Symposium

Maritime Network and Cultural Heritage

-People and Objects Connected by Oceans-

FY2021 Symposium report

JCIC-Heritage

Japan Consortium for International Cooperation in Cultural Heritage

Symposium

Maritime Network and Cultural Heritage

-People and Objects Connected by Oceans-

FY2021 Symposium report

JCIC-Heritage

Japan Consortium for International Cooperation in Cultural Heritage

Preface

This report records the contents of the FY2021 symposium "Maritime Network and Cultural Heritage-People and Objects Connected by Oceans" held by the Agency for Cultural Affairs and the Japan Consortium for International Cooperation in Cultural Heritage (JCIC-Heritage) on November 28, 2021. The manuscript was based on transcriptions of sound recordings, with editorial additions and revisions to improve the presentation of the report. All photographs used without sources cited were provided by the presenter in question.

This symposium was held in line with the international cooperation survey "Maritime Network and Cultural Heritage" conducted by JCIC-Heritage from FY2020 to FY2021, comprising members selected from each regional subcommittee of JCIC-Heritage and external experts, who discussed the content of the symposium. The members of the working group are as follows (in arbitrary order).

- ABE Masashi (Senior Researcher, Japan Center for International Cooperation in Conservation, Tokyo National Research Institute for Cultural Properties)
- ISHIMURA Tomo (Head of the Audio-Visual Documentation Section, Department of Intangible Cultural Heritage, Tokyo National Research Institute for Cultural Properties)*
- ITO Nobuyuki (Assistant Professor, Graduate School of Humanities, Nagoya University)
- KIMURA Jun (Associate Professor, School of Marine Science and Technology, Tokai University)*
- SAOTOME Masahiro (Emeritus Professor, The University of Tokyo)
- SASAKI Randall (Representative, Marine Archaeology Lab)*
- SUZUKI Hideaki (Associate Professor, School of Global Humanities and Social Sciences, National Museum of Ethnology)*
- SUTO Yoshiyuki (Professor, Graduate School of Humanities, Nagoya University)
- FUNO Shuji (Visiting Professor, College of Industrial Technology, Nihon University)
- YAMAUCHI Kazuya (Professor, Research Institute of Cultural Properties, Teikyo University)
- MAKINO Mariko (Assistant Professor, Research Institute of Cultural Properties, Teikyo University)
- Related organizations (Agency for Cultural Affairs, Ministry of Foreign Affairs, Japan International Cooperation Agency)

*External experts

Organizer: Agency for Cultural Affairs, JCIC-Heritage
Auspices: Ministry of Foreign Affairs, Japan International Cooperation Agency, The Japan Foundation

Contents

Objectives

The azure oceans, with their endlessly crashing waves, occupy about 70% of the Earth's surface. What view might we obtain if we were to look at the interactions of people and objects from the perspective of the oceans?

The oceans bring us abundant blessings and have been a stage and a confluence of "roads" for people and objects to come and go since ancient times. Undoubtedly, the "ocean roads" have been a stage for the interaction of people and objects, much akin to "roads" on land. Despite knowing the danger that awaits, humans have ventured boldly forth into the oceans, seeking other worlds that lie beyond. The encounters among different cultures facilitated via the oceans have given rise to new cultures, civilizations, and the world we live in today.

The global legacy of our maritime cultural heritage remains as a testament to the existence of this stage for the interaction of people and objects, the deeds of peoples nurtured along with the ocean roads, and the societies, histories, and cultures of those times. This cultural heritage ranges from tangible items such as trade items (glass, ceramics, and so on), the port towns that are the points of contact between the oceans and the land, and the sunken ships lying on the seabed to intangible items such as fishing techniques, navigation, and beliefs about the oceans. Recent progress in research on underwater cultural heritage has yielded cutting-edge technologies and analytical methods that help clarify the origins of objects transported via the oceans.

A major current in the history of the world has been to focus on the role played by "the oceans" and reconsider this at a global scale as an overall picture of the interrelationships among regions. Accordingly, new perspectives are required in the context of researching, investigating, and protecting the cultural heritage, which demonstrate exchange via the oceans.

In this context, the Japan Consortium for International Cooperation in Cultural Heritage has been conducting an international cooperation survey "Maritime Network and Cultural Heritage" since FY2020 to address maritime cultural heritage.

Coincidentally, 2021 is the first year of the United Nations Decade of Ocean Science for Sustainable Development. Adopting new perspectives in re-examining the ancient relationship between humanity and the oceans as well as the cultural heritage that stands as a testament to that relationship will play a key role in considering how we can make a sustainable use of the oceans in the future.

To reconsider "the oceans" as a stage for interactions among people and objects, this symposium provides an introduction to international research and conservation trends related to marine cultural heritage and examples of worldwide initiatives related to marine cultural heritage, as well as the involvement of Japanese researchers therein. In addition, the symposium provides a space to consider the role of Japan in international cooperation in the field.

Program

14:00-14:05 **Opening Remarks**
TOMODA Masahiko (Secretary General, Japan Consortium for International Cooperation in Cultural Heritage)

14:05-14:20 **Statement of Purpose**
ISHIMURA Tomo (Head of the Audio-Visual Documentation Section, Department of Intangible Cultural Heritage, Tokyo National Research Institute for Cultural Properties)

14:20-14:40 **The Appeal and Significance of Research on Sunken Ships: Time Capsules of the Ocean**
SASAKI Randall (Representative, Marine Archaeology Lab)

14:40-15:00 **Opening the Sea Route: Voyages, and Shipbuilding**
KIMURA Jun (Associate Professor, School of Marine Science and Technology, Tokai University)

15:00-15:20 **Glass Beads Brought Across the Oceans: East-West Trade and the Road of Glass**
TAMURA Tomomi (Principal Researcher, Imperial Palace Sites Investigation Department, Nara National Research Institute for Cultural Properties)

15:20-15:40 **People Crossing the Maritime World: Islamic Merchants, Including the Merchants of Hormuz**
YOKKAICHI Yasuhiro (Associate Professor, Graduate School of Arts, Rikkyo University)

15:40-16:00 **Places where the Sea and Land Meet: Port Cities of Asian Waters: Shophouses & Courtyard Houses**
FUNO Shuji (Visiting Professor, College of Industrial Technology, Nihon University)

16:00-16:50 **The World Connected Through the Oceans**
Moderator: ISHIMURA Tomo
Commentators: SUTO Yoshiyuki (Professor, Graduate School of Humanities, Nagoya University)
ITO Nobuyuki (Assistant Professor, Graduate School of Humanities, Nagoya University)
SASAKI Randall / KIMURA Jun / TAMURA Tomomi / YOKKAICHI Yasuhiro / FUNO Shuji

16:50-17:00 **Closing Remarks**
YAMAUCHI Kazuya (Professor, Research Institute of Cultural Properties, Teikyo University)

Opening Remarks

TOMODA Masahiko (Secretary General, Japan Consortium for International Cooperation in Cultural Heritage)

Hello, everyone. Thank you for attending the symposium, "Maritime Network and Cultural Heritage-People and Objects Connected by Oceans." I am Tomoda Masahiko, Secretary General of the Japan Consortium for International Cooperation in Cultural Heritage (JCIC-Heritage), and I will be hosting the session today. Let me make some opening remarks on behalf of the organizer, JCIC-Heritage.

For the promotion and effective implementation of Japan's international cooperation in the field of cultural heritage protection, primary role of the JCIC-Heritage is to facilitate mutual cooperation among the various parties and organizations, both public and private, that are engaged in the collaborative activities.

As one of its regular programs, the JCIC-Heritage organizes a yearly symposium, open to the public, which addresses a wide range of topics related to the protection of cultural heritage in the world as well as the relevant cooperation from Japan. However, we were unable to hold a symposium in FY2020 due to the COVID-19 pandemic. We are very happy to resume the symposium this year online, having so many people to join.

The topic of this symposium is "Maritime Network and Cultural Heritage-People and Objects Connected by Oceans", through which we aim to reconsider "the ocean" as a stage for interactions among people and objects, including the various aspects of cultural heritage associated therewith. Since FY2020, the JCIC-Heritage has been implementing an international cooperation survey, "Maritime Network and Cultural Heritage." This symposium has been planned in tandem with that survey.

The oceans bring us abundant blessings and have been a stage and a confluence of "roads" for people and objects to come and go since ancient times, much akin to the "roads" on land. Various forms of maritime cultural heritage remain around the world as witnesses telling the stories of these interactions among people and objects, with a range of related research conducted in this regard employing diverse perspectives and methods. The role of "the oceans" in world history has also come into focus recently, with research going beyond the framework of regional history to more widely encompass views that re-examine the history of humans, cultures, and civilizations at a global scale.

Adopting new perspectives in re-examining the long-lasting relationship between humanity and the oceans, together with the cultural heritage that stands as a testament to that relationship, will play a key role in considering how we can achieve a peaceful international society and make sustainable use of the oceans in our future.

The symposium will introduce international research and conservation trends related to maritime cultural heritage, examples of worldwide initiatives, and the involvement of Japanese researchers therein. Hopefully, the five presentations and subsequent forum will provide a good opportunity to reconsider "the oceans" as a stage for interaction among people and objects, and to think about the role of Japan in international cooperation in related fields going forward. I look forward to your active participation until the end of the program.

Statement of Purpose

ISHIMURA Tomo (Head of the Audio-Visual Documentation Section, Department of Intangible Cultural Heritage, Tokyo National Research Institute for Cultural Properties)

ABD at Graduate School of Letters, Kyoto University (2004). PhD in literature, specializing in archeology and cultural heritage. After working as a research fellow at the Japan Society for the Promotion of Science and a researcher at the Nara National Research Institute for Cultural Properties, he has been involved in research on intangible cultural heritage at the Tokyo National Research Institute for Cultural Properties since 2015. He also contributed to the World Heritage registration (2016) of the Nan Madol archaeological site in the Federated States of Micronesia. He is interested in the cultural heritage of the oceans and has conducted investigations via scuba diving and sea kayaking.

Hello, everyone, I am ISHIMURA Tomo of the Tokyo National Research Institute for Cultural Properties. There are various forms of maritime cultural heritage, and I will introduce several of them in my explanation of the purpose of today's symposium (Figure 1).

First, this diagram indicates the connection between the oceans and humanity (Figure 2). The diagram dates back over a century, when it was presented by the German scholar of cultural morphology Kurt von Beckmann. The diagram presents four categories of culture that exist in this connection between the oceans and humanity, with the oceans as a source of diverse stimuli for human beings, which prompted us to create cultures in response.

The first of these stimuli is marine products as resources from the oceans-fish and other bounty received from the oceans. This stimulus created fishing cultures as a form of response.

The second stimulus is that of the role of the oceans as "roads," linking with other lands, a role that nurtured seafaring cultures encompassing trade and commerce.

The oceans have served as a catalyst for ambitions to explore and conquer the lands that lie beyond. The oceans' role as a road to other lands gave rise to maritime cultures. These cultures include the turbulence of war and the adventurous spirit of setting sail into the unknown oceans, as Columbus did. These maritime cultures go back two thousand years before Columbus, encompassing the time when the Polynesian people rowed across the Pacific Ocean, without knowing if there were other islands beyond.

The third of these stimuli gave rise to marine art cultures, created as a reaction to the influence of art, knowledge, and thought within the connection between the sea and human lives. Consider the famous "floating world" ukiyo-e art of Katsushika Hokusai, or his woodblock print of Mount Fuji seen from the Kanagawa coast (the "Great Wave off Kanagawa" from *Thirty-Six Views of Mount Fuji*), which is an example of art influenced by the sea. Hokusai's art reached Europe and inspired the paintings of Van Gogh,

Figure 1

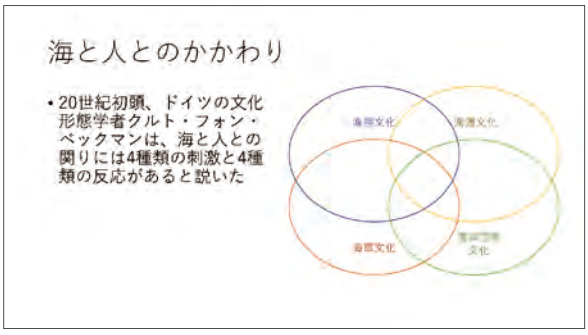

Figure 2

in addition to apparently inspiring Debussy to compose La Mer (The Sea).

Here I will discuss some of the cultural heritage that expresses these diverse cultures in a tangible form.

Perhaps the first thing that comes to mind with regard to maritime cultural heritage is "underwater cultural heritage" (Figure 3). This underwater cultural heritage naturally includes sunken ships as well as a somewhat wider scope. Figure 4 depicts a stone wall structure (in Japanese *ishihibi*) akin to a weir for catching fish; tidal-zone objects such as these are also considered to be underwater cultural heritage. Other items are recognized as connected to fishing cultures and as heritage related to the sea in terms of livelihoods (Figure 5). In Japan in particular, many Jomon-era shell mounds and similar can also be described as maritime cultural heritage. Items connected to seafaring cultures include various objects that were transported across the ocean roads. A typical example is ceramic ware; I believe the presentations today will introduce glass items and a variety of other objects that have been traded across the oceans (Figure 6).

Others are those related to ocean scenery. Figure 7 illustrates the scenery of Tomonoura. The scenery of this port town is different from that of landlocked towns.

Figure 3

Figure 4

In particular, unique landscapes and townscapes are created with an awareness of the view from the ocean or from ships or the ocean as seen from the town. These can also be described as maritime cultural heritage.

There are also objects connected to spiritual belief in the oceans. Figure 8 is a photo of an outdoor ritual site on Okinoshima Island. The various cultural items from within the island, preserved at this site for over a thousand years, have earned it the name the "Shosoin of the ocean" (as in the well-known treasure house attached to the Japanese temple complex of that name). Except for special festivals, people are not permitted to enter the site, a belief that has persisted to this day. So sites like this can also be regarded as maritime cultural heritage.

While the objects presented so far are all examples of tangible cultural heritage, there are also examples of intangible maritime cultural heritage. These Iranian Lenj boats are constructed from wood; the shipbuilding and sailing techniques used therein are on the UNESCO Representative List of Intangible Cultural Heritage (Figure 9).

Another example of intangible maritime cultural heritage is the navigation techniques of Oceania (Figure 10). When the Polynesian and Micronesian peoples of Oceania sailed the oceans, they used a traditional type of seamanship referred

Figure 5

Figure 6

to as "star navigation," where the movement of the stars is used to indicate the direction of the boat.

Although this type of navigation almost disappeared during the colonial era, there have been efforts to revive star navigation as a part of a cultural renaissance movement since the late twentieth century. Practices such as these can also be described as maritime cultural heritage.

In this way, maritime cultural heritage comes in various types and forms. However, it is difficult to cover all of them in this symposium, and therefore, we have narrowed the focus to the following topics for discussion (Figure 11).

The first topic is from a regional perspective, with a focus on maritime cultural heritage in the Asian region from the Indian Ocean to the Pacific Ocean.

We will approach this topic from three perspectives. The first of these perspectives is that of cultural exchange via the oceans. The expansive ocean area spanning East to West includes numerous regions and their diversity of civilizations and cultures. We will discuss the exchange of civilizations and cultures via the oceans and the ways in which they have stimulated one another.

The second perspective relates to the diverse new research methods that have been developed and applied in recent years to understand maritime cultural heritage. The most prominent of these methods is investigative research of underwater cultural heritage. This includes submersed studies conducted by scuba diving, indicating the rapid advancements made in this field. In addition, physical and chemical analysis of cultural items has made it possible to understand where they were made and when the materials used to make them were obtained. Using these methods, we can now clearly identify the routes on which these cultural items moved among regions. This symposium will also address the application of these new research methods.

An exceptionally large number of researchers in Japan specialize both in Japanese locations and within the wider Asia-Pacific region, conducting research on maritime cultural heritage as described

Figure 7

Figure 8

Figure 9

Figure 10

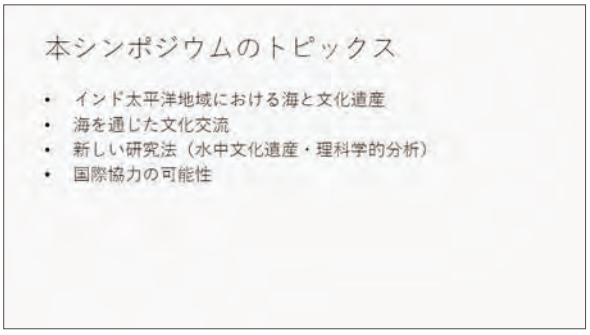

Figure 11

above.

To what extent can the findings of their research and these new research methods be used when moving forward to preserve the cultural heritage of other nations through international cooperation? I look forward to the discussion of possibilities such as these as well.

The purpose of this symposium is along the lines I have just discussed. I hope everyone will enjoy and benefit from today's symposium

⚓ Lecture 1

The Appeal and Significance of Research on Sunken Ships:

Time Capsules of the Ocean

SASAKI Randall
(Representative, Marine Archaeology Lab)

Born in Kanagawa Prefecture, he holds a Ph.D. from Texas A&M University (Underwater & Nautical Archaeology). His graduate studies focused on the traditional ship structures of East Asia, investigating archaeological sites in Japan and Vietnam related to the Mongol Empire's military incursions via the oceans. His research currently focuses on the management of global underwater cultural heritage, methods of investigating archaeological sites, and the utilization and public display of archaeological sites. He advocates the importance of protecting underwater cultural heritage in Japan and communicates research information overseas through lectures and writing. He has published multiple academic papers and written works for general audiences.
In 2021, he participated as an expert in a UNESCO workshop on underwater cultural heritage organized by Mongolia. He is also the founder of the Marine Archeology Lab, with which he works to promote the protection of underwater cultural heritage.

Today, I will talk about what underwater archaeology is and discuss exploratory methods for discovering archaeological sites and artifacts (Figure 1). People have searched for objects underwater since ancient times. Diving bells have been used since antiquity and medieval times but not in the pursuit of academic knowledge.

Figure 1

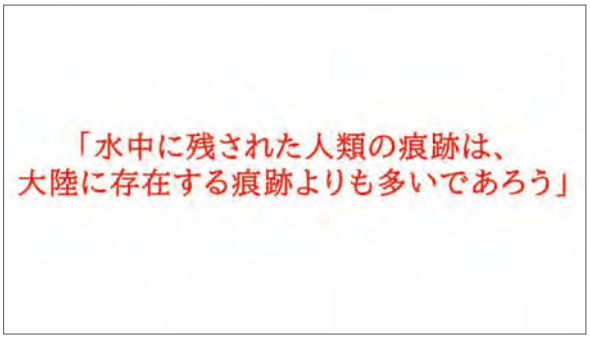

Figure 2

Sir Charles Lyell, perhaps the first person to proclaim the academic significance of the study of these underwater artifacts, stated the following: "For it is probable that a greater number of monuments of the skill and industry of man will, in the course of ages, be collected together in the bed of the oceans than will exist at any one time on the surface of the Continents" (Figure 2). Lyell, who wrote the *Principles of Geology*, is often mentioned in high school earth science textbooks and the like (Figure 3). Lyell spent a year traveling around the UK using records from insurance companies to search for lost objects from maritime accidents and shipwrecks, amounting to as much as 100,000 tons of cargo and other items. He argued that since even the present day had given rise to such a large amount of objects lost in the oceans, in the past many other objects must also

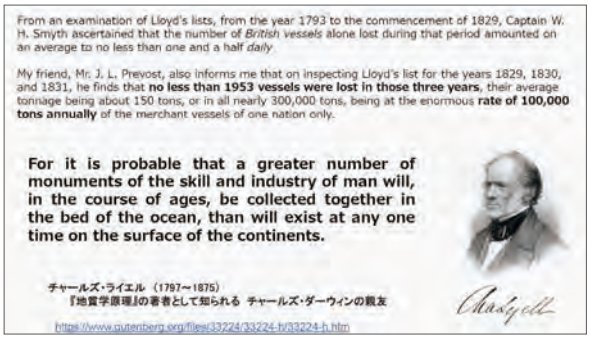

Figure 3

have been similarly lost.

To digress a little: Do you know when and which country enacted the world's first law related to underwater artifacts? (Figure 4). In fact, it was Greece in 1834 (Figure 5). It was just when Greece became an independent nation, coinciding with the rise of nationalism in the country. This law regarded these underwater artifacts as cultural heritage as well. In the past, artifacts had been removed from the Parthenon, and the idea that this should not be allowed to happen again led to these underwater objects also being regarded as Property of the State and protected as national objects.

Later, from around 1884, surveys were done on the Battle of Salamis site and other locations (Figure 6). However, the helmeted divers and others who were actually conducting the work were instructed to conduct these surveys by archaeologists who remained on land. At that time, the divers used prods and other tools to check if there were any artifacts underwater. These surveys, in which prods are inserted into the sand to check for objects, have also been conducted to check for undersea artifacts at sites such as Japan's Takashima Island. While the survey itself didn't produce significant results at that time, it was effective in providing momentum to similar efforts to locate artifacts underwater in the future.

For some time thereafter, World War II made it difficult to conduct research. From the 1950s, scuba diving became more mainstream (Figure 7). So archaeologists started diving themselves to do surveys. First, let's look at the Cape Gelidonya shipwreck artifacts in Turkey, which date back to 1200 BCE. Many damaged bronze items and similar objects were found here, so this may have been the world's oldest recycling business-perhaps an example of a commoner's ship.

The Uluburun shipwreck was also discovered in Turkey (Figure 8). About 100 years older than the Cape Gelidonya artifacts mentioned above, the ship was loaded with gold, beads, and other luxury items. This indicates that it was a ship of royalty or nobility. These are examples of two completely different types of trade being conducted using a common ship and a noble ship.

