PROGRAM

9:30 AM
CHECK-IN AND REGISTRATION

9:45 AM
OPENING REMARKS

10–10:30 AM
REFRAMING NATURAL LUSTER: THE ART AND HISTORY OF KOREAN MOTHER-OF-PEARL LACQUER
Kyeongmi Joo, Lecturer, Chungnam National University

10:30–11 AM
THE CONSERVATION OF FOUR KOREAN LACQUERWARE OBJECTS IN THE ASIAN ART MUSEUM’S COLLECTION
Colleen O’Shea, Mellon Fellow in Conservation, Historic New England

11–11:30 AM
ANALYTICAL INVESTIGATION OF ASIAN LACQUERS FROM THE ASIAN ART MUSEUM OF SAN FRANCISCO
Herant Khanjian, Assistant Scientist, Materials Characterization Group, The Getty Conservation Institute

11:30–11:45 AM
BREAK

11:45–12:15 PM
HAS YOUR LACQUER LOST ITS LUSTER? PHYSICAL CHARACTERISTICS THAT CONSERVATORS, CURATORS AND COLLECTORS SHOULD RECOGNIZE
Marianne Webb, Senior Conservator, Webb Conservation Services

12:15–12:45 PM
CONTEMPORARY USE OF TRADITIONAL ASIAN LACQUER
Sunhwa Kim, Associate Professor, Wood/Furniture Design Coordinator, Buffalo State College

12:45–1:15 PM
DISCUSSION
It is an exciting time for the study of Asian lacquer. In the field of conservation, there have been recent initiatives to undertake a systematic survey with the aim of improving the characterization, understanding and preservation of this unique material. As one of the most important collections of Asian artworks in America, the Asian Art Museum has partnered with the J. Paul Getty Museum and other museums to participate in the groundbreaking project "Recent Advances in Characterizing Asian Lacquer," also known as "RAdiCAL." Until recently, the study and analysis of Asian lacquer had been confined to Chinese and Japanese objects. As a result of the collaboration between the Getty and the Asian Art Museum, samples collected for analysis and inclusion in the study now include Korean lacquerware. The Asian Art Museum is a forerunner in the field because of its expertise in Korean art and active collecting of Korean mother-of-pearl lacquerware, resulting in the largest collection in the United States. The conservation of the four Korean lacquer objects that will be introduced at today's symposium is the result of the museum's continual efforts to research and preserve Korean lacquerware.

As an important contributor to the data being collected and participation in workshops with conservators and scientists from around the globe, the Asian Art Museum has applied procedures for analyzing the constituent material and techniques of production for Asian lacquer. These factors vary by geography, availability of raw materials and historical context. So far, the museum's lacquer conservation project has already discovered a much wider range of materials in Asian lacquers than was originally believed to be used.

In this symposium, you will learn about the expansion of our knowledge by previously underutilized analytical techniques such as Pyrolysis-gas chromatography/mass spectrometry and how the resulting data and interpretation can be organized and analyzed using rapidly developing technology and software tools. This process allows for the creation of a database that can help make sense of the multitude of information gathered through these initiatives. This reflects the efforts of the museum's conservation team to better understand the art historical and scientific significance behind Korean mother-of-pearl lacquer.

Beginning with the Asian Art Museum's conservation of the four Korean lacquer objects that received close study, scientific analysis and treatment, and now followed by this symposium, which brings together scholars from around the world, this project — generously funded by the Overseas Korean Cultural Heritage Foundation — has highlighted the benefits of collaboration between conservators and scientists. The interest generated by this recent collection of information has international importance and lays the groundwork for future research. The concepts being developed today to study lacquer may also be applied to the study of other materials. Continued investigations may allow us to do the same for the inlay materials found in lacquers, including mother-of-pearl, ray skin and tortoiseshell. The wealth of information not only contributes to our understanding of how, where and when traditional lacquer was created, but also can assist us in devising the most appropriate methods for ensuring its long-term preservation.

KATHY GILLIS
HEAD OF CONSERVATION
ASIAN ART MUSEUM
KYEONGMI JOO

Kyeongmi Joo is a lecturer in the department of archaeology at Chungnam National University. She completed her Ph.D. in art history at Seoul National University in 2002.

