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Conserving the Contemporary: Challenges of Preserving Cuttlefish Bone and Egg

Abstract:

Greek Beach V, constructed by the German-American artist Ilse Getz, was gifted to the Winterthur University of Delaware Program in Art Conservation as a student research and treatment project. The construction, as termed by the artist, is composed of found materials: a plywood support, woven rattan caning, cuttlefish bone, an animal phalange, and a whole egg. The sculpture, formerly displayed in a Plexiglas case, was in very poor aesthetic and unstable condition; the cuttlefish bone was delaminating with active flaking and loss and only a third of the egg remained intact and attached to the wicker substrate. At the time of examination, most of the fragments were present at the bottom of the display case. When the Plexiglas cover was removed, closer examination showed the presence of mold on the interior of the Plexiglas and corrosion of the metal wire components, indicating sustained high relative humidity. It is believed that the plywood support, high relative humidity, and limited ventilation within the display case accelerated degradation and the development of Byne's efflorescence on the cuttlefish bones and egg. Treatment involved surface cleaning, consolidation of the cuttlefish bone, re-assembly of the egg, and addressing display and storage issues associated with any further off-gassing of the plywood. Although the artist is deceased, through a collaboration with the Hirshhorn Museum and Sculpture Garden, which owns several works by Getz, an interview with the artist's daughter was conducted. This allowed for a better understanding of the artist's working technique, materials, and how the artist may have wanted one of her constructions conserved.

1. Introduction

In August of 2013, a contemporary mixed-media sculpture, *Greek Beach V*, by the artist Ilse Getz (1917-1992) was donated to the Winterthur/University of Delaware Program in Art Conservation (WUDPAC) Study Collection by Werner and Sally Kramarsky in the hopes that it could become an informative project for a conservation student. The construction, as termed by the artist, is composed of plywood, wicker, cuttlefish bones, an animal phalange, and an egg. Collected by the Kramarsky's in 1966, only a year after its fabrication, the construction is significant to the artist's ouvre and to the art movements of the 1960s. Research and treatment of the work was undertaken by objects conservation student and the author or this paper, Claire Curran, as a part of the WUDPAC second-year curriculum. The project presented a good opportunity to investigate treatment methods and ethical considerations for contemporary materials and to interview an individual close to the artist for a better understanding of the artist's working technique, materials, and likely thoughts in terms of conservation options. This paper will begin by providing a historical background on the artist, the particular piece, and its significance within the art scene of the 1960s. This will be followed by a detailed description of the work, its condition upon arrival at WUDAC, and finally its treatment, including the interview with the artist's daughter and the construction of storage housing and considerations for exhibition.

2. History

Ilse Getz (figure 1) was born to parents Abraham and Pauline Bechold in Nuremburg, Germany in 1917. Getz had a long and prolific career, albeit a tragic end. She led a migrant existence, seeking both change in landscape and inspiration in her work. As a child, Getz lived in Hamburg, Venice, Spain, and Mexico prior to migrating to the United States in 1934 to escape Nazism. After 1937, Getz moved between the United States and Europe frequently, mostly maintaining a home base in New York, but with extensive travel throughout South America, North Africa, and Europe. In her own words, Getz says she had "a gypsy-like manner of living" (Neuberger Museum and Kunsthalle Nürnberg 1978).

Figure 1: Ilse Getz in her studio. Undated photo, but likely from the 1970s.

Getz is most well-known for her paintings and collage-like constructions created from found objects (refer to figure 2 as an example of Getz's work). Getz found inspiration from her childhood and the surrounding landscape. Objects such as dolls, birds, playing cards, and eggs show up frequently in her work; some of which she attributes to specific memories from her adolescence and other times as unconscious decisions based on the

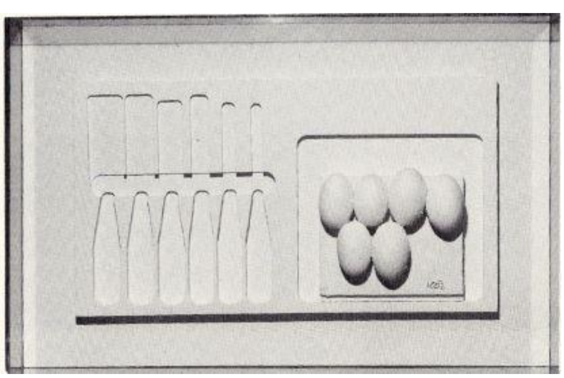

Figure 2: *Greek Summer*, construction, 1965-66; this would appear to relate to the current object named, *Greek Beach V*, also dated to 1965 and a possible trip to Greece at that time.

aesthetic of the object. She states: "… all the materials are used quite unconsciously. If I knew why I choose the things I use or why I am drawn to them apart from their visual appeal, I would have the answer and there would be little need to create this kind of symbolism" (Neuremburger Museum and Kunsthalle Nürnberg 1978).

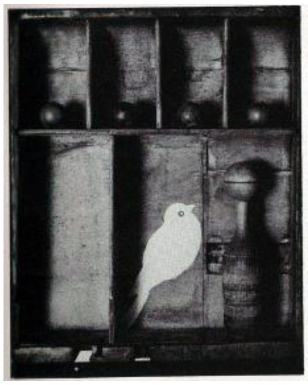

Figure 3: *The Box-Homage to Joseph Cornell*, Ilse Getz, 1973.

