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TREATMENT OF CLAES OLDENBURG'S *ICE BAG–SCALE C*, AN INTERDISCIPLINARY APPROACH

Keywords: pop art, kinetic sculpture, Claes Oldenburg, interdisciplinary treatment, conservation ethics, replication

ABSTRACT

This paper discusses the conservation of Claes Oldenburg's *Ice Bag–Scale C* (1971), a towering kinetic sculpture, and the theoretical issues surrounding its conservation treatment. When the Whitney Museum of American Art acquired the work of art, which includes three motors and six fans that allow for different combinations of movement, they discovered that it possessed serious mechanical flaws that impaired its functionality and rendered it unsafe. The history of the sculpture is presented, as is the measured conservation strategy to repair, restore, and enable the sculpture to operate safely, while concurrently respecting its historical integrity and the artist's original intention. This case study also addresses and challenges concepts of originality, authenticity, and uniqueness.

RÉSUMÉ

Cet article discute de la conservation d'une œuvre de Claes Oldenburg intitulée *Ice Bag–Scale C* (1971), une sculpture mobile géante, et des questions théoriques concernant son traitement de conservation. Lorsque le Whitney Museum of American Art a acquis cette œuvre d'art, qui comprend trois moteurs et six ventilateurs autorisant différentes combinaisons de mouvements, les personnels du musée ont découvert qu'elle présentait de sérieux défauts mécaniques qui entravaient son fonctionnement et la rendaient dangereuse. L'histoire de cette sculpture est présentée, ainsi que la stratégie de conservation modérée qui a été adoptée pour la réparer, la restaurer et permettre son fonctionnement sécuritaire, tout en respectant son intégrité historique et l'intention originelle de l'artiste. Cette étude de cas remet par ailleurs en ques-

INTRODUCTION

The conservation of nontraditional modern and contemporary works of art is often a journey into the unknown. This is particularly true when the art in question is a complex machine in complete disrepair. In 1972, the Whitney Museum of American Art acquired Claes Oldenburg's *Ice Bag–Scale C* (1971), a programmed kinetic sculpture shaped like an oversize ice bag (Figure 1). At the time, the Whitney was unaware of the work's fundamental design flaws, which prevented it from functioning properly, and its lack of basic safety features. This paper discusses the conservation treatment of this challenging art/machine hybrid, including the preservation of the industrial and cultural history of the piece, while rendering the mechanism operationally safe within the bounds of Oldenburg's aesthetic concept and vision. The project proved an excellent opportunity for an interdisciplinary approach to conservation and an ideal case for exploring the contested borderline between preservation and replication.

THE SCULPTURE'S ORIGIN

In keeping with his celebration of everyday objects on a monumental scale, the American Pop artist Claes Oldenburg (b. 1929) conceived a group of works known as the Ice Bag series, beginning in 1970. The easily manipulable shape of the ice bag, a humble object used to ease headaches, inspired Oldenburg. During this time, Oldenburg made a film entitled *Sort of a Commercial for an Ice Bag*, an account of the conceptual origin of the series (Oldenburg 1970). In the film, Oldenburg impersonates an ice bag as if it were alive, moving in a random, lopsided, and undulating manner, pretending to inflate and deflate, and making high- and low-pitched humming sounds.

Oldenburg ultimately developed his ice bag idea into three separate kinetic sculptures. The first, *Ice Bag–Scale A*, is an outdoor piece over five meters in diameter that was exhibited at the U.S. Pavilion at EXPO '70 in Osaka, Japan. About one meter tall, *Ice Bag–Scale B* followed shortly thereafter, in 1971. The final piece, *Ice Bag–Scale C*, is over three meters high and four meters in diameter, and was manufactured in late 1971 (Figure 1). Many editions of *Scale B* exist, while *Scale A* and *C* are unique. All three sculptures differ in size, color, movement, construction, and materials. *Scale C* (hereafter referred to as *Ice Bag*), the subject of this paper, is the

tion les concepts d'originalité, d'authenticité et d'unicité.