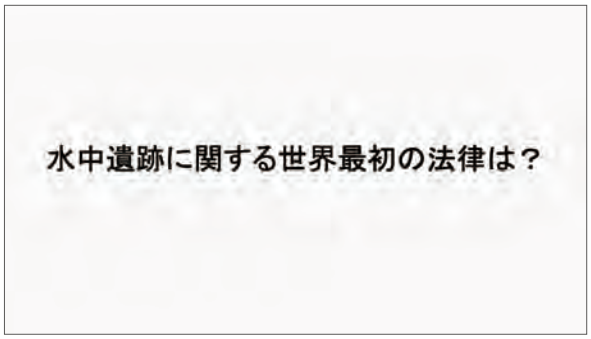

Figure 4

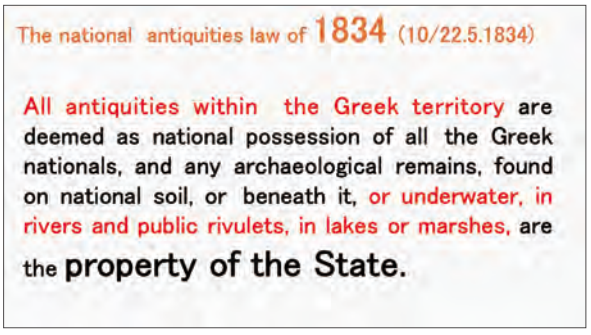

Figure 5

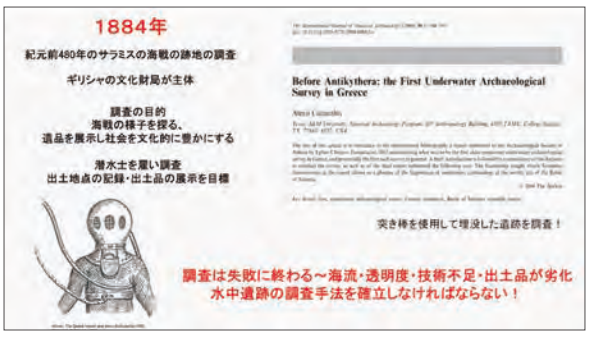

Figure 6

Figure 7

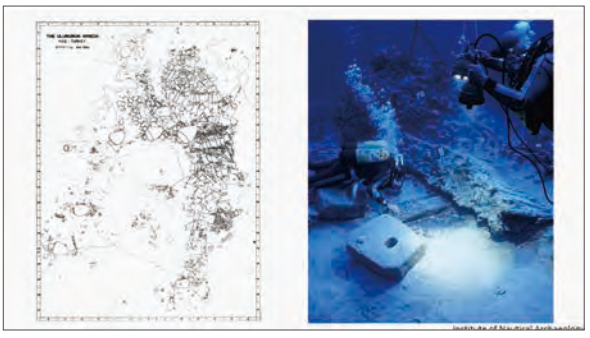

Figure 8

Let me explain Figure 9 in more detail: here I've noted the foundations of civilizations and the connection between civilizations and large rivers. Perhaps in school, you learned about the Indus and Mesopotamian civilizations, among others, and how these civilizations developed alongside rivers, which were the underlying factors for that development. These people used the rivers for interchange with other places. The rivers were used as highways, where ships were used to conduct trade, meaning that without the ships the rivers would have been of no use. I believe that it may have been the ships, rather than the rivers, that served as the foundation or basis for these civilizations. Ships existed from a time before the origins of farming, and they are extremely important in this regard.

In addition, as there is only so much space on a ship, whatever you bring on board a ship must have a use. Say you are going on a three-day trip within your country and you are thinking about what to pack in your suitcase: Will you bring three rice cookers with you? No, of course not. Similarly, people will likely only take what is essential on board a ship. Sunken ships are like a snapshot of the moment of distribution, meaning that whatever is there was definitely brought on board for a reason.

When thinking of distribution, I often liken trade to a tree (Figure 10). So just like the roots of a tree, many items are gathered at a port, and those gathered items are then transported to various other places, like the branches and leaves of a tree. Studying distribution and artifacts on land is basically a survey of the leaves and branches. So sunken ships are the trunk of the tree, and they give us a picture of the whole process of trade at a certain time in the past. Ports are also important places where items are gathered and also need to be considered along with sunken ships. One of the most exciting aspects of research on ports is how we perceive the transformation in trade from the stratigraphy of discoveries at ports over time. Sunken ship artifacts are snapshots of a point in time, and as such, they are a valuable resource in understanding the stratigraphy of port artifacts and in ascertaining how people traded and how it changed over time.

Professor George Bass, considered the "father" of underwater archaeology, sadly passed away in March 2021 (Figure 11). I was one of those fortunate enough to be among his last students. Professor Bass discovered the Uluburun and Cape Gelidonya shipwrecks mentioned earlier. While there were established fields of research on ships, nautical cultures, and maritime cultures, Professor Bass demonstrated the contributions that underwater archaeology, that is undersea artifacts, could make to the fields of history and archaeology. For his achievements, he was awarded the United States' National Medal of Science. This medal, which is likened to the United States equivalent of the Nobel Prize, stands as a testament to the widespread recognition and respect paid to Professor Bass in the United States and overseas for his achievements in underwater and oceanic cultural heritage.

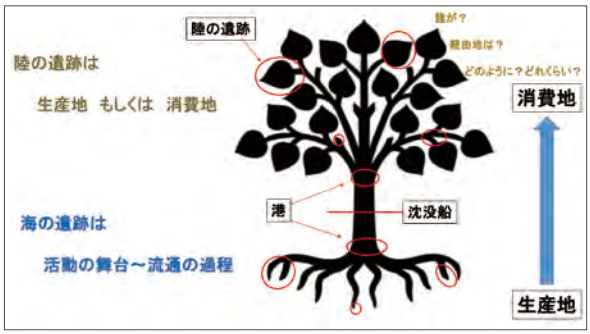

Figure 10

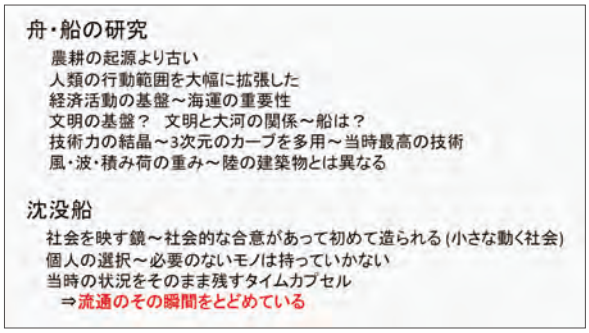

Figure 9

Figure 11

In English, there are several similar terms related to "underwater archaeology," which is the phrase I have been using (Figure 12). These include, "nautical archaeology" in reference to ships and "maritime archaeology" in relation to the oceans. So the term "underwater archaeology" essentially refers to the methods through which archaeology is conducted in relation to underwater objects. Maritime and nautical archaeology refer to the archaeological investigation of topics such as the relation between humanity and bodies of water (i.e., the oceans), ways in which people set sail for and adapt to new lands, as well as their adventurous spirit in tackling unknown oceans.

I will now touch on Japanese archaeological sites and artifacts (Figure 13). Going back in time to the Edo period, Kiuchi Sekitei produced a catalogue of his rock collection entitled *Unkonshi*, including the strangely shaped stones, flint arrowheads, and other rocks that he had collected from areas such as Lake Biwa. Later, in the Meiji period, when the paleolithic and Jomon-era Sone artifacts were discovered at the bottom of Lake Suwa in Nagano Prefecture, excavation surveys were conducted using boats. In the Taisho period, artifacts were discovered at Tsuzuraozaki on Lake Biwa and other places. These discoveries were the beginning of underwater archaeology in Japan.

Figure 12

Figure 13

Looking at the rest of the world, figures 14 and 15 present the Godavaya shipwreck in Sri Lanka, which dates to the period around the first century CE.

This was the Yayoi period in Japan, so shipwrecks from the Yayoi period probably looked similar. The ship was loaded with many bronze items and other objects. While this shipwreck was discovered relatively recently, I believe it will become an increasingly well known shipwreck over time. Elsewhere in Asia, many ships have been discovered in Korea, China, and other countries (Figure 16). Advancements in research imply that we are now able to determine factors such as where a ship was built, mainly through looking at the ship's cross section and the way the materials are joined, including whether nails were

Figure 14

Figure 15

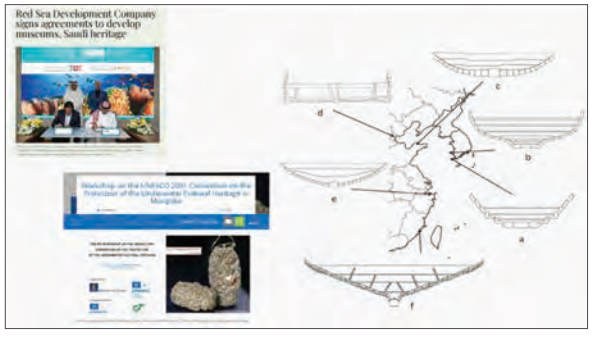

Figure 16

used.

The news has recently reported on the plans for the construction of a national underwater cultural heritage center and a national maritime museum in Saudi Arabia.

Even in a landlocked country such as Mongolia, there is a growing movement for the protection of underwater heritage. In September, UNESCO held a workshop on underwater cultural heritage. The workshop was attended by the top officials of Mongolia's national cultural heritage policy. I also participated in the workshop as an expert. It gave me a sense that Mongolia is rapidly moving toward ratifying the UNESCO Convention on the Protection of the Underwater Cultural Heritage.

Having once understood the importance of these artifacts, we should still consider how best to discover and excavate them. Here I will discuss the equipment used for exploring underwater archaeological sites. This is data from the same ship; the data at the bottom is from side scan sonar and that at the top is from multibeam sonar (Figure 17). Various investigative methods are used to search for artifacts (Figure 18). While the names listed here are somewhat technical, the Agency for Cultural Affairs in Japan is currently compiling a handbook on surveys of underwater artifacts, which may be of interest to those in search of further details. In this method, basically, a device is attached to the ship. The lines you can see here go back and forth at 10-meter and 20-meter intervals (Figure 19), covering the entire survey range, while continuously searching for any artifacts that might be there.

With side scan sonar, a so-called sonic survey, the device reads sound reverberations to determine if there is anything in the sea bed (Figure 20). While it is also possible to see fine details in this way through a magnetic survey, if the sea is rough, the devices will shake and the images will blur (Figure 21).

When viewing the side scanner data, imagine an aerial photo taken when the afternoon sun is strong. This photo would show, for instance, whether objects are trees or buildings from the

Figure 19

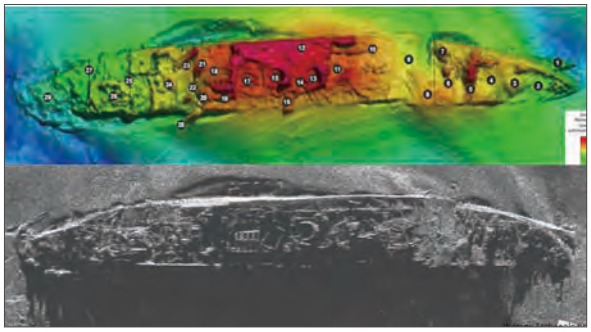

Figure 17

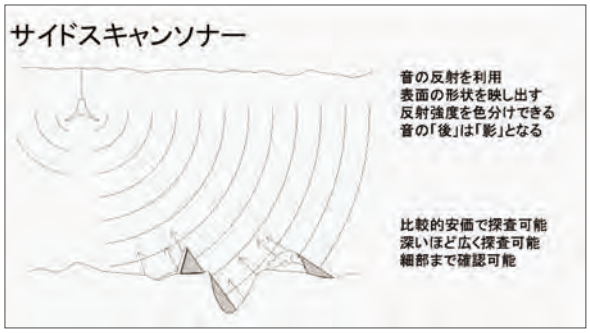

Figure 20

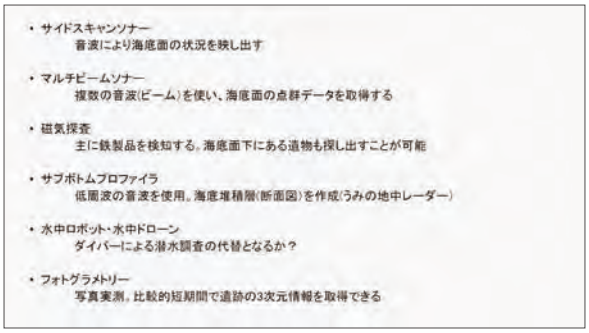

Figure 18

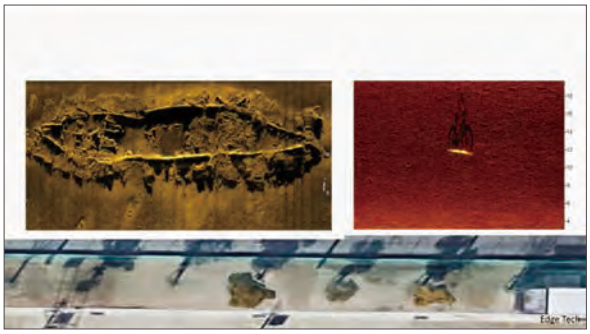

Figure 21

shadows reflected on the ground.

You could also measure other information such as size from the shadows' length and from other aspects such as the position and angle of the light source. For convenience, we can consider sound waves and light as similar here.

Next, let's discuss multibeam sonar (Figure 22). This device also uses sound waves, emitting multiple beams to obtain readings from various directions, grasping them as XYZ coordinates, essentially point group data. While the data must be post-processed, various perspectives can be used to extract a range of data in several ways.

This is a sub-bottom profiler (Figure 23). Put simply, it is like an underground radar for the oceans, visualizing a cross-section of seabed sediment. Those who have studied archaeology will likely know more about these underground radars. They enable a cross-section of the seabed sediment to be captured, essentially displaying the sedimentary layer of the seafloor only at the cross section below the seafloor surface at the point where the slice was taken. If there is nothing in the area where the slice was taken, nothing will be found. But if the sediment surface changes, or there are hard objects in soft soil, they can be detected.

Magnetic surveying is another method (Figure 24), which is used relatively often overseas.

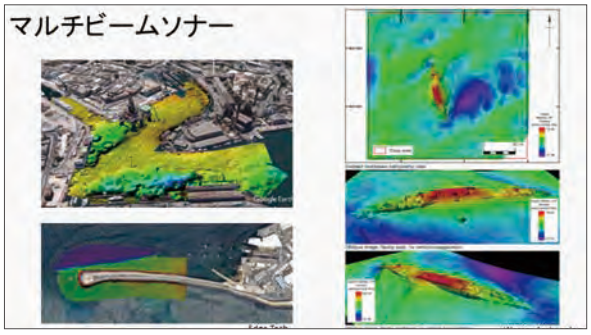

Figure 22

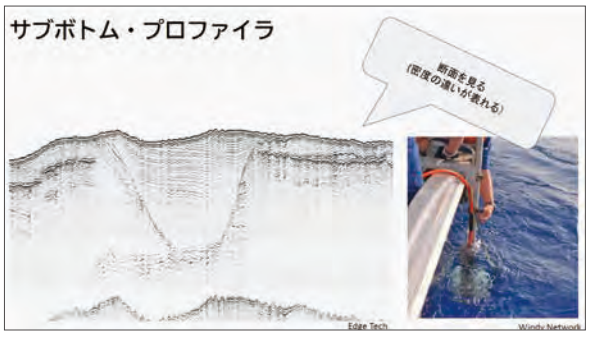

Figure 23

This is extremely effective when searching for metal objects such as anchors and cannon. It searches using magnetic response to iron and other materials, which can present difficulties in that it will respond similarly to both small iron objects nearby and larger iron objects far away (Figure 25). As shown in the previous photo, there are various solutions to this issue, such as lining up several magnetic survey machines, enabling the researcher to estimate the distance and direction of the embedded artifacts.

Other methods used recently include underwater drones (Figure 26). About a decade ago, it was quite difficult to operate underwater robots and drones. The angle of view was also narrow, and there were few qualified operators. More recently though, these machines have become much cheaper and are used increasingly

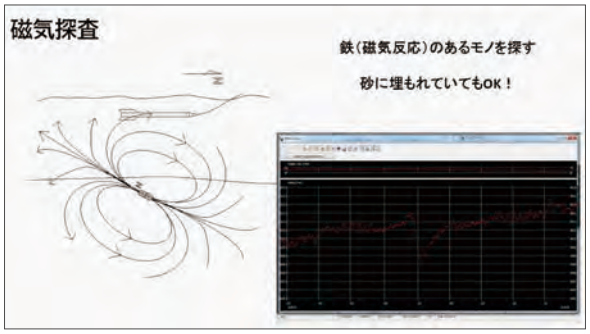

Figure 24

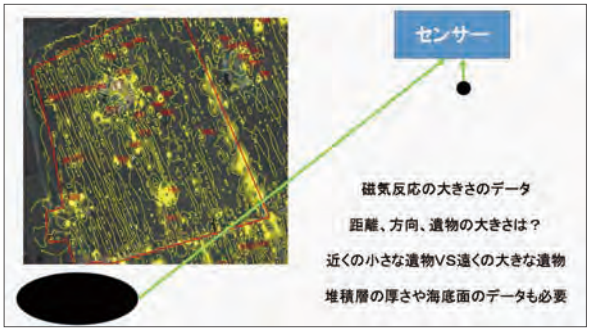

Figure 25

Figure 26

often in the private sector as well.

So I think we will see more diverse ways of using drones in the future.

Next, I will talk about recording methods (Figure 27). One method that has gained traction in recent years is photogrammetry, a type of photographic surveying in which thousands of photos are taken underwater and merged together to create 3D images. When it comes to methods of recording underwater artifacts, the best method is essentially one that anyone can use without training to create records simply. The phrase "underwater survey" may bring to mind images of large-scale investigations conducted with machines (Figure 28). However, these machines have become gradually less expensive, and various new ways to use them have also been discovered. They are fairly compact and can be connected by a USB to a store-bought laptop and submerged; as such, they make it relatively easy to take underwater pictures (Figures 29 and 30). A simple side scan sonar or similar device costs around 300,000 to 400,000 yen.

I will now summarize my presentation (Figure 31).

Actually, archaeologists aren't very good at searching for underwater artifacts. Through this, I mean that fishers, divers, or people involved in development projects tend to be better at searching for artifacts. Most underwater artifacts worldwide are initially detected by these people, from whom information is then received; archaeologists then work with exploration companies on these discoveries. More than a few discoveries are made during construction work or other such projects, and many underwater artifacts are discovered in the preliminary surveys for development projects (Figure 32). Developments such as offshore wind power generation have led to a boom in the discovery of underwater artifacts, with many thousands of artifacts discovered at sites in developed nations. Reclaimed land and other areas used in the past are being searched again, leading to the discovery of ships. A famous site is the World Trade Center, where the 9/11 terrorist

Figure 29

Figure 27

Figure 30

Figure 28

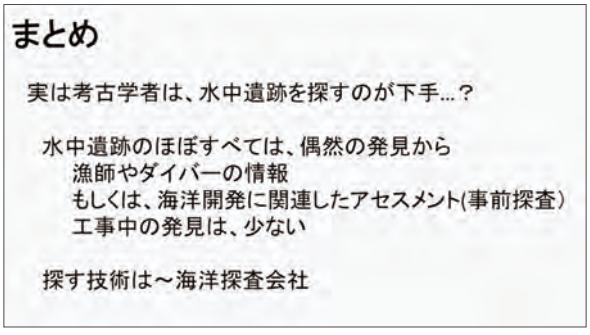

Figure 31

attacks occurred and where ships and items from the time of the American Revolutionary War are being discovered underground. Archaeologists do not search for artifacts; rather, they investigate whether objects already found are actually artifacts, working to explain further details and realize the significance of those objects.

Figure 33 presents the distribution and candidate sites for underwater artifacts, mainly from countries such as the Netherlands and the United Kingdom. In developed nations such as these, tens of thousands of underwater artifacts have been recorded. If you were to overlay a map of western Japan here, you would gain something of a sense for the similar potential for discoveries in Japan.

Underwater artifacts are not subjected to research simply as artifacts, which happen to be in the water (Figure 34). Sunken ships and underwater coastline ports are archaeological sites that do not exist on land. They are valuable sites containing artifacts from which we learn about maritime cultures and the connection between humanity and the oceans; as such, they must be protected. I hope to spread the word that the sea also contains precious artifacts.

I believe there is now a global trend toward discovering and protecting underwater artifacts using information from the general public and preliminary surveys for development projects.

We may assume that excavating underwater artifacts is extremely costly; however, they are largely excavated from areas being targeted for development projects. Ocean-based development project costs come to several hundreds of millions of yen; therefore, spending tens of millions on excavating underwater remains is not such a large cost in relative terms. On land, individual projects can often cost one or two million yen for excavation alone. So compared with that, I feel that the ratio of money spent on excavation in an ocean-based development project is quite low. We need to build a system that will thoroughly protect these precious artifacts. Thank you for your attention.

