



HUDSON MUSEUM

TECHNOLOGY
&
TRADITION

SHAPING INDIGENOUS COLLECTIONS
FOR THE FUTURE



Land Acknowledgment Statement

The University of Maine recognizes that it is located on Marsh Island in the homeland of the Penobscot Nation, and the University of Maine at Machias is situated in the homeland of the Passamaquoddy Tribe. Both of our universities recognize that in these homelands, issues of water and territorial rights, and encroachment upon sacred sites, are ongoing. Penobscot and Passamaquoddy homelands are connected to the other Wabanaki Tribal Nations — the Maliseet and Mi'kmaq — through kinship, alliances and diplomacy. UMaine and its regional campus also recognize that the Wabanaki Tribal Nations are distinct, sovereign, legal and political entities with their own powers of self-governance and self-determination.

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PROJECT INTRODUCTION

The Hudson Museum received a UMAI seed grant to support a collaboration with the Advanced Structures and Composites Center and Intermedia Programs to replicate a culturally - sensitive object in our collection. This object, a Tlingit Frog Clan Helmet (HM5040), is among 7 items requested for repatriation by the Central Council of Tlingit and Haida Indian Tribes of Alaska (CCTHITA). Helmets or hats are the most important objects of cultural patrimony for the Tlingit people.

1.

THE FROG CLAN HELMET'S CONTEXT AND PROVENANCE

GRETCHEN FAULKNER, HUDSON MUSEUM, THE UNIVERSITY OF MAINE

Between 1880 and 1930 collectors and museums descended upon Native communities around the world to document their cultural traditions and to collect material culture. The traditional Northwest Coast chief's house displayed clan-owned regalia worn and danced by clan leaders on important ceremonial occasions, such as the death of clan leaders and potlatches. The wearing of clan hats must be reciprocated at these events.

In the late 19th and early 20th centuries, efforts to eradicate indigenous languages, traditions, and ceremonial and religious practices undermined cultural systems and allowed clan-owned objects to be removed from their communities. Some were sold from shops in Alaska to visitors to the region, such as Martin's Old Curiosity Shop in Juneau Alaska, Walter C. Waters Bear Totem Shop in Wrangell and the Gold Nugget Shop in Juneau which was owned by Belle and Robert Simpson. The Hudson Museum has Northwest Coast holdings from the Simpson and Waters shops.

“INDIGENOUS COMMUNITIES AROUND THE WORLD ARE WORKING COLLABORATIVELY WITH MUSEUMS TO EXERCISE GREATER CONTROL OVER COLLECTIONS THAT REPRESENT THEIR CULTURES”

The Frog Clan Helmet was part of a 1982 bequest to the University of Maine from the estate of William P. Palmer III, which included an extraordinary gift of pre-Columbian objects ranging from Olmec to Aztec and an assemblage of 160 Northwest Coast masks, potlatch bowls, Chilkat textiles and tourist items. The Northwest Coast Collection includes deaccessioned museum holdings and objects acquired from Native American Art dealers, such as the Simpsons and Waters. Collection documentation indicates that Palmer acquired the Frog Helmet from Proctor Stafford, a California collector.

In 1985, the LA County Museum of Art featured objects from Proctor Stafford’s collection, including the Tlingit Frog Helmet, in *Symbols of Prestige: Native American Arts of the Northwest Coast from Los Angeles Collections*. This exhibit also included other works that found their way to the Hudson, including the mask that was the inspiration for the Seattle Seahawks logo (HM5521).

Indigenous communities around the world are working collaboratively with museums to exercise greater control over collections that represent their cultures. In the United States the 1990 passage of the Native American Graves Protection and Repatriation Act (NAGPRA) altered the relationship between Native American nations and communities, and archaeologists, scholars and collecting institutions. This Act requires federal agencies and institutions receiving federal funding, like UMaine, to return certain kinds of cultural

heritage (human remains, associated and unassociated funerary objects, sacred objects, and objects of cultural patrimony) when requested by culturally-affiliated Federally-recognized Native American tribes and Native Alaskan and Hawaiian villages and organizations. The Hudson Museum has among its holdings objects that are subject to NAGPRA and has consulted with Native American tribes and communities in Maine and beyond, repatriating human remains and unassociated and associated funerary objects through processes set up and administered by the National Park Service (NPS).