RESUMEN

Este artículo analiza la conservación del *Ice Bag–Scale C* (1971), de Claes Oldenburg, una enorme escultura cinética, y los aspectos teóricos en torno a su tratamiento de conservación. Cuando el *Whitney Museum of American Art* adquirió la obra de arte, que cuenta con tres motores y seis ventiladores para permitir las diferentes combinaciones de movimiento, descubrieron que poseía serios fallos mecánicos que afectaban a su funcionalidad y hacían que no fuera seguro. En el artículo se presenta la historia de la escultura, así como la estrategia de conservación destinada a reparar y restaurar la escultura y permitir que funcione de manera segura, respetando su integridad histórica y la intención original del artista. Este estudio de caso también aborda y cuestiona conceptos de originalidad, autenticidad y singularidad.

Figure 1
Claes Oldenburg, *Ice Bag–Scale C*, 1971. Programmed kinetic sculpture (displayed at low rise, deflated). Fiberglas-reinforced polyester resin, lacquer, nylon cloth impregnated with neoprene, plywood, steel, fans and motors. 335.6 × 406.4 × 406.4 cm. Whitney Museum of American Art, New York. Purchase, with funds from the Howard and Jean Lipman Foundation, Inc. Photograph: Eleonora Nagy

most complex of the Ice Bags, presenting the most intricate mechanisms and elaborate movements.

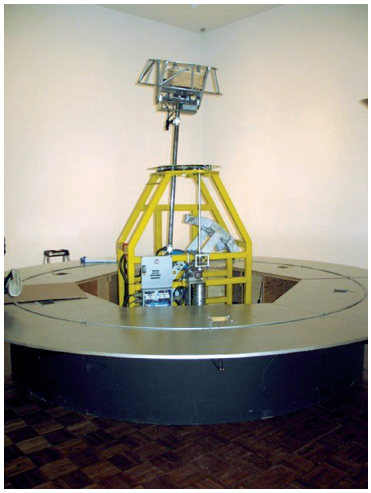
With *Ice Bag–Scale C*, Oldenburg succeeded in realizing his vision and creating a mechanical art object that resembles a living organism. With its three motors, six fans, and several possible combinations of movement, *Ice Bag–Scale C* is an ingenious technical invention that introduces random movement using 1970s technology. It moves up and down, twists, undulates, tilts, and inflates and deflates, in addition to producing various lifelike sounds. Made in collaboration with Gemini Graphic Editions Limited (GEL) and Krofft Pictures Corporation, a television and film production company, *Ice Bag–Scale C* was executed using commercially available materials and industrial motor parts, combined with custom-made components.

A TROUBLED HISTORY

Ice Bag–Scale C was originally planned as an edition of four, but only one prototype was completed. "The cost of the project was prohibitive", according to Oldenburg's chief collaborator at Gemini (Tyler 2009). The project eventually ran out of funding and time. As a result, the fabricators of *Ice Bag–Scale C* hastily released it from the workshop without subjecting it to a test run or checking it for safety. Oldenburg never saw the finished prototype. Within a year of its completion, the Whitney Museum of American Art acquired the artwork wholly unaware that it possessed fundamental design flaws and lacked basic electrical, mechanical, and safety features.

When installed at the Whitney, *Ice Bag* never functioned for longer than a few days at a time, and, even then, it performed only part of its intended motion. Throughout its exhibition history, *Ice Bag* had broken gears, exuded noxious fumes, leaked oil, ripped its own fabric exterior, growled, squeaked, and set itself on fire. Despite repeated attempts by the original fabricators, engineers, tradesmen, and a long list of conservators to address the problems, *Ice Bag* was consigned to storage, never again to enter an exhibition. The last unsuccessful repair by a set of engineers was in 1999 (Mack 2009).

Ten years later, in 2009, the Whitney's department of conservation assembled a team of experts from various fields to resurrect *Ice Bag*. When Oldenburg was contacted about the museum's intention to repair *Ice Bag*, he replied, "good, if you can make it behave" (Oldenburg 2009a). Despite extensive research and interviews with the original fabricators, no plans, mechanical drawings, or other technical documentation could be located. Nor could any documents describing the complete motion of *Ice Bag*. In the end, the team relied upon forensic analysis of the existing machinery and materials, the original short film (which, unfortunately, did not address the uniqueness of *Ice Bag–Scale C)*, and extensive collaboration with the artist to determine how *Ice Bag* functioned when it was newly made. Armed with this information, the team devised a treatment that would permit the work to be both functional and true to the artist's original intent.



