THE OBSERVER EFFECT IN CONSERVATION:
CHANGES IN PERCEPTION AND TREATMENT OF A MAN’S SILK SUIT C. 1745

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ABSTRACT
In quantum mechanics, the observer effect postulates that a photon’s status as a particle or a wave is determined by observation rather than the photon’s intrinsic qualities. The observer effect can also provide a useful conceit to explore the ways a conservator’s perception can transform an object’s context, and lead to different treatment choices that may significantly alter the object. The recent conservation of a man’s silk suit from the 1740s provides an opportunity to (re)examine choices made by eighteenth-century tailors and previous conservators through their historical perceptions of the suit.

The suit was accessioned by the Museum of the City of New York in 1938. Its many repairs reflect the different assumptions associated with clothing, costumes, and collections. The recent conservation included mechanical removal of flaking adhesive from a previous treatment, and utilized stitched underlays to consolidate and support tears in the silk suit.

By acknowledging the effects of observation, we can better evaluate the methodologies used by conservators and seek ethical treatment choices for an object’s current needs that balance an understanding of its past and anticipation of its future. This paper will explore the impact of historical and contemporary perceptions of the same suit on treatment choices.

EL EFECTO DEL OBSERVADOR EN LA RESTAURACIÓN: CAMBIOS EN LA PERCEPCIÓN Y TRATAMIENTO DE UN TRAJE DE SEDA DE HOMBRE C. 1745: RESUMEN—En mecánica cuántica, el efecto del observador postula que el estado de un fotón como partícula o onda se determina mediante la observación en lugar de las cualidades intrínsecas del fotón. El efecto del observador también brinda una presunción útil para explorar las maneras en que la percepción de un restaurador transforma el contexto de un objeto, y lo lleva a diferentes opciones de tratamiento que podrían alterarlo significativamente. La reciente restauración de un traje de seda de hombre de los años 1740 ofrece la posibilidad de (re)examinar las decisiones tomadas por sastres del siglo dieciocho y otros restauradores a través de sus percepciones históricas del traje.

El traje ingresó al catálogo del Museo de la Ciudad de New York en 1938. Sus diversas restauraciones reflejan diferentes presunciones asociadas con vestimentas, trajes y colecciones. En la última restauración se removió mecánicamente adhesivo descamado producto de un tratamiento previo y se hicieron puntadas de refuerzo para consolidar y reforzar las rasgaduras del traje de seda.

Al reconocer los efectos de la observación, podemos evaluar de mejor manera las metodologías utilizadas por los restauradores y buscar opciones éticas de tratamiento para las necesidades actuales del objeto en equilibrio con el entendimiento de su pasado y la previsión de su futuro. Este documento explorará el impacto de las percepciones históricas y contemporáneas del mismo traje con respecto a las opciones de tratamiento.

1. INTRODUCTION
The questions that led to this paper stem from the recent conservation of an eighteenth-century man’s silk suit in the collection of the Museum of the City of New York (MCNY) comprised of a matching coat (fig. 1) and waistcoat (fig. 2). Originally it would have included three garments: coat, waistcoat, and breeches. When the museum acquired the suit, however, it was missing the breeches. The suit began as a fashionable garment and is now a museum object; in between it probably entered the second-hand clothing market before becoming a
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costume for theatrics and/or fancy dress parties. With each of these roles, the suit’s treatment was determined by the different assumptions associated with clothing, costumes, and collections. Specialists (tailors, restorers, and conservators) worked to shape, remake, restore, and conserve the same suit according to their various perspectives. Quantum mechanics is used as a conceit in this paper to explain how these perspectives shape ethical choices.

Figure 1: Front view of coat, pre-treatment.

Figure 2: Front view of waistcoat, pre-treatment.