As part of this process, museums and Native American tribes consult. Museums provide access to holdings and available catalog information. The communities provide indigenous knowledge about these objects, sometimes historic images and documents, and clan histories recounting the passing of these objects from clan member to clan member. In June 2018, a delegation led by Harold Jacobs, Cultural Resource Specialist, visited the Hudson Museum. In February 2020 the Museum received a formal repatriation request that included the Tlingit Frog Clan helmet.

Repatriation returns the object to the appropriate culturally-affiliated community, but at the same time it removes the piece from the public realm. The Hudson received permission from Harold Jacobs to replicate the helmet and we were aware of a number of replication projects the Tlingit had undertaken with the Smithsonian Institution's National Museum of Natural History. Through the UMAI Seed Grant, the Museum replicated the Tlingit Frog Clan Helmet in preparation for repatriation by creating a 3-D printed replica and engaging artists to finish the surfaces of the replica and paint and do surface treatments that match the original. This project allows the Museum to retain the replica for exhibition and educational purposes, as well develop a proof-of-concept for future object replication projects.

2.

The Central Council Tlingit & Haida Indian Tribes of Alaska (CCTHITA) and NAGPRA

HAROLD JACOBS. CULTURAL RESOURCE SPECIALIST, CCTHITA

This section is abstracted from the repatriation request letter and provides cultural context for the Tlingit Frog Clan Helmet.

Cultural Affiliation

The Tlingit are a tribe, people and culture that are indigenous to the United States. They have owned and occupied Southeast Alaska since time immemorial. They are a federally recognized region-wide tribe under the Central Council of Tlingit and Haida Indian Tribes of Alaska.

The Tlingit conceive of themselves as members of one group and distinguish themselves apart from their neighbors. They live within a bounded geographical region within Southeast Alaska. They share social customs and customary laws that apply to all Tlingit whether they live at Cape Fox in the southern terminus at the Yakutat settlement in the most northern region. Their ancient language was mutually intelligible to all Tlingit.

While they did not have a centralized political organization that unified all Tlingit until the early 1900s, their common set of customs, traditions, and beliefs together with a high level of intermarriage and social and economic interactions served to unify the Tlingit into a distinct social group who share a common identity. In response to actions that threatened their culture and society, the Tlingit clans formed coalitions.

The Tlingit unified to resist the encroachments on their land by the Russians in the early 1800s and the Americans after 1867. Shortly after the American government assumed jurisdiction over Alaska, the Tlingit people hired an attorney to represent their interests in Washington.

In 1912, the Tlingit together with the Haida Indians formalized their unification under a region-wide organization, the Alaska Native Brotherhood. Their region-wide affiliation was further solidified under the Central Council of Tlingit and Haida Indian Tribes of Alaska. The Central Council was organized to pursue and to implement the settlement of their aboriginal land claims.

The Tlingit continue to identify themselves as a tribe and to act collectively under their traditional customs and values, as well as their federally recognized tribes.

While many of their ancient practices have been altered from their original form, the Tlingit continue to adhere to their ancient values, ideologies and ceremonial practices. The Tlingit culture and society continues to evolve, but their fundamental values and basic traditions persist.

The Tlingit Tribe intends to pursue repatriation of their ancestral human remains and funerary objects, their objects of cultural patrimony and sacred objects subject to NAGPRA under their traditional clan system represented by the federally recognized community entity of their choice.

The Clan

The basic property holding unit within the Tlingit Tribe is the clan. Ownership of property resides within the clan as a whole rather than within its individual members.

The clan is comprised of separate but interrelated lineages that recognize a common ancestry. Under the Tlingit system, lineages are formed through a line of females and their brothers who maintain ongoing relationships. Descent and kinship are traced through the maternal line or mothers. A Tlingit child is born into his/her mother's clan.