Getz began her studies at the Art Student's League with instructors George Grosz and Morris Kantor. There she drew ideas and style from instructors and fellow students. Getz forged her own path in the art world and has not been identified with a specific group or movement. However, a large part of her career was spent in New York, where she maintained friendships with many of the artists from the New York School (or Abstract Expressionists), whom she may have drawn inspiration from. Among them were Jackson Pollock, Robert Motherwell, and Helen Frankenthaler (Neuremburger Museum and Kunsthalle Nürnberg 1978). Her collage-like constructions may have also been influenced by contemporaries such as Joseph Cornell (figure 3).

Getz exhibited frequently throughout her career at both small galleries and large institutions. She had twenty-one solo exhibitions, the first of which took place in 1945 at the Norlyst Gallery in New York and was facilitated by Peggy Guggenheim. Included among them are two retrospectives of her work in 1978 and 1980. Getz also participated in over ninety group exhibitions from 1944 to 1977 (Alex Rosenberg Gallery 1980). Although not a household name of the 1960's, Getz was immersed in the New York and Easthampton scene, creating and flourishing among some of the more well-known artists of that time, making her work uniquely representative and significant to that era.

Getz met a sad end, when she along with her husband, Gibson Danes, took their own lives on December 4, 1992. Getz had been suffering from advanced Alzheimer's at the time. Dane's son, Mark Danes, said his father had taken, "a carefully considered course of action" after "exhausting all possibilities and options available to him." (New York Times 1992) Today, Getz's work can be found in notable institutions such as the Carnegie Institute (Pittsburg, PA), Hirshhorn Museum and Sculpture Garden (Washington, DC), and the Wadsworth Atheneum (Hartford, CT; Alex Rosenberg Gallery 1980).

3. Object Description

The object or "construction," as termed by the artist, is a mixed-media work; composed of a plywood board, woven rattan caning or wicker, cuttlefish bones, an animal phalange, and a chicken egg (Alex Rosenberg Gallery 1980; Woods 2013). When the work became part of the WUDPAC Study Collection, the construction was fixed to a stiff canvas-covered board, over which fit a Plexiglas cover (figure 4). Both the canvas-covered board and Plexiglas cover appeared to be for the purposes of display only and were not initially considered as part of the original object. In the following sections, each of the component parts and how they are attached will be described separately from bottom to top.

Figure 4: Overall image of *Greek Beach V* in display case before treatment.

The plywood board is approximately 13 ½" x 10 ½" and is the support for all other associated elements. It is an unfinished piece of wood with ten drilled holes, four on each side and one at the top and one at the bottom. The wicker is fixed to the board through a combination of adhesive and mechanical means; this consists of a semi-translucent white adhesive spread thickly over the center of the plywood board and ferrous wire attachments that wrap around the ends of the canes and pass through the holes in the plywood.

The wicker consists of round rattan canes that have been woven together and are of a consistent size and diameter, approximately 1/8" (Pouliot 2013). The consistency and weathering, which will be described in greater detail in the condition section (refer to section 4), indicates that the rattan may have been cut from a piece of wicker furniture, rather than collected and woven by the artist. Ilse Getz formed most of her constructions from found elements, which would not

Figure 5: Example of wire used to attach the ends of the wicker to the plywood board.

preclude the use of a cut section from a piece of wicker furniture. The weave structure is as follows: oriented horizontally are six pairs of canes spaced approximately 1" apart and running vertically are eighty-five canes with no spacing. As mentioned briefly above, in addition to the adhesive, the wicker is attached to the plywood with several pieces of metal wire, 4"-5" in length (figure 5). The wire has a ferrous composition, based on the red-brown corrosion present and its attraction to a magnet. Seven wires remain along the left and right sides. To attach, the wire has been looped around the paired canes, inserted through the plywood, and folded at the verso to hold the wicker in place.[1]

There are twelve separate cuttlefish bones[2] adhered on top of the wicker. They are attached with the same semi-translucent white adhesive used to attach the wicker to the plywood support. Only one of these is whole, which is by design and not as a result of condition. The remaining bones are partial and range in size from 2"-3 ½". The cuttlefish bones are a creamy white color and have a layered structure. There is an additional animal bone in the top proper right quadrant that is not from a cuttlefish and appears to be a phalange from an animal (Hillson 1992). Small powdery fragments from the delaminating cuttlefish bones were present at the bottom of the Plexiglas cover.

Figure 6: Egg yolk and white.

Also adhered to the wicker near the center with the same semi-transparent white adhesive is a single egg. Images of the work at an earlier date indicate that the egg was once whole, but has since broken. Several pieces of the broken eggshell, the dried intact yolk/white, and a powdery white material, likely mixed fragments from the egg and cuttlefish bone, were present at the bottom of the Plexiglas cover. The yolk and white of the egg, now dried, is one hard ball (figure 6). The

[1] Based on the drilled holes in the plywood support and the rust stains present around those holes, it appears that there were once 10 metal wires to connect the wicker to the plywood. Now only seven remain.
[2] Structured from calcium carbonate rather than calcium phosphate, cuttlefish bone is the inner shell of a mollusk and is compositionally very similar to other shells and unlike bone.

yolk, which can be seen through losses in the surrounding white, appears hard and crystallized. It has retained its yellow color and has a dried, powdery appearance. The white has also hardened and is a translucent dark red-brown color, resembling a hardened resin. Jean Woods, Curator of Birds at the Delaware Museum of Natural History Museum, indicated that the egg was possibly boiled before being incorporated into the construction (Woods 2013). Alternatively, discussion in January 2014 on the archived listserv of the Objects Specialty Group suggests the yolk and white were not boiled, but rather dried to a hard ball over time. The exact treatment of the egg prior to its incorporation into the construction was not further confirmed.