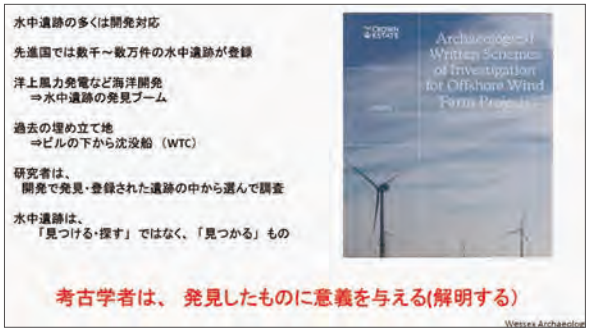

Figure 32

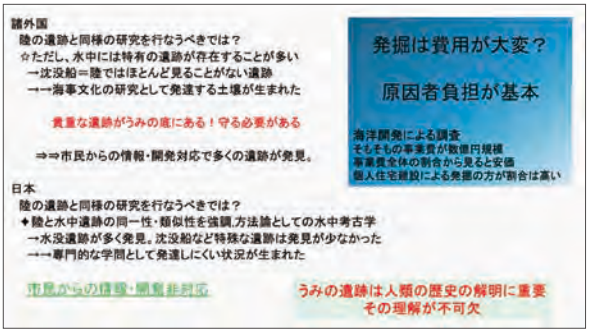

Figure 34

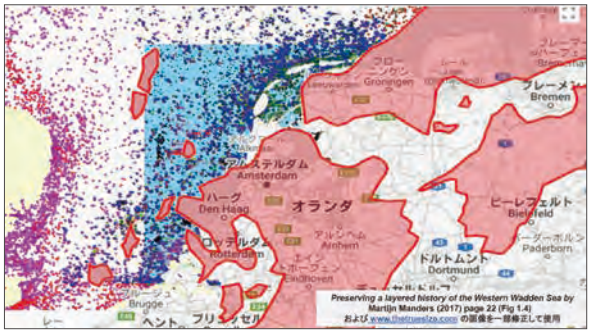

Figure 33

Lecture 2

Opening the Sea Route:
Voyages, and Shipbuilding

KIMURA Jun
(Associate Professor, School of Marine Science and Technology, Tokai University)

PhD from Flinders University. After working as a researcher at the Asia Research Center at Murdoch University in Western Australia and at the Field Museum of Natural History in Chicago, he was appointed to the School of Marine Science and Technology at Tokai University. He specializes in the research on archaeological materials of ship hulls and artifacts of sunken ships using marine and underwater archaeological methods, as well as the clarification of traditional ship structures and shipbuilding methods of East and Southeast Asia. As a member of the Agency for Cultural Affairs Underwater Archaeological Artifacts Survey Review Committee, he is involved in the identification of Japanese underwater archaeological artifact locations; as an expert advisor for the ICOMOS Sub-Committee on International Underwater Cultural Properties, he advises on the protection and management of underwater cultural heritage in the Asia region. His major publications include *Archaeology of East Asian Shipbuilding*, *Introduction to Nautical Archeology: Methods and Practices* (Japanese), and *Illustrated Underwater Ruins of the World* (Japanese).

In my presentation today, I will talk about the opening of ocean routes as considered in terms of the importance of ships, navigation, and shipbuilding (Figure 1).

Let's see why we think about ocean routes today (Figure 2). There has long been an interest in ocean routes in Japan in the context of research on the history of East-West exchanges, studies of trade, ceramics, and other such fields, with significant quantities of research conducted. Elsewhere, outside Japan, research on the Silk Road is currently thriving. This overseas research on the Silk Road is continuing as an extension of research on landborne Silk Road heritage.

In conjunction, there has recently been particular interest in the Maritime Silk Route (in this context, the word "route" is used rather than "road"), with movement toward an application for world heritage status for the Maritime Silk Route. Sustainable development is a topic often mentioned in present-day society; number 14 of the Sustainable Development Goals is "Conserve and sustainably use the oceans, seas, and marine resources for sustainable development." As such, there is a growing international interest in the marine environment and its resources. The United Nations Decade of Ocean Science began in 2021 and will run until 2030. It includes a move toward preserving the cultural resources of the oceans, alongside conservation of the natural resources of

Figure 1

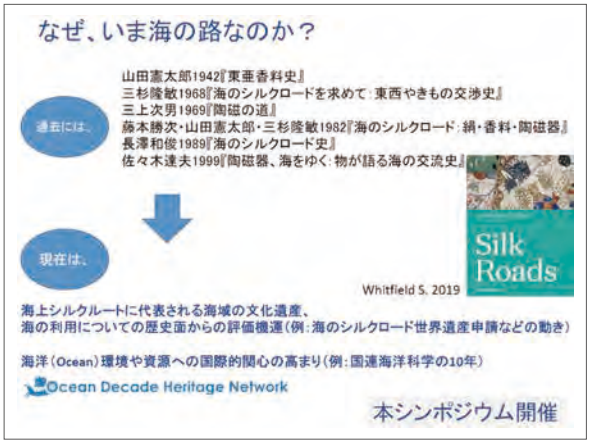

Figure 2

the oceans, which can be linked to the significance of holding this symposium.

When considering ocean routes, studies have long emphasized the connections among marine areas (Figure 3). Actually, looking at human history, the connections among marine areas are closely related to the discovery of seasonal winds and ocean currents. A specific example is the discovery of a seasonal wind called the Hippalus wind. Around the start of the Common Era, this wind was used to navigate from the Mediterranean Sea to the Middle East and Indian Ocean, causing maritime trade to prosper in these regions. Some 1,500 years later, the discovery of the Japan (Kuroshio) Current and seasonal winds helped create a route across the Pacific Ocean. At the same time, navigation techniques were being developed. This is an example of a sea chart that was created in the late 13th or early 14th century. It shows linear routes to important port towns for voyagers. By contrast, the Cantino planisphere from 1500 already has information for direct travel to destinations, as well as latitude-longitude and other information. The development of these navigation techniques and the advantages of using ships are described in Figure 3. These factors have played a monumental role in the history of humans.

Why, then, do we need to take another look at ships, navigation, and shipbuilding?

This question is related to the perspectives and discussions of the archaeology of ships (Figure 4). In the past, there was an immense interest in the movement of objects via the oceans. More recently, research has significantly expanded to include objects and the discovery of new archaeological materials in the form of the ship hulls that transported these objects, as well as the underwater excavation of artifacts of sunken ships, pointing out the significance of considering ships, navigation, and shipbuilding.

My field of study, ship archaeology and related topics, considers just this role of ships in the movement of objects and people. In recent years, an increase in ship hull archaeological materials and research thereon have brought to light various facts.

So what can ship hull archaeological materials tell us (Figure 5)? In this talk, I use the term "ship hull archaeological materials": conducting detailed research on the ship timber remaining in sunken ships and on the ship hull artifacts can clarify the history of ship construction (shipbuilding) for use in inland waters and open seas. There is an exhibit of an ancient Egyptian boat called the Dashur boat at the Field Museum of Natural History in Chicago, my previous place of work. Looking closely at the boat's construction, you can see that

Figure 3

Figure 4

Figure 5

wedges and tenons were used to join the parts together. Used in ancient Egypt to build river boats, this is an extremely ancient shipbuilding technique from around 1850 BCE.

Ship hull archaeological materials are discovered underwater as well as on land.

Figure 6 presents an example of one of the world's oldest sunken ships. Looking at it, we can see that before it sank, this ship was engaged in the trade that supported the development of the Bronze Age civilization in the Mediterranean Sea and sailed these waters based in the eastern Mediterranean Sea, traveling to Egypt as well. Dr. Sasaki mentioned this in his talk about the ships of royalty and nobility; this ship also contains glass ingots and other extremely precious and valuable items of trade at that time. At the same time, copper ingots, the raw materials of the bronze supporting the Bronze Age civilization, were also discovered on this ship. The people who actually transported these objects are thought to have been of Middle Eastern origin, from the area which is now the Syrian coast.

Let's consider how the world's oldest ship was constructed (Figure 7). The mortise and tenon shipbuilding technique in the Mediterranean dates to the Late Bronze Age, 3500 years ago, and was revealed from a detailed analysis of the archaeological materials of ship hulls.

Next, let us consider the Japanese archipelago and the ship timbers discovered there and what they tell us about construction techniques (Figure 8). Looking at dugout canoes and the ships subsequently developed, recent research has revealed that ship parts were joined by tightly binding with tree bark, rather than with the mortise and tenon technique. Discussions on the archaeology of ships in Japan often adopt an evolutionary perspective, emphasizing the morphological development of ships from dugout canoes to semi-structured and then structured ships. Rather than adopting this perspective, if we instead focus on the shipbuilding techniques indicated by the ship hull archaeological materials, it then becomes important to consider the origins of these techniques and how they developed in Japan.

Although the mortise and tenon technique was used often in the ancient Mediterranean region, other techniques that excavated ships have shown to be in widespread use include sewing together the ship timbers with string and other materials (Figure 9). This boat was not excavated from the ocean, but at the French port city of Marseilles, at a location once underwater and now on land. Detailed study indicates that the timber parts were sewn together in a seam-frame construction; this is what is referred to as a sewn boat. From a recent study of ship hull archaeological

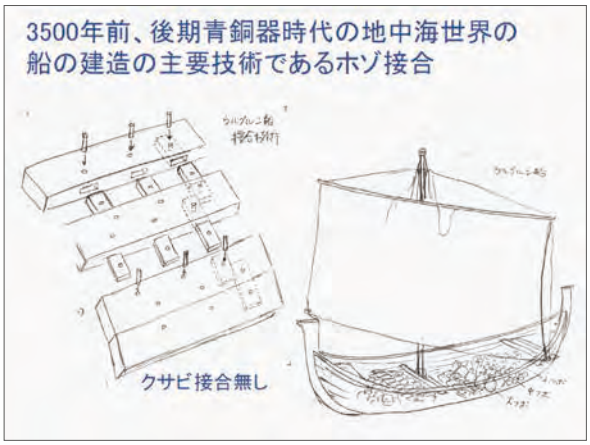

Figure 7

Figure 6

Figure 8

materials, we can tell that the techniques used in this sewn boat were also widely applied throughout human history. Some of you may have already heard of *The Periplus of the Erythraean Sea*, an ancient guidebook (1st century CE) that describes ocean trade routes as told by Greek sailors in Egypt. It describes the seam-frame construction of sewing together the timber parts, as used in the Middle East.

Recent underwater archaeological surveys have been using new diving techniques to do deep-sea exploration, finding merchant ships from extremely ancient times, such as ancient Greece and Rome, in the deep areas of the Black Sea (Figure 10). A study of these sewn ships can be expected to clarify the periods of antiquity and the locations in the Mediterranean and elsewhere in which they were used.

With regard to sewn boats, let us now focus on the Indian Ocean and marine areas in Southeast Asia (Figure 11). The example of dhow ships indicates that the technique of sewn ships spread extensively throughout the Indian Ocean; recently analyzed examples of ship hull archaeological materials indicate that the same types of sewn ships also sailed the waters of Southeast Asia (Figure 12). The seam-frame construction and sewing techniques used to join together the timber parts of ships have also been found in archaeological materials from around the 7th to 8th century that were excavated in Thailand.

Figure 12 is an enlarged photo of the Phanom Surin ship hull excavated in Thailand. A detailed examination of the ship's hull indicates that the timber sections were sewn together with string braided from coconut fiber. The period from the 7th to 8th century coincides with the Tang dynasty in East Asia, during which the Maritime Silk Route sea trade network was developed (Figure 13). The names of several ships appear in the literature from this period, such as the Brahman ships, Persian ships, and Kunlun-po ships. The actual form of sewn ships has become clear based on those excavated in Thailand and the 9th-

Figure 9

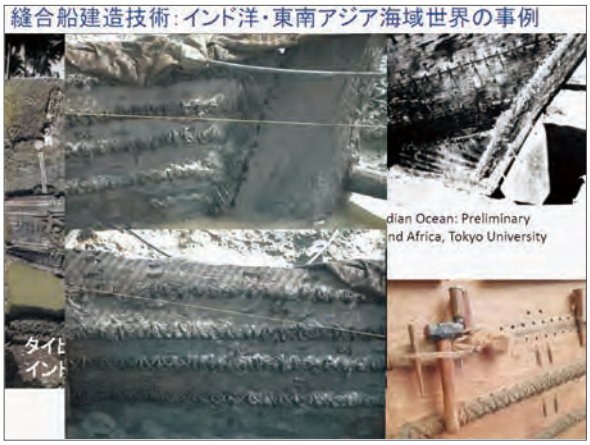

Figure 11

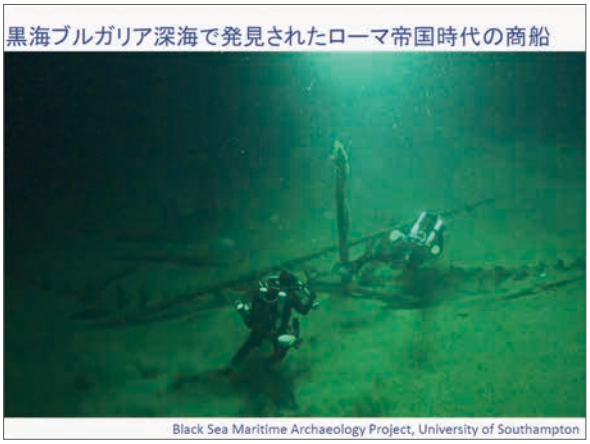

Figure 10

Figure 12

century Belitung shipwreck discovered in the Indonesian seabed. Persian and other merchant ships from Arabic and Islamic countries were probably also sewn ships, a fact that is gradually coming to light thanks to the recent analysis of ship hull archaeological materials.

So what kind of ships were the Brahman and Kunlun-po ships?

Much is unknown about Brahman ships, but Chinese-language sources describe how the Kunlun-po ships were used by the Kunlun people of Austronesia. We can also get an idea of the kinds of ships used to sail the oceans of Southeast Asia from the images of the ship hull archaeological materials recently excavated there.

Figure 14 depicts an example of a sunken ship I studied with fellow Japanese researchers, constructed with ship timber from the late 8th to early 9th century, salvaged offshore from the village of Chau Tan in central Vietnam. We can see that it is extremely similar in structure to the ships discovered in other areas of Southeast Asia (Figure 15).

Specifically, we can see that the ship's timber sections are joined together using wooden nails called dowels. This is the Punjulharjo Ship excavated in Indonesia. It is being studied by researchers from the École française d'Extrême-Orient.

It is an extremely well-preserved 15-meter-long archaeological ship hull. The timber of this ship, excavated in Indonesia, and that of the Chau Tan ship found in Vietnam share extremely similar features. When reconstructed, the Vietnamese Chau Tan ship is about 22 meters long. There are holes in the seams of the timber sections (Figure 16). These are probably the holes from the wooden dowels used to join them.

The literature indicates that the string made from coconut fibers was often used to bind Kunlun-po ships. Similarly, ship hull archaeological materials excavated in Southeast Asia indicae that palm fiber string was used to reinforce the timber. They also demonstrate that wooden dowels were

Figure 13

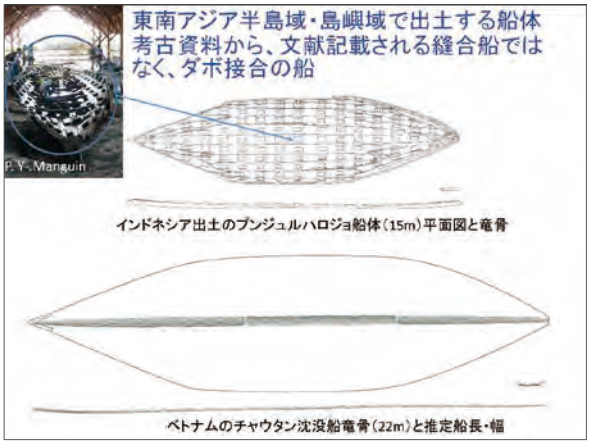

Figure 15

Figure 14

Figure 16

used to join the timber sections. An often-cited typical example of a ship from Southeast Asia is seen in the Borobudur mural: based on current research findings, we can say that this ship was probably also joined together with wooden dowels.

Moving forward in time to the Middle Ages in East Asia, a new form of ship emerged and came into frequent use (Figure 17). These ships were used by Chinese Song-dynasty merchants, also called Song sea traders, who built ships in their homeland along the shore of the East China Sea and were active in sailing to foreign lands during this time of trade. As seen in Figure 17, the ships used during this period tapered at the keel to a V-shape. These ships were built to carry voluminous loads of cargo, facilitated by means of an armor-like structure with multiple panels layered on the exterior or by the use of steel pins in the construction of the hull, enabling internal partitions called bulkheads. This cross section of the sunken ship archaeological material reveals a V-shaped structure and multiple panels on the underside. Figure 18 presents an example of a ship excavated offshore in Guangdong, called the Nanhai One. A Chinese trading ship that sank in the Song period is similar to a ship from Quanzhou that was excavated in the 1970s, with its wide V-shaped structure with multiple exterior panels.

Archaeological materials from the hulls of these East China Sea ships in the Middle Ages have also been discovered in Japan: the second ship excavated from the Takashima Kozaki Ruins, a famous relic of the Mongol invasions, was a sturdy ship likely commandeered during the Southern Song dynasty (Figure 19). A detailed analysis of these ships indicate a similar structure

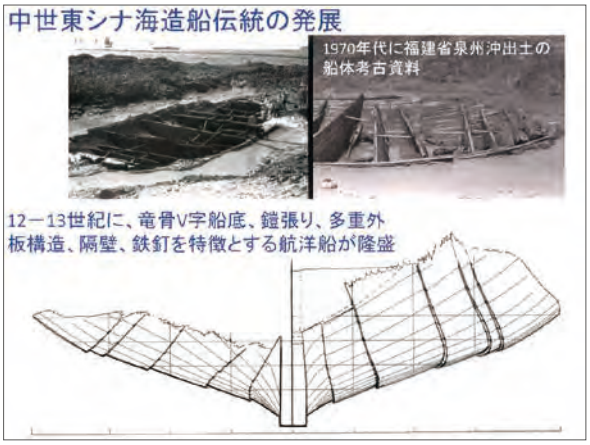

Figure 17

to the Nanhai One and Quanzhou ships. Figure 19 depicts a 3D replica of the second Takashima ship. To further illustrate this by referring to the Illustrated Account of the Mongol Invasion (an illustrated handscroll), it is thought that this form of ship was used during the Mongol invasions of Japan (Figure 20).

Shipwreck materials from the 14th century following the Mongol invasions are scarce across

Figure 18

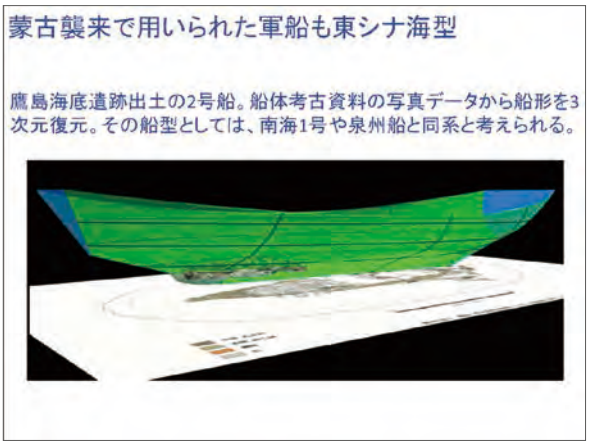

Figure 19

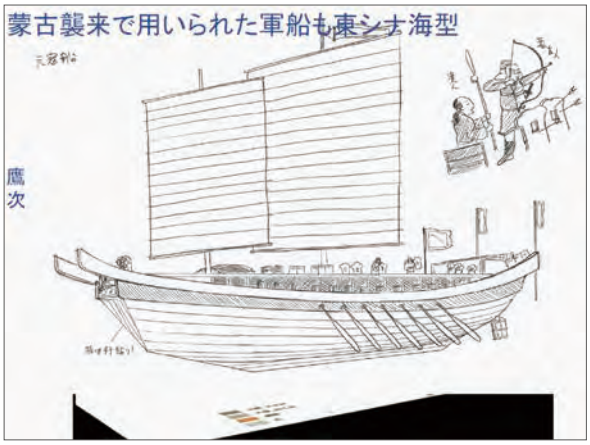

Figure 20

the entire Asian marine region, and it is only recently that undersea excavations of shipwrecks in Singapore have been undertaken, associated with blue-and-white porcelain from the Yuan Dynasty (Figure 21).

An increasing number of shipwrecks from the 15th century have been discovered. Recent excavations have confirmed that during this period, hybrid-type trading ships were used, built using a combination of techniques from different marine areas. These hybrid trading ships have been discovered in the seas of Southeast Asia (Figure 22). The shipbuilding techniques of East Asia and Southeast Asian seas were combined to create a new hybrid type of trading ship, and it is these sunken ships that are being discovered on the seabed.

This slide indicates an example from the Philippines. These hybrid ships were used over a long period of time historically in Southeast Asia (Figure 23). These hybrid ships are being discovered not only in the waters of Southeast Asian islands but also in peninsular waters. Figure 24 indicates an early 17th century shipwreck from Bang Kachai Bay, Thailand. These ships from Southeast Asia eventually sailed to Japan as well.

The ship excavated in Thailand contained an immense amount of timber called sappanwood (Figure 25). The literature states that sappanwood was imported from Southeast Asia by the Ryukyu Kingdom and so on; the study of ship hull archaeological materials indicates that this sappanwood was likely transported by these hybrid trade ships.

However, the study of ship hull archaeological materials is in fact experiencing difficulties at present (Figure 26). In some areas of Asia, these materials are mostly not being properly conserved, and there are reports of excavated materials just being discarded. While there is a growing global interest in cultural heritage of the oceans, there are also many issues in this regard in terms of research and protection.

This concludes my presentation.