The Tlingit clan is comprised of houses whose membership included several closely related families. The Tlingit term "*Hit*" refers to both the physical structure and the matrilineage associated with a house. The house is a sub-unit of the clan. Its inhabitants included the matrilineally-linked males, their wives and offspring and the men's maternal nephews. However, the wives and their children belonged to a different clan rather than that of their husbands or their fathers.

The clan is the enduring organization that unifies the Tlingit into a cohesive functioning unit. Additionally, the clan provides the Tlingit with a link to their ancestors and ensures their perpetuation into the future. Tlingit individuals are born into a clan and remain members through their life and death. Individuals die, but the clan persists. Clans remain self-perpetuating through the birth of new members to replace those who have died. Infants are given the names of their clan ancestors. The Tlingit beliefs in reincarnation and their system of naming mean, in essence, that clans retain their original membership through the re-birth of the same individuals.

In the present period, clans remain active within the ceremonial sphere. The ceremonies include a series of memorial potlatches to honor deceased clan members and ancestors. Relationships among clan members, with ancestors, opposing clan members, crest animals and spirits are also reaffirmed and maintained within the ceremonial rites. In addition, ownership of clan property and crests are validated. The office of clan leaders, clan names and clan objects are transferred between generations to ensure the perpetuity of the clan.

Fundamental Principles of Clan Property

A Tlingit individual acquires ownership to clan property through his/her membership in a clan. Ownership rights are not inherited or assigned independently of clan membership. A Tlingit gains access to property by virtue of the fact that he or she is born into a clan and is a member of a clan. Under Tlingit law, no descendible or alienable rights accrue to the individual member of the clan at the time the property vests. An infant has all the attendant power to use and own clan property in his/her own right. An individual clan member has the authority to "use" clan property, but he/she cannot independently transfer or alienate this right.

This privilege ends at death, and thus inheritance right as recognized under American law does not exist in Tlingit law.

Members of clan houses possess a primary ownership interest in clan objects that are located within their houses. However, clans retain a pre-imminent interest in clan crests and objects. According to Tlingit property law, clan objects and crests may move from one house unit to another within the clan. Clan crests may be replicated by its clan members as new houses are established. Older clan objects may also be transferred to newly constructed clan houses. Under Tlingit law, wives and children do not have legal rights to their husbands' and fathers' clan house or property.

Anthropologists and ethnographers who have studied Tlingit culture uniformly concur that individual property and rights, with the exception of personal clothing and a medicine box, were for all purposes non-existent.

Individual rights do not extend to clan crests, songs, or stories. However, a pattern of individual ownership of ceremonial regalia emerged with the appearance of non-clan based dance groups around the mid-1900s. Such clothing or objects were not ritually or ceremoniously presented during potlatches to validate them as clan property. The clan, however, retains an ownership interest in the clan crest used on an individual's ceremonial regalia and objects. An individual cannot transfer the right of ownership to clan crests.

The clan as the legitimate property owner under Tlingit law was reaffirmed in a Tlingit tribal court. The widely-publicized "Whale House artifacts" case involved the removal of four house posts and a rain screen in 1984 (Chilkat Indian Village, I.R.A. v. Michael R. Johnson, et. al.). Several members of the clan attempted to sell the Whale House artifacts, but other members of the clan and the village did not concur and sought the protection of the tribal council and relief under a village ordinance.

In accordance with Tlingit property law, Judge Bowen ruled in 1993 that the tribal government and the *Gaanxhteidi* clan have the ultimate authority to exercise all custodial responsibility over the artifacts.

Clan Hats

The clan hat is one of the most significant objects a clan can have, and usually depicts the main crest of the clan, or one of their other crests they're entitled to use, having both social and religious significance. They serve to unify clan members, tie present day clan members to their *shuká*, ancestral clan members, and link the clan member to the animal or crest depicted thereon.

Clan hats were worn during special ceremonies. As with all of our *at.óow*, they were only brought out at certain times and were not displayed as “art objects” until the time was proper to take them out of their storage containers.