3.1 Housing/Exhibition Elements:

As briefly noted above, the entire “construction” was fixed with screws to a canvas-covered board and enclosed by a Plexiglas cover. While this was originally thought to be added by a gallery after the sale of the work, it was later found to be an integral part of the work (Refer to Section 5). The backing board appears to be constructed from wood. However, complete examination was not possible due to the canvas covering. The canvas, painted with a matte white paint, is tightly fitted to the board and secured with paper tape along all four edges. The “construction” is attached to the board with two screws threaded through the plywood support and into the backing board. The screws are located beneath the caning at the center of the top and bottom sides of the plywood. The Plexiglas cover fits over the edges of the canvas-covered board and is fixed to the board with four screws located at the mid-point along each of the edges.

4. Condition

At the time of examination, the object was in very unstable and poor aesthetic condition. The entire surface of the cuttlefish bone was severely delaminating and there was widespread flaking and loss. In addition, only a third of the eggshell remained attached to the wicker substrate. The fragments from the egg and cuttlefish bones were visible along the bottom of the Plexiglas cover. The plywood support and wicker were in stable and fair aesthetic condition. A more detailed condition of each of the component parts is described below.

The plywood support was structurally sound with only minor damage; the board suffered from slight delamination along the edges, with a few corner losses of the top layer of the board, that were generally ½”-1” in size. Iron staining due to corrosion of the ferrous attachment wires was visible around the holes where it was inserted through the wood. There was a thin layer of surface dirt and grime overall, with the most obvious being located around the edges of the board.

The wicker was brittle and dry, but stable. There was some distortion overall and minor losses at the ends of the canes where they extend over the edge of the plywood substrate. The light grey-brown color of the wicker likely indicates cycling of dry and wet conditions and overall weathering. The ends of most of the canes were slightly darker in color with a slight reddish tinge, potentially signifying the area of greatest exposure and degradation (Pouliot 2013). In addition, a yellow to white powdery material was present on the surface of the wicker (figure 7). As the artist was well known for using found objects, the wicker may have been a fragment from a piece of painted wicker furniture. In this scenario, the paint may be what remains of a former surface coating. Although the paint’s original condition was unknown, its incomplete covering of the surface may be a result of weathering, partial removal by the artist for a specific aesthetic, or a combination of the former. Localized grey-blue drops present on the wicker appear to be unintentional paint spatter. Seven of the possible ten attachment wires wrapped around the wicker and inserted into the plywood remained. All the remaining wires were corroded overall, with dark red-brown and some powdery red corrosion present. The corrosion did not appear active and is likely the result of past exposure to excessively high relative humidity conditions.[3]

Figure 7: Showing the powdery yellow accretion, which may be remnants of paint from the former object.

[3] When the enclosure was removed a very musty/moldy smell emanated from inside indicating both the presence of mold as well as a period of time when the object was exposed to high relative humidity.

Approximately one-third of the eggshell remained intact and attached to the wicker. These fragments were brittle and vulnerable to further loss. The interior and exterior of the eggshell were stained, likely from contact with the degrading products of the yolk and white during the period when they were still inside the shell. These consisted of a large yellow brown stain on the interior and small, light brown spots on the exterior (figures 8 and 9). The remaining eggshell fragments were located at the bottom of the Plexiglas cover with pieces that ranged in size from 2", the largest, to small bits and powder. The dried yolk and white, also located at the bottom of the Plexiglas cover, were mostly intact as a hard, dried ball, but had sustained some small cracks and losses. A powdery white material was visible on the surface of the dried ball, possibly degradation of the yolk/white or powdery loss from the deteriorating cuttlefish bone and eggshell. In one area, the surface was a dark-grey to black color, possibly again related to how the egg yolk/white degraded within the eggshell (figure 10). Due to the presence of the yolk/white, it was clear that the whole egg, either raw or boiled, was incorporated into the work of art and dried over time. Once dry, repeated or excessive vibration from transport or handling likely caused the yolk/white to separate from the shell, and through movement, break the eggshell. This was possibly accentuated as the shell became more brittle and fragile with age, particularly as it was exposed to the acidic fumes from the off-gassing of the plywood board.

Figure 8: Interior staining on eggshell.

Figure 9: Exterior staining on eggshell.

Figure 10: Showing dark grey to black surface on egg yolk and white.

The cuttlefish bones were overall in extremely unstable condition with severe delamination, active flaking, and many losses (figure 11). The macroscopic structure of the cuttlefish bone, formed via several layered deposits during the mollusk's life, was severely compromised. More specifically, the different layers had begun to visually separate from one another, expanding outward as degradation progressed further. While overall mostly intact due to protection from the Plexiglas cover, the cuttlefish bone was extremely brittle and fragile. Fragment losses were evident along the bottom of the Plexiglas cover; fragments ranged in size from 1" to powder. In comparison, the single animal phalange appeared to be completely unaffected and in good, stable condition.

Figure 11: Delamination and active flaking of the cuttlebone.

The poor condition of the cuttlefish bone and eggshell may be safely attributed to the presence of the plywood, which is known to off-gas formaldehyde and other organic acids, particularly acetic and formic acid. All of these can contribute to the degradation of the calcium carbonate matrix of mollusk shell and eggshell, causing Byne's efflorescence, which is the formation of calcium acetate and/or calcium acetate-formate double salts (Pouliot 2012). As these reactions continue, massive efflorescence can be produced, leading eventually to complete disintegration. High relative humidity, as mentioned previously, does not only speed up these chemical reactions, but can also increase the rate of off-gassing (Minnesota Department of Health 2013). The relatively well-sealed Plexiglas cover, which inhibited any ventilation, created in effect a moist and acidic micro-environment enhancing the rate of degradation of these materials.