Figure 21

Figure 22

Figure 23

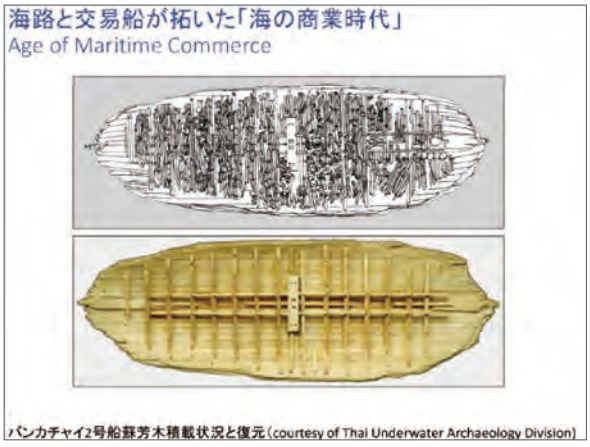

Figure 24

Figure 25

Figure 26

⚓ Lecture 3

Glass Beads Brought Across the Oceans:

East-West Trade and the Road of Glass

TAMURA Tomomi
(Principal Researcher, Imperial Palace Sites Investigation Department,
Nara National Research Institute for Cultural Properties)

PhD in conservation science from the Graduate School of Human and Environmental Studies, Kyoto University. After completing her doctoral research, she joined the Nara National Research Institute for Cultural Properties in July 2009 and worked there as a researcher at the Conservation and Restoration Science Laboratory of the Center for Archeological Operations from April 2010. In April 2017, she was transferred to Archeology Section 1 of the Imperial Palace Sites Investigations Department. She is currently working as a principal researcher in the same department and as an expert in cultural property science and conservation science. She specializes in the analysis of glass bead materials and conducts classification research on glass beads excavated in Japan. She is currently engaged in research seeking to clarify chronological changes in glass bead material in the Japanese archipelago as well as the areas of their production and historical trade routes. She received her PhD (Human and Environmental Studies) from Kyoto University in 2013.

I am TAMURA Tomomi of the Nara National Research Institute for Cultural Properties. At today's symposium on "Maritime Network and Cultural Heritage-People and Objects Connected by Oceans," I will discuss "Glass Beads Brought Across the Oceans: East-West Trade and the Road of Glass" (Figure 1).

Let me briefly outline my presentation today (Figure 2). I will discuss Indo-Pacific beads as glass beads that were brought across the oceans. This is perhaps the first time many of you have heard of Indo-Pacific beads, so I will start by explaining what they are. Then I will use the chemical analysis in which I specialize to introduce the material characteristics of Indo-Pacific beads and then consider trade routes based on their distribution as clarified through similar case studies in Asia. Although I will mainly talk about maritime trade in today's presentation, as a comparison, I will also briefly discuss what kind of beads were distributed inland in the Eurasian continent. In summary, I will discuss the study of glass beads excavated dating from ancient times, particularly in my specialty areas of the Yayoi through the Kofun periods of Japanese history, roughly from the 3rd century BCE to the 6th

Figure 1

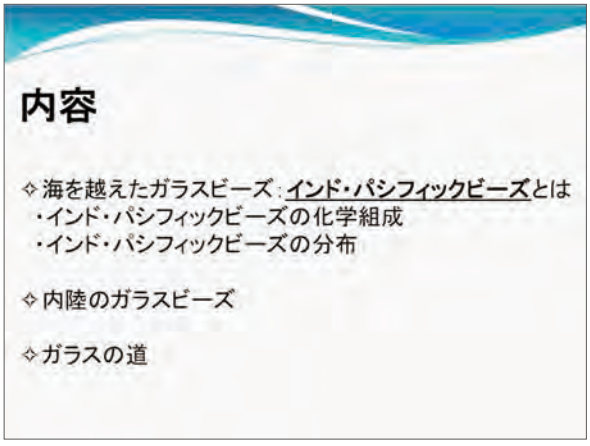

Figure 2

century CE.

I will summarize the routes through which these glass beads entered East Asia.

We know that glass was actively traded through land and sea routes and widely distributed throughout Eurasia. All the glass in the Figure 3 photo was excavated in Japan. Over 600,000 glass items dating from the Yayoi period to the Kofun period have been discovered in the Japanese archipelago, in particular from tombs. Vessels have been discovered only in very small quantities; most of the items are glass beads, referred to in Japanese as tama. The vast majority of these glass beads are small, monochrome items referred to as kodama.

The archaeological surveys conducted thus far indicate that glass beads with similar features were distributed in the West from the East Coast of Africa through to Southern India and across the coastal areas of Eurasia as far as Southeast Asia. Recently, we have also learned that these areas of distribution extended to East Asia, the Korean peninsula, and the Japanese archipelago in large quantity.

Figure 4 depicts the so-called Indo-Pacific beads. Looking at the specific features of these glass beads, they are defined as beads made using the "drawing method, creating small, monochrome beads with a diameter of 6 mm or less (Figure 5). This "drawing method" is a special technique involving making a long glass tube and reheating the split-off sections to create beads. These were once called trade wind beads. When it became known that these beads were widely distributed mainly from the Indian Ocean to the Pacific Ocean coastal areas, they were renamed Indo-Pacific beads by researcher Peter Francis Jr. in 1989-90. There are various theories as to the origins of these Indo-Pacific beads, but now thanks to the discovery of what is thought to be their oldest production site-the Arikamedu site in Southern India-it is thought that they were first made around the 3rd century BCE, with production then expanding throughout Southeast Asia. Incidentally, the oldest Indo-Pacific beads to have been discovered in Japan are from a 3rd century BCE burial jar in Northern Kyushu. Although the start of production of Indo-Pacific beads in India likely predates this somewhat, either way, it seems remarkable that these Indo-Pacific beads arrived in the Japanese archipelago quite soon after their production began.

I actually visited the Arikamedu site in 2013, as you see in Figure 6. The site is in the suburbs of Pondicherry (now Puducherry) in Southern India.

These archaeological artifacts discovered there are currently on display at the Puducherry

Figure 4

Figure 3

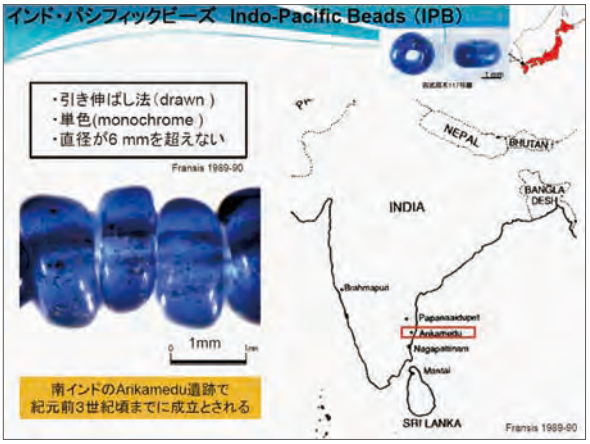

Figure 5

Museum (Figure 7). Vast amounts of Indo-Pacific beads were discovered at this site, as well as numerous glass materials and tube-shaped incomplete items. It is clear that the finished items (i.e., beads) are very similar to those items excavated in Japan. Similar production site artifacts have been discovered throughout Southeast Asia, and production is thought to have spread at least as far as Thailand, Myanmar, and Vietnam. Currently, there is still no clear evidence to indicate whether the production of Indo-Pacific beads reached Southern China. For instance, Figure 8 presents glass beads excavated from the Mupon site in Myanmar.

In addition to glass beads, glass tubes and materials and numerous other items have been discovered, so it is clear that beads were produced here. By contrast, in Far East Asian areas such as the Japanese archipelago and the Korean peninsula, although a large amount of finished products have been discovered, the excavation surveys so far have found no production site artifacts including unfinished items or glass materials. Based on this, we can assume that the vast number of Indo-Pacific beads excavated in Far East Asia, such as in the Japanese archipelago and the Korean peninsula, all entered these areas as finished products.

In summary, Indo-Pacific beads with a common production method were distributed in the Eurasian coastal areas and had already reached the Japanese archipelago by the 3rd century BCE (Figure 9). As there have been no unfinished goods, glass materials, or other items used to make beads found in East Asia, it is thought that these beads entered the area having been produced elsewhere.

So where were the beads made and by what route did they reach Far East Asia, including the Japanese archipelago? One clue is the distinctive material qualities of glass, basically its chemical composition (Figure 10).

Now, I'd like to talk briefly about analysis. It is

Figure 6

Figure 8

Figure 7

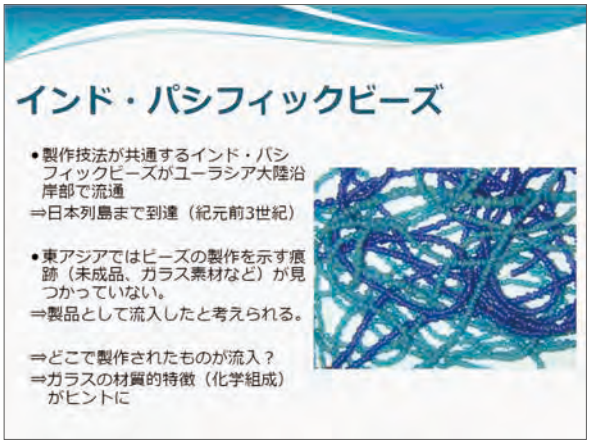

Figure 9

thought that glass was invented around 3000 BCE in West Asia (Figure 11). The main raw material used to make glass is a substance called silicon. A typical example of a material containing silicon is quartz, which is a crystalline mineral. The main materials actually used included clustered crystals, sand with a high quartz particle content, and so on. However, melting quartz alone requires extremely high temperatures of around 1700°C or more. As it is not possible to achieve such high temperatures using ancient techniques, the melting temperature must be lowered. Various melting agents (known as "flux") are added to lower the melting point temperature; they contained lead, potassium, or sodium. The glass then takes the name of the materials used to make it, as in lead glass and potassium glass. Glass made of sodium is called soda glass.

As for the specific raw materials, galena is the lead-based material used, and the mineral potassium nitrate is the potassium-based material.

Figure 10

Figure 11

In the case of sodium, there are many including a substance along the lines of burnt plant ash and the salt that forms when a lake dries up. A particularly well known substance is "natron" from the Natron Lakes in Egypt; although different from table salt, it still contains a lot of sodium. It is thought that these substances and materials were used to make glass. The types of raw materials used also depend on the production areas and their varying traditions. Thus, identifying the raw materials used by their chemical composition enables a rough identification of the production area as well. For instance, China has traditionally made lead glass using lead, while potassium glass made using potassium nitrate is distinctive to India and Southeast Asia. Soda glass made with natron is notably from the Mediterranean Sea, and soda glass made with plant ash is a characteristic of West and Central Asia. I have simplified the actual situation somewhat, as to go into detail would take up my whole presentation, but I hope this gives you the general idea.

Figure 12 presents the findings of analytical surveys of the glass beads distributed across the Japanese archipelago from the Yayoi to Kofun periods, classified by their chemical composition.

The color coding in Figure 13 denotes the production areas based on the characteristics of the materials used. The green text indicates materials that have the characteristics of glass made in India and Southeast Asia.

Figure 14 indicates a map with color coding. The figure includes photos of the typical products of these areas. Looking at these groups classified by chemical composition, there is a clear connection between the type of product and the

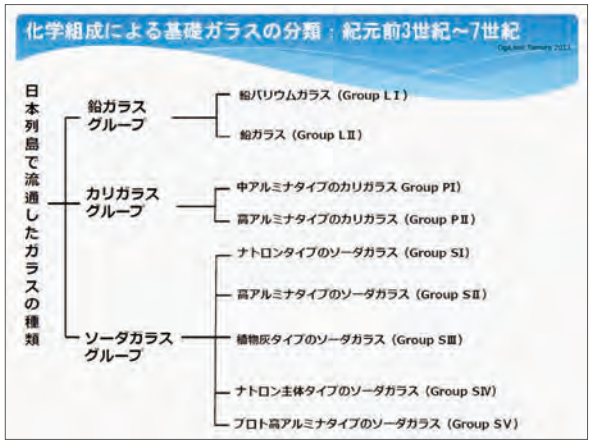

Figure 12

methods used to make it. Basically, glass items with the material characteristics of glass made in India and Southeast Asia are mostly Indo-Pacific beads. Conversely, no typical Indo-Pacific beads have been found among glass with the material characteristics of other areas. We also know that there are many different types of glass composed of the materials made in India and Southeast Asia. Basically, it can be said that there were also several production areas for Indo-Pacific beads.

Next, I will take a closer look at the connection between the materials of Indo-Pacific beads and their production areas (Figure 15). First, the Indo-Pacific beads made from potassium glass were the earliest to enter Japan (Figure 16).

They arrived in large quantities: over 100,000 have been discovered. The chemical composition of these potassium glass beads distributed in Japan can be roughly divided into two categories (Figure 17). Each of these categories has been found to correspond to different color tones of glass. The timing of the entrance of these two types of potassium glass beads into the Japanese archipelago also follows different patterns and rhythms in terms of the numbers of beads found. The earliest potassium glass beads to enter Japan are shown in navy blue in the figure. As the composition and rhythm of distribution differ, we can assume that the two types of potassium glass beads are from different production areas.

Comparing the distribution of products and examples from analyses conducted overseas, the potassium glass beads shown in light blue have a similar chemical composition to the glass found mainly from Southern China to Northern Vietnam; it is therefore highly probable that the glass beads were produced in these areas (Figure 18). Meanwhile, while there have long been various theories regarding the origins of the potassium glass beads shown in navy blue, the previously mentioned Arikamedu site in Southern India has a lot of glass with a similar chemical

Figure 13

Figure 15

Figure 14

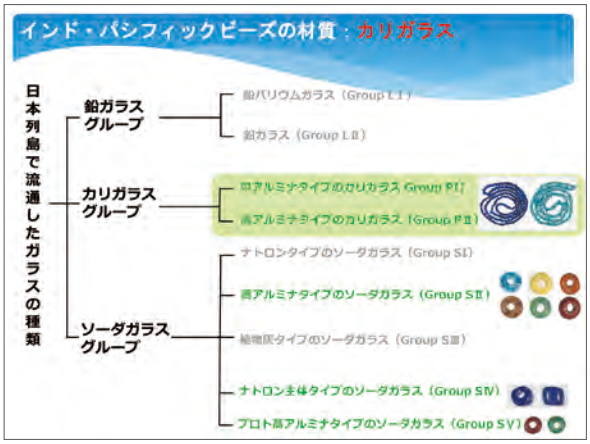

Figure 16

composition, and the current prevailing theory is that they were probably produced in Southern India.

A noteworthy point is that the volume of distribution of both types of beads in the Japanese archipelago rapidly increased in the 1st century CE (Figure 19). *The Periplus of the Erythraean Sea*, previously mentioned by Dr. KIMURA, describes the discovery of the Hippalus trade wind around the 1st century and how it led to dramatic advances in navigation techniques. The rapid increase in potassium glass from the south also occurred in Far East Asia around the 1st century, and we can therefore suppose there was some kind of connection between this rapid increase and the advances in navigation techniques during that period.

Let us also briefly discuss the distribution of products, as seen from a detailed examination of the distribution routes of Indo-Pacific beads. Using mainly the materials my team and I have analyzed, we have plotted the areas in which Indo-Pacific beads have been excavated in Figure 20. As you can see, many of them are in the coastal areas from India to Southeast Asia. Large quantities of Indo-Pacific glass beads similar to those in the Japanese archipelago have also been found in the southern Korean Peninsula. Meanwhile, a relatively large amount of Indo-Pacific glass beads have been found in China in areas such as modern-day Jiangxi in the south and coastal areas further south of the Jiangnan Region. However, particularly in the period corresponding to Japan's Yayoi period, in the Zhongyuan central plains region of the Han empire, where the key cities of Luoyang and Chang'an were located, almost none of these beads have been found.

As for inland Eurasia, completely different kinds of glass beads were distributed there. Figure 21 depicts glass beads excavated from a Xiongnu tomb in Mongolia around the start of the common era. At a glance, you can see that their characteristics

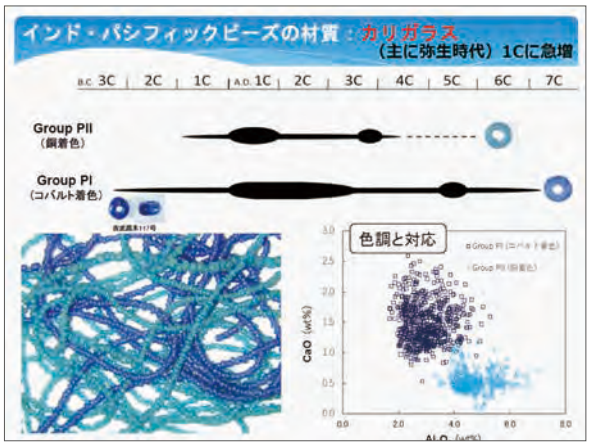

Figure 17

Figure 19

Figure 18

Figure 20

differ from those of Indo-Pacific beads. Materials analysis indicates that the majority of the Xiongnu glass beads are natron glass from the Mediterranean or what is referred to as Roman glass (Figure 22). Similarly, vessels made with Roman glass, stone products, other decorative items made with lapis lazuli, and other items found in large quantities in the Mediterranean were also found in the Xiongnu tomb.

The second most widely found variety of Xiongnu glass beads are those made with plant-ash glass (Figure 23). The beads thought from the characteristics of their chemical composition to have likely been made in Central Asia are those second most widely found.

It is not the case that there is absolutely no glass from the south (Figure 24). But it is extremely scarce in relative terms, and the distribution of a limited variety has been confirmed. The somewhat unusual orange glass shown here is among these, as well as these small beads with a very dark purple coloring, which are also Indo-Pacific beads. So we can say that a certain amount of these beads from the south were distributed up to the Mongolian plains via inland routes. However, the navy blue and light blue potassium glass beads found in large quantities in Southeast Asia and the Japanese archipelago are not found in the Xiongnu tomb site.

We can assume that many of these beads were brought to Far East Asia by the sea trade that connected coastal areas.

Going back to the Kofun period, from around the 4th to 6th century CE, soda glass Indo-Pacific beads were distributed in large amounts (Figure 25). Many of these beads were made from soda glass with a high alumina content, a chemical composition typical of beads from India and Southeast Asia. This soda glass with a high alumina content was the most general type of glass in Southeast Asia, with its high aluminum and low calcium content (Figure 26). Another

Figure 21

Figure 22

Figure 23

Figure 24

feature is color variation: an extremely colorful array of glass has been found. These examples were all excavated in Japan, but glass beads with similar characteristics have also been excavated in Southeast Asia.

As an example, here are some materials excavated from the Angkor Borei site in Cambodia (Figure 27). Angkor Borei is the remains of what is thought to have once been the capital city of the Kingdom of Funan around the 5th or 6th century. There is now a museum at this site, with glass artifacts on display. Many typical Indo-Pacific beads have also been excavated here.

Figure 28 indicates a specimen on display that I borrowed from Angkor Borei as a sample for analysis. It is very similar in size and color variation to the beads excavated in Japan that date from the same period. In terms of materials as well, all but two of the items are soda glass with a high alumina content. When compared with items excavated in Japan, they are almost identical (Figure 29).

These are fascinating materials that may connect the Indo-Pacific beads of Japan and Cambodia (Figure 30). *The Nihon Shoki* states that in 543, King Seong of Baekje (in ancient Korea) presented goods from Funan and slaves to Wakoku (a word used by foreigners for ancient Japan). At around the same time period as this description in *the Nihon Shoki* (i.e., the 6th century), Indo-Pacific beads of the same colors were distributed in large amounts in Baekje as well as in Japan and

Figure 25

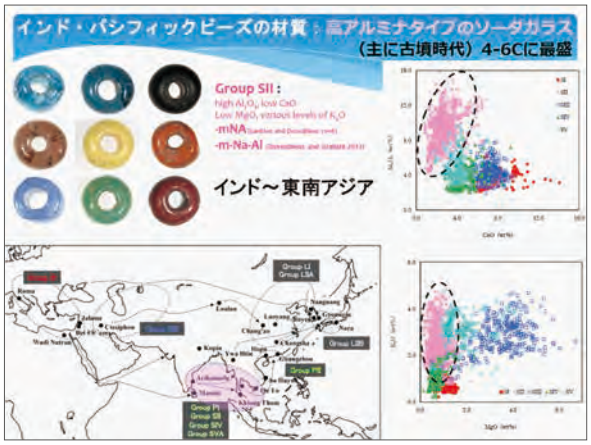

Figure 26

Figure 27

Figure 28

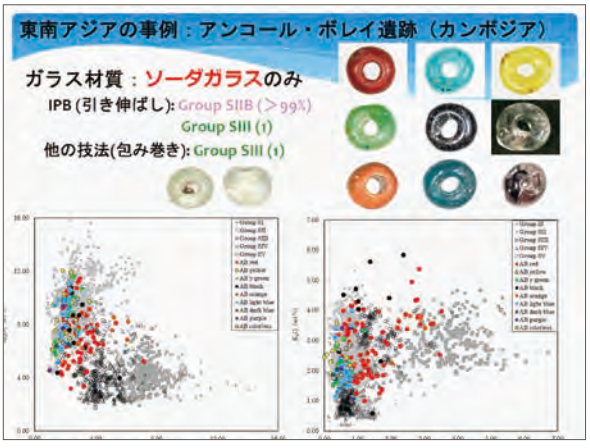

Figure 29

Cambodia. Personally, I think these colored Indo-Pacific beads were likely included in the goods from Funan.

Incidentally, King Muryeong of Baekje, the predecessor to King Seong, is well-known for having been buried with a vast amount of glass beads.

However, it cannot be definitively confirmed that all these Indo-Pacific beads from the south were consistently transported by ocean routes to East Asia. For example, large amounts of Indo-Pacific beads were distributed around the start of the common era in Japan, the Korean Peninsula, and other places. But as mentioned before, only a few glass beads have been discovered in the Zhongyuan central plains at the heart of China. Nonetheless, even in Luoyang-in those central plains-large quantities of Indo-Pacific beads have been excavated from the ruins of Buddhist temples dating from the Northern Wei period around the 6th century.