Joo specializes in the history of arts and crafts of East Asia and is currently serving as an associate member of the Committee of Cultural Heritage at the Cultural Heritage Administration of Korea. She was previously a Humanities Korea research professor at the Busan University of Foreign Studies and Sogang University, and a research professor at Pukyong National University in Korea, as well as a visiting scholar at Kokugakuin University in Japan. She has conducted research on various topics related to production techniques of East Asian arts and crafts, cultural transmission and variations between China and Korea.

Joo’s book “Study of Buddhist Reliquaries from Ancient China” (Iljisa, 2003) examines extant Buddhist reliquaries and those relevant historical records from the Six Dynasties period to the Tang period, focusing on patrons and religious practices related to Buddhist reliquaries. She has published many journal articles not only on Song and Liao Buddhist reliquaries but also on Baejje and Silla Buddhist reliquaries. Her recent book “Blacksmith” (Minsokwon, 2011) explores the traditional production techniques of ironsmiths and its historical context in Korean culture, especially by examining the traditional blacksmiths workshops of Chungnam Province in Korea. In 2014, she became a member of the advisory board for the special exhibition Modern Lacquerware Inlaid with Mother of Pearl held at the Busan Modern History Museum and wrote a short article for the exhibition catalogue on lacquerware with Nangnang patterns during the Japanese occupation period of Korea.

REFRAMING NATURAL LUSTER:
THE ART AND HISTORY OF KOREAN MOTHER-OF-PEARL LACQUER

Mother-of-pearl lacquer is an exquisitely crafted traditional Asian art form created from wood, lacquer and inlaid shells. Since the Neolithic period, natural shells have been used as ornamental materials all over the world. Being surrounded by the sea on three sides, the Korean Peninsula has an abundance of shells. After eating shellfish, Korean people would utilize shell remnants as ornaments and decoration. As a result, a distinct technique and style of mother-of-pearl lacquer craft was developed.

Although various types of shells are used in this art, the most important and prevalent shell type is the abalone shell from the southern sea of the Korean Peninsula. The inner surface of the abalone shells show the dazzling and lustrous colors of nature enabled by the interference color effect. This lustrous effect is produced on the crystallized surface material by the interference of many rays in natural white light. Lacquer artisans in ancient Korea devoted their lives to redesigning and reframing this natural color effect for use in a new handcrafted lacquer object. They exquisitely combined the lustrous abalone shells from the sea with lacquer, which is made from materials that come from trees.

Even before the complete development of mother-of-pearl lacquer in Korea, Korean craft masters utilized many natural materials with the interference color effect, such as jewel beetle wings or mica flakes. However, only after the use of the abalone or turban snail shells did the mother-of-pearl inlay techniques and lacquer become fully developed and culminate in technical perfection.

The historical origin of Korean mother-of-pearl lacquer crafts is not yet clearly determined, although the finest artworks of the craft have been traced to the Goryeo dynasty (918–1392), especially during the 12th century. Only approximately 20 Goryeo dynasty mother-of-pearl lacquers remain in the world, but they represent the most refined and lustrous beauty produced by those creative artists in medieval Korea.

This elaborate and dazzling artwork tradition has been handed down by craftsmen of the Joseon dynasty (1392–1910) to their modern Korean counterparts, while the style and forms of traditional Korean mother-of-pearl lacquers have constantly transformed in tune with historical and cultural changes.

This lecture will illuminate the stylistic and material characteristics of Korean mother-of-pearl lacquers and provide an overview of their stylistic and technical developments from inception through modern times. The traditional Korean mother-of-pearl lacquer craft developed its own artistic style distinct from other East Asian countries in terms of technique, style, pattern and materials. Korean mother-of-pearl lacquer craftsmen have always showcased the natural luster of materials to imbue everyday objects with exquisite and luxurious beauty.
Colleen O’Shea is the Mellon Fellow in Objects Conservation at Historic New England, the nation’s oldest and largest regional heritage organization. She received her Master of Arts degree in art conservation from SUNY Buffalo State in 2015, specializing in objects conservation. She completed graduate internships in conservation at the Agora Excavations in Athens, Greece; the Gordion Excavations in Yassihoyuk, Turkey; and the Chincha Valley Archaeological Project in Chincha Alta, Peru. Her third-year internship was at the Asian Art Museum in San Francisco, after which she served as the project conservator for the Korean lacquer treatments. Her special interest is the conservation of organic materials, particularly textiles, basketry and lacquerware objects.