On a minor note, a small number of carpet beetle carcasses were also found under the Plexiglas cover, indicating infestation at one time, but without any evidence that any of the components were damaged – it is theorized that the insects survived briefly on the protenacious component of the egg yolk.

The canvas-covered board was in stable and good aesthetic condition. The canvas was intact with no loss. It was attached to the backing-board along the borders with a pressure-sensitive paper-tape, which had yellowed, but remained attached. There was a slight yellowing of the Plexiglas cover, likely due to age, but overall it was in good condition. The interior surface of the Plexiglas was covered in remnants/powder from the losses of the cuttlefish bone and eggshell, as well as inactive patches of mold growth. The presence of the mold growth further supports the theory that this artwork was once exposed to prolonged high relative humidity.

5. Interview

After complete examination of the object, questions arose regarding materials and working methods of the artist, originality of the current display case, and what the artist's preference may have been in terms of conservation. As the artist is no longer living, the author felt that an appropriate candidate for interview may be either a family member or gallery that represented the artist. With little published information on the artist that may provide leads to interview candidates, the author reached out to the Hirshhorn Museum and Sculpture Garden in Washington, DC who owns four paintings and one construction by Getz. Stephen O'Banion, then Smithsonian Fellow in Conservation, provided all of the Hirshhorn's archived records associated with Getz. Within the files, an address was located for the artist's daughter Patricia Preziosi and a letter was drafted requesting either an in-person or phone interview.

To ensure completion of the treatment within the academic year, treatment had to continue while awaiting a response from Ms. Preziosi. Contact was made via phone in January, shortly after the assembly of the practice eggshell was near completion (refer to section 6.2). The most pressing questions revolved around the originality of the display case and whether re-assembly of the original egg was an appropriate approach. Although Ms. Preziosi did not remember this particular work, she did indicate that her mother often placed her constructions in Plexiglas cases for protection of the work and a more finished appearance. Since it was then possible that the case was added by the artist, this dictated the treatment decision to keep the artwork within its current case. Ms. Preziosi also stated that her mother often used eggs in her work and that when they failed she replaced them with an extra-large, white chicken egg from the grocery store. She did not indicate whether her mother may have had a possible preference for replacement or re-assembly, but added with a little humor that replacement may significantly reduce the time and energy required for the treatment. Even though the artist is no longer living to specify how she may have wanted the broken egg addressed, her former practice of replacing damaged eggs could certainly inform how to approach treatment. Although this appeared to clarify the inherent question of replacement or re-assembly of the eggshell, additional thought and discussion were needed before a decision could be made. Further conversation with Ms. Preziosi provided interesting information regarding Getz's working methods and choice of materials. As example, *Greek Beach V* is not a typical type of construction for Getz in that she discontinued the use of cuttlefish bone after the 1960s, as far as Ms. Preziosi could remember, or that Getz very often used materials as she found them and with limited manipulation before incorporation into an artwork. Overall, the phone interview was an essential component of the treatment decision process, serving to clarify many questions regarding the conceptual and physical construction of the object, and how these may affect treatment.

6. Treatment

The extremely unstable condition of the cuttlefish bones meant that they could not take the slightest touch. Even a strong air flow was enough to cause more particles to fall; consolidation was to be an essential component of the treatment. The fragmentary and fragile nature of the eggshell would either dictate replacement or re-assembly, a decision that could only be made after careful consideration, practice with other eggshells, and discussion with Ms. Preziosi (see Section 5 above). Testing would need to be conducted as to whether the plywood was still off-gassing; if this was the case, the display format would need to be altered and an appropriate housing considered for long-term storage. Other minor treatment required overall surface cleaning and repair of one of the rattan canes that was broken.

6.1 Consolidation of the cuttlefish bones

When addressing the cuttlefish bones, typical application of a consolidant with a brush was not appropriate as it caused the fragile surface to disintegrate further. In trying to come up with the best method, consolidation using a micro-pipette was considered. This method, typically used in the conservation of archeological ceramics and glass, particularly unfired cuneiform tablets, uses a micropipette along with capillary action to progressively introduce tiny amounts of the adhesive (Wight 2010). In testing this method, it was found to provide adequate consolidation, but with too much of an impact

Figure 12: Applying .5% gelatin in deionized water to the surface of the bone with a nebulizer.

on the surface aesthetic of the cuttlefish bones. It was observed that as the solvent evaporated and the adhesive shrunk, it pulled together the small particles of the surface, slightly altering its sheen/texture. A secondary option was then considered to determine a method that would first consolidate just the outer layers, fixing them in place, and thereby allowing as a second step the completion of a more in-depth consolidation via the micropipette. As a result, a two-pronged approach was developed in which the surface was first set in place via mist consolidation and then a complete, more in-depth stabilization was achieved with the micropipette technique. This combination of consolidation methods provided minimal aesthetic change to the outer surface, yet an adequate consolidation of the cuttlefish bones. The methods were tested first on another cuttlefish bone to determine exactly how much adhesive was needed to achieve appropriate consolidation without causing visible changes to the surface. Then tests proceeded on a small area on one of the cuttlefish bones on the object. In the end, the most appropriate method consisted in first executing mist consolidation with a Devilbliss Ultra Neb 99 and .5% solution of gelatin in deionized water. The nozzle was held approximately an inch and a half from the bone and kept over the surface until it appeared damp (figure 12). After each application had dried, a 000 brush was used to test the degree of consolidation of the cuttlefish bone surface, in order to ensure that it was stable enough for the next step, the micropipette consolidation. Three mist applications of gelatin solution were required before the surface was deemed stable enough to begin micropipette consolidation.