Figure 31 presents glass beads excavated from the Northern Wei site of Yongning Temple in Luoyang.

Around 150,000 glass beads have been excavated from the west gate of the temple. Analytical surveys indicate that most are the southern-type of Indo-Pacific beads, made of soda glass with a high alumina content. As for how these Indo-Pacific beads entered this area, there is a fascinating passage in *the Wei Shu*, a classical historical text from the western region of the Kingdom of the Greater Yuezhi. The text recounts that the people from that kingdom made five colors of glass from stone at the capital city of Northern Wei, and the glass they produced was of such high quality that the people of China no longer considered glass a prized rarity. Considering that high-ranking Buddhist priests from the West were frequently invited to Northern Wei and given that the beads were excavated from Buddhist temple ruins, we cannot exclude the possibility that these glass beads were also brought from India via inland routes.

Finally, let me summarize my presentation so far (Figure 32). We have looked at the distribution of Indo-Pacific beads from the perspective of glass beads brought across the oceans. Indo-Pacific beads were made in India up to around the 3rd century BCE and arrived at the Japanese archipelago shortly after in the early mid-Yayoi period. Subsequently, Indo-Pacific beads continued to be distributed in Far East Asia up to the 6th century CE; however, as there have been no discoveries of artifacts indicating the beads were made there, it is likely that they were consistently imported as finished products. Studies of the import routes reveal that the beads were

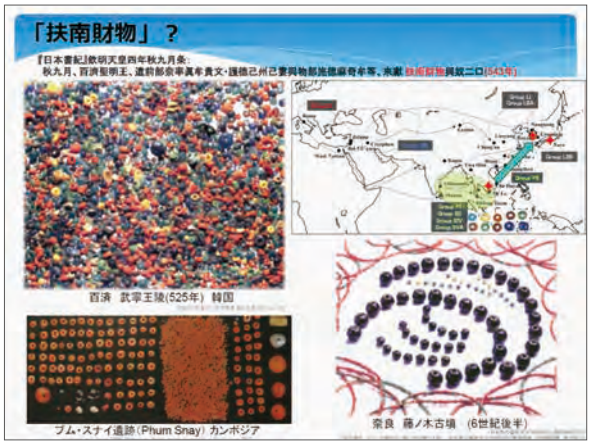

Figure 30

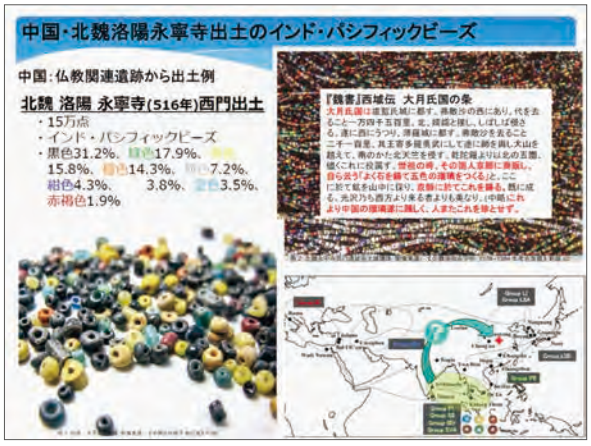

Figure 31

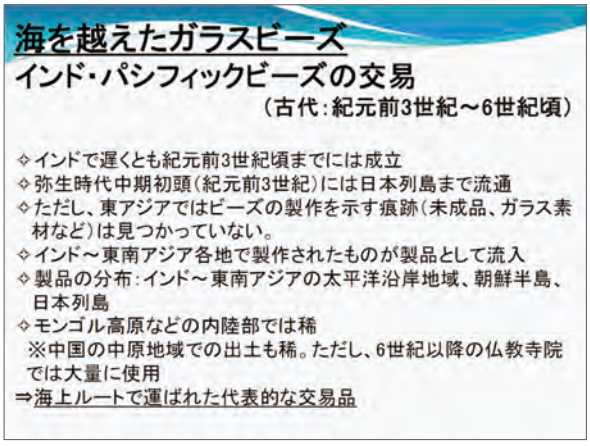

Figure 32

basically distributed in the coastal areas of Eurasia from around the start of the common era to the 5th century. It was quite rare for the beads to enter via inland routes, so it is thought that they were mainly transported by ocean-based routes.

However, from the 6th century, large quantities of these beads were used in Buddhist temples in inland China as well. Thus, in subsequent periods, there remains the possibility that a certain quantity of beads were also distributed via inland routes.

That said, from their first introduction through the 6th century, Indo-Pacific beads were essentially transported by sea routes as typical trade items.

Thank you for your attention (Figures 33 and 34).

Figure 33

Figure 34

⚓ Lecture 4

People Crossing the Maritime World:

Islamic Merchants, Including the Merchants of Hormuz

YOKKAICHI Yasuhiro
(Associate Professor, Graduate School of Arts, Rikkyo University)

PhD (Literature) from Waseda University. Positions held before the current one, as of 2018, included full-time lecturer at Kyushu University. His specialist subjects include the history of East-West Eurasian exchanges, maritime history of Asia, and the history of China, Mongolia, and Iran. He studies the relationship of merchants and the religious with society and the state, using historical materials written in Chinese, Mongolian, and Persian. Recent research projects include studying the format of multilingual documents during the Mongol Empire; investigating the distribution of ceramics, silver, and textiles in Eurasia and the coastal areas of the Indian Ocean; and researching the transmission of dragon and phoenix crests and stone lions in Eastern and Western Eurasia.

Thank you for the introduction. I am YOKKAICHI Yasuhiro of Rikkyo University (Figure 1). Today, I will discuss Islamic merchants who crossed the oceans from the viewpoint of the history of literature. The phrase "Islamic merchants" covers a broad range, including merchants from various regions and categories differing quite considerably according to the times. Today, I will focus on the merchants of Hormuz, who were active around the 13th to 14th century-the time of the Mongol Empire, my specialty area.

First, I will discuss the Islamic port-state and merchants of marine trade. Hormuz, Kish, and Siraf are all towns in Iran (Figure 2). The merchants of Siraf, Hormuz, and Kish are known for spearheading trade in the Indian Ocean.

Various other urban and port-based merchants were also active in marine trade, including the Adeni merchants of Yemen.

The merchants of Siraf, a port town on the north coast of the Persian Gulf, began trading around the 9th century. These Siraf merchants steadily built their trading bases, expanding from the western side of the Indian Ocean up to East Asia, covering East Asia, Southeast Asia, and Northwest Africa. They used these bases to rapidly expand their trade. However, from around the 10th to 11th century, the port of Siraf began to rapidly decline. There were various reasons for that decline, including a major earthquake, the emergence of rival port states, and poor relations with the larger nations called domain-states.

Figure 1

Figure 2

From the 12th to around the 14th century, Siraf merchants were replaced by those from the ports in the city-state kingdoms of Hormuz, Kish, and also Aden. Unlike those of Siraf, all of these merchants were from kingdoms, each with its own king. That said, the members of the royal families of these kingdoms were originally from a family lineage of Siraf merchants and ship captains called Nakhuda. The literature confirms how they became kings at their respective destinations.

The kingdoms of Kish and Hormuz were port city-states in the Persian Gulf, the remains of which exist to this day. We can specifically confirm this mostly from information in historical materials, such as chronicles in Persian and Arabic (Figure 3). *The Majma' al-Ansāb* (Source of Genealogy) documents the royal bloodlines of each of these royal families of Iran, as well as the history of the origin and development of Hormuz's kingship. *The Tārīkh-i Waṣṣāf* (Wassaf History) is a chronicle from the Mongol period in Arabic and Persian. It also has considerable information on the Indian Ocean trade of Kish and Hormuz. There are also Portuguese-language materials from the explorer Pedro Teixeira, who wrote *A History of the Kings of Hormuz*, based on what he-a Portuguese who had come to Hormuz-had heard from the kings of Hormuz about their royal lineage. Research is being conducted based on these historical materials by researchers in a variety of locales, particularly Europe and Iran. Beyond this, in Japan, YAJIMA Hikoichi is world renowned for his studies of the history of the Indian Ocean.

As such, there is now a history of research on trade in the Indian Ocean, including Hormuz and Kish, considering a range of different aspects.

I have also been researching Hormuz for some time, and my recent findings particularly relate to the Kingdom of Hormuz, when it was the old royal capital. You can see Old Hormuz and New Hormuz written on the map. Around the start of the 14th century, the old royal capital of Old Hormuz became New Hormuz when it was relocated to the small island of Djerba (Figure 4). Although the royal regime remained the same, New Hormuz is the name modern-day archaeologists use for the city after the capital was relocated. The kingdom of Kish refers to the modern-day island of Kish. As stated previously, the merchants of the islands of Kish and Hormuz traded in the Indian Ocean. If we examine the power balance in Iran at the same period, there was the Qara-Khitai Kingdom of Kirman, also called the Qutugh-Khanid dynasty, north of Hormuz. To the west of this, northwest of Hormuz, was the Shabankarah Kingdom. Further west in Fars province was the Atabeg administration of Fars-also known as the Salghurid dynasty-with the ancient city of Shiraz as its capital. Though they were not vast, they ruled over certain territories as territorial states with local lords in surrounding areas. Later in the 13th century, a vast territorial state covering all others emerged in the form of the Il-khanate dynasty. Succeeding to the Mongol Empire's regime, it ruled over all of Iran.

Hormuz and Kish maintained relations with these regional states and the enormous empire of the Il-khanate dynasty, which they needed to

Figure 3

Figure 4

trade with. Specifically, Hormuz and Kish entered into a protective arrangement with the Il-khanate dynasty, in which their merchants tithed the profits of trading in pearls and other items in the Persian Gulf and Indian Ocean, in return for receiving protection from the regime. Before the Mongols came to Iran, Hormuz and Kish had also formed similar relations with the dynasties of Qutugh-Khanid, Shabankarah and Salghurid, thereby maintaining a delicate power balance of administration in the region.

At that time, the port towns of Hormuz, Kish, Siraf, and Aden served as starting points for caravan routes that connected Shiraz (the capital of Fars Province), the Il-khanate dynasty capital of Tabriz, and the enormous cities of Baghdad, and Cairo. Pilgrimage routes also ran in all directions from Mecca and Baghdad. These caravan routes, used for both pilgrimage and trade, connected directly to the port states of Kish and Hormuz in the direction of the Persian Gulf.

All of the above is confirmed in the literature. A typical example is in the *Tārīkh-i Waṣṣāf* I mentioned earlier, in which Ghazan Khan of the Il-khanate Dynasty is said to have dispatched to the Yuan Dynasty the Kish merchant leader Fakhr al-Din Ahmad, a prince of the Kish Kingdom (Figure 5). He was the son of the Kish king of the time, Shaykh al-Islām Jamāl al-Dīn Ibrahīm. The *Tārīkh-i Waṣṣāf* also recounts that after four years trading in China, he died in Southern India on his way back to his homeland. In the Maval region of Southern India, the Kish merchants of the Persian Gulf set up a trade base and formed relations with the king of the local Pandya Dynasty. We know this from the historical materials, including Chinese-language sources (Figure 6).

The *Collected Works of Huang Jin*, which is also called as *Huang Document Collection* contain an engraved epitaph of Maritime Commander Yang Shu.

The Yang clan was from Songjiang, close to modern-day Shanghai. They handled marine transport and maritime civil service for the Yuan Dynasty. Yang Shu was dispatched as an envoy to the Il-khanate Dynasty of Iran at the start of the 14th century. The epitaph states that Yang entered Hormuz at that time and traded there. The site where he landed in Iran and conducted trade was clearly Hormuz.

Figure 7 illustrates an epitaph in China. It was excavated in the port city of Quanzhou in Fujian Province, the gateway to southern maritime trade. In China, it is referred to as the "monument to the envoys to Persia." The inscription states that at the start of the 14th century, the Yuan Dynasty dispatched envoys to King Ghazan of the Il-khanate Dynasty (Ghazan Khan) and that those envoys passed through Hormuz en route.

From these materials, it is clear that the Islamic port states of Hormuz and Kish were connected not only to the West via the Indian Ocean and Persian Gulf but also to East Asia as

Figure 5

Figure 6

far as China through the trade networks. There is also an Arabic document that came to light in the 2000s, entitled *The Light of Knowledge on the Governance, Laws, and Customs in Yemen, Ruled by the Honorable Sultan Muzaffar*. These materials are administrative documents of the Rasulid Dynasty of Yemen. Within them is a list of trade tariffs for the Aden port, as well as a list of products related to Kish and Hormuz (Figure 8). The product list includes items from China, Southeast Asia, and India, enabling us to gain a sense of the product distribution structure connecting the Islamic world with East and Southeast Asia. If we plot that structure on a map to recreate it, we can see that items from China passed through India and items from India crossed the Persian Gulf and the Red Sea, which were also connected by trade networks.

The above is an introductory explanation of Islamic port states, merchants, and products mainly based on historical literature. This information can also be clarified from an archaeological perspective in terms of the theme of this symposium-cultural heritage. As mentioned previously, this is a slightly more detailed map of the caravan routes between the port towns and the city of Shiraz (Figure 9). These caravan routes from the Persian Gulf's north bank to central Iran and their origin points in port cities such as Kish and Hormuz have been studied for decades. I am a philologist (a scholar of history who uses mainly literature). I have been working on a joint project with an archaeologist specializing in ceramics and a researcher of local Iranian history, surveying these caravan routes and the port cities of Kish and Hormuz for over a decade (Figure 10).

We have been mainly surveying the caravan routes from the Kish and Hormuz islands and the archaeological sites of the Kingdom of Old Hormuz to Shiraz, the capital of Fars Province. Time constraints today make detailed discussion impossible, but I will touch on a few of our research points below.

First is Kish Island. Hormuz is on the east coast of the Persian Gulf, just at its entrance, and Kish Island is slightly west of Hormuz. On the north coast are the ruins of Harireh, dating from around the 12th to 14th century (Figure 11). Most of the excavation surveys of the ruins are being done by a British survey team and the University of Tehran, and several of the buildings have been restored.

These are the remains of a bazaar or market. The remains of markets and buildings facing the ocean have now been restored to a fairly significant extent, and a considerable number of ceramic

Figure 7

Figure 8

Figure 9

potsherds from China have been found in the vicinity (Figure 12). Scattered over the ground surface, most of them are from the Southern Song to Yuan dynasties.

Occasionally, some pieces from as late as the Ming dynasty or from before the Song are found, but most are olive green ceramic pieces from the Southern Song to Yuan dynasties, called Longquan celadon porcelain. These collected samples are now preserved in Iran. By way of example, this lotus design matches those of Yuan-dynasty ceramics; artifacts featuring designs such as these have been found in considerable numbers at these sites.

Next, I will discuss the remains of Old Hormuz (Figure 13). The site is located on the shore of the mainland adjacent to Hormuz Island. There is a town called Minab to the east of the large port city of Bandar Abbas on the opposite shore. There are several hundred groups of archaeological sites in the Minab river basin, dating from ancient times to the early modern period.

Several of these artifacts are from the kingdom of Hormuz during the period of the former capital. These include the Tapeh Sorkh artifacts (Figure 14). "Tapeh" means hill or tomb, and "sorkh" means red. So Tapeh Sorkh means the "red hill artifacts."

Scattered here are numerous glass fragments

Figure 12

Figure 10

Figure 13

Figure 11

Figure 14

and Chinese ceramic wares, dated from the Five dynasties and Song periods to the Ming dynasty (Figure 15). Glass beads from the pre-Islamic period have been found, and our investigations have also found Yongle Tongbao copper coins from the Ming dynasty (Figure 16).

These large-scale remains are called the K103 site. There is a relatively large amount of Chinese ceramic wares scattered among the Hormuz artifacts as well (Figure 17). There are building remains from this period on the ground surface in the present day, following the layout of the city during that period. Looking at the satellite picture, you can see that these remarkable remains quite clearly show the districts and overall structure of the city. It is quite close to the sea, and so it may sink into the sea due to rising tides. Most of the Chinese ceramic wares found here are from the limited time period of the Southern Song to Yuan dynasties, with hardly any pieces from the Tang, Five dynasties, Northern Song, or Ming (Figure 18). A few pieces of Islamic glass and copper items have also been found here. Survey teams from Japan have also visited this location, thought to be the old capital of Hormuz, many times.

When we surveyed the area, we found a notably high ratio of Chinese ceramics and seemingly too few ceramic wares from Islamic countries, and so on. Therefore, my team and I believe that rather than being the capital of Hormuz, this area was perhaps a trading port.

These are the "Hill Remains of Old Hormuz" (Figure 19). Here as well there are Islamic ceramics and Chinese ceramic wares from the Southern Song to Yuan dynasties only; we think that it was this area that may have been the capital of Hormuz (Figure 20).

This is the Tapeh Jangar Hoseināhād site (Figure 21). Slightly older artifacts have been found here, such as Yue ware ceramics from the Five dynasties period. There are also white porcelain pieces from the Tang dynasty and the Five dynasties to Northern Song eras and blue-and-white Ming porcelain. As such, there are

Figure 15

Figure 17

Figure 16

Figure 18

artifacts scattered here from a fairly broad range of time periods.

This is the Tapeh Sardkhāneh site (Figure 22). The emerald green pieces shown in Figure 23 are glass fragments.

As the ratio of glass pieces is quite high, there may have been either a glass factory or a glass market here. However, no crucibles or other tools needed to produce glass have been found here.

We have so far looked at the remains of Old Hormuz from the era of the old capital. Next I want to look at the remains of New Hormuz from the period after the capital was moved to Hormuz Island (Figure 24). Originally called Djerba Island, the island includes the remains of a Portuguese citadel alongside scattered Chinese ceramic potsherds (Figures 25 and 26).

Unlike Old Hormuz, there are more ceramics

Figure 19

Figure 22

Figure 20

Figure 23

Figure 21

Figure 24

from later periods like the Ming and Qing dynasties, rather than the Song and Yuan. Figure 27 indicates a fragment of Yuan blue-and-white porcelain.

Hormuz Island also has mausoleums, such as those for Saint Khizr and Saint Ilyas. Records from the 14th century reveal that the scholar and explorer Ibn Battuta visited these mausoleums (Figure 28). The mausoleums became an object of worship for the nautical faiths of sea-faring merchants and sailors. Ceramic fragments from China and Southeast Asia have also been found around the mausoleums.

We have thus far looked at religious facilities in and around port cities. From here, we will look at the remains of trading cities and religious facilities on caravan routes. Figure 29 presents the remains of the monastery of the Daniyal sect within the city of Khonj, a scholars' city known as a base for Sufi orders and Ulama during the Il-khanate dynasty. Many Chinese ceramic fragments are found at the remains of large Islamic mosques and mausoleums and Sufi monasteries. The Persian inscription on the pillar depicted in Figure 30 states that the King of Hormuz made donations to this monastery.

Fragments of Yuan-dynasty Chinese ceramics have also been found here. In essence, this constitutes important evidence that the merchants of Hormuz were directly involved in the trade of

Figure 25

Figure 26

Figure 27

Figure 28

Figure 29

Chinese ceramic wares. A relatively large number of Chinese ceramic fragments have also been found scattered in similar mausoleums of Islamic saints and monastery ruins (Figures 31 to 34). Figure 33 indicates what was once the stronghold of Kazerun, the former home of the Kazeruni (or Eshaq) order, a site at which Chinese ceramic potsherds of the Mongol period have also been found.

In addition, the ruins of the mausoleum of Bibi Maryam have been found on the island of Qeshm next to Hormuz (Figure 34). Bibi Maryam was a queen of Hormuz.

She became an object of worship for merchants in Mongol-period Hormuz, and thus, a mausoleum was built for her (Figure 35). There are also pieces of Chinese and Islamic ceramic wares found on this site. Queen Bibi Maryam was born in Qalhat in Oman and moved to Hormuz when she married. A mausoleum was also built for her in her ancestral land of Qalhat. In addition, as there are similar place names to the north of the Persian Gulf, it is presumed that there may also once have been mausolea for Queen Bibi Maryam there (Figure 36).

Figure 30

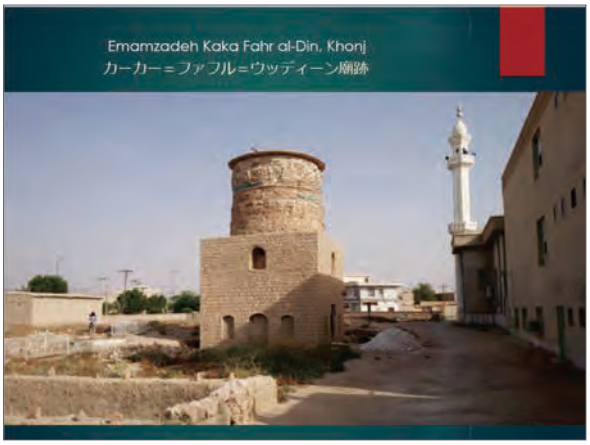

Figure 31

Figure 32

Figure 33

Figure 34

This distribution of mausoleums is perhaps indicative of the distribution of trade networks of Hormuz merchants.

Lastly, I will summarize my presentation. The activities of Islamic merchants can be connected directly with various factors (Figure 37). One such factor was "empires"-enormous nations with immense political power.

For example, today I have talked about the Il-khanate dynasty, but the Siraf and Hormuz merchants also had connections with the empires of the Abbasid, Buwayhid, and Seljuk dynasties. Another such factor was the merchants' connections to religious sects, typified by the Sufis. Islamic merchants were often engaged in trade bonded by protection and patronage with religious sects such as the Sufis.

In addition, while I did not talk much about this today, the city states and port towns had both hostile and cooperative relations with one another, and in fact, this significantly affected trade relations between them.

