

Excavations are conducted so that we can learn about past activities of people from the traces left behind deep underground. By removing the soil, we can examine these traces with our own eyes. However, such an intervention is irreversible. Not to mention that digging without knowing where such traces might be found often leads to wasting time and money. For this reason, we are testing non-intrusive methods for exploring archaeological sites.

Figure 3. Surveying with a ground-penetrating radar.

Measuring and Recording: Testing and Developing New Methods for Taking Measurements

All worldly things are impermanent. Everything changes shape over time. Therefore, the shape of artifacts needs to be recorded in detail and as soon as possible.

For this reason, our Section always seeks to improve and develop new surveying and measurement methods. In recent years, 3D measurements using laser-light and image processing have become cheaper and simpler. Therefore, we are refining and

promoting these methods nationwide. We are also developing a technology we named "light rubbing" that can help record inscriptions on artifacts.

Figure 4. Taking 3D measurements of an earthenware vessel.

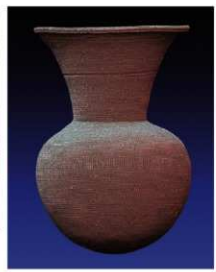


Figure 5. The results of the 3D measurements of a *sue* ware.

Through our endeavors, we cooperate and help in domestic and international research projects and train Japanese cultural heritage experts. We will continue to pursue our research while constantly asking what kind of research is needed by everyone.

Asuka Historical Museum
Curatorial Section

The Museum was opened in 1975 to present the Asuka region's history and culture to the public. There are three exhibition rooms: the first thematically showcases the history of the area; the second focuses on the temple of Yamadadera; the third is for special and thematic exhibitions.

Besides the Museum, our Section is also in charge of the top floor of Shijin-no-yakata, where the Kitora Tumulus murals are preserved. The Agency for Cultural Affairs commissioned Our Institute to manage a section of the facility and arrange the public display of the murals.

Here, we would like to introduce our work at the Museum in the form of a FAQ. We will leave Shijin-no-yakata for another time.

Figure 1. Asuka Historical Museum.

Figure 2. Exhibition Room 1.

- How do you arrange an exhibition?

Many tasks are involved in creating an exhibition, including the planning, the investigation of objects, preparing catalogs, putting the objects on display, PR work, and guided tours. The four curators employed in the Curatorial Section helm the creation of exhibitions, but they are helped by assistants and other colleagues from Administration. Work in the Curatorial Section revolves around the preservation and management of the Museum collection, in which managing exhibitions play a central role.

Figure 3. Studying a map for an exhibition.

Figure 4. The curators themselves set up the display cases for special exhibitions.

- Does the permanent exhibition change?

The Museum opened its doors more than forty years ago. During this time, a series of major archaeological discoveries have revealed many details about the birth of the Japanese state. We pay close attention to these discoveries and constantly update the permanent exhibition to reflect them. Most recently, we overhauled the sections concerning palaces and burial mounds in the region.

Figure 5. The renewed section on burial mounds.

Figure 6. Working on the permanent exhibition.

- Is the section of Yamadadera temple on display a replica?

Visitors are often surprised to learn that all the discolored, brown parts of the display, such as the bars of the windows and pillars, are genuine artifacts. The unearthed artifacts were reassembled into the corridor after chemical treatment. During the excavation of Yamadadera, a large number of artifacts were found, such as pieces of the timber frame. Artifacts not on display are carefully stored in a room with temperature and humidity control. Conserving and displaying them is an important part of our job.

Figure 7. Surviving section of Yamadadera.

Figure 8. Logging the temperature and humidity in the storage room.

- Will children enjoy a visit to the museum?

Many children come on school excursions to our Museum. We strive to develop materials that make learning history fun. Recently, we created a brochure for children designed to guide them through the Museum, and the history of Asuka, via quizzes and other activities.

In addition, a coloring book is available in the reading corner for small children to familiarize themselves with the history of Asuka. We even have gifts for those who complete and bring the coloring book to the reception desk. Both the brochure and the coloring book are available to download from our website.

Figure 9. Brochure for kids.
The brochure is designed to help children enjoy the exhibition at their own pace.

Figure 10. Coloring book for small children.
The Monkey Stone can be cut out and assembled after coloring, making both sides of the monument visible.

- Is there anything to do besides visiting the permanent exhibition?

We have several thematic exhibitions throughout the year, as well as various activities in the summer. The recent summer-time activity, in which visitors could create a miniature version of the pillow from the Abuyama Burial Mound, was quite popular. We cannot hold such events during the pandemic, but we are brainstorming ideas once it ends.

We are also developing original merchandise to raise interest in history. We aim to create items only our Institution can make by implementing ideas and perspectives from cultural heritage research. We believe that such endeavors are important for drawing attention to Asuka.

Figure 11. Making miniature pillows was very popular with children.

Figure 12. Our current selection of merchandise.

- What do you do to accommodate foreign visitors?

We are in the middle of preparing signs, wall texts, and handouts in languages other than Japanese. We have already finished translating several exhibition section titles and pathfinding signs. The museum brochure is also available in English, Chinese, and Korean. Because there is no dedicated staff present in the Museum, we are assisted by researchers specializing in developing texts for international audiences at the Institute's HQ. We will continue our efforts to create a space where visitors from abroad can enjoy learning about the local history.

Figure 13. Multilingual pathfinding sign.

Figure 14. Multilingual section title.

- What is the most rewarding part of your work?

Getting feedback from our visitors! The message that an object conveys changes depending on how it is presented. Visitors spend very little time looking at a single object. We plan the placement of the objects, the words, font sizes, and typefaces used on the labels while thinking about how we could better convey the charm of each object. When we receive positive feedback from our visitors or see them enjoy the exhibition, we feel rewarded for all the time spent planning everything.

Figure 15. Proofreading exhibition labels. Every curator joins in to help.

Figure 16. Providing explanation to a visitor. We value interactions with our visitors.

- What do you find challenging in your work?

PR work includes a lot of trial and error. We are creating and distributing PR materials, doing press conferences, and providing information for local papers. Recently, we also put much effort into designing eye-catching posters. We actively use social network sites and our website to reach a wider audience. We are also in the middle of trying to find better ways for our flyers to reach visitors. We strive to bring our information to as many people as possible.

Figure 17. Posters of the Asuka Historical Museum (left) and the Shijin-no-yakata (right) put on display inside the village.

Figure 18. The recently overhauled Museum website.

The history of Asuka is connected with the history of the Japanese state, and through that, with world history. The Museum aims to provide an enjoyable experience through which our visitors (history buffs and tourists alike) can learn more about the local history and culture. We will continue our efforts at providing enriching experiences based on our joint research efforts with the local community.

For further information, refer to our website and blog.

遠訪研究室—奈文研へのご招待—
NABUNKEN: A Walk Around the Institute

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