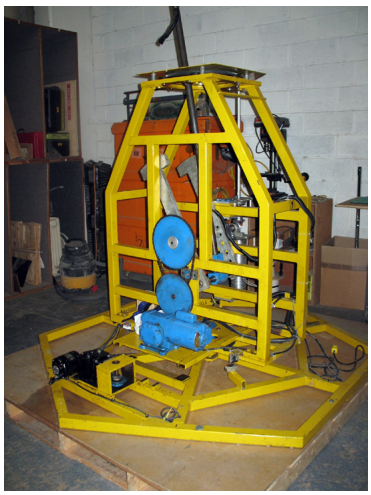


Figure 2
Ice Bag's interior: cap frame with subcap motor, shroud, and base

Figure 3
Six sections of *Ice Bag*'s base; turning portion of yellow frame with electrical box and pendulum; shaft with subcap frame, containing subcap motor

Figure 4
Yellow frame: stationary hexagonal base section with black motor, and tall turning frame section with blue motor

DESCRIPTION OF COMPONENTS

Further complicating the conservation effort, *Ice Bag* has a multitude of external and internal components. The external components consist of a voluminous neoprene-coated nylon fabric bag, a lacquered fiberglass cap, and a round, painted plywood base. Underneath the fabric layer is a galvanized steel shell, or shroud (Figure 2). This shroud contains two motors, various parts, and protects the fabric from tangling or tearing when *Ice Bag* is in motion. Under the metal shroud is a sturdy yellow frame, which serves as the spine of the sculpture (Figure 3). The yellow frame consists of two parts: a stationary hexagonal base that rests on the floor and a tall turning frame on top (Figure 4).

On the lower part of the turning frame is a metal box that houses *Ice Bag*'s electrical headquarters, or "mission control", where an operator can program the three internal motors (Figure 3). The "subcap motor" is secured under the cap in an aluminum frame and allows the cap to tilt (Figures 2, 3). The "black motor" controls the left- and right-pivot as well as the clockwise and counterclockwise motion of *Ice Bag*, while the "blue motor" controls the sculpture's up-and-down movements (Figure 4). In addition, there are six fans, housed in the round plywood base, that facilitate inflation and deflation of the bag.

DIAGNOSIS AND TREATMENT

Internal components

At the outset of the 2009 conservation effort, the sum of available knowledge of *Ice Bag* consisted of not much more than piles of discarded or nonfunctioning parts, which had been used and replaced over many years of trying to get the piece to function properly. *Ice Bag* was simply too hazardous to turn on, so options for investigation were severely limited; therefore, the team pursued a forensic investigation. Weeks of careful examination of the original 1970s equipment and historical research followed, accompanied by interviews with the original fabricators.

One of *Ice Bag*'s most serious problems concerned switches that were supposed to prevent it from turning out of control around itself. When functioning properly, these "limit switches" instruct and engage the black motor, which directs the internal yellow turning frame to stop and reverse itself causing a twisting motion. However, any vibrations or handling of *Ice Bag* or its frame resulted in a misalignment of the limit switches and failure to safely stop. Consequently, the motor kept turning in the same direction until the fabric bag ripped. Magnetic switches installed by engineers in 1999 did not solve the problem and were incompatible with the original 1970s design. The team dismantled the ineffective switches and installed new ones identical to the originals, but much larger. This repair enabled *Ice Bag* to perform its movement in accordance with its original programming.

The electrical headquarters, or "mission control" (Figure 3), was also replaced during the 1999 repair and, like the magnetic limit switches, proved problematic. The new mission control modified *Ice Bag*'s original programming and discarded its electromagnetic relays. Fortunately, the original box with the 1970s relays was preserved. When the team reinstalled the original relays, they worked but were deemed unsafe. To maintain the historical integrity of the piece and its electrical safety, the old relays were replaced with new, smaller relays from the same period and paired with circuit breakers, so that all fit into the original control box. This solution ensured that the electrical system met current safety standards.

Another challenge lay directly below *Ice Bag*'s fiberglass cap in the subcap motor (Figure 5). Designed to tilt back and forth, faulty wiring of the 13-kilogram motor caused it to turn in one direction only, resulting in a severely broken gear and causing the motor to catch on fire on several occasions. When the motor moved, it pulled the cap dramatically to one side, so that it resembled a one-legged man trying to walk without crutches. The team balanced the cap by adding a removable counterweight to the opposite side of the subcap motor. This new balance also relieved the extreme stress placed on one of the gears that had repeatedly broken in the past. Additionally, the subcap motor was originally mounted upside-down and, as a result, consistently leaked oil. Lack of proper oiling of the gear also contributed to frequent stoppages. To address this issue, the team fashioned an ingenious device – a tube stuffed with felt soaked in high-viscosity oil, much like an oversize felt-tip pen. The oil-tube lubricated the gear without spills.