Figure 13: Detail showing micro-pipette consolidation of cuttlefish bone.

Then the micropipette consolidation technique was used to stabilize the interior structure of the cuttlefish bone. Again, the technique was tested first on another cuttlefish bone and then on a small area of the cuttlefish bone on the object, both of which had already received three passes of the mist consolidant. Once this was considered effective it was used overall. This technique used a 100 µL micropipette, acetone, and a 5% solution of Paraloid B-72 in acetone (w/v). The micropipette was first used with acetone to dampen the surface of the bones, allowing for better penetration of the adhesive. This was immediately followed by the application of the 5% B-72 solution. During application of both the solvent and the adhesive, the micropipette was placed into the jar and capillary action drew the solution up into the micropipette. A finger was placed over the opposing opening to hold the solvent or adhesive in the pipette until it was transferred to the object. Once the micropipette was in contact with the surface, the finger was lifted and the solvent or adhesive was allowed to naturally wick into the pores of the cuttlefish bones (figure 13). This technique was used once overall, providing complete consolidation in most areas, and then followed by a second application of adhesive only in areas that were still unstable. To test for adequate consolidation, a 000 brush was lightly pressed to the surface; if no particles moved or were loosened through the gentle pressure from the brush, the cuttlefish bones were considered as adequately consolidated. The combination of a water soluble adhesive during the initial consolidation, followed by the application of an acrylic adhesive, allowed first for the surface to solidify and not be compromised later during the application of the B-72. The gelatin is also quite compatible with the shell, as collagen represents a small percentage of the composition of mollusk shells, while the use of Paraloid B-72 as the main consolidant ensured excellent stability over time and minimal change in saturation.

6.2 Re-assembly of eggshell

Figure 14: Re-assembling practice egg.

To feel more comfortable with assembly of the original egg, an egg was bought for practice (figure 14). The egg was emptied of its contents by making a hole at the top and bottom of the egg with a needle and blowing the interior out. The egg was rinsed with water and allowed to dry for a few days. The egg was broken in a manner that closely matched how the original egg had broken; this consisted of one larger fragment that was about 1/3 the size of the total eggshell and 30-40 fragments ranging in size from about 1” to 1/8”. To recreate the manner in which reassembly would have to take place on the object, the single larger fragment was adhered to a piece of blue-board with

Figure 15: Re-assembled practice egg.

hot melt adhesive. Additionally, two pieces of Ethafoam were cut as rests for the elbows during re-assembly. This was to mimic the positioning required to access the original eggshell fragment on the artwork and avoid contact with the surrounding cuttlefish bone, which while consolidated, remained too fragile to resist any pressure. After several attempts in this position, it became clear that reassembly could not be adequately executed with such limited access to the fixed eggshell fragment. As a result, the decision was made that the original eggshell fragment would be removed from the artwork for the purpose of re-assembly. Once this decision was made, assembly of the practice egg with no limitation on movement of the egg or the author's hands was carried out. Fragments were adhered in place with 20-25% Paraloid B-72 in xylene (w/v). Japanese paper saturated with the same B-72 solution was lined along the interior surface of the egg for additional support. Assembly was carried out to almost completion. When approximately three-quarters of the egg had been assembled, it was felt that the technique and materials had been appropriately mastered (figure 15). Shortly after, a call was received from Ms. Preziosi (refer to section 5). As mentioned above, Getz regularly replaced damaged or degraded eggs. However, after further discussion, it was decided that in an attempt to preserve as much of the original material as possible, particularly with all extant fragments available, re-assembly of the original eggshell would be attempted prior to making the decision to replace it with a new eggshell. Additionally, it was felt that the patina of age that had developed on the artwork may cause a replacement or new egg to appear slightly out of place.

In order to temporarily detach the eggshell fragment from its wicker substrate, it was thought at first that a method using a solvent chamber would be least invasive, particularly when considering the fragility and close proximity of the cuttlefish bones (figure 16). Since the same adhesive was used to adhere all components on the artwork, a localized solvent chamber was created. This consisted of aluminum foil gently placed around the eggshell remnant alone, cotton wool dampened in a 1:1 solution of ethanol and acetone placed at the base of the egg and within the aluminum foil chamber, and polyethylene sheeting placed over the chamber and weighted with small steel shot weights adjacent to, but not over the cuttlefish bones (figure 17). Very little softening of the old adhesive was noted even after several hours of solvent exposure, and when left overnight. The solvent tended to evaporate, leaving the adhesive unaffected the next morning. Instead a more direct application method of the solvent was considered and tested using a micropipette with the same 1:1 ethanol: acetone mixture. Tiny amounts of the solvent mixture were gently released directly over the adhesive at the base of the eggshell and it was noted how the adhesive readily absorbed the solvents. With this method, the old adhesive softened quickly, and then a micro-spatula heated on a tacking iron was used to gently cut through the adhesive under the eggshell. Due to limited visibility and difficulty of access, the remaining egg fragment sustained a couple of minor cracks where the adhesive was thickest, and slight abrasion to the surface of the wicker underneath was noted afterwards. Overall, however, this was considered as successful given that these tiny damages would not be visible at all once the eggshell was re-assembled and re-adhered back into its original position on the artwork (figure 18).

Figure 16: Detail of broken eggshell adhered in place.

Figure 17: Showing the localized solvent chamber.

Figure 18: Detail of broken eggshell temporarily removed.