Iran is further from China than Japan is. Yet, the amount of Chinese ceramic wares found there is greater than the amount found in Japan (Figure 38). In particular, the sites where these artifacts are found are scattered along the caravan routes from port cities like Hormuz to major cities like Shiraz. This includes religious buildings like the monasteries known as khanqah and zawiyah, mosques, and mausoleums, where Chinese ceramic

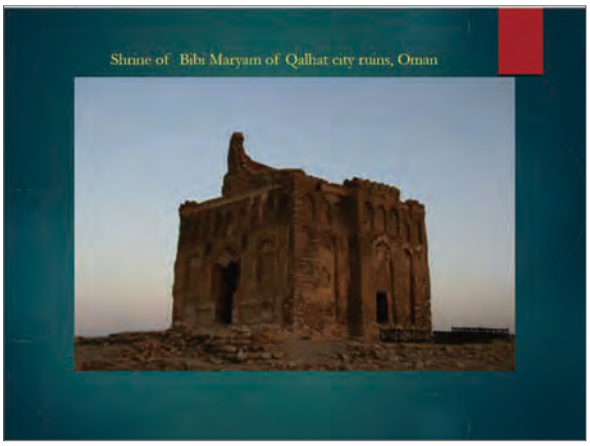

Figure 35

Figure 36

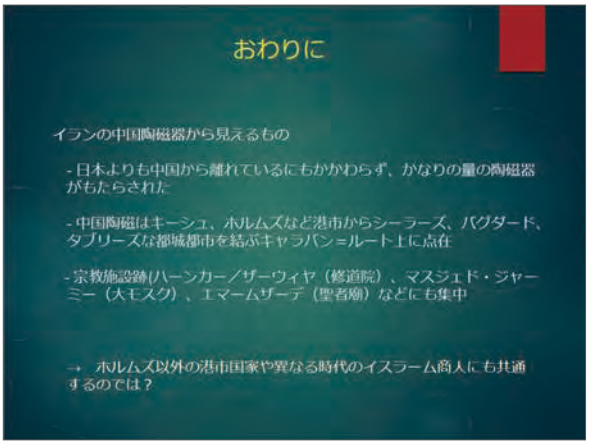

Figure 38

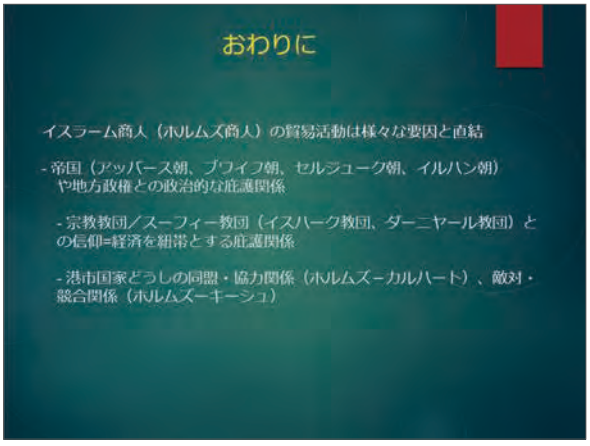

Figure 37

Figure 39

fragments are found particularly frequently. Although not found to such an extent in other places, Chinese ceramic fragments can be found relatively easily in the ruins of cities and religious buildings along the caravan routes.

Today, I have discussed only Hormuz, but we may consider that Islamic merchants in different times and regions shared similar aspects, overlapping with the topics we have covered today to some degree. Thank you.

Lecture 5

Places where the Sea and Land Meet:

Port Cities of Asian Waters: Shophouses & Courtyard Houses

FUNO Shuji
(Visiting Professor, College of Industrial Technology, Nihon University)

D.Eng. from the University of Tokyo. Specialty in architectural planning, with a focus on the history of Asian urban architecture. He started researching *kampong* urban settlements in Indonesia in 1979, and since then has conducted fieldwork mainly in Asian cities in the field of urban tissue (composition) research. His trilogy of works on Asia includes *The City as Mandala*, *Mughal Cities*, and *Da Yuan City*. He has also engaged in colonial urban studies with a focus on the Dutch colonial city, including *The Modern World System and Colonial Cities*, *The Grid City*, and *The Formation of Modern Korean Cityscapes*. He has also edited and published *Houses Across the World*, *History of Asian Architecture and Cities*, and *Encyclopedia of the Global History of Cities*, as well as his recent book, *Surabaya: Kampung as Cosmos*.

My specialty is architectural planning. Since 1979, I have spent over 40 years in the field, mainly in Asian countries. Today, I will be discussing port cities in Asian waters (Figure 1).

While there are various ways of approaching the topic of port cities, one of their essential characteristics is as a site of exchange of objects, people, and information. A major theme in architecture and urban planning is the principle of segregation of various ethnic groups-an issue of the spatial composition of port cities. Here I will discuss shophouses (dianwu) and courtyard houses (siheyuan)-in essence, the basic housing styles that make up cities, their variations, and how they are interrelated with regional features (Figure 2).

Siheyuan are a Chinese style of housing.

They are referred to as "courtyard houses" in English. These courtyard-style houses are basic urban residences found in all times and places. "Shophouse" is the English translation of dianwu (Figure 3). The Oxford English Dictionary (OED) describes a shophouse as a style of housing found in Southeast Asia.

Figure 2

Figure 1

Figure 3

Baidu Baike, the Chinese version of Wikipedia, contains a similar definition. So shophouse is the English translation of the Chinese word "dianwu". The Chinese word "wujiaolang", literally a five-foot corridor, is also used; in Indonesian and Malay, the word is Kaki Lima, meaning five feet. Thus, a shophouse is both a shop and a residence, with a five-foot-wide arcade. When Stamford Raffles built Singapore in the early 19th century, he used this style of housing, which has its origins in Southern China, for a range of different people including Chinese, Indians (Chulias, i.e., mixed-race merchants descended from Tamil Muslims, Arab merchants, and Indian-Arabs), Bugis (Sulawesi), and Arabs. A distinctive feature of these houses is their arcades. They follow the tradition of houses with arcades in Europe and Southern China, reflecting Singapore's position as a meeting point of East and West. Let us focus here on housing styles in port cities.

"Port city" is the English translation of the Chinese term "gangshi". The term "port" originates from the Latin word "emporium" or "emporion" in Greek. The outer port of Piraeus in Athens was different from the agora market. Piraeus was not a marketplace within Greece but an archetypal port city that handled overseas trade. Essentially, port cities are located on the border between land and ocean. The oceans were originally a free place that belonged to no one. Port cities were a kind of intermediary device between the land and the people from overseas who crossed those oceans. As such, port cities are composed of ethnic groups with varying cultural backgrounds (Figure 4).

As for what kind of port cities became hubs in Asian waters, we can get an idea from several sea voyage logs. These include *The Periplus of the Erythraean Sea* (1st century CE), *The Travels of Marco Polo* (1290-1293), *The Rihla by Ibn Battuta* (1325-59), "Occidental Voyage of Zheng He" in *Yingya Shenglan* by Ma Huan (1405-1433), *Suma Oriental* by Tome Pires (c.1515), *The Mediterranean and the Mediterranean World in the Age of Philip II* by F. Braudel (1949), and other texts I referenced while studying marine research and deciding on the port cities for my field studies (Figure 5).

I have surveyed around 40 port cities in Asian waters. The main port cities, starting from Japan and moving west, are Hakata, Nagasaki, Ulsan, Busan, and Naha, with Ningbo historically serving as a major port and hub (Figure 6). Then Malacca, Georgetown, Galle in Sri Lanka, Goa, and so on; it strikes me again today that many of these port cities are registered as World Heritage Sites. I have also been to East Africa, which boasts the World Heritage Sites of Lamu, Stone Town of Zanzibar, and Kilwa Kisiwani (Figure 7). The Swahili world has been connected with Southeast Asia since ancient times.

We can broadly divide the formation of a network of port cities in Asian waters into various stages in the global history of cities. The two major categories of this formation are the Mongol Impact that linked inland areas in Eurasia (Pax

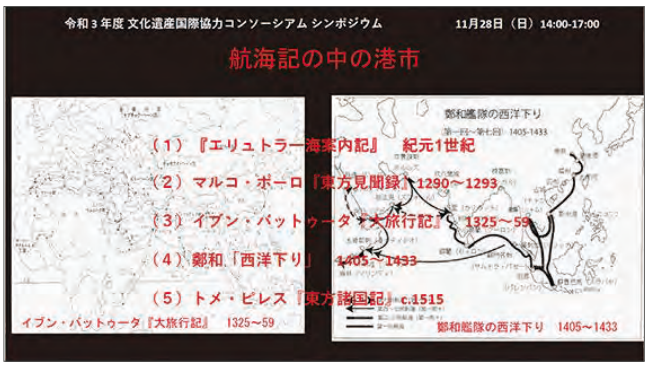

Figure 5

Figure 4

Figure 6

Mongolia) and the Western Impact (the so-called Pacific Rim revolution that connected the globe) (Figure 8). The formation of Austronesia is the main underlying factor in how humans (Homo sapiens) spread throughout the earth (Figure 9). The urban civilizations that developed following the urban revolution shaped the seas and oceans of China and India. The Nile River flows into the Mediterranean Sea, and parallel to the Red Sea.

Mesopotamia runs through the Persian Gulf to the Arabian Sea and into the Indian Ocean (Figure 10). After the rise of Islam, from the Abbasid Caliphate to the 14th century, the Indian Ocean became the ocean of Islam (Figure 11), but this was all to change with the advance of European countries and the emergence of steamships. This was to become a significant phase of history in which the Suez Canal was built (Figure 12).

From among the many port cities, I have selected one to discuss today: Quanzhou, which was inscribed as a World Heritage Site this year (Figure 13). Dr. KIMURA introduced the sunken ships of Quanzhou in his presentation.

Quanzhou is a port city already open to the world by the 10th century. Maritime trade administrators were appointed there at the end of the Northern Song, and Quanzhou became a

Figure 7

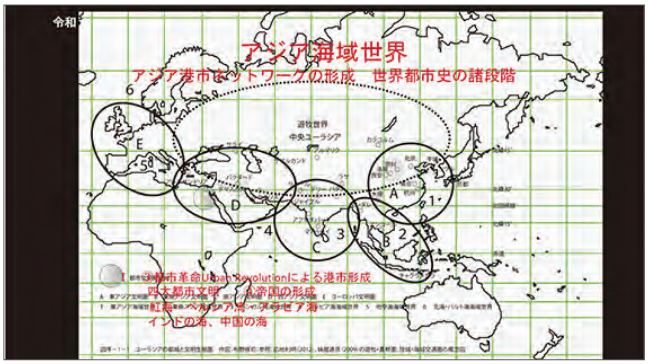

Figure 10

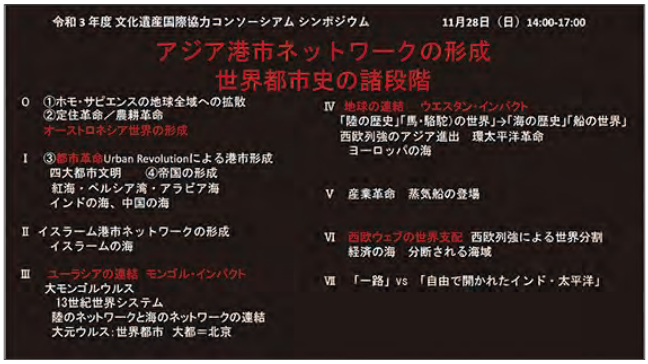

Figure 8

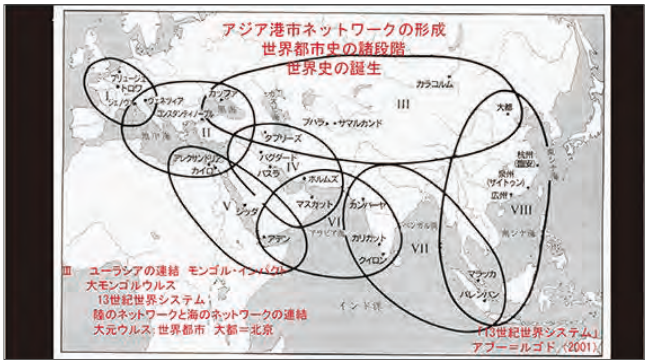

Figure 11

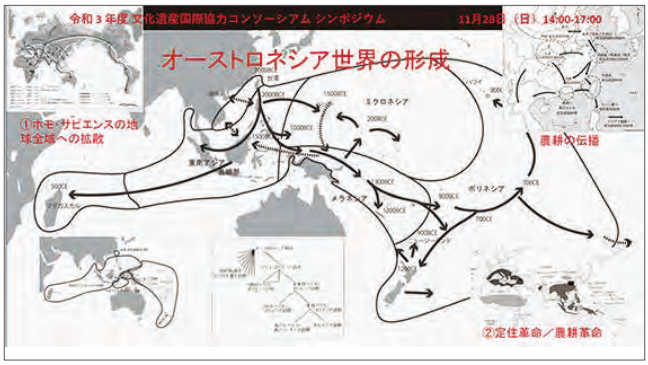

Figure 9

Figure 12

major hub in China's overseas development in the Southern Song Dynasty. Marco Polo and Ibn Battuta called Quanzhou "Zaiton"; it is well known that both of them described Quanzhou to the West as perhaps the world's greatest port city. Islam spread quickly, and the Qingjing (Ashab) mosque in Quanzhou was clearly not Chinese but Iranian iwan-style. The Kaiyuan Buddhist temple has reliefs of the Hindu monkey god Hanuman, who may have served as the model for the legendary Chinese monkey king Sun Wukong: there seems to be an ancient association with India too (Figure 14).

Dr. YOKKAICHI previously mentioned Siraf. Arabs and Persians, who came to Guangzhou and Quanzhou from early on, stayed in a foreigners' settlement there called the "fanfang". In the mid-13th century, there was a maritime trade administrator called "Pu Shougeng". Although the academics Kuwabara Jitsuzo and Maeshima Shinji argued about his origins, this Muslim merchant and administrator in China seems to have been from Siraf (Figure 15).

There are three styles of housing in Quanzhou. One is the siheyuan courtyard-style houses (Figure 16). Then there is the shoujin-liao housing style, with a courtyard that has a narrow frontage. Guangzhou has bamboo houses called zhutongwu, similar to the traditional townhouses called machiya in Japanese. There is also the qilou style of housing that features an arcade. This is a dianwu shophouse in Singapore (Figure 17).

Turning our attention to the topic of port cities and segregation, related terms in Japanese include "toubou" and "toujinbou," as well as the "Binjin-sanjuurokusei" ("Thirty-six families from Min") in Naha's Kume Village in Okinawa, a settlement built by Fujianese. There was also the

Figure 15

Figure 13

Figure 16

Figure 14

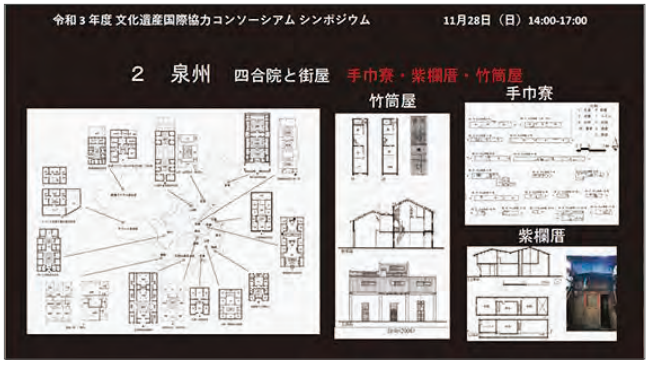

Figure 17

Parián settlement in Manila, essentially a Chinatown. Cebu also had a similar settlement. As the Parián settlement in Manila had various disputes with the Spanish there, its location was moved about six times (Figure 18). Japan also had shogun-authorized trading vessels, which sailed to Southeast Asia. So-called "southern oceans Japanese towns" (nan'you nihonjin-machi) were set up in Manila, Phnom Penh, and Ayutthaya (Figure 19).

Hindus, Jains, and Muslims co-existed in the areas adjoining the Indian Ocean. The caste system also made segregation extremely complicated. The southwest monsoon winds carried ships from East Africa and the Arabian Sea as far as the Gujarat region, where trade cities developed in ancient times. These included the prosperous Cambay (Khambhat) and Mundra ports, where diverse and finely segmented groups lived, including the Bohras (Shia Muslims) and Banyan (Jain) merchants (Figure 20).

In Singapore, the city was planned and divided into districts at the outset. At the center was the European settlement, followed by the Chinatown and districts for Chulia and Tamil Muslim merchants, and pre-planned Arab Kampong and Bugis Kampong segments. There was also the extreme form of segregation implemented by the British in Cape Town and other places in South Africa, which ultimately led to apartheid. Singapore did not practice this extreme segregation: each district had similar shophouses. Raffles associated the city with the world's largest flower, Rafflesia, found in Sumatra, and sometimes referred to it as the Shophouse Rafflesia. Singapore's archives have some 500 construction permit blueprints, which can be analyzed to see the styles used in each district (Figure 21).

The urban housing style of shophouses with an arcade, which was created in Singapore, first spread to the British Straits Settlements in Southeast Asia. These included Malacca as well as Georgetown in Penang. Next, in 1859, King Rama IV of Siam (Thailand) dispatched two ministers to Singapore. They returned with the basic styles of the urban planning that were adopted for Bangkok's Rattanakosin Island (Figure 22).

Next, in Southern China, the urban planning legislative system of the United Kingdom was reverse-imported. The arcade style of architecture was also virtually adopted in its entirety in Taiwan, where it is referred to as *tingzijiao*. From there, it

Figure 18

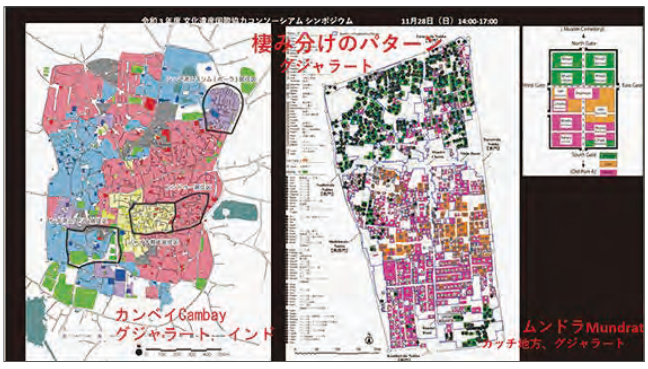

Figure 20

Figure 19

Figure 21

was also brought to China. Houses with verandas were built early on in Hong Kong and then on Haikou (Hainan Island), and in 20 cities including Guangzhou, Xiamen, and Zhangzhou, in addition to Quanzhou (Figure 23).

The same pattern can be seen in the Indian Ocean region, particularly in Northern India, where there is a courtyard-style of housing called havelli (Figure 24).

There is also a style called gala, which can be described as similar to townhouses or shophouses. When the port of Cambay declined, the center of trade shifted from deep in the Gulf of Cambay to Surat. There you can see shophouses essentially based on the forms established in Singapore (Figure 25).

The Gujarati merchants brought this gala style of housing with them to the areas to which they migrated (Figure 26). The owners' origins are expressed through the entrance doorways of homes in Stone Town of Zanzibar, which I surveyed. There are three categories of doors: Gujarati, Omani, and Swahili. Although this system has broken down considerably in recent years, it seems to correspond to the segregation of ethnic groups there (Figure 27).

Most port cities that were historically significant remain important in modern times. In terms of the transaction volume of containers (Figure 28), the outer port of Piraeus in Athens, which I mentioned at the start of my talk, is number one in the Mediterranean Sea and number 26 in the world. Mundra is also one of India's leading port cities. That said, a major change is that eight of the top ten port cities are now concentrated in the East China Sea and South China Sea.

Looking at a map reveals how the once free and open oceans owned by no one are now almost completely a thing of the past, with land-based

Figure 22

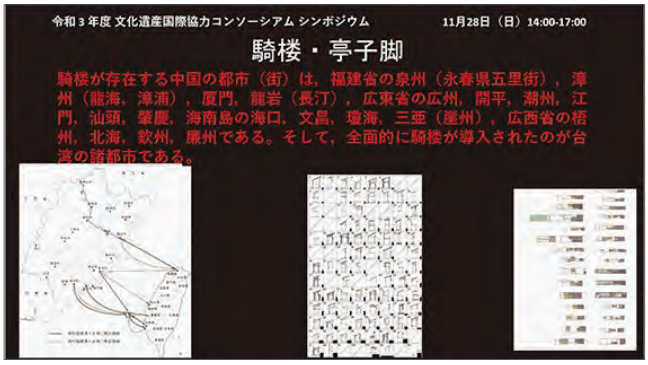

Figure 23

Figure 25

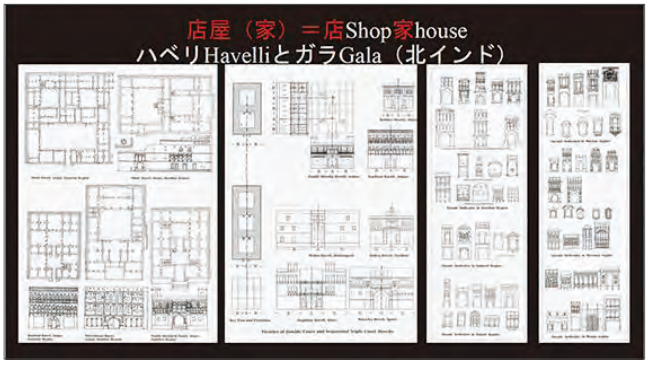

Figure 24

Figure 26

states controlling the majority of the oceans (Figure 29).

The study of maritime areas and port cities is important in terms of clarifying the mechanisms by which different cultures accept or reject one another in the context of cross-cultural exchange, and then extracting knowledge from investigations in this regard (Figure 30).