The Conservation of Four Korean Lacquerware Objects in the Asian Art Museum’s Collection

This talk addresses the conservation of four late Joseon dynasty lacquerware objects from the Asian Art Museum’s collection. The objects were the center of extensive study and treatment in preparation for the exhibition *Mother-of-Pearl Lacquerware from Korea*. The main goals in the conservation process were threefold: 1) to provide a detailed study and examination of the objects to add to the body of knowledge about late Joseon lacquerware objects and to inform the treatment steps to be taken; 2) to ensure that the objects are stable for exhibition and storage; 3) to make judicious aesthetic compensation for losses of inlay and lacquer.

In terms of examination and study, the objects were looked at visually and under ultraviolet radiation. The ultraviolet radiation helped to reveal differences in materials used, prior repairs and surface coatings. Small samples were taken for cross-section analysis and instrumental analysis by the Getty Conservation Institute. The cross sections showed that each object had a textile layer, followed by a ground layer, followed by one or further layers. X-radiographs were taken of each object, which helped to reveal where there had been previous repairs to structural parts of the objects. Elements were analyzed with X-ray fluorescence spectrometry, including the gold-colored wire and golden flakes, both of which were determined to be composed of copper and zinc.

The results of the examination helped to determine the treatment steps. For example, it was discovered that the round table had a final coating of wax on top of the original surface. This wax layer was in good condition and was protecting the original surface, the brass wire inlay and all of the other decorative inlay. The wax layer was left in place and lightly cleaned and buffed.

To meet the second goal of preparing the objects for exhibition, all loose parts, such as lifting inlay elements, lacquer and textile layers were secured with a conservation-grade adhesive. After securing loose elements, the objects are safe to be displayed or stored without risk of further losses.

For the last goal of filling losses in the lacquer and decorative inlay elements, the object was looked at in concert with the curator to determine the desired extent of compensation. The general aim was to render the designs legible again and to fill in losses that were distracting to the overall pattern. In all cases in conservation, we strive to make sure our treatment steps are reversible or retreatable. To this end, every material used to fill losses in inlay or lacquer should be removable, if so desired. The fill materials should also be readily detectable under magnification and ultraviolet radiation. Some innovative steps here included crafting fills for the ray skin inlay using paper and giving the paper a texture that matched that of the ray skin scales, and using cast acrylic paint for fills in the lacquer.
These objects have been conserved with generous support from the Overseas Korean Cultural Heritage Foundation.
HERANT KHANJIAN

Herant Khanjian received his undergraduate degree in chemistry from California State University, Northridge, and has been a member of the science department of the Getty Conservation Institute (GCI) since 1988. His research interests involve the detection and identification of organic media found in historical objects and architecture, including paintings, photographs, sculptures and decorative art pieces. He has co-authored articles in a number of professional journals on topics ranging from characterization of natural organic media to the study of modern paints and plastics. He is a co-author of "Solvent Gels for the Cleaning of Works of Art" (GCI, 2004). In recent years, he has been engaged in the Institute’s Conserving Modern Architecture Initiative on the conservation of the Eames House and the Salk Institute. He has also been involved in the Characterization of Asian and European Lacquers project. Khanjian is currently an assistant scientist in the Material Characterization group of the GCI.

ANALYTICAL INVESTIGATION OF ASIAN LACQUERS FROM THE ASIAN ART MUSEUM OF SAN FRANCISCO

In recent years, the characterization of Asian lacquers has been gaining increasing attention in the conservation field. The Getty Conservation Institute (GCI) has undertaken a long term research initiative to investigate the composition and behavior of a geographically diverse group of Asian lacquers. The project has been supported by the development of analytical procedures to facilitate the identification and differentiation of lacquers. It employs a sensitive pyrolysis-gas chromatography/mass spectrometry with thermally-assisted hydrolysis and methylation (THM-Py-GC/MS) methodology that delivers maximum information on the lacquer composition. The analysis benefits from a precision sample micro-excision procedure, using ultraviolet and visible light, to separate individual lacquer layers. It also utilizes histochemical stains to identify non-lacquer organic components in layers from sample cross-sections. Finally, a systematic protocol for data evaluation and interpretation is applied, through targeted library search from a large collection of published and unpublished marker compounds.