Re-assembly of the original egg was carried out using the skills and materials tested on the practice egg; this consisted of using a solution of 20-25% Paraloid B-72 in xylene (w/v) and Japanese paper saturated with the same B-72 solution as a lining along the interior surface of the eggshell. For joins where an appropriately tight join could not be immediately achieved during mechanical assembly, heat was gently applied afterwards using a Leister Labor S heat gun, allowing for almost exact realignment of the entire structure. A strategy also had to be devised in terms of where to begin and end, as no pressure could be applied from within once the eggshell was almost completely re-assembled. The ideal method consisted in assembling

Figure 19: Detail of assembled eggshell.

approximately half of the egg and then dry-fitting the remaining fragments to map out continued assembly. The one half of the egg that would be most visible once it was re-incorporated into the construction was completed first, allowing for any misaligned joins to be positioned towards the bottom of the egg where it would not be visible during display. For the last few fragments, when there was no longer access to the interior of the egg, the best positioning possible was achieved by gently pushing fragments against the edges of the paper lining already positioned inside the eggshell under adjacent fragments. Any slight misalignment was judged acceptable as they were not visible during display. However, a few small losses; approximately ¼" in diameter and a few smaller losses that were about 1/16" – 1/8" in size were quite noticeable and needed to be filled (figure 19). This is likely because some fragments were completely shattered when the egg broke and could therefore not be incorporated back into the egg.

Figure 20: Re-assembled eggshell with losses filled and inpainted.

To fill the losses, several materials were tested, including Japanese paper, paper pulp, Flügger acrylic putty, but none appropriately matched the eggshell in either texture or sheen. After more testing, it was found that Modostuc mixed with dry pigment and Golden fluid acrylic paints provided a texture, sheen, and color that was similar to those of the eggshell. The Modostuc mixture was placed into the loss over the Japanese tissue lining already present and then leveled while still semi-damp with a micro-spatula. When almost dry, its surface was smoothed by burnishing over a piece of Melinex with an Agate burnishing tool, matching in the process the sheen of the eggshell. A scalpel and Micro-mesh were also used to further level and adjust the fills along the edges.

Small touches with Golden fluid acrylics and porcelain restoration glaze were used to completely match the fills with the patina and staining present on the egg (figure 20).

Once completely re-assembled, the eggshell was re-adhered to the wicker substrate. As the egg and wicker are organic materials that need to breath and flex with time and environmental changes, it was deemed that Lascaux 360 or Jade 403 would be ideal options as an adhesive. In addition, both of these adhesives are thermoplastic and Jade 403 will swell in water, which would ease reversal, if ever required. As the egg would need to be adhered to an uneven surface, the adhesive needed to be bulked so that it would not run into the interstices of the wicker. Both the Lascaux and Jade were tested with fumed silica and glass micro balloons, and Jade 403 with fumed silica proved to be the most appropriate in terms of its handling properties. An image of the work provided by the donor, illustrating the object before the eggshell had completely shattered was used to correctly position the egg (figure 21). The thickened adhesive was applied to the wicker surface with a micro-spatula and the egg was put in place. The adhesive was allowed to dry for several hours with only gravity serving as a form of pressure. The next day the eggshell was gently tested for stability and found to be firmly adhered in placed (figure 22). Evidence that the eggshell was once broken is barely noticeable, even from a close distance, while the cuttlefish bones are now stable enough for the piece to be moved without losing any particles. Treatment of these components was considered complete.

Figure 21: Image of Greek Beach V before the egg shattered (taken in June of 2009).

Figure 22: Image of Greek Beach V after assembly and re-attachment of the egg to the wicker.

6.3 Testing for off-gassing and alteration of display case

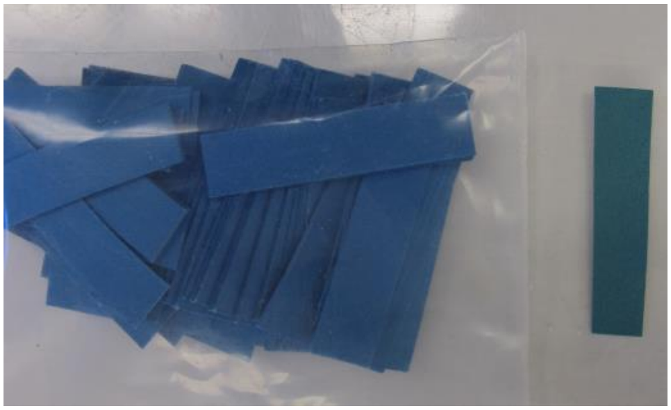

Figure 23: Image showing the color change of the AD strip after one week enclosure in the display case.

To confirm whether the plywood was still off-gassing, the treated artwork was placed back over the backing board and under the Plexiglas cover with an AD strip. The AD strip was placed onto a piece of Melinex to ensure that it was testing acidic off-gassing rather than direct acids that may be present on the backing board. The artwork in the display case was placed in a dark storage closet, allowing for limited light exposure for a period of one week. A slight color change resulted, confirming that the plywood is still actively off-gassing acidic materials (figure 23).