Such times might be for a house dedication, a memorial for a clan member, when someone has died and they're lying-in-state, when a new clan leader is brought out in public, and for use by the grandchildren of the clan, those whose paternal grandfather was of the clan the hat is from.

The stories associated with the origin of the hat and/or the crest and the hat itself are retold by the caretaker of the hat or someone who is knowledgeable with the story, there-by reaffirming and validating clan ownership and their relationship to the hat. To not have a hat from your family/ clan house, was considered a shameful thing as you had “no ancestry”!

“Money is killed” on these hats. That is, clan members contribute at ceremonies for the public display of these objects and will often times name the object specifically that they are killing money on this hat or that object. The caretaker of the object(s) usually puts up the most money and in this way the clan again validates their claim to the objects and “they are made worth more” by this money being killed on them.

In pre-monetary days, blankets, furs, and even slaves “were killed on them”. In the notes of Fr. Anatolii Kamenski (Kan, 1980), he gives the following history for one of the hats of the *Kaagwaantaan* (a hat that was recently restored to clan hands after 80 years of being in the wrong claimants hands, and this history recounted)

-The creator of the hat as well as the first caretaker are named and reference made to four slaves being killed [strangled] “for displaying” the hat. After this man it went to his nephew who was also going to kill four slaves but instead freed them and on to the next caretaker who freed two slaves in like-fashion when he inherited the hat, and eventually the next caretaker who freed one slave. By the time it went to the next caretaker slaves were too hard to come by and a pile of blankets were given away instead of slaves. This hat had two more caretakers mentioned by Fr. Kamenskii and since then it has had four more and the value of the hat cannot be measured in monetary figures.-

Today, money is “killed” on them. In times past, slaves were killed. How much is one life worth? How much are 10 worth? Some of these objects, especially these crest hats are old enough that slaves were “killed on them” to make them worth more and then nothing can compensate for the lives “paid” to display them or the property put out by the clans for the right to display their crest hats and other objects in the possession of the clan, not limited to crest hats.

Crest hats have ongoing historical, traditional and cultural importance that is central to the Tlingit Clan structure itself. They are Objects of Cultural Patrimony and cannot be alienated appropriated, or conveyed by any individual clan member.

The crests depicted on the clan hat (and any other clan object for that matter) is owned by the clan and is subject to

Tlingit property law and cannot be alienated, appropriated, or conveyed by an individual clan member.

We address these objects as though they are living objects— They are sacred. When they are brought out and another clan brings their crest hat out or another crest object we will address the opposite moiety and their objects and refer to them, “As though they are holding hands.”

As such (sacred object) it is essential for the practice of our traditional ceremonial rites and activities which require balance of one moiety’s hat to that of the other moiety’s hat when they are displayed. We cannot let them go unbalanced.

They are also necessary for the renewal and continued practice of our own religious ceremonies, rituals, and traditions of our clans and clan leaders. Some clans are currently without a clan hat and this makes it almost impossible to participate in ceremonial activities; they are necessary for our ongoing ceremonial rites and the *Naanya.aayí* have lost every one of their hats by, sale, theft, or both! They do not have anything to bring out in our ceremonies to show their children, grandchildren or in-laws and cannot participate in such with the loss of their hats.

If one cannot be assured that his opposites will bring out their crest hat, often times a clan will leave an object at home rather than bring it out and have it “hang in the air, without balance”.

As important as it is for us to participate in these ceremonies, we feel that the hats themselves need to be present to show who we are, and to offer respect one to another when we show the hats to the children, the grandchildren (we could say of this, “*Haa dachxánx’i saani yis áwé haa at.óox’u.*” or, “Our property is for our precious grandchildren”), in-laws, and tell of *haa shuká*, our ancestry,

which could very well be theirs as well, thereby tying us together and strengthening clan relations.

3.

THE REPLICATION PROCESS

Alex Cole

Alex Cole, Research Engineer at the Advanced Structures & Composites Center (ASCC), used a Faro Laser-line 3D scanner to capture hundreds of millions of data points from the helmet without physically touching it. This unit is typically used by the ASCC to extract data on complex surfaces, such as unique molded parts that cannot be physically measured. Alex scanned areas multiple times to ensure that he had the best quality scan data. The interface on the screen allowed him to see the quality of the scan in real time and re-scan areas as needed.