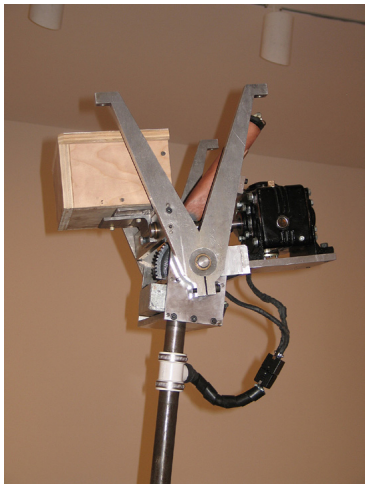


Figure 5
Black subcap motor; copper-colored "felt-tip pen" for oiling; box of counterbalance

Figure 6
Pendulum with added balance

While calculating *Ice Bag*'s weight load in motion, the team realized that the original fabricators neglected to account for the considerable weight that the external components put on the frame and must be carried while *Ice Bag* is in motion. A 54-kilogram counterbalance was added to the original pendulum located inside the yellow frame, which not only solved the imbalance, but also fit comfortably within the limited space of the original design (Figure 6).

External components

Once the malfunctioning internal components were addressed, the team focused on the sculpture's external features. The plywood base was in good condition; however, the lacquered fiberglass cap and fabric exterior required substantial treatment. The team found severe impact damage along the cap's bottom edge and considerable wear along its perimeter. Moreover, black felt, used for padding the storage crate, adhered to approximately one-quarter of the cap. It would have been impossible to correct these problems individually and achieve a cap with "perfectly smooth shine, resembling the sun" that Oldenburg had described in his film (Oldenburg 1970). Therefore, after analytical review, the cap was refinished to a perfectly reflective surface, leaving most of the original intact under a new layer of acrylic lacquer.

Due to diligent archiving, the original fabric exterior survived. However, the neoprene-coated nylon was discolored, brittle, and so deeply creased that it could not be flattened out and placed on *Ice Bag*'s frame (Figure 7). Therefore, the fabric was retained as an original reference for a replacement fabric and as a cutting pattern. After an extensive search for the same type of fabric, the team found 18404 Black Aluminum buff-free neoprene-coated nylon—a product just out of production.[1] The fabric was a perfect match in material and weight, but color measurements indicated a very close but not perfect match in tone. Thus, the artist's approval was obtained before using it as a replacement.

Figure 7
Original exterior fabric

Figure 8
Subcap frame hitting the shroud

OPERATION OF THE SCULPTURE

Repair of the faulty parts did not mark the completion of the project. Test runs were performed that revealed underlying bugs. For example, the combination of a too-tall inner metal shroud and flawed programming of the cap's motion resulted in the cap frame hitting the top of the shroud as *Ice Bag* moved (Figure 8). This occurrence immediately explained the cause of the curved structural fractures found along the lower edge of the cap. The yellow internal frame had to be raised and *Ice Bag*'s motion reprogrammed to allow more space between the cap and the shroud.

The last step was fine-tuning the programming of the motion of *Ice Bag*, which had been modified during previous repairs. Again Oldenburg was consulted. The team spent a thrilling and rewarding day and a half with the artist watching *Ice Bag* return to life. As Oldenburg scrutinized his newly animated work, he excitedly called out: "rising should go smoother, put shorter brake here, make it less puffed" (Oldenburg 2009b).

RESULTS AND ISSUES RAISED

The appearance of *Ice Bag* originally and after treatment remains nearly the same. Every attempt was made to restore *Ice Bag* to its original appearance and intended motion. However, the newness of its most visible parts, i.e., the fabric and the cap, brought into question the tenuous boundary between original and replica. Although there is no standard determinant for the point at which a restored work of art becomes a replica, we propose that *Ice Bag* had not crossed the line. Even though the exterior is a major part of *Ice Bag*, so are its kinetic motion and its hidden internal parts. A historic house with a replaced slate tile roof and siding would not be considered a replica of the original house, nor should *Ice Bag*. In short, a meaningful conservation of a kinetic work must strive to preserve not only its appearance but also its authentic functionality.