This year I published a book entitled *Surabaya*, which refers to a port city in Indonesia ranked 45th in the world for container transaction volume. In the near future, I hope to publish a book on the findings of my current field work in Asian port cities (Figure 31).

Figure 27

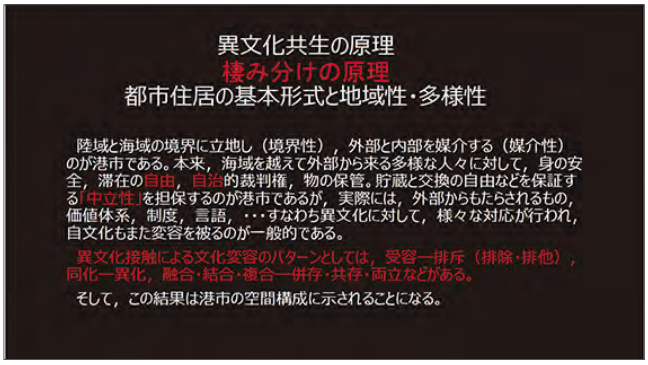

Figure 30

Figure 28

Figure 31

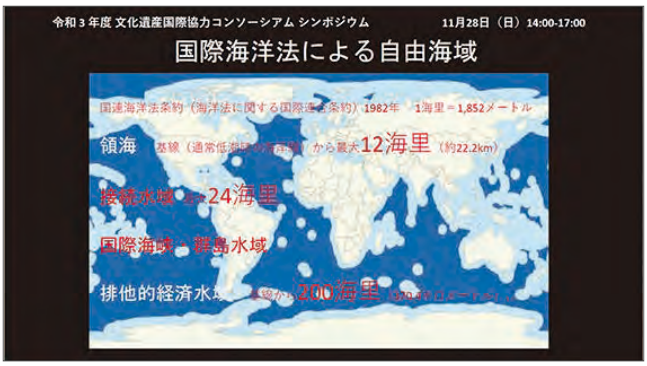

Figure 29

Forum

The World Connected Through the Oceans

Moderator: ISHIMURA Tomo

Commentators: SUTO Yoshiyuki (Professor, Graduate School of Humanities, Nagoya University)
ITO Nobuyuki (Assistant Professor, Graduate School of Humanities, Nagoya University)
SASAKI Randall, KIMURA Jun,
TAMURA Tomomi, YOKKAICHI Yasuhiro,
FUNO Shuji

Session 1: East-West Maritime Exchange

ISHIMURA: I will be the moderator for today's forum.

First, let me explain how the forum will work. In the first half, our five speakers will comment on one another's presentations, posing questions and responding as needed. Then Dr. SUTO and Dr. ITO will provide commentary from the perspectives of the regions of Europe and the Mediterranean and Central and South America, respectively. Lastly, we will discuss how to facilitate international cooperation from the viewpoint of maritime cultural heritage and maritime exchange.

Today's presentations have covered topics such as maritime exchange and new surveying methods and techniques that make use of the oceans. Let us begin by discussing maritime exchange. Dr. TAMURA and Dr. YOKKAICHI talked about maritime exchange in the East and West during ancient and medieval times, respectively. First, let us have Dr. TAMURA comment on Dr. YOKKAICHI's presentation. Dr. TAMURA, if you please.

TAMURA: Dr. YOKKAICHI, thank you for your fascinating presentation. I found it deeply interesting from the perspective of a researcher of East-West trade in ancient times. In terms of the ocean routes in ancient East-West trade, for example between Rome and India, items from India and China in the East were imported into Rome in the West. It has been mentioned that this created an imbalance, in which trade was biased from East to West. What was this balance of trade like during medieval times?

YOKKAICHI: This is a very important and also difficult question. There certainly was an imbalance, but specialty items are, to some extent, determined by each region; so trade isn't necessarily going to be equal. Ceramic wares, silk, and also silver would have been imported from China.

However, silver and gold were also produced in other areas besides China. So trade wouldn't necessarily always have been from east to west- items moved from west to east as well; so it is

difficult to say definitively one way or the other. That said, silk, silver, ceramic wares, and then tea all gradually became specialty Chinese items, already moving westward from the 10th century in the early premodern era. In contrast, items such as precious stones, pearls, and spices moved from West to East. Areas of spice production were concentrated in India and Southeast Asia. Frankincense was produced solely in the Arabian Peninsula. As a result of the significant increase in the importance of horses in maritime trade, Arabian horses in particular were exported to India. The Arabic text *The Light of Knowledge*, which I mentioned in my presentation, has been available since the 2000s. It describes how silver and silk from China were used to pay for horses from Islamic countries. So we know from this text that horses were transported eastward from the Arabian Peninsula over the ocean to India and used as payment for silk and silver. However, unlike today, the conditions for transporting horses by boat were not good. While it would probably have been feasible to transport horses from the Arabian Peninsula as far as India, transporting them by ocean further east to China would have been largely impossible. Therefore, it is believed that traded goods were not brought directly from the Arabian Peninsula to China: although spices, glass, metal, and other such items from intermediary points such as India and Southeast Asia entered China along with goods from the Islamic world, horses did not enter China in this way.

ISHIMURA: Thank you. Now I would like to ask Dr. YOKKAICHI to offer a comment or question on Dr. TAMURA's presentation.

YOKKAICHI: I'm also interested in glass. Glass from Syria is very well known in the 10th to 11th century, the period I am studying. In your presentation today, you mentioned that there are various glass-producing areas around the world and that these glass items are used in a variety of ways. Did the production locations, movement, and distribution structure of glass change from the ancient period which you study to the medieval period of my research? Also, do we know whether it was just glass that was transported, or was the glass transported with other objects? And what was used as payment for this glass?

TAMURA: Thank you for your questions. First, the production areas were quite similar in ancient and medieval times. So with regard to glass from around the Mediterranean Sea, products from Syria, Israel, and Egypt moved eastward. Part of the ocean route in that case included countries such as India; glass beads were apparently transported by routes that passed through the grassland areas of the Xiongnu people and so on. Glass from Southeast Asia entered the Japanese archipelago and Korean peninsula in vast quantities up through the 6th century or so. Lead glass started being produced in Japan from around the 7th century, and on the Korean Peninsula from around the 5th or 6th century. So because of this situation unique to East Asia, the demand for imported glass suddenly decreased. And for some time, absolutely no imported glass came into East Asia. Glass started being imported again during the Middle ages, but not as actively as during ancient times. Some Islamic glass, such as the pieces in the Shosoin Treasure House, entered these areas, but my impression is that much more glass was imported during ancient times.

So I believe that the main glass production areas essentially remained the same between antiquity and medieval times. Specifically, the production areas were the Eastern Mediterranean Coast (natron-type soda glass in the tradition of Roman glass), Western Asia (plant ash-type soda glass typified by Islamic glass), and China (potassium lead glass). Basically, glass production areas were located where there was an abundance of raw materials for glass (silica sand and flux). However, natron soda glass gave way to plant ash soda glass around the 9th century. The reason for this may have been depletion of the raw material natron.

In the medieval period, a new type of glass (potassium lime glass) was made using wood ash from beeches and other forest trees as flux. Plant ash was also used as a flux in ancient glass, but this flux was produced from herbs growing in the salty grasslands of western and central Asia. Using forest timber meant that inland Europe (inland France and Germany, the Czech Republic, etc.) was to become a major production area. This type of glass is called forest glass (*waldglass*): a typical

example is Bohemian glass.

As for the structure of distribution, I believe it was basically the same in ancient and medieval times, but the spread of technology meant that glass beads were produced in more areas than in antiquity. That said, the production of glass materials was itself still dependent on the availability of the raw materials, so essentially matters remained the same. In terms of the distribution of finished products, I have the impression that distribution by ocean routes (from the West to Southeast Asia) became more active than it was in ancient times. However, in areas of Far East Asia such as the Japanese archipelago, there was a greater influx in ancient times. With regard to Southeast Asia, there was an active influx of Islamic glass and also Venetian glass somewhat later.

Incidentally, the Indo-Pacific beads that were so prolific in Southeast Asia seem to have been replaced by Chinese glass beads (potassium lead glass produced by the coiling method; i.e., Chinese coil beads) around the 13th century.

A detailed examination of this kind reveals the ever-changing situation across different time periods and different regions, along with factors including the invention of new types of glass and the accompanying changes in distribution. I specialize in the Japanese archipelago during ancient times, but even in this small area, the situation is complex in that large amounts of glass entered and then disappeared within the limited time period of antiquity. If research can show similar shifts over time in various parts of the world connected by the distribution of glass, I hope that we will be able to use glass to gain a greater understanding of the movement of people, objects, and technology in the world in different eras.

Additionally, as for which items were transported along with glass, it appears that in ancient times, glass was transported from west to east along with silver and gold, particularly silver items from Iran. As the topic for today was ocean routes, I didn't talk much about inland routes. But in the late 5th century, quite a lot of glass beads seem to have entered East Asia via inland routes as well. This was likely glass from Central Asia, which entered along with silver. So because of this trend, there is a focus on the movement of silver with glass beads, as well as silver and gold products with glass beads.

Lastly, the subject of what was used as payment for glass beads is something of a difficult problem because it varies depending on the region and time period. Here are a few interesting examples from the Japanese archipelago in ancient times.

From the 3rd century BCE to the early 5th century CE, most of the glass beads found in the Japanese archipelago were Indo-Pacific beads transported via ocean routes from India and Southeast Asia, with the exception of some Chinese lead glass. Then, in the late 5th century, there was an influx of glass beads made of plant ash soda glass. These beads are larger than the typical Indo-Pacific beads, and their material reveals that they are Central Asian in origin. Details about the origin and route of the influx are still unknown, but a large amount of glass beads with the same material and morphological characteristics, dating from the same period, have been excavated in the Silla region in the southeastern Korean peninsula. It is therefore highly likely that the final transit point on the way to the Japanese archipelago was the Silla region. Other than glass, there was also an influx of gold products and other items thought to be of Central Asian origin into Silla during this period. This provides an interesting insight into the cultural artifacts that were transported along with glass. A large amount of jade *magatama* produced in Japan have been excavated in the Silla area dating from this period. It appears that jade may have been sent to Silla in return for the glass beads.

Also, as in my slides, according to the *Nihon Shoki*, "cultural artifacts of Funan" were presented by Baekje to Japan in the 6th century, and I do not think it unlikely that Indo-Pacific beads would have been included among them. It is known that Japanese umbrella pine wood was used for the casket in the tomb of King Muryeong, the predecessor of King Seong of Baekje.

The distribution structure in East Asia does not seem to have involved a balance of trade, so this might have been somewhat different from "payment for goods." Nonetheless, I do think that these, at least, are examples of goods that were exported from the Japanese archipelago.

ISHIMURA: Thank you. Dr. FUNO's presentation covered the period from medieval to early modern

and modern times. So from that perspective, could you comment on Dr. YOKKAICHI's presentation?

FUNO: There are two points I would like to ask about. The first is regarding the origin of the name Zaiton. While Quanzhou is referred to as Zaiton in Arabic, Zaiton also means olive.

So why is Zaiton the name for Quanzhou in Arabic? The second question is about the wealthy Muslim merchant Pu Shougeng, active from the end of the Song Dynasty to the start of the Yuan Dynasty. We know that he was an Arab or Persian Muslim; was he originally from Siraf?

YOKKAICHI: First, let me discuss the origin of the name Zaiton. The Japanese historian Kuwabara Jitsuzo argues that Zaiton arose as a corruption of "Citong," another name for Quanzhou Castle. However, this is not only phonetically unlikely, but also a sound change that, according to Chinese researchers, would not occur. Zaiton also means olive in Arabic and Persian. However, according to Ibn Battuta, there were no olive trees in Quanzhou in the 13th and 14th centuries, and in fact none now either. So when considering why Quanzhou was called Zaiton (olive) in Arabic even though there are no olive trees there, perhaps the name is derived not from olive as in the fruit, but rather from the color, which is *zaituni or zaitunya*.

The Chinese characters for celadon porcelain include the character for blue, but the porcelain itself is green. And celadon is still called zaituni in Iran. So perhaps Quanzhou was called Zaituni, meaning either "the city of celadon" or "the city that exports celadon." Certainly, ceramic wares are produced near Quanzhou. So my theory is that the name Zaiton was given to Quanzhou to refer to "a city of ceramics," as it was a trade port exporting those ceramics.

As for where Pu Shougeng originally came from, I can only say I don't know. Muslim names may use adjectives indicating personal attribution, referred to as *nisba*. For example, Sirafii or Sirawee are *nisba* indicating Siraf. But it's debatable as to whether *nisba* can be used to confirm Pu Shougeng's origin. And even if it could be confirmed, a *nisba* doesn't necessarily indicate the actual place of origin, but simply a connection of some kind to that place. It might be used, for example, to refer to the hometown of a grandfather or ancestors further back. That said, there were certainly many people from Siraf who came to China at that time. The Chinese character transcription of the "Sirafii" *nisba* is also found in Chinese literature, so we cannot deny the possibility. But we also cannot prove it one way or the other.

Session 2: Ships and Technology

ISHIMURA: Both Dr. SASAKI and Dr. KIMURA focused on underwater cultural heritage in their presentations. First, let me ask Dr. KIMURA to comment on Dr. SASAKI's presentation.

KIMURA: Dr. SASAKI, in your presentation, you explained the differences between maritime archaeology, underwater archaeology, and nautical archaeology. This symposium and research in general address not only objects found underwater, but also objects discovered on land and at ports. In particular, maritime archaeology covers a wide range of objects, not just those underwater, and also a wide range of archaeological sites and heritage related to marine areas.

As for underwater sites and artifacts, thanks to improvements in surveying techniques, you mentioned that recently there has been a trend towards discovering a variety of objects underwater. Considering distribution, trade and the movement of people in regard to ship artifacts, your presentation made me think once again that these fall into the category of land artifacts.

Based on this, I would like to ask you about the current status of this area of study, and what kind of developments you anticipate in the future. Also, what should Japan do in this context? You mentioned that Mongolia is moving toward ratifying the 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage, and more countries are expected to ratify the Convention in the future. Could you give us an overview of this issue from your perspective?

SASAKI: It's quite a tricky question.

Even though there are still issues, I believe that the global trend is toward a growing understanding of underwater cultural heritage among many countries worldwide.

In Japan, "marine issues" tends to refer mainly to the problem of garbage in the oceans. Actually, these marine issues include the need for humans to preserve the cultural heritage left to us in all waters, including oceans, lakes and rivers. #14 of the SDGs is to "conserve and sustainably use the oceans, seas, and marine resources."This represents the contemporary movement towards conserving the bountiful oceans, including cultural heritage. I think this will become a worldwide trend from here on. So Japan has to move along with the rest of the world and take action in this area. In terms of marine development, as cultural heritage is also part of the resources of the ocean, we must take responsibility and protect these resources.

ISHIMURA: There are various issues when it comes to protecting and conserving underwater cultural heritage. In fact, Dr. TAMURA's specialty is conservation science, and she is currently working on preserving actual artifacts at the Nara National Research Institute for Cultural Properties. Dr. SASAKI, could you please ask Dr. TAMURA about the conservation of underwater cultural heritage?

SASAKI: As you know, if measures are not taken to conserve artifacts pulled up from the ocean, their condition will deteriorate rapidly. Unfortunately, at this symposium we haven't been able to talk much about conservation science, but conservation is one of the major issues in underwater cultural heritage. Dr. TAMURA, while in your specialty area of glass, conservation treatments may not be needed so much, what conservation treatments do you actually use? Also, what can Japan offer the world in the field of conservation treatments? I have the impression that Japan is relatively advanced in document preservation techniques and so on. Could you tell us if there is anything we can share with the world in the field of conservation science?

TAMURA: I myself don't work on conservation of artifacts related to underwater archaeology and underwater cultural heritage. But I do have colleagues who are quite actively involved in that field, so I will include some of the findings from their activities in my response.

No finished glass products have yet been salvaged from the ocean in Japan, and so I don't think there are any examples of glass artifacts actually being subject to conservation treatments here. Overseas, though, there are examples of Islamic glass and other objects being salvaged from sunken ships. I am not clear on what specific conservation treatments are used, but probably salt has to be removed in what is called desalination treatment. This treatment is also used for glass and ceramics in land-based excavations from soil with a high salt content. There are many examples of salt damaging artifacts that have been excavated (salt inside the artifact moves to the surface layer of the artifact due to moisture evaporation and then crystallizes, eroding the surface of the artifact and causing damage), so I believe that after desalination, some kind of method to fortify the glass is employed. In the future, if any glass items are excavated from archeological sites associated with Japan, we must be sure to engage in serious research in terms of conservation science as well.

As for what kind of contributions Japan can make, salvaging artifacts is one way we can do this, and conserving local sites is another significant option. If we choose to conserve artifacts as they were at the bottom of the ocean, we first have to survey the soil. My place of work is currently studying the methods to be used if we then decide to rebury the artifacts and conserve them on site. Japan can make significant contributions by researching these reburying conditions and disseminating the findings.

With regard to the treatment of salvaged items as well, many of them are made from blended materials, such as wood and metal. Recently various methods have been used to treat these items, including the use of trehalose; this advanced method from Japan is now being shared with the rest of the world. While research is ongoing, I feel that furthering research in this way is one contribution Japan has to offer.

Session 3: Global Perspectives on the Oceans and Cultural Heritage-Maritime Exchanges Between the Mediterranean and the Caribbean

SUTO Yoshiyuki
(Professor, Graduate School of Humanities, Nagoya University)

Born in 1962, in Yokosuka City, Kanagawa Prefecture. After majoring in archeology at the University of Tokyo, he studied abroad in Athens on a Greek government sponsorship. His area of specialism is ancient Greek history and the history of eastern Mediterranean cultural exchange. In recent years, he has been engaged in field research in Egypt, studying the dynamics of Egyptian society during the Hellenistic period. His main published works include Ancient Greece: Expansion into the Mediterranean (2006) and Hellenism in the World of the Nile: Encounters between Egypt and Greece (2014).

ITO Nobuyuki
(Assistant Professor, Graduate School of Humanities, Nagoya University)

Scholar of Mesoamerican archaeology, in particular the origins of Mesoamerican civilization, with a focus on preclassic culture. He has conducted archaeological surveys in Mexico, Guatemala and Honduras. He also works to elucidate features of Mesoamerican civilization as demonstrated through stone carving, in particular with regard to the Olmec civilization that produced the giant stone head statues and other works. He is currently excavating and investigating the ruins of ancient cities with a focus on El Salvador as a crossroads between Mesoamerican civilization and the cultures and civilizations of regions further to the south.

SUTO: Hello, everyone. My name is SUTO Yoshiyuki of Nagoya University (Figure 1). Today I will comment from the perspective of my specialty area, the Mediterranean Sea.

Regarding the sea as a topic of discussion, the Mediterranean Sea is known as the setting of works by the French historian and author Fernand Braudel (Figure 2). Although his work *The Mediterranean World* focused on the 16th century, recent interest appears to have shifted to the Mediterranean world before and also after that period.

A particularly topical title is The Corrupting Sea: *A Study of Mediterranean History* by Peregrine Horden and Nicholas Purcell (Oxford, 2000); it is about the world of connected smaller environments which divided the Mediterranean Sea.

Figure 1

If we had more time, I would have liked to discuss our perspective on the oceans in the context of the Indian Ocean as well.

Personally, I am interested in how knowledge in the broader sense expanded alongside the movement of objects in the Mediterranean Sea, particularly centered on Greece (Figure 3). Aided by the teachings of various experts worldwide, I have been researching the movement and organization of knowledge in the ancient Mediterranean Sea. The proceedings of an international research conference held on this topic in 2018 will soon appear in Austria as *Transmission and Organization of Knowledge in the Ancient Mediterranean World* (Y. Suto (ed.), Vienna, 2021).

The Mediterranean Sea is characterized by being an extremely limited space clearly surrounded by continental land. I think it is reasonable to consider this area roughly in terms of three scales (Figure 4). The yellow circle in the middle of the slide is the core area of Greece. This range includes roughly, for example, the Minoan and Mycenaean civilizations, the Delian League of classical Athens, and so on. So first, there was movement and connection of people connected by the ocean within this range.

However, Greece had notably important links to the greater area of the eastern Mediterranean Sea, as shown here in this white circle around it. I call this the expanded sphere of ancient Greek civilization. While surveying Egypt, I first became aware of this maritime connection when studying amphorae (unglazed bisque-fired ceramic vessels used to transport liquids such as wine and other items) that were used for marine transportation of wine (Figure 5). Amphorae have been excavated in large quantities from our archaeological survey site at Achoris in Egypt, about 400 km inland from the Mediterranean Sea. This has made me acutely aware of the importance of maritime trade. Looking at the bottom right of this map, the tip of the Italian peninsula and the southeastern tip of Greece in the Aegean Sea have been circled; amphorae made in these locations have been excavated in large quantities from our Egyptian survey site.

This actually points to a more serious issue; namely, the fact that in archeology, we tend to focus on tangible objects, despite the fact that underlying trade in tangible objects, there was often movement of information and intangible things (Figure 6). This naturally includes the knowledge I previously mentioned, while the amphorae traded during the Hellenistic age were almost certainly the return cargo of wheat and

Figure 2

Figure 3

Figure 4

Figure 5

grain. So we must remember that using the amphorae was a way of restoring the trade of wheat, which has left no physical trace, and other valuable goods. Also, in the study of material culture, the focus has been on static points (places where objects are made and used, etc.), but a fundamental aspect of objects and people is that they are not static, and instead move in various ways. Dr. SASAKI mentioned in his presentation that sunken ships are snapshots of that instant of distribution. I think we need to focus more on artifacts such as sunken ships in order to learn more about this kind of movement in the Mediterranean Sea as well.