Since in previous conversations with Ms. Preziosi, it was revealed that the display case was likely chosen/added by the artist herself with a specific aesthetic in mind, it was then necessary to consider a way to minimize the build-up of gasses within the display case, while retaining all of its components. Several options were considered to minimally alter the existing display case, by either allowing for ventilation or to hide included scavenging materials. In the end, the latter option of using scavengers was deemed least invasive overall. This was achieved by inserting the scavenger directly under the plywood backing, effectively hiding it when viewing the object from the front. Six polyethylene foam blocks (approximately 1” x 1” x 2”) were cut and arranged on the canvas-covered backing board to fit just underneath the edges of the plywood. These blocks are intended to allow for enough space to position a sheet of Artcare Microchamber board underneath the plywood. A sheet of Melinex, cut and folded to create an open sleeve serves to hold the Artcare board in place. Both the polyethylene foam blocks and the Melinex sleeve were adhered directly to the canvas covered board with Jade 403 (figures 24 and 25). As the original screws that fixed the plywood support in place were no longer long enough, now that a space had been created for the Artcare board, the original screws were kept in the object file, but replaced on the artwork with longer stainless steel screws that adequately secure the artwork to the canvas-covered backing board.

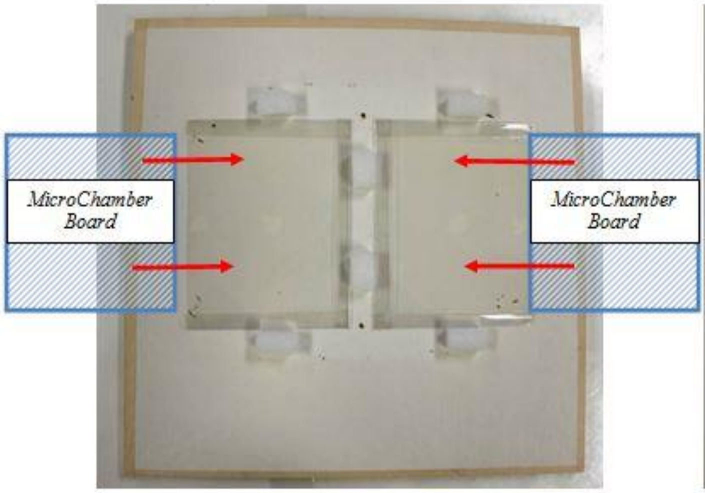

Figure 24: Illustrating how the MicroChamber is slid into each of the Melinex Sleeves. Arrows indicate the direction.

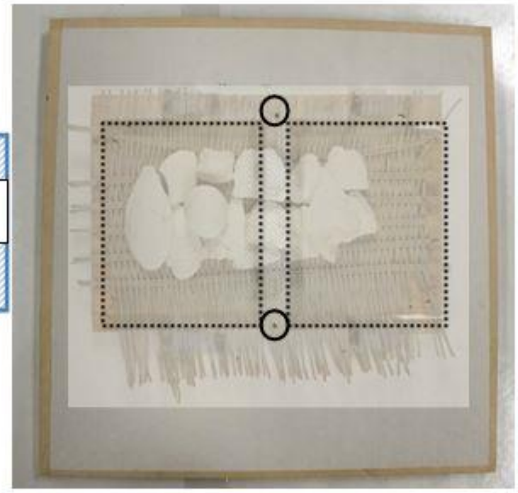

Figure 25: Highlighting placement of object over the Melinex sleeves (outlined by the black squares) and where the screws (outline by the black circles) are inserted to secure the object to the display board.

To ensure that the alterations made to the display case would effectively scavenge acidic gasses, an AD strip was placed into the display case with the artwork and the Artcare board in place, and the Plexiglas cover temporarily re-installed. Somewhat surprisingly, the AD strip still slightly changed color after exposure for one week, although to a lesser degree than during the tests prior to the installation of the Artcare board. As a result, an alternative method for scavenging or dissipating all acidic gasses within the case will need to be considered prior to exhibiting this artwork within its current display for any extended period of time. Considerations will need to include either alterations to the existing Plexiglas cover or construction of an entirely new Plexiglas cover to allow for ventilation. For the time being, alterations were not made to the case, but instead considerations were made for the safe long-term storage of the artwork.

6.4 Storage

For storage, it was important to create a storage housing that would allow the artwork to be kept alongside the display case, as it is both integral to the interpretation and display of this piece, yet not fully assembled to limit the build-up of damaging off-gassing from the plywood. The solution was a two-tiered storage box constructed of Blueboard, polyethylene foam, Volara, and Artcare Microchamber board. The design of the storage housing allows for the fragile artwork to remain fastened to the canvas-covered board and stored on the top tier of the storage housing, while the Plexiglas cover is placed on the bottom tier. A separate, small, partitioned box, constructed of Blueboard, polyethylene foam, and Volara holds the hardened yolk/white and the remaining fragments of eggshell and cuttlefish bones (all within labeled Ziplock polyethylene bags). This fits into the top tier and adjacent to the artwork. The storage housing was lined with Artcare Microchamber board to scavenge acidic gasses from the plywood. Since the artwork is not stored under the original display cover, a greater surface area was provided for placement of the Artcare board, allowing for better potential that the majority of the acidic off-gasses will be captured before it can react with the cuttlefish bones. This will likely prolong the time span in which the object can be stored within a closed environment without further damage to the cuttlefish bones and eggshell (figures 26 and 27).

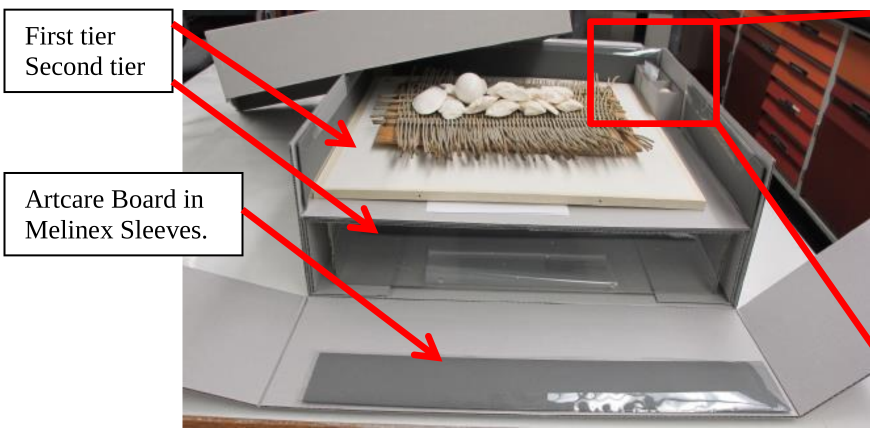

Figure 26: Storage housing for the artwork and display case showing the two-tiered design and the location of the Artcare boards.