Thanks to the collaboration among art conservators and industrial specialists, *Ice Bag* is able to operate properly, safely, and reliably, much to Oldenburg's and the Whitney Museum's satisfaction (Whitney Focus 2009a, 2009b). The team's approach was comprehensive, as opposed to all prior repair attempts that were partial and addressed only the immediate calamity. Treatment of *Ice Bag* concluded at the point where only those constituents

that jeopardized its safe operation were replaced or modified. Indeed, some of the original design flaws remained, including the upside-down motor, irregularly spaced grommets that controlled the fabric's configuration, and the ill-fitting shroud. While cumbersome, these faulty design elements are an integral part of the work's authenticity and were thus preserved.

Oldenburg's attitude was in line with the team's approach. Since his Ice Bag film offered only a general concept of all three versions, he understood that it was inadequate to define the uniqueness of the Whitney's *Ice Bag*. Moreover, he never saw the original *Ice Bag–Scale C* and, after nearly forty years, his memory of the work was understandably vague. Therefore, the team's only option for restoring the intended motion of *Ice Bag* was to perform a forensic intervention fraught with complications. Unlike many artists confronted with repairing their art in very poor condition, Oldenburg did not propose making another *Ice Bag*. Instead, throughout the process of bringing *Ice Bag* back to life, Oldenburg intently focused on recovering all technical evidence that would define the uniqueness of *Ice Bag*. He considered *Ice Bag*'s innumerable original parts specific to the work and felt strongly that they were important constituents of its authenticity. They were also central to the team's ability to restore the original intent of the work as defined by the artist.

That said, now that *Ice Bag*'s unique features are fully documented, one has the freedom to contemplate options for improving the remaining flaws or even making an exhibition copy. The passage of time may necessitate minuscule but cumulative repairs that could eventually obscure the borderline between conservation and replication, and, ultimately, existing original design flaws could be improved by contemporary solutions. Should that happen, *Ice Bag* would likely qualify as a mixed breed of original and replica. Indeed, parts of *Ice Bag* are so sturdy that they could function for up to 50 years without significant wear. For this reason, a detailed record of the 2009 treatment was created, including videotaped instructions for installation, de-installation, and basic maintenance. In addition, an accurate recording of the motion and sound effects was made, and a proper electrical blueprint was provided. Unlike customary conservation reporting, this documentation represented a marriage of non-museum professionals' expertise with conservation ethics, and, by extension, will undoubtedly affect museum practice with regard to documenting and caring for art/machine hybrids.

In a follow-up interview, Oldenburg endorsed the team's conservative approach of replacing failed parts with those from the same period (Oldenburg 2009c). However, appreciating the newly gained insights about the engineering of the piece, he was open to the idea of correcting flaws in the original design that countered the desired movement. When asked whether he would approve of the creation of an exhibition copy – a replica of *Ice bag* – he concurred. However, he also clearly stated that he would not consider the copy – no matter how faithful to the intended appearance and function – *the* work of art. Oldenburg's comment affirms

that the genuineness of the 1970s technology that the team worked so hard to preserve does ultimately play a crucial role in *Ice Bag*'s authenticity. As for the museum, the creation of an exhibition copy might loosen its exhibition and loan requirements, but it would not jeopardize the status of the restored original as defined by the artist.

CONCLUSION

The case presented in this paper offers a precedent for complex conservation decisions regarding the preservation of original material, restrained replacement of malfunctioning parts, reconfiguration of original design flaws to facilitate function, and interpretation of artist's intent. Questions regarding the seminal issue of restoration versus replication were addressed, and the project was characterized by its open and inclusive approach. Had such a conservative approach not been taken, future options for treatment may have been severely compromised. For the first time in *Ice Bag*'s history, a team of conservators and industrial specialists jointly performed treatments that observed the ethical principles of conservation, while solving the mechanical problems of kinetic motion. In so doing, these highly qualified and creative individuals, capable of thinking outside of the quotidian practicalities of their respective fields, created the dynamism that made this interdisciplinary project a notable success.

NOTES

[1] Original fabric: L* 71.22, a* -1.18, b* 5.06; replacement fabric: L* 62.44, a*1.05, b* 1.55. Color measurements were taken with a handheld Konica Minolta Chroma Meter CR-400/410. Readings are a mean of 5.

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