The recent conservation campaign focused on the removal of an embrittled paste on the interior of both the coat and waistcoat that fell in flakes from the torn silk whenever the garments were moved (fig. 3). The back of the waistcoat had been cut away previously, which was unsightly and compromised its stability (fig. 4). These conditions required interventive treatment to enable the suit to be exhibited in a way that would be meet requirements of aesthetic and structural integrity. This intensive treatment was justified by the suit’s rarity - the relatively small number of men’s silk suits from the early eighteenth-century in American museums - combined with the suit’s high quality textile and tailoring.
An important component of the conservation work was determining which previous repairs had been performed before the suit was acquired by the museum and which repairs were restoration or conservation treatments from the twentieth-century. This distinction was an important factor in making ethical treatment choices. Conservators are charged with preserving the physical components of culturally significant objects. Our understanding of cultural significance guides which histories are preserved and restored and which are cleaned or repaired away. While so-called “native repairs” performed by original and/or important owners are sometimes preserved as significant histories, modern repairs and previous conservation treatments are generally replaced to reveal a more authentic history and to show the object’s true nature.

For the textile conservator who must confront physical objects and actively help transform them into museum objects, the language of science complete with theory, experiment, and measurable results provides a tempting framework to understand an object’s true nature. Analytic tests can reveal details about the physical characteristics and degradation of objects. Scientific analysis has also afforded valuable information about materials and environments that can help preserve objects with minimal damage.

And yet scientific analysis cannot fully articulate the cultural significance of an object, as many contemporary conservators have pointed out, including Miriam Clavir and Diana Estop. The seeming dichotomy of static museum object and dynamic material culture subject represents a duality that conservators must consider in order to arrive at informed treatment choices. Treatments need to respect the objects’ histories and their cultural roles. At the same time, all accessioned museum objects must fulfill their (new) roles as such; they must not only be preserved, but made available for research and exhibition.
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If the study of material culture seems in conflict with physical science, the specialized field of physics called quantum mechanics may provide common ground. Quantum mechanics is the study of the subatomic world. On the frontiers of measurable time and space, quantum mechanics stresses the importance of context, probability, and relativity in understanding objects and events.

The observer effect is a quantum theory that explicitly articulates the impact of observation — and understanding — on the interpretation of otherwise objective facts. For the physicist, it helps to describe the duality of waves and particles. For the conservator, the observer effect can provide a framework to help acknowledge the impact of subjective observations on the many changes made to this suit over time. Even now, different choices could have been made based on the same information. The treatment could have tried to restore the suit’s original aesthetic, preserved evidence of its wear and use as a garment, or maintained the previous restoration campaign as part of the history of textile conservation. In addition, a conservator’s connoisseurship and understanding of authentic components will inform the treatment proposal. The role of the conservator-observer not only conceptually reshapes the suit, but also influences the suit’s physical future and its impact on future observers.

2. QUANTUM MECHANICS

The modern conservator’s concerns with issues of context, subjectivity, and duality are similar to those of quantum mechanics. The principles of quantum physics provide equations of probability that allow measurements to combine objective and subjective elements. The subjectivity of quantum mechanics refers to the critical importance of context for understanding events. Quantum mechanics explores the duality of particles and waves found in the subatomic world. For example, before the twentieth-century scientists were divided as to whether light was best described as a particle or a wave. Quantum mechanics demonstrated that subatomic objects have both particle and wave characteristics. The observer effect of quantum mechanics explains one aspect of this duality: when light is measured with particle instruments it behaves like a particle, and when measured with wave instruments it behaves like a wave. Although at first this seemed to suggest that the observer was altering the light, it is now understood that subatomic objects have particle and wave attributes that manifest in response to their context.