One important outcome from the development of the scientific procedures has been the assembling of hands-on workshops to provide conservators and conservation scientists a better understanding of lacquer sample composition. Recent Advances in Characterizing Asian Lacquers (RAdiCAL) workshops have facilitated the training of nearly 50 conservators and conservation scientists. The training has prompted participants to contribute useful information on unique and unpublished Asian lacquer marker compounds.

Lacquer samples originating from several Asian Art Museum collection objects were investigated in GCI’s Materials Characterization Laboratory. The purpose of the investigation was to study the stratigraphic composition and historical material use in the lacquered objects. A broad range of compounds were identified including Vietnamese (laccol), Korean (urushiol) and Burmese (thitsi) lacquers in the primary layers. In addition, some samples contained only shellac, while glue was found in other layers.

PEAK AREA % COMPOSITION

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<thead>
<tr>
<th>Component</th>
<th>Area Percentage</th>
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<tbody>
<tr>
<td>Thitsi</td>
<td>91.0%</td>
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<tr>
<td>Tallow Tree Oil</td>
<td>8.4%</td>
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<tr>
<td>Proteins</td>
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<td>Carbohydrates</td>
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<tr>
<td>Resins</td>
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<td>Other</td>
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MARIANNE WEBB

Marianne Webb is an independent conservator and researcher based on the West Coast of Canada. Previously, she was the decorative arts conservator at the Royal Ontario Museum in Toronto, where she developed her keen interest in Asian and Western lacquer.

Webb received an honors degree in fine art from the University of Toronto and a diploma in art conservation techniques from Sir Sandford Fleming College. A founding member of the International Council of Museums Committee for Conservation Working Group on Lacquer, she served as its coordinator for 12 years. She received the Samuel H. Kress Publication Fellowship in 1997, awarded by the American Institute for Conservation of Historic & Artistic Works, to write a manuscript on a conservation subject. “Lacquer: Technology and Conservation” was published in 2000. She is currently working on the second edition to be published by the Getty Conservation Institute.

This presentation is based on her 30 years of experience preserving Asian lacquer and her recent research carried out at the Getty Conservation Institute on the aging characteristics and discoloration of Asian lacquer.

HAS YOUR LACQUER LOST ITS LUSTER PHYSICAL CHARACTERISTICS THAT CONSERVATORS, CURATORS AND COLLECTORS SHOULD RECOGNIZE

The structure of Asian lacquer objects is complex. The combination of many layers of lacquer with different additives coated onto a variety of substrate materials naturally results in different types of deterioration. Understanding the aging characteristics and behavior of these surfaces has been the focus of many research projects in the past three decades. Recent studies at the Getty Conservation Institute have led the way in analyzing coatings to determine the type of lacquer, urushi, thitsi or laccol along with other ingredients, from common linseed oil to the unusual tofu. Behavior that seemed unpredictable in the past is beginning to be understood as we slowly learn how the ingredients and the history of the object affect it.

Natural aging and the environment can lead to both physical and chemical changes. For example, structural damage occurring to the core results in changes to the surface. Surface degradation by light and heat can affect not only the appearance of an object but invite further damage by water. Not only are individual parts of the object affected, but the interaction between the layers can cause damage. Understanding how damage has occurred is important for the custodian so that deterioration can be prevented and in many cases repaired.

Research undertaken in 2014 at the Getty Conservation Institute facilitated the understanding of how the initial formula affects aging. Eleven sample boards were made that represented five different formulas based on laccol lacquer and six based on urushi. The samples contained transparent lacquers, some with oil added and other with pigments as well.

After artificial aging with light and changing relative humidity, the physical characteristics were compared by four methods of assessment that conservators have previously used on Asian lacquer: measurement of gloss, measurement of surface pH, a comparison of microcracking using a scanning electron microscope, and observation of autofluorescence.