The scanning process for the entire helmet, including the underside of the piece, took approximately 3 hours. He then took the scan data and created a high quality digital mesh model which could then be printed in 3D.

As Alex explains, “My role in the project was to perform 3D scans of the artifact, and then to post-process the data into a file that can be used by the 3D printer.”

“The greatest challenge I ran into was collecting every face and contour of the object, as it wasn’t easy to fit the scanner in and around every part of the helmet. I overcame this

obstacle by collecting all the data I could using the scanner, and using the data to interpolate data of areas that were difficult or impossible to scan. When compared with images of the object, the interpolated data was agreeable with the object.”



Jonathan Roy

Jonathan Roy, Research Engineer (ASCC) coordinated the 3D printing of the replica, which was printed on a Fortus F 900mc. The unit has a print chamber able to print up to 36” x 36” x 24” high. The printer has unrivaled accuracy in the Fused Deposition Modeling industry (FDM) and is designed for manufacturing end-use parts with aerospace industry quality.

The replica could have been reproduced from a wood blank using Computer Numerical Control (CNC) technology—a more expensive and time intensive process. By using a 3D printing process, the results were lighter, more durable and required less time, effort, cost and skill level than a traditional machining process. The printer prints the object in an oven which allows it to control the rate at which the print layers cool and reduces the internal stresses on the print.

ASA was selected for the print material. It is a variant of ABS, which has a higher resistance to moisture, UV light levels and is less likely to warp, as well as possessing good mechanical properties that make it easier to sculpt in the post-production process. Due to the shape of the object, the helmet was printed with a soluble, dissolvable support material.

This project allowed the ASCC to understand the key skill sets needed in the replication of ethnographic objects and highlighted the artistic elements in engineering design.

Luke McKinney

Luke McKinney, an Intermedia MFA student, used DSLR cameras to record time-lapse segments of the object scanning and 3-D printing.



Reed Hayden

Reed Hayden, MFA Interdisciplinary Ph D Candidate Flagship Fellow, University of Maine, explains his role in the Tlingit Frog Helmet project was that of post production prior to finish painting. “My main concern and consideration in this process was to minimize any surface anomalies that were the result of the technology used and which did not serve the aesthetic replication of the original. To smooth out the surface, I applied Bondo. I did experience some surface growth of a crystalline nature that seems to have been a result of the filler (Bondo) chemically reacting to production materials within the confined space of the storage box. There were also some question as to if the piece should have been allowed to cure over the course of a week or two before I began my work.

“The actual production of the piece took some time and I was eager to begin my work and stay within a window that would allow Anna the time she needed for the final stage. Ultimately I was able to clean off the growth, finish my work and hand it off.”



Anna Martin

Anna Martin, Interdisciplinary Ph.D. Candidate, University of Maine.

Anna selected a variety of artist quality acrylic paints and began to prime the surface of the replica. Once the surface was primed, she began to apply artist paints, but quickly found that their sheen did not match the dull, matte surfaces of the original. To “match” these pigments, she turned to craft paints commonly found in hobby and arts and crafts shops. Throughout the process, she worked with the replica and the Frog Helmet side by side meticulously recording wood graining, wear patterns and surface losses. She used iridescent paints to replicate the abalone shell inlays, rather than purchasing abalone shell, and grinding it into shape to inlay.

Of all the aspects of the project, this was the most time-intensive work. Anna showed meticulous attention to detail and the resulting replica is nearly indistinguishable from the original work.

Anna’s process included the following information:

Step 1. The print arrived to the Hudson Museum in its archival box and upon arrival, it was determined that additional dry time was required before priming the surface of the print. As a result, the print was set on blocks for 2 days in order to let the interior cavity air dry.

Step 2. Artist quality GOLDEN Heavy Body Acrylic (“Titan Buff”) was used to prime the surface of the print. This was chosen as the thickness of the paint was able to fill the remaining areas of the surface where the print resolution was present after the Bondo application. These areas included: around the eyes, mouth, elbows and ridge of the back.



Two coats of paint were applied to the top surface of the print and allowed to dry for 13 days. After this window of time, the paint was able to cure and it was determined that the paint did not react with the ASA Thermoplastic, nor the Bondo. At this time, the cavity and underside of the print were primed with two coats of the heavy body acrylic paint.

Step 3. With the print primed, a review of the surface and its accuracy to the original took place. It was determined that additional acrylic paint was needed to apply an additive layer in certain areas in order to address the surface where the resolution of the print was unable to capture the surface of the original. The decision to apply material in an additive fashion was chosen over carving the ASA thermoplastic as to not compromise the integrity of the print. This material was allowed to dry for 24 hours. At this point, it became clear that a different type of paint was needed in order to accurately render the original artistry and patterns of ethnographic wear. A collection of Folk Art acrylic craft paints were acquired for the project as the finish of the paint achieved the same chalky finish of the paint used on the original work.



Duane Shimmel

Duane is a UMaine Intermedia MFA alumni.

Photo documentation is a valuable tool for capturing the progress and results of a proof-of-concept (POC) project. Here are a few key benefits of using photo documentation in a POC project:

1. Evidence of progress: Photos provide a visual record of the steps taken during the project, making it easy to see how far the project has come and what still needs to be done. This can be especially useful for stakeholders who may not be familiar with the technical details.
2. Communication tool: Photos can be used to communicate results to a wide range of stakeholders, including technical and non-technical audiences. They can also be used to explain complex concepts and processes in a simple and easy-to-understand way.
3. Evidence of results: Photos can provide concrete evidence of results achieved by the project, making it easy to demonstrate its success and justify further investment for a much larger project.
4. Tracking changes: Photos can be used to track changes and improvements over time, making it easy to see how the project has evolved and what impact different strategies have had.
5. Easily accessible: Photos can be stored digitally and easily shared with stakeholders via email or cloud storage platforms, making them accessible to anyone who needs to see them.

Overall, photo documentation can be an invaluable tool for capturing progress and results. It can be used to verify progress, communicate results, track changes and engage stakeholders.

4.

CONSIDERATIONS FOR FUTURE PROJECTS

Who owns the scan data

Integral to 3D printing projects is the scan data or object capture process, which tells the printer how to create the object. Publicity about this project resulted in requests to the Advanced Structures and Composites Center for the scan data of the Tlingit Frog Clan helmet by outside individuals to allow them to create a replica. In part, this may be a result of the Smithsonian Institution which features print files for 124-3D files in their digitization portal <https://3d.si.edu> It should be noted that Smithsonian scan files for Tlingit material culture are not publicly available.

The scan data for the helmet is the intellectual property of the Tlingit. The Hudson received permission to create a replica for specific purposes and the capture data will be given to the Tlingit at the conclusion of the project.

In some cases, communities may choose to make additional copies of the objects for community use, but that is entirely up to the community and accepted norms. Projects should be clear on the use of the capture data, who has access and how access will be controlled.

Future Projects

Not all objects are candidates for 3D printing replication. The objects need to be relatively compact, “solid” forms without loose appendages or small delicate parts. For example, textiles, basketry, and large, oversize objects are not good candidates for the process used to create the Tlingit Frog Helmet replica. Other options are available for these forms including replication of large wooden objects using Computer Numerical Control (CNC) technology—a more expensive and time intensive process that involves using a wood blank. Some objects may be replicated by engaging community artist to make “new” works based on a specific object. For example, the Hudson Museum worked with the Penobscot Nation and Jennifer Neptune, an award-winning Penobscot beadworker to recreate a 19th century cape collar and cuff set integral to the inauguration of Penobscot Chiefs.

Museums may also consider merely creating scan files of objects and providing these to indigenous communities, so they may coordinate the replication process through the most appropriate process and materials.



CREDITS:

This project was funded by a University of Maine Arts Initiative seed grant

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