Any scientific experiment is subjectively tied to the scientist through the conception, implementation, and interpretation of results. Personal subjectivity is described by probabilities of ignorance, while fundamental probabilities refer to information that can never be accurately anticipated. An example of this can be found in the recent conservation of this suit. When I first observed the previous adhesive treatment, with the open weave structure and the adhesive paste, I assumed that it was an original buckram component of the suit (fig. 5). I combined this visual evidence with historical written texts discussing the use of buckram in early suits for shaping. I unknowingly invoked the observer effect: the restorer’s paste was metaphorically transformed into eighteenth-century buckram by my attribution. My first draft of the treatment proposal suggested methods for protecting the flaking “buckram.” If I had implemented this first treatment plan, the suit would still be stiff with adhesive and would have a less graceful silhouette.
With continued examination of the placement of the adhesive layer, comparisons with other garments with known adhesive treatments, and schematic drawings showing eighteenth-century suits with interlinings, I finally understood that it was indeed a past restoration and not original buckram. Further analytical investigation shed more light on the adhesive. So far, FTIR and XRD analysis have not been able to completely describe the chemical construction of the paste, but it seems to be similar to the pasta linings used in paintings conservation. While the original misattribution fits within the high probability of ignorance experienced by a student conservator, the paste’s composition will likely remain a fundamental probability based on informed assumptions.

3. CLOTHING

Good conservation and good science begin with observation and research. This suit’s history is almost completely unrecorded, other than brief notes on catalog cards. Any descriptions of its pre-museum past are simply compelling probabilities based on the conservator’s observation and research - already, a somewhat subjective element. Physicists would also argue that the very act of observation seems to go against the conservator’s long held goal of reversibility. The quantum physicist Werner Heisenberg wrote, “every act of observation is by its very nature an irreversible process.” (Heisenberg, 1958, 137). Even if observation does not directly affect the object, it influences and changes the observer.

My research began with the suit’s silk brocade (fig. 6). It has two sets of wefts in pale pink and blue that are used separately and in combination to create the pattern. The quality and design of the textile indicate that it was manufactured during the early to mid eighteenth-century. The fabric was probably woven in either England or France where developments in spinning and weaving technologies would start the Industrial Revolution. These developments led to increased production of textiles, aiding in the rapid turnover of fashion trends. Fashion history suggests a date of circa 1745 based on the silhouette of the suit: namely the collar, cuffs, and side pleats.
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Figure 6: Detail of silk textile.

During the eighteenth-century fashionable clothing was made bespoke. A wealthy man would select a silk and bring it to his tailor to make into a suit. The suit was made to a man’s individual measurements and styled according to his preferences. Although the MCNY suit is made of silk with a good drape, the wide silhouette is achieved with many layers of interlinings including wool roving, woven horsehair, linen canvas, and linen buckram.

This suit would have been called an habit à la française since the French courts of Louis XIV and Louis XV set standards of fashionable dress for Western Europe and the American colonies. The prestige and power of these garments proved so strong that the insurgents of the French Revolution called themselves the sans culottes (without breeches). They explicitly aligned themselves against the clothing of the courtly ancienne regime. Perhaps ironically, our suit is now sans culottes.

The man who commissioned and wore this suit lived in a society that increasingly expected to find truth in scientific experiment and logical reasoning rather than in religious faith or emotional experience. This was a period of scientific and philosophical revolution that transformed Western societies. Unsurprisingly, men’s fashions changed with their thoughts: the Age of Enlightenment, for example, coincided with the transition from doublets to suits. Such changes in fashion, science, and philosophy are intimately entwined and have had lasting influences on our modern culture.

The scientific approach, as we practice it today in conservation, was born in this Age of Enlightenment and distinguishes conservation research from purely historical, cultural, and artistic research. Methods of scientific analysis also distinguish conservators from tailors and craft artisans. Both tailors and past restorers have worked on our suit, using tools of their trade and leaving evidence of their skills and purpose. The use of scientific analysis can aid in determining which past work is from whom – and therefore, which should be kept or changed as this garment is shifted into its next phase of museum object.
4. COSTUME

The careful attention to detail found in the construction of the suit shows how much value Western society placed on silk textiles and garments. While a new suit was a considerable investment, eighteenth-century clothing had a high resale value. Many tailors would remake, or turn, garments that were bought second-hand. The original owner of the suit probably sold it or gifted it as a hand-me-down. Finally, when it was past its fashionable re-use phase, the suit could have been acquired from the second-hand clothes market by a theater that wanted authentic costumes. One of the linings of the waistcoat has a large stamp reading “The property / of H. Compton / S. Hanover St.” which connotes ownership by a commercial entity – possibly a theater or costume rental shop although research could not locate the specific company (fig. 7).