Also, from an archaeological perspective, the movement of objects tends immediately to be connected with trade. However, in the case of Greece and the Mediterranean, there is a wealth of literature indicating that objects were also moved by looting and gifting, as much as by trade (Figure 7). The widely accepted theory is that the Uluburun ship, mentioned at the start of the symposium, transported goods for gifting. We should pay more attention to these processes and the aesthetic senses and knowledge in the broader sense which moved along with them.

In the Mediterranean in particular, an idea that has gained traction in recent years is that the Greek world emerged from the movement of goods and from networks rather than from the formation of networks among existing cities. I am also interested in whether something similar can also be said about Asia and the area around the Indian Ocean (Figure 8).

ISHIMURA: Thank you, Dr. SUTO Since Braudel's *The Mediterranean World*, the topic of maritime exchange in the Mediterranean has been extensively researched. Some of the most recent findings have been shared today, and we have a good understanding of how this research should also be referenced when considering maritime exchanges in the Asia Pacific region.

Moving on, let me ask Dr. ITO to comment from the perspective of Central and South America.

ITO: Hello. My name is ITO Nobuyuki of Nagoya University. I am not a specialist in maritime archaeology, so I will focus on the connection between the New World and Old World, focusing on the topic of "people and objects connected by oceans" (Figure 1).

Figure 2 shows Acapulco, a port on the New World side of the galleon ships' route connecting the New World and the Old World. There you'll find Fort Santiago-now the Acapulco Historical Museum-a place with very close connections to Japan.

The connection between Japan and the oceans of the New World began during the Age of Discovery.

Figure 6

Figure 7

Figure 8

For 250 years, from the 17th century to the start of the 19th century, trade was conducted by galleon ships via Acapulco. It is thought that the maritime exchanges between Japan and the New World started when some galleon ships ran aground in Japan.

If we look at the routes of the galleon ships and Spanish fleet during the Age of Discovery, we see that to reach the Americas, called the New World, from the Philippines, sailing to Acapulco was a prerequisite. So products from Manila, the Moluccas (now the Maluku Islands) or so-called Spice Islands, China, and Southeast Asia arrived at Acapulco. The loaded cargo was then transported overland, from Acapulco on the Pacific Ocean side to Veracruz on the opposite side (Mexico Bay and the Atlantic Ocean). The cargo was then taken to Europe by Spanish naval vessels.

Galleon ships were built not just in Europe, but in Japan as well. In the 17th century, One was built in the Sendai feudal domain: Hasekura Tsunenaga, head of the Keicho Mission to Spain and Rome, is said to have used a galleon ship when he and his Mission crossed the Pacific Ocean.

Figure 1

Figure 2

The Mission traveled inland from Acapulco via Mexico City, the capital of the Viceroyalty of New Spain (Virreinato de Nuevo España), and moved on to the Atlantic Ocean side, where they boarded a different ship bound for Spain in Europe. Legend has it that there are still Japanese descendants living in Coria del Rio to the south of Seville in Spain. I have participated in administering DNA analysis surveys in Spain. Based on the study results, there was no positive indication of Japanese descent. However, as DNA analysis technologies advance further, if the presence of Japanese descendants becomes clear, it may be possible to determine that people bearing the local Japon (Spanish for Japan) surname are of Japanese descent.

From around the 16th century to the mid-19th century, enslaved people from Africa were bought and sold and taken to Central and South America. Recent DNA studies have revealed that most African-Americans have roots in Africa. Also, the Garifuna, who live mainly along the Caribbean coastline of Honduras, Nicaragua, Guatemala and Belize in Central America, are said to be a mixed-race people descended from enslaved Africans and the indigenous people of the Caribbean.

Their music is called Garifuna music, and it is closely connected with dance (Figure 3). The traditional instruments that they have long used are mainly drums, maracas, and the marimba (xylophone). In this photo (taken in Antigua City in Guatemala), you can see the marimba (xylophone) and maracas. Many people in Guatemala currently believe that the traditional marimba, which can be found from Guatemala to the Mexican state of Chiapas, may originally have come not from Africa but from around Guatemala.

Let us consider Mexico from the perspective of international exchange, based on this photo (Figure 4). The photo shows the Casa del Risco colonial-era house in Mexico City.

This fountain is decorated with ceramics traded at the time. This includes decoration made with Imari ware (Japanese porcelain from Hizen).

Looking at the situation in Central and South America in terms of the ratification of the UNESCO Convention on the Protection of the Underwater Cultural Heritage, almost 20 countries have either ratified it or are considering it. These countries include Mexico and Argentina, where cultural heritage related to maritime exchange is protected by both domestic and international laws. However, Argentina does not have many specialists who can work on conserving excavated artifacts, and the results of a questionnaire survey in Mexico show that there is minimal budget for the conservation and exhibition of these artifacts. In addition, the governments of Guatemala and El Salvador are extremely lackluster in their efforts to conserve underwater cultural heritage. An acquaintance of mine, who is an expert in underwater archaeology in El Salvador, laments that there is no government assistance even for conducting surveys. Researchers of underwater archaeology in Guatemala also say the same thing.

In fact, there are anecdotal reports of interference in surveys in these locations.

I believe that Japan can be involved in conservation and restoration work in Latin America through international cooperation.

ISHIMURA: Thank you, Dr. ITO. When discussing maritime exchange in the New World, Spain and Portugal often come to mind. But as indicated in the story of Hasekura Tsunenaga, there is also a connection with Japan. The Caribbean region also has important connections with the slave trade with Africa, such as the Garifuna. These perspectives remind us that the world is connected by oceans. It is also very clear that we need to closely consider maritime exchange at the global level.

Figure 3

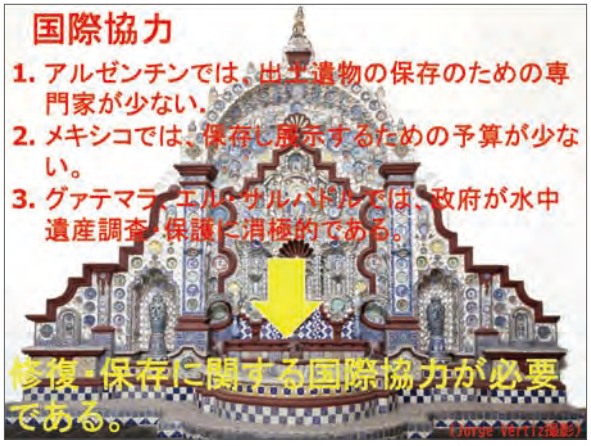

Figure 4

Session 4: Issues and Prospects for International Cooperation

ISHIMURA: Lastly, Dr. ITO highlighted the topic of international cooperation. A key aim of the Japan Consortium for International Cooperation in Cultural Heritage (JCIC-Heritage) is finding ways to channel research findings into international cooperation. I would like to invite today's participants, represented by Dr. KIMURA and Dr. FUNO, to share any comments they may have from this perspective. First, let me ask for comments on the potential of international exchange from Dr. KIMURA, who has been deeply involved in underwater cultural heritage and has extensive experience in overseas research.

KIMURA: I have a few opinions on how the JCIC-Heritage can contribute to international cooperation, using overseas research on underwater cultural heritage (Figure 1). First, I will briefly outline the current situation overseas, specifically on underwater cultural heritage rather than maritime cultural heritage (Figure 2).

Mechanisms for conserving underwater cultural heritage are established to a certain extent in the international community. These mechanisms are promoted by two international organizations. You are all familiar with the first one, UNESCO, while the second one is ICOMOS (The International Council on Monuments and Sites). These two organizations have been extensively involved in the principles and legal mechanisms for the protection of underwater cultural heritage.

Looking at the history of mechanisms for the protection of underwater cultural heritage, prior to these two international organizations, in the 1980s, the UN included clauses in its Convention on the Law of the Sea for the protection of cultural heritage in the oceans and archaeological artifacts (Figure 3). Following that, it was debated whether these clauses were sufficient. Led by a group of legal experts engaging in international discussion on the protection of cultural heritage, it was concluded that there was a need for slightly stronger mechanisms for the protection of underwater cultural heritage. ICOMOS listened to this view, and in 1996 promulgated the Charter on the Protection and Management of Underwater

Figure 1

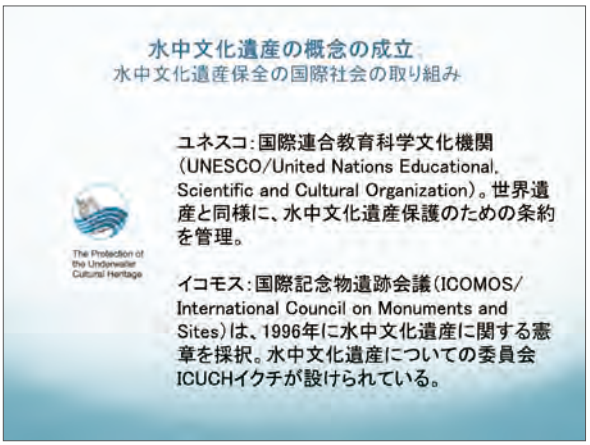

Figure 2

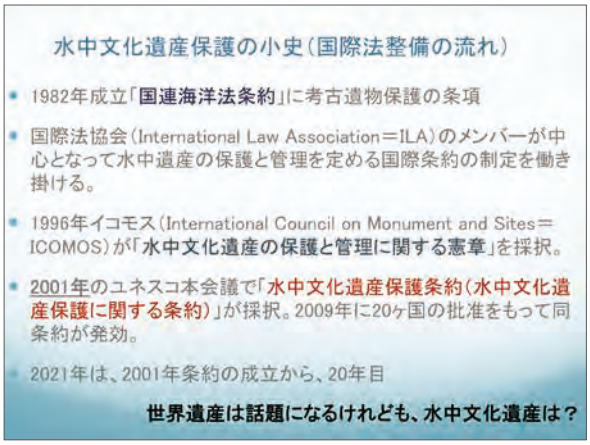

Figure 3

Cultural Heritage.

This Charter underpinned the adoption of the Convention on the Protection of the Underwater Cultural Heritage at the General Conference of UNESCO in 2001. This Convention came into effect in 2009.

Looking chronologically in this way, it is now 20 years since the 2001 Convention was established, and as such, 2021 can be seen as a milestone. However, as for the situation in Japan, compared to the level of discussion on world heritage stipulated in the same UNESCO Convention, I think we can say there has been little discussion on underwater cultural heritage in the past 20 years.

With regard to the current situation in neighboring regions, in Southeast Asia, for example, UNESCO has set up training opportunities regarding the protection of underwater heritage (Figure 4). However, each country is grappling with its own issues in this training. The protection of underwater cultural heritage is more advanced in some Southeast Asian countries than in others. In Indonesia, regrettably, notwithstanding UNESCO training, the illicit trade in artifacts salvaged from the ocean floor has not been completely eliminated. This table contains data on the sale of ceramic items salvaged from sunken ship archaeological sites. It shows how many ceramic items have been retrieved from archaeological sites, and how many of them have been sold. It is a staggering number, isn't it? These ceramic wares are not treated as cultural heritage, but rather as goods to sell for a profit. In addition to the salvage issue, countries in Southeast Asia are also dealing with a lack of established techniques to conserve salvaged items. In this regard, the trehalose wood preservation technique mentioned by Dr. TAMURA is perhaps a field that Japanese researchers can study with their fellow researchers, both in neighboring Asian nations and in developed nations. Also, on the topic of maritime cultural heritage, there has recently been much discussion on the Maritime Silk Route. Japan has experience in research on the Maritime Silk Route, so perhaps we also need to be involved in research and discussions on this area and its associated heritage.

When considering maritime cultural heritage, I believe that it is very important we pursue this topic from transregional and cross regional perspectives, across multiple regions, rather than focusing on individual countries or regions (Figure 5). My hope is for Japan to play a role in broadening this approach within the scope of international cooperation.

ISHIMURA: Moving on, I would like to ask Dr. FUNO to comment. He has been working with and advising the JCIC-Heritage for many years.

FUNO: I have been involved in the JCIC-Heritage for many years. I am currently in my fourth year of serving as the Chair of the Southeast and South Asia Subcommittee. Frankly, the range of activities possible within the JCIC-Heritage's current framework is not

Figure 4

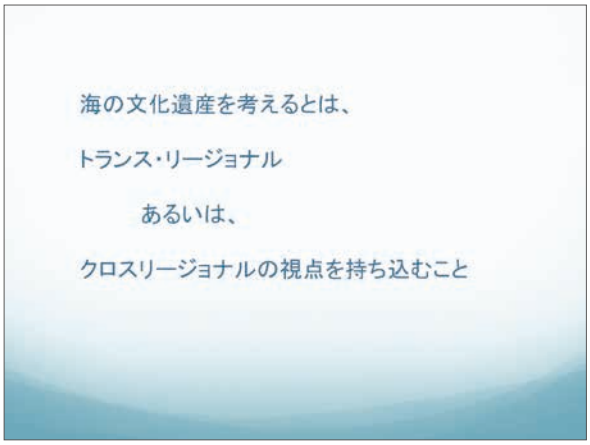

Figure 5

very broad.

At today's symposium, which mostly consisted of relatively academic discussions, I myself may have raised the most pressing problem we face now. The conservation of cultural heritage has both country-specific and region-specific contexts, with a range of different issues. In the background of these issues is the use of the open Indian Ocean and Pacific Ocean, these very international and highly political waters. While the marine world as originally one of free waters, owned by no one, may be only a philosophy, I wish to consider international cooperation from the starting point of respecting the culture of various regions, at least on the premise that the oceans are a shared space from this perspective.

My specialty is architectural and urban planning, and in these fields, there is a certain shared understanding of valuing cultural heritage in community-building throughout. However, when discussions are difficult due to complex international relations and political power relationships in each region, I think it is important to share regional experiences.

This is about recognizing one another's different cultural backgrounds, while having discussions on specific regions and sharing experiences of conservation methods and techniques. By further expanding this network that connects regions, I believe that the JCIC-Heritage can also further contribute to international cooperation.

ISHIMURA: Both Dr. KIMURA and Dr. FUNO have pointed out that the oceans are transregional. So in terms of advancing international cooperation from that viewpoint, Japan is extremely fortunate to have an array of researchers studying various countries. This is one of Japan's academic strengths, and also has the potential to lead to transregional international contributions. I hope the JCIC-Heritage can also become such a platform.

I'd like to thank all the presenters and commentators for their time.

Closing Remarks

YAMAUCHI Kazuya (Professor, Research Institute of Cultural Properties, Teikyo University)

1984 graduate of the Waseda University, School of Humanities and Social Sciences (Asian History), master's degree from the Waseda University, Graduate School of Letters, Arts and Sciences in 1988, master's degree from the University of Tehran, Faculty of Literature and Humanities in 1992. After joining the Tokyo National Research Institute for Cultural Properties in 2003, employed in current position as of 2016. Specialist in the cultural history and archaeology of Iran and Central Asia. Actively involved in the protection of cultural heritage in the Caucasus, Central and West Asia, including Afghanistan (Bamiyan), India (Ajanta), Tajikistan, Kazakhstan, Egypt, Jordan and Armenia.

As one of the people involved in planning today's symposium, "Maritime Network and Cultural Heritage-People and Objects Connected by Oceans," I will be giving the closing remarks for today.

First, I would like to thank the many participants in today's symposium. We are delighted by the high level of participation, which also proves just how many people have an interest in the oceans and their cultural heritage.

This symposium was planned as part of the release of the findings of the international cooperation survey on Maritime Network and Cultural Heritage. In 2019, when I proposed this international cooperation survey, I had in mind that its core would be the Maritime Silk Route, rather than focusing on major topics like maritime network and cultural heritage.

Perhaps many of you recall the registration of the Silk Road, the trading routes network of the Chang'an-Tianshan Corridor, as a UNESCO World Heritage in 2014. Of the three routes of the Silk Road (the Steppe Route, Oasis Route, and Maritime Route), only a part of the Oasis Route was registered as World Heritage. Nonetheless, this registration led to recognition and inspiration that triggered a momentum in countries and regions to register the Maritime Silk Route and other routes on the Silk Roads as World Heritage, spurring action and initiatives to advance this movement. This momentum has given further significance to initiatives to preserve and protect, survey and study the cultural heritage along the Maritime Silk Route, as well as the investigation of potential Japanese cooperation with these initiatives.

Meanwhile, while discussing the contents of this international cooperation survey, the view emerged that there was no need to focus solely on the Maritime Silk Route. Many people expressed the view that it might be beneficial to take a much broader, worldwide view of exchanges among people via the oceans, and the cultural heritage associated therewith. Also, the ships and shipbuilding that enabled maritime trade and exchange and the invention of navigation techniques, as well as the craft items and techniques that emerged in each area and region through contact with these ships and the people directly involved in those activities-these are all similarly and closely connected with maritime cultural heritage. Another aspect of maritime cultural heritage that easily comes to mind is the items remaining underwater, such as sunken ships. But the port facilities and port towns on land can also be said to be part of maritime cultural heritage. Today's symposium brought together researchers who share these views.

Dr. SASAKI talked of the appeal of sunken ships. Surveys of sunken ships provide direct evidence of their structure and cargo. They are indeed the time capsules of the sea.

Next, Dr. KIMURA discussed advances in shipbuilding and navigation techniques. Using

specific examples of the techniques underpinning maritime exchange, he employed the viewpoint of so-called marine archaeology.

Dr. TAMURA presented the findings of her chemical analyses of glass beads discovered throughout Asia including Japan, and outlined how the world was connected historically and what trade between east and west was like at that time. These specific examples of glass beads will continue to further clarify how objects moved around through maritime exchange.

Following these presentations largely about physical objects, Dr. YOKKAICHI talked about the people actually involved in these exchanges and trade. His presentation helped us to understand the Islamic merchants who were active in East-West exchange in premodern Eurasia and the oceans of Asia, discussing the reality of their activities, and the wide geographical range in which they were active.

The final presenter, Dr. FUNO, talked of port towns in the maritime world of Asia. Although the Japanese term for "port city" is now relatively unusual, these port towns were the contact points connecting the oceans and the land. And it is here, in these contact points of exchanges of people and objects via the oceans, that we find related cultural heritage.

Dr. ISHIMURA was the moderator of today's forum, in which the commentators were Dr. SUTO, who specializes in Greece and the Mediterranean, and Dr. ITO, who specializes in Central and South America. This forum went beyond the south and south-east coasts of the Eurasian continent, covered by the examples cited in today's presentations, and took a wider, global view of the oceans and cultural heritage. This symposium reminded us of the common theme shared by all of us: everywhere we look, we will find people and objects connected by oceans, and maritime cultural heritage. 70% of the earth is covered by the oceans. The remaining 30% is the land we live on. We tend to turn to land-based evidence when examining interactions and contact among humanity, but when we look at exchanges of people and objects across the vast oceans, it can lead us to new discoveries and realizations. The cultural heritage created through these exchanges of people and objects, found throughout the world, has come into greater focus in the 21st century. Also, as mentioned before, there is now a movement to register the Maritime Silk Route as World Heritage.

This slide is a map created on Google Earth (Figure 1).

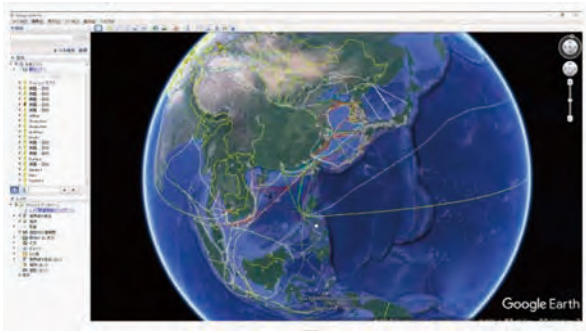

Figure 1

It shows the network of maritime exchanges in East Asia. Toward the registration of the Silk Road as World Heritage in the future, ICOMOS asked us to create a base map of East Asia, and this map was created with the help of Japanese researchers. This map shows not only ocean routes, but also the routes from port towns and cities to inland areas. This map shows how Asia was connected not just by land routes, but by ocean routes as well. As Dr. SUTO and Dr. KIMURA have pointed out, we need to consider the exchanges of people and objects within the area encircling a single ocean (the ocean area), as well as cooperating for the protection thereof.

One of the aims of this symposium was to introduce maritime cultural heritage and foster interest in this area. With so many people participating in this symposium, I feel we have largely achieved this aim. I also hope this symposium will serve as a catalyst for considering how Japan can cooperate in the future in the field of researching and protecting maritime cultural heritage. This was another aim of this symposium: to enable us to consider how Japan can contribute in this field moving forward.

As you can see on the map, the oceans are an important stage connecting people and objects.

People have sailed out on these oceans and connected with the world. Their traces remain as cultural heritage throughout the world. In this 21st-century world of increasing globalization that we live in, I hope this symposium will become an excellent impetus for research on the traces

remaining of humanity's journeys across the oceans and for the launch of activities to protect these traces. With apologies for speaking at some length, this concludes my closing remarks. Thank you for your attention.

FY2021 Symposium Report

“Maritime Network and Cultural Heritage -People and Objects Connected by Oceans- ”

February 2023

Published by :

Japan Consortium for International Cooperation in Cultural Heritage

C/O Independent Administrative Institution National Institutes for Cultural Heritage
Tokyo National Research Institute for Cultural Properties
13-43, Uenokoen, Taito-ku, Tokyo 110-8713, Japan
Tel: +81-(0)3-3823-4841 / Fax: +81-(0)3-3823-4027

Edited by: FUJII Ikuno
(Japan Consortium for International Cooperation in Cultural Heritage)

Printed by: Choyodo Printing Co., Ltd.

JCIC-Heritage