In all methods of evaluating the surface, the initial lacquer formulas made a difference in the results, and patterns of behavior are beginning to emerge. Conservators have used low pH measurements to evaluate the severity of surface degradation. However, when the 11 different Asian lacquer formulas were compared, the transparent lacquers consistently measured lower than any samples containing oil or pigments. Although they had the lowest level of pH, they retained the highest gloss. Gloss varied according to formula, with the greatest loss occurring on the sample colored by iron oxide.

Under ultraviolet light, the transparent lacquers showed more intense autofluorescence than those with oils or pigments, with laccol being brighter than urushi. Microcracking after exposure to RH cycling occurred on most samples, but many different patterns occurred. Transparent urushi had the least microcracking, which is consistent with the gloss measurements.

Asian lacquer can no longer be considered a single type of coating. Objects must be looked at more like paintings, where variations in the medium, additives and pigments differ according to time, place and the individual artist.
Since 2008, Sunhwa Kim, a South Korean lacquer and furniture designer, has been the coordinator of the wood/furniture design program at Buffalo State College in Buffalo, New York. Prior to teaching in Buffalo, she worked for six years as an Asian lacquer lecturer at several colleges and universities in Korea. She has studied at Ishikawa Prefectural Institute of Wajima Lacquer Art in Wajima, Japan. She holds two Master of Fine Arts degrees, one in design and craft from the Kanazawa College of Art in Japan, and one in furniture design from the Savannah College of Art and Design in the U.S. She holds a Bachelor of Fine Arts degree in wood furniture design from Dong-A University in Korea.

Passionately committed to preserving the craft of lacquer, Kim hopes the wonderful techniques of the past will continue to inspire modern artists to develop imaginative approaches to this tradition. Sharing her knowledge and passing on the tradition of lacquer craftsmanship are important to her, as is adding to the comprehensive knowledge base about this intriguing art form and contributing to the perpetuation of natural lacquering techniques. Kim would like to create objects that are aesthetically pleasing, with details that provoke emotion, increase enjoyment and improve the quality of people’s lives.

Great lifestyle shifts have occurred in East Asia over the past decades. These shifts are a result of many factors such as influences from the West, faster lifestyles, societal changes in respect to gender, economic changes resulting in diversification of vocations, goods, services, food and changes in manufacturing and materials.

These cultural shifts have had an impact on production in Japan and Korea. Furniture forms have changed to better accommodate the on-the-go generation that places less value on tradition and does not suit present spatial environments. Traditional lacquer craft and furniture is too expensive for most young people, and they prefer a contemporary style.

Even though contemporary craft/furniture in Korea accommodates people’s changing lifestyles, there is a substantial loss of quality. Mass-produced goods are less original. Synthetic materials do not foster the same emotional connections as natural ones.

The process of creating natural lacquer work is difficult, time-consuming, requires expensive materials/tools, involves numerous craftsmen and techniques, and can cause allergic reactions. There are also no longer many job opportunities due to the lack of demand.

Each Asian lacquer piece begins with inspiration and then requires research, sketches, form creation, lacquer foundation and the decoration process. There are a variety of material choices for the form, including wood, glass, metal, ceramic, leather, paper, fabric, plastic, etc. Wood is commonly used in Korea because it is easily available. The lacquer process also involves a variety of materials such as lacquer, pigment, charcoal, paper filters and sharpening stones. The decoration technique and materials offer many possible choices such as najeon and makie. Najeon, the mother-of-pearl inlay, is the most popular natural lacquer technique traditionally used in Korea. The term derives from “na,” refers to the conch or other spiral shells, and “jeon,” originally meaning decorative work using metal plate. Makie is a traditional Japanese technique of decoration. After having drawn patterns in lacquer on the surface of furniture or vessels, gold or silver powder and colored powder is sprinkled on and affixed. All techniques and processes involve specialized tools and equipment, such as a moisture box, lacquer-compressing stand, sander and cutting tool for mother-of-pearl, a variety of brushes, tools for chinking and make. It is always a challenge to keep the workspace, tools and materials free of dust.

The lacquer foundation process alone can easily take several months. However, if these processes, techniques, materials and tools are not preserved, they will be forgotten and will become difficult, or impossible, for future generations to recover.
This symposium is made possible by the generous support of the Overseas Korean Cultural Heritage Foundation.