![Figure 7: Detail of waistcoat interior showing stamp on lining.](image)

Fashion and costumes rely on mutual understandings between wearer and audience to communicate cultural concepts of gender, status, and individuality. This suit’s pleated skirts and large-scale cuffs challenge contemporary mainstream notions of masculine power and self-restraint. The pale pink and blue of this textile, coupled with its delicate silk threads, are in extreme contrast to the masculinity of dark wools and straight silhouettes used for men’s suits from the nineteenth-century through today’s contemporary suits. The audience – whether in a boardroom, theater, or museum – needs to be able to place the suit in its context.

Terrance Turner has called clothing our “social skin,” and our intimate relationship with our clothes can make the conservation and study of fashion especially challenging (Schneider 1993, 204). The suit’s original owner would have considered his garments to be appropriate expressions of sophisticated masculinity. Clothing can seem to literally embody gender; for example skirts strongly connote femininity. Garments are not passive symbols because they actively create the gender that they represent. This is analogous to descriptions of particles in quantum mechanics. Physicist Kenneth Ford wrote, “what particles are and what they do are intertwined . . . the properties of the particles get mixed up with the actions of the particles” (Ford, 4). Objects continue cultural performance within museums, and their display should be designed to clarify cultural assumptions.
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After Compton the next known owner of the suit was Henry Alexander Ogden, who donated the suit to the MCNY. His use for this garment is unknown—perhaps as an artist’s prop or as a fancy dress costume for a party, or perhaps he was just a collector. Ogden was an artist with a particular interest in American history; he created detailed illustrations of uniforms worn during the Civil War. As a member of New York society, it is likely that he attended some of the costume balls held during the late nineteenth and early twentieth-centuries.

The variety of darning stitches on the coat were probably added during the suit’s use as a costume—whether during its time at Compton’s or with Ogden. Such stitches would have provided considerable support to a garment experiencing the movements and abrasions of wear and laundry. They do not provide the aesthetic beauty, minimal intervention, or reversibility sought by conservation treatments.

5. COLLECTION

The suit was donated to the MCNY in 1938, and was displayed in a large exhibition, Those Fabulous New Yorkers, as well as in period rooms. It was apparently loaned to the museum prior to its accession since the catalog card briefly states, “cleaned & restored 2/18/35.” An early and ambitious campaign, presumably the 1935 restoration, combined stitched repairs with adhesive supports. The treatment utilized patches cut from the back of the waistcoat to replace damaged areas on the front and back of the coat. Less damaged areas were supported with a thick paste and underlay of open weave fabric. The sleeves were detached to facilitate the application of paste. The patches were hand-sewn, and the sleeves were reattached with a sewing machine. Both of these treatments used the same gray thread, which suggests that the stitched and adhesive treatments were done at the same time (fig. 8).

![Figure 8: Details of coat interior showing a) thread used for inserted patches and b) thread used in sewing machine to reattach sleeves.](image)

The adhesive did not prove stable over time and failed to consolidate or support the silk. In order to close and support the many tears in the silk, it was necessary to first remove the adhesive paste. Fortunately, the very qualities that made it a poor adhesive aided its removal. The embrittled adhesive was easily, if laboriously, removed using needle-nose tweezers and a vacuum on low suction. The adhesive had not penetrated the silk textile and could be carefully removed mechanically (fig. 9). The adhesive proved soluble in alcohol and acetone, but this type of treatment was impractical given the complex tailoring of the garments and the solvent’s propensity to discolor the silk.
Current conservation practices emphasize the value of minimally interventive treatments to maximize preservation of original material for future generations. Evidence of the past adhesive treatment with its patches cut from the waistcoat show a different, now dated, understanding of the suit’s role within the museum: the coat was conceived as a three-dimensional fashion plate, as a work of visual art. Within this context, the holistic preservation of the suit was subverted in order to restore the visual appearance of its facade. In other words, it was deemed acceptable to cannibalize the back of the garment to project a more complete front. While we have come a long way in our thoughts on such a treatment, there are still occasional lingering issues concerning the balance between preventative care, true nature, and display that remain contested.

The 2010 conservation campaign repeated the goals of the earlier treatment to provide the structural and aesthetic integrity needed to exhibit the suit (fig. 10). While the goals of the two campaigns are similar, their methods are different. Unlike the use of adhesive and cannibalized patches, the recent treatment included the application of underlay patches using very fine monofilament thread with laid and couching stitches (fig. 11). This technique is meant to hide the work of the conservator so that the audience’s attention will be directed to the object. It is also designed to damage the fabric as little as possible by limiting the number of stitches and using a thread with a similar diameter to those in the textile.
Laid and couaching stitches were used to close small tears on the coat and waistcoat near the waistline, possibly caused by abrasions to warp threads. The same stitches were used on the coat armseycs and sleeves to stabilize areas with more extensive tears and losses. The laid stitches were spaced approximately .75 inches apart, depending on the placement of tears. The waistcoat armscye were so creased and distorted, that humidification was required prior to stitching underlays in place. This was done with distilled water through a GoreTex® barrier.

While it is hoped that the 2010 treatment will not need to be replaced, it should be easier to remove the stitches than the previous adhesive without causing additional stress to the textile. While the loss of the waistcoat back could not be amended, the back was treated with silk replacement panels to provide additional support and a more attractive appearance (fig. 12). The 2010 treatment is adhering to contemporary conservation standards, as was the 1935 treatment for its day. Let’s hope that in another 70 years this suit is not the subject of a scathing presentation (perhaps holographic instead of PowerPoint) looking back sadly at yet another set of unenlightened choices!
6. CONCLUSION

During the nearly 300 years since the suit was constructed, it has evolved from a fashionable garment to a theatrical costume, to an accessioned museum object. Even as a museum object, changes to it through restoration and conservation continued the suit's evolution. With each alteration to the original, the perceptions of the suit shifted; these changes are physically manifested in the physical wear and repairs on the garments.

The suit was acquired by the MCNY during the 1930s, a time when quantum mechanics revolutionized physics and chemistry by describing the dual nature of particles and waves. This revolution did not completely overthrow Classical science. Rather it extended the ability of science to describe a world full of probabilities and contextualized experiences, rather than one of absolute objective truths.

Museums have also shifted during this time in attempts to express a wider variety of perspectives. Conservation practices and ethics reflect and support these changes. The seemingly objective catalog of an object's physical characteristics is no longer considered a sufficient basis for ethical conservation treatments. Current conservation ethics strive to encompass many ambiguities: the multiple meanings and interpretations for each object; the duality of authentic object and accessioned object; the importance of both physical science and material culture to describe an object's significance and thus develop treatment and exhibition proposals. The theories of quantum mechanics were developed to describe the actions and ambiguities of subatomic particles. While the theories themselves do not relate to conservation, their guiding questions can help conservators make ethical choices that consider the past, present, and future lives of objects.

As Heisenberg wrote in *Physics and Philosophy*: "The two processes, that of science and that of art, are not very different. Both science and art form...a human language by which we can speak about the more remote parts of reality, and the coherent sets of concepts as well as the different styles of art are different words...in this language" (Heisenberg, 109).

The observer effect can provide a conceptual framework to help conservators make ethical treatment choices that benefit from both art and science while acknowledging our own subjective place in an object's history.

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FURTHER READING


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Laura Mina is a textile conservator with an M.A. in Fashion and Textile Studies: History, Theory, Museum Practice from the Fashion Institute of Technology. This paper explores research questions that grew out of her thesis, “Men In Buckram: The Tailoring and Conservation of a 1740s Man’s Silk Suit.” In September 2011 she will begin a Mellon Fellowship in costume and textile conservation at the Philadelphia Museum of Art.
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