Figure 27: Small box that slides in adjacent to the artwork and provides storage of remaining fragments and egg yolk/white.

To ensure that the housing design was effective, an AD strip was placed into the storage housing for a week. Fortunately, the AD strip did not change color indicating that the Artcare board, likely along with absorbing capacity of the Blueboard used in the box construction, are effectively scavenging acidic gases emitted by the plywood, or possibly that the design of the storage housing allows enough air volume and/or ventilation to limit the accumulation of acidic gasses. What is clear is that the Artcare board is a general scavenger, whose lifetime will be dependent on the rate that pollutants are released. As such, it was recommended in the treatment report that the efficacy of the storage design at scavenging acidic off-gasses be monitored every 6 months by placing an AD strip into the storage box for a period of one week.

7. Conclusion

The treatment of this contemporary work provided a unique learning experience, highlighting several of the issues pertinent in the conservation of modern and contemporary collections. It demonstrated particularly how an interview with the artist, or an individual close to the artist, can positively affect the interpretation or treatment of a work of art. In considering the overall treatment, much was gained through research, examination, and experimentation. Although assembly of the original eggshell required much time, in excess of 40 hours, it allowed the artwork to maintain the originality of all components and evidence of the natural aging of the work. Questions were raised about the issue of whether the original yolk and white should have been reinserted back into the re-assembled eggshell, but at least their documentation and storage in close proximity and within the same housing should prevent any chance of dissociation of these components in the future. Also this does not affect the presentation of the artwork and limits risks associated with the hardened yolk/white shattering again an already badly damaged eggshell. The two pronged approach developed to consolidate the extremely brittle cuttlefish bone is a new, promising method that can possibly be used in the consolidation of other very unstable materials, for instance other mollusk shells extensively damaged by Byne's efflorescence. Finally, the inherent vice created by the presence of the plywood adjacent to materials like the cuttlefish bone that is particularly sensitive to acidic off-gassing provided an excellent avenue for research into the preservation of composite works with incompatible materials. Although the work currently remains in the WUDPAC study collection, it is hoped that it will eventually be donated to an institution with a modern/contemporary art collection where the more 'ephemeral' constructions of the artist Ilse Getz can be preserved, displayed, and enjoyed by generations of future visitors.

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References:

Alex Rosenberg Gallery. 1980. *Ilse Getz: Boxes, Collages, & Constructions*. New York: Goethe House New York.

Hillson, S. 1992. *Mammal Bones and Teeth. An Introductory Guide to Methods of Identification.* London: Institute of Archaeology, University College.

Jaeschke, H. 2003. Consolidating Bone. Conservation DisCtList. http://cool.conservation-us.org/byform/mailing-lists/cdl/2003/0912.html (accessed 10/2/13).

Johnson, J. S. 1994. *Consolidation of Archeological Bone: A Conservation Perspective*. Journal of Field Archeology. 21 (2): 221-233

Koob, S.1984. *The Consolidation of Archeological Bone*. Adhesives and Consolidants: IIC Preprints. Paris Congress, Paris. London, England: IIC, 141-145.

Kres, A. K. and L. C. Lovell. 1995. *A Comparison of Consolidants for Archeological Bone*. Journal of Field Archeology 22: 508-515.

Minnesota Department of Health. 2013. Formaldehyde in Your Home. http://www.health.state.mn.us/divs/eh/indoorair/voc/formaldehyde.htm (accessed 10/14/13).

Nackman, R. 2013. Plexiglas box on Ilse Getz construction. [E-mail]. Message to Claire Curran: (ccurran@udel.edu). September 27, 2013, 9:48 AM.

Neuberger Museum and Kunsthalle Nürnberg. 1978. *Ilse Getz: Paintings, Collages, Constructions*. Exhibition Catalogue. Purchase, New York: Neuberger Museum.

Pace, E. 1992. *Gibson, Danes, Dean, 81, and Ilse Getz, Artist, 75*. New York Times, December 7. http://www.nytimes.com/1992/12/07/arts/gibson-danes-dean-81-and-ilse-getz-artist-75.html (accessed 10/14/13).

Pouliot, B. 2013. Personal Communication. Winterthur Museum, Winterthur, DE.

Pouliot, B. 2012. Lecture on Hard Organic Matrices – Keratinaceous Materials. Winterthur/University of Delaware Program in Art Conservation, Winterthur, DE.

Snow, E. C. and T. D. Weisser. 1984. *The Examination and Treatment of Ivory and Related Materials*. Adhesives and Consolidants: IIC Preprints. Paris Congress, Paris. London, England: IIC, 141-145.

Wight, K. 2010. Seminar for Objects Majors: Tips for using the Micropipette Technique and doing Reversible Fills. Winterthur/University of Delaware Program in Art Conservation, Winterthur, DE.

Woods, J. 2013. Egg Identification and Treatment. [E-mail]. Message to Claire Curran: (ccurran@udel.edu). September 22, 2013, 6:14 PM.

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