PROCEEDINGS

Living Matter: The Preservation of Biological Materials in Contemporary Art

An International Conference Held in Mexico City, June 3–5, 2019

Edited by Rachel Rivenc and Kendra Roth

Getty Conservation Institute

Living Matter

Living Matter

The Preservation of Biological Materials in Contemporary Art

Edited by Rachel Rivenc and Kendra Roth

GETTY CONSERVATION INSTITUTE, LOS ANGELES

The Getty Conservation Institute
Timothy P. Whalen, John E. and Louise Bryson Director
Jeanne Marie Teutonico, Associate Director, Strategic Initiatives and Publications

The Getty Conservation Institute (GCI) works internationally to advance conservation practice in the visual arts—broadly interpreted to include objects, collections, architecture, and sites. The Institute serves the conservation community through scientific research, education and training, field projects, and the dissemination of information. In all its endeavors, the GCI creates and delivers knowledge that contributes to the conservation of the world's cultural heritage.

This publication was created using Quire™, a multiformat publishing tool owned by the J. Paul Getty Trust.

The free online edition of this publication is available at getty.edu/publications/living-matter/ and includes videos and zoomable high-resolution photography. Also available are free PDF, EPUB, and Kindle/MOBI downloads of the book.

First edition, 2022
github.com/thegetty/living-matter/

Published by the Getty Conservation Institute, Los Angeles
Getty Publications
1200 Getty Center Drive, Suite 500
Los Angeles, California 90049-1682
getty.edu/publications

Tevvy Ball, *Project Editor*
Lindsey Westbrook, *Manuscript Editor*
Greg Albers, *Digital Manager*
Kurt Hauser, *Cover Designer*
Molly McGeehan, *Production*
Leslie Rollins and Nancy Rivera, *Image and Rights Acquisition*
Audrey Warne, *Digital Assistant*

Distributed in the United States and Canada by the University of Chicago Press

Distributed outside the United States and Canada by Yale University Press, London

Library of Congress Cataloging-in-Publication Data
Names: Getty Conservation Institute, author, issuing body. | Rivenc, Rachel, editor. | Kendra Roth, editor.
Title: Living Matter: The Preservation of Biological Materials in Contemporary Art
Description: First edition. | Los Angeles : Getty Conservation Institute, 2022. | Proceedings of the symposium "Living Matter: The Preservation of Biological Materials in Contemporary Art / La Materia Viva: Conservación de materiales orgánicos en el arte contemporáneo" which took place June 3–5, 2019, in Mexico City and was co-organized by the Getty Conservation Institute (GCI), the Museo Universitario Arte Contemporáneo (MUAC) of the Universidad Nacional Autónoma de México (UNAM), and the Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete" (ENCRyM) of the Instituto Nacional de Antropología e Historia (INAH). | Includes bibliographical references. | Summary: "This is the first book to provide a comprehensive overview of the conservation of biological materials used in contemporary art"— Provided by publisher.
Identifiers: LCCN 2021056356 (print) | LCCN 2021056357 (ebook) | ISBN 9781606066874 (paperback) | ISBN 9781606066881 (mobi) | ISBN 9781606066898 | ISBN 9781606067673 (epub)
Subjects: LCSH: Art, Modern—20th century—Conservation and Restoration—Congresses. | Art, Modern—21st century—Conservation and Restoration—Congresses. | Artists' Materials—Deterioration—Congresses. | Museum conservation Methods—Congresses.
Classification: LCC N8554.5 .L58 2019 (print) | LCC N8554.5 (ebook) | DDC 702.8/8—Dc23/eng/20220118
LC record available at https://lccn.loc.gov/2021056356
LC ebook record available at https://lccn.loc.gov/2021056357

Front cover: Adrián Villar Rojas (Argentinian, b. 1980), from the series *The Theater of Disappearance (XIII)*, 2015–18 (detail). Organic, inorganic, and human- and machine-made matter, 381 × 312.4 × 243.8 cm. Collection of The Bass Museum of Art, Miami Beach, Florida. © Adrián Villar Rojas. Installation view, Geffen Contemporary at MOCA, Los Angeles, 2017. Studio Michel Zabé, courtesy the artist, Marian Goodman Gallery, New York / Paris / London; kurimanzutto, Mexico City; and The Geffen Contemporary at MOCA

Back cover: Gabriel de la Mora (Mexican, b. 1968), eggshell pieces for potential use in the series *CaC03*, 2013–ongoing (fig. 22.10, detail). Courtesy the artist and Proyectos Monclova

Contents

Foreword

The appetite of contemporary artists for experimentation is seemingly infinite, and the variety of materials they use is therefore correspondingly immense. This poses numerous conservation challenges, perhaps none as acute as with the use of biological materials in works of art. These can include flowers and plants, food and bodily fluids, and microorganisms. And because all that lives eventually dies, the preservation of such living matter can seem like an impossible paradox. Yet museums and institutions are routinely tasked with ensuring that these artworks endure.

It was to address this challenge that the symposium “Living Matter: The Preservation of Biological Materials in Contemporary Art / La Materia Viva: Conservación de materiales orgánicos en el arte contemporáneo” was conceived. The international meeting was co-organized by the Getty Conservation Institute (GCI), the Museo Universitario Arte Contemporáneo (MUAC) of the Universidad Nacional Autónoma de México, and ENCRyM (Escuela Nacional de Conservación, Restauración y Museografía “Manuel del Castillo Negrete”) and held in Mexico City in June 2019. It was attended by more than 150 conservators, curators, artists, art historians, and archivists, all of whom have a keen interest in preserving these unique and increasingly ubiquitous “living” materials. This volume documents the proceedings of this exciting and groundbreaking meeting.

The GCI’s involvement in both the conference and these proceedings stems from its Modern and Contemporary Art Research Initiative, launched in 2007 to address some of the complex challenges raised by the conservation of contemporary art. The initiative includes a strong research component, yet it also recognizes that one of the most effective ways of meeting these challenges is through networking and the dissemination of information among professionals in the field. One of the strategies adopted to achieve this goal is the organization of focused, singled-themed meetings, like this symposium, which present an opportunity to hear a range of different points of view, compare practices, and survey the current state of thinking.

Additionally, the GCI has a long history of collaborating with partners in Latin America. We were delighted to work alongside both MUAC and ENCRyM and to be able to host the symposium in vibrant Mexico City, which is teeming with contemporary art and artists and claims a dynamic contemporary art conservation community. We are extremely thankful to our partners for hosting a very successful symposium, and for their many contributions, both logistical and intellectual. We also

gratefully acknowledge Kendra Roth and Rachel Rivenc for their careful and thoughtful editing of this volume.

“Living Matter / La Materia Viva” generated in-depth exchanges of knowledge and perspectives. As the first symposium dedicated to this topic, this conference has a singular significance, and it is important for everyone in the emerging field of preservation of biological materials to be able to access the resulting research, case studies, and discussions. We are therefore delighted that these proceedings are available in both digital and print formats, and we hope that they will play their part in helping keep these artworks alive.

Timothy P. Whalen
John E. and Louise Bryson Director
Getty Conservation Institute

Preface

Rachel Rivenc
Kendra Roth

For decades, contemporary art has challenged collecting institutions and, as a consequence, the conservators and others tasked with caring for the art. Conceptual art, readymade and found objects, time-based media, performance art—many of these were attempts to expand the boundaries of traditional art forms and defy the conservatism of institutions. In response to such challenges, conservators had to expand the conventional definition of an artwork as a discrete object directly embodied by and contained in a set of materials and consider different forms of incarnation and manifestation, different modes of being. They also had to drastically expand their skill sets, and therefore their networks of collaborators, to address these new art forms.

The introduction of biological materials into the ever-expanding palette of materials used by contemporary artists has certainly been one of the greatest challenges to institutions, and a difficult puzzle to solve for conservators. Art that lives, breathes, grows, morphs, sprouts, mutates, oozes, decays, and might decompose entirely, certainly goes against the idea of the museum as a static place where objects are housed, contemplated, and preserved as much as possible in their existing form. The challenges are both conceptual and practical. In this volume, Marcia Reed underscores that Fluxus works were specifically created to challenge institutional authority and questions the ethics of preserving works not meant to last; she reminds us that, literally, "Fluxus means change." On the more practical side, Mercedes Isabel de las Carreras remarks that the conservation of Víctor Grippo's *Analogía I* (Analogy I, 1970–71) hinges just as much on the proper selection of potatoes as it does on the museum's environment, and notes that if the work were to be exhibited continuously for two years, the cost of more than 2,160 replacement potatoes and a minimum of 120 conservator work hours would have to be factored in.

The advent of bioart, in which artists draw upon scientific advances of genetically modified organisms (GMOs) and other types of manipulations of living beings and tissues, poses yet another level of intertwined ethical and practical challenges, as outlined in Jens Hauser's article. The responsibility of museums toward the living organisms they are caring for, and transparency toward the public, must be reckoned

with. For instance the loan agreements can involve complex ethical negotiations, and shipments may need to be handled by biomedical companies rather than conventional art transporters.

A challenge to the institution is not, however, always the primary goal of using living matter in art. In many cases, it is the aesthetic, tactile, and poetic properties of biological material that the artist is forefronting. Flavia Parisi, Maura Favero, and Rosario Llamas Pacheco's article in this volume discusses *Precipitazioni Sparse* (Scattered Precipitations, 2005), a work by Bruna Esposito in which white, golden, and red onion peels are scattered across a marble slab. The artist was attracted to the beauty of the onion peels—their infinite variations in color, shape, and translucency—which in juxtaposition with a traditionally noble art material, namely Carrara marble, calls attention to the beauty and poetry discoverable in everyday things. Other times it is the process of change itself that the artist wishes to deploy for its symbolic value. The Mexican artist Darío Meléndez here discusses *Símbolo descarnado* (2013), a collective installation realized in collaboration with Omar Soto and Diana Bravo, in which he displayed the rotting carcasses of an eagle and a serpent inside a glass case to evoke "the atmosphere of deterioration in which [his] country is submerged."

For some works, periodic replacement of their biological materials may be appropriate, even convenient, as long as the criteria are well defined and the resources are available. In fact, following this logic could represent the ultimate form of commodification, in one of those spins with which the art market is familiar. There is perhaps no better example of this than Maurizio Cattelan's *Comedian* (2019), which is in part a critique of the art world but nevertheless fetched $120,000 at a Miami art fair, where it fascinated patrons and became a social media sensation. When an edition of the work was donated anonymously to the Guggenheim, the museum's conservators were happy to discover that, thanks to extensive instructions on how to select and install the banana and the duct tape, the work was rather easy to conserve (Bowley 2020). It is not always the case, though, that replacement is possible, or that the possibility of replacement leads to commodification.

In 2007, Adrián Villar Rojas used a sponge cake in his installation *Pedazos de las personas que amamos* (Pieces of the People We Love). After the installation, the cake was brought back to Villar Rojas's hometown of Rosario, Argentina, where his parents kept it for eight years, until it was shipped to Sweden in 2015 to be part of the exhibition *Fantasma*, and subsequently acquired by the Moderna Museet in Stockholm (see the essays by Adrián and Sebastián Villar Rojas and Thérèse Lilliegren et al. in these pages). The cake, made by the artist's aunt and identical to cakes she made for his childhood birthdays, acquires more ontological value as an object with each year that passes and every event it survives. Reusing entire parts of an installation in a new one, in a process of continuity and reinvention, has become a feature of Villar Rojas's work. The replacement of the now thirteen-year-old cake is not considered an option at the moment; rather, the Moderna Museet is working in consultation with the artist to store it in an oxygen-free environment. In fact, the artist sees his work on the opposite spectrum of commodification, with "the material dimension of [his] practice," as he writes in his essay here, being more the "precarious act of bearing witness to an activity that is lost forever (all of the richness of a nomadic life in that community or of the processes of exploration) than the ultimate goal of a 'career' aimed at producing commodities."

The symposium "Living Matter: The Preservation of Biological Materials in Contemporary Art / La Materia Viva: Conservación de materiales orgánicos en el arte contemporáneo" took place June 3, 4, and 5, 2019, in Mexico City and was co-

organized by the Getty Conservation Institute (GCI), the Museo Universitario Arte Contemporáneo (MUAC) of the Universidad Nacional Autónoma de México (UNAM), and the Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete" (ENCRyM) of the Instituto Nacional de Antropología e Historia (INAH). Over the course of the three days, a lively international group of conservators, curators, artists, art historians, philosophers, and archivists explored the many different ways that living matter can be incorporated into art, its multifaceted significance, and different conservation approaches and institutional responses. Several artists were present throughout the conference, each at a different phase of their career and with very different and deeply personal practices, thus reflecting a plurality of artistic voices. The dialogue with the custodians of their works was curious, rich, and respectful.

As expected, no monolithic solution was found. Any consensus that did emerge was around the necessity to continue these conversations so that each work of art, each situation, can be considered in all its complexities, and to accept that while we want to preserve these works, we cannot tame them or fix them in a final state of unchanging objecthood. We want them to continue to live and to challenge us—as does life itself.

We would like to thank the MUAC and ENCRyM, who were wonderful partners in the organization of the seminar, and in particular Julia Molinar and Claudio Hernández (MUAC-UNAM) and Ana Lizeth Mata Delgado and Claudia María Coronado García (ENCRyM-INAH), who worked tirelessly to make the symposium happen. Their enthusiasm, diligence, and efficiency made them a joy to work with. We also thank the director of MUAC, Graciela de la Torre, and director of ENCRyM, Gerardo Ramos Olvera, for their support of the symposium and being such generous hosts. At the GCI we are extremely grateful to Tom Learner, head of science; Kathy Dardes, head of collections at the time; Jeanne Marie Teutonico, associate director, strategic initiatives and publications; and Tim Whalen, John E. and Louise Bryson Director, for their support of the project. The symposium would certainly not have been possible without Reem Baroody's work; her limitless energy and dedication made it possible to overcome all sorts of logistical obstacles. Nicole Onishi's help was frequently crucial. Cynthia Godlewski, Chelsea Bingham, and Gary Mattison at the GCI expertly coordinated the preparation for publication of these proceedings. At Getty Publications, our gratitude to Tevvy Ball, Greg Albers, Kelly Payton, Karen Levine, and Kara Kirk.

BIBLIOGRAPHY

Bowley 2020
Bowley, Graham. 2020. "It's a Banana. It's Art. And Now It's the Guggenheim's Problem." *New York Times*, September 18, 2020, https://www.nytimes.com/2020/09/18/arts/design/banana-art-guggenheim.html.

Keynote

In the Unpredictable Garden of Forking Paths

Adrián Villar Rojas
Sebastián Villar Rojas

From suicidal or ephemeral sculptures to diachronic, mutant, or hybrid objects, the presence of the living in my projects has been developing for more than a decade. In this essay, I attempt to provide a panoramic overview of this journey, while showing how each phase of this relationship with living matter causes my team's collaborative work to be organized differently. I will follow a chronological order in coordination with theoretical considerations, many of which emerged in interviews, books, and catalogues written together with my brother Sebastián, a writer, playwright, and theater director. Accordingly, the notion of praxis fits in well with my own practice, which is affected both by contingent discovery and by the intention to formalize it in idea systems.

◆ ◆ ◆

> *Century follows century, and things happen only in the present. There are countless men in the air, on land and at sea, and all that really happens, happens to me.*
>
> —*Jorge Luis Borges,* The Garden of Forking Paths*, 1944*

I will approach the notion of "living matter" in two ways. One is the presence of material able to generate phenomena such as autopoiesis or auto-production in the "language games" (Wittgenstein 1953) that I weave into my projects. The other is the presence in them of human work, or simply work, since, as the central thesis in the Marxist theory of value suggests, it is the application of "muscle, nerve, and brain" to transforming material that is at the core of human action on the planet. In effect, the human dimension is the primary "living matter" that, I believe, I have devoted myself to shaping, both in respectful exchanges with local actors and in the social experiment that my team has been and continues to be. It is these two directions (*work* along with my collaborators and the *auto-production* of organic material) that I will address in this essay, inscribing them diachronically in the evolution of a praxis.

2004: YEAR 0

If I had to choose a relative starting point for my dialogue with living matter, it would not be the direct use of an organic element, but a pictorial representation of life, namely the reproduction of two Jurassic landscapes by Charles R. Knight, who created the murals at the Museum of Natural History in New York, which I commissioned my friend and faculty of fine arts colleague Juan Manuel

Hernández to produce for my first solo show, *Incendio* (Fire) at Nuevo Espacio, Ruth Benzacar Art Gallery, Buenos Aires, in 2004. In them, two dinosaurs graze and look toward the horizon on the savannah seventy million years ago, in a hypothetical scene from daily life in the Late Jurassic. The only difference, missing from the original and added by Juan at my request, is a handful of tiny trails of fire, almost imperceptible, in a corner of the blue sky: a group of meteorites that in just a few moments will trigger the start of a new mass extinction on Earth.

2006 AND THE *CLOSE ENCOUNTERS* MOUNTAIN: ANTHILLS IN FRONT OF THE ELEMENTARY SCHOOL

A man wakes up in the morning and hurries to his garden. He gathers soil in a wheelbarrow and takes it inside his house. He dumps it in the living room. He repeats this activity for days. He doesn't stop until he has made a mountain with a precise shape and size: a homemade three-dimensional map of the place where the close encounter will take place. The scene changes the history of film.

It is the same obsession that pursues me: soil/earth. Wire structures covered in Kraft paper, coated in glue, and sprinkled with black dirt until they become a volcano, or actually an anthill. The theme of the alien runs through my drawings, my notebooks, the little projects that look as if they were made by a teenager, a nerd, a loner, at home in his garage. With these giant anthills, it is not the theme but the logic that produces them that seems alien, strange, alienated, emancipated from the "human." Rather than content, it is an ontology that is glimpsed beneath the obsessive creation of those anthills: an exercise in distancing in order to produce material noise in the environment, silent entities that barge or burst onto the scene implosively like an autistic presence. There has been a photograph for years on the Wikipedia entry in my name: I am installing anthills in front of the door to an elementary school in Rosario during Art Week 2006, surrounded by students who look at me as if I were an alien consumed by a useless or incomprehensible task.

The mountain-anthills reappeared in 2007 at the Centro Cultural Borges and Belleza y Felicidad, both in Buenos Aires, eliciting the same sense of an autistic impact on the space, and ended up stored for years in my parents' living room, crumbling on their carpet (fig. 0.1).[1]

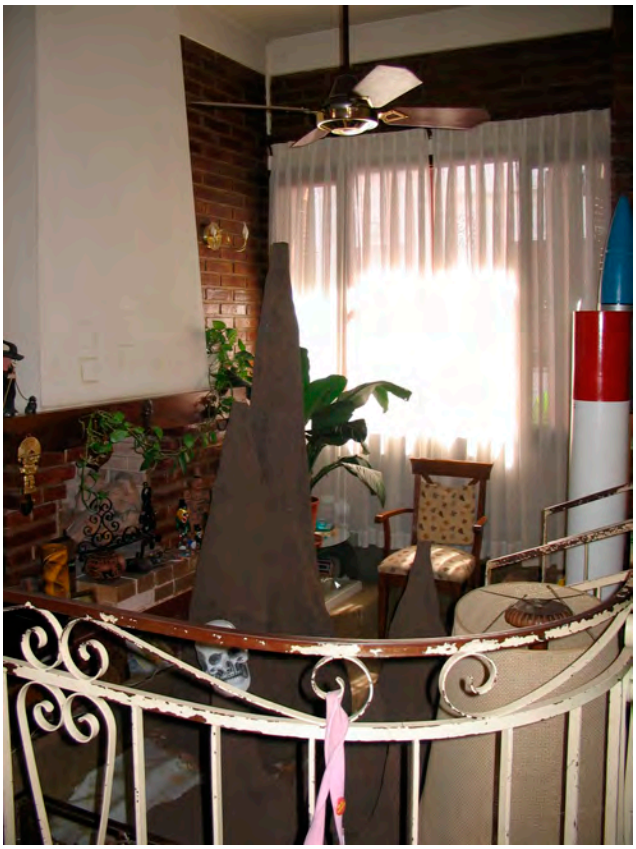


Figure 0.1 Two ant nests made in 2006, stored in the living room of the artist's parents, Rosario, Argentina. Soil, glue, Kraft paper, and small graveyard crosses. Adrián Villar Rojas

2007 AND THE MAP OF MAPS: THE PETROBRAS TABLE

Pedazos de las personas que amamos (Pieces of the People We Love, 2007, fig. 0.2) is a twenty-meter-square table where, with countless materials and homemade processes, all of the cause-and-effect relationships needed in the multiverse for a tragically ending love story are put into play: she is infected with bacteria carried by a meteorite on exhibition in the forest, and he commits suicide inside his robot on the side of a mountain (made out of cake by my aunt, just like the ones she used to make for my birthday when I was a child). Nearby, another cake covered in green sprinkles serves as the base for a dinosaur lying amid balsa-wood crosses and little pastry trees. A school of goldfish swim in their world of glass and electrically oxygenated water. A canary song echoing snippets of Nirvana and Radiohead drifts from a PC's humble speakers. And under the table, again, the soil piles up in a series of hills sprouting sepulchral crosses. The interaction of low-cost industrial objects (Chinese imports bought in

Figure 0.2 Adrián Villar Rojas (Argentinian, b. 1980), *Pedazos de las personas que amamos* (Pieces of the People We Love), 2007. Styrofoam, cardboard, balsa wood, epoxy putty, unfired clay, soil, sponge cakes, insects, paper, ketchup, corn flour, potatoes, cacti, artificial plants, tree branches, miniature pine trees, trophies, lamps, fish, fish tank, loudspeakers, graphite pencil leads, motocross helmet, trainers, televisions, and DVD players, all collected in Rosario, 640 × 440 × 130 cm. Installation view, 4th arteBA-Petrobras Visual Arts Prize, Buenos Aires, 2007. Tomás Lerner, courtesy the artist

the wholesale commercial zones of Rosario) such as articulated dolls, backpacks, decorative ceramics, costume jewelry, stickers, dishes, electronics, and Styrofoam packing materials is combined with this—somewhere between ominous and innocent—presence of the organic in a trans-temporal microcosm where every element in the chain of causation has not yet been destroyed by entropy—that is, by the arrow of time—and is therefore frozen in the instant of greatest productivity to be an explanation or consequence of their previous or future link. It is done in a way that reprises Antonio Campi's *The Mysteries of the Passion of Christ* (1569), where Jesus is alive, dead, resuscitated, and ascending, not only in the same painting, but in an apparent single chronotopic unit: an Aleph with no chronology, or with a chronology that has been undone by its own exacerbation.

That is where the first sculptures appear, in that whirlwind of three-dimensional stimulation, modeled out of two materials that are diametrically opposed in their durability: clay and epoxy. The raw clay figurines and objects will disappear in a matter of weeks once the project is dismantled. The epoxy ones (the busts of the tragic couple, for example) are still on top of the souvenir display case at my parents' house, intact, like the youthful melancholy beauty of lovers.

Here, using the very temporal multidimensionality of the project, I will flash forward: the cake-mountain, made of four stories of cake, where the protagonist would go to commit suicide, will be returned to Rosario and stored in the warehouse of the family business along with other remnants of the Petrobras table.[2] My parents kept it on a shelf for eight years until 2015, when, now practically reduced to dust, rock, and mold, it was moved to Sweden using a sophisticated logistical plan that spanned thirteen thousand kilometers. In Stockholm it was displayed in a specially designed case with ideal humidity and temperature conditions as part of *Fantasma* (Ghost, fig. 0.3). That project was an attempt to imagine what a retrospective of my oeuvre would be like two hundred years from now, given that because of its radical entropy,

Figure 0.3 Adrián Villar Rojas (Argentinian, b. 1980), *Untitled*, from the series *Pedazos de las personas que amamos* (Pieces of the People We Love), 2007. Sponge cake, marzipan, robot, miniature pine trees, confetti sprinkles, and balsa wood, 30 × 50 × 50 cm. Moderna Museet, Stockholm. Installation view, *Fantasma*, Moderna Museet, Stockholm, 2015. Åsa Lundén, courtesy the artist and Moderna Museet

there would be nothing more than some residuals or remnants of its material form. We will get back to this point.

2008 AND THE BIRTH OF ENTROPIC AWARENESS

I used to say that the Petrobras table is a map of maps, a master plan for my life project, meaning that, in retrospect, one might see each of my subsequent steps as the hyperbolic development of a particular vein of work that was already present in that work and in the experience of producing it. This is absolutely apparent in *Lo que el fuego me trajo* (What Fire Has Brought Me, 2008, fig. 0.4), a hyper-entropic universe born from a particle of the Petrobras table: the clay figurines I mentioned above, barely noticeable among the myriad creatures that populated its surface like the multitudes of every species that teemed throughout *Star Wars*' intergalactic Tijuanas.[3] All I had left of them were five unused bags of clay, and the experience of making something that simply disintegrated.

In January of 2008, I sank my fingers into the clay and started to model without any preconceived outcome. In a couple of hours, I imitated the life I saw around me: a jar of pills, an iPod, a spoon. I was in the first and only studio I have had, a house in Buenos Aires that I rented and lived in for two years. It was a first time for many things: living alone, away from Rosario, having a place to work, and the ominous imminence of grief that I would experience in March of that year with the death of my maternal grandfather. In a couple of months (once again picture the lonely, quasi-autistic adolescent, driven by an apparently useless obsession, a kind of calling from elsewhere, as with the unraveled time Kurt Vonnegut's character experiences in *Slaughterhouse-Five* [1969], but unlike the catatonic state that character falls into when traveling to a parallel universe; my condition was still more akin to that of the compulsive man in *Close Encounters of the Third Kind* [1977]), I filled the house with a clay "memory" that was already starting to crack the minute I set it down on the shelves or the floor, wherever there was a place to put it. The clay interacted violently with the air, the temperature, the humidity, the vibrations of the noisy world into which the pieces were born to simply die, like Martin Heidegger's

Figure 0.4 Adrián Villar Rojas (Argentinian, b. 1980), *Lo que el fuego me trajo* (What Fire Has Brought Me), 2008. Unfired clay, bricks, cement, demolition rubble, water tanks, water, lime, sand, wood, metal, mirrors, glass, soap, mollusk shells, car windscreen, car hood, badges, stickers, sprouting potatoes, corals, stones, ceramic objects, cold porcelain, trainers, glass jars, burned bread, pasta, Post-it note cube, and jewelry, all collected in Buenos Aires. Ignacio Iasparra, courtesy the artist and Ruth Benzacar Galeria de Arte

Dasein. They were—I discovered—beings conceived to perish.

Like the condensers that Nikola Tesla conceived to transform the electromagnetic waves that surround us into instant energy, these humble raw clay *Daseins* were hypersensitive to time. They absorbed it from every particle that came into contact with them, accumulating and amplifying it. They magnified it thousands of times, as if under a microscope lens: that lens was their very body, which cracked and aged in just a few hours until it was transformed into a fossil, before disintegrating and vanishing. For me, then, clay represented the possibility to fossilize beings, whether figurative, abstract, or symbolic. There was one step between this discovery and playing with the oxymoron: the future (incarnated in a cyborg, in a device for the digital era, or however our imagination represents the future) can be fossilized until it becomes a cemetery of what is to come. And at the same time, what is clay but the prehistory of life on Earth, organic matter pounded into infinity, the sediment of everything that has lived on its cool shores or beneath the surface of its waters? The remote past and the distant future draw closer to the present, and the present distances itself with them or opens up to its othernesses (to the multiverse, to its parallel dimensions). With clay, time becomes manipulable. Time becomes sculpture. And sculptures become suicidal.

FROM TIME AS SCULPTURE TO TIME AS SCULPTOR: MOVING FROM SUICIDAL TO DIACHRONIC OBJECTS

I began to multiply these clay entities dramatically in 2009. It started with the whale at Parque Yatana in Ushuaia, Argentina, for the Biennial at the End of the World (fig. 0.5).[4] There were key moments, like the eleven monoliths at the 2011 Venice Biennale, the hundred-meter cylinder at the Tuileries Garden in Paris, also in 2011, or the sculpture forest at *dOCUMENTA (13)* in Kassel (2012).[5] These projects condensed all the ideas laid out above: noise or estrangement from the landscape; the radicalization of time as representation or narrative; a distancing from the human world through its fossilization; and hyper-entropy

Figure 0.5 Adrián Villar Rojas (Argentinian, b. 1980), *Mi familia muerta* (My Dead Family), 2009. Unfired local clay and rocks, 300 × 2700 × 400 cm. Installation view, Parque Yatana, 2a Bienal del Fin del Mundo, Ushuaia, Argentina, 2009. Carla Barbero, courtesy the artist

that annihilated objects that were ever more labor-intensive because of their magnitude or complexity.

Adding to that, on the one hand, there was an increasing defiance against the limits of the field of "art" (the variables that ensure that its reproduction and even its transformation into a commodity—transport, durability, scale, costs—were continually mined or taken to the extreme, first in a more intuitive way, and then in a more systematic and conscious way, which I will call "the philosophy of limits"). On the other hand there was the birth of a community of collaborators that embarked on its own path of development vis-à-vis clay, expanding its possibilities as a material while improving strategies and accumulating knowledge and technology. Here, clay begins to turn into a language that is transferable to future generations. Each new collaborator internalizes and tests the techniques, the processes, the group dynamics, all of which vary from project to project. Sometimes the serial and repetitive logic of the factory comes into play; at other times, it is the creative and loose logic of the artisanal workshop; and at yet other times, it is the harrowing and uncertain dynamic of the experimental laboratory. I am always the coordinator of these metamorphoses, generating different communication dynamics with each team member, at times more transparent and direct, and at other times more opaque and ambiguous. No one person is the same, and no one person requires the same thing.

From the language of engineering to the language of psychoanalysis, from the prompt to Socratic catharsis, from Frederick W. Taylor's assembly line to Melanie Klein's negative transference, the discourses that spark ideas in the studio are numerous, hybrid, mixed. I try to take maximum advantage of the gaps in communication (misunderstanding as a source of discovery, as a space for creative freedom), but also of the possibility of establishing very strict codes when necessary. In short, the "community" engages in a dialogue with itself and with its surroundings in the hyper-specialized language of raw clay. Over time, cement was added to it, leading to the mixture that would dominate the period between 2008 and 2013: clay + cement. This formula also signals a key metaphor in my practice: "before human beings" + "after

human beings": the traces of life before the Anthropocene (clay) and the traces of our lives in its wake (cement).

What began in 2009 with the two collaborators I found in Ushuaia based on recommendations from locals, César Martins and Mariano Marsicano, and Alan Legal, a technical assistant I brought from Buenos Aires, became *Today We Reboot the Planet* (2013) in an enormous warehouse on the outskirts of London.[6] This is an organized system with workstations (self-designed mini-studios), where more than ten collaborators function as actors on their own sets (jewelry, sculpture, construction, metalworking, et cetera), improvising their roles based on interactions with a director (me), who shapes their performance in real time, reacting to each of them based on what they provide and building their scenes along with them. The material results of this process of "rehearsals" come together in the "premiere": the opening of an exhibition, which is increasingly less satisfying or representative to me as a mechanism for the visibilization of work, given its complexity. The actual richness of this process—the intense human activity, the living matter of the theater (muscular and neural energy put into play)—has disappeared forever. The resulting pieces barely bear precarious witness to what is no longer there, namely the life of a community developing a language over weeks or months. To survive, that community has become nomadic—an itinerant company that, even as the current exhibition is opening, is already flying to its next destination.

As projects pass by, I am more and more aware that human experience is the lost core of my practice and that physical material is just evidence of it. It is no longer just about the idea of a suicidal materiality that, over time, won't leave more than a trace of itself, but about the very idea of materiality (no matter how many centuries it lasts) as residue, as remnant, as an utterly insufficient record of a life that is always a fleeting present. The stage metaphor takes on its full meaning in that the theater is a perpetual dueling ground. In every performance, the "play" is born, lives, and dies. It is human activity in a continuous present, and it is only in acting out that loss that the next performance can be accessed (which will also lead to a next death). No record (audiovisual, written, or oral) can supplant shared experience. The bodily ritual that exists between actors and spectators is structurally irreplaceable. That logic somehow runs through my own praxis, the "disappearance" of which becomes less about the material than about the human hand that works with it.

Two other changes in London are connected with a space that has been operating in Rosario since December 2012, the *Brick Farm* (fig. 0.6). It is an experimental open-air camp installed in a corner of a lot belonging to an artisanal brickworks on the outskirts of my hometown, in a transitional area between rural and urban environments. Members of my team work on a variety of activities there, mainly testing materials (looking for greater stability in combinations of clay and cement), exploring the surroundings to gather organic materials or "residuals," and exchanging knowledge and experience with the workers at the brickworks, who utilize the same traditional methods used for more than one hundred and fifty years to produce adobe bricks. This experience yields surprising results, opening new horizons in experimentation with highly unstable organic materials, from vegetables, fruit, legumes, and plants to even small animals that are found decomposing near the brickworks (fig. 0.7).

Figure 0.6 *Brick Farm*, 2012–ongoing, an experimental collaborative studio located in a traditional brickyard on the outskirts of Rosario, Argentina. Mario Caporali, courtesy the artist

Figure 0.7 One of the first tasks that Villar Rojas's team undertook in *Brick Farm* was to reproduce some elements of the *dOCUMENTA (13)* installation. This instinctive exercise allowed them to revisit the intense period of production that had just finished with a slower and more reflexive spirit. The photograph shows horses galloping alongside one such replica. Mario Caporali, courtesy the artist

It also leads to an encounter with a species of synanthropic (highly adaptable to human environments) bird and its peculiar architecture: the hornero bird, a national symbol, and its nest, which resembles a traditional domestic mud oven used to bake bread in rural Argentina (fig. 0.8). I discovered that this bird, the brickworks, and my team all share the same material as object of transformation: soil. Each has their own methods and techniques to manipulate it, shape it, and stabilize it, but all have the same goal: to build with mud. In one case, cow intestines bought from local slaughterhouses are dumped into a giant hole filled with dirt and water, where a herd of horses trample it all until the mix is blended to make adobe (mud blended with the dung from those intestines), which is then dried in rectangular molds and fired in pyramids made of those same raw bricks (fig. 0.9). In the other, the adobe is fashioned by making a ball in the beak, blending saliva with bits of straw, branches, and grasses gathered in the area as the ovaloid walls of the nest are erected. And in the third, mud is blended with cement, wooden structures, screen, and wire.

Figure 0.8 Hornero nest with interventions by Ariel Torti, who added his own mixture of clay to the exterior. Here the hornero added more layers of matter over Torti's intervention—a unique bird-human interaction. Mario Caporali, courtesy the artist

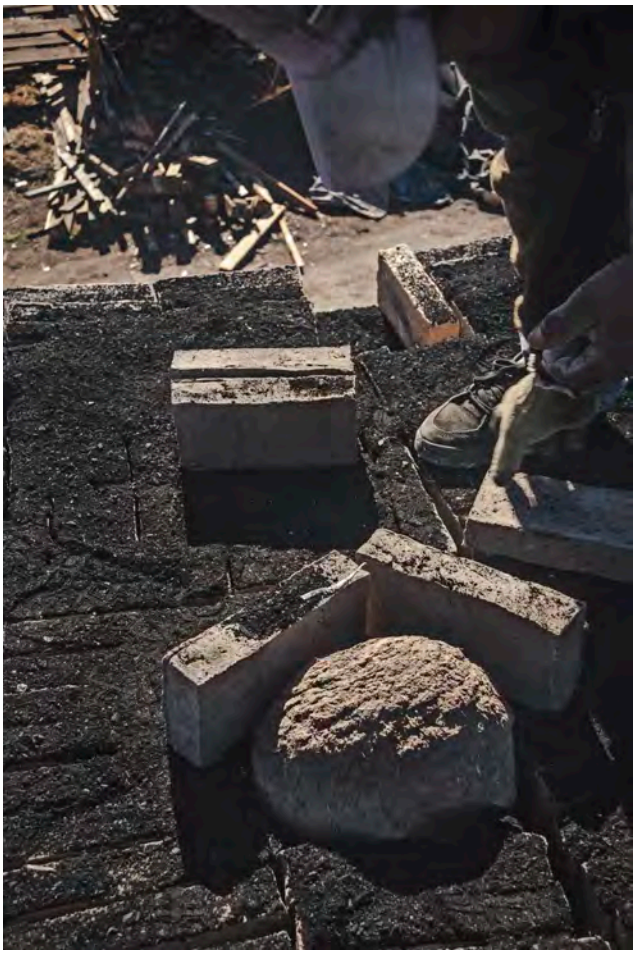


Figure 0.9 Construction of a brick kiln. Each layer of bricks is coated with charcoal, which helps amplify the heat during the firing process. A hornero nest is fired in the oven along with the bricks. Mario Caporali, courtesy the artist

THE PATHS FORK: THE HORNERO NESTS SERIES AS A KIND OF DEPARTURE FROM *BRICK FARM*

The horneros make use of the technologies and resources of the Anthropocene, building their nests not only in tree branches but on utility and telephone poles, building facades, window ledges, air conditioning and ventilation units, urban traffic lights, and pretty much any other opportune spot to serve as the foundation for their construction. The birds use the nests for just a single reproductive period, abandoning them once their offspring are ready to fly. Veritable abandoned residential complexes, sometimes with five or six units stacked atop one another, grow silently in the cities and towns of the Argentine Humid Pampas. You only have to look in the right spots to find them. My collaborators did just that. They began to track down and gather these abandoned nests from the brickworks' surroundings, instantly associating them with their own work as sculptor-builders. The team started using them in different experiments with clay and with the artisanal firing techniques of the brickmakers. It was the start of a project with no temporal or territorial boundaries: to expand the architecture of this unique South American avian species across the planet.

I started installing these nests in different places around the world: New York (2014), Kalba, UAE (2015), Stockholm (2015), Havana (2015), Anyang, South Korea (2016), Riga, Latvia (2018), Drenthe, the Netherlands (2018).[7] I used the hornero's own construction and installation logic, and stimulated a dialogue not only with other regions in the Anthropocene but also with other species, because those nests often serve as shelters for different creatures, for instance snakes, mice, and other kinds of birds. I make use of institutional opportunities like the Havana Biennial or the Riga Biennial. Cities and towns become the stages for

an invisible, silent project whose protagonists are for the most part not human, but the small animals and insects that occasionally inhabit the nests. For the people who see them, these ovoid mud forms, which remain indefinitely on building facades and light posts after the "event" they were a part of ends, become a kind of curiosity in the landscape, unlikely to be seen as art.

This liminal state—the integration of these objects into the environment and the refusal to identify them as fetishistic objects protected by a field and an artist, instead letting them become things that exist autonomously—is an exploration that has been systematized in the series titled *Brick Farm*. Nonetheless, it has other very significant moments, like the whale constructed in the San Juan desert of northeastern Argentina in 2010 and "found" by a drone in 2017, when technology could finally access this inhospitable place. Area newspapers and social media spread reports about the discovery of a fossil of an unidentified animal, possibly a prehistoric cetacean that lived there when the Andean mountain range was dominated by the ocean. The emancipation of the thing, which is not even from this geological era, dumped onto the world completely naked, seems to me the highest aspiration for a work of art: to simply stop being one.

ROSARIO INSEMINATES LONDON: *BRICK FARM* IN *TODAY WE REBOOT THE PLANET*

Ariel Torti became a key player in *Brick Farm*, the open-air experimental lab at the brickworks in Rosario. His upbringing in an agricultural area of Argentina gives him an understanding of rural matters that he puts to use at the brickworks. He knows gardening, horticulture, and botany. He is the main force behind the germination and hybridization experiments with potatoes and beans. He composts all the organic matter he comes across, and grafts plants and legumes with vegetables or tubers. He will allow life to take its course in the fierce heat of the Argentine summer, which in the central littoral region can easily reach temperatures of 40ºC (104ºF). Everything emulsifies, grows, fills with mold; forms burst forth within forms. It is a biological kaleidoscope unfolding before his very eyes, while he paints hornero nests with clay and fires them in artisanal brick pyramids.

When the team left for London to start work on the project at Serpentine Gallery in July 2013, Ariel remained at *Brick Farm*, where he continued working for six more weeks. He has become a fixture there—or, more precisely, he is the *Brick Farm*. So when he lands in the British capital, one month after the others and dealing with administrative delays for permissions to enter the studio, he is far from being slowed down or paralyzed. He begins to carry out his experiments with organic materials in the house where we all are staying. He goes out on long exploratory walks in the area that generate a haul of found materials and photographic records. Excited, he sends me emails telling me and showing me what he is doing. It dawns on me that Ariel has arrived in London, but he is still in Rosario at the brickworks. He has brought his logic and dynamics to the English metropolis. So, I propose that he makes a psycho-dramatic experiment: to become *Brick Farm*, to absorb that project in his own body, and have a dialogue with the project we are engaged in there, no longer as Ariel, but as this topographic character.

From that moment on, I communicate with *Brick Farm* through a continuous exchange of emails. We reflect, ramble, and share impressions about his botanical and horticultural experiments. He is taking his search in the landscape for "things" even deeper, from trash, knickknacks, textiles, and other industrial items to vegetables, tubers, fruit, edible animals, seeds, flowers, legumes, and plants. He grafts beans onto a watermelon, fills it with clay, plants it in the backyard of the house. He buys a shoe, fills it with dirt, plants sunflower or flax seeds, and inserts a chicken liver. He is completely obsessive. He photographs everything he is doing and writes about it cryptically, almost illegibly, in his accounts sent via email, which I respond to in an utterly natural way.

When *Brick Farm* is finally in the studio, it is ready to start a revolution at the workstations: its mission is to provoke them, to be a parasite, to introduce anomalies, like a satellite off its orbit that uses the orbits of functioning satellites not to reestablish its own, but to drive the whole system mad (fig. 0.10). Basically, living matter, in a state of decomposition or growth, penetrates every worktable. It blossoms, flows, gushes forth; it settles in between the spaces of the materials it intervenes in, whether inorganic, like plastic or metal, or more stable organic ones like wood. Each variation incorporates fauna and flora. Even the lunch leftovers are transformed into a source: the waste matter is reintroduced into the process as a destabilizing mechanism. Everything is convulsing.

A pair of pliers suddenly disappears and reappears lodged in a sculpture at another station, almost like an act of vandalism, and sparks a new logic in the pieces. The studio enters directly into the final product as metonymy (a tool becomes part of the object, sticking to it like a mushroom on a humid surface). The borders between workstations, supplies, materials, waste, people, and "artwork" blur

Figure 0.10 Hybrid pieces mixing clay, cement, organic, and industrial elements being manufactured by the team at workstations at a temporary studio for *Today We Reboot the Planet*, Serpentine Sackler Gallery, London, 2013. Adrián Villar Rojas, courtesy the artist

without disappearing, but stretch in their capacity to offer certainty and order. The situation becomes barely tolerable. The system tries to immunize itself; there is contact and friction; there are attempts to expel the foreign object. Where there is life, there is the struggle for survival, but also cooperation, dialogue, politics. *Brick Farm* questions, using the discourse of a psychotic person or an analyst. For this intrusive character, the stations become plots of land displaying a twisted agriculture of symbols that, through the living matter, continue with their unpredictable contortions.

The parasitosis soon bears fruit. The jungle cracks the cement—or in our case, cracks the "clay + cement" formula, whose painstaking development inside that "community" of sculptor-builders has led to increasing stabilization, a *programmed* disappearance, a *controllable* instability that is exhausting its revolutionary power. There is a need to dynamite the ankylosis and introduce new processes that cannot be manipulated by complex wood, wire, and steel mesh structures, the way the clay ultimately is. That same clay that fell apart in Ecuador during a storm the day before the opening at the 2009 Cuenca Biennial, leaving nothing of the piece behind but photographic records as the water and wind demolished it, is now the material base for an organized community that is highly developed technically and symbolically, and able to transmit its structure from one generation to the next.[8]

It is no coincidence that cement, the crust that the Capitalocene (the geological era that corresponds to capitalist modernity) will leave behind long after we disappear as a species, came to consolidate this order of things. It represents, in my praxis, the redesign of the planet for and by human actions. After five years (2008–13) the clay + cement equation has reached its greatest degree of operational and semiotic equilibrium. Through this clay + cement period, the phase of time as sculpture—as a narrative with its relative center in that human action—is coming to an end. It will make way for time as sculptor,

and for nonhuman agents as the protagonists. The time has come for one cycle to end and another to begin, starting with intense work of micropolitical, micro-poetic, and micromolecular sabotage. This political-poetic-material agitation has at its core Rosario's insemination of London, of *Brick Farm* in *Today We Reboot the Planet*. The result will be the transition from programmed suicide to deprogrammed auto-production—from suicidal sculptures to diachronic, mutant, or hybrid objects.

FROM PROGRAMMED DISAPPEARANCE TO A DEPROGRAMMED AUTO-PRODUCTION

What we have in *Today We Reboot the Planet*, then, is this world interfered with via sabotage, negotiation, and resignification operations by the satellite *Brick Farm*, the character-project-place that injects an "anomalous" logic, as Thomas Kuhn might say, into a "normally" functioning planet (Kuhn 1962). This saboteur's chemical weapon is, on the one hand, the organic material collected in situ, and on the other, what we can call the insemination of the different contextual levels within the microcosm of the workshop (including the workshop itself as the last of those levels, from the atomic perspective of the workstations). This takes place through Ariel Torti–*Brick Farm*'s exploration of the project's urban environment (London) and the pollinating act of circulation among the different stations, just as he/it did in and around the brickworks in Rosario. While the workstations are already engaged in a dialogue, their communications are catalyzed by this "bee" until they are transformed into an authentic hybridizing force—a genetic mutation.

When the planet reboots, it will find its whole system reconfigured. The echo of a world at once in silent agony and in continuous transformation will appear on the specially designed shelves, as if in an alien warehouse, inside the new Serpentine Sackler space (a former gunpowder store repurposed by the institution, and now also adulterated for this project by my team of architects). Potatoes, onions, apples, mushrooms, beans, leaves of plants, all of that still-timid life that is now woven into the "suicidal sculptures" germinates, grows, rots, dries up, attracts more life—insects, bacteria, microorganisms. It radicalizes a logic that will be key from this point forward, namely the openness and plasticity of the "object" that becomes a porous system in permanent interaction with the environment, yet with more morphological possibilities that are less predictable, while the incorporation of new biological structures multiplies the diversity of behaviors and the physical-chemical reactions of its components.

It is not the greater instability, but rather the greater contingency and number of movements—the depth and complexity of the mutations to the point of dissolving the idea of "final form" on that of the "horizon"—that is released here as the core of the ontological revolution initiated within my practice in *Today We Reboot the Planet*. Thus, the final leap of variable time from the surface (as theme, as representation) into the interior of the modeling mechanism (as a sculptural force) is essential for redefining these new entities as diachronic objects. Their real wealth is not in the photograph but in film, in the comparison between two points in time. From one day to the next, from one week to another, from one season to the other, the mutant proffers observable changes. Of course, this dynamic was already present in the "suicidal" pieces, but its radicalization leads us firmly to the notion of autopoiesis, of deprogrammed auto-production. The various paths already existing in the garden have forked into hundreds of possible (and unforeseeable) paths.

THE THEATERS OF SATURN: ANOMALY AS LAW

In the way that the Phrygian cap used by freed slaves in ancient Rome became a symbol in modern European and American republics, anomaly became law in the project immediately following *Today We Reboot the Planet*, titled *Los teatros de Saturno* (The Theaters of Saturn, 2014, fig. 0.11, fig. 0.12, fig. 0.13).[9] In Mexico City, the out-of-orbit satellite is the locus of a new orbit of processes, operations, techniques, directions, and detours. Everything that was insinuated conceptually, experienced as a team, and accumulated as a technical and methodological legacy at Serpentine is transferred, expanded, and legitimized at kurimanzutto gallery. On one hand, the mutants take center stage, and the *Brick Farm* devices now become a work structure, a way forward based on exploration of the environment. This is the core mechanism for obtaining local materials and knowledge that will be hybridized on the nomadic studio's worktables. This studio in Mexico City is turning into a mutant garden, a nursery for monsters, where the workstations do not disappear but instead subordinate themselves to this logic, providing the other key ingredient in the combination (the products of collaborators, like Mariano Marsicano in his role as jeweler, or of Martín Pazienza as ceramicist) or momentarily shifting over to a second plane, as with those stations that are still subject to the rules of the previous paradigm and set to reproduce some pieces from *dOCUMENTA (13)*. On

the other hand, the system's increasingly porous condition is visible in another aspect with clear antecedents in *La inocencia de los animales* (The Innocence of Animals, 2013), and even in *Today We Reboot the Planet*.[10] However, now it is presented as a true dialogue with the environment, whereas before it was an imposing force. I am referring to the reformulation of architectural-institutional space with which the project interacts.

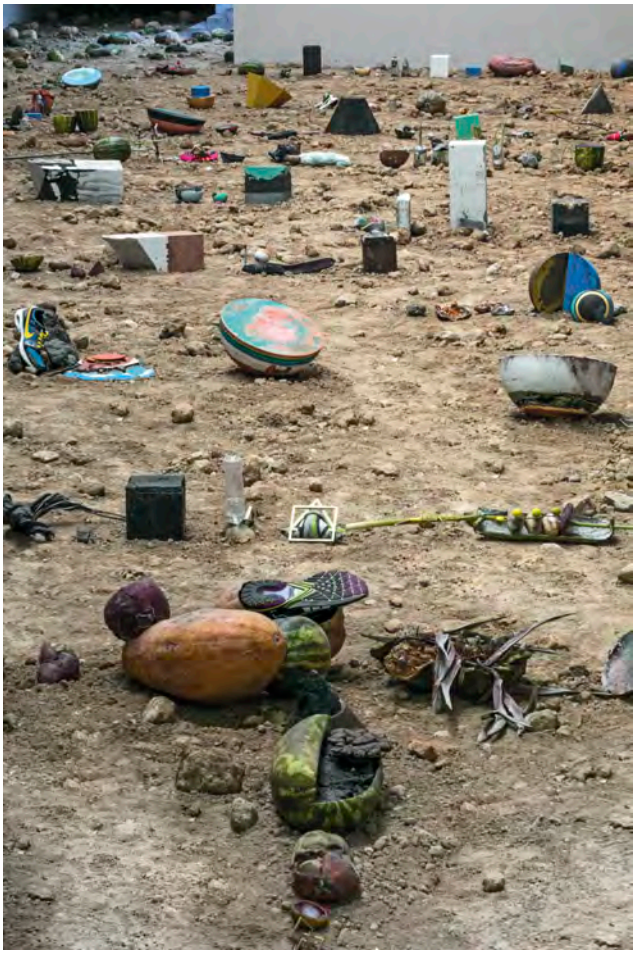


Figure 0.11 Adrián Villar Rojas (Argentinian, b. 1980), *Los teatros de Saturno* (The Theaters of Saturn), 2014. Organic, inorganic, human-made, and machine-made matter, including *tezontle* (red volcanic soil), pigmented plaster, unfired clay, water, coal, *Heliconia*, banana flower, trainers, iPod, opal, obsidian, pearls, bronze, silver, fungi, bread, snails, freshwater fish, crabs, lobsters, pumpkins, watermelons, potatoes, and onions, all collected in Mexico City. Installation view, kurimanzutto, Mexico City, 2014. Michel Zabé, courtesy the artist and kurimanzutto

Figure 0.12 Adrián Villar Rojas (Argentinian, b. 1980), *Los teatros de Saturno* (The Theaters of Saturn), 2014. Organic, inorganic, human-made, and machine-made matter, including *tezontle* (red volcanic soil), pigmented plaster, unfired clay, water, coal, *Heliconia*, banana flower, trainers, iPod, opal, obsidian, pearls, bronze, silver, fungi, bread, snails, freshwater fish, crabs, lobsters, pumpkins, watermelons, potatoes, and onions, all collected in Mexico City. Installation view, kurimanzutto, Mexico City, 2014. Michel Zabé, courtesy the artist and kurimanzutto

Figure 0.13 Adrián Villar Rojas (Argentinian, b. 1980), *Los teatros de Saturno* (The Theaters of Saturn), 2014. Organic, inorganic, human-made, and machine-made matter, including *tezontle* (red volcanic soil), pigmented plaster, unfired clay, water, coal, *Heliconia*, banana flower, trainers, iPod, opal, obsidian, pearls, bronze, silver, fungi, bread, snails, freshwater fish, crabs, lobsters, pumpkins, watermelons, potatoes, and onions, all collected in Mexico City. Installation view, kurimanzutto, Mexico City, 2014. Michel Zabé, courtesy the artist and kurimanzutto

In *Los teatros de Saturno*, the spaces at kurimanzutto are modified to house the mutants and the rest of the show. This includes an exhibition in the second story of the gallery in the form of a "3D fanzine" that features a considerable amount of the information about production and direction generated in the London project with its curator, Sophie O'Brien, who also comes to Mexico to work as another station on the team. This second story will thus be entirely devoted to serving as a kind of archive or record of *Today We Reboot the Planet*, with hundreds of emails, notes, sketches, maps, drawings, lists, and other assorted papers. In general, such things are either kept or discarded, but they are rarely exhibited, at least not in this way, namely as an artist's subsequent project, highlighting the organic nature of the chain, the residual energy that passes from one project to another. It is one more way of forestalling death, of recovering the dense life that goes well beyond the possibilities of the visible. What can't be trapped is clamoring to emerge and incorporate itself.

The surface of the ground floor is covered in soil, and the results of this mutant botany are planted in it. Ariel Torti–*Brick Farm* works on these hybrids along with two Mexican floral project and landscape specialists (AR COSMOS), who recommend exploration of the local markets: La Lagunilla, La Merced, Jamaica, the fish and meat markets, and the Central de Abasto wholesale market, among others. Expeditions to these commercial centers, either open-air or in giant hangars, jammed with vendors and customers offering and comparing merchandise, are decisive for the project in that they allow both the synesthetic impact of encountering a world of colors, flavors, smells, shapes, and even sounds to fill the work, and a myriad of materials without precedent in my practice, due to their variety and number: fruits, vegetables, seeds, legumes, herbs, mushrooms, flowers and ornamental plants, minerals, rocks, even antiques.

With the palette laid out on tables throughout a warehouse of more than five hundred square meters, and with very few tools (blades, spoons, plastic containers, hand mixers), the three "botanists," Ariel, Alfredo, and Ramiro, begin to outline the various methods for intervening in, modifying, and arranging these mutants, added to by other stations that provide sculptures, jewelry, geometries in pigmented plaster. The ontological question I have asked in order to set up this game is: What would the world look like if it had to be re-created by this community of sculptor-builders? What would its fauna and flora, its fish, its insects, its fruit, its stones, its animals be like? Ultimately, what would the three realms look like after this team of "aliens" encountered it?

That is how a line of inquiry in my practice matured—one that was sustained from the beginning but is now very clearly defined. Human agency is replaced in favor of other agencies (bacteria, mushrooms, insects, climate, seasons, reproduction, growth, decomposition) that employ time to exert their influence to shape things. From the museological paradigm of protecting "things" against the passage of time, we move toward "things" that are "beings *in* time," with pasts, presents, and projected futures, auto-produced but also conditioned by contextual variables. Thus, the institutions that house these mutants take on a central role. The hybrid's "quality of life" depends on their control and monitoring, their care and interest, in conjunction with oversight by my office.

The Guggenheim in New York or the Fondation Louis Vuitton in Paris do not provide the same context as the one experienced by an object left at the *Brick Farm*, or at the Garden of Babur in Kabul, Afghanistan.[11] Or at Eco Flor, an edible-flower nursery in Xochimilco, on the outskirts of Mexico City, which I visited with Ariel Torti and Noelia Ferretti after the opening of *Los teatros de Saturno* to continue our research, bringing with us all of the material that was left over from the project, including pieces that were not installed. This horticultural and agricultural region was central to the imperial Aztec economy. It supplied a million and a half inhabitants five centuries ago using techniques based on the artificial expansion of arable land, by building floating islands (*chinampas*) on the lake in the Valley of Mexico. We speak there with local producers, and intensify our explorations of the territory. We test and study methods with crops, landscape, and the local terrain. We end up developing two stratified cubes made of plaster, clay, and compost (fig. 0.14), which will become the basis of the next steps: *The Evolution of God* (2014), *Where the Slaves Live* (2014), and *Planetarium* (2015).[12] This is how *Brick Farm*, as a praxis, develops its twin sister in Mexico, a kind of experimental farm in Xochimilco (where Ariel Torti additionally becomes the protagonist of a film that has yet to be produced). This farm signals the change of a period, the birth, from the womb of an anomaly, of a new law: the law of Saturn, the Roman god of agriculture, who managed to cling to his belt of seven rings, made of thousands of other rings. Those are the theaters of Saturn, which endlessly fork and give rise to new scenes and vicissitudes.

Figure 0.14 On the outskirts of Mexico City, the team found an agricultural and horticultural area, the Colonia San Gregorio Atlapulco, which was rented and treated as a sister space to *Brick Farm*. *Los teatros de Saturno* fed off and spilled over this area. The photograph shows a stratified cube; when it collapsed, its fragments went on to become part of *Fantasma*. Michel Zabé, courtesy the artist and kurimanzutto

THE PROJECT AS SYSTEM TO ABSORB THE ENVIRONMENT, THE "CUBE" AS ARCHETYPE, THE "TABLE" AS MAP, THE "WORLD" AS TERRITORY (2014–PRESENT)

Everything in *Los teatros de Saturno* stems from the ecosystem where the project develops. Even the volcanic soil (*tezontle*) covering the floor is the result of an intense exploration of the region's possibilities. We visit quarries, sand plants, and horticultural areas like Colonia San Gregorio Atlapulco, where we have access to an artisanal potato plot that will serve as the model to design the ground floor at kurimanzutto (the field of *tezontle* planted with mutants) (fig. 0.15). The local markets provide the materials that will be the biological basis for the hybrids, from tubers and flowers to crustaceans and fish. The local culture provides the poetics for the project: soil and color spontaneously emerge, with the latter returning after a six-year absence in the form of pigmented plaster.

Figure 0.15 Ariel Torti experiments with potato grafts. Whatever was not used for *Los teatros de Saturno* was recycled, mixed, and exposed to the elements at Colonia San Gregorio Atlapulco—rotting, growing, and sprouting spontaneously. Michel Zabé, courtesy the artist and kurimanzutto

Through dialogues with producers, merchants, neighbors, and other key actors in the process, local lore and history provide the information and the images that bring specificity to the project.

Geography, especially in Xochimilco, provides the territory to carry out a Mexican *Brick Farm*, and through it a dynamic of immersion in the topographical features of the environment. So powerful is the force that the landscape exerts on our senses—the diversity of the crops, of techniques, of species, of layers of sediment on the edges of the canals, of life fermenting within life—that the mutants become literally chronotopic (time-space) crystallizations, surfaces to absorb everything that surrounds us, like a screenshot of a dream, given the extreme metaphorical-metonymic concentration of these living entities. That is the case with those stratified cubes made of pigmented plaster, clay, and compost, which were born as a kind of multidimensional snapshot of Xochimilco. They are a material emulsion of our commitment to the site, the result of a state of interpenetration with the context, evidence in motion (since those cubes will remain at Eco Flor and be photographed in their diachronic transformation) of a fleeting present in a specific spot on the planet.

Ultimately, we have two levels operating at the same time in *Los teatros de Saturno*. One is micro, with the mutants, and the other macro, the project acting as a system of subsystems absorbing the environment. These two articulated levels render the ontological logic and the functioning of a new phase in my practice, where deep immersion in local contexts and the transport of vernacular material from one point of the planet to another to generate ever more complex hybridizations become the key to access future experiences.

A PICTORIAL HOMAGE TO XOCHIMILCO

Inspired by the Xochimilco cubes, *The Evolution of God* and *Where the Slaves Live* are a "pictorial" homage to the change taking place in Mexico, where I set out to design, draw, and paint in 3D using the resources and techniques acquired in *Los teatros de Saturno*. In a way, this homage is a statement in which we lay out the rhetoric of a new poetics touched by that Mexican experience. This is why both projects enact a formalist play with stratification, the pigmented layers of sediment, the organic, the vegetation, blended with industrial detritus (sandals, textiles, ropes, bottles, personal items belonging to the team), which appear trapped in the mixture and which will lead various readers to see a metaphor with the Capitalocene. Both the "cube" in New York and the "tank" in Paris (fig. 0.16) are entities that replicate that autism of the early clay period (they are in some measure alien in the contexts where they are installed). But, like the project in Mexico, they return to the range of colors, materials, and elements of the Petrobras table, that map of maps where the dynamic of absorption of the environment was already implicit, on a scale appropriate to the period in which it was produced: everything that was used for the table was acquired through a process of exploring the commercial wholesale neighborhood of Rosario.

The "tank" in *Where the Slaves Live* at Fondation Louis Vuitton in Paris is an example of the new institutional approach stimulated by this mutant dynamic. Its organic components and the growth of its vegetation require constant monitoring and exchange of information with my office, as well as daily gardening maintenance such as pruning, watering, et cetera, in order to keep its autopoietic drift under control. This is also the case with *Motherland* (2015) at the Guggenheim in New York, where I create a poetic gesture based on the institutional actions generated by taking care of the diachronic object. It is at once an eternal project and an incognito one on the building's roof, a place inaccessible to visitors and only made visible by an annual "ritual" on the same day at the same time: a designated maintenance staff member goes up to the rooftop, walks around the walkway that circles the glass cupola of the rotunda, and opens a small square in the mesh ultraviolet filter that covers it, letting natural light through that opening into the museum for one hour. This ritual is not announced publicly, but instead is seen as an ordinary task, performed without any "artistic" sense. Installed next to the heating equipment in a corner of the rooftop is a small sparrow made of clay, viscera, twigs, and weeds. Its permanent exposure to the atmosphere means that it must be replaced at intervals established by the museum and my office, based on observation. Both the ritual and the object will be replicated under the same protocols until the institution is permanently closed in some distant or nonexistent future. Both dimensions of living matter that I am trying to grasp in this article (the interaction between human and nonhuman agency, between *work* and *auto-production*, and one could now add a third element: *environment*) are poeticized here in a silent system of material and performative gestures.

TRANSPORTING MATERIAL AND ENERGY IN A NEW RELATIONSHIP WITH THE ENVIRONMENT

The Most Beautiful of All Mothers (2015) and *Rinascimento* (Renaissance, 2015) are associated projects and represent a turning point in two issues: the connection with the environment and how to navigate the transition from one

Figure 0.16 Adrián Villar Rojas (Argentinian, b. 1980), *Where the Slaves Live*, 2014. Stratified layers of soil, compost, tree branches, pigmented plaster, resin, trainers, watermelons, pumpkins, sprouting potatoes, courgettes, beetroots, germinated beans, fungi, seeds, corn, herbaceous plants, lichen, ivy leaves, and ferns, collected in Dover, London, and Yangji-ri, 560 × 300 × 240 cm. Fondation Louis Vuitton, Paris. Installation view, Fondation Louis Vuitton, Paris, 2014. Jörg Baumann/baumann fotografie frankfurt a.m., courtesy the artist and Fondation Louis Vuitton

experience to another in a very short period of time, in terms of both the transportation of vernacular materials and the transfer of collective residual energy from one project/point on the planet to another.[13] *The Most Beautiful of All Mothers* is a large-scale sculptural and aquatic installation (executed at sea) combining animals in a disorienting, absurd, or illogical way, for instance using some pieces as pedestals for others (fig. 0.17). Elements are also introduced that have been collected around the site, or from the store of transported materials or derived from the studio activities themselves that are unfolding in situ. The list includes fishing nets, livestock, scrap, clay, residue, minerals, and vegetation. It is a montage that makes use of the landscape as a kind of stage set, since these animals are installed on cement bases in the water, alongside the house where Leon Trotsky lived during the first three years of his Stalinist exile (1929–33) on the island of Büyükada in the Sea of Marmara facing Istanbul. The project demands very intense physical commitment, given, for example, the need to swim at night from one sculpture to the other to finish smoothing the cement at the bases and add finishing touches. It is a phenomenally transformative experience for us. Small sea snails soon appear on the parts exposed to saltwater, which triggers a fundamental question for me: What if this play of platforms, of animals holding up animals, has all of these tiny mollusks as the ultimate ending? What if this is only there for them to use?

The more than two-month sojourn with my team in Turkey, which the production and assembly of these pieces for the Istanbul Biennial requires, leads to interactions with locals, from curators and producers to transportation specialists and suppliers. Some of those interactions result in lasting friendships. It also paves the way for a deep exploration of Istanbul—its marketplaces and landscapes, its geography and history and surroundings. During this process of exploration we collect vernacular materials, such as the one-meter-diameter stones to be used as the basis of the Turin project *Rinascimento*. Production on that project begins immediately following the opening of *The Most Beautiful of All Mothers*.

Figure 0.17 Adrián Villar Rojas (Argentinian, b. 1980), *The Most Beautiful of All Mothers*, 2015. Organic, inorganic, human-made, and machine-made matter, including cement, resin, polyurethane paint, lacquer, sand, soil, rocks, fishing nets, wood, snails, raw beef, corals, mollusk shells, feathers, and petrified wood, collected in Istanbul, Kalba, Mexico City, and Ushuaia. Installation view, shore by Leon Trotsky's former house, Büyükada Island, 14th Istanbul Biennial, 2015. Jörg Baumann/baumann fotografie frankfurt a.m., courtesy the artist, Marian Goodman Gallery, and kurimanzutto

We arrive at this engagement enormously burned out and with no time to recover. The "community" of sculptor-builders, who have traveled the world as a tightly knit group, is threatening to fall apart as a natural consequence of exhaustion. The only alternative is to tap into that charged residual end-of-the-party or hangover state—to clean and organize the house the day after a big night. And that is literally what we do. The space at the Fondazione Sandretto Re Rebaudengo is submitted to a housekeeping process. It is a dynamic that we will stick with from then on, with ever higher levels of awareness and conceptualization: the idea of domestic work as an activity generally assigned to women, with almost no acknowledgment or remuneration throughout history, yet vital for the rest of human activities.

With *Rinascimento*, we begin a diagnosis of the state of the physical and institutional space that will be impacted, with the understanding that the project should establish an ecological equilibrium with it. Based on this diagnosis, the process of deep cleaning of the operational terrain is deployed in order to clear these zones, unconscious of the accumulation of things, filth, deterioration, or chaos that institutions, through habit or negligence, tend either not to see or to normalize. Thus, in Turin, once the "semiotic noise" has been "weeded" from the building, we begin to set up the stones brought from Turkey (fig. 0.18). The almost psychoanalytical logic of diagnosing the overall state of an institution based on its spatiality and my possibilities of "cleaning" the excess of unconscious semiotic production enable me to explore an aspect of *work* that will take on a central role in my practice: negotiating with the authorities, or in other words the political dimension of the projects. In effect, the adjustment of the institutional environment to the ecological needs of the project will depend on a highly refined use of the "art of the possible."

TOWARD A NEW HUMAN ECOLOGY: THE GEOPOLITICS OF FRIENDSHIP

The convergence of ecological equilibriums that involve a strong empathetic and political commitment to otherness is manifest in *El momento más hermoso de la guerra* (The Most Beautiful Moment of War, 2014).[14] This experience can be thought of as a third phase of *Brick Farm*, since it involves long-term immersion in a rural setting, this time Yangji-ri, a village in the demilitarized zone (DMZ) between the two Koreas, whose stable population has an average age exceeding eighty years. Here, the intention is to establish contact with residents from the very beginning in order to develop a film project focused on their lives, selecting some "characters" and encouraging activities that may trigger situations or atmospheres, such as a community lunch in which my team prepares a pig using the Argentine grilling technique of *asado*. In this way, without a script and giving in to serendipity, we are able to get takes in alleys, in the countryside, in the town church, in residents' homes—ultimately a range of audiovisual records, both of the villagers in their daily lives and of my collaborators interacting with them, exploring the place, or intervening in sites with fabricated or found objects. *El momento más hermoso de la guerra* (2017, fig. 0.19, fig. 0.20) is the product of these records, a film that is one part of the film trilogy *The Theater of Disappearance* (2017), which encompasses the fleeting present of the projects.[15]

Figure 0.18 Adrián Villar Rojas (Argentinian, b. 1980), *Rinascimento*, 2015. Organic, inorganic, human-made, and machine-made matter, including metamorphic, igneous, and sedimentary rocks, petrified wood, butterfly wings, raw beef and pork, swordfish, crows, geese, corals, mollusk shells, grapes, artichokes, watermelons, rubber and plaster molds, trainers, fishing nets, burned ropes, metal pots, and utensils, collected in Turin, Istanbul, Kalba, New York, and Mexico City. Installation view, Fondazione Sandretto Re Rebaudengo, Turin, Italy, 2015. Jörg Baumann/baumann fotografie frankfurt a.m., courtesy the artist and Fondazione Sandretto Re Rebaudengo

Figure 0.19 Adrián Villar Rojas (Argentinian, b. 1980), still from *El momento más hermoso de la guerra* (The Most Beautiful Moment of War), 2017. Video, color, sound, 55:23 min. Courtesy the artist and Real DMZ Project

Figure 0.20 Adrián Villar Rojas (Argentinian, b. 1980), still from *El momento más hermoso de la guerra* (The Most Beautiful Moment of War), 2017. Video, color, sound, 55:23 min. Courtesy the artist and Real DMZ Project

This first experience in Yangji-ri in 2014 along with a small group of my collaborators, chosen on the basis of their social and communicative abilities, is the start of a close bond and prolonged engagement with the village residents. Together with the curators of the Real DMZ Project, our host, we decide to return regularly to visit them and make footage. This process will lead to a second film, *The War of the Stars* (2018).[16] In 2016, a house recently vacated by its owner (a man who moved to his son's home due to his advanced age) is acquired to deepen this sustained relationship with the village. Some of the man's personal effects remain, like a pair of sandals and his actual footprints in the dust on the floor. Preserved as a humble and silent museum in his honor, these belongings and traces of the house's former occupant become parts of a project that will function there, in his dwelling, in perpetuity. With a respectful housekeeping process, the space is prepared for future activities yet to be defined. Two cakes, baked by my team, are kept (perhaps forever) in a refrigerator in the kitchen.

TURNING TOWARD THE ENVIRONMENT: ARCHITECTURE AS A MODEL FOR THE ECOSYSTEM "PROJECT"

In *Two Suns* (2015, fig. 0.21), dozens of tiles, handmade in Rosario with leaves from trees, cigarette butts, seashells, coins, iPods, butterflies, glass, paper, and many other organic and industrial "residuals" inlaid in the cement, are transported to New York to cover the floor at Marian Goodman Gallery. Michelangelo's *David* lies on that floor "asleep": a scale replica of the iconic Florentine sculpture, with the physical posture modified to appear reclining, seemingly either defeated or dead. The *David*-tiles relationship is an attempt to contemplate the art-versus-background relationship, in other words that contiguous tension between the "work of art" and its context. Between that which carries the weight of being the human project (embodied in the *David* archetype) and what seems to be there to sustain that intention with its silence (and with its signage, its walls, its order, and its rules): the physical environment of the gallery, the museum, the institution. This is the architectural dimension of the problem of the environment, the negotiation for a redesign of the exhibition space as a part of the project, which, while earlier established in *Lo que el fuego me trajo*, is systematically attacked in *Los teatros de Saturno* and consolidates as a specific theme in *Two Suns*, *The Work of the Ocean* (2013),[17] *Fantasma*, *Planetarium*, and the four projects of *The Theater of Disappearance* (2017).[18]

In *The Work of the Ocean* (fig. 0.22), the entire interior of a house (kitchen, bathroom, living room, and bedrooms) is designed and built in the gallery in order to imagine an alternative life of some of the "suicidal" sculptures from *dOCUMENTA (13)* as small decorative statues made of epoxy putty (a highly durable material), and scenes from *Brick Farm* modeled from photographic records. The entire "home" is a silent location that acts as a neutral zone, as if it were an exhibition system of white gallery walls and bases, so as to create a semiotic trap: a comfortable and bourgeois environment resignifying sculptural objects as tasteful decoration, the originals of which (many no longer in existence) carry a dense burden of both conceptual and symbolic history as part of enormously complex processes.

In *Fantasma* (fig. 0.23), the display devices usually used for museological exhibition are taken to their climax to show a series of surviving "mutants," in a state of virtual mummification, from *Los teatros de Saturno*. These mostly organic items have been stored for almost a year at kurimanzutto gallery and are now transported to Moderna Museet in Stockholm in order to imagine a retrospective of my work in two hundred years—what these diachronic objects and other remaining evidence of my work would look like in the distant future. Being also a reflection on the notions of document, memory, and preservation, the project includes some suggestive found images showing the protection and evacuation tasks involved in saving artistic and cultural heritage in Europe during World War II, together with photographic registers documenting the recent dismantling in Buenos Aires of a statue of Christopher Columbus, the Spanish Italian navigator, and its replacement with a statue of Juana Azurduy, the Bolivian mestizo female South American independence war leader. The rooms are completely redesigned, with added walls, display platforms, and bases to house these surviving mutants and documents as well as the second

Figure 0.21 Adrián Villar Rojas (Argentinian, b. 1980), *Two Suns*, 2015. Unfired clay and cement re-creation of Michelangelo's *David*, blackout curtains, and handmade tiles (cement, sand, turba, and pigments) embedded with organic, inorganic, human-made, and machine-made matter collected in New York, Kalba, Rosario, and Ushuaia. Installation view, Marian Goodman Gallery, New York, 2015. Jörg Baumann/baumann fotografie frankfurt a.m., courtesy the artist and Marian Goodman Gallery

Figure 0.22 Adrián Villar Rojas (Argentinian, b. 1980), *The Work of the Ocean*, 2013. Drywall, paint, carpet, wallpaper, furniture, decorative objects, and nineteen figurines made of wire, modeling clay, and epoxy putty, dimensions variable, ranging from 17 × 29 × 13 cm to 26 × 66 × 20 cm. Installation view, De 11 Lijnen, Oudenburg, Belgium, 2013. Jörg Baumann/baumann fotografie frankfurt a.m., courtesy the artist and De 11 Lijnen

Figure 0.23 Adrián Villar Rojas (Argentinian, b. 1980), diachronic object (potato with hypertrophied germination) from *Los teatros de Saturno* (The Theaters of Saturn), from the series *Fantasma* (Ghost), 2014. Installation view, *Fantasma*, Moderna Museet, Stockholm, 2015. Jörg Baumann/baumann fotografie frankfurt a.m., courtesy the artist, kurimanzutto, and Moderna Museet

life of "things" that were not originally "art," but rather supplies in the production process, such as the pallets of the wooden boxes where the stratified cubes from *The Evolution of God* were made—now multicolored abstract landscapes because of the pigment absorbed by the wood. In other cases, display platforms house the second life of "things" that had been "art" in the now-disappeared sculpture installations, such as the cake-mountain from the Petrobras table, which my parents stored in a back corner of their business for almost a decade before it was transported to the Swedish capital using a sophisticated logistical plan and "revived" as a petrified mutant made of sugar, flour, fungus, and dust.

In *Planetarium* (fig. 0.24, fig. 0.25), we clean, refurbish, and redesign an abandoned ice factory on the outskirts of the town of Kalba, on the edge of the Persian Gulf, in order to install a series of stratified columns made of pigmented plaster, clay, cement, compost, and organic and industrial products in that deconstructed space. These columns are directly derived from the Xochimilco "cubes," both formally and technically, and in their function of chronotopic (time-space) crystallization. In addition to incorporating materials transported from other parts of the planet, like Xochimilco and the *Brick Farm* in Rosario, the components are brought together after an intense process of exploration and collecting in the Sharjah region. Indeed, it is this multidimensional immersion in the Emirate territory—involving geographic, socioeconomic, cultural, and human aspects—and the resulting interactions with a network of local contacts, that give me access to the Kalba waste treatment plant. This state-owned company, created to process the growing amount of garbage resulting from the region's economic and demographic boom, is producing black dirt through a composting process for local agricultural use. One ton of this composted soil becomes a part of the landscape created with the ice factory, arranged into six mounds that encapsulate the expansion of the Capitalocene fertile frontier over the desert, based on the treatment of its own organic residue. Everything in *Planetarium*, as a system to absorb the environment or chronotopic crystallizer, suggests this anthropogenic conquest of the desert.

This is how we come to *The Theater of Disappearance*, four projects in Bregenz, Athens, New York, and Los Angeles developed under the same umbrella title. In them, the various kinds of spatial, ontological, thematic, and procedural logics described above all come together, from transporting vernacular materials to exploring the environment, from reconfiguring the exhibition space to combining production methods from the different phases of my practice. A new variable is added to the language game: the human factor is removed from spaces that were

Figure 0.24 Adrián Villar Rojas (Argentinian, b. 1980), *Planetarium*, 2015. Organic, inorganic, human-made, and machine-made matter, including compost, cement, gypsum, pigments, sand, soil, ropes, obsidian, smithsonite, dogtooth calcite, jeans, sweaters, trainers, mollusk shells, tree branches, gastropod fossils, canaries, finches, parakeets, shark fins, corals, crabs, lobsters, fungi, watermelons, oranges, corn, sprouting potatoes, germinated beans, and pumpkins, collected in Kalba and Sharjah. Installation view, 12th Sharjah Biennial, Kalba, United Arab Emirates, 2015. Jörg Baumann/baumann fotografie frankfurt a.m., courtesy the artist and Sharjah Foundation

Figure 0.25 Adrián Villar Rojas (Argentinian, b. 1980), *Planetarium*, 2015. Organic, inorganic, human-made, and machine-made matter, including compost, cement, gypsum, pigments, sand, soil, ropes, obsidian, smithsonite, dogtooth calcite, jeans, sweaters, trainers, mollusk shells, tree branches, gastropod fossils, canaries, finches, parakeets, shark fins, corals, crabs, lobsters, fungi, watermelons, oranges, corn, sprouting potatoes, germinated beans, and pumpkins, collected in Kalba and Sharjah. Installation view, 12th Sharjah Biennial, Kalba, United Arab Emirates, 2015. Jörg Baumann/baumann fotografie frankfurt a.m., courtesy the artist and Sharjah Foundation

heretofore essentially the province of manual work, such as sculpture, and replaced by digital modeling technologies such as a computerized robotic arm.

Figure 0.26 Adrián Villar Rojas (Argentinian, b. 1980), *The Theater of Disappearance*, 2017. Ivy, colored lights, re-creation of parietal pictographs, *pixação*, and Roman-period graffiti, floor tiles and blocks of Moroccan marble encrusted with ammonites and *Orthoceras* fossils, fossilized turtle shells, Neolithic stone tools, and septarian concretions. Installation view, Kunsthaus Bregenz (first floor), Austria, 2017. Jörg Baumann/baumann fotografie frankfurt a.m., courtesy the artist, Marian Goodman Gallery, and kurimanzutto

THE THEATER OF DISAPPEARANCE AS CLIMAX OF ONE ERA AND DAWN OF ANOTHER: SUPERFLUOUS HUMANITY

Kunsthaus Bregenz in Austria, designed by the architect Peter Zumthor, serves as the setting for the culmination of the examination of art and exhibition space ties, as the project itself was the total redesign of the building's four floors into a "home" for the staff that have looked after it since it opened in 1999. It is a kind of silent homage to those who, in the shadows, live to take care of this architecture. This homage is filtered through a melancholy look back at the Western notion of reason that feeds the museum's unconscious. Text and context, work and environment, exhibit and exhibition spaces are all impossible to distinguish here, impelling the visitors to actually generate the boundaries between them, based on their movements and their sensory and hermeneutical activity (fig. 0.26).

In addition to the usual array of vernacular materials from different parts of the planet, we incorporate granite containing four-hundred-million-year-old fossilized zooplankton extracted from the quarries of Erfoud and

Rissani in Morocco. This granite was used to manufacture the tiles, flooring, and furniture used to remodel the museum's interior. The almost imperceptible yet ubiquitous presence of this Paleozoic fossil contrasts (along the anachronistic and poetic path from a distant past toward the Western notion of reason that the exhibit traces) with the metonymic legs of Michelangelo's *David* on a pyramid-shaped base on the upper floor, made from the same marble taken from the quarry in Carrara, Italy, that was used for the original sculpture.

In Greece, the National Observatory of Athens is the ideal setting for imagining the conquest of other planets from a disputed territory, no longer through war but symbolically. It is one of the premier scientific institutions in a country considered the cradle of Western civilization, but also a region that exists as a liminal zone between the Muslim East and the Christian West, recovered for "Europe" in 1832 after almost four hundred years of Turkish rule. Meanwhile, there in Athens, the nation's historical identity and memory is defined by decisions made by the archaeological institutions regarding how deep to excavate to look for the "past"—which layers of earth to remove. Thus, reformulating the observatory's exterior space, which is located on Nymphs' Hill, one of the seven hills where Athens is situated, and transforming it into a field of grasses (after obtaining complicated permits from the local archaeological authorities), as well as corn (an American crop), introduces the play of chronotopic juxtapositions addressing the problem of the appropriation of the ground, what lies beneath it or on top of it, by different countries, regions, and civilizations, with relation to the development of their economies and their identities (fig. 0.27).

Figure 0.27 Adrián Villar Rojas (Argentinian, b. 1980), *The Theater of Disappearance*, 2017. Biotope assemblage, corn, pumpkins, watermelons, wild grass, artichokes, olive trunks, common reed, rocks, compost, and soil. Installation view, Hill of the Nymphs, Athens. Commissioned by NEON in collaboration with the National Observatory of Athens, 2017. Jörg Baumann/baumann fotografie frankfurt a.m., courtesy the artist and NEON

Argentina developed its foundation myth at the end of the nineteenth century, with the countryside as a binding marker for nationhood, and agricultural exports the only source of prosperity and integration with Western powers, much the way that modern Greece finds the material proof of its rightful place in that same cohort of "free nations," claiming the Parthenon or the Acropolis as the nexus of that ideological and cultural matrix (fig. 0.28). For both countries, the soil, on its surface or in its depths, in its material or historical wealth, plays a central role in their connection to the "civilized world." It is also in the soil that, with the early beginnings of agriculture and sedentism, more specifically the growth of grasses such as wheat ten thousand years ago, we find the key to the development of ever more complex human groups: city-states, kingdoms, empires, nation-states, and, finally, the modern global societies of advanced techno-capitalism that must now seek new inhabitable territories outside Earth, just as in other eras when arable land expanded, swaths of desert or sea were won, continents were conquered, or new commercial routes were created. But now the issue is no longer attempting to grow; it is attempting to survive the catastrophe of growth.

Figure 0.28 Adrián Villar Rojas (Argentinian, b. 1980), *The Theater of Disappearance*, 2017. Plaster reproduction of Victory of Samothrace (190 BCE) graffitied and fly-postered, military rucksack embroidered with Christian cross, military clothing, silver peace-sign pendant, Chinese flag, stromatolites, orange powder, metal, and glass vitrine, 210 × 314 × 175 cm. Installation view, Hill of the Nymphs, Athens. Commissioned by NEON in collaboration with the National Observatory of Athens, 2017. Jörg Baumann/baumann fotografie frankfurt a.m., courtesy the artist and NEON

One last detail brings the telluric cycle full circle in the Athens project: while beneath that city the ruins of one civilization lie under another, providing ample material for archaeology and anthropology, Argentina's tendency has been to see its ties to the land as a connection with a young fertile uterus, almost without history. And yet it is layered with the remains of the megafauna that inhabited the subcontinent until seven thousand years ago. Besides, Jurassic fossils feed a national paleontology that even has a blockbuster star: the Argentinosaurus, the largest dinosaur ever unearthed. Two debts to truth and justice, however, still lie buried beneath that soil: the genocide of the Indigenous peoples (the Argentine territory's former expropriated owners) and the disappeared of the last military dictatorship (1976–83). Over the past few decades, there has been increasing will to settle those debts. Forensic anthropology is playing a key role by collaborating to identify the skeletal remains found in NN (from *ningún nombre*, or no name) tombs and graves, or even in museum anthropological archives, as is the case with the Museo de La Plata of natural science, where the Grupo Universitario de Investigación en Antropología Social (GUIAS, or Social Anthropology Research Group) uncovered more than ten thousand human remains, as well as in other museums in Germany, France, and England that were beneficiaries of that institution. The remains belonged to more than two thousand five hundred unidentified people murdered during the extermination and expropriation of Indigenous peoples by the Argentine state, known as the Conquest or Campaign of the Desert (1878–95). In the Athens chapter of *The Theater of Disappearance*, this accumulation of questions surrounding the complex problem of the soil is laid out on the carpet.

In the New York chapter, the rooftop of the Metropolitan Museum of Art becomes the setting for an examination of the compartmentalization of "world history" based on a white Eurocentric paradigm, and for the possibility of its deconstruction, starting with a counter-hegemonic geopolitical-poetic reorganization. Following a several-months-long process of research and selection in the different departments (Arts of Africa, Oceania, and the Americas, Greek and Roman Art, Medieval Art, the American Wing, et cetera), I arrive at a kind of convulsion of official chronological, geographic, ethnic, and cultural divisions.

Three-dimensional scans are taken of hundreds of pieces from the collection—frequently of objects on the peripheries of the departmental canon, such as utensils or everyday tools. They are reactivated in new sculptural combinations modeled via a 3D milling process (a robotic arm), along with human figures derived from scans of real people. The goal is to present these new objects in a "living" way, bound to the body, the head, and the hands—returned to their ordinary function as "tools for life" that exhibition display systems (cases, supports, tempered glass) often negate or hide as they follow security and conservation protocols. It is also a response to the fetishization of materials that operates in the unconscious of these institutions. These new sculptural forms are displayed on the Met rooftop, on top of and in between large tables with tablecloths and place settings, as if served for a bacchanal that the public can move through, activating their own ritualistic, festive, hedonistic, and even anthropophagic fantasies (fig. 0.29). It is, pure and simple, an attempt to reactivate the frozen materiality of the museum.

A not-insignificant detail: the sculptures presented at the Met no longer respond to the artisanal and suicidal logic. They are fully produced by a robot and made of materials such as nylon and polyurethane: highly resistant and durable plastics. We flip the poles of the temporal paradox that was laid out in the "suicidal" phase, and which very broadly consisted of representing the present and the distant future using techniques from the past and perishable materials. Here, humanity's distant past, thematically reactivated with these pieces, is approached technically using tools from the future and ultra-resistant materials, in processes where the intervention of the human hand has virtually disappeared. Compared to earlier periods in my practice, and even more so with the objects chosen from the collection, we are dealing with an "art" that can well correspond to a phase characterized by a "superfluous humanity": replacing muscle, nerve, and brain with artificial intelligence. As such, the project as system to absorb the environment takes another step forward, risking a certain poetic hypothesis about the future that, not coincidentally, is unfolding on the museum rooftop.

The chapter of *The Theater of Disappearance* at MOCA in Los Angeles also presents an examination of this "superfluous humanity" that techno-capitalism seems to be heading toward (along with new forms of semi-enslaved work in regions with exceedingly low levels of unionization, workers' rights, and salaries, such as South Asia, Africa, and Latin America). This time it is seen from the perspective of the new digital technologies used by Hollywood to create its super-productions, connecting the blue screen or green screen in California studios with the so-called render farms in countries like China, India, or Pakistan, where thousands of outsourced workers cut out silhouettes of movie stars to insert them in computer-

designed locations. On the final frontiers of this radical replacement of the analog by the digital in the movie industry, articulated dolls are literally built with images and sensors from a package of key movements and gestures belonging to the actor or actress, doing away with the need for fully acted sequences from the script. In this sense, superfluous humanity in the Western metropole has its counterpart in the superfluous humanity of the periphery or factory countries.

The use of blue screens as a leitmotif and framework for the objects presented at MOCA signals this white noise that Hollywood film has become, where the actors, connected to mobile sensors, isolated from their environment and above all from other actorly connections, perform a series of disconnected movements in front of a neutral backdrop, which will later be hyper-processed in a render farm somewhere in South Asia, where they will be virtually transformed into video game characters who become the real stars of the movie. Like actors with no future, submissive to whatever may come, the "things" presented against the blue screens in the central spaces of the museum not only absorb the myriad elements collected in the very intense months-long explorations I made in California's "innovative milieu" and leafy stores of cinematographic junk; they also incorporate the remains of earlier projects and vernacular materials, gathered over years, stored in rental warehouses and brought from various corners of the planet, involving the largest logistical operation to date in my practice. Stones from Turkey, wood from Turin, marble from Morocco, flora and fauna from Mexico and Argentina, stratified columns, and even a bicycle wheel found along the shore in Sharjah all arrive in Los Angeles to blend alchemically with the organic and industrialized local materials (fig. 0.30). An enormous polymorphous mutant, a Leviathan project, rises up on the West Coast of the United States.

Figure 0.29 Adrián Villar Rojas (Argentinian, b. 1980), *The Theater of Disappearance*, 2017. Nylon-printed and polyurethane CNC-milled reproductions of human and nonhuman animal figures, food, and artifacts from the Metropolitan Museum of Art's permanent collection coated in bespoke automotive paint, porcelain tiles, diamond plate flooring, hollybush hedges, public bar, signage, benches, and adapted and repainted pergola. Installation view, Roof Garden Commission at the Metropolitan Museum of Art, New York, 2017. Michael Kirby Smith, courtesy the artist, Marian Goodman Gallery, and kurimanzutto

Figure 0.30 Adrián Villar Rojas (Argentinian, b. 1980), *The Theater of Disappearance*, 2017. Organic, inorganic, human-made, and machine-made matter, including freezer, saber-tooth tiger's spine, skulls of both *Homo erectus* "Peking man" and Neanderthal "La Chapelleaux-Saints," orangutan skeleton, rubber molds (from *The Most Beautiful of All Mothers* [2015]), crucifix and tree branches (from *Rinascimento* [2015]), fungi, vines, sprouting tubers, robotics, shark fins, and hornero nests, collected in Los Angeles, Istanbul, Kalba, Mexico City, Morocco, Argentina, and Turin, 330 × 111 × 203 cm. Installation view, Geffen Contemporary at MOCA, Los Angeles, 2017. Michel Zabé studio, courtesy the artist, Marian Goodman Gallery, and kurimanzutto

One last point that encapsulates the pivotal nature of the Californian iteration of *The Theater of Disappearance* in relation to the key elements and dynamics of this period is the total absorption of the exhibition space as a decisive part of the system. It is a transformation the likes of which I have never attempted before, after facing together with its curatorial authorities such profound deconstruction of MOCA's physical-institutional space that it almost caused the entire project to collapse. The architecture of the space is operated on to elicit a true ecosystem, capable of hosting a macro-project that is absorbing virtually all of my previous projects. Stairways and ramps are removed. Floors are leveled. Walls and banisters are taken out. The lighting is modified. Offices, bathrooms, and hallways are moved. There is not a single element of the building that is not part of the project, whose sovereignty over the space is reticular. In that way an Aleph, a point that is all points, a *chronotopic crystallizer* of my entire project-life, happens temporarily in Los Angeles, that Western cradle of the fiction of the masses, at a critical junction of its own transformation, where the prospect of disappearing or sharing arable land with new species of "grasses" planted in Silicon Valley is being debated. Google, social media, Netflix, apps—all of them are, perhaps, new forms of fiction.

CONCLUSION: THE LONG ROAD FROM THE WORK OF ART TO THE GARDEN OF FORKING PATHS

Ever since my years as a student at the Escuela de Bellas Artes in Rosario, I understood that contemporary art was something that could not last forever. On the contrary, I intuitively knew that a central problem was its very disappearance, its speed, and its superabundance, which in fact made it insignificant. That insignificance resulting from overproduction clashed with the will to survive and to transcend that all things have, especially humans. Adopting the fictional gaze of an alien from another world,

looking from a distance with an icy horizontality, I threw myself into working with that physical and metaphysical tension that has time as its central and agonizing question, but also as its great tool.

All things are beings in time, straddling life and death, the ephemeral and the eternal, the present and its incessant pull in opposite directions: toward the past and toward the future. The entities that I have designed attempt to access some of that existential tension of *Dasein*, and as such are positioned, singular and unrepeatable: they are not being, they are *happening*. The early appearance of the organic in my practice in the form of clay gave me the material basis to think of their corporeality as a happening, as the fleeting present doing battle with entropy. That was combined with a dynamic of work (my team) and movement (nomadism) in environments that demanded ever-greater immersion and commitment. It was not long before time became space-time. The space-time of the Other.

With this article, I have attempted to create a descriptive record of how living matter exists in my practice, understanding not only the presence of a certain organic materiality, but more precisely the complex connection between work, auto-production, and environment via a chronology that spans from the suicidal sculptures (the clay + cement period that results in a programmed disappearance), to the diachronic objects, hybrids, or mutants (incorporating new organic and industrial components that reinforce autopoiesis and deprogrammed growth), to arrive at the notion of the project as a system to absorb and be reabsorbed by the environment (deep immersion in local contexts that ends up in a chronotopic crystallization), and lastly, *as ecosystem* (the emergence of a new ecological balance through housekeeping and the negotiated redesign of the architectural-institutional space).

In relation to these transformations of the object, I have attempted to demonstrate their correspondence with a simultaneous transformation of the subject—that is, of the organization of my team's collaborative work, which spans various phases (community of builder-sculptors, itinerant company, workstations) to arrive at what is currently a range of available organizational forms in conjunction with the incorporation of new technologies like rendering, three-dimensional scans, and the robotic arm, complicating the systemic equilibrium of living matter: the latent threat of superfluous humanity.

Within this framework, I have presented a series of projects that, when linked, serve as hinges in the progressive emergence of a new paradigm, from hibernation in raw clay (2008–13) to the blossoming of a "garden of mutants" in an unpredictable forking of paths beginning in 2012 with *Brick Farm*, and its effect on *Today We Reboot the Planet*. This anomaly became law in *Los teatros de Saturno* and Xochimilco, which marked the consolidation of a phase characterized by organic material as the organizing factor of an extended (diachronic) temporality, and by the withdrawal of human agency in favor of other modeling forces. In this phase, there was a shift from time as representation to time as sculptor, stemming not only from entropy (the principal nonhuman agent of the previous period) but also from auto-production, which provokes another shift, this one from the idea of "completion" to the idea of "horizon," a never-ending process of self-modeling from inside out. This constant self-modeling via growth and decay opens a new stage that follows the end of the human part of the projects, that of monitoring of the autonomous life of the diachronic objects by the institutions that house them and my office. This led to examinations such as the one in *Motherland*, touching on the "eternal" link that ties us to institutions in charge of mutant objects, or like that of *Fantasma*, where I attempted to imagine a retrospective of my work in two hundred years.

Furthermore, I have attempted to demonstrate how the transporting of vernacular materials, fragments of projects, and residual team energy from one point of the planet to another in order to be recycled into subsequent projects stemmed from that same nomadic dynamic, and from the accelerated speed that was a result of the hyper-entropic nature of the system. That system has sought to perpetuate itself more through action (with the communal geneticization of a language aimed at "doing") than with "done" materiality, and through creating a record of that fleeting present with poeticized archives, pictorial homages to studio activities,[19] or films based on audiovisual records with varying degrees of cinematographic self-awareness.[20] The publication of texts such as this article, catalogues, and artist's books, which are currently in production, is a fourth source of records.

Accordingly, my objective here was to examine how the material dimension of my practice is more the precarious act of bearing witness to an activity that is lost forever (all of the richness of a nomadic life in that community or of the processes of exploration) than the ultimate goal of a "career" aimed at producing commodities. That is why the environment, first in the form of an immersive process that led me to develop a geopolitics of friendship, with strategies for respectful connections with different local realities and the actors who experience them, and next in the form of housekeeping within physical and institutional

spaces with the goal of reaching a singular and unrepeatable ecological equilibrium, was posited here as the final stop on a journey that aspires to constantly escape the work of art and move toward the thing, long oblivious to its condition as fetish, and that, without labels or proper nouns, surrenders completely to bare life. It is there, at that point, where matter becomes, in the end, living.

NOTES

1. Adrián Villar Rojas, *Diario íntimo 3D* [Intimate Diary 3D], Centro Cultural Borges, Buenos Aires (2007); Adrián Villar Rojas, *15.000 años nuevos* [15,000 New Years], Belleza y Felicidad, Buenos Aires (2007).

2. This nickname is related to the institutional space where *Pedazos de las personas que amamos* was developed and exhibited: the 4th arteBA-Petrobras Visual Arts Prize.

3. Adrián Villar Rojas, *Lo que el fuego me trajo*, Ruth Benzacar, Buenos Aires (2008).

4. Adrián Villar Rojas, *Mi familia muerta* [My Dead Family], at *Intemperie*, 2a Bienal del Fin del Mundo [2nd Biennial at the End of the World], Ushuaia, Argentina (2009).

5. Adrián Villar Rojas, *Ahora estaré con mi hijo, el asesino de tu herencia* [Now I Will Be with My Son, the Murderer of Your Inheritance], Argentina National Pavilion, 54th Venice Biennale (2011); Adrián Villar Rojas, *Poems for Earthlings*, SAM Art Projects in collaboration with Musée du Louvre, Jardin des Tuileries, Paris (2011); Adrián Villar Rojas, *Return the World*, at *dOCUMENTA (13)*, Kassel, Germany (2012).

6. Adrián Villar Rojas, *Today We Reboot the Planet*, Serpentine Sackler Gallery, London (2013).

7. Adrián Villar Rojas, *From the series Brick Farm*, at Rockaway!, Fort Tilden and Rockaway Beach, New York (2014); Adrián Villar Rojas, *Planetarium*, at *The Past, the Present, the Possible*, Sharjah Biennial 12, Kalba, United Arab Emirates (2015); Adrián Villar Rojas, *Fantasma*, Moderna Museet, Stockholm (2015); Adrián Villar Rojas, *From the series Brick Farm*, 12ª Bienal de La Habana (2015); Adrián Villar Rojas, *From the series Brick Farm*, APAP 5: Anyang Public Art Project, South Korea (2016); Adrián Villar Rojas, *From the series Brick Farm*, at *Everything Was Forever Until It Was No More*, 1st Riga International Biennial of Contemporary Art, Latvia (2018); Adrián Villar Rojas, *From the series Brick Farm*, at *Into Nature: Out of Darkness*, Drenthe, the Netherlands (2018).

8. Adrián Villar Rojas, *El momento más hermoso de la guerra no sabe distinguir el amor de cualquier sentimiento* [The Most Beatiful Moment of War Cannot Distinguish Love from Any Other Feeling], at *Intersecciones: Memoria, realidad y nuevos tiempos* [Intersections: Memory, Reality and New Eras], X Bienal de Cuenca, Ecuador (2009).

9. Adrián Villar Rojas, *Los teatros de Saturno*, kurimanzutto, Mexico City (2014).

10. Adrián Villar Rojas, *La inocencia de los animales*, at *Dark Optimism*, EXPO 1: New York, MoMA PS1, New York (2013).

11. Adrián Villar Rojas, *Motherland*, at *Storylines: Contemporary Art at the Guggenheim*, Solomon R. Guggenheim Museum, New York (2015); Adrián Villar Rojas, *Where the Slaves Live*, Fondation Louis Vuitton, Paris (2014); Adrián Villar Rojas, *Return the World*, at *dOCUMENTA (13)*, Bagh-e Babur, Queen's Palace, Kabul, Afghanistan (2012).

12. Adrián Villar Rojas, *The Evolution of God*, High Line at the Rail Yards, New York (2014).

13. Adrián Villar Rojas, *The Most Beautiful of All Mothers*, 14th Istanbul Biennial (2015); Adrián Villar Rojas, *Rinascimento*, Fondazione Sandretto Re Rebaudengo, Turin, Italy (2015).

14. Adrián Villar Rojas, *El momento más hermoso de la guerra*, Real DMZ Project, Yangji-ri, South Korea (2014).

15. Adrián Villar Rojas, *The Theater of Disappearance*, three films, total run time 118:37 min. (Buenos Aires: Rei Cine SRL, 2017).

16. Adrián Villar Rojas, *The War of the Stars*, at *Imagined Borders*, 12th Gwangju Biennale, South Korea (2018).

17. Adrián Villar Rojas, *The Work of the Ocean*, De 11 Lijnen, Oudenburg, Belgium (2013).

18. These all take the same title and appeared in 2017 at Kunsthaus Bregenz, Austria; NEON Foundation at Athens National Observatory (NOA); the Roof Garden Commission at the Metropolitan Museum of Art, New York; and Geffen Contemporary at MOCA, Los Angeles.

19. As in Adrián Villar Rojas, *Films before Revolution*, Museum Haus Konstruktiv, Zurich (2013).

20. As in Adrián Villar Rojas, *Lo que el fuego me trajo*, 32 min. (Buenos Aires: Rei Cine SRL, 2013).

BIBLIOGRAPHY

Kuhn 1962
Kuhn, Thomas. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Wittgenstein 1953
Wittgenstein, Ludwig. 1953. *Philosophical Investigations*. New York: Macmillan.

Part One

Living Matter in Contemporary Art: Snapshots

1

Biological Material Indeterminacy Rebukes the Social and the Artistic: Cases from the Documentary Archives of the Arkheia Documentation Center, Mexico

Eugenia Macías
Cristina Reyes

This paper addresses three cases of documentary materials housed at the Centro de Documentación Arkheia at the Museo Universitario Arte Contemporáneo (MUAC) of the Universidad Nacional Autónoma de México (UNAM): works by Santiago Rebolledo of Editorial Cocina Ediciones; by Rocío Boliver, also known as "La Congelada de Uva"; and by César Martínez Silva. In each case, biological material plays a central role in the critical rethinking of practices and concepts in art. The paper uses historiographic methodologies and visual analysis to discuss the biological material and its conservation implications in each case.

◆ ◆ ◆

Some of the items held at the Centro de Documentación Arkheia of the Museo Universitario Arte Contemporáneo (MUAC) of the Universidad Nacional Autónoma de México (UNAM) exemplify unusual artistic uses of diverse biological material that distort received canons of art. This paper discusses works by Santiago Rebolledo, Rocío Boliver (also known as "La Congelada de Uva"), and César Martínez Silva that alter the concept of archive and documentary resource through the presence of biological components and their precarious, indeterminate status in terms of material permanence. In these cases the role of the archivist is productive, as proposed by Hal Foster (Foster 2015, 31–35) and Anna María Guasch (Guasch 2011) and revised and paraphrased by Andrés Maximiliano Tello (Maximiliano Tello 2015), who imagine the paradigm of archiving as a sort of uncertain, fragmentary, and playful memory in which human testimonies provide a foundation for proposing critical art practices.

SANTIAGO REBOLLEDO: A LIVING PROCESS

El Archivero was a gallery and bookshop active from 1985 to 1991 in the Colonia Roma neighborhood of Mexico City. It started as a project to promote dissemination, distribution, and collaboration in publishing within the artist's book movement. It arose from the passion for experimentation and self-publishing that Felipe Ehrenberg brought from England in the early 1970s with the Beau Geste Press / Libro Acción Libre publishing community, which had survived over subsequent generations. This is also how Agru-pasión entre Tierras was born, a sort of traveling publishing company founded by Santiago Rebolledo, René Freire, Manuel Zavala, Ana Checchi, Diego Mazuera, Elsa Zambrano, Gabriel Macotela, and Paul Rolfe.

This publishing company was specifically created for mail art and thus began to collaborate with El Archivero. One of these collaborations was *Hoja de vida / El Cabello está en la cabeza* (Résumé / Hair Is on the Head, 1985, fig. 1.1) by Rebolledo, a coauthored book consisting of a wooden shoeshine box with cutouts of photos, coins, and other metal objects adhered to its exterior. Inside the box is a large piece of parchment that unfolds to reveal repetitions of the typewritten phrase "El Cabello está en la cabeza," accompanied by hanks of hair from different artists, along with their signatures.

Figure 1.1 Santiago Rebolledo (Colombian, 1951–2020), *Hoja de vida / El Cabello está en la cabeza* (Résumé / Hair Is on the Head), 1985. Typewriting and human hair on manila paper, wood box, 27 × 29.5 × 15 cm. Fondo El Archivero, Centro de Documentación Arkheia, MUAC-UNAM. Courtesy Fabián Cadena

The making of this piece occurred in stages that are worth revisiting, as they represent relevant and significant activations, or diffusion events of public circulation. The piece originated with a sheet of paper that Freire found on the street. He thought the phrase it bore was interesting and mailed it to Rebolledo, who at that time was living in Colombia. Some time later, Rebolledo returned to Mexico, bringing Freire's letter with him. At a gathering at Macotela's home, Freire and Macotela made a mimeograph stencil of the phrase and printed it repeatedly on a large piece of Kraft paper.

Rebolledo proposed an intervention into this sheet of paper by inviting several attendees to cut a lock of their hair, glue it to the paper, and sign it, after which they released the parchment out a third-floor window of the building. The paper fell to the street. It seems that part of the sheet was lost in this action, and what remains is slightly less than a meter in length (fig. 1.2).

Figure 1.2 Santiago Rebolledo (Colombian, 1951–2020), *Hoja de vida / El Cabello está en la cabeza* (Résumé / Hair Is on the Head), 1985. Typewriting and human hair on manila paper, wood box, 27 × 29.5 × 15 cm. Fondo El Archivero, Centro de Documentación Arkheia, MUAC-UNAM. Courtesy Fabián Cadena

This account, constructed in April 2019 from memories and electronic communications between Rebolledo, Freire, and another friend of their generation, the photographer Armando Cristeto, is a clear example of how the works these groups published were not simply printings on paper, but artworks that included the actions that led to them. The hair stored in the box is evidence of a living process that is undergoing change even now (fig. 1.3).

Figure 1.3 Santiago Rebolledo (Colombian, 1951–2020), *Hoja de vida / El Cabello está en la cabeza* (Résumé / Hair Is on the Head), 1985. Typewriting and human hair on manila paper, wood box, 27 × 29.5 × 15 cm. Fondo El Archivero, Centro de Documentación Arkheia, MUAC-UNAM. Courtesy Fabián Cadena

Figure 1.4 Rocío Boliver (Mexican, b. 1956), *Pocos mocos* (*Little Snots*), ca. 1999. Tissues and swabs with human secretions, 13 × 8 × 2 cm each. Fondo Rocío Boliver "La Congelada de Uva," Centro de Documentación Arkheia, MUAC-UNAM. Courtesy Rocío Boliver and Centro de Documentación Arkheia, MUAC-UNAM

ROCÍO BOLIVER, "LA CONGELADA DE UVA": I'M HAPPILY LIVING MY SLOGAN, "LET ME SHOW YOU"

Pocos mocos (*Little Snots*, ca. 1999, fig. 1.4, fig. 1.5, fig. 1.6) is a collection of packets, each containing a commercial cotton swab, disposable tissue, paper, earwax, and nasal mucus from the maker's artist friends. What slightly mitigates the instinctive reaction of disgust is the range of responses on the notes accompanying each bag: drawings, phrases, texts, other objects. The creator of this project is Rocío Boliver, also known as "La Congelada de Uva" (The Grape Popsicle), who has a long history of performances and other actions involving the handling of human fluids.

One may wonder sometimes whether the exercise of provocative intellectual argumentation by critics carries more weight than an action itself, which borders on excess. However, we find useful Fabián Giménez Gatto's problematization of the pornographic aspects in Boliver's work. In an article on her obscenity and trans-aesthetic games published in 1999 at the Uruguay-based site H Enciclopedia, Gatto suggests that the elements of her actions are expressive units (which he calls pornograms) that provide two processes, or lenses, by which we can assess *Pocos mocos*: the link between the body and inscriptions with, from, on, and in it, and the breaking of the boundary between what is inside an artistic situational framework and what is outside of it. He describes it as an obscenity seeking an enormous immersion or nesting within the observer, to the point of being unrepresentable

Figure 1.5 Rocío Boliver (Mexican, b. 1956), detail (Rossana Ponzanelli) from *Pocos mocos* (*Little Snots*), ca. 1999. Tissues and swabs with human secretions, 13 × 8 × 2 cm each. Fondo Rocío Boliver "La Congelada de Uva," Centro de Documentación Arkheia, MUAC-UNAM. Courtesy Rocío Boliver and Centro de Documentación Arkheia, MUAC-UNAM

because it is beyond all limits, because the experience is placed on a chaos of scales, making it hard to find any dimension of weight between the components of certain actions and the world of reference (broad or limited) of the person contemplating them. It is an experience that Boliver expressed with the phrase: "I'm happily living my slogan 'LET ME SHOW YOU'" (Giménez Gatto 1999).

Sol Henaro, Alejandra Moreno, and Christian Aravena deserve acknowledgment for recommending texts and providing an oral account of this project by Boliver. These three, along with Brian Smith, were the curators of an

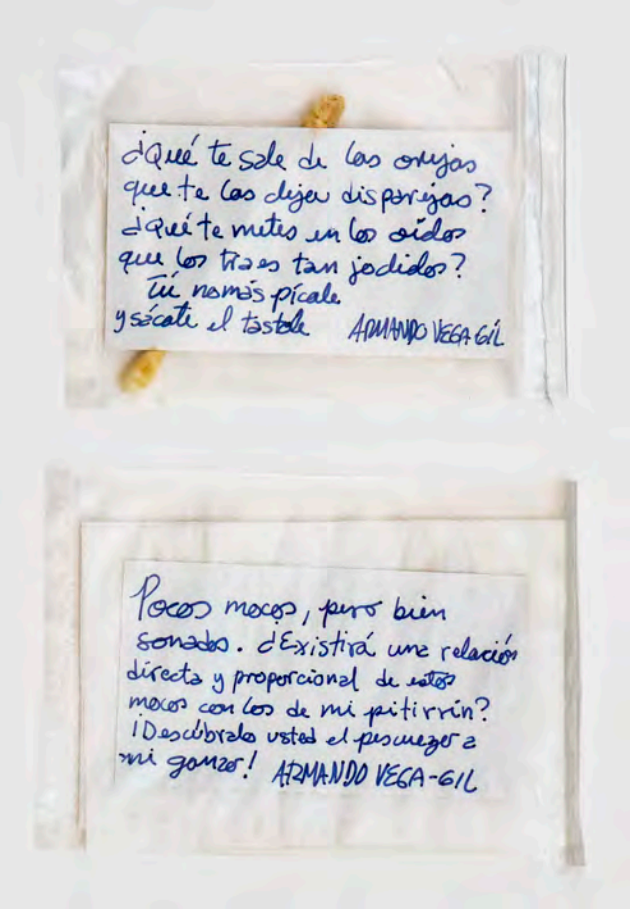


Figure 1.6 Rocío Boliver (Mexican, b. 1956), detail (Armando Vega-Gil) from *Pocos mocos* (*Little Snots*), ca. 1999. Tissues and swabs with human secretions, 13 × 8 × 2 cm each. Fondo Rocío Boliver "La Congelada de Uva," Centro de Documentación Arkheia, MUAC-UNAM. Courtesy Rocío Boliver and Centro de Documentación Arkheia, MUAC-UNAM

exhibition that opened in 2019 at the University Museum of Contemporary Art (MUAC), *Arte acción en México: Registros y residuos* (Action Art in Mexico: Registers and Residues). This exhibition brought together—under various reflexive criteria—the documentary records of projects along this creative line in Mexico and included *Pocos mocos* in the group "Salir de la carne: Prótesis y accesorios" (Out of the Flesh: Prostheses and Accessories), which sought to emphasize works that expand the usual perimeters of bodily experience (Henaro et al. 2019, 12, 13).

In an oral account Boliver provided regarding this project in November 2018, she stated that she requested mucus from fellow artists, and supplied packets in which they could deposit their secretions along with a comment. Juan José Gurrola gave her a scab and a fingernail; Felipe Ehrenberg was happy to oblige, but Astrid Haddad was not; Guillermo Fadanelli proffered only colored sprinkles. At that time, Boliver had recently seen an installation at ExTeresa in Mexico City by an unidentified foreign artist consisting of little labeled plastic bags containing such things as river water from Spain, Japan, and Mexico—all apparently alike—and rose petals from India, Chile, and Canada—again, all seemingly identical. It occurred to her to take the idea to an abject extreme, suggesting that artists and non-artists all have similar mucus and earwax. Broach what is private and flaunt it. One does not extract these excretions in public (or if one does, there are social protocols). It also aligned with other performances in which she used her own excretions: tears, eye discharge, mucus, excrement, urine, menstrual and other blood, saliva, and phlegm.

Conservator Alexandra Samkova performed basic conservation treatments on the material record of this project when Boliver's documentary archives entered the MUAC in 2017 and were added to the Centro de Documentación Arkheia. She stated in an interview at the museum in November 2018 that she only stabilized each unit (examining and registering its conservation condition, and transferring the group to preservation covers and cases) and repacked it, since the packets were all part of the devised system that Boliver had created to gather the materials. Samkova said that it would be intriguing from a conservation perspective to conduct a physical and chemical analysis of each one to determine whether it contained latent biological activity, and thus whether other storage or preventive isolation methods might be called for.

CÉSAR MARTÍNEZ SILVA: *RETRATOS DE CHOCOLARTE*, OR THE EPHEMERAL AS FUTURE CONDITION

Retrato de chocolARTE (Portrait in ChocolART, 2013, fig. 1.7) is one of three faces 3D printed in chocolate by César Martínez Silva and first presented in the 2013 solo exhibition *Antropofagia Gourmet* at Café La Gloria, Mexico City (fig. 1.8). This work exemplifies one of the fundamental ideas behind Martínez Silva's processes: the ephemeral transformed into a future condition, or how conceptual artistic practices can generate as much or more meaning than an artwork's material permanence. Some of Martínez Silva's *chocolARTE* works are completed when they are devoured, or at least tasted, by people in situations arranged by the artist, as a critique of certain unconscious ethical-political stances on humanity; for instance some persons attending Martínez Silva's

Figure 1.7 César Martínez Silva (Mexican, b. 1962), *Retrato de ChocolARTE* (Portrait in ChocolART), 2013. 3D modeling chocolate and clear acrylic box or cape, head: 25 × 18 × 15 cm. Fondo César Martínez, Centro de Documentación Arkheia, MUAC-UNAM. Courtesy César Martínez Silva

performances with chocolate in human form become actors in symbolic anthropophagic actions.

But this piece, produced along with two others and based on the faces of Norma Patiño, Felipe Hernández, and José Luis Cuevas (this information comes from the artist; we are not sure who these people are except for the famous artist Cuevas), emanates from another conceptual event recounted by Martínez Silva in an email message from May 2019: isolate chocolate faces in jars made of acrylic plastic to decelerate the process of biodegradation and oxidation, and then encourage their contemplation not by eating but by dislocating or diverting from the primary function of ingestion toward vision alone (to eat with one's eyes?).

The artist engages in a dialogue with the premise of conservation by having an exhibition of his work simultaneously display elements made to be eaten and others made from foods but mounted on a wall to be observed and protected from environmental conditions that might accelerate their deterioration. The system for securing the pieces to the wall posed a challenge. The chocolate is not fastened directly to the acrylic jars, but is hollow, with a wooden core that anchors it to the container. Martínez Silva prepared detailed instructions for mounting them.

In her recent research into the work of Martínez Silva, the art historian María Luisa González proposed that his projects activate transubstantiations of sociopolitical critique and behaviors restored in the performance space itself. They re-signify acts, discourses, objects, and cultural products drawn from religious ritual practices having to do with the transformation and/or transubstantiation of matter, and with the artist's own unsettled relationship with his Catholic upbringing (González 2018). Furthermore, by alternately allowing either ingestion or observation of the portraits in *Retratos de chocolARTE*, Martínez Silva makes it possible to enter and exit the situation of anthropophagy, as he has done in other installations, such as an event-exhibition in Santander, Spain, in 2015, which also included pieces of chocolate (fig. 1.9) and built another alternative to the spiritualization of matter. González refers to this interpretation via a comparison to the writer Nikos Kazantzakis's conception of transubstantiation. For González, these entreaties to specific means of contemplation (eating and/or observing) also bring about changes in the status of the individual participants as they reflect on themselves and what they have experienced, similar to the way Richard Schechner links ritual performativity and aesthetics.

Martínez Silva himself recently reflected on this in a dialogue with contemporary art conservation scholars regarding his approach to the case of artist Dieter Roth (countering the restorers' logic of material preservation), concerning another sculptural trend in his work—works in latex—that can be extrapolated to the sculptures in chocolate (Martínez Silva 2013). And in a 2018 email exchange with these authors, Martínez Silva stated, "The ethereal, the fleeting, the invisible, the imperceptible, the perishable, the momentary, the fugitive, and passing are the subjects of my research and, therefore, the very basis of my sculptures. . . . They were envisioned as events, situated in a concrete space/time dimension, not to be understood as concrete, sculptural objects of art."

In this line of work, Martínez Silva plays with encounters between physical properties of materials and their conceptual auras, willingly assuming the risk of accidents that accompany the passage of time. For this artist, such risks provide new paths—his strategies for documenting visual accounts of damage to the pieces and their material degradation correlate with their sociopolitical meanings. They have also led him into scientific research into materials, as in the case of his pieces in latex. Such

Figure 1.8 César Martínez Silva (Mexican, b. 1962), *Retratos de ChocolARTE* (Portrait in ChocolART), 2013. Installation view at *Antropofagia Gourmet*, Café La Gloria, Mexico City, 2013. Fondo César Martínez, Centro de Documentación Arkheia, MUAC-UNAM. Courtesy César Martínez Silva

research is still pending for his pieces in chocolate, exploring the improbability that gives life to the long lasting.[1]

CONCLUSION

This overview of three specific cases reveals the dilemmas concerning the role of organic or biological matter in artwork as it pertains to material preservation as a means of protecting the historical memory of artistic practices of dissent; and also ethical dilemmas that the projects themselves actuate through organic matter, for instance sublimated cannibalism and anthropophagy, or abject or scatological intimacy.

Hoja de vida / El Cabello está en la cabeza is just one of many pieces to emerge from a generation that decided it did not need fine paper or professional printing systems to create art. A shoeshine box, hair, and glued cutouts are testimony that the artist's book movement would not simply begin or end with the printing of a book, thus calling into question the common conception of the archive and its conservation.

In *Pocos mocos*, biological waste plays a leading role in the disruption of what might be considered artistic or worthy of collection. Its current storage arrangement raises various conservation issues: Is a microclimate operative in each plastic bag such that the organic material is undergoing deterioration or other behaviors? Would it be preferable to transfer each unit to more stable storage arrangements, even if it entails replacing the original artist-created packets?

In the sculptural approach envisioned in *Antropofagia Gourmet*, on the one hand samples of processed animal milk are eaten in an elegant banquet attended by the artist and the public, which, if the faces were real, would be a cannibalistic act. At the same time, the busts of chocolate are exhibited as hunters might display mounted animal heads. The organic matter evokes community rituals in traditional cultures in which the purpose of collective participation is to make a connection through rites, food, masks, and accessories.

Figure 1.9 César Martínez Silva (Mexican, b. 1962), artistic action in Santander, Spain, 2015. Fondo César Martínez, Centro de Documentación Arkheia, MUAC-UNAM. Courtesy César Martínez Silva

NOTES

1. César Martínez Silva, email message to the authors, November 2018.

BIBLIOGRAPHY

Foster 2015
Foster, Hal. 2015. *Bad New Days: Art, Criticism, Emergency.* London and New York: Verso.

Giménez Gatto 1999
Giménez Gatto, Fabián. 1999. "Obscenidad a la mexicana: Los juegos transestéticos de Rocío Boliver (I y II)," *H Enciclopedia*, http://www.henciclopedia.org.uy/autores/FGimenez/Obscenidad1.htm, http://www.henciclopedia.org.uy/autores/FGimenez/Obscenidad2.htm.

González 2018
González, María Luisa. 2018. "La transubstanciación. El performance en el performance. Un abordaje a La perforMANcena, 'North America Cholesterol Free Trade Agreement' (1999) in César Martínez Silva." In *Aproximaciones interpretativas multidisciplinarias en torno al arte y la cultura,* edited by Raúl Wenceslao Capistrán Gracia, 135–45. Aguascalientes, Mexico: Universidad Autónoma de Aguascalientes.

Guasch 2011
Guasch, Anna María. 2011. *Arte y archivo. Genealogías, tipologías y discontinuidades*. Madrid: Akal.

Henaro et al. 2019
Henaro, Sol, Alejandra Moreno, Christian Aravena, and Brian Smith. 2019. *Arte-acción en México. Registros y residuos*. Mexico City: MUAC-UNAM.

Martínez Silva 2013
Martínez Silva, César. 2013. "Permanencia en el tiempo de esculturas hinchables realizadas con hule látex vulcanizado, mecanismos de aire y sensores electrónicos; La conservación del futuro." Presentation at the 14th Jornada de Conservación de Arte Contemporáneo, Museo Nacional Centro de Arte Reina Sofía, Madrid.

Maximiliano Tello 2015
Maximiliano Tello, Andrés. 2015. "El arte y la subversión del archivo." *Aisthesis*, no. 58, 125–43. http://dx.doi.org/10.4067/S0718-71812015000200007.

2

Can We Use the Concept of Programmed Obsolescence to Identify and Resolve Conservation Issues on Eat Art Installations?

Claudia María Coronado García

Eat Art installations trace back to 1968, when contemporary artists began to use food to express different emotions and meanings. Food is indeed something that everyone can relate to, but not all food is equivalent from a conservation standpoint. Sonja Alhäuser's Braunes Bad V *(Brown Bath V, 2009/2015), Laurent Moriceau's* Found and Lost #1 *(2003), and Janine Antoni's* Lick and Lather *(1993) are installations made with chocolate, and at first glance, they seem like they might call for similar conservation approaches because they use identical materials. But they most certainly do not. Understanding their differences, both physically and in terms of artistic intent, aids in recognizing the appropriate preservation response: allowing programmed obsolescence through replacement; accepting consumption; or allowing for continual decay.*

◆ ◆ ◆

Daniel Spoerri and a few other artists, including Dieter Roth and Peter Kubelka, decided in 1970 to organize an exhibition featuring quite a few experiments they had carried out since 1968, when Spoerri Restaurant opened, and then subsequently the Eat Art Gallery, which was unique in its presentation of something as common as food as capable of inducing emotions, memories, and sensations, even evoking personal memories among visitors. The show was titled *Eating the Universe* and took place at Burgplatz in Düsseldorf, Germany. Spoerri described it as follows:

> *a) the tables in the restaurant became trap-paintings, b) as in my "grocery shop" regular foods (meals) are exhibited as artworks, c) the works of art are in transformation (and transient), . . . d) everyone could have produced at will his own trap-painting under my license, and e) the sense of taste was directly involved, in addition to touch and sight, etc.* (Novero 2010, 159)

These artistic principles were the foundation of Eat Art. The artists intended to demonstrate the power of food—that it can communicate meanings, transmit clear ideas, and provoke even the most passive observer. The exhibition

evidenced that using food as a material for artistic expression is just as or even more powerful than re-creating it on canvas. The name Eat Art is now commonly used for installations containing some element that is edible or closely linked to food—so much so that some previous artworks by Roth or Joseph Beuys that were not created with the intention of eating the food are now considered Eat Art installations (fig. 2.1).

Figure 2.1 Joseph Beuys (German, 1921–1986), *Zwei Fräulein mit leuchtendem brot* (Two Girls with Bright Bread), 1966. Chocolate painted with oil on imprinted card and paper in box, approx. 75 × 21 × 1.2 cm. Private collection. © Lempertz 1845

This paper discusses Eat Art installations and proposes the concept of planned obsolescence to approach their conservation. What would that obsolescence look like, and how would we recognize it?

TYPOLOGIES OF EAT ART INSTALLATIONS

Little is firmly established about the conservation of Eat Art, and even less about how to determine when changes to the organic parts are decay intended by the artist versus decomposition that should be combated. Yet other installations involve a constant replenishment or replacement of materials to function as intended.

In the history of art, food has often been portrayed, in one form or another, as a symbol of power and well-being. It is thanks to Spoerri, however, that the art world came to consider food items as raw material able to "generate associations that, together with the forms into which they are shaped, establish the subject or content of the work of art" (Buskirk 2003, 13). Food items in Eat Art installations can fulfill a variety of functions. Using food promotes a fuller sensory experience, inviting us to utilize not just our vision, but also our sense of smell, and even maybe touch and taste. Involving more than a single sense makes the created experience stronger. The artists have achieved their objective if they generate in the viewer whatever sense of playfulness, cryptic-ness, grotesquerie, eroticism, repulsion, savageness, transgression, or surreality that they intended. The material creates a visual or sensory experience in a specific environment (fig. 2.2).

Food items in Eat Art installations might suggest the fleetingness of life because, just like us, the food will undergo change that is inherent to its organic state. The work will start out with one shape, color, and smell and undergo transformations until these aspects are unrecognizable. Perhaps the piece will completely deteriorate. This deterioration is a clear reminder of our fragile nature, of the organic decomposition that every human being is destined to undergo. As Pere Salabert puts it, from the beginning our bodies contain an anomaly, an error in the production process. Art that advocates decomposition of matter is connecting us with our body's final destiny. It forces us to confront what we strive to avoid: "the expiration of living matter, its stinking vocation, its propensity to decay," because materials that must be eaten will degrade, decompose, or even perish, which is what will convey meaning or transform into the sensations and interactions between ourselves and the works of art (Salabert 2004, 86). This is sometimes confusing because these installations promote consumption, asking for direct interaction rather than being simply observed; they are presented as a temptation that breaks with traditional exhibition rules by asking us to approach the artworks, touch them, even eat them.

The wide variety of food that has been used as art material has led to a great diversity in the types of artworks created, as well as in terms of the time and place of exhibition, the idea to be conveyed, and the type of audience the work is intended to impact. This variety of presentations and contexts means that works that might look alike could require different actions from their

Figure 2.2 Sandy Skoglund (American, b. 1946), *The Cocktail Party*, 1992. Installation with found objects, Cheez Doodles, and paint, dimensions variable. McNay Art Museum, San Antonio, Texas. © 1992 Sandy Skoglund, Collection McNay Art Museum, San Antonio, Texas

audiences and have different meanings. In other words, not all artists endow the same food with the same meaning or significance; the food might fulfill very different functions. New artworks employing food items are still able to produce new and different discourses, and new sensations and experiences (fig. 2.3).

At present, there is no single way to characterize these types of installation. They could be categorized by era, by artist, by type of material, or by the artist's intention. Intentionality encompasses everything from the reason why the artist selected, from among various materials, some in particular and assigned to them specific tasks to perform within an exhibition space to the way in which they will interrelate with visitors. This categorization is based on prior knowledge of the installations; they cannot be grouped by the type of food chosen because, as we will see, three installations using chocolate as the raw material could have quite different intentions behind them (Hummelen 1999). Knowing the ideas behind the choice, and familiarity with the artist's previous work, enables an understanding of what motivated the artist to select that material and its significance within the particular context. With food installations, at least three typologies of intentionality can be recognized.

The first group comprises edible art objects that the artist has endowed with an emotional charge, sensitive to human relationships with this type of food item. This group, which conveys sensations and reactions, utilizes the physical, formal, and material qualities of the food products to create a connection with viewers. These objects are sometimes treated chemically so they will not change over the course of the exhibition in which they will be presented, as is the case depicted in figure 2.2, where in 1992 Sandy Skoglund stabilized Cheez Doodles chemically to keep their peculiar color and form.

Another typology reflects on the daily ritual of eating, tasting food in communion, which brings families together around the table not only to eat but also to share how their day has gone, listen to one another, and strengthen emotional ties. This typology attempts to create moments in which humans, through food, share experiences and communicate with others while simultaneously satisfying their own biological and social needs.

The third situation consists of exhibitions in which the artist allows the process of deterioration to be a fundamental part of the experience. The objects displayed will not only communicate with the visitor through their

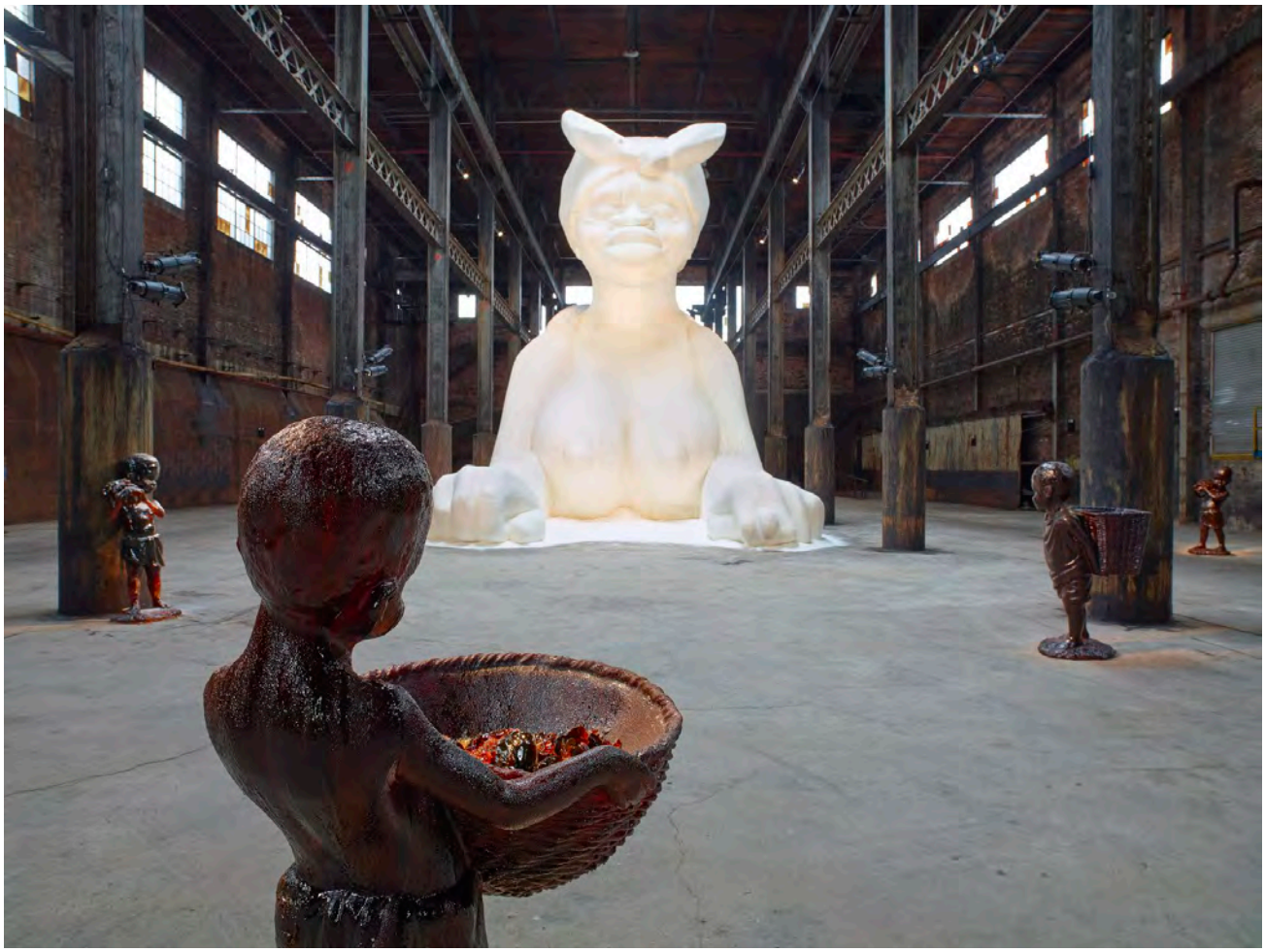


Figure 2.3 Kara Walker (American, b. 1969), *A Subtlety, or the Marvelous Sugar Baby, an Homage to the unpaid and overworked Artisans who have refined our Sweet tastes from the cane fields to the Kitchens of the New World on the Occasion of the demolition of the Domino Sugar Refining Plant*, 2014. Polystyrene sphinx coated with thirty-five tons of sugar, approx. 10.8 × 7.9 × 23 m. Installation view, Domino Sugar Refinery, Williamsburg, Brooklyn, 2014. Jason Wyche, courtesy Creative Time, © 2014 Kara Walker

sense of vision; smell will likely play an important role as well. These foods have a limited shelf life if they are not consumed, but in art their usefulness is extended through decomposition.

Each of these typologies corresponds to the action or the function that the artist wants the food to fulfill, and each of them asks the audience for a specific (re)action that reinforces the intention behind the choice. Consequently, any one of these works presents a challenge to the viewer—and to the conservator—through smell, vision, presentation, and the actions taking place around them.

CASE STUDIES

To put forward just one example, a great number of artworks use chocolate as a raw material. Three case studies are discussed here, each representing one of the typologies described above: Sonja Alhäuser's *Braunes Bad V* (Brown Bath V, 2009/2015, fig. 2.4), Laurent Moriceau's *Found and Lost #1* (2003, fig. 2.5), and Janine Antoni's *Lick and Lather* (1993, fig. 2.6). All three are made with edible milk chocolate. All three are portraits of the artists. But they differ by period, size, and above all function.

Figure 2.4 Sonja Alhäuser (German, b. 1969), *Braunes Bad V* (Brown Bath V), 2009/2015. Stainless steel tub, chocolate, temperature control function, and artist action, tub: 60 × 160 × 80 cm. Installation view, *Black Box*, Lehmbruck Museum, Duisburg, Germany, 2015. Alex Heide, Braunschweig, @sonja-alhaeuser.de (ARS/GETTY)

Figure 2.5 Laurent Moriceau (French, b. 1964), *Found and Lost #1*, 2003. Chocolate, 169 × 51 × 23 cm. Installation/performance view, Palais de Tokyo, Paris. Laurent Moriceau

Figure 2.6 Janine Antoni (American, b. 1964), *Lick and Lather*, 1993. One licked chocolate self-portrait bust and one washed soap self-portrait bust on pedestals, edition of 7 + 2 APs + TP, busts: approx. 61 × 40.6 × 33 cm each; pedestals: 116 × 40.6 × 40.6 cm each. Collection of Carla Emil and Rich Silverstein and the San Francisco Museum of Modern Art. © Janine Antoni, courtesy the artist and Luhring Augustine, New York

Alhäuser exemplifies the first typology described above. Her work promotes the culture of communion and often involves sculptures and installations made with different edible items, including chocolate, to smell, taste, feel, and eat. Many of Alhäuser's works not only promise pleasure in the traditional sense but also provide the taste buds with a direct, immediate pleasure (Schultz n.d.). *Braunes Bad V* takes the viewer by surprise. Nothing suggests opulence more than those banquets where one sees a fountain of endless chocolate for dipping fruit. This work is a fantasy brought to life, the dream of any chocolate addict, from the smell upon entering, to the possibility of tasting it as part of the experience that Alhäuser promotes.

Found and Lost #1 portrays Moriceau himself in three different mediums: bars of soap, lollipops, and a life-size version in chocolate. At first, the project seems to be a set of self-portraits. But each one of these propositions creates multiple dialogues, a set of approaches that address not only the relationships between audience and artist and between audience and artwork, but also the artist's sensual approach to the body of the viewer (Taddei 2009). Each one presents a "communion" of the artist's body with visitors. Moriceau as executioner smiles as he distributes and redistributes his body, sacrificing himself, one might say, so others may taste. Here audience participation—not only as observers but also as "cannibals"—is necessary for the work to make sense.

Antoni's *Lick and Lather* began with a mold of the artist's own head that was used to cast seven iterations with soap and seven with chocolate. These self-portrait busts observe us in a challenging manner, like bishops on a chessboard, but we cannot eat them or touch them; we can only observe them and witness their transformation over the years. Antoni uses the soap bust to wash her body, and she licks the surface of the chocolate bust with each encounter. She has specifically prohibited these actions from being undertaken by anyone but her.

What these examples demonstrate is that, although they might appear similar in form and rendered in a common material, each artist expects the public to react and interact in a specific and different way. So, as the conservator, how does one know what to do? In which cases is it valid to conserve the works, and in which cases not? In which cases should they be allowed to deteriorate and in which cases should they be remade, changed, or replaced so they will continue to fulfill their assigned function?

Based on the foregoing typologies, the next step would be to assess what percentage of the work is composed of organic matter and what one is expected to do with it. Only when work is meant to be *observed*—the organic matter is the work itself and cannot be replaced in the event of deterioration—must the work be conserved through preventive measures, perhaps by storage in a climate-controlled room or case. Or, if the artist so agrees, it can be intervened in with materials appropriate for its preservation.

In the other two cases (consumption or replacement) the organic materials present are expected to fulfill a specific task within the exhibition. In other words, if the work is made to be eaten, then the museum or gallery will allow it to be consumed. In the case of Moriceau, the work was produced for the opening of an exhibition, and once distributed, there would be nothing left of it, only a record of the action and the experiences of the visitors. The work will not be repeated until the artist decides to do so.

There are several ways to resolve the matter of replacement. It can be when the artist is planning a new exhibition, or it might be periodic and/or continual. When replacing organic materials, questions arise as to the appropriate person to do so, how it should be done, when should it be done, and why should it be done. It should not be done if these questions have not been answered or if one lacks a deep knowledge of the artist's intention and the various meanings of the work.

PROGRAMMED OBSOLESCENCE

Material replacement can be a systematic modification regulated by the artist, who dictates the intervals for replacement, its parameters, and the reasons for doing so. In some cases, the system or protocol to be followed confirms that replacement should be continual; otherwise, the installation will cease to function. Merriam-Webster defines obsolescence as the process of becoming obsolete or the condition of being nearly obsolete. Therefore, we are dealing not only with obsolescence, but also with programmed obsolescence, as in, "a business strategy in which obsolescence (the process of becoming obsolete, that is, no longer fashionable or no longer usable) of a product is planned and built into it from its conception" (*The Economist* 2009).

The concept of programmed obsolescence arose in 1920, when businesspeople from different light bulb manufacturers decided to regulate the characteristics of a commercial light bulb: its electrical resistance, materials, and life span. At the time, it was normal for light bulbs to last for fifteen hundred to two thousand hours. But the Phoebus cartel, as it would afterward be called, determined that it would be more profitable for the light

bulb market if they did not last that long, and the limit was newly set at one thousand hours. Even today there are regulations around how many hours a light bulb should function.

There are many reasons why an object can become obsolete, even several ways of classifying it. John Ippolito and Richard Rinehart (Ippolito and Rinehart 2014) state that technology, institutions, and legislation can be the causes of producing obsolescence, referring to new media and social artworks. Another classification system, based on economic processes, can depend on an item's quality (because it has defects or a malfunction), on desire (new styles or fashion on the market), or on the item's function if it is no longer useful and needs to be replaced. We will focus on this last classification: programmed obsolescence based on function.

Joseph Beuys's *Capri Battery* (1985, fig. 2.7), a light bulb with a plug socket and a lemon, summons the bright Mediterranean sun, and relates to the artist's interests in energy, warmth, and the environment. This artwork is peculiar for several reasons. Beuys required that when it is exhibited, the lemons may come only from the island of Capri, Italy, because he felt they are the best, and because they could fulfill the essential requirement of form and function in an exhibition of one thousand hours. With each presentation, a new lemon is procured so the work will function properly. The citric acid in the lemon contains an electrolyte that can conduct electricity, such that it is essentially an electrochemical battery. Once a thousand hours have elapsed, the lemon ceases to fulfill the function that was assigned to it and needs to be replaced, which is clearly comparable with the previously defined concept of programmed obsolescence.

A similar case is Víctor Grippo, an Argentinian artist who, in the 1970s, created a series of works that deal in traditionally opposing binaries such as art versus science, nature versus culture, and real versus artificial, such that they evidence the basic processes of cooperation, production, and consumption and reflect on the city-versus-country duality. The works are related to conceptual art and utilize organic materials such as potatoes and bread. His best-known works from that period are *Analogía I* (Analogy I, 1970–71, fig. 2.8), *Analogía IV* (1972), *Algunos oficios* (Some Jobs or Some Trades, 1976), *Valijita de panadero* (Small Bread Maker's Suitcase, 1977), and *Tabla* (Table, 1978) (MALBA 2012). In these artworks, a voltmeter makes evident that potatoes carry energy. What is interesting about these installations is that their organic components must be replaced when the energy is exhausted. That is, the potatoes as batteries must be replaced by others with similar characteristics every so often for the artwork to continue to function.

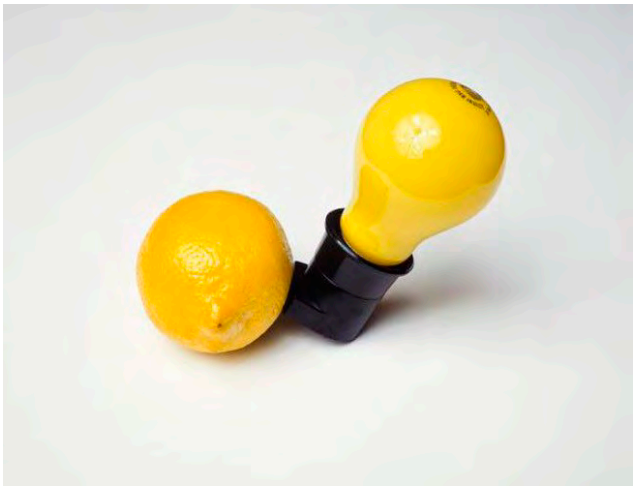


Figure 2.7 Joseph Beuys (German, 1921–1986), *Capri Battery*, 1985. Light bulb with plug socket and lemon, 8 × 11 × 6 cm. Broad Museum Foundation. ARS/ GETTY

Giovanni Anselmo's *Untitled (Sculpture That Eats)* (1968) is also a work of this type. In this case, it is essential to change the romaine lettuce leaf on the granite monolith about every week, before it rots or dries up, because the artistic intent is to suggest that this sculpture needs food to exist.

Felix Gonzalez-Torres's candy works are another example where understanding the reasons behind the artist's rules for how the work should exist and function is key. This may permit us to identify in them a few elements related to programmed obsolescence, since there are certain preestablished guidelines, such as the type of candy to be used in *"Untitled" (A Corner of Baci)* (1990). The work—an accumulation of Baci Perugina chocolates, which have a specific shiny wrapping—converts a pile of chocolates into a recognized work attributed to this author. Visitors to the museum or gallery are invited to take away a candy and eat it later. The weight, disposition, location, and replenishment rate of the pile of candies may vary as an exhibition progresses, but only within certain set parameters. The candy works of Gonzalez-Torres have some aspects that must always be the same, but also various malleable aspects whose performativity, if you will, makes them unique and unrepeatable. We must be careful, since previous research as well as the intention of the artist are fundamental to understanding when, how, and in what way the concept of programmed obsolescence plays into decisions on the conservation and restoration of a particular work.

Figure 2.8 Víctor Grippo (Argentinian, 1936–2002), *Analogía I* (Analogy I), 1970–71. Potatoes, painted wood, electrical connectors, voltmeter, and text, 47.4 × 153 × 10 cm. Museo Nacional de Bellas Artes, Buenos Aires. © Museo Nacional de Bellas Artes. Origen: Donación Antorchas

CONCLUSIONS

The concept of programmed obsolescence is present in some Eat Art installations, and understanding it facilitates the conservation approach to take. We must recognize when the artist has the intention of replacing edible material for the artwork to function, versus when the artist desires the deterioration or other transformation of the materials.

In the case of installations in which the artist has the intention of replacing edible material for the artwork to function, it should be understood that the ephemeral elements are the guiding principle and that, without systematic replacement, the work will no longer exist as intended. But replacement or substitution must take into account the considerations specified or suggested by the artist so that the modifications do not alter the meaning or diminish the work's ability to fulfill the artist's intention.

These kinds of installations question the role of the conservator and call for study toward a full comprehension of their intentions and meanings. The concept of programmed obsolescence may be inherent in them, so understanding if their function is affected by the deterioration of the edible materials will help us prevent the installations from actually becoming obsolete.

BIBLIOGRAPHY

Buskirk 2003
Buskirk, Martha. 2003. *The Contingent Object of Contemporary Art.* Cambridge, MA: MIT Press.

Hummelen 1999
Hummelen, IJsbrand. 1999. "Decision-Making Model for the Conservation and Restoration of Modern Art." In *Modern Art: Who Cares? An Interdisciplinary Research Project and an International Symposium on the Conservation of Modern and Contemporary Art*, edited by IJsbrand Hummelen, Dionne Sillé, and Marjan Zijlmans, 4–18. Amsterdam: Foundation for the Conservation of Modern Art.

Ippolito and Rinehart 2014
Ippolito, John, and Richard Rinehart. 2014. *Re-collection: Art, New Media, and Social Memory*. Cambridge, MA: MIT Press.

MALBA 2012
MALBA. 2012. "Víctor Grippo: Homenaje." https://malba.org.ar/evento/victor-grippo-homenaje/.

Novero 2010
Novero, Cecilia. 2010. *Antidiets of the Avant-Garde: From Futurist Cooking to Eat Art.* Minneapolis: University of Minnesota Press.

Salabert 2004
Salabert, Pere. 2004. *La redención de la carne, hastío del alma y elogio de la pudrición.* Murcia, Spain: Editorial Centro de Documentación y Estudios Avanzados del Arte Contemporáneo (CENDEAC).

Schultz n.d.
Schultz, Michael. n.d. "Sonja Alhäuser." https://www.schultzberlin.com/de/sonja-alh%C3%A4user.

Taddei 2009
Taddei, Jean-François. 2009. *Les Perméables = The Permeables.* Paris: MeMo.

***The Economist* 2009**
The Economist. 2009. "Planned Obsolescence." March 23, 2009, https://www.economist.com/news/2009/03/23/planned-obsolescence.

3

The Artist's Body in the Age of Genomic Reproduction

Barbara Ursula Oettl

As soon as the reprogramming of human cell material became the state of the art, artists made use of this possibility, investigating its implications for humankind. And as biological substances such as blood, flesh, and DNA found their way into the art context, they caused unprecedented problems, demanding unconventional conservation approaches as well as innovative handling toward their care and preservation within the white cube. The British artist Marc Quinn and the French performance artist ORLAN's collaborations with the Tissue Culture & Art Project in some ways exemplify this material turn in art, and raise ethical, legal, as well as conservational questions through their art production.

◆ ◆ ◆

Curating the living—be it flora, fauna, or the human—has always held risks. Edward Steichen's *Delphiniums* (1936) is a good early example of the application of traditional and new chemical influences to established breeding methods for plants, such as selection and hybridization, toward the creation of a work intended as art. The *Delphiniums*, on display in vases, withered away after a week on view at New York's Museum of Modern Art. To this day, the latest scientific standard of knowledge is unable to completely prevent the living from growing, changing, aging, or dying while on view in a museum setting. With living art, one can never be entirely sure what to expect, which at best is part of the experience, but is hard to accept for many people involved in creating displays of such art: curators, visitors, artists, and last but not least the art itself, especially if we are talking about art that is alive.

One work of art that could not be hindered from not prospering at all, indeed from withering away, was a restaging of Hans Haacke's *Grass Grows* (1969). When the grass refused to grow in the freshly sown earthwork presented in a Land art retrospective at the Haus der Kunst in Munich, it was not favorably received by the public. At the turn of the millennium, the press released pictures of the artist Eduardo Kac holding his transgenic creation *GFP Bunny Alba* (2000), a bioluminescent rabbit, but the French laboratory where the genetically altered animal was bred ultimately refused to hand the never-to-become-domestic pet over to the artist. And during *dOCUMENTA (13)* in Kassel, Germany, in 2012, two artists had to deal with partly unwanted outcomes of their works in public space: the butterflies Kristina Buch had released in a little patch of garden for her installation *The Lover* escaped into freedom as intended by the artist, never to be seen again by visitors, and the beehives that Pierre Huyghe had brought to his artificially created biotope *Untilled* had to be replaced twice when the colony died out.

These things happen. But instead of trying to prevent them, or criticizing the museum, the curators, or the art when they do, it should be understood that such glitches may be an essential side effect of living artworks. Indeed, there is a need to understand how and why art that is alive should have all the same privileges and disadvantages as the living beings who come to visit it. A living exhibit may prosper or wither, and both might be absolutely appropriate for the work of art and its significance. In the foreseeable future this may no longer hold true, as the various sources of error may be eradicated by the latest discoveries in medicine and biotechnology. What if the flaws of the living are one day eliminated by achievements in scientific research?

In 2012 the Japanese cell researcher Shinya Yamanaka and the British biologist John B. Gurdon received the Nobel Prize for their successful reprogramming of human cellular material. Reducing a cell to its original status of pluripotency is desirable in a medical context, as only a not-yet-specified cell has the ability to develop into almost any other cell type in an organism. The baseline in a medical and also in an artistic context is that whatever holds a complete set of DNA is able to reproduce that set of DNA. A layperson cannot be expected to understand the quintessential forebodings held within the groundbreaking potential of this discovery. But maybe art can enlighten in this case. This essay will demonstrate how and why bioartists are addressing the riddles of human life and death, and how to offer these insights to the public in a well-curated frame. After all, one thing is clear: by passing down their complete DNA and forcing us (curators, conservators, visitors, art historians) to make existential decisions about life and death, artists raise ethical and legal questions regarding who we are—and for how long.

Bioartists operate at the interface between medicine, biology, and informatics. The knowledge and techniques that have become available to the biotechnological sciences are now available to fine artists as well. What the two disciplines—science and art—disagree on is less bioscientific methodologies than the motivation in applying them. The fine arts can offer ways to articulate questions and confront both scientists and the public with provocative statements on biotechnological accomplishments and biopolitical power. Such artists have devoted themselves to suggesting what consequences are to be expected in the face of a constantly shifting and modifiable *conditio humana* that has been downgraded to a mere information pool on growth, health, biological functions, age, and disease.

Walter Benjamin's much-discussed essay on the aura of an artwork that is reproduced (Benjamin [1935] 2006) enters its next round with these case studies on artists who hint at the potential to hybridize and clone the human body with the (un)predictable prospect of releasing their personae into the future, into the age of the genomic reproduction of the artist's body.

MARC QUINN

The British artist Marc Quinn is widely known for his series *Self*, portraits cast from his own blood. Beginning in 1991 and every five years thereafter, Quinn has produced a new version (fig. 3.1). In order to obtain the material for this sculptural piece, the artist collects four and a half liters of his own blood. It goes without saying that this artwork cannot survive in a typical museum storage or display context; it is coated with silicone and needs to be kept at a constant temperature of -18°C. The cast is housed in a transparent cabinet positioned on a custom-built cooling device made of stainless steel.

Figure 3.1 Marc Quinn (British, b. 1964), *Self*, 1991. Artist's blood (4.5 liters), stainless steel, Perspex, and refrigeration equipment, 63 × 208 × 63 cm. Courtesy the artist

It took several incarnations of *Self* before Quinn developed a technique to hold it in a state of permanent frozen equilibrium. The first cast needed to be re-modeled four times. In the first attempts, Quinn cast the head directly from the mold and put it into a showcase at -18°C. But since the vulnerable sculpture had not received a coating, the air caused the water content in the blood to rise to the surface of the cast and down toward the coolest area of the case—the bottom. This disintegration of *Self* prompted the next iteration to be sealed with a transparent silicone skin. But this solution did not last long; over time, little holes developed in the silicone, through which the blood that had started to coagulate showed. This mishap was successfully corrected by immersing the blood head in liquid silicone cooled to -18°C (Self 2009, 7).

Today, different versions of *Self* are in collections all over the globe. When in 2009 the Foundation Beyeler in Basel, Switzerland, organized a retrospective of the artist's oeuvre, four of Quinn's *Selfs* were flown to Switzerland, creating for a brief moment, with the addition of the artist, a quasi-identical-quintuplet scenario.[1] Unfortunately, the changing air pressure in the airplane's cargo hold compromised the seals within the cabinets, which caused condensation on the glass. This problem has now been solved by heating the panes to counteract the cooling system for the heads and thus provide a clear vista on both sides. Unless any of these devices is unplugged, the *Selfs* can be displayed in museum settings as intended, indefinitely. And as the casts hold the artist's complete genetic information, possibly he will outlive every single one of us.

It is worth noting that in 2001 Quinn made another interesting work from his own bodily components, *Cloned DNA Self Portrait 26.09.01* (fig. 3.2). By using standard biotechnological methods of cloning, the artist's DNA was extracted, replicated, and framed in a transparent colony of bacteria to keep it alive (Quinn 2007, 309). In the age of a possible genetic reprogramming of unipotent cells such as blood and sperm, his cloning options are infinite.

Figure 3.2 Marc Quinn (British, b. 1964), *Cloned DNA Self Portrait 26.09.01*, 2001. Stainless steel, polycarbonate agar jelly, bacteria colony, and human DNA, 26.2 × 20.5 × 2.7 cm. Courtesy the artist

ORLAN

The French multimedia artist ORLAN is taking this concept even further. ORLAN has radicalized body art with her long-term performance *La Ré-Incarnation de Sainte ORLAN*. From 1990 to 1993, ORLAN underwent nine "surgical manipulations" (Bouchard 2010, 63) that included skin transplant, liposuction, facial surgery, and the reshaping of her flesh and bones. During these procedures, ORLAN only received local anesthesia, which allowed her to respond to audience questions sent by fax or videoconference, provided she was not prevented from speaking by surgical necessities (fig. 3.3). From these performances, she created recordings, videotapes, and even relics of biological material (10 grams of her flesh apiece) for sale on the art market. The vials and reliquaries contain her blood, fat, and tissue. All the products are certified by ORLAN's signature and the following inscription: "This is my body, this is my software" (fig. 3.4).

ORLAN's live performative oeuvre has been personally witnessed by an exceedingly small number of spectators. However, it is possible to access the testimony of her performances. According to Jens Hauser, there are three possibilities to collect, preserve, and exhibit ephemeral art practices in the gallery space: there is the initial spark of the live performance; there are documents that remind the viewer of what and how it happened such as photographs, videos, and sketches; and there are the physical remains of the processes that allow the contemporary visitor to trace back the events on a physical level (Hauser 2008, 91–92). ORLAN's oeuvre includes all of these options. From a conservation viewpoint, her once-living materials pose

Figure 3.3 ORLAN (French, b. 1947), *Omniprésence*, the seventh surgery-performance in the series *La Ré-Incarnation de Sainte ORLAN*, New York, 1993. Cibachrome print in Diasec mount, 165.1 × 109.2 cm. Courtesy the artist

Figure 3.4 ORLAN (French, b. 1947), *Small Reliquary: My Flesh, the Text, and Language* (English text), no. 11, 1993. Soldered metal, burglar-proof glass, and 10 grams of ORLAN's flesh preserved in resin, 30.5 × 30.5 × 5.1 cm. Courtesy the artist

particularly pressing questions regarding their safekeeping. For secure preservation of this material, the biopsies are sustained in resin, and the collectibility of the relics is guaranteed by their welded, burglar-proof receptacles. In the case whereby an art museum accepts ORLAN's last will—to exhibit her body after her death—it would not be acting any differently than a museum of natural history exhibiting medical and histological preparations, or than churchgoers adoring the human remains of saints and martyrs. With her relics, ORLAN

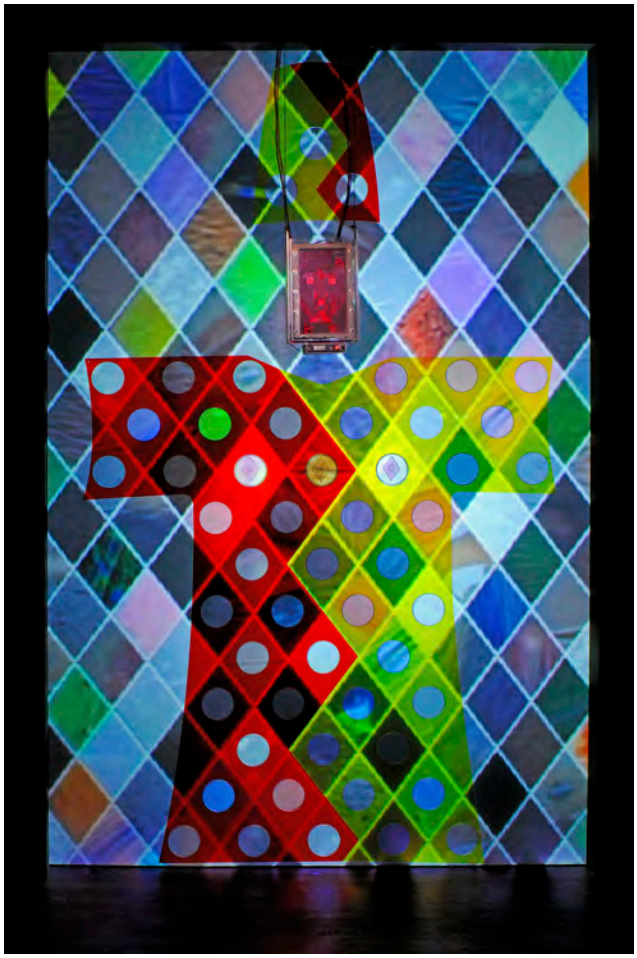


Figure 3.5 ORLAN (French, b. 1947), *The Harlequin's Coat*, 2007–8. Bioreactor, biopsies of human flesh, and petri dishes. Installation view at *sk-interfaces*, Foundation for Art and Creative Technology (FACT), Liverpool, England, 2008. Courtesy the artist

takes the measure of physical possibilities to convey her post-mortal persona.

In recent years ORLAN has begun to refine the methods and options of her reincarnation, including exploring the co-culturing and fusion of human and nonhuman cells and tissue. Her first project using biotechnology and the living matter of others is *The Harlequin's Coat* (2007–8, fig. 3.5). The idea was to hybridize skin tissue of various ethnicities (white and Black) and other species (marsupial and bovine) with her own skin cells (ORLAN 2010, 116–17). These were shown intermingling in vitro in constantly moving petri dishes that were attached to the back of a Harlequin's gown.[2] But the impure cell-bastard did not morph infinitely: "Of course, all the cells or bacteria are dead."[3]

The current state of science does not allow for complete transendence of the mortal body—in other words, eternal

Figure 3.6 ORLAN (French, b. 1947), *ORLANoid*, 2018. C3I-robot (command-control-communication-intelligence system). Courtesy the artist

life. Future knowledge and insights will continue to illuminate the healed, modified, transformed, hybridable, exchangeable, and maybe someday-obsolete body. Just like science, ORLAN is struggling "against the innate, the inexorable, the programmed, Nature, DNA (which is our direct rival as artists of representation), and God!" (ORLAN 1998, 325). ORLAN has made many attempts to outpace science, to outlive the body, and to keep the audience in literal touch with her tissue, cells, and flesh within the museum setting. For the moment she has stored new stem cells and tissue and bacteria cultures at the Institut Pasteur in Paris, where they are kept in a freezer at -80°C.

When the time is right, her cells might fuse with *ORLANoid* (2018, fig. 3.6), her look-alike robot, thus extending ORLAN's body by means of electronically and digitally encoded information. Currently, the *ORLANoid* is capable of deep learning and has the ability to react and interact through language skills, giving it artificial, collective, and social intelligence. To remain on the safe side—legally, biotechnically, curatorially, and concerning problems of eventual contagion—ORLAN is working hand in hand with professionals such as the Tissue Culture & Art Project.[4]

THE TISSUE CULTURE & ART PROJECT

The formation of the artistic collective the Tissue Culture & Art Project (TC&A Project) in 1996 led in turn to the foundation of the collective's current workplace, the Art & Science Collaborative Research Laboratory (aka SymbioticA), situated at the School of Anatomy and Human Biology at the University of Western Australia, Perth, and at the Tissue Engineering and Organ Fabrication Laboratory at Massachusetts General Hospital / Harvard Medical School.[5] SymbioticA was the first institution in the world to offer artists and researchers the possibility to engage in wet biology by using tissue engineering and biotechnological tools within the surroundings of a research laboratory at a university science department. Its output is thus far dedicated to widening scientific and humanistic perspectives, particularly in the fields of bioengineering and transgenics, and producing art at the intersection of bio (nature) and tècne (art, science, and technology). SymbioticA functions as the home base for TC&A Project and has developed and applied tissue culture and tissue engineering methods to create so-called semi-living sculptures (fig. 3.7). These artworks shed light on

humanity's relationship and behavior toward partially living systems—a new category of yet-unclassified object-subjects. So far, no rights or status have been given to these semi-living organisms; they are a no-man's-land in terms of biological, legal, and ethical valuations and judgments. The production, mutation, and hybridization of the living with the nonliving and the human with the nonhuman remains a scientific and ethical balancing act.

Figure 3.7 The Tissue Culture & Art Project (hosted @ SymbioticA, School of Human Sciences, the University of Western Australia) (founded 1996, Australia), *A Semi-Living Worry Doll H*, 2000. McCoy cell line, biodegradable/bioabsorbable polymers, and surgical sutures, 2 × 1.5 × 1 cm. Courtesy the artists

Wherever it goes, semi-living art is in need of a sterile environment, as its crucial vulnerability is the lack of an immune system. Thus, TC&A Project provides museums and galleries with the necessary equipment and instructions to maintain the works. In order to protect the semi-living from its surroundings, a fully functional laboratory is an integral part of any exhibition (fig. 3.8). This involves an enclosed environment at bio-safety-level 1 provided by a sterile hood for the bioreactor.[6] In addition, the cells must be fed on a daily basis with specific nutrients and biological agents, which in turn produce waste that needs to be removed (Catts and Zurr 2002, 367; Catts and Zurr 2003, 5–6). All these tasks are either performed by the artists or carried out by museum staff, in the latter case transforming the curators into their literal definition as caregivers.

The constitutional guarantee of scientific and artistic freedom covers not only the work produced but also the effect the work produces. The effect of living art in turn generates *affect* in the viewer, resulting in socially and ethically motivated questions such as: Of what exactly does the semi-living consist? Is it alive and sentient? To whom does it belong? On a purely legal level, these questions are framed by the laws that allow tissue culturing under certain requirements and are complied with by the artists involved. There is no property right over body tissue. Research, manipulation, growth, and mutation of human cell and tissue material is allowed unless it is done before the sixteenth division of a totipotent (embryonic) cell. This is valid in the United States and most European countries, but not Germany. For example, TC&A Project had to apply to the Human Ethics Committee of the University of Western Australia, which issued an executive decision stating that the animals, humans, and materials used in their projects be treated according to the ethical rules applied to scientists.[7]

Just like any other living system, semi-living organisms are doomed. When they are publicly placed in the gallery space and exposed to voluntary human touch, they are contaminated by the fungi and bacteria in the air or on people's hands and inevitably die.[8] The removal of the semi-living from their sterile environment at the end of the exhibition has come to be known as the killing ritual: "The Killing ritual also enhances the idea of the temporality of living art and the responsibility that lies on us (humans as creators) to decide and act upon their fate" (Catts and Zurr 2003, 6).[9]

CONCLUSION

All of the works of art discussed above—Marc Quinn's blood heads, ORLAN's hybridizations, and TC&A Project's semi-living works—have proven to be exhibitable, curatable, and, if needed, preservable in the museum space. The museums who host them face biological, medical, legal, and ethical challenges, to which enlightening and promising solutions have already been given by the mere existence of these works of art. The uncontrollability of the new materials used in contemporary art practices points to the need for an

Figure 3.8 The Tissue Culture & Art Project (hosted @ SymbioticA, School of Human Sciences, the University of Western Australia) (founded 1996, Australia), bioreactor used for *Disembodied Cuisine Installation*. Installation view at *L'Art Biotech*, Nationalen Kunstzentrum Lieu Unique, Nantes, France, 2003. Axel Heise, courtesy the artists

extended catalog of vantage points to evaluate the proper handling of such artworks. The work of art in the age of genomic reproduction (as Benjamin might put it)—the duplicated, multipliable, hybridizing, and presently still thriving artworks discussed above—certainly does not lack a peculiar, and quite particular, aura. The aura is on the rise, as the potential of growth is intrinsic to these works.

NOTES

1. Pun not intended but nice.
2. The work was presented with a custom-made bioreactor, marking the head of the larger-than-life model of the Harlequin that was indicated by colorful diamond shapes on the gown.
3. Author email correspondence with ORLAN, July 27, 2016.
4. ORLAN is also working with Sub'Biotech, the Higher Institute of Biotechnologies of Paris. Author email correspondence with ORLAN, July 27, 2016.
5. The founding members were Oron Catts and Ionat Zurr; from 1999 to 2003 Guy Ben-Ary became part of the collective.
6. At bio-safety-level 1 (BSL-1), only well-characterized agents with minimal hazards to humans and the environment are in use. That's why the precautions are on a low level, consisting of washing hands, decontaminating potentially infectious agents before disposal, and a lockable door, providing limited access. BSL-1 labs do not have to be isolated from the general site. The ease and safety of maintaining such a lab makes it suitable for schools or museums.
7. TC&A Project's pledge is registered at Human Ethics Committee, Research Ethics, Research Services, University of Western Australia, Project No. 0813, September 2003. As mentioned above, neither the cells nor the tissue culture possesses an agency or identity status and neither is yet biologically or culturally classified. This is why science and the arts are given unconstrained access and modus operandi concerning these objects.

8. That is, visitors may be invited to touch the semi-living voluntarily—this is not exclusively the purview of museum workers.

9. This decision is for practical reasons, as the semi-living is not allowed to travel or cross borders and usually no one is willing to adopt it. For those feeling guilty about euthanasia, TC&A Project has developed the *De-Victimizer* (2006), a kit with instructions to build a bioreactor in which to keep the semi-living alive.

BIBLIOGRAPHY

Benjamin [1935] 2006
Benjamin, Walter. (1935) 2006. *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit = The Work of Art in the Age of Mechanical Reproduction*. Frankfurt am Main: Suhrkamp.

Bouchard 2010
Bouchard, Gianna. 2010. "ORLAN Anatomized." In *ORLAN: A Hybrid Body of Artworks*, edited by Simon Donger, Simon Shepard, and ORLAN, 62–72. London and New York: Routledge.

Catts and Zurr 2002
Catts, Oron, and Ionat Zurr. 2002. "Growing Semi-Living Sculptures: The Tissue Culture & Art Project." *Leonardo* 35 (4): 365–70. http://www.tca.uwa.edu.au/atGlance/pubMainFrames.html.

Catts and Zurr 2003
Catts, Oron, and Ionat Zurr. 2003. "Are the Semi-Living Semi-Good or Semi-Evil?" *technoetic arts—an international journal of speculative research*, no. 1, 1–12. http://www.tca.uwa.edu.au/atGlance/pubMainFrames.html.

Hauser 2008
Hauser, Jens. 2008. "Observations on an Art of Growing Interest: Toward a Phenomenological Approach to Art Involving Biotechnology." In *Tactical Biopolitics: Art, Activism, and Technoscience*, edited by Beatriz Da Costa and Kavita Philip, 83–103. Cambridge, MA: MIT Press.

ORLAN 1998
ORLAN. 1998. "Intervention" (1995). In *The Ends of Performance*, edited by Peggy Phelan and Jill Lane, 315–27. New York: New York University Press.

ORLAN 2010
ORLAN. 2010. "The Poetics and Politics of the Face-To-Face." In *ORLAN: A Hybrid Body of Artworks*, edited by Simon Donger, Simon Shepard, and ORLAN, 103–18. London and New York: Routledge.

Quinn 2007
Quinn, Marc. 2007. "Genomic Portrait." In *Signs of Life: Bio Art and Beyond*, edited by Eduardo Kac, 309–11. Cambridge, MA: MIT Press.

Self 2009
Self, Will. 2009. "Bring Me the Head of Marc Quinn!" http://marcquinn.com/assets/downloads/Bring_me_the_Head_of_Marc_Quinn_Will_Self_FULL.pdf.

4

The Eternal Metabolic Network: Fluxus, Food, and Ecofeminism

Natilee Harren

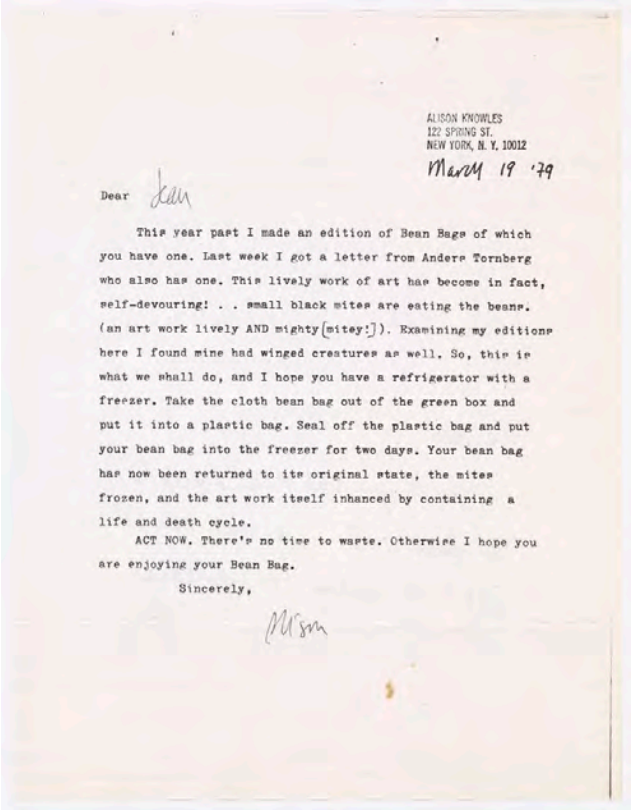
Connecting the disciplines of contemporary art history and conservation, this essay explores how living-matter artworks produced by the 1960s neo-avant-garde Fluxus collective have generated an "eternal metabolic network" in which conservators and curators are enlisted in a program of permanent creation alongside the artists. The chemical processes that ostensibly degrade the work of art in fact sustain organic life, enriching the work's conceptual value while engaging a shifting array of collaborators in its ongoing care. Special attention is given to food-related works by Fluxus artist Alison Knowles, discussed in relation to the ethics of ecofeminism and to contemporary artworks by Jae Rhim Lee, Anicka Yi, Kelly Kleinschrodt, and Emily Peacock.

◆ ◆ ◆

In 1978 Fluxus artist Alison Knowles (b. 1933) assembled the boxed edition *Bean Bag*, one among numerous works she has created involving a favorite food material, dried beans (fig. 4.1). Not long after, the small collection of legumes and related ephemera unexpectedly became the object of nonhuman consumption by attracting mites, leading the artist to send notes to collectors instructing them to place the work's bean-filled cloth bag in a freezer for two days in order to exterminate the insects. Knowles's charming letter argues that the infestation effectively enhances the work of art, now made "lively," "self-devouring," and "mighty" (pun intended) by having incorporated "a life and death cycle" into its materials and process of creation (fig. 4.2). Seen through this episode, *Bean Bag* instructively orients us to the international Fluxus collective's other, more ephemeral engagements with food, such as curated feasts, collaborative cooking experiments, and interactive and edible multiples. Food was embraced as an artistic material by many Fluxus affiliates, including George Maciunas, Benjamin Patterson, Takako Saito, Daniel Spoerri, Ben Vautier, and Robert Watts, with the full knowledge that it degrades, decays, and disappears as it is consumed by those who eat it or simply by time and the elements (Higgins 2011).

Linking the disciplines of contemporary art history and conservation, this essay speculatively explores how Fluxus artworks generate an "eternal metabolic network" in which conservators and curators are enlisted in a program of permanent creation alongside and in the wake of the artist.[1] Following from the pioneering work of Knowles and connecting it with discourses of ecofeminism and the Anthropocene, one can draw an art historical vector to contemporary art practices involving food and other biological materials as poignant means of addressing

Figure 4.1 Alison Knowles (American, b. 1933), *Bean Bag*, 1978. Box containing dried beans, gelatin silver print, and printed bag containing objects in various media, closed: 14 × 13.3 × 13.3 cm. Published by Printed Editions, New York. Gilbert and Lila Silverman Fluxus Collection Gift, Museum of Modern Art, New York, 3749.2008, © 2019 Alison Knowles



ALISON KNOWLES
122 SPRING ST.
NEW YORK, N. Y. 10012

March 19 '79

Dear Kelly

This year past I made an edition of Bean Bags of which you have one. Last week I got a letter from Anders Tornberg who also has one. This lively work of art has become in fact, self-devouring! . . small black mites are eating the beans. (an art work lively AND mighty [mitey!]). Examining my editions here I found mine had winged creatures as well. So, this is what we shall do, and I hope you have a refrigerator with a freezer. Take the cloth bean bag out of the green box and put it into a plastic bag. Seal off the plastic bag and put your bean bag into the freezer for two days. Your bean bag has now been returned to its original state, the mites frozen, and the art work itself inhanced by containing a life and death cycle.

ACT NOW. There's no time to waste. Otherwise I hope you are enjoying your Bean Bag.

Sincerely,

Alison

Figure 4.2 Alison Knowles (American, b. 1933), letter to Jean Brown about *Bean Bag*, March 19, 1979. Jean Brown papers, 1916–1995 (bulk 1958–1985), Getty Research Institute, Los Angeles (890164 and 2016.M.14). © 2019 Alison Knowles

humans' caring relationships to the environment, its objects, and one another. Such works engage an eternal metabolic network of nonhuman "living matter" in ways that do not shy away from its inevitable transformation. The ever-unfolding chemical processes that ostensibly degrade the artwork as a static object in fact sustain organic life, thus enriching the artwork's conceptual value while enlisting a shifting array of collaborators in its ongoing care.

Adopting food as an artistic material was a direct means for Fluxus artists to approach their avant-garde goal of merging art with everyday life on the way to making art—or at least its qualities of preciousness and elitism—obsolete. In 1974 the Lithuanian American Fluxus artist George Maciunas, a leading organizer of the collective, gathered together all the empty packages from food items he had consumed over the past year and called it an artwork. The assemblage, *One Year* (1973–74), is now part of the permanent collection of the Museum of Modern Art, New York. According to Maciunas, the arranged towers of (now depleted) industrially processed consumer packaged goods—everything from rice pilaf and granola to cottage cheese, preserved strawberries, and instant dry milk—were deserving of aesthetic appreciation. Indeed, *One Year* is an impressive readymade in the post-Duchampian tradition, while its homage to everyday commercial design aligns with the aesthetic orientation of Pop. But *One Year* gestures beyond those immediately visible art historical affinities. As David Joselit has argued, food was for Fluxus artists the perfect "metabolic readymade" or "bio-readymade." As a (nearly) universally accessible and approachable material able to, in Joselit's words, "articulate the metabolism of life with the global circulation of commodities," Fluxus food objects cannily addressed the symbolic social body by passing through the actual body of the individual. "It was precisely by linking individual bodies—what might be called wetware—to the hardware of global markets that Maciunas opened an aesthetic paradigm in which organic flux was metabolized as art—as *Fluxus*" (Joselit 2013, 192, 196, 192).

Indeed, Fluxus art provides a theoretical object lesson in how to manage and bear material indeterminacy of all kinds, particularly in matters of curation and conservation (Harren 2016). This was brought home to me through my encounter in 2009 with Benjamin Patterson's *Hooked* (1980, see fig. 11.8 in this volume) in the Jean Brown papers of the Getty Research Institute. *Hooked* is a readymade consumer-grade fishing tackle box filled with dozens of small objects outfitted with hooks, all of them joke lures assembled by the artist. It also contains a can of sardines in tomato sauce—sustenance for the unlucky fisherman—which had corroded to the point of leaking when I called it up from storage during my research, unwittingly releasing its putrid stench throughout the GRI special collections

reading room. Quite literally in this case, organic flux had been metabolized as art. With advice from Patterson and GRI chief curator Marcia Reed, objects conservator Albrecht Gumlich devised a conservation solution that entailed carefully documenting the old can and adding in its stead a new reference can that had been emptied, sanitized, and refilled with a weight of plaster equivalent to its prior contents (Patlán 2010). Taken alone, neither the old (exploded, degraded) can, now represented by a printed image, nor the new (imposter) can, with its false contents, constitute a total solution. Only taken together do the cans adequately convey the material truth of the original object.

The provisionality of this solution—much enjoyed by the artist, who called it "Montazuma's [*sic*] revenge" on the museum—is philosophically rooted in Fluxus artists' general attitude and approach to objects, which draws on cultures of performance.[2] Foundational to historic Fluxus practice in the 1960s and 1970s was the format of the event score, typically a brief text written in colloquial language instructing the reader to make a gesture, object, or observation within their immediate environment. Centering their practice on scores composed to be interpreted by diverse performers and makers, Fluxus artists were groundbreaking in translating performance protocols into collaboratively produced, highly interactive art objects (Harren 2020). Accordingly, Fluxus output stands in an ever-curious relationship to institutions and disciplines, existing between art history, poetry, music, dance, and performance studies; between the unique object and the edition or multiple; and between the art museum's permanent collection and other special collections, libraries, and concert halls, as well as the public domain. Ephemerality and iterativity are fundamental to the ontology of the Fluxus work. At the same time, the score as a technology of performance inscription and reanimation carries with it a long history and culture of preserving artistic intent. Fluxus artworks produce an eternally evolving system that toggles between abstract instructions (scores, notations) and substantive materials (often ephemeral, unstable, biological), necessitating a rethinking of conventional approaches to conservation in order to better honor and even embrace their essential qualities of change (Hölling 2015; Hölling 2017).

Fluxus offers ethical case studies and useful models for curators and conservators thinking through a broad array of subsequent contemporary art practices wherein the preservation of an aesthetic concept requires de-privileging specific original materials and embracing processes of transformation and even decay. The putrefying elements of Patterson's *Hooked* present an extreme conservation problem, one seemingly opposite the conceptual, text-based, more readily enduring format of the Fluxus event score. Indeed, Fluxus scores have received scholarly attention for modeling an artwork that lives on precisely because of its acceptance of change through varying interpretations, thereby de-fetishizing the work of art as a unique, original, authentic, materially fixed entity. In comparison, the collective's provisional food objects present a complementary tactic, albeit in more material terms. As Joselit writes, "Fluxus stages an art of witnessing: It testifies to the thin line between organic stuff (i.e., food) and human consciousness and sociality, and it marks the fragile border between life and its expiration as shit" (Joselit 2013, 200). By reminding us that all works of art are to some degree transitory, Fluxus engagements with food orient our attention to the ongoing, collaborative labor of caregiving that artworks engender.

In addition to calling to mind global commodity networks, as Joselit posits, Fluxus work with food illuminates the intersections of feminist and environmentalist concerns. Among Fluxus artists, Knowles, with her elevation of everyday objects and gestures, including domestic and caregiving activities related to food, was especially successful in trans-valuing the minor into something precious and worth honoring through care (Robinson 2004; Woods 2014). Her score *Proposition #2 (Make a Salad)* (1962, fig. 4.3) instructs the performer, quite simply, to "make a salad." And *The Identical Lunch* (1969) reframed her habitual midday meal as a readymade event for others to perform (as maker and/or eater): a tuna fish sandwich on wheat toast with lettuce and butter (no mayonnaise) and a large glass of buttermilk or a cup of soup. Among a multitude of works involving the cheap and lowly bean, Knowles published the editioned Fluxus object *Bean Rolls* (1963), a tea canister containing loose dry beans and small paper scrolls printed with bean imagery and trivia (prefiguring her *Bean Bag* of 1978). Referencing the vitalist material philosophy of Jane Bennett (Bennett 2010), Aurelie Matheron has argued that in works like *Proposition #2*, Knowles "conditions the durability of her performance to the inevitable decay of biological material." The work subtly critiques our common regard of food as a form of immanent waste, turning this around so that "what has been discarded matters again" (Matheron 2019, 107, 103).

Like *Proposition #2*, *The Identical Lunch*—performable by almost anyone—turns food preparation and consumption into a special, mindful experience. This is convincingly illustrated by *Journal of the Identical Lunch* (fig. 4.4), an artist's book chronicling performances of the piece, which details interactions with a particular waitress at Riss Diner

Figure 4.3 Alison Knowles (American, b. 1933), *Proposition #2 (Make a Salad)*, performed at Festival of Misfits, ICA, London, October 24, 1962. Gelatin silver print, sheet: 25.4 × 20.3 cm. Gilbert and Lila Silverman Fluxus Collection Gift, Museum of Modern Art, New York. Digital image © The Museum of Modern Art / Licensed by SCALA / Art Resource, NY, © 2019 Alison Knowles

in midtown Manhattan where the meal was originally eaten (Knowles 1971). We quickly learn that the lunch is about more than simply a sandwich, as the seemingly straightforward recipe produces endlessly indeterminate results choreographed by the restaurant staff as unwitting performers alongside Knowles. The ephemeral foodstuff that inevitably ends up as human waste is revealed as a medium that brilliantly highlights the typically invisible, unheralded labor and care behind its preparation.

Knowles's work further reveals to us the degree to which notions of the everyday are entangled with what is conventionally understood as women's experience or women's work. As part of a collaborative publishing practice that has involved Marcel Duchamp, John Cage, Pauline Oliveros, and, more recently, Rirkrit Tiravanija (another famous food artist), in 1975 Knowles coedited with composer Annea Lockwood the anthology *Women's Work* (fig. 4.5). A collection of experimental scores written by woman-identifying artists, *Women's Work* followed the upswell of second-wave feminism and more than a decade's worth of new performance practices exploring alternative approaches to scores. The anthology identified the correlations between experimental music's phenomenology of heightened awareness, an ethics of noticing and care, and female labor. Its title thus carried a double meaning, as both an anthology of compositions by women but also pieces that paid attention to so-called

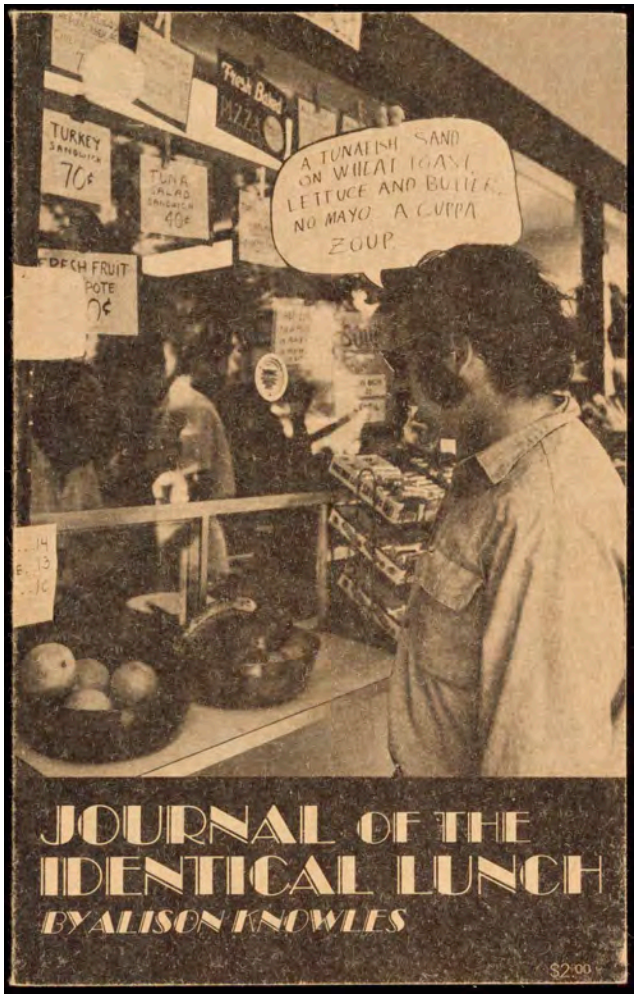


Figure 4.4 Alison Knowles (American, b. 1933), *Journal of the Identical Lunch* cover, 1971. Artist's book, 20 × 14 cm. Published by Nova Broadcast, San Francisco. © 2019 Alison Knowles

women's work as worthy of appreciation and an art form in itself. Knowles and Lockwood's project anticipated the trenchant arguments of anthropologist and labor theorist David Graeber, who has said, "We need to start by redefining labor itself, maybe, start with classic 'women's work,' nurturing children, looking after things, as *the paradigm for labor itself* and then it will be much harder to be confused about what's really valuable and what isn't" (Graeber 2014, my emphasis). In the realm of art, the kinds of socially oriented, participatory, communitarian activities that are celebrated under the terms of relational aesthetics or social practice may be viewed as simply reframing what has been traditionally considered women's work, long undervalued while being absolutely essential to the functioning of society.

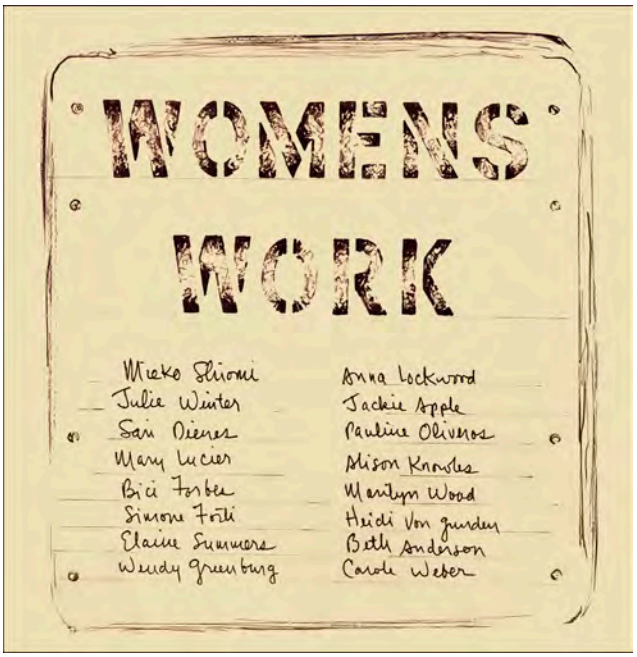


Figure 4.5 Alison Knowles (American, b. 1933) (designer and coeditor) and Annea Lockwood (coeditor), *Women's Work*, 1975. Self-published artist's book, 22 × 21 cm. © 2019 Alison Knowles

By recasting women's work as performance art, Knowles collapsed the roles of performer and caregiver, making the experience of women's work available to diverse others. Like the "maintenance art" of Mierle Laderman Ukeles, her gestures elevated to the level of art the mundane work by which women's time and energy is already consumed. In using the score format in conjunction with biological materials, however, further elisions take place once such pieces enter museum collections, with the roles of performer, beholder/participant, curator, and conservator equalizing to a remarkable degree. Engaging with Knowles's work, all partake, for example, in the making and eating of a salad or a simple lunch. For curators and conservators, minding the work of art becomes a form of domestic labor transferred to the workplace, inviting us to notice the ways in which the practical and disciplined care of arts professionals is fundamentally gendered, aligned with what we traditionally think of as women's work regardless of whether or not that work is performed by those who identify as women.

If Knowles's Fluxus practice resonated with concerns of both the feminist and the environmentalist movements unfolding contemporaneously in the 1960s, by the 1970s her imbrication of female-associated forms of caregiving, management of biological processes and materials, and acceptance of metabolic decay as a fundamental condition of life resonated with the emerging discourse of ecofeminism. From its beginnings in the mid-1970s, ecofeminist theory and activism have strengthened connections between feminism, environmentalism, and broader social justice struggles by identifying the parallels among marginalized human populations, on the one hand, and on the other, entities in and of nature that have been marginalized, colonized, polluted, or otherwise exploited (Warren 1997; Adams and Gruen 2014). As a vibrant, evolving discourse, ecofeminist frameworks and methodologies have since aligned with renewed awareness of Indigenous and racialized knowledge and the decentering of anthropocentric frameworks in favor of new materialisms and object-oriented ontologies. The ecofeminist ethic of Knowles's work—its attention to and care for biological matter, its radical empathy with nature—means that "the work" in both its material and processual dimensions (the physical artwork and the labor that sustains it) do not end. Such an approach opposes the techno-futuristic aesthetic of artists such as ORLAN or Stelarc, whose work typically comes to mind when we think of contemporary bioart and its approach to living matter, which seeks to artificially extend life through complex technological, genetic, or other biological modification. Taking a different tack, Fluxus artists have paid attendant, appreciative witness to ruin, occupying us with quite simple means of caring for and maintaining the material world and its beings while simultaneously accepting the fate of their degradation and decay.

If, as an avant-garde, Fluxus was invested in integrating art into everyday life, its food objects understood life in terms of biotic networks. As such, Fluxus food art's embrace of metabolic transformation and ruin stands as a compelling precedent (one perhaps more appropriate than bioart's speculative science) for a number of contemporary art practices that employ biological materials in ways that similarly honor the aesthetics of decay and take this as the basis for multispecies collaborations. One thinks, for example, of Jae Rhim Lee's *Infinity Burial Suit* (2008–ongoing, fig. 4.6), a jumpsuit adorned with mushrooms that have been adapted to consume the wearer's hair, nails, and skin, such that upon death, their body will be actively broken down and returned to soil by the bespoke fungi. Or Anicka Yi's experiments with mold as a material, including in sculptural works such as *Grabbing at Newer Vegetables* (2015, fig. 4.7), which utilizes bacteria collected from the artist's network of female friends and colleagues to cultivate gorgeous, grotesquely fascinating messages and visual designs. Other artists, including Kelly Kleinschrodt and Emily Peacock, have embedded human-generated biological materials in soap-based artworks that explicitly link living matter with performative gestures of care and remembrance.

Kleinschrodt's soaps, made with the artist's own breast milk, translate intersubjective maintenance acts of nutrition and hygiene into the form of beautiful objects for contemplation that are also extremely vulnerable to their environment (fig. 4.8). Peacock's soaps, poured into simple marble vessels, cradle within them amounts of her son's umbilical cord and placenta, her husband's hair, and her mother's cremated remains, looking generationally both forward and back to metabolic processes of the individual body that reach beyond the self to entangle others (fig. 4.9). These works remind us of the always astonishing proximity of caregiving and death. With exquisite tenderness, they acknowledge the entropic inevitability that we (and they) will perish someday. At the same time, fittingly, their deliberate fragility activates a circuit of care for the object that mirrors the very activities that inspired their creation.

Figure 4.6 Jae Rhim Lee (South Korean, b. 1975), *Infinity Burial Suit*, 2008–ongoing. Custom garment infused with mushroom mycelium, dimensions variable. Collection of the artist. Courtesy the artist

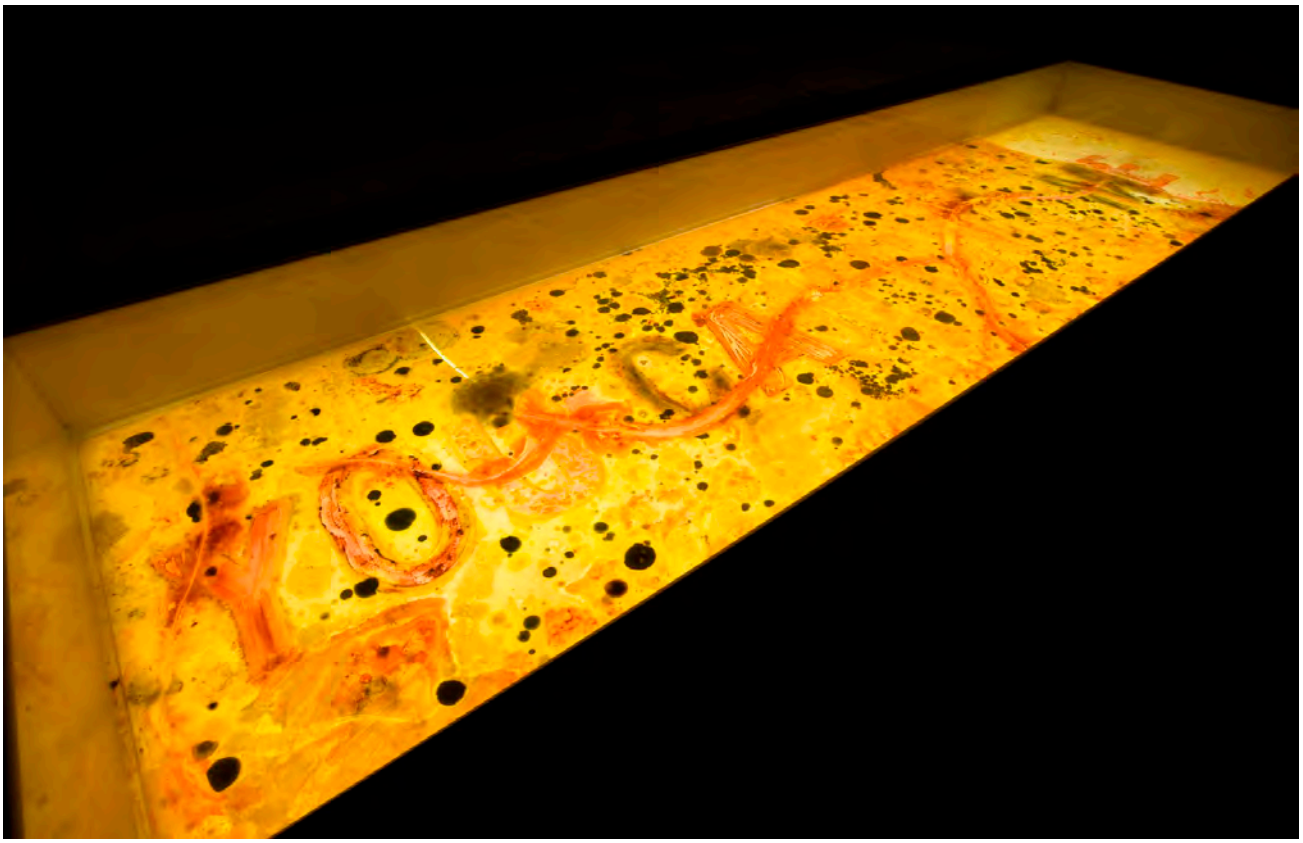


Figure 4.7 Anicka Yi (Korean American, b. 1971), *Grabbing at Newer Vegetables*, 2015. Plexiglas, agar, female bacteria, and fungus, 214.6 × 62.2 cm. © Anicka Yi, courtesy the artist, Gladstone Gallery, New York and Brussels, and 47 Canal, New York

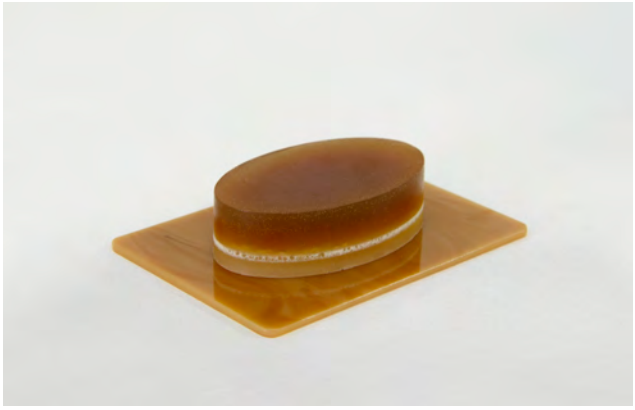


Figure 4.8 Kelly Kleinschrodt (American, b. 1983), *breastmilksoap, variation IV (for Eliotte)*, 2013. Glycerin, breast milk, honey, castor oil, and acrylic, 5.1 × 14 × 10.2 cm. Collection of Candace Worth. Courtesy the artist

Figure 4.9 Emily Peacock (American, b. 1984), *Smother: My mother's ashes*, 2019. Soap, ashes, marble, and custom-flocked triangle table, 91.4 × 35.6 × 7.6 cm. Collection of the artist. Courtesy the artist

The anthropologist Anna Lowenhaupt Tsing has illuminated parallel dynamics in her ethnography of the communities of foragers and dealers that have sprung up around the wild harvesting and trade of the treasured matsutake mushroom, which thrives in forests (of Oregon, China, Japan, and beyond) that have been ruined by the logging industry. In late or post-capitalist/industrial landscapes of "transformative ruin," it is only "assemblages of species" that survive because they have adapted via "contaminated diversity," a paradoxical form of enrichment in the wake of pollution. She writes, "Staying alive—for every species—requires livable collaborations. Collaboration means working across difference, which leads to contamination." In addition to foregrounding symbiosis as the rule of nature and not the exception, Tsing further argues that "precarity *is* the condition of our time" (Tsing 2015, 28, 20, emphasis in original). With it comes indeterminacy, or the unplanned nature of life's unfolding through time. Although indeterminacy is often frightening, Tsing reminds us that "indeterminacy also *makes life possible*" (Tsing 2015, 20, my emphasis).

A more recent anthology coedited by Tsing, *Arts of Living on a Damaged Planet* (2017), opens with an illustration of an indeterminate musical score by John Cage, an experimental composer and progenitor of Fluxus. The work, *Fontana Mix* (1958), is in fact composed of overlaid transparencies that combine a tightly gridded rectangle with a wild web of curved lines and a fixed constellation of individual dots. In the context of Tsing's volume, the curious graphic suggests how, in nature, infinite forms of indeterminacy are achieved through the overlay of multiple life systems or ecologies: humans, individual animals, plants, environments, and atmospheres or microclimates. But we might also relate this model to the indeterminacies that arise when artworks rendered in diverse materials encounter and move through various institutional systems, populated by human actors with all their individual investments. Tsing and her coauthors argue that "to survive, we need to relearn multiple forms of curiosity" and become experts in the art of noticing, attuned to the complexity of "multispecies entanglement" (Tsing et al. 2017, G11). In the development of organisms—and, arguably, human culture too—nature selects and privileges successful *relationships* rather than singular individuals or entities. Correspondingly, the radical forms of multispecies collaboration that define living-matter artworks render obsolete our conventional notions of the autonomy of the work of art. Thus it may help us in our work (as conservators, curators, scholars, or otherwise) to understand collaboration as extending not only to our near-at-hand colleagues but also to the very materials with which we are dealing, including their inherent microbial agents. With the aforementioned examples in mind, especially the signal work of Knowles, the ecofeminist ethic behind this work demonstrates that the artwork reconceived as an eternal metabolic network haltingly lives on—not despite but *because of* the collaborative proposition of its ongoing decay, transformation, and regeneration (fig. 4.10).

Figure 4.10 Alison Knowles (American, b. 1933), *Proposition #2 (Make a Salad)*, performed at MoMA PS1, New York, in collaboration with Julia Sherman and Salad for President, 2014. © 2019 Alison Knowles

NOTES

1. This term adapts the language of Fluxus affiliate Robert Filliou, who once imagined all conceptual artists to be participants in a global "eternal network" of "permanent creation," which links all their actions—artistic and nonartistic, well and badly executed—into a continuous creative gesture (Fredrickson 2019).

2. Email from Benjamin Patterson to the author, November 30, 2009.

BIBLIOGRAPHY

Adams and Gruen 2014
Adams, Carol J., and Lori Gruen, eds. 2014. *Ecofeminism: Feminist Intersections with Other Animals and the Earth*. New York: Bloomsbury.

Bennett 2010
Bennett, Jane. 2010. *Vibrant Matter*. Durham, NC: Duke University Press.

Fredrickson 2019
Fredrickson, Laurel Jean. 2019. "Life as Art, or Art as Life: Robert Filliou and the Eternal Network." *Theory, Culture & Society* 36 (3): 27–55.

Graeber 2014
Graeber, David. 2014. "Spotlight on the Financial Sector: Did Make Apparent Just How Bizarrely Skewed Our Economy Is in Terms of Who Gets Rewarded [interview with Thomas Frank]." *Salon*, June 1, 2014, https://www.salon.com/2014/06/01/help_us_thomas_piketty_the_1s_sick_and_twisted_new_scheme/.

Harren 2016
Harren, Natilee. 2016. "The Provisional Work of Art: George Brecht's Footnotes at LACMA, 1969." *Getty Research Journal*, no. 8, 177–97.

Harren 2020
Harren, Natilee. 2020. *Fluxus Forms: Scores, Multiples, and the Eternal Network*. Chicago: University of Chicago Press.

Higgins 2011
Higgins, Hannah. 2011. "Food: The Raw and the Fluxed." In *Fluxus and the Essential Questions of Life*, edited by Jacquelynn Baas, 13–21. Hanover, MA: Hood Museum of Art.

Hölling 2015
Hölling, Hanna. 2015. *Revisions—Zen for Film*. New York: Bard Graduate Center.

Hölling 2017
Hölling, Hanna. 2017. *Paik's Virtual Archive: Time, Change, and Materiality in Media Art*. Oakland: University of California Press.

Joselit 2013
Joselit, David. 2013. "The Readymade Metabolized: Fluxus in Life." *RES: Anthropology and Aesthetics*, nos. 63/64, 190–200.

Knowles 1971
Knowles, Alison. 1971. *Journal of the Identical Lunch*. San Francisco: Nova Broadcast.

Matheron 2019
Matheron, Aurelie. 2019. "Performing Waste, Wasting Performance: The Ecology of Fluxus." *Resilience: A Journal of the Environmental Humanities* 6 (1): 102–17.

Patlán 2010
Patlán, Lorena. 2010. "Career Profile: Albrecht Gumlich, Objects Conservator." *Iris: Behind the Scenes at the Getty*, November 24, 2010, http://blogs.getty.edu/iris/career-profile-albrecht-gumlich-objects-conservator/.

Robinson 2004
Robinson, Julia. 2004. "The Sculpture of Indeterminacy: Alison Knowles's Beans and Variations." *Art Journal* 63 (4): 96–115.

Tsing 2015
Tsing, Anna Lowenhaupt. 2015. *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton, NJ: Princeton University Press.

Tsing et al. 2017
Tsing, Anna Lowenhaupt, Heather Swanson, Elaine Gan, and Nils Bubandt, eds. 2017. *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*. Minneapolis: University of Minnesota Press.

Warren 1997
Warren, Karen J., ed. 1997. *Ecofeminism: Women, Culture, Nature*. Bloomington: Indiana University Press.

Woods 2014
Woods, Nicole L. 2014. "Taste Economies: Alison Knowles, Gordon Matta-Clark and the Intersection of Food, Time and Performance." *Performance Research: A Journal of the Performing Arts* 19 (3): 157–61.

5

Plump and Pliant: The Preservation of Bacterial Cellulose in Textile Bioart

Courtney Books

An innovative newcomer to textile materials, dehydrated bacterial cellulose decays at a rate prohibitive to performance art and exhibition. This paper presents collaborative research realized between the art conservation department at Queen's University in Kingston, Ontario, and the Speculative Life Biolab at Concordia University in Montreal. Results produced an immersion treatment for bacterial cellulose that allows the material to persist externally from fluid containment while preserving vital qualities of pliancy and fluid retention, thus achieving longer functionality as a wearable, performance-ready textile. This case study explores the role that conservation and future collaborations may perform in the development and preservation of biomaterials.

◆ ◆ ◆

Bioart and preservation are unnatural co-players. Distinguished from the control and malleability of biomimetic art, bioart attempts to harness the quasi-uncontrollable growth of living organisms. Biological organisms, with few exceptions, represent an enemy camp for art conservation. Moreover, bioartists often embrace material degradation as an inherent aspect of an individual or iterative work. Conceptual strength is derived from the uniqueness of a living organism, and showcasing its pathway of creation, life, and inevitable decay becomes a type of performance art.

In contrast, some bioartists seek to defy the laws of ephemerality and deterioration by extending the natural life and postmortem span of their materials. A prime example is Doris Salcedo's *A Flor de piel* (2011–12), developed in collaboration with scientists. The biotextile artwork consists of thousands of rose petals sutured together with wax thread and treated with a solution of glycerin, collagen, and turpentine. Desiring that the textile remain flexible, Salcedo's studio has shared with conservators the recipe and method for processing the rose petals.[1] Conservation scientist Narayan Khandekar of the Straus Center for Conservation and Technical Studies, Harvard Art Museums, subjected sample petals to the stress of induced environmental aging in order to make the prediction that each petal, many of which have already been replaced, will eventually require a surrogate (Khandekar 2016). Salcedo has granted permission to remanufacture petals, yet stresses that the piece should not lose function as textile. Curator Mary Schneider Enriquez explains: "It is the impossibility of securing the presence of the absent body and the skin of petals in a lasting physical state that confounds the viewer, and defines the success of this work" (Schneider Enriquez 2016,

129). The rose petals conceptually embody the absent flesh of a disappeared murder victim; the work is a shroud for mourning, and as soon as it loses this functionality, the concept is also lost.

In a similar vein, textile artist Astrid Lloyd constructed a garment from pomegranate peels for the performance piece *Mother* (2008, fig. 5.1). Despite continuous treatment with vegetable glycerin, the biotextile quickly showed signs of deterioration (absorbing ambient moisture, developing mold, crumbling, and resulting loss of material) and is now housed in an airtight glass case. Lloyd has expressed that the encasement is an undesired barrier but a nonnegotiable solution in order to salvage the piece as wearable and therefore performance-ready. After future manifestations of the performance series, nature can be unleashed on the pomegranate peels, or in the artist's words: "Like skin, it should age."[2]

Figure 5.1 Astrid Lloyd (Canadian) *Mother*, 2008. Pomegranate peels stitched and treated with glycerin, pictured here as performed in *Mother, after Natalie Barney*, 2010. Digital print from digital photo taken by Bob Siemens, 76.2 × 63.5 cm. © Astrid Lloyd

Salcedo and Lloyd represent a clear desire on the part of some artists to extend not only the lifetimes of their ephemeral materials but also degrees of the physical plasticity of biological matter. Biotextiles and the use of cellulosic (plant- or bacteria-derived) biofilms exemplify a subset of bioart where the continued functionality and perception of the material as *textile* relies upon preservation.

BACTERIAL CELLULOSE: A TEXTILE BIOFILM WITH INHERENT VICE

In 2017 textile artist WhiteFeather Hunter and biodesigner Théo Chauvirey began experimenting with bacterial cellulose at the Speculative Life Biolab, a research cluster within the Milieux Institute for Arts, Culture and Technology at Concordia University, Montreal. They co-created *Bucci* (2017, fig. 5.2), a two-piece garment fashioned from bacterial cellulose biofilm and 3D-printed bioplastic.[3] While the skirt of the garment was seemingly stable, the shirt, made from thinner biofilm and processed differently (that is, unwashed), was actively falling apart within weeks (fig. 5.3). Why did half of *Bucci* degrade more rapidly? Would the bottom half succumb to the same fate as the top, and when? Could bacterial cellulose be manipulated to last longer, allowing for a longer exhibition duration?

Figure 5.2 WhiteFeather Hunter (Canadian, b. 1972) and Théo Chauvirey (French, b. 1991), *Bucci*, 2017. *Acetobacter xylinum* bacterial cellulose with 3D-printed PLA embedded designs. © WhiteFeather Hunter

Figure 5.3 WhiteFeather Hunter (Canadian, b. 1972) and Théo Chauvirey (French, b. 1991), detail of *Bucci*, 2017. Deteriorating *Acetobacter xylinum* bacterial cellulose with 3D-printed PLA embedded designs. © WhiteFeather Hunter

Dehydrated bacterial cellulose, also known as "kombucha leather," as it is the same substance used to ferment kombucha tea, has surged in popularity as a new textile material due to properties akin to animal and plant-based leathers. Bacterial cellulose is flexible, sustainable, biodegradable, and widely considered ethically responsible. Artists such as Susan Lee, with her TED Talk "Grow Your Own Clothes," have popularized economical and easily reproducible production methods (Lee 2011). When grown in a large vat, the biofilm colony, scientifically termed a pellicle and commonly referred to as a SCOBY (symbiotic culture of bacteria and yeast), is large enough to produce human-size clothing. Through an aerobic fermentation process that converts simple carbohydrates into acetic acid and carbon dioxide gas, the water-insoluble material grows from an active yeast culture that colonizes in layers to create a cellulosic biofilm. The pellicle conforms to the shape of the incubation vessel as it floats to the top of the air-liquid interface, suspended by the

carbon dioxide gas and blocking competitor access to the sugar-laden food source.

Bacterial cellulose differs from plant cellulose in that it contains no hemicellulose or lignin and is characterized by a higher degree of crystalline structure and polymerization due to the cellulose grouping in microfibril ribbons; this lends the biofilm impressive strength and flexibility (Keshk 2008). The hydrated pellicle is firm and fleshlike in texture and sandy-pink hued. Dehydrated pellicles darken to deep sienna-umber hues, lose up to 95 percent of fluid mass, and remain semiflexible. Microscopic photo documentation of cross sections taken from bacterial cellulose illustrates the changes in topographical morphology that occur with natural dehydration; the significant change in texture and hue is evident in images of untreated, hydrated bacterial cellulose (fig. 5.4) versus untreated, dehydrated bacterial cellulose (fig. 5.5). The rate at which the material deteriorates over time varies according to processing, thickness, and environment, but can occur within weeks, as seen in the case of *Bucci*. Critically, when the dehydrated material is exposed to ambient moisture fluctuation or skin contact, the biofilm's cellular structure, weakened during dehydration, degrades and the biofilm fractures. This vulnerability results in a short time allowance for static gallery display and an even shorter allowance when worn on a human body. The inherent vice of water vulnerability is still considered the leading obstacle for artists working with this material.

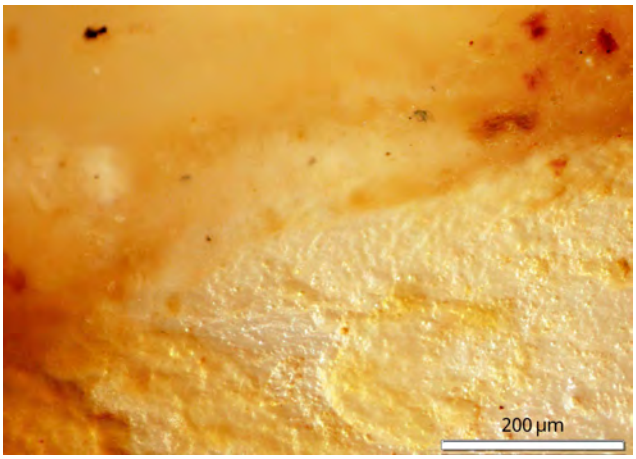


Figure 5.4 Photomicrograph of untreated cellulose, biologically active (control sample); reflected light, 200X. © Courtney Books, Queen's University, Kingston, Ontario, 2017

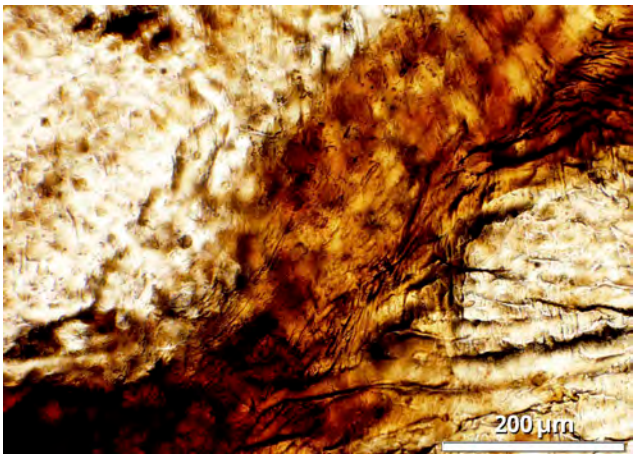


Figure 5.5 Photomicrograph of untreated, dehydrated cellulose (control sample); reflected and transmitted light, 200X. © Courtney Books, Queen's University, Kingston, Ontario, 2017

PROJECT COLLABORATION: COMBINING SPHERES OF ART CONSERVATION AND MATERIAL PRODUCTION

The degradation that eroded *Bucci* inspired the collaborative project *Plump and Pliant* (2017–18), involving the author (art conservation graduate student, Queen's University, Ontario) and WhiteFeather Hunter (interim principal of the Speculative Life Biolab). The project was driven by a common goal: to create an immersion treatment for bacterial cellulose that would allow the material to persist externally from containment (for instance preservation within a liquid bath, storage and/or exhibition inside a hermetic vitrine, et cetera) while preserving lifelike qualities of pliancy and fluid retention. The challenge was to retain as much fluid, flexibility, hue, and texture of untreated, hydrated bacterial cellulose as possible while reducing hygroscopic properties (that is, imparting water resistance). To note, the primary aim was to *extend* the viable exhibition time of the bacterial cellulose beyond the threshold of normal degradation processes. Instead of measuring the exhibition window of the biotextile in weeks, artists could exhibit for months and plan for multiple performance-art pieces worn on human skin for longer durations. Significant longevity of the materials (up to one year or more) calls for further research.[4]

Inspired by Doris Salcedo's process created for *A Flor de piel*, *Plump and Pliant* combined materials and methodologies used in the conservation of waterlogged archaeological organic material with cellular stabilization

and dehydration materials and methodologies used in botanical, medical, and food industries (Botfeldt, Gelting, and Hovmand 2009; Giachi et al. 2010). Immersion treatments were selected and adapted from each of these fields based on potential for reducing hygroscopicity in the bacterial cellulose and to minimize cellular-wall damage experienced by the biofilm during and after dehydration.

An overarching parameter of the project was that the resulting immersion treatment method, technology, and materials should be easily reproducible, affordable, nonhazardous, and nontoxic for practicing artists. This stipulation forbade the consideration of cellular fixatives, champion (but also toxic) defenders against decay, such as turpentine, formaldehyde, or dimethyl sulfoxide.[5] In addition, vacuum-freeze drying, a preferable method of stable dehydration, was omitted due to relative inaccessibility and biolevel safety codes observed by the Speculative Life Biolab (for instance prohibition of removal of biologically active testing material from the laboratory).

EXPERIMENTATION: CORRALLING BACTERIA INTO COOPERATION

Test samples of bacterial cellulose used for the research project derived from the same pellicle, grown in the Speculative Life Biolab and sourced from RISE *Acetobacter xylinum* bacteria/yeast. Significantly, this was the same cellulosic body used to create the top piece of *Bucci*—further verifying the success or failure of the experimental treatments. Ninety-nine samples were cut from the main pellicle (each sized 5 × 5 × 0.5 to 1 cm) and rinsed with distilled water. Half of the samples were sterilized by autoclaving the biofilm at high-pressure steam held at 121°C, while the remaining half of samples were allowed to remain biologically "active" (with bacterial yeast strains thriving or dormant). Each immersion solution was tailored with three main components—a plasticizer, a consolidant, and a preservative—all designed to protect the cellular structure during dehydration and to decrease hygroscopicity.[6] Concomitant antifungal properties imparted to the test samples by the immersion treatments were also observed and documented.

The treatment method relied upon cyclic displacement of fluids; alternating between immersion and dehydration stages, the aqueous incubation fluids (mainly acetic acid, leftover sugars, and bacterial strands) were driven out of the samples via capillary forces and replaced with preservative materials (listed below). Dehydration was performed by air drying or with artificial-aging ovens. Samples were often treated first with solvents (for instance acetone or mineral spirits) followed by the immersion baths. To encourage higher penetration and saturation of treatment materials, immersion solutions were gently heated or kept for longer dwell times at room temperature (fig. 5.6). Immersion materials included collagens, glycerol, alcohols, cellulose ethers, and low-molecular polyethylene glycol (PEG: the long-standing darling for consolidation treatment of wood and leather conservation) as well as common preservatives used for fruits and vegetables such as sucrose, mannitol, and waxes.

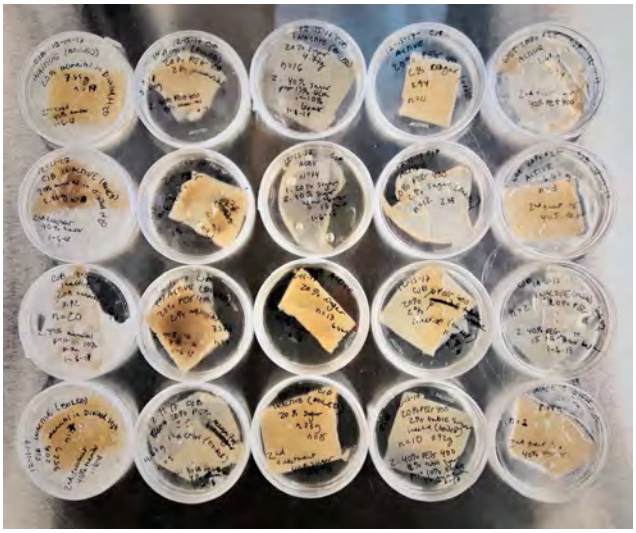


Figure 5.6 Array of bacterial cellulose samples in petri dishes during immersion solution treatment. © Courtney Books, Speculative Life Biolab, Concordia University, Montreal, 2018

Technical analyses used to map the pilot results included ASTM cantilever bend tests to evaluate preserved or improved textile pliancy, mass/weight calculations to indicate fluid retention, cross sections and polarized light microscopy (PLM), and ultraviolet microscopy (UVM) to monitor adjustments in surface morphology and cross-contamination.[7]

RESULTS: A NEW, BIOLATEX-LIKE TEXTILE MATERIAL

Three qualifiers were used to evaluate success: retention of fluid, flexibility, and "lifelike" texture; reduction of hygroscopic properties; and anti-biodeteriogen properties (that is, treated samples that avoided becoming hosts for raging bacterial parties). Of the twenty-one different immersion treatments ultimately tested, three were deemed successful enough to repeat using new samples (deriving from the same pellicle and also from a different pellicle) in order to confirm results. It is noteworthy that

several discarded treatments, although deemed losers by the parameters of the project goals, produced materials that were of interest to the consulted artists. For example, despite substantial fluid loss, collagen/glycerol treatments produced a strength and flexibility similar to wearable latex, while treatments with alcohol and PEG produced a semi-firm, gelled texture that was, despite increased tackiness, most suggestive of the lifelike "plumpness" of the original wet biofilm. The dynamic nature of working in a biolab full of practicing artists allowed for a proverbial recipe exchange—some artists recorded discarded treatments (for instance the rubbery, cellulose-nitrate-like results of samples treated with pure collagen) for future art applications.

All treatments aesthetically altered the cellulose to some degree—challenging the goal of retaining lifelike verisimilitude. According to Hunter and Chauvirey (whose voices here are operative as artists), some changes, including in color and in texture, were deemed acceptable as long as the material's resistance to degradation was strengthened and it "read" as biomaterial: flexible, pliant, and, ideally, plump (indicative of hydration). After the second-phase testing of the three initially successful candidate treatments, one emerged victorious.

Ultimately, a trifecta involving collagen, glycerol, and a PEG manifested the most promising results. Despite fluid loss (approximately 60 percent), the aesthetics of hue and surface morphology in these samples were the most unaltered in comparison with untreated, hydrated bacterial cellulose, as visible in the photomicrograph shown in fig. 5.7 (compare with fig. 5.4). This new form of treated bacterial cellulose exhibited a notable increase in flexibility and tensile strength (fig. 5.8) and proved to be water resistant (but not water impermeable). Since untreated cellulose has shown to deteriorate within hours of skin contact, samples prepared with the winning treatment were worn directly on skin for twenty-four hours in order to demonstrate that the treated material could withstand longer exposure to the microenvironment of human skin (moisture, salts, et cetera). At the time of this article submission (approximately three years later), these samples have shown no visible or tactile signs of degradation.[8] The new treated bacterial cellulose has achieved a tentative permanence that, while subject to eventual decay, allows for further use in performances and exhibition.

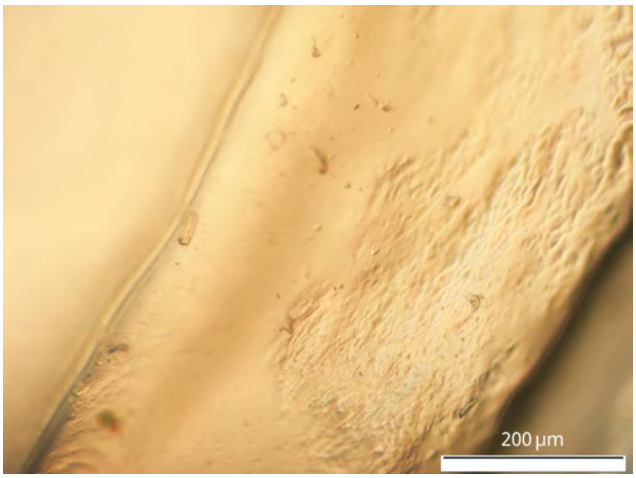


Figure 5.7 Photomicrograph of cellulose treated with PEG, collagen, and glycerol, sterilized and oven dried; reflected and transmitted light, 200X. © Courtney Books, Queen's University, Kingston, Ontario, 2017

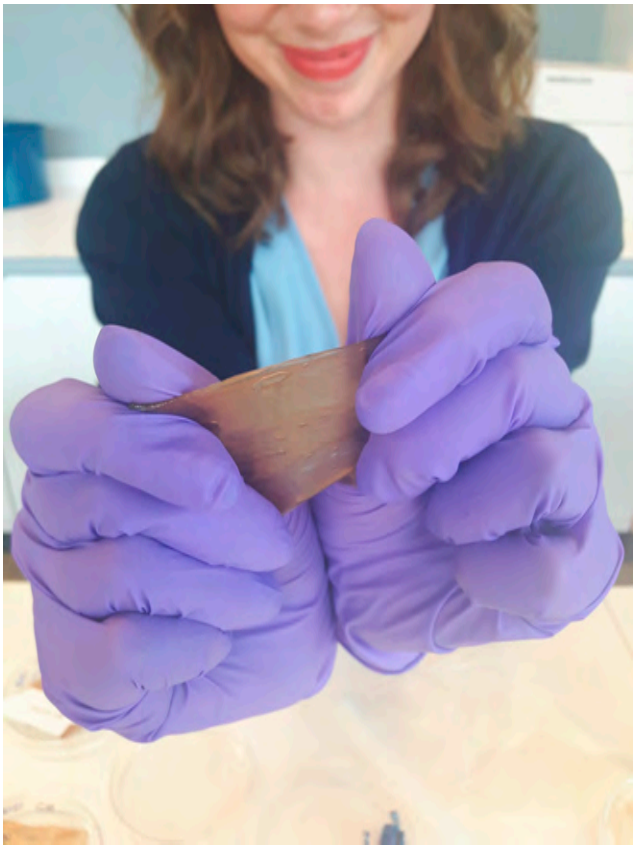


Figure 5.8 Physical demonstration of tensile strength, cellulose treated with PEG, collagen, and glycerol. © WhiteFeather Hunter, Speculative Life Biolab, Concordia University, Montreal, 2018

EVOLUTION: CONTINUED APPLICATION AND DEVELOPMENT

The intersections between biofilms and art conservation continue to multiply as new applications for cellulosic biofilms and bio-produced gels continue to pepper conservation literature. Cleaning techniques for treating paper, paintings, and objects that involve rigid, polysaccharide-based biofilms (for instance agar, low-acyl gellan gum) rely upon the capillary action of the still-hydrated gel to perform as a poultice.[9] Archaeological conservators have recently attempted to consolidate waterlogged wood by growing the bacterial cellulose internally within the object (Gregory et al. 2017). Conservation scientists have explored dehydrated bacterial cellulose as an alternative lining material to Japanese paper (Santos et al. 2016a; Santos et al. 2016b). The potential of treated bacterial cellulose for serving as strength-reinforcing repair material for hygroscopic leathers, parchments, and textiles holds exciting promise.

Perhaps the most compelling results branching from the *Plump and Pliant* study rest not with what has been created but with what is yet to come. Montreal-based medical scientists, working in collaboration with Hunter, have proposed researching the treated bacterial cellulose as a potential patch material applied to internal tissue repair of mammalian organs.[10] Hunter and Chauvirey have received requests to apply the treatment in commissioned garments for an annual festival in Ottawa affectionately named Boochfest.

Moreover, Hunter developed adaptations of the treatment in order to tailor specific properties better suited for a collaboration with bioartist Tagny Duff. This collaboration occurred for the occasion of the 2019 exhibition *MATTER(S) matter(s): Bridging Research in the Arts and Sciences* at the Eli and Edythe Broad Art Museum at Michigan State University, Lansing. The work, *Wastelands*, is an ongoing project created by Duff to include multiple iterations and collaborations (Duff 2018).[11] In this iteration, Hunter augmented the recipe proportions of the treated bacterial cellulose to enhance properties of elasticity. She constructed cordage and hand-stitched carriers (fig. 5.9, fig. 5.10) to house Duff's biogas generators—tiny glass vessels that house excrement, viruses, and methane. In this case, the conceptual performance of the treated bacterial cellulose is implicated in the viewer's perceived network of anxiety surrounding containment and exposure to bacteria—in the project, the success of the rendered biomaterial transforms it into an effective container of another biomatter—all the while able to be worn, as designed, on an incubator (a living body).

Figure 5.9 WhiteFeather Hunter in collaboration with Tagny Duff, *Wastelands*, 2016–ongoing. Bag 1 (alone without full apparatus), 2018–19. Treated bacterial cellulose. Bioplastic bags codesigned and solely produced by WhiteFeather Hunter for the *Wastelands* project by Tagny Duff, 2018; bioplastic formula treatment for the bags researched and developed by Courtney Books and WhiteFeather Hunter, 2017. © WhiteFeather Hunter

Figure 5.10 WhiteFeather Hunter in collaboration with Tagny Duff, *Wastelands*, 2016–ongoing. Bag 2 (alone without full apparatus), 2018–19. Treated bacterial cellulose. Bioplastic bags codesigned and solely produced by WhiteFeather Hunter for the *Wastelands* project by Tagny Duff, 2018; bioplastic formula treatment for the bags researched and developed by Courtney Books and WhiteFeather Hunter, 2017. © WhiteFeather Hunter

CONCLUSION: COLLABORATION BETWEEN ARTIST, CONSERVATOR . . . AND BACTERIA?

Initially, *Plump and Pliant* was designed as a graduate thesis research project in collaboration with an interested and generous bioartist and hosting lab. The project quickly morphed into something more, shifting beyond the core goal to preserve bacterial cellulose in its original, familiar form to the new applications and possibilities of an invented material. As the author attempted to limit variables and establish controls for the project's

parameters, Hunter emphatically pushed in the direction of the experimental in pursuit of results that were actually desirable and *applicable* for a practicing artist. Without this constant retuning, the project may have remained stagnant instead of leapfrogging between artistic communities and spreading preservation methodologies into productions of bioart.

The entanglement of bioart, preservation, and ethics will continue to develop as the genre grows and innovates. More biomaterial will fall under the purview of preservation; working alongside an artist at the creation point of a material offers invaluable opportunities in negotiating common goals. Yet there also exists an often-unacknowledged player in such projects: the bacteria. Each fermentation of the bacterial cellulose produces an irreproducible iteration of the art. A certain degree of uniqueness, and of success (or failure), is owed to the unpredictable, uncontrollable role performed by the bioagent as directed by the bioartist.

Contemporary ethical awareness of the bacterial role in material processing is ever more nuanced as concerned societies move toward sustainable, environmentally conscious products. Are we comfortable growing and killing a bacterial colony to make a kombucha "leather" handbag? Are we *more* comfortable if the dead colony is repairing a historical artifact? Our materialism is spun from an unwilling or unknowing participant, and how this material production differs from animal husbandry or plant horticulture is highly debatable. The bioartist group known as the Tissue Culture & Art Project ends the exhibition of performance pieces such as *Victimless Leather* (2004) with a "killing ritual" of cellulose and tissue that rips apart the illusion that their art objects are in a sense "play." Paola Antonelli, who curated the piece at New York's Museum of Modern Art in 2008, lamented: "[It] started growing, growing, growing until it became too big. And [the artists] were back in Australia, so I had to make the decision to kill it. And you know what? I felt I could not make that decision. I've always been pro-choice and all of a sudden I'm here not sleeping at night about killing a coat. That thing was never alive before it was grown" (Dixon 2016, 174).

When asked for her opinion, Hunter will state that she's as comfortable with the killing ritual as she is with washing her hands (given that the two acts involve the same level of destruction). Rather, a shared discomfort for Hunter and the author derives from calling the substance "vegan" or claiming that this material is inherently more sustainable than an alternative—too many variables remain. In this light, conceptualization of bacterial cellulose as a living colony is brushed aside in the quest to promote the production of each new material as neutralized, as safe from reproach.

In her 2019 article "Culturing Creativity, and a Little Bit of Shit-Stirring," Hunter introduces the concept of the bacteria as another collaborator in order to dismantle it as anthropomorphism or aggrandization within a hip "lifestyle" or "next big thing" framework: "I might say that *Acetobacter xylinum*, rather than functioning as a 'collaborator' or solution to any global or future problem, instead acted as a metaphorical leavening (and leveling) agent, fermenting new levels of cross-disciplinary (and anti-disciplinary) work that both elevated and re-calibrated each human collaborator and our creations" (Hunter 2019, 10). Hunter instead privileges the agency of the human players, celebrating their ability to interact and co-compose—a fitting note to rest upon until culturing the next bioexperiment.

NOTES

1. Salcedo's recipe, summarized as quoted: "The solution is a multistep process that involves treating the petals first with turpentine, followed by glycerin and collagen, followed by an immersion in shellsol and pigment; then pressing them between sheets of Mylar with glycerin and pigment; then soaking and saturating them with pigmented wax; before finally flattening them in between high-density foam for a month. The petals are stitched together with waxed thread, and the juncture between the petal and thread is also waxed" (Khandekar 2016, 150).
2. Author telephone call with Astrid Lloyd, October 30, 2017.
3. For more work by the artist and researcher WhiteFeather Hunter see https://www.whitefeatherhunter.ca/bio-tech. For more on the research and collaborations engendered by the Speculative Life Biolab, such as a documentary by Théo Chauvirey on the creation of *Bucci* (*Beauty and the Booch* [2019]), see https://speculativelifebiolab.com/2019/02/13/beauty-and-the-booch-is-live/ and https://speculativelifebiolab.com/.
4. Future analysis conducted with electron microscopy (for instance ESEM) may provide advanced topographical mapping of the alterations made to the bacterial cellulose. Sorption isotherm testing may be useful to establish acceptable moisture content thresholds for the exhibition of bacterial cellulose (treated or untreated).

5. Additional eliminated materials (due to prohibitive costs) included trehalose (sugar) and genipin (cross-linking agent). The polyol D-mannitol ≥98% (Sigma-Aldrich) was tested as a consolidant but ultimately eliminated due to the requirement that all bacterial cellulose samples be clinically sterilized before treatment; according to medical research dating from the 1980s, mannitol treatments can lead to combustive activity when they involve carbon-dioxide-gas-producing live cultures (La Brooy et al. 1981).

6. Casts of pure immersion mixtures were poured into petri dishes in order to compare and analyze the interaction of cellulose with immersion fluids.

7. ASTM testing was completed using: American Society for Testing and Materials, ASTM Committee D-13 on Textiles, and American Society for Testing and Materials 1988 Annual Book of ASTM Standards: Textiles: Yarns, Fabrics, and General Test Methods. Philadelphia: ASTM. Cross sections/polarized light microscopy documentation was captured using: Olympus microscope (model BX53) with a semi-motorized fluorescence microscope Olympus DP73 camera (CellSens software). Light sources included polarized light or reflected light, and ultra-fluorescence filters.

8. A sample treated with the winning trifecta of collagen, glycerol, and a PEG was cut in half with a scalpel (resulting in approx. 2.5 × 5 × 0.75 cm) and taped to the author's and Hunter's upper left chest. The samples were worn for twenty-four hours and were examined two weeks later under polarized light microscopy for evidence of degradation such as layer separation, micro-cracking, and moisture bloom; no differences between the samples before and after skin contact were observed. Visual (to the naked eye) and tactile inspection indicate no changes as of spring 2021, approximately three years post-treatment.

9. For a comprehensive view on the use of hydrated and semi-hydrated biofilms in conservation see *Gels in the Conservation of Art* (Angelova et al. 2017).

10. In 2007 the performance artist Stelarc had a third ear, engineered from polyethylene scaffolding and stem cells harvested from the artist's body, implanted into his arm; this is widely considered a generative work that sparked heated ethical debate as well as further experimentation using cellular scaffolding and implants across bioart communities. See Stelarc.org and the book *The Cyborg Experiments: The Extensions of the Body in the Media Age* (Zylinska 2002). Similarly, the ethics and biocompatibility of grafting or implanting plant or bacteria-derived tissue within human tissue are also considered polemic. Many artists encounter legal obstacles to any work involving human tissues. For literature on the topic published by bioartists and medical researchers see Modulevsky, Cuerrier, and Pelling 2016; Hickey and Pelling 2019.

11. *Wastelands* by Tagny Duff is an ongoing bioart project that imagines how a dystopian future, five hundred years advanced, generates biogas. The project involves varied collaborative research, fabrications, and installations. For more on the project and on Duff's art see https://tagnyduffcom.wordpress.com/2017/10/12/first-blog-post/.

BIBLIOGRAPHY

Angelova et al. 2017
Angelova, Lora V., Bronwyn Ormsby, Joyce H. Townsend, and Richard Wolbers. 2017. *Gels in the Conservation of Art*. London: Archetype.

Botfeldt, Gelting, and Hovmand 2009
Botfeldt, K. B., U. Gelting, and I. Hovmand. 2009. "Conservation and Restoration Methods Used for Waterlogged Archaeological Leather: A Retrospective." In *Proceedings of the 10th ICOM Group on Wet Organic Archaeological Materials Conference, Amsterdam, 2007*, edited by K. Strætkvern and D. J. Huisman, 707–21. Amsterdam: Rijksdienst voor Archeologie, Cultuurlandschap en Monumenten.

Dixon 2016
Dixon, Deborah P. 2016. *Feminist Geopolitics: Material States*. London: Routledge.

Duff 2018
Duff, Tagny. 2018. "Wastelands: A Dirty Future." *Centre for Sustainable Practices in the Arts Quarterly* 21 (September 18, 2018): 31–35.

Giachi et al. 2010
Giachi, Gianna, Chiara Capretti, Nicola Macchioni, Benedetto Pizzo, and Ines Dorina Donato. 2010. "A Methodological Approach in the Evaluation of the Efficacy of Treatments for the Dimensional Stabilisation of Waterlogged Archaeological Wood." *CULHER Journal of Cultural Heritage* 11 (1): 91–101.

Gregory et al. 2017
Gregory, David, Yvonne Shashoua, Nanna Braunschweig Hansen, and Paul Jensen. 2017. "Anyone for a Nice Cup of Tea? The Use of Bacterial Cellulose for Conservation of Waterlogged Archaeological Wood." In *ICOM-CC 18th Triennial Conference, 2017, Copenhagen*, edited by J. Bridgland. Paris: International Council of Museums. https://pure.kb.dk/en/publications/anyone-for-a-nice-cup-of-tea-the-use-of-bacterial-cellulose-for-c.

Hickey and Pelling 2019
Hickey, R. J., and A. E. Pelling. 2019. "Cellulose Biomaterials for Tissue Engineering." *Front. Bioeng. Biotechnol.* 7 (45): https://www.frontiersin.org/articles/10.3389/fbioe.2019.00045/full.

Hunter 2019
Hunter, WhiteFeather. 2019. "Culturing Creativity, and a Little Bit of Shit-Stirring." *Musings* 2019:2–10. https://www.academia.edu/41620679/Culturing_Creativity_and_a_little_bit_of_shit_stirring.

Keshk 2008
Keshk, Sherif M. A. S. 2008. “Homogenous Reactions of Cellulose from Different Natural Sources.” *Carbohydrate Polymers* 74 (4): 942–45.

Khandekar 2016
Khandekar, Narayan. 2016. “Inherent Vice and the Ship of Theseus.” In *Doris Salcedo: The Materiality of Mourning*, edited by Mary Schneider Enriquez, Doris Salcedo, and Narayan Khandekar, 141–52. New Haven, CT: Yale University Press.

La Brooy et al. 1981
La Brooy, Susan J., Fendick Avgerinos, C. B. Williams, and J. J. Misiewicz. 1981. “Potentially Explosive Colonic Concentrations of Hydrogen after Bowel Preparation with Mannitol.” *The Lancet* 317, no. 8221 (March): 634–36.

Lee 2011
Lee, Susan. 2011. “Grow Your Own Clothes.” TED Talk, March 2011. https://www.ted.com/talks/suzanne_lee_grow_your_own_clothes.

Modulevsky, Cuerrier, and Pelling 2016
Modulevsky, D. J., C. M. Cuerrier, and A. E. Pelling. 2016. “Biocompatibility of Subcutaneously Implanted Plant-Derived Cellulose Biomaterials.” *PloS one* 11 (6): e0157894. https://doi.org/10.1371/journal.pone.0157894.

Santos et al. 2016b
Santos, Sara M., José M. Carbajo, Nuria Gómez, Ester Quintana, Miguel Ladero, Arsenio Sánchez, Gary Chinga-Carrasco, and Juan C. Villar. 2016b. “Use of Bacterial Cellulose in Degraded Paper Restoration. Part II: Application on Real Samples.” *Journal of Materials Science* 51 (3): 1553–61.

Schneider Enriquez 2016
Schneider Enriquez, Mary. 2016. “Organic and Ephemeral: Salcedo’s Recent Material Challenges.” In *Doris Salcedo: The Materiality of Mourning*, edited by Mary Schneider Enriquez, Doris Salcedo, and Narayan Khandekar, 119–39. New Haven, CT: Yale University Press.

Zylinska 2002
Zylinska, Joanna, ed. 2002. *The Cyborg Experiments: The Extensions of the Body in the Media Age*. London: Continuum.

6

Some Survive, Few Are Conserved, Even Fewer Can Travel: Paradoxes and Obstacles in Maintaining and Staging Biomedia Art

Jens Hauser

Biomedia art that appropriates the most recent technologies of the life sciences updates, at first sight, art historical tropes of "aliveness" and "creation" when coming close to "life" in a very literal, biological sense. However, while museums and collectors traditionally deal with the ontological paradox that aesthetic representations made out of dead matter can, indeed, appear as alive, such strategies fail with regard to artistic modes that insist on the authenticity of their staged biological agents, functions, and processes. Such contemporary practices pose unprecedented challenges in terms of staging, conservation, and transport. In addition, they may willfully challenge institutions' status as art depositories or "cemeteries."

◆ ◆ ◆

The creation of lifelike appearances is a persistent feature in art, from early anthropomorphic statues and myths of artists' works "coming to life," to notions of the artwork as an organism in itself, to robotic and software simulations of digital media art, to, more recently, artistic artifacts created in bioscientific contexts. By means of form, material, or process, art has imagined, represented, mimicked, simulated, and quite recently actually manipulated living beings and systems, since genetics, tissue engineering, DNA chips, and so-called synthetic BioBricks have entered the repertoire of experimental artistic strategies—for which cultural institutions remain dramatically ill-equipped.

Three primary typologies of "alive" artworks exist today: representational and concept-based art, often including organic matter; process-based "dry" media art using software and hardware such as informatics and robotics to simulate lifelike behaviors via media that are not biological; and process-based "moist" media art with wetware that uses biotechnological methods to manipulate organic systems, organisms, or their constitutive parts in an aestheticized technical framework.

The first category includes the use of biological materials such as bodily fluids, food, or intentional putrefaction processes in an attempt to attribute semantic value to

unstable materials. The potentially fragile works are likely to pose serious challenges for display and shipping, but above all for preservation. However, a large part of these issues can be solved through established best practices of conservation treatment that claim "universal applicability"—for example, a methodology that consists of first characterizing an object, including its history and ideal state, followed by the creation of a realistic treatment goal accompanied by complete documentation of all steps (Appelbaum 2007, xxii, xix).

The second category can be addressed according to methodologies for preservation and reenactment of performative, digital, or time-based media art. These have been recently developed as the urgency of conserving and collecting technological art has been recognized. Here, software and hardware conservation, accompanied by artist interviews, are key when faced with rapid technological obsolescence, deterioration, and future incompatibility. Process- and communication-based art, often with expanded concepts of artistic authorship, "reduce the hitherto valid collecting criteria of longevity, authenticity, and intrinsic value to absurdity" (Serexhe 2013, 24).

Devoid of institutional advocacy, the third category lacks any coordinated methodology, since these practices cut across many disciplines, from art to natural history, medical, and design museums, media art and performance festivals, biotechnology and bioethics, and are still only supported by a few collectors ready to engage with the subsequent challenges beyond conservable objects. Some of the challenges of biomedia art present similarities to those of performance art—especially as their actual presence may not only be reenacted but "survive" in the form of documents or physical remnants (Hauser 2006). However, the various nonhuman and techno-scientific agencies of micro-performativity (Hauser 2014b; Hauser and Strecker 2020) involved in such artworks destabilize human scales (both spatial and temporal) as the dominant plane of aesthetic experience and link together the machinic and the organic (Salter 2010). The shift from organic representation to biological manipulation results in technical, institutional, regulatory, legal, ethical, bureaucratic, philosophical, and aesthetic issues with regard to museum infrastructures, the status of living organisms, tissues, and genetically modified organisms (GMOs), and their fragility when maintaining, conserving, reenacting, or shipping them.

Interestingly, the first reported historical case of genetically modified organisms exhibited as artworks in a major museum already anticipated the entanglement of today's challenges. In 1936, at New York's Museum of Modern Art, photographer Edward Steichen showed hundreds of living delphinium plants that he had bred and altered with colchicine, drawing parallels between the authentic aliveness of his photography and flower breeding. The exhibition followed his motto "art for life's sake"; the museum "reduced to showing 'art for art's sake,' to Steichen . . . [was] a mausoleum" (Gedrim 2007, 353). Steichen drove the blooms to MoMA in a refrigerated truck, and the display during the eight-day show needed to be occasionally refurbished. The museum took care to "avoid confusion; it should be noted that the *actual* delphiniums will be shown in the museum, not paintings or photographs of them" (Museum of Modern Art 1936).

The artist's desire to see purposeful genetic mutation applied to plant breeding recognized as art seems to be correlated with shipping and customs issues he had previously encountered. It is reported that Steichen was involved in an exhibition at MoMA for which he shipped Constantin Brâncuși's *Bird in Space* (1923), which was refused both duty-free entry into the United States and status as a work of art because of its lack of representative qualities, since "no feathers were visible" (Gedrim 2007, 350). Steichen's battle against the $600 penalty is therefore to be seen as a part of a larger battle to redefine aesthetics. However, his delphiniums were not for sale as art "objects," and his MoMA works "survived" as unsalable photo documentation only before they later appeared beyond the confines of the art market, in the form of commercially available, affordable seed packs under the name *Delphinium Steichen strain mix*.

Half a century later, Steichen has been rediscovered and rehabilitated as the precursor of biotechnological art by George Gessert, a painter who exchanged brushes for genetic plant hybridization in the early 1980s. In his installations of "inverted Darwinism," Gessert selects plants diametrically opposed to dominant aesthetics and the "laws" of the market. But in the age of molecular genetics and after the horrors of World War II's human experimentations, his arrangements trigger, behind their facade of beauty, reflections on eugenics and genetic selection driven by politics or fashion (Gessert 2003). Downplaying human centrality, he acknowledges "insects and wind" as equal nonhuman co-creators (fig. 6.1) and insists on keeping his seeds "out of the marketplace" and away from art collectors.[1] Instead, for him the "art to scatter" consists of inserting his hybrids into the ecological cycle: sowing seeds, sending pollen or plants to people, or transplanting them at unexpected urban or wilderness places (Gessert 1993).

Figure 6.1 George Gessert (American, b. 1944), *Pacific Coast Native Iris*, 1991. Seed pack, 9.5 × 13.7 cm. Private collection. Jens Hauser

Despite the formal similarities, significant changes have occurred with the general shift from objecthood to process-based art linked to the cybernetic paradigm in the second half of the twentieth century. Lucy Lippard described a phenomenon she called the "dematerialization of the art object" whereby a greater focus is placed on conceptual artistic thought and processes than on collectible objects (Lippard 1973). Similarly, Jack Burnham's *Beyond Modern Sculpture* (1968) aptly anticipates what biomedia art will become in an era of technical media competence, interest in scientific insights, awareness of ecosystems, and the desire to biotechnically create "aliveness." Burnham examines the evolution of sculpture over the last twenty-five hundred years and states that art's survival depends on its transition "from a psychically-impregnated totemic object toward a more literal adaptation of scientific reality via the model or technologically inspired artefact," then to "life-simulating systems through the use of technology" and "away from biotic *appearances* toward biotic *functioning* via the machine" (Burnham 1968, 76). Influenced by cybernetics, environmental concerns, and Ludwig von Bertalanffy's systems biology (Bertalanffy 1949), Burnham hoped that such art would encourage spectators to adopt a holistic view and develop environmental consciousness—not contra but qua technology. It is unlikely, however, that he anticipated the incredible variety of biotechnology-based art today, and all its consequences for staging, conservation, and transport (fig. 6.2).

An ideal-case scenario in which a work of biomedia art may be seamlessly shipped and staged alive, and be functionally conserved in its potential to be reenacted whenever needed, is the rare exception. From a curatorial standpoint, this means that a large part of exhibition budgets is dedicated to regrowing potentially rotting and fragile ephemerals and facilitating a greater number of artist visits, since works constantly face the threat of contamination, deterioration, or death. Diligent curatorial work requires time and effort be spent negotiating specific local laboratory infrastructures, sometimes more than a year in advance, endless legal and bioethical paperwork, perpetual shipping and customs problems, and manifold technical, ethical, and legal challenges to maintain literally alive art.

Staging biomedia art is, technically, most challenging when artists insist that their work has to be shown alive. This often overexerts, and sometimes voluntarily challenges, the museum's ability to provide the needed infrastructure for works that fall outside standard display methods. Regular care and maintenance by specially trained assistants is necessary. In addition, the health and safety and ethics regulations for the public display of materials such as tissues or GMOs are not the same in every country. Living organisms are sometimes euthanized by museums after an exhibition against the artist's will in order to comply with animal health inspection and quarantine rules—even after organizing gallery talks that glorify interspecies empathy. Legally, some works may even be shown only "in transit" on their way to authorized labs. Common practices such as loan agreements or condition reports encounter obstacles when the work consists largely of ephemeral, living, or perishable entities and customized or borrowed laboratory equipment. At the same time, these institutional limitations push artists to consider showing simulacra, documentation, or remnants instead of the actual "alive" artwork.

Conservation of art that deals with the manifold characteristics of the living, such as metabolism, growth, reproduction, or mutation, unfolds per se as paradoxical. Functional preservation of works may be possible in cases where the artist establishes precise protocols for

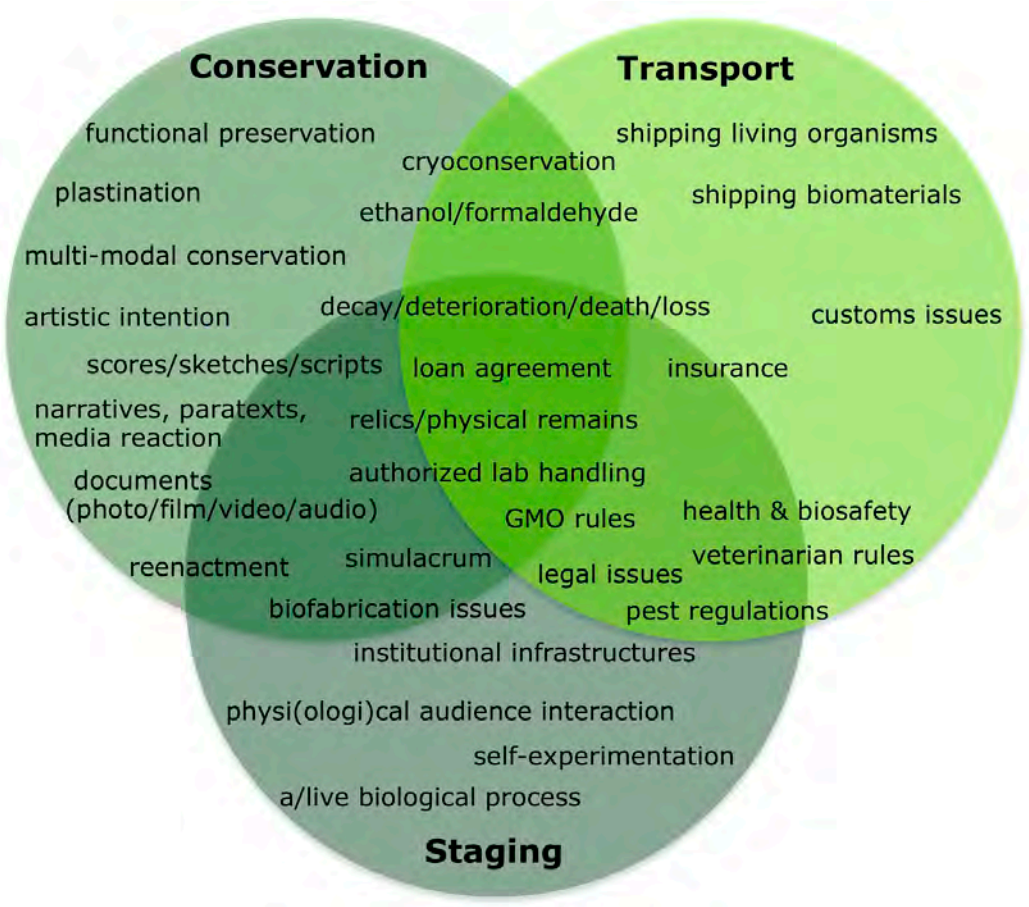


Figure 6.2 Overview of issues occurring with staging, conservation, and transport of biomedia art. Jens Hauser, 2019

reenactment. However, an ongoing debate among protagonists in the field is whether a biological entity should be preserved, plastinated, or taxidermied after its performative display. Instead of the actual artwork, documentation, scores, sketches, and other mediated paratexts are increasingly deployed and produced by artists aware of institutional constraints (Hauser 2008). In some cases, technical solutions are conceived for collectors to preserve the work's apparent "aliveness" even in the event of its biological death.

The *transport* of such works—including actual organisms, organic matter, or biological samples such as genetic sequences, plants, or tissue—can often not be handled by regular art shippers. Instead biomedical companies must transport them from lab to lab. Additionally, customs declarations may require different details to be reported when such art travels across international borders, conforming to national policies in regard to biodiversity, ethics, veterinary, phyto-sanitary, or pest regulations. The following short case studies illustrate some of these issues and solutions.

A striking example of how GMO regulations affect biomedia art differently, even across countries within the otherwise homologized space of the European Union and associated countries, is Jun Takita's bioluminescent sculpture *Light, only light* (2003). The work is meant to be experienced by visitors in total darkness, and consists of a 3D print of the artist's brain covered with moss containing a genetic sequence from the firefly. Confronting the viewer with a light-emitting plant, materializing the historical association of light with life, Takita presents the transgenic as an ambiguous cognitive achievement of the human brain. The brain shape is strongly reminiscent of skull motifs seen in vanitas and memento mori paintings. Initially developed as a fully functioning version, perceivable with the naked eye, for the exhibition *sk-interfaces* at FACT art center, Liverpool (Takita 2008), thousands of pounds and many months were spent developing the piece with a team of Japanese scientists and a supporting lab in Leeds. After discussions with the UK Department for Environment, Food and Rural Affairs, and just a week before the opening, the art center reconsidered the artwork. Despite being double-contained

in a specially built Plexiglas case and displayed in a closed gallery, potential release of spores into the environment could not be 100 percent excluded "in the event of a systems failure." And although given that "the chance is slight and that if such an event were to occur it would constitute a category 1 (low) release," this was a risk they were unwilling to take.[2] As a result, *sk-interfaces* only included a non-glowing, non-GMO simulacrum—a fact disclosed to audiences.

A few months later, however, a fully functional version of *Light, only light* made its debut as part of the Article Biennale in Stavanger, Norway (fig. 6.3).[3] Here, the glowing brain sculpture was shown in the lantern room as the only form of illumination at a coastal lighthouse, where visitors were invited in to contemplate the stunning effect. This time, the organizers had decided to operate in a legal gray zone by displaying *Light, only light* "in transit." A permit for contained use of genetically modified plants was obtained with the condition that the transgenic moss, after having been sent from Leeds to a laboratory in Uppsala, Sweden, and driven over the border by the artist himself, would be autoclaved at a laboratory at the University of Stavanger.

Figure 6.3 Jun Takita (Japanese, b. 1966) prepares his installation *Light, only light* (2003) for display in the Tungenes lighthouse near Stavanger, Norway, 2008. Jens Hauser

And finally, no regulatory issues at all occurred during the next venue of the *sk-interfaces* exhibition, Casino Luxembourg. In close coordination with that country's Ministry of the Environment and taking the issue seriously several months before the opening, the venue deemed Takita's piece as not presenting any danger of unintended release, and organized popular weekly demonstrations of the moss glowing in a specially constructed gallery room.

Luxembourg's decision might have been influenced by a precedent: the official authorization obtained for another transgenic art piece to be shown at the same exhibition: Eduardo Kac's *Natural History of the Enigma* (2009). This work involves the creation of a transgenic "plantimal" by combining human and plant DNA to produce a genetically engineered flower: a molecular hybrid of the artist himself and a petunia, called *Edunia*. In this new strain, the artist's DNA extracted from his blood produces a human protein in the red veins of the flower. Ironically, the actual plant could not be displayed at Casino Luxembourg either, only as photographic representation. While all applications to Luxembourg's state authorities regarding the import of genetically modified organisms and phyto-sanitary risk management were successful, the flower was ultimately not shipped. The Weisman Art Museum at the University of Minnesota, Minneapolis, which commissioned the work, claimed a last-minute loan fee of $3,500 to $4,000 to prepare paperwork and packing for the loan, in addition to the pretense "that the usual lead time needed for us to approve a loan is at least twelve months prior to the opening."[4]

It is understandable that artists who struggle for their work to be shown alive mock museums' inefficiencies to provide the required infrastructure and increasingly conceive of their participation in large exhibitions as deliberate institutional critique. A recent example shows how the Tissue Culture & Art Project, a protagonist of biomedia art for the last two decades, challenged the Centre Pompidou in Paris by staging work that brands museums as the ultimate necropolis. Referencing Samuel Butler's *Erewhon* (Butler 1872), their piece *(for art is like a living organism). . . Better Dead Than Dying* (2014, fig. 6.4) consists of a closed bioreactor where cancerous HeLa cells grow a miniature figurine shaped after Henrietta Lacks, the person from whom this cell line originated (Skloot 2010). However, the bioreactor is specifically designed with limited nutrients and without a waste removal system, so that it becomes, purposefully, a death chamber. Tissue Culture & Art Project cofounder Oron Catts explained the ironic design of the piece included in the 2019 *La Fabrique du vivant* show as a reaction to previous correspondence, revealed in public, with Centre Pompidou's curators: "I am afraid it would be difficult to realize a living installation work as part of the show *Designing the Living* at the Centre Pompidou."[5]

Figure 6.4 The Tissue Culture & Art Project (hosted @ SymbioticA, School of Human Sciences, the University of Western Australia) (Australian, founded 1996), *(for art is like a living organism). . . Better Dead Than Dying*, 2014. HeLa cells grown over a polymer structure in a custom-designed bioreactor vessel. Installation view at *La Fabrique du vivant*, Centre Georges Pompidou, Paris, 2019. Aniara Rodado, courtesy the artists

Another piece by the Tissue Culture & Art Project, *Victimless Leather* (2004), sparked headlines like "Murder at MoMA?" when the bioreactor growing miniature leather-like jackets out of immortalized animal and human cell lines had to be stopped due to unforeseen cell proliferation taking over the apparatus in MoMA's *Design and the Elastic Mind* show (Yap 2009). While the art died a month into the exhibition, the institution turned the failure to stage the piece as intended into a popular selling narrative. *Victimless Leather* was indeed performed successfully just before and after the MoMA exhibition at *sk-interfaces* in Liverpool and Luxembourg. Here, the question of the "afterlife" of the grown biotechnological garments was debated between the artists and the curator, resulting in the decision to have the surviving cell cultures plastinated (fig. 6.5), but to keep them strictly for documentation purposes—neither exhibit them in place of the actual piece, nor sell them.

Figure 6.5 The Tissue Culture & Art Project (hosted @ SymbioticA, School of Human Sciences, the University of Western Australia) (Australian, founded 1996), *Victimless Leather*, 2004. Tissue-engineered cell sculpture plastinated by Gilles Desraisses in 2010, 5 × 4.3 cm. Private collection. Axel Heise

In contrast, artist Brandon Ballengée has found a way to both carry out bio-artistic research and preserve material outcomes that can be collected. In *Species Reclamation via a Non-linear Genetic Timeline* (1998–2006, fig. 6.6, fig. 6.7) he aims at phenotypically re-creating an extinct aquatic frog species using closely related extant species by resurfacing historically described physical traits, resulting in "living sculptures" (Hauser 2010). They live their natural life span before being cleared and stained (a chemical process to reveal the animal's skeletal anatomy consisting of bones and cartilage), photographed, and sold as prints or as conserved specimens, ready to be released into glycerin, where their translucent members seem to gracefully swim.

Figure 6.6 Brandon Ballengée (American, b. 1974), *Species Reclamation via a Non-linear Genetic Timeline – An Attempted Hymenochirus curtipes Model Induced by Controlled Breeding*, 1998–2006. Preservation and storage kit for collectors, 9 × 20.4 × 20.4 cm. Private collection. Axel Heise

Figure 6.7 Brandon Ballengée (American, b. 1974), *Species Reclamation Via a Non-linear Genetic Timeline – An Attempted Hymenochirus curtipes Model Induced by Controlled Breeding*, 1998–2006. Preserved specimen in glycerin, 1.7 × 1.7 cm. Private collection. Axel Heise

An exemplary case of conservation of a complex synthetic biology-based work is *Living Mirror* (2013, fig. 6.8) by the artist duo C-Lab, which solves the challenge of optimizing a living biomedia piece so its function is preserved in potential perpetuity. *Living Mirror* uses magnetotactic bacteria's ability to swim along the Earth's magnetic field in order to create a living mirror image of the silhouette of its observer. Once an input image is translated into a magnetic field, the bacteria reorient their bodies in real time, causing light to scatter and create an image in a liquid bacteria culture. The piece draws on the myth of Narcissus, who fell in love with his own image in the water's reflection, and at the same time emphasizes contemporary science's discovery that human bodies are made up of a majority of nonhuman bacterial cells. The development of a collectible version in which this shimmer effect persists over time took several years—with bottles available for replacement in case of anomalies. Even if the bacteria die, whatever nanomagnetic chain they created would remain intact beyond their death.

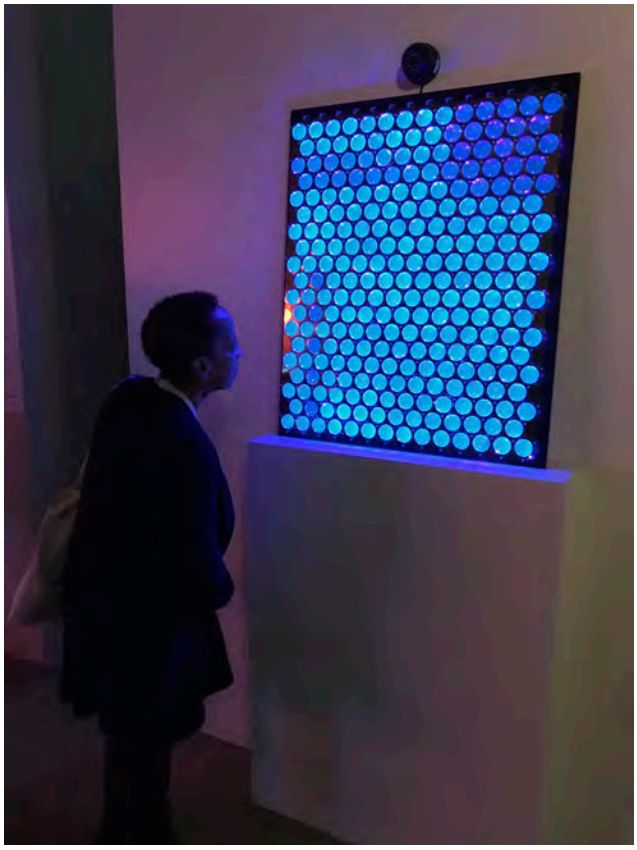


Figure 6.8 C-Lab (British, founded 2003), *Living Mirror*, 2013. Mirror consisting of glass vessels with magnetotactic bacteria in liquid medium, camera, approx. 80 × 90 cm. Collection of Wiyu Wahono. Installation view, Ars Electronica, Linz, Austria, 2019. Adam Brown

An early art piece involving tissue culture, Art Orienté Objet's *Artists' Skin Cultures* (1996, fig. 6.9), is curious with regard to conservation and transportation issues. Initially grown out of the artists' epidermal cells grafted onto pig dermis and tattooed with motifs of lab model organisms and endangered species, these trans-species totems were supposed to be offered for grafting to collectors, but were finally conserved in formaldehyde and sold. Ironically, although the pieces were made in the United States in 1996, they could not be shipped back from France for the *MATTER(S) matter(s): Bridging Research in the Arts and Sciences* show at the Eli and Edythe Broad Art Museum at Michigan State University, Lansing, in 2018. Since formaldehyde is flammable, no art shipper agreed to take this on, and companies specializing in shipping biological samples refused to transport the work due to its hybrid human-animal nature. This necessitated applying for a special permit from the US Department of Agriculture and involved a monthslong process. Previously, when shipping the work to Australia, a workaround was created whereby the customs declarations contained different descriptions on the way in and out: while "pig cells" were disguised under more generic "human and animal cells" on the way to Australia, only cells labeled "domestic pigs" were sent back to France, since shipping human cells would have caused legal complications.

The worst-case scenario consists of loss or theft during transport resulting from the use of companies not specialized in art shipping nor offering adequate insurance coverage. Take Tagny Duff's *Cryobook Archives* (2010) as such an example. The *Cryobook Archives* are frozen sculptures made of human skin. It takes weeks to prepare the packages to meet international shipping standards for biological samples, and they can only be shipped from lab to lab as research items. Since no art shipper was willing to transport living biological samples on dry ice, as required for this work, the pieces were shipped via FedEx from Canada to France and simply disappeared in transit. While the box with the dry ice arrived, all the fleshy sculptures were missing without any explanation (they had last been tracked at the FedEx hub in Memphis). The artist speculated that maybe "an underpaid chain worker believed this to be a precious organ, worth thousands of dollars on the black market," or that "customs or state authorities considered the art piece to be suspicious and infectious."[6]

The difficulties with regard to staging, conservation, and transport should not, however, be treated as a straightforward grid of practical problems to solve in order to enable museums to stage new "living images." The conceptual challenges are philosophically most inspiring and point as much to profound changes in contemporary art practices as to institutions' incapacity to adapt and evolve accordingly. Phenomena that once took the form of artistic images are being fragmented into a variety of instances of "biomediality" (Hauser 2014a; Hauser 2016), which need to be considered an integral part of the aesthetic idiom—including the challenges, intended or not, prone to exasperate and disrupt museum routine.

Figure 6.9 Art Orienté Objet (French, founded 1991), *Artists' Skin Cultures*, 1996. Tattooed tissue sculptures conserved in formaldehyde, approx. 10 × 15 cm. Private collection. Courtesy the artists

Acknowledgments

This paper has been supported by a Continuing Professional Development grant from the Gabo Trust for Sculpture Conservation.

NOTES

1. George Gessert, personal letter to the author containing a selection of seeds resulting from artistic hybridization, 2008.
2. Email communication between FACT, the curator, and the author, January 24, 2008.
3. The author co-curated this biennale.

4. Internal email communication between the Weisman Art Museum and the author, November 5, 2009. This museum was the original commissioner of the work and did not anticipate all the problems that would accompany its great success. It was flooded with loan requests from all over the world, and email communications seem to demonstrate that it hoped to discourage requests for loans by putting up new hurdles each time one issue was solved. It the end, the museum let the artist handle all further shows alone.

5. Oron Catts at the Behavioral Matters conference, March 29, 2019, Centre Pompidou, Paris.

6. Tagny Duff, "Cryobook Archive," explanatory text displayed at Espace multimédia Gantner, Bourogne, France, 2015.

BIBLIOGRAPHY

Appelbaum 2007
Appelbaum, Barbara. 2007. *Conservation Treatment Methodology*. Oxford: Butterworth-Heinemann.

Bertalanffy 1949
Bertalanffy, Ludwig von. 1949. *Das biologische Weltbild. Band 1. Die Stellung des Lebens in Natur und Wissenschaft*. Bern, Switzerland: Francke. English version published as *Problems of Life: An Evaluation of Modern Biological Thought.* New York: John Wiley & Sons, 1952.

Burnham 1968
Burnham, Jack. 1968. *Beyond Modern Sculpture: The Effects of Science and Technology on the Sculpture of This Century*. New York: George Braziller.

Butler 1872
Butler, Samuel. 1872. *Erewhon: or, Over the Range.* London: Trübner and Ballentyne.

Gedrim 2007
Gedrim, Ronald J. 2007. "Edward Steichen's 1936 Exhibition of Delphinium Blooms: An Art of Flower Breeding." In *Signs of Life: BioArt and Beyond*, edited by Eduardo Kac, 347–69. Cambridge, MA: MIT Press. First published in *History of Photography* 17, no. 4 (1993): 352–63.

Gessert 1993
Gessert, George. 1993. *Scatter*. Eugene, OR: Green Light.

Gessert 2003
Gessert, George. 2003. "Notes sur l'art de la sélection végétale." In *L'art biotech*, edited by Jens Hauser, 47–55. Nantes, France, and Trézélan, France: Filigranes.

Hauser and Strecker 2020
Hauser, Jens, and Lucie Strecker, eds. 2020. "On Microperformativity." *Performance Research: A Journal of the Performing Arts* 25 (3): https://www.tandfonline.com/doi/full/10.1080/13528165.2020.1807739.

Hauser 2006
Hauser, Jens. 2006. "Biotechnology as Mediality: Strategies of Organic Media Art." *Performance Research: A Journal of the Performing Arts* 11 (4): 129–36.

Hauser 2008
Hauser, Jens. 2008. "Observations on an Art of Growing Interest: Toward a Phenomenological Approach to Art Involving Biotechnology." In *Tactical Biopolitics: Art, Activism, and Technoscience*, edited by Beatriz Da Costa and Kavita Philip, 83–103. Cambridge, MA: MIT Press.

Hauser 2010
Hauser, Jens. 2010. "Sculpted by the Milieu: Frogs as Media." In *Praeter Naturam. Brandon Ballengée*, edited by Claudio Cravero, 38–41. Turin, Italy, and Biella, Italy: Eventi & Progetti Editor.

Hauser 2014a
Hauser, Jens. 2014a. "Biotechnologie als Medialität – Strategien organischer Medienkunst." PhD diss., Ruhr Universität Bochum.

Hauser 2014b
Hauser, Jens. 2014b. "Molekulartheater, Mikroperformativität und Plantamorphisierungen." In *Wahrnehmung, Erfahrung, Experiment. Wissen, Objektivität und Subjektivität in den Künsten und den Wissenschaften*, edited by Susanne Stemmler, 173–89. Zurich: Diaphanes.

Hauser 2016
Hauser, Jens. 2016. "Biomediality and Art." In *Artists-in-Labs: Recomposing Art and Science*, edited by Jill Scott and Irene Hediger, 201–19. Berlin: Springer.

Lippard 1973
Lippard, Lucy R. 1973. *Six Years: The Dematerialization of the Art Object from 1966 to 1972*. New York: Praeger.

Museum of Modern Art 1936
Museum of Modern Art. 1936. "Press Release: Steichen Delphiniums." June 22, 1936. New York: Museum of Modern Art. https://assets.moma.org/documents/moma_press-release_325057.pdf.

Salter 2010
Salter, Chris. 2010. *Entangled: Technology and the Transformation of Performance*. Cambridge, MA: MIT Press.

Serexhe 2013
Serexhe, Bernhard, ed. 2013. *Preservation of Digital Art: Theory and Practice: The Digital Art Conservation Project.* Vienna: Ambra V.

Skloot 2010
Skloot, Rebecca. 2010. *The Immortal Life of Henrietta Lacks*. New York: Crown.

Takita 2008
Takita, Jun. 2008. “Light, only light.” In *sk-interfaces. Exploding Borders: Creating Membranes in Art, Technology and Society*, edited by Jens Hauser, 141–43. Liverpool, UK: Liverpool University Press.

Yap 2009
Yap, Chin-Chin. 2009. “Murder at MoMA?” *ArtAsiaPacific* 62:49–50.

Part Two

Working with the Artist: Between Conservation and Production

7

Preserving Mortality through a Sacrifice for Your Country: A Performance by Carlos Martiel and a Conservator's Challenge

Flavia Perugini

Award Martiel, Carlos *(2014) by Carlos Martiel, a living Cuban performance artist, consists of a piece of skin removed from the artist's body and sealed in a gold medal after desiccation. The medal, coupled with a video of the surgery, was made for the 2014 Cisneros Fontanals Art Foundation (CIFO) Grants and Commissions Program exhibition* Fleeting Imaginaries*. The project was a collaboration of experts with different backgrounds. Pathologists and hospital laboratories were contacted for information on skin preservation. Natural history and medical collections were investigated to learn about the treatment of animal and human remains. Tattoo museums, leather manufacturers, and taxidermy practices were contacted. Professionals from various fields offered their knowledge and input to help make the project a success.*

◆ ◆ ◆

The Museum of Fine Arts, Boston, is one of the largest encyclopedic collections in the United States, holding about 450,000 artifacts ranging from ancient to contemporary art. It sees a very active program of exhibitions, loans, and tours, and occasionally collaborates with other institutions or collections on special exhibitions and events. In 2013 it partnered with the Cisneros Fontanals Art Foundation (CIFO), a nonprofit organization based in Miami, to organize the 2014 exhibition at the MFA titled *Permission to Be Global / Prácticas Globales: Latin American Art from the Ella Fontanals-Cisneros Collection*. In early 2014, while preparing for the show, CIFO's (now former) collection manager, Diego Machado, approached this author about preserving human skin for a piece that would be a part of an (unrelated) CIFO grant and commission program. He explained that the Cuban artist Carlos Martiel, one of ten artists participating in an upcoming exhibition titled *Fleeting Imaginaries*, intended to have a piece of skin removed from his body, preserved, and encased in a medal he had designed. Martiel, who had been planning this event as a performance for several years, only had six months to realize the plan and understood that the process required further study and specific steps to be followed. He had been advised to

contact a taxidermist to help with the treatment, but he felt that taxidermy was not the appropriate approach. The request for collaboration was accepted, and research on the unfamiliar topic of practical live human skin preservation began.

THE CISNEROS FONTANALS ART FOUNDATION

CIFO was founded by Ella Fontanals Cisneros in 2002 to promote and support Latin American contemporary art. The foundation serves as a platform for living Latin American artists through its many national and international programs, such as the Grants and Commissions Program, the Traveling Exhibitions Program, the CIFO Collection, and more. Fontanals Cisneros is CIFO's founder and honorary president, and Liz Munsell, curator of contemporary art at the MFA, serves as a CIFO advisory committee member. To date, the foundation has exhibited the work of more than 130 Latin American artists and awarded grants amounting to more than $1.5 million.

CIFO's 2013–14 Grants and Commissions Program explored the theme of displacement—literal, conceptual, and fragmentary, through fluctuation and transformation. Ten artists selected from a pool of applicants each received a grant to create an artwork that would be shown in *Fleeting Imaginaries*, running September 5 through November 2, 2014. The recipients were Pablo Accinelli (Argentina), Teresa Burga (Peru), Nayarí Castillo (Venezuela), Claudia Joskowicz (Bolivia), Marcellvs L. (Brazil), Carlos Martiel (Cuba), Mateo Pizarro (Colombia), Adrián Regnier (Mexico), Rosângela Rennó (Brazil), and Antonieta Sosa (Venezuela).

CARLOS MARTIEL

Carlos Martiel (fig. 7.1) was born in 1989 in Havana. In 2009 he graduated from the Escuela Nacional de Bellas Artes San Alejandro, and between 2008 and 2010 he studied under the guidance of Cuban performance artist Tania Bruguera. Since 2007, Martiel, who currently lives between New York and Cuba, has performed extensively in the Americas, Cuba, Europe, and North Africa. He has participated in many biennials, such as the Venice Biennale, and performed in many important museums and galleries. Martiel's work highlights social, economic, and racial matters, such as discrimination, migration, and power relations. In his performances the artist subjects himself to extreme physical and psychological conditions. Blood and skin piercing are common in many of his performances, and so having a piece of skin removed from his body was an extension of this practice and did not seem unusual for the artist.

Figure 7.1 The artist Carlos Martiel, Miami, 2014. Daniel Godoy/Farisa Co, with permission by the artist Carlos Martiel

Martiel had originally planned this project back in 2010, but due to logistical complications, on that occasion he ended up performing a work titled *Prodigal Son*, in which he pinned medals his father had earned through military achievement onto his bare chest. Both the 2010 and the rescheduled 2014 performances were intended to illuminate Cuba's racial problems, specifically its systemic and institutional racism toward Afro-Cubans.[1] Despite Fidel Castro's attempts to end racial discrimination at the end of the 1950s, it continues to affect people of color in Cuba; they are ostracized and/or segregated and lack social supports. In this 2014 work, Martiel would "award" himself a gold medal similar to those given by the government to state officials and the military, such as his father.

RESEARCH

While researching for this project, it soon became evident that medical professionals don't commonly assist artists who want to use their bodies in such a manner. Many universities and medical facilities in the Boston area were contacted for advice on the preservation of human specimens, but little to no information was gathered; indeed, some commented that, in their opinion, the artist was irrational and attempting something that no medical professional should get involved with. The Hippocratic oath involves swearing "to treat the ill to the best of one's ability," and thus, the prospect of a healthy patient wanting a piece of healthy skin surgically removed and desiccated for an art project would be inappropriate, even unethical.

Meanwhile, internet research yielded different and more useful results. Medical articles revealed that since the nineteenth century, doctors around the world have been involved with skin removal to preserve tattoos, albeit from deceased people. Today many museums associated with hospitals and universities host collections of tattooed skin, not all of which are for medical research purposes. A query was posted on the Global Conservation Forum—at that time called the Conservation DistList—in hopes of acquiring more relevant advice. Surprisingly, an inundation of replies from professionals such as conservators and biologists who had worked on skin or were familiar with processing human specimens provided the necessary directives.

SKIN PREPARATION TECHNIQUES

Skin preparation is executed in different manners, depending on factors such as whether the skin is of human or animal origin, and whether the whole body is available or only parts of it (Kite and Thomson 2006). Mummification is one method that has been practiced in several countries since early civilization. The procedure consists of exposing a body to drying elements such as salts that absorb water from the body and desiccate it (Spindler et al. 1996). The desiccated bodies remain susceptible to moisture in the environment. Mummification was not considered appropriate for this project due to the lack of control over the specimen's results and the length of time the process requires.

In the case of treatment of animal skin, any of the following three methods may be employed: taxidermy, tanning, or rawhide (Grantz 1969). *Taxidermy* is a process that preserves an animal's exterior body. The animal skin, with fur or feathers, is separated from the flesh and bones and then stuffed to give shape back to the body. *Tanning* is used for leather production, whereby a skin undergoes exposure to many liquids and extensive manipulation; it involves salting, soaking, liming, un-hairing, de-liming, and/or pickling. Liming involves extensive alkaline baths to remove hair, fat, and flesh and soften the skin, followed by acidic baths for the purpose of neutralization. Production of *rawhide* consists of removing the skin from the animal body and stretching it over a frame for air drying. This process is also used to make parchment. These three treatments leave the dehydrated skin reactive to moisture and susceptible to biological degradation.

The treatment of human tissues differs from that of animal tissue and may involve plastination, freeze-drying, or solvent drying (Brenner 2014). *Plastination* involves fixing a human specimen in formalin (a preservative for human and animal tissue specimens that prevents degradation and mold formation), followed by flooding it with acetone, and subsequently impregnating it with polyethylene glycol (PEG), silicon rubber, polyester, or other polymers. This system is typically used by embalmers and achieves long-lasting results (Quigley 2015). Plastination is the only method that renders the skin a little more resistant to humidity, although it doesn't completely protect from mold growth. *Freeze-drying* is carried out with a process called lyophilization: the specimen is gently frozen and water is extracted in the form of vapor using a high-pressure vacuum. A gradual temperature rise extracts all remaining "bound" moisture from the specimen. This treatment is also used in conjunction with taxidermy. The main drawback to this method is that a dried specimen remains very susceptible to fluctuations in relative humidity. In *solvent drying*, the skin is separated from flesh and fat to reduce the possibility of putrefaction. After fixation in formalin, the tissues are bathed in a drying solvent solution that is adjusted daily until all water has been removed.

Solvent drying was ultimately selected for the treatment of Martiel's skin, due to its ease of execution and affordability.

EXPERIMENTATION

With only one chance to remove a piece of skin and succeed in its dehydration, experimentation was necessary to understand the physical behavior of skin removed from a live body. For practical reasons, the experiments were carried out on animal skin. Pig skin has similar characteristics to human skin, and was therefore selected. Arrangements were made for the conservator to visit a

local farm on a day when pig slaughtering was scheduled. Suitable skin was identified on the necks of three pigs, which varied in color. Following slaughter, the skin specimens were extracted and placed in a glass container with distilled water for transportation in a cooler. Upon arrival at the conservator's studio, the skin was rinsed in fresh distilled water and small sections were cut for the experiments. For safety reasons, formalin was not used in this instance due to its toxicity, although it would be used to preserve the final human specimen. The outlines of these skin samples were marked on paper to track any dimensional changes that might occur during the tests.

Over the course of ten days, the skin was bathed in a distilled water and ethanol solution that was changed daily to facilitate the drying process. Afterward the pieces of skin were cut into smaller sections and allowed to slowly air dry in a controlled environment. The edges were stapled onto a plain cardboard support covered with a sheet of Volara, a closed-cell polyethylene foam, to prevent curling or warping.[2]

These experiments were repeated three times to ensure consistency in the results. After drying, consistent shrinking in all directions was observed and calculated at around 1 or 2 percent. This information was shared with the artist in preparation for the surgery.

With this new information, the artist revised his initial idea of having a tattoo removed and dehydrated; given the small size of the medal that would contain the specimen, Martiel realized that the shrinking of the skin would make the tattoo illegible. He decided to have an un-tattooed piece of skin removed and to get a new tattoo consisting of the title of the work—*Award Martiel, Carlos*—applied after the surgery, near the scar.

THE SURGERY AND SKIN TREATMENT

With a clear list of appropriate steps required to execute this project and a timeline in place, the surgery was scheduled for July 9, 2014 (fig. 7.2). The event was filmed and photographed by Daniel Godoy, a professional filmmaker and producer. Godoy also filmed an interview with the artist for a possible documentary on art and social issues.

Figure 7.2 The artist before the surgery with Doctor Flor Mayoral, Miami, 2014. Daniel Godoy/Farisa Co, with permission by the artist Carlos Martiel

Doctor Flor Mayoral, professor in the Department of Dermatology and Cutaneous Surgery at the University of Miami Miller School of Medicine, was selected to perform the surgery. An artist herself and a friend of Fontanals Cisneros, Mayoral was interested in the project and actively participated in the conversations with the conservator throughout the process. Knowing that the medal was 45 mm in diameter, she marked Martiel's skin on the left side of his waist accordingly. The area of the incision was selected based on Langer's lines, which determine where a surgeon should cut the skin to obtain the least invasive scarring and optimal healing.[3] The measurement was determined by considering the shrinking of the skin upon removal from the body, as well as the age of the patient; being in his early twenties, he had healthy and very elastic skin. It was calculated that after surgery the skin would shrink at least 1 percent, and about the same amount or a little more after drying.

Upon removal (fig. 7.3), the piece of skin was cleaned with a scalpel to remove deposits of fat, which would have encouraged putrefaction and thus compromised the desiccation and preservation of the specimen. The piece of skin, which measured about 3 mm in thickness (fig. 7.4), was placed in a sterile cup containing formalin. After twenty-four hours, the specimen was removed from the cup, rinsed in distilled water, and placed in a new sterile container with distilled water and ethanol. This solution was replaced daily over the course of ten days.

Figure 7.3 Skin specimen after being cut. Daniel Godoy/Farisa Co, with permission by the artist Carlos Martiel

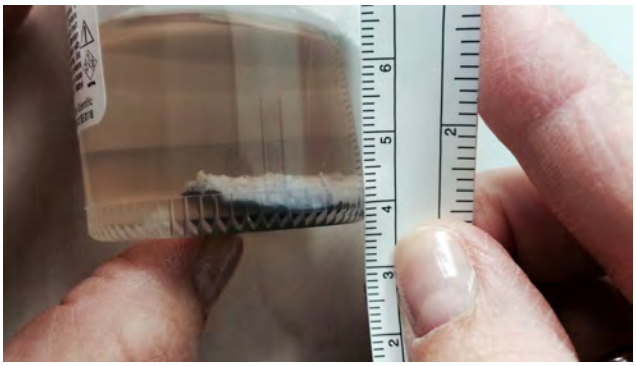


Figure 7.4 Skin specimen being measured after removal. Daniel Godoy/Farisa Co, with permission by the artist Carlos Martiel

The specimen appeared oval in shape. This was likely due to the fact that the marking on the skin had been carried out with the artist standing up, and the marked circle had become distorted when he lay down on the operating table. Overall, the width of the specimen was about 40 mm at the largest point and about 35 mm at the narrowest.

After bathing, the piece of skin was prepared for the slow air-drying process (fig. 7.5). The specimen was placed face-down onto a biological mat and pinned in place with entomology steel pins, slightly pulling out the edges to gently restore a circular shape, which proved successful.[4] After drying, the specimen appeared darker in color and smaller in size (fig. 7.6) as predicted, and measurements confirmed the desired size of 20 mm in diameter (fig. 7.7).

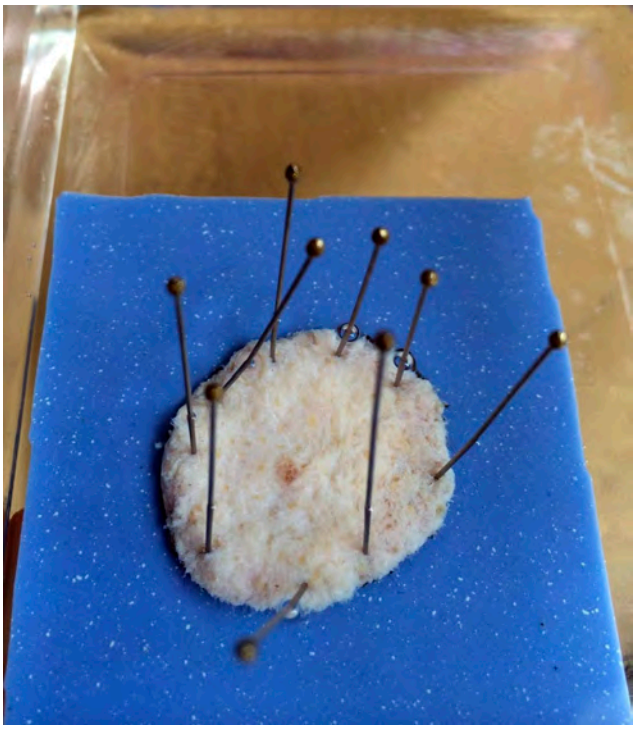


Figure 7.5 Preparation for the skin dehydration process. Daniel Godoy/Farisa Co, with permission by the artist Carlos Martiel

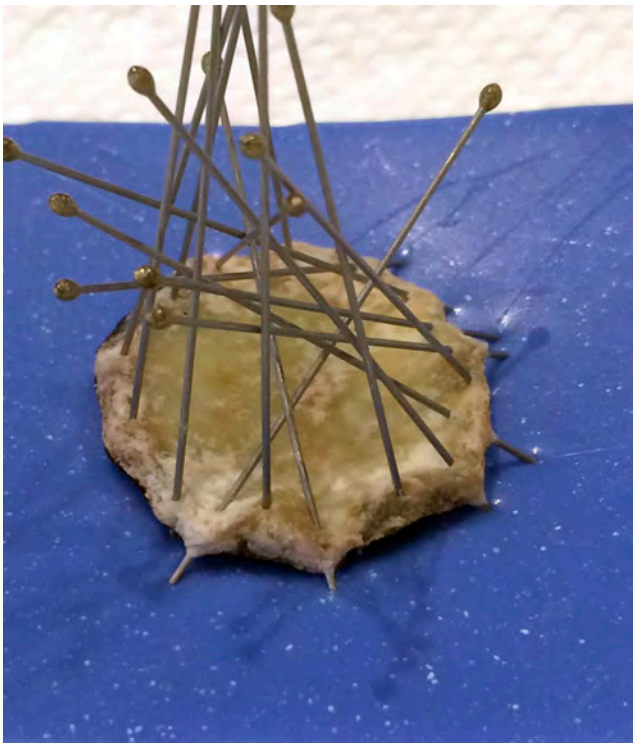


Figure 7.6 Air drying the skin specimen. Daniel Godoy/Farisa Co, with permission by the artist Carlos Martiel

Figure 7.7 Measuring the dehydrated specimen. Daniel Godoy/Farisa Co, with permission by the artist Carlos Martiel

Figure 7.9 Scar and tattoo on the artist's body. Oriol Tarridas, with permission from the artist and CIFO, Miami

Figure 7.8 The skin specimen in the medal. Oriol Tarridas, reproduced by permission of CIFO, Miami

The specimen was inserted in the medal just in time for the opening reception of *Fleeting Imaginaries* at CIFO, Miami, on September 5, 2014. The final work, titled *Award Martiel, Carlos*, comprised the medal containing the skin (fig. 7.8), a video of the surgery, and an image of the artist's scar and tattoo (fig. 7.9). At the end of the show, the medal containing the skin was packed in archival materials and retired to the CIFO's environmentally controlled storage facilities.

CONCLUSION

Martiel's performance was originally planned in 2010 but not executed until four years later due to a lack of resources and information. Communication between the artist, CIFO's staff, the conservator, the surgeon, and many other parties was extensive and highlighted the need for everyone to be in conversation at all times. The artist's wound healed well and the skin was successfully preserved. Through this performance, Martiel used his CIFO grant to shed light on the social effects of segregation in Cuban society. By placing a piece of his skin into a gold medal, he highlighted the importance of Afro-Cuban influence in Cuba's social structure and provided a platform for Afro-Cuban artists.

The preparation of biological specimens is complex and requires a clear understanding of the available processes, the behavior of the specimen, and the characteristics of the results. Without extensive research, conversations with several professionals, and numerous trials, the project would likely not have been possible. The conservator's involvement, which began with thorough research and practical experiments, allowed for the most appropriate skin preservation method to be selected, and for more control over the dehydration of the skin. Close collaboration between the conservator and the surgeon was crucial in the calculation of the size of the skin specimen to be removed, as well as in the treatment of the specimen, in order to obtain the best results.

Acknowledgments

The author wishes to thank Martyn Cooke, head of conservation, Royal College of Surgeons of England, UK; Jesse Meyer, Pergamena, Montgomery, New York; Emily O'Reilly, principal conservator paper, National Museum of Wales; Éloïse Quétel, conservator-restorer of ethnographic objects, France; and John Simmons, adjunct curator of collections, Penn State University.

NOTES

1. Martiel is Afro-Cuban. His father was able to join the army and get decorated for his merits, a particularly honorable matter for a Black Cuban. With this work Carlos sacrificed his skin for his father and for the country in an attempt to assert his place in Cuban society.
2. For more information on Volara see http://www.paccin.org/content.php?275-Volara-Crosslinked-Polyethylene-Foam.
3. A good summary is at Wikipedia: https://en.wikipedia.org/wiki/Langer%27s_lines.
4. A typical mat is pictured here: https://www.carolina.com/dissecting-pans-pads/vinyl-dissecting-pads/FAM_629006.pr.

BIBLIOGRAPHY

Brenner 2014
Brenner, Erich. 2014. “Human Body Preservation: Old and New Techniques.” *Journal of Anatomy* 224 (3): 316–44. https://dx.doi.org/10.1111%2Fjoa.12160.

Grantz 1969
Grantz, Gerald J. 1969. *Home Book of Taxidermy and Tanning*. Harrisburg, PA: Stackpole.

Kite and Thomson 2006
Kite, Marion, and Roy Thomson. 2006. *Conservation of Leather and Related Materials*. Boston: Elsevier Butterworth-Heinemann.

Knoeff and Zwijnenberg 2016
Knoeff, Rina, and Robert Zwijnenberg, eds. 2015. “The Fate of Anatomical Collections.” Special issue, *Social History of Medicine* 29 (4).

Quigley 2015
Quigley, Christine. 2015. *Modern Mummies: The Preservation of the Human Body in the Twentieth Century*. Jefferson, NC: McFarland.

Spindler et al. 1996
Spindler, Konrad, Herald Wilfing, Elisabeth Rastbichler-Zissernig, Dieter ZurNedden, and Hans Nothdurfter, eds. 1996. *Human Mummies: A Global Survey of Their Status and the Techniques of Conservation*. New York: Springer Science and Business Media.

8

Cross-Disciplinary Collaboration and Innovation in the Exhibition of Living Matter at the National Gallery of Zimbabwe: The Case of the *Planetary Community Chicken* Exhibition

Davison Chiwara

This paper describes the considerations involved in staging the 2016 exhibition Planetary Community Chicken *at the National Gallery of Zimbabwe, Harare. The undertaking was a collaboration between the Belgian artist Koen Vanmechelen; Chido Govera, a Zimbabwean entrepreneur; and museum staff. It included live chickens, chicken eggs, and fresh mushrooms. The exhibition of living matter in a museum environment poses numerous conservation challenges. In light of this, a spirit of innovation was demonstrated, and the Courtauld Gallery wing was transformed into a fowl run, an all-encompassing installation with appropriate conditions and facilities to support the rearing of chickens and the growing of mushrooms.*

◆ ◆ ◆

The National Gallery of Zimbabwe was officially established in 1952 through an act of parliament, and opened to the public in 1957 as a center for exhibiting sculptures, paintings, drawings, print works, and installations by Zimbabwean and international artists. It acquires traditional and contemporary art from local and international artists through loans, bequests, purchases, and donations, and likewise exhibits both traditional and contemporary art. An appropriate environment must be provided for the conservation of all artworks on view, and thus the exhibition of living matter as contemporary art can be a challenge due to its fragile and complex nature.

The exhibition team for the 2016 show *Planetary Community Chicken* was made up of Koen Vanmechelen and his exhibition crew from Belgium; Chido Govera, a Zimbabwean entrepreneur specializing in mushroom and poultry farming; Raphael Chikukwa, the exhibition's curator; and gallery staff from the Conservation and Collections, Exhibitions, Workshop, Education, and Public Programming departments. Vanmechelen and Govera

came up with the concept and provided the key resources, including the chickens and mushrooms. The role of Conservation and Collections was to preserve the exhibited elements as well as other artworks in the gallery. Workshop provided equipment and crew for the installation. Vanmechelen's crew and Exhibitions were responsible for designing the presentation and led the installation work. Education prepared learning materials, and Public Programming publicized the exhibition to the media, corporate and other sponsors, and the public.

Planetary Community Chicken was the first show of its kind in terms of exhibiting living matter at the National Gallery of Zimbabwe. Its goal was to leverage the museum as a respected public platform to empower people with the knowledge necessary to diversify their agricultural activities, specifically through the production of chickens, eggs, and mushrooms for self-sustenance (mushrooms are an excellent source of fiber and protein).

The idea was born of an urgency to educate citizens about the need to restock a local species of roadrunner, which had depleted due to diseases resulting from inbreeding. The chickens in the show were a new species resulting from the crossbreeding of Vanmechelen's cosmopolitan rooster with the Zimbabwean common chicken, also known as the roadrunner. The resultant offspring are less susceptible to disease, stress, and physiological problems than the roadrunner.

The intended audiences for the demonstrated food production system involving chickens and mushrooms were rural communities in Zimbabwe surrounding the capital city, Harare; the exhibition was connected to a social project of empowering residents. The new breed of chicken was donated to them to be used for crossbreeding with local chickens beyond the exhibition. One such community was Seke, where local residents successfully crossbred the chickens, produced eggs, and grew mushrooms. The production fulfilled their consumption needs, and the surplus was sold.

The exhibition was an intricate one, demanding a conscious conservation mindset to keep the chickens alive as well as ensuring that the chicken eggs and mushrooms remained fresh for the month-long duration of the show. Caution was also taken to prevent potential pest infestation of other artworks, especially those composed of organic materials, for instance sculptures, paintings, drawings, or prints made using wood or paper.

CONSERVATION CHALLENGES

Contemporary artworks containing biological materials such as food, bodily fluids and/or tissues, plants, animals, and animal parts pose specific challenges for museums, conservators, and collectors. They are prone to illness, decay, putrefaction, and eventual disappearance, which makes them difficult to exhibit and preserve for future museum visitors. In the case of this exhibition, numerous challenges presented themselves. Confinement of live chickens in an environment that is too hot or cold, without sufficient ventilation, without regular cleaning or hygiene, or without adequate feed or water can cause illness, stress, even death. A hot environment also causes the decomposition of chicken eggs. Mushrooms will likewise not survive if they are exhibited in an unregulated environment; overly hot temperatures, lack of humidity, or inadequate watering can all result in wilting and decomposition. In light of all this, the exhibition of live chickens, chicken eggs, and mushrooms required an understanding of issues that are vital for their preservation.

INNOVATION FOR THE CONSERVATION OF LIVING MATTER AND ARTWORKS

Pest Control

The exhibition team proactively addressed potential pest hazards. The nests prepared for the egg-laying chickens were to be made from logs gathered in the forest—these nests would be more cost effective for the gallery compared to buying specially prepared nests from the market—but they posed a greater possibility of pest infestation on both the chickens and other artworks made from organic materials. Thus, the nesting materials were treated with pesticides, then covered with black polyethylene sheets and placed for a prolonged time in the sun to kill any pests present (fig. 8.1, fig. 8.2a, fig. 8.2b). This was a low-cost method of preventing pest infestation in the gallery, since the museum had no fumigation chambers.

Figure 8.1 Spraying nests with pesticides. National Gallery of Zimbabwe

Figure 8.2a

Figure 8.2b

Covering nests with polyethylene fumigation sheets. National Gallery of Zimbabwe

Additionally, the museum environment was disinfected to prevent the outbreak of diseases that affect chickens.

Mushrooms are a fungus whose spores could potentially harm some of the gallery's organic artworks. To prevent this, polyethylene bags were used for mushroom production, which helped to contain the mushroom spores and prevent them from entering the galleries (fig. 8.3a, fig. 8.3b).

Figure 8.3a

Figure 8.3b

Mushroom production in polyethylene bags. National Gallery of Zimbabwe

Figure 8.4a

Figure 8.4b

Installing *Planetary Community Chicken* at the Courtauld Gallery, National Gallery of Zimbabwe, Harare, 2016. National Gallery of Zimbabwe

Creating an Environmentally Friendly Atmosphere for Living Matter

The exhibition team created an all-encompassing installation, transforming the Courtauld Gallery wing into a representation of a farmyard (fig. 8.4a, fig. 8.4b) with enough space to allow free air circulation, which in turn created a cool environment, preventing stress and suffocation of chickens or rotting of the chicken eggs and mushrooms. The exhibition team added soil to the main ground-floor space along with a wooden palisade fence—an enclosure mirroring a typical fowl run. The fowl run allowed for free movement of the chickens and ample space for them to forage living organisms in the soil.

Govera was responsible for cultivation of the mushrooms. She noted: "We manipulate places around us into the right kind of incubators of the ideas or the activities we want to carry out. . . . Chickens were scratching on the floor, they were mating, they were laying eggs, eggs were incubated." The transformation of the gallery's wing was in line with Amalia Kallergi's assertion that for an institution to host a living exhibition, it must undergo spatial modifications and introduce new routines and procedures into its normal practices (Kallergi 2008).

The gallery's transformation complied with the provisions of ICOM, which stress that, with regard to living collections, special consideration should be given to the natural and social environment from which they derive. Institutions should display live animals only if they can be looked after appropriately, and when they can form part of a positive message about nature for visitors (ICOM 2006, 10, 15; ICOM 2013, 3). The exhibition team did this by simulating a natural environment in which chickens and mushrooms can be cultivated successfully.

Figure 8.5a

Zimbabwean and Senegalese chicken hutches. National Gallery of Zimbabwe

Figure 8.5b

Installation of Chicken Hutches

The chicken shelters were two Zimbabwean-style hutches and two Senegalese-style hutches. According to Chikukwa, the curator, the juxtaposition was intended to show cross-cultural similarities in the rearing of chickens in these two countries. The similarities involve the use of dagga (an earthen structure made by molding clay mixed with water) and thatch. These materials help regulate temperatures, keeping chickens warm when temperatures are low, and cool when temperatures are high. The only difference is that the Senegalese hutches are elevated, whereas the Zimbabwean hutches are not (fig. 8.5a, fig. 8.5b).

Feeding of Chickens

The chickens foraged for food and other organisms found in the soil, but the exhibition team also provided supplementary feed and fresh drinking water to keep them healthy and thriving. Those responsible for this task acquired basic knowledge of domestic poultry rearing from an ordinary level agriculture subject (a practical subject offered at secondary schools under the Zimbabwe School Examinations Council).

The Preservation of Mushrooms

According to Govera, mushroom production is an indoor activity requiring an environment with sufficient humidity and air flow. She stated that the creation of this environment in the gallery was an interpretation of science in the form of art. The exhibition team provided shelves for the mushrooms and sand on the ground to maintain the required humidity. The mushrooms were kept fresh by watering them in the morning and evening throughout the duration of the exhibition. Mature mushrooms were harvested, and pieces of mushroom that fell to the ground were removed to keep the environment clean.

Govera further explained that they housed the mushrooms in polyethylene bags to keep them fresh (see fig. 8.3a, fig. 8.3b) and highlighted a long process that started with the humidification, pasteurization, and incubation of the bags before the gallery installation. Nutrients for mushroom growth were added to the bags as part of the incubation process.

IMPORTANCE OF COLLABORATION IN THE EXHIBITION OF LIVING MATTER

Cross-disciplinary collaboration was crucial in preserving living matter in the *Planetary Community Chicken* exhibition. In addition to the creative collaboration between artist Koen Vanmechelen and entrepreneurial mushroom and poultry farmer Chido Govera that led to the concept for the exhibition, staff members from the gallery's various departments were essential in executing and maintaining it. The involvement of people from different disciplines created a hub of ideas and skills as well as human and material resources for the successful exhibition of living matter. Everyone shared an understanding of the need to provide an environment suitable for preserving a living ecosystem. Govera, who has collaborated with Vanmechelen since 2012—their projects have been featured at the 2014 Havana Biennial and the 2015 Venice Biennale—states: "The key to a successful exhibition of chicken and mushrooms in the gallery was understanding and appreciation of each other's work. I have an

appreciation of [Vanmechelen's] work, and he has an appreciation of my work. It's just merging these two roles, which are complemented by Koen's artistic eye in the context of art. He is an exceptional artist who can transform anything into art."

Their long history of working together on international exhibitions made it possible for them to bridge their disciplines and collaborate in exhibiting living matter in *Planetary Community Chicken*. Their artistic collaboration was supported by the commitment of the gallery staff, who provided the needed person-hours, resources, and guidance on technical aspects. The exhibition of biological art poses complex issues, often requiring collaborative and interdisciplinary approaches to conservation. Beyond the artist's creative vision, other experts must provide technical knowledge and skills (DiNoia 2019; Kallergi 2008).

The involvement of experts from different disciplines enabled the museum to provide an environment and facilities that supported the preservation of living matter. This cross-disciplinary collaboration created an "innovation hub" for the preservation of live chickens, fresh eggs, and fresh mushrooms in the gallery. Innovative ideas emerged from this hub, transforming the Courtauld Gallery into an environment mirroring a real fowl run supporting live chickens and eggs and the growing of mushrooms.

Preventing any cruelty to the chickens was an important consideration in the overall design of the exhibition environment. The team's collaborative efforts provided key facilities and an environment that guaranteed the safety of the chickens. Cruelty to animals manifests in various forms such as physical harm, psychological pain, exploitation, health risk, and commodification of animals (Kaplan 2017). All these were prevented by the exhibition team; the chickens felt at home and looked healthy, with no signs of psychological or physical harm. With regard to the ethics of exhibiting living animals, institutions, artists, and art historians are entangled in tricky discussions about the rights and treatment of animals (DiNoia 2019). Such challenges were not encountered in *Planetary Chicken Community*, as the exhibition team observed the rights of the chickens through an environment that supported their survival.

CONCLUSION

The *Planetary Chicken Community* exhibition attracted many visitors from all walks of life. The exhibition showcased a project run by Chido Govera in rural areas to empower communities to be more self-sufficient in food production. The project on the crossbreeding of the chickens and the growing of mushrooms empowered communities with knowledge for rearing chickens and growing mushrooms for healthy nutrition and a source of livelihoods.

The exhibition fused science and art. It was a novel and challenging undertaking for the gallery, as it encompassed living matter that required the transformation of the gallery environment in order to preserve it, as well as the adoption of precautionary measures to protect the organic artworks in the collection from potential pest infestation.

Planetary Community Chicken showed that the integration of different disciplines, a shared goal, proactive teamwork, and mutual understanding among the exhibition team members are vital in the conservation of living matter in a museum. The conservation discipline immensely benefits from tapping into the knowledge of other fields to safeguard living matter and other artworks in a museum. A common goal ensures shared responsibilities and overlapping of tasks among members of the exhibition team, which simplifies work on exhibiting living matter. Proactive teamwork helps in identifying critical conservation needs in the exhibition of living matter and ensures that the needs are addressed in a timely manner. Mutual understanding between the artist and exhibition team members helps in the fusion of ideas in transforming living matter into art in a museum. The preservation of living matter in museums is a complex issue requiring versatility and integration of people from different disciplines, including artists, conservators, curators, exhibition designers, and other stakeholders. These were key in *Planetary Community Chicken*, where collaborative efforts ensured a smooth flow of operations.

BIBLIOGRAPHY

DiNoia 2019
DiNoia, Megan. 2019. "Decomposing Art: How Museum Professionals Treat Living Matter." *Heritagebites*, April 15, 2019, https://heritagebites.org/2019/04/15/decomposing-art-how-museum-professionals-treat-living-matter/.

ICOM 2006
International Council of Museums (ICOM). 2006. *ICOM Code of Ethics for Museums*. Paris: ICOM.

ICOM 2013
International Council of Museums (ICOM). 2013. *ICOM Code of Ethics for Natural History Museums*. Paris: ICOM.

Kallergi 2008
Kallergi, Amalia. 2008. "Bioart on Display: Challenges and Opportunities of Exhibiting Bioart." Leiden, the Netherlands: Leiden University. https://www.researchgate.net/publication/266333742_Bioart_on_Display-_challenges_and_opportunities_of_exhibiting_bioart.

Kaplan 2017
Kaplan, Isaac. 2017. “When Is It Okay to Use Animals in Art?” *Artsy*, May 11, 2017, https://www.artsy.net/article/artsy-editorial-animals-art.

9

The Life-Death Movement of Fruits, Tubers, and Vegetables in Nydia Negromonte's *POSTA*

Magali Melleu Sehn

Nydia Negromonte's ongoing artwork POSTA *is made from fruits, tubers, and vegetables enveloped in raw clay and placed on a wooden table. Over the course of the exhibition, the plant materials undergo various stages of transformation. Some dry up until they are completely desiccated; others decompose; some sprout. This article outlines the process of constructing the work and the actions of each plant type to free itself from the layer of raw clay, leading to aesthetic alterations and new interactions between the materials and their surrounding space. The implications of such a work being acquired by an institution and an analysis of the limitations involved in replacement of individual elements are also considered.*

◆ ◆ ◆

Nydia Negromonte (b. 1965) is a visual artist born in Lima and presently living in Brazil. She graduated from the School of Fine Arts of the Universidade Federal de Minas Gerais with a specialization in graphic arts and has participated in numerous exhibitions in Brazil and abroad. Some of the artist's installations illustrate the idea of exploring, participating in, and collaborating on changes affecting matter, as in the ongoing work *POSTA*, an art installation made from clay-enveloped fruits and vegetables arranged on a wooden table. Over time, the objects change: the fruits and vegetables either grow or wither, and the clay dries and cracks, revealing the temporality of the objects and the transformations that occur to them due to (favorable or unfavorable) characteristics in the environment. According to the artist, this work investigates the movements of "vigor and decay": some of the objects sprout, others decompose, and yet others dry up.[1] The curator and critic Jorge Villacorta Chávez has written about *POSTA*:

> *Temporality is a crucial factor in these works by Nydia Negromonte. The artist suggests that time must be allowed to do its part. Thus, the growth and life force that breaks through the clay enveloping the fruits and vegetables brings us face to face with a dimension in which processes take place that we don't keep any record of at all (or which we only identify in order to discard the matter undergoing transformation). This reveals the power—and fragility—of the process of memory if we pay attention and cultivate it.* (Chávez 2018, 3)

Figure 9.1 Nydia Negromonte (Brazilian, b. Peru, 1965), *POSTA*, 2012–ongoing. Vegetables and raw clay on wooden table, dimensions variable. Collection of the artist. Installation view, *A iminência das poéticas*, 30th Bienal de São Paulo, 2012. Daniel Mansur, courtesy Nydia Negromonte archive

POSTA EXHIBITION HISTORY

POSTA has been shown in five exhibitions to date: *Lección de cosas* (Lesson of Things), curated by Renata Marquez at the Museu de Arte da Pampulha, Minas Gerais, Brazil (2012); *A iminência das poéticas* (The Imminence of Poetics), curated by Luis Péres-Oramas, 30th Bienal de São Paulo (2012, fig. 9.1); Palácio das Artes, Belo Horizonte, Brazil (2013); Centro Cultural Chacao, Caracas, Venezuela (2013); and *Lección de cosas*, curated by Andrea Elera and Jorge Villacorta Chávez at Sala Luis Miró Quesada Garland, Lima (2018, fig. 9.2). At all of these locations, the work was mounted following a script, which consisted of the artist selecting fruits and vegetables from local markets, having assistants encase them in clay, and arranging the wrapped vegetables on a table designed by the artist. Although the same procedure was followed each time, the vegetables naturally had different reactions and behaviors of expansion, retraction, and stabilization. These movements, some anticipated and others not, added symbolic meanings.

Figure 9.2 Nydia Negromonte (Brazilian, b. Peru, 1965), *POSTA*, 2012–ongoing. Vegetables and raw clay on wooden table, dimensions variable. Collection of the artist. Installation view, *Lección de cosas*, Sala Luis Miró Quesada Garland, Lima, 2018. Mirella Moscheta, courtesy Nydia Negromonte archive

The selection process for the fruits and vegetables is based on somewhat loose criteria, such as shape and color; vegetables that will sprout; vegetables that won't sprout; and affordability (what might be cheap in one state or country can be expensive in others). The next step is to instruct the assistants in the process of encasing the fruits and vegetables in a black clay, or when that is unavailable, a locally sourced clay with similar composition and color. At this stage, the artist conveys technical information, such as how to handle the raw clay, emphasizing the importance of "form rather than texture" (fig. 9.3). During the process, the artist offers discussions on art and the

Figure 9.3 Detail of the wrapping process. Courtesy Nydia Negromonte archive

Figure 9.4 Assembly of the work by the artist. Marcelo Drummond, courtesy Nydia Negromonte archive

works of the participants, who are almost always art students, friends, or teams hired by the institution where the exhibition is taking place. Lastly, the artist arranges the pieces on the simple, unvarnished wooden table, laying out the large pieces first and then the medium and smaller ones, thereby creating a composition. The artist carries out this part alone (fig. 9.4).

The artist notes: "The most interesting thing about this work is that it invites observation. People spend a long time looking, trying to identify what something is, what it is not, if it is sprouting, if it is smelling. The banana, for example, smells not like rot, but like it is roasted, and it dehydrates, like a banana-raisin." The installation requires replacement of selected materials so that the transformations happen according to the artist's intention, although across the spectrum of transformations, some are expected and others are not expected, but accepted by the artist. The artist's experience with the transformation of materials at each exhibition expands her understanding of the reaction of materials in different contexts. The vegetables that dehydrate and stabilize might even be used in another exhibition. And excess clay fragments that break during the germination process are removed to avoid unwanted noise.

THE MOVEMENT OF LIFE AND DEATH: VIGOR AND DECAY

According to the artist, new conceptual and practical issues arise each time the work is installed. As an example, she cites her experience with potatoes, which generally decompose and start to smell bad and thus were at first mostly avoided. But when she was mounting the work in Peru, it felt impossible to omit potatoes, considering that the region has such an enormous variety of them. As a result, she indicated that in future installations no fruit or vegetable should be systematically avoided. What is important is the movement of "vigor" that is represented in life through flowering and expansion (fig. 9.5) and the "decay" that is represented in decomposition, desiccation, withering, and death (fig. 9.6, fig. 9.7). Some types of produce, such as ginger and potatoes, sprout more than others. Others, such as cucumbers and watermelons, contain a considerable amount of water and have to be removed after a time to prevent disrupting the entire assemblage. Others, such as star fruit, dry up and stabilize: "It is a work comprising two opposing forces, decay and vigor. These two forces are essential. Thus, in future mountings of the work, I won't use just star fruit because life isn't like that, it's not made solely of things that bear up well under adversity."

POSTA employs ephemeral, organic materials that undergo transformations over time, and each fruit or vegetable responds differently to being enveloped and imprisoned, testing its capacity to free itself to sprout and expand. Through the various processes of selecting vegetables, encasing them, and observing transformations such as changes in appearance and shape, one can understand the symbolic meanings that change with each movement of vigor or decay. The concept is preserved through continual replacement of materials during each exhibition, and by making the selections in keeping with the specific context, which allows for observing new reactions.

The work poses a number of questions when considering its viability for a long-term exhibition: What would be the parameters and limitations of maintenance, partial

Figure 9.5 Flowering and expansion detail. Daniel Mansur, courtesy Nydia Negromonte archive

Figure 9.6 Desiccation and withering detail. Fabio Del Re, courtesy Nydia Negromonte archive

Figure 9.7 Desiccation and withering detail. Daniel Mansur, courtesy Nydia Negromonte archive

replacement, or reconstruction? Generally, potential permanent acquisition is feasible in the same way that many other works made from ephemeral materials have been acquired—namely, the purchase of the project must include instructions regarding the materials, the assembly process, acceptable methods of exhibition and interaction with the public, and an artist's statement about its conceptual and material aspects. There is already a general consensus on these protocols among professionals and institutions that acquire complex collections of contemporary art. But based on the artist's observations during the new iterations of the work in different spaces and climates, some desired and some undesired outcomes have already been encountered that affect the work as a whole.

What limitations are presented by the sprouting and expansion of the plants and the interactions among them? What limitations are entailed in desiccation and shrinking and emanation of odors? What limitations are involved in the elimination of the fragments of clay that break off during the sprouting process? The answers to such questions depend mainly on the context and how each institution can continually update preestablished protocols for the work's maintenance and criteria for ongoing replacement. Regarding maintenance, the artist suggests

> *a daily review to find fruits or vegetables that may have decomposed (leaking liquid or foul odors) and eliminating them along with their fragments. If they exhibit very disagreeable odors, spray the moldy parts with an antibacterial spray, but avoid spraying nearby vegetables that are in the process of sprouting. In the event of replacement, wrap the replacement item in raw clay one centimeter thick, seeking fidelity to the shape rather than the texture.*

The maintenance instructions are based on her experience viewing the work in temporary exhibitions that generally do not exceed three months. If the work is acquired by an institution to be on permanent or periodic display, factors that will need to be considered include: having a team of professionals capable of reconstructing the work for each exhibition; financial conditions for continued maintenance and replacement; and appropriate location and space so that the work doesn't interfere with the welfare of other works in the collection.

Although the artist says that the process begins with her own selection of fruits and vegetables in local markets, she does note that if an institution purchases the work and reconstructs it in the future without her being present, all the other instructions should still be followed in this manner:

- Select varied fruits and vegetables, considering shape and color—some that sprout and others that don't
- Have a team wrap the fruits and vegetables, emphasizing shape over texture
- Display them on a table designed by the artist specifically for exhibiting these pieces
- The wrapped fruits and vegetables must be laid out by only one person, using the following order of distribution: the large fruits and vegetables first, then the medium-size ones, and lastly the smallest ones
- Limitations on expansion of fruits and vegetables that sprout will depend on the context in which the work is exhibited
- Limitations on the permanence of the fruits and vegetables in the desiccation process will depend on how much they disrupt the work as a whole
- In the event of permanent acquisition by an institution, the exhibition duration will be determined by curatorial proposals, since interactions can occur ad infinitum through continual replacement of the fruits and vegetables
- At the end of each exhibition, the institution may choose to completely discard even the pieces that have stabilized
- The work may be displayed in simultaneous exhibitions

For observation purposes, the artist still keeps some fruits or vegetables today that have stabilized. During the exhibitions, documentation is carried out on some transformations, which resulted in another work titled *Post POSTA Series* (2014, fig. 9.8), a photographic essay of *POSTA* fruits and vegetables carried out during the dismantling of the installation after the 30th Bienal de São Paulo (2012).

THE POTENTIAL FOR LONG-TERM OR PERMANENT ACQUISITION

Regardless of whether the work will be acquired by an institution or not, it is extremely important that conservators, working with the advice of an institution, take part in the main phases of evaluating a long-term loan or permanent acquisition, including maintenance capabilities. Other professionals to consult should be trained in preparing documentation and intervention protocols; drawing up contractual agreements that consider the transformation of materials; remaining in contact with the artist for potential changes in her stance over time, and other considerations.

My 2013 article "El problema de la conservación de arte contemporáneo en el contexto de los préstamos a largo plazo" (The Problem of Conserving Contemporary Art in the Context of Long-Term Loans), which treats loans of up to twenty years, partially assesses the problem of long-term acquisitions of contemporary art and the role of the conservator in drawing up contractual agreements, which is an acquisition practice in Brazil. In an interview I conducted for that article, curator Felipe Chaimovich emphasized the importance of long-term loans to evaluate whether the work in question definitely fits an institution's mission statement and collecting policies, and to evaluate whether a museum has adequate technical facilities for maintaining the work. The matter is complex, but it is a practical intermediate step toward a permanent acquisition (Sehn 2013, 89). In the case of *POSTA*, the concept encompasses the process, the symbolic meaning of the materials, and the transformations in shape and appearance that, in the case of a long-term or permanent acquisition, entail the preparation of detailed protocols.

In spite of the many existing bibliographic references regarding issues surrounding the preservation of contemporary art as a reflection on criteria, methodologies, documentation, and so on, conservators are continually struggling with opposing forces during the decision-making processes that will also affect the life and death of the work. *POSTA*, with its literal and symbolic balance between movements of vigor and decay, in this way offers possibilities for maintaining vigor in particular.

Acknowledgments

Many thanks to Nydia Negromonte for a highly productive conversation in her studio, and for making photographs available from her personal archive; to the Graduate Program of the Universidade Federal de Minas Gerais; to PPGARTES and PROEX for their financial support for the presentation in Mexico; and to the organizing and editorial team for the "Living Matter" symposium.

NOTE

1. All artist quotes come from a 2018 interview with the artist in her studio, later supplemented by email and telephone conversations. For more information on the artist visit https://nydianegromonte.com/.

BIBLIOGRAPHY

Chávez 2018
Chávez, Jorge Villacorta. 2018. "A Presentation." In *Lección de cosas*. Lima: Sala Luis Miró Quesada Garland. https://www.academia.edu/36890339/Nydia_Negromonte.

Cologne Institute of Conservation Sciences and Technology Arts Sciences 2019
Cologne Institute of Conservation Sciences and Technology Arts Sciences. 2019. *The Decision-Making Model for Contemporary Art Conservation and Presentation*. Rev. ed. Cologne: Cologne Institute of Conservation Sciences and Technology Arts Sciences. https://www.th-koeln.de/en/decision-making-model-for-contemporary-art-conservation-and-presentation--revisited_63959.php.

Macedo and Henriques da Silva 2010
Macedo, Rita, and Raquel Henriques da Silva, eds. 2010. *A arte efímera e a conservação: O paradigma dos bens etnográficos e da arte contemporânea = Ephemeral Art and Conservation: The Paradigm of Contemporary Art and Ethnographic Objects.* Lisbon: Instituto de História da Arte, IHA FCT-UNL. https://run.unl.pt/bitstream/10362/16429/1/Livro_Actas_Completo.pdf.

Negromonte 2016
Negromonte, Nydia, ed. 2016. *D.U.C.T.O: Nydia Negromonte.* Belo Horizonte, Brazil: Autêntica.

Figure 9.8 Nydia Negromonte (Brazilian, b. Peru, 1965), *Post POSTA Series*, 2014. Four hundred mineral pigment prints on 305 g cotton paper, each 73 × 36.5 cm. Collection of the artist. Courtesy Nydia Negromonte archive

Sehn 2013
Sehn, Magali Melleu. 2013. “El problema de la conservación de arte contemporáneo en el contexto de los préstamos a largo plazo,” 87–94. Conservación de arte contemporáneo 14. Madrid: Museo Nacional Centro de Arte Reina Sofía.

Sehn 2014
Sehn, Magali Melleu. 2014. *Entre resíduos e dominós: Preservação de instalações de arte no Brasil*. Belo Horizonte, Brazil: C/ARTE.

Wharton et al. 2016
Wharton, Glenn, et al. 2016. “The Artist Archives Project: David Wojnarowicz.” In *Saving the Now: Crossing Boundaries to Conserve Art Works*, edited by Austin Nevin et al., 241–47. Los Angeles and London: Studies in Conservation (IIC).

10

Conservation/Restoration of Biological Material in Contemporary Art: A Perspective from Academia in Collaboration with Artists

Ana Lizeth Mata Delgado

Mexico's Escuela Nacional de Conservación, Restauración y Museografía has developed the Seminario Taller de Restauración de Arte Moderno y Contemporáneo (Workshop-Seminar on Restoration of Modern and Contemporary Art). The methodologies it employs take into consideration factors such as the artist, production technique, context, compatibility and interactions of materials, as well as present and possible future deterioration dynamics. A related but separate research project titled Documentación, Registro y Experimentación Material en Arte Contemporáneo (Documenting, Registering, and Experimenting with Material in Contemporary Art) was aimed at documenting and experimenting with different organic materials. This allowed for collaboration with artists based on experimentation with biological materials to generate, conserve, and/or restore works of art.

◆ ◆ ◆

Since 2004 the Seminario Taller de Restauración de Arte Moderno y Contemporáneo (Workshop-Seminar on Restoration of Modern and Contemporary Art) offered at Mexico's Escuela Nacional de Conservación, Restauración y Museografía (ENCRyM), which is part of the Instituto Nacional de Antropología y Historia (INAH), has positioned itself nationally and internationally as an academic space that researches, conserves, restores, and documents new artistic proposals created in the twentieth and twenty-first centuries. The workshop-seminar was created in 2001 in response to in-depth reflections on new professional challenges facing ENCRyM's graduates with bachelor's degrees in restoration. New artistic production techniques and new vocational opportunities outside INAH in both the public and private spheres also influenced its creation. The workshop-seminar is presently being offered in the ninth semester of the bachelor's degree program as a full-time, on-site elective. At this time it is the only course of its kind in Mexico; none of the other schools or universities currently providing a bachelor's degree in restoration offer courses that address cultural issues in an integrated manner. Its uniqueness attracts students outside of ENCRyM to take the course to supplement their training.

Over the course of its fifteen years so far, distinct methodologies have been developed in the workshop-seminar for addressing issues in the conservation and restoration of artworks made from organic and inorganic material. This paper addresses only the cases of art made from organic material. These methodologies consider different fundamental aspects—for instance production techniques, context of creation, context of exhibition, artist/creator, compatibility and interaction of materials, and existing as well as possible future dynamics of deterioration—to establish the best course of intervention. A primary consideration is collaboration with the artist in order to understand the meaning of the work, the artist's intention behind using a specific material, and their long-term vision for and opinion on the work's conservation.

Within the structure of the workshop-seminar's academic program are three research projects: documenting, registering, and experimenting with materials in organic or inorganic contemporary art; conserving, registering, and documenting urban art and graffiti; and conserving and researching plastics. The first of these involves close collaboration with the creators of contemporary artworks in order to record their testimonies, which serve as vital documents for the conservator's task, and experimenting with different substantive raw materials.

A distinctive aspect of this project is collaboration with artists to experiment mainly with biological material in the creation, conservation, and restoration of works of art. Examples of such collaboration have included works made with leather and pigs' feet, others made with eggshells, and yet others crafted with coconut and maize fibers—a diversity of materials that reveals the creators' ongoing search to innovate and produce works with different perspectives, which in turn also generates new problems and research urgencies vis-à-vis their conservation.

It is important to mention that artists are increasingly open to and interested in collaborating with conservators, and this dynamic paves the way for new research into both the constituent materials and new materials and strategies for conservation and restoration, thereby generating new, creative alternatives for proper conservation.

CONSERVATION, RESTORATION, AND RESEARCH ON WORKS OF ART MADE FROM ORGANIC MATTER

As a result of the daily work within the workshop-seminar, and as part of the collaboration with artists such as Darío Meléndez, Grupo SEMEFO, Antonio Serna, Marta Palau Bosch, and Noemí Ramírez, to mention but a few, research projects have been conducted that have resulted in the conservation and/or restoration of works made with materials such as maize leaves, coconut fibers, animal skin, embalmed horse fetuses, and a taxidermied crocodile. For instance:

- Grupo SEMEFO, *Lavatio Corporis*, 1994. Three embalmed horse fetuses on metal pedestals.
- Antonio Serna, *Untitled*, 1984. Mixed media (oil, acrylic, mortar, pumice stone, and birdseed) on fabric.
- Marta Palau Bosch, *Mis caminos son terrestres XVII* (My Paths Are Earthly XVII), 1985. Textile sculpture involving dyed henequen (agave) and totomoxtle.
- Noemí Ramírez, *Mirada del tiempo* (Time View), 1985. Henequen, coconut, and palm fibers filled with wadding.
- Santiago Rebolledo, *Christo* (Christ) (fig. 10.1), 1981. Wood, leather, ink, and paper.
- Taxidermied crocodile from a scientific collection, 1980s.

The research projects and interventions follow a process through which the researchers investigate the material and its meaning, and issues in conserving the work. They usually follow the following procedure:

1. Diagnosis of the Work of Art

Before the work is selected, it is assessed at its current site to determine whether it is an appropriate subject for the workshop-seminar. Collections normally considered for this are mainly in public museums.[1] Once a diagnosis has been conducted on the state of conservation of the work, a project is created that identifies in detail the deterioration, options for conservation, scope of intervention, and any agreements required. Once both parties accept the initial agreement, the work is transferred to ENCRyM and its conservation and/or restoration begins.

2. Artist Interview

While assessing the specific work at hand, the research project investigates the artist's broader body of work, processes, motivations, and materials. Guidelines are established and defined for an interview, which may focus on the work to be restored and/or the artist's broader production. Usually, once an artwork is in the workshop, the artist is invited to visit and begin the interview process

Figure 10.1 Santiago Rebolledo (Colombian, 1951–2020), *Christo* (Christ), 1981. Mixed media (wood, leather, ink, and paper), 104 × 84 cm. Centro Nacional de Conservación y Registro del Patrimonio Artístico Mueble (CENCROPAM) del Instituto Nacional de Bellas Artes y Literatura (INBAL). STROMC-ENCRyM, INAH

(fig. 10.2). To date, the workshop-seminar has a database of more than forty artist interviews, all focused on the conservation of their works and on conservation and/or restoration of modern and contemporary art in general. The information collected during the interview plays an important role in determining possible solutions for conservation; sometimes the artist has a specific opinion on the matter, which is considered and conveyed to the owner of the work (usually, as noted above, this is a museum or cultural institution).

Two particularly interesting interviews were with Darío Meléndez and Colectivo Sonámbulo. Meléndez's *Tilma Porca* is an installation that uses pigskin in different presentations to reflect the image of the Virgin of Guadalupe (Meléndez and Mata Delgado 2012). Colectivo Sonámbulo's *Incontenible* (Uncontainable) involved a research project for the purpose of evaluating and determining alternatives to slow the rotting of pigs' feet (Rebolledo et al. 2019).

Figure 10.2 Interview with artist Noemí Ramírez. STROMC-ENCRyM, INAH

Figure 10.3 Taxidermied crocodile under ultraviolet light. STROMC-ENCRyM, INAH

3. Scientific Analysis and Research

For the research and the interdisciplinary work, the team works at ENCRyM and/or in external laboratories, depending on the type of analysis required. Team members conduct biological, physical, forensic, and chemical analyses, depending on the issues present (fig. 10.3, fig. 10.4). Professors may contribute their expertise to answer questions posed by a particular artwork. When ENCRyM does not have the specialist required, external specialists are consulted who can provide supplemental information.

4. Evaluation of Conservation Alternatives

After an artwork's state of preservation is assessed and diagnosed and the meaning and conceptual aspects of the work considered, different conservation options are proposed. The artist's opinion, technical resolutions, technical and financial resources, viability of the processes, and aesthetic and artistic factors are all considered. This usually occurs after several weeks of working closely with the artwork and after obtaining all analytical results. Next

Figure 10.4 Detail of colorimetric analysis for the taxidermied crocodile. STROMC-ENCRyM, INAH

steps include determining the scope, a time schedule, equipment and materials needed, and human and financial resource requirements.

5. Presentation of the Best Alternative

After assessing advantages and disadvantages of each proposed conservation process, a meeting is held with the custodians of the work in which findings and recommendations are presented. This includes general information, research done on production techniques, material and scientific analyses, state of conservation and diagnosis, graphic and photographic registry, the interview with the artist, and the artist's opinion. Based on this presentation, a consensus is reached between the museum and the restoration team, and formalized as an agreement.

6. Intervention

Having established the scope, processes, materials, and agreement(s) among the parties, conservation and/or restoration begins. It usually lasts from four to eight months, depending on the type of work and the issues involved. This intervention is usually conducted in the workshop-seminar facilities at ENCRyM (fig. 10.5, fig. 10.6).

Figure 10.5 Eliminating earlier repainting on the snout of the taxidermied crocodile. STROMC-ENCRyM, INAH

Figure 10.6 Antonio Serna (Spanish, 1927–2011), *Untitled*, 1984, undergoing restoration and stabilization of the birdseed. Mixed media (oil, acrylic, mortar, pumice stone, and birdseed) on fabric, 90 × 80 cm. STROMC-ENCRyM collection. STROMC-ENCRyM, INAH

7. Delivery of Results and Work Report

When all restoration work is complete, an exhaustive report is delivered to the museum, to the ENCRyM library, and sometimes to the artist, containing all the information concerning the work, from the start of the registration to the research, analysis, and actions carried out, plus a complete photographic record of the intervention. This document aggregating all the relevant information is now a unique file on the work that will serve for future research and/or intervention (if necessary).

8. Dissemination in Specialized Forums and Publications

Last, the research and work conducted are disseminated and circulated in various academic forums: conferences, lectures, symposia, and written articles.

CASE STUDY

Grupo SEMEFO's *Lavatio Corporis* is a useful case study to illustrate the methodology explained above. This installation involves three embalmed horse fetuses placed on metal pedestals. These are part of a series of five installations exhibited in four galleries of the Museo de Arte Carrillo Gil, Mexico City, in 1994 (Ganado and Herrera 1994). Although, in this case, the work that was restored was not the original piece (the first version decomposed as a result of excessive humidity), the piece we worked on is authentic in conceptual and material terms; Grupo SEMEFO created a new version within the same year and with the same characteristics, which it donated to the Museo de Arte Carrillo Gil.

This work came to the workshop-seminar in 2010 as a result of its conservation issues, which consisted mainly of material and aesthetic changes. Interestingly, it was not initially clear whether these contributed to or detracted from the piece's meaning. The material state of the work indicated that, without intervention, in would likely continue to deteriorate and perhaps be lost, yet this was potentially congruent with the concept proposed by the artists. It is a processual work whose deterioration is intrinsic to it.

Two main condition issues were observed. *Lavatio Corporis* was in fact at that time mostly materially stable, but the fetuses were noted as having reduced density due to loss of bodily fluids, as well as desiccation and contraction of the tissues. There was also a loss of flexibility to the skin and resulting parchment-like texture caused by progressive desiccation and polymerization of the proteins structurally modified by the embalming process. The pedestals were neither original nor stable in supporting the fetuses. Additionally, the storage box was moldy and without any ventilation, such that mold continued to attack the fetuses.

Several scientific analyses were performed, including examination of the fetuses under UV light, analysis of the skin and the threads suturing the wounds inflicted during taxidermy, and incubation of a mold culture in the box and on the fetuses to determine the best way to eradicate it. Generally speaking, three possible options for conservation presented themselves:

- The ephemeral work: the work will eventually be lost thanks to the decomposition in which it is engaged. In this case, a record would remain of the work's existence and transformation.
- The permanent work: conservation and/or restoration treatments and resources will be used to achieve permanence of the work.
- The renewable work: when the fetuses have deteriorated to an agreed-upon degree, the organic components will be replaced with fetuses deemed equivalent, but newer.

After interviewing Grupo SEMEFO, it was determined that the fetuses' current state of deterioration was central to the work's meaning. It was therefore deemed essential to make conservation efforts to stabilize its present appearance, and so the second option was chosen. The pedestals were replaced, and the storage box and fetuses were fumigated to kill the mold (fig. 10.7, fig. 10.8, fig. 10.9).

The piece has great historical, aesthetic, and political relevance to the contemporary art of Mexico, representing a historical period and art movement that explored specific discourses and means of expression. There was a collective consensus at the time the installation was donated that the museum would provide for its long-term conservation and maintain its permanence. Any ephemeral consideration was superseded. Over time, that characteristic has nourished the work's discourse, making it an example of the fact that institutions, museums, and galleries house not only works but, in some cases, processes as well (López Guzmán 2010, 54).

Figure 10.7 Grupo SEMEFO (Mexican, active 1990–99), *Lavatio Corporis*, 1994, showing an embalmed fetus after processing. Three embalmed horse fetuses on metal pedestals, dimensions variable. Museo de Arte Carrillo Gil, Mexico City. STROMC-ENCRyM, INAH

Figure 10.8 General view of the packing box that was part of *Lavatio Corporis*. STROMC-ENCRyM, INAH

Figure 10.9 General view of one of the new pedestals for *Lavatio Corporis*. STROMC-ENCRyM, INAH

CONCLUSIONS

Material experimentation in art opens new perspectives and poses challenges for conservation and restoration, so it is essential to develop strategies aimed at better solutions to issues presented in conserving art made from organic matter. Direct interactions between artist and restorer are becoming increasingly relevant in the conservation and restoration of contemporary art, in the interest of both creating new works of art and conserving existing ones. Exchanges of knowledge and experience lead to a better understanding of certain works and their meaning and function, as well as future conservation efforts. Documentation through interviews, notebooks,

archive materials, and reports serves not only as testimonies concerning conservation work, but also as background for future research.

NOTE

1. We have worked with the Museo Universitario Arte Contemporáneo, Mexico City; the Museo de Arte Carrillo Gil, Mexico City; and the Museo Regional de Nayarit, Tepic.

BIBLIOGRAPHY

Ganado and Herrera 1994
Ganado, Edgardo, and Carolina Herrera. 1994. "SEMEFO, Museo de Arte Carrillo Gil. Catálogo de Exposición." Consejo Nacional para la Cultura y las Artes. Instituto Nacional de Bellas Artes. Mexico City: Museo de Arte Contemporáneo Alvar and Carmen T. de Carrillo Gil.

López Guzmán 2010
López Guzmán, Javier. 2010. "Informe de los trabajos de conservación sobre la obra: Lavatio Corporis / Grupo SEMEFO." Seminario Taller de Restauración Arte Moderno y Contemporáneo. Temporada de trabajo agosto-diciembre 2010. Unpublished.

Meléndez and Mata Delgado 2012
Meléndez, Darío, and Ana Lizeth Mata Delgado. 2012. "Tilma Porca." In *Memorias del 5º Foro Académico*, edited by ENCRyM, 33–40. Mexico City: ENCRyM-INAH. https://www.repositoriodepublicaciones.encrym.edu.mx/pdf/4-TilmaPorca.pdf.

Rebolledo et al. 2019
Rebolledo, Karla, et al. 2019. "Incontenible: Entre la creación artística y la conservación." *Estudios sobre conservación, restauración y museología* 5:157–70. https://www.repositoriodepublicaciones.encrym.edu.mx/pdf/13%20incontenible_corregido2019.pdf.

Part Three

Living Matter: Challenging Institutions

11

Killing with Kindness? The Challenges of Conservation and Access for Living Matter

Marcia Reed

The most difficult moment in the life of an artwork is sometimes when it enters an institution. Challenging establishment authority, many avant-garde and Fluxus works were created to act out. They warp, wrinkle, and ooze as they age, occasionally deteriorate, or even completely disappear. Such works are documents as much as art, made to be experienced and handled rather than entombed as untouchable treasures. This paper discusses a Surrealist cellulose acetate book casing adorned with butterflies and a seahorse; stabilization of Benjamin Patterson's tackle box Hooked *(1980) following a sardine can explosion; and ongoing monitoring of Dieter Roth's editions.*

◆ ◆ ◆

One of the most difficult moments in the life of an artwork can be when it enters an institution. In this author's experience, private collectors tend not to over-conserve, most often erring on the side of passive storage. Some of the most discerning collectors simply wish to appreciate and enjoy their works of art on a daily basis, which means that the works are, for instance, displayed for lengthy periods in too much light. Such collectors enjoy living with art, and they don't worry about extending its life or preserving works in perpetuity. Indeed, it could seem a bit pretentious to assume responsibility for creating an eternal life for a work of art.

Collecting plays out very differently with libraries, archives, and museums, sometimes taking on the worst senses of "institutionalization." While early works on paper can behave well for centuries, more recent ones, particularly twentieth-century avant-garde and Fluxus works, present problems. Indeed, many were created specifically to challenge institutional authority, to act out, and were thus intentionally *not* made to last. They warp, wrinkle, leak, ooze, or explode as they age. These artworks were created to be in an extended state of process. It is a given that they will deteriorate, and maybe completely disappear, as is the case with early photocopies and faxes. They exist as documents as much as art. Most significantly, they're made to be experienced and handled rather than entombed like untouchable treasures in cases. I have thought more than once that if something unpleasant happened to certain works, it might even please the artist, who may no longer be with us but whose work is still actively talking back. The incorporation of living materials

is especially sympathetic to creating art that is not static, but rather notable for its tendencies to change and decay, effectively as if it were a living organism.

The Getty Research Institute (GRI) special collections include rare and unique works that document the history of art. Up to the twentieth century, they are mostly works on paper. But modern and contemporary artists have occasionally included food, plants, or even dead animals in their works. When considering objects in the GRI's special collections that are made from living matter, it is clear that references to both their initial status as well as to their present, now-changed condition are crucial to their meaning and to an appropriate—that is, direct and unmediated—experience and appreciation of the work. For both historical documentation and surrogate viewing, photography and digitization are remarkably helpful, often revealing more information than the naked eye can discern. And documentation of how these objects are stored, conserved, and accessed is also critical to their comprehension.

The important questions include: Is it possible to preserve the work responsibly without interfering with the artist's intent that it age and/or disintegrate? Can it still have a life? And should it? Once works become institutional assets, must we preserve them as typical institutional assets if that counters what the artists intended? If a work is made to be handled and we only show it behind glass or in a case, are we denying the right of the work to exist and function as the artist wished? In certain cases, at least one of these issues can be simple. For instance, if an artist's book is made to be read, then we must provide a way to do that at some point, thus allowing the crucial experience of the book's materiality to take place. Dieter Roth's books, for example, have not been read so much as simply viewed as book sculptures, but they are filled with his words, his poetry. To deny access to the texts fails to acknowledge a critical facet of the work, which is the interactions of words and images in the context of Roth's selections of specific materials.

Signature characteristics of twentieth- and twenty-first-century art include such intricately interwoven presentations of texts and images, for which, it should be stressed, reading is often crucial. A touchstone of the genre is Marcel Duchamp's *Green Box* (1934, fig. 11.1), filled with quasi-archival documents that present an explication of his *Large Glass* (1915–23). Like Duchamp's *Boîte-en-valise* (Box in a Suitcase), produced in multiple editions as a box or valise that presents miniatures of his works, the *Green Box* requires firsthand access to touch and to read. This becomes difficult when these are designated masterpieces—significant works by a major artist. In Mexico City on the last day of the "Living Matter" conference, attendees viewed works by Duchamp, including the *Green Box*, in glass cases at Museo Jumex as part of the exhibition *Appearance Stripped Bare* (Gioni 2019). The boxes were shown in galleries together with works by Jeff Koons, and the juxtaposition was telling. The exhibition presented Duchamp's boxes in a state of embalmed inaccessibility, like closed books. The implicit denial that they are made to be unpacked, handled, and read took away their aura and retracted their power. Meanwhile, Koons's brightly colored paintings and shiny sculptures grabbed visitors' immediate attention. Duchamp smiled wisely and somehow knowingly out from the vintage photographs and film in the show.

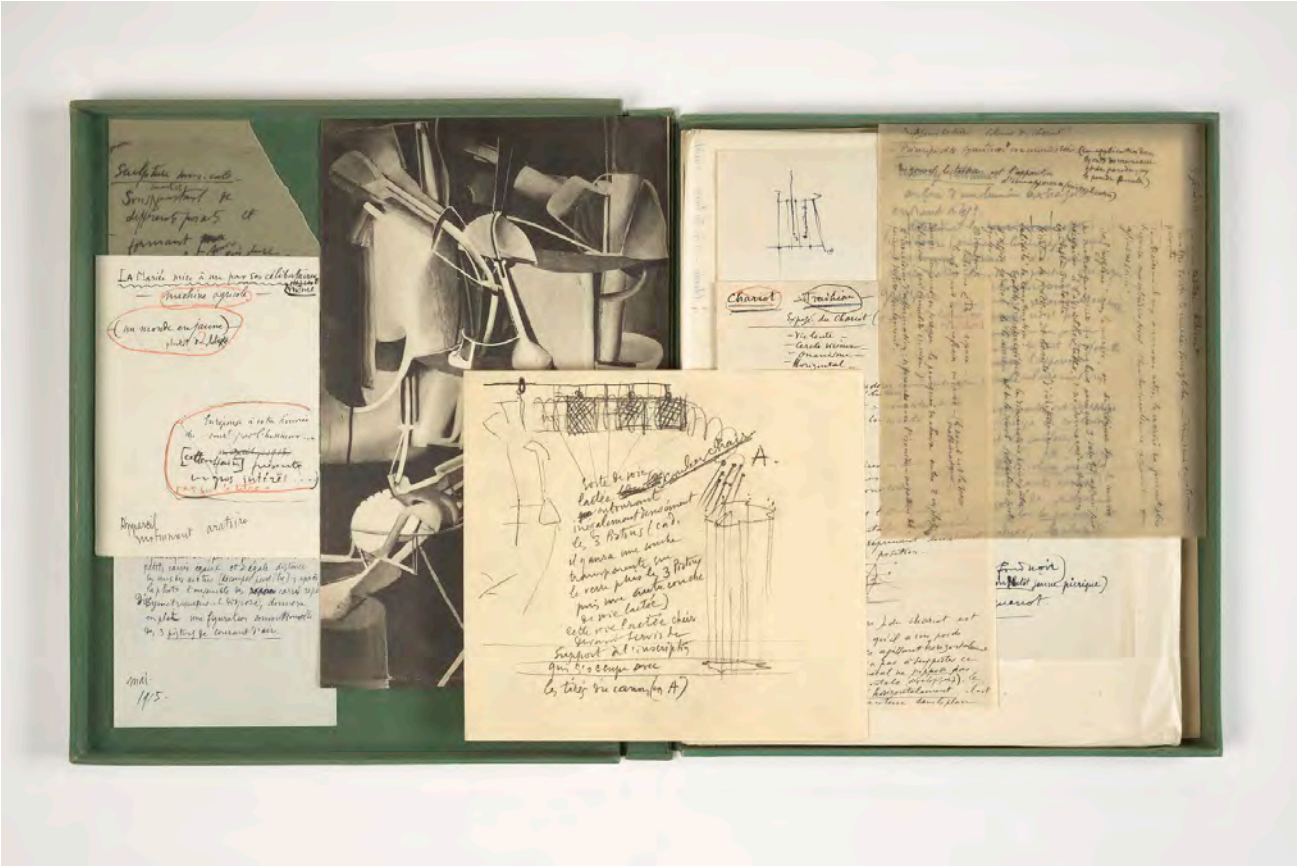


Figure 11.1 Marcel Duchamp (French, 1887–1968), *Green Box*, 1934. Box containing collotypes and hand-colored lithographs reproducing Duchamp's works, closed: 33.4 × 27.8 × 2.5 cm. Paris: Edition Rrose Sélavy. GRI 95-B1934. © 2019 Artists Rights Society (ARS), New York / ADAGP, Paris / Estate of Marcel Duchamp

At the GRI, one of our first experiences with making major conservation decisions regarding living matter came with the acquisition of the Jean Brown Collection. Although Brown is well known today as a collector of Fluxus works, in collaboration with her husband, Leonard, she also collected an extraordinary group of Dada and Surrealist editions in the late 1950s and 1960s. The Browns had especially complete holdings of Duchamp's signature boxes and publications. Their Dada, Surrealist, and Fluxus collections were acquired by the GRI in 1985, and the first encounter with living matter concerned a small case of books (fig. 11.2, fig. 11.3). This Surrealist cellulose acetate case filled with butterflies, feathers, a seahorse, and eyelashes arrived with the Jean Brown Collection in a state of serious deterioration. Attributed to Duchamp and André Masson, it dates from around 1939. A Surrealist object in itself, the book case holds 1939 editions of four literary classics published by in Paris by Guy Lévis Mano under his GLM imprint in the series Biens Nouveaux. The small, elegant books are Lewis Carroll's *La Canne du destin* (The Walking Stick), Franz Kafka's *La chasseur Gracchus* (Gracchus, the Hunter), Gisèle Prassinos's *Sondue*, and Duchamp's *Rrose Sélavy*. In the 1930s and 1940s, GLM published hundreds of illustrated Surrealist editions in these sorts of tastefully designed paperbound quartos. While the Surrealists often *portrayed* bizarre variations on living bodies—contorted, dismembered, part animal, part insect—they did not often actually employ living matter in their art. (The major exception is of course Meret Oppenheim's *Object* [1936], the fur-covered cup and saucer.) To date, no documentation has been found concerning the fabrication of this unique book case, except for an unknown dealer's description. Possibly it was designed by Duchamp's companion at this time, the book designer and binder Mary Reynolds, in collaboration with Masson, who drew the figures in ink on the cardboard chemise. The box serves as an overlay for the drawings on the chemise. They are created as an ensemble, to be enjoyed visually while reading the deliberately strange selection of texts stored within.

Figure 11.2 Marcel Duchamp (French, 1887–1968), design possibly by Mary Reynolds (American, 1891–1950), ca. 1939. Cellulose acetate case containing Lewis Carroll, *La canne du destin*, trans. André Bay; Marcel Duchamp, *Rrose Sélavy*; Franz Kafka, *Le chasseur Gracchus*, trans. Henri Parisot; and Gisèle Prassinos, *Sondue*, with added butterflies, feathers, a seahorse, and drawings on the chemise attributed to André Masson (French, 1896–1987), closed: 17 × 12 × 2.5 cm; object: 18.7 × 12.3 × 4.7 cm. GRI 95-B2292.

GETTY RESEARCH INSTITUTE

Periodic Action Item

[individual components of this item or material as a whole needs a periodic check of condition]

Next check anticipated in: 2009 > ☐ 2010 > ☐ 2011 > ☐ 2012 > ☑ 2013 > ☐

Object Identification

TMS/Accession No.: 95-B2292
Source: Jean Brown Collection

Titles/respective Authors:
La canne du destin / Lewis Carroll.
Le chasseur Gracchus / Franz Kafka.
Sondue / Gisèle Prassinos.
Rrose Sélavy / Marcel Duchamp.

Series: "Biens Nouveaux"

Media: mixed
Materials:
Outer cover: organic materials in clear, hard plastic (CN or CA?)
Inner cover: hand decorated paper, covering card board with leather spine, containing 4 volumes

Date: 1939

Dimensions: Of slipcase (approx.)
Height x L x W [inches or cm]

Image:

Special note for handling:

- Avoid any vibration when transporting the storage box, or when handling the item.
- The plastic slipcase should be handled with unpowdered nitile gloves (due to the deteriorating plastic) and with extreme care (mind the fragile butterflies).
- Check plastic cover periodically for possible crazing, cracking, or further deformation.
- Item should be kept in cold storage, reducing the rate of deterioration.

Figure 11.3 Conservation guidelines housed with the case. GRI 95-B2292.

By the mid-1980s, when the GRI acquired the Jean Brown Collection, the case was yellowed and warped, partly split at the seams. The gilded seahorse, butterflies, and feathers were desiccating. This hauntingly beautiful and truly surreal book-object, evoking a dreamlike otherworld and the perfect enclosure for its fantastical literary works, has been exhibited once as of this writing, in the 1994 GRI exhibition *Sites of Surrealist Collaboration*. It was displayed in a wall vitrine with a black velvet curtain to protect it from sustained direct light.

In the years before the new Getty Center was built, the GRI's collections storage building also housed the Getty Conservation Institute. One of the GCI scientists, Jim Druzik, had considerable experience with the effects of lighting and museum display. Happening by one day, he took an interest in the case and its books, offering to assess it and make recommendations. In collaboration with a GRI conservator, the case was stabilized and squared up slightly so that the books could fit into it again, although they are now stored separately with instructions for unpacking, storage, and use so as to limit abrasion and handling of both the books and particularly the case, which requires very limited handling and no sudden movement. The surface was lightly cleaned, since it had accumulated dirt. Unbeknownst to us, Druzik was a butterfly collector. He identified the butterfly species and asked whether we wanted to replace them. He brought in a drawer of very similar specimens for us to select from if we wished. But the decision was immediately obvious: to replace the butterflies seemed like unacceptable cosmetic surgery. It was a suggestion to which perhaps Duchamp would have responded with his familiar mysterious smile, but at the time, it did not seem an appropriate option. With objects such as these, there is an ongoing life. It should be tended to with care, but the process should not be interfered with.

A coda to this past decision is that the butterfly wings are now desiccating further, fading and turning to powder. As such objects age and change, conservators and curators may want to reconsider whether to enhance (meaning, restore) the artistic qualities or to continue to preserve and stabilize the objects as well as they can. Almost inevitably they will continue to change.

In addition to this unique work, Duchamp also created numerous multiples—a new category in the twentieth century, a kind of small-scale artistic mass production. Duchamp himself was an early adopter of this format because it worked well in the context of his readymades. Although multiples begin their lives produced in groups (hence the term) of identical or very similar objects, as they are acquired by collectors or institutions, they proceed to experience different histories. Their residence in various locations with different conditions of housing and display results in changes in their appearance. Plastic, itself a potentially unstable material, is often used in multiples, sometimes as a container, and sometimes combined with living matter, as in some Fluxus boxes. Post-avant-garde artists' books, multiples, and objects with text and images often use plastic for transparent enclosures, for instance as sleeves that become the leaves of a book.

Jean Brown was fascinated by the works of Dieter Roth and acquired more than fifty volumes directly from him. She particularly appreciated Roth's experiments with book design and publishing formats, such as his combination of traditional printing techniques with contemporary materials that are far more unstable than the papers that bookmakers used for centuries. Brown had at least two copies of the special edition of Roth's *Bok 3c: Wiederkonstruktion des Buches aus dem Verlag Forlag Ed* (Reconstruction of the Book from the Verlag Forlag Ed., 1961/1971, fig. 11.4), which has a separate slipcover embellished by either painted bagels or croissants. The GRI has bagels; the Museum of Modern Art, New York, has croissants (Suzuki 2013, 29). Here, the question is whether to restore the sections of the bagels that have crumbled. So far the bagels are slightly deteriorated, and the crumbs have been carefully preserved, somewhat sympathetically collected in a small bag; because of their fragility, the covers receive only supervised use.

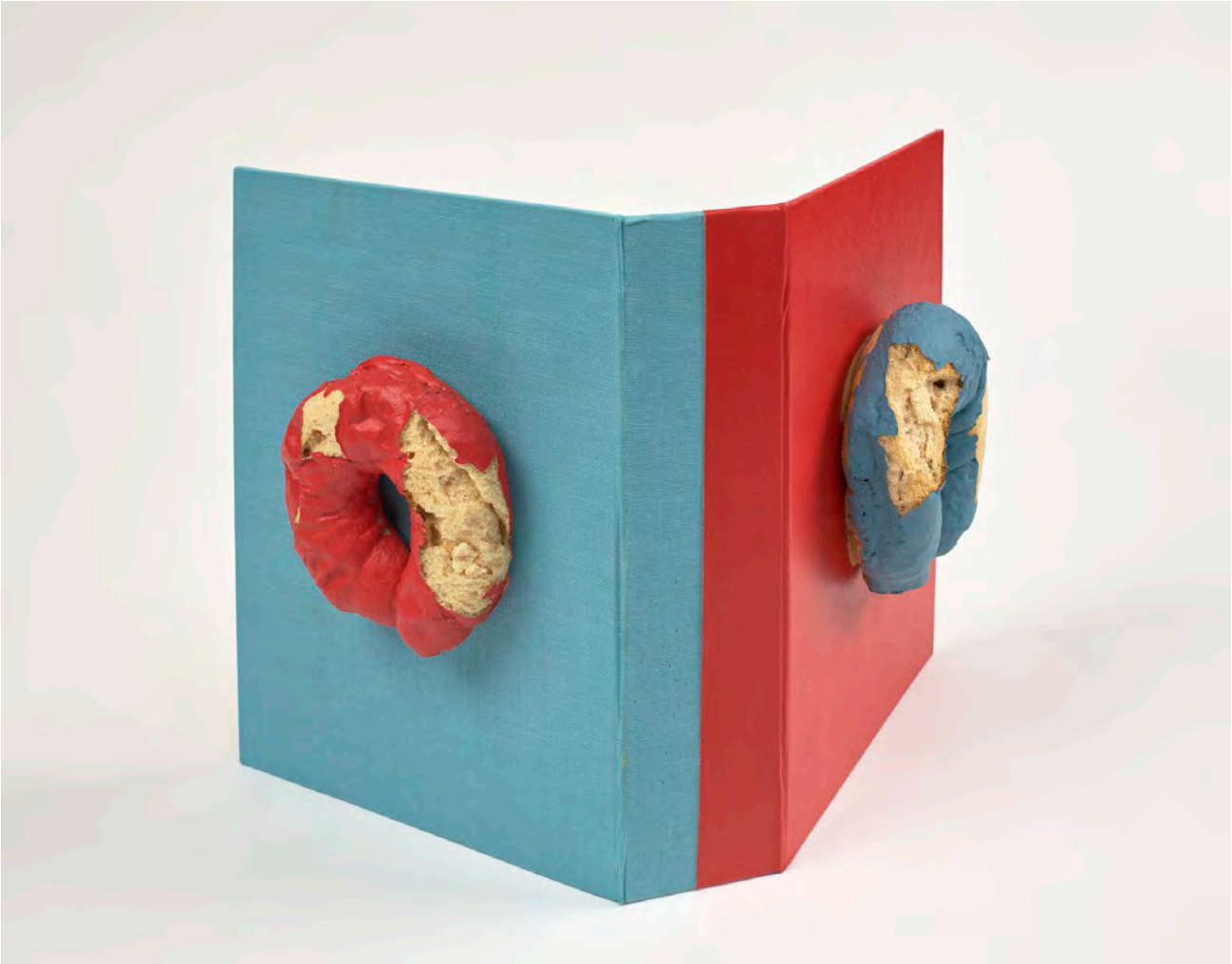


Figure 11.4 Dieter Roth (Swiss, 1930–1998), *Bok 3c: Wiederkonstruktion des Buches aus dem Verlag Forlag Ed* (Reconstruction of the Book from the Verlag Forlag Ed.), 1961/1971. Cardboard, caraway seed roll, and paint, open (cover): 23.2 × 40.3 × 4.1 cm; closed (book): 22.9 × 17.1 × 3.8 cm. Reykjavik: H. Mayer. GRI 93-B18994. © Dieter Roth Estate, courtesy Hauser & Wirth

The GRI holds five different copies of Roth's special editions of *Poetrie*. Two are printed on plastic pages. The pages of one are filled with urine, which we know with certainty because of its smell. Another edition of *Poetrie* is filled with either cheese or pudding. The latter has not been tested because we are hesitant to disturb its apparent equilibrium. The evocative plastic pages of Roth's poems wrinkle like skin. Because they have a tendency to stick together, they have been interleaved, as is commonly done with freshly produced prints.[1] A plastic spine supports the book; the plastic pages pucker. When standing up, the volumes lean uncertainly, like elderly people.

Almost forty of Roth's variations on book structure were displayed in the 2018 GRI exhibition *Artists and Their Books / Books and Their Artists* (Reed and Phillips 2018; fig. 11.5). The volumes filled with living matter absolutely stole the show. It seems that living matter resonates especially in artists' books such as Roth's, which themselves are visual references to physicality. The editions of Roth's *Poetrie* (with variant spellings: *Poemetrie, Poeterei*) were shown, all embellished differently by him with watercolors or ink, or versions in which the poems are printed on plastic leaves filled with urine or cheese (Roth 1967–68). It seems that Roth cannot make the same book twice. Each is an inspired variant performance to be viewed and read differently. But my concerns at the time involved touch specifically. Handling the books is important to their concept, but the plastic is fragile, and the printed words of the poems could stick together or fall off the pages. And what about smell? Is the intentionally strong, unpleasant smell of the urine book part of the experience of reading it? At the time of the exhibition, these issues remained unaddressed. Viewers were not permitted to touch the books on display,

Figure 11.5 Case displaying artist's books by Dieter Roth. Installation view, *Artists and Their Books / Books and Their Artists*, Getty Research Institute, Los Angeles, 2018. © Dieter Roth Estate, courtesy Hauser & Wirth

and the smell of the urine book did not penetrate the glass case.

Another edition of Roth's poems, also from the Jean Brown Collection, had an inserted slice of mutton. When the collection was received, conservators took the mutton out of the book (noting the page it had been on) and placed it in a separate housing because it was staining the pages. No doubt this removal was done with good intentions; mutton has no place in a proper book. However, to see the mutton stain as a problem to be rectified, rather than a deliberate intervention by Roth, is a misunderstanding of the work. The conservation treatment interferes with the deliberate insertion of a smelly piece of meat *intended* to spread a stain on the pages. Roth's essential idea was precisely that the mutton's presence is part of the life of this book. Can institutions justifiably counter an artist's intentions?

Compared to such tour-de-force gestures, Roth's editioned multiple *Taschenzimmer* (Pocket-Room, 1969/1972, fig. 11.6) always struck me as an engaging piece that conceives a simple life for an artwork. It is an exhibition in a modest container—a cardboard box that opens to show a print of a table with a small piece of banana peel tacked on. Of the two in the GRI collection, one is quite moldy, and the other is dried out. One box has no lid and is possibly a variant edition. Roth's deployment of the banana slice has to be intentional. Who is not familiar with the life cycle of a banana, and the fruit's frequent use in jokes? Fortunately, several other versions in institutional collections are well documented. All have aged differently according to storage conditions, illustrating how resonant it is to use living matter in an edition in which initially identical works go out into the world and change according to their situations. Should the decayed fruit and mold in *Taschenzimmer* be cleaned up? Again, this would seem to contradict Roth's intent. Better to just let its aging process proceed and make sure that the mold doesn't migrate.

Like Roth's books, many Fluxus works are collections of seemingly miscellaneous things drawn from life,

Figure 11.6 Dieter Roth (Swiss, 1930–1998), two copies of *Taschenzimmer* (Pocket-Room), 1969/1972. Cardboard, banana slices (one moldy, one not moldy), and rubber stamps, inner sheet: 10 × 7 cm. Remscheid: Vice-Versand. GRI 94-F202. © Dieter Roth Estate, courtesy Hauser & Wirth

significantly not composed so as to be immovable. Domestically staged and deliberately not monumentalizing, they present an accessible atmosphere of informality. But they are also cheaply made and fragile. For instance the hinges on the brittle 1960s-era plastic Fluxus boxes break. The plastic becomes cloudy. To engage with the work, you must take objects out of the boxes, some of which include found objects from nature, such as branches, nuts, pine cones, scat, and bones. Elements in many privately owned boxes have gone missing. How should they be viewed or handled, and how much is too much manipulation? Does lack of access isolate and silence them? Viewing in vitrines effectively suffocates these works. It shuts them up and cuts off the essential personal connection. Yet how can these boxes be viewed in an appropriately informal way if this very activity consumes them? Can the original artists or owners restore, or reconstitute, new works, as Barbara Moore did in her ReFlux Editions?[2] Or do original works become artistic monuments and historical markers when they are acquired by institutions or collectors, arrested in time, needing to be stabilized and preserved but withdrawn from their intended lives? Does adding reproductions of missing elements constitute restitution of a new generation of objects for another lifetime, or inauthenticity? Perhaps with open editions (print or multiple editions without a specific number or date), that's really okay.

One Fluxus work by George Maciunas most certainly will not be considered for reproduction. In a glass jar, not plastic, the GRI's *Fluxmouse no. 1* (1973, fig. 11.7) is preserved like a specimen in a natural history museum. Murdered by Maciunas, imprisoned in a jar, and packed in an archival box, this small dead animal is presently shelved in a dark vault. Full disclosure: conservators monitor this work, and have added liquid, so there has been some intervention even here. One could observe that although Fluxus artists did make works that include living matter, the mouse is significant in large part because it is no longer living. It has become art.

Figure 11.7 George Maciunas (American, born Lithuania, 1931–1978), *Fluxmouse no. 1*, 1973. Glass jar, paper label and tag, and dead mouse, 12.4 × 6 × 6 cm. GRI 1391-669. Marcia Reed, © The Estate of George Maciunas

About fifteen years ago, there was a true emergency, actually a confined but messy explosion in Fluxus artist and composer Benjamin Patterson's tackle box *Hooked* (1980, fig. 11.8). The lid of the box swings up and opens out to reveal several shelves; each compartment holds an everyday object with a hook in it. It is a complex work with many parts, some of them moving. The box had been stored in an archival banker's box, examined and stabilized by a GRI objects conservator. But when the box was brought out of storage it was smelly, and a sticky substance was oozing: a very old can of sardines in tomato sauce had exploded. Canned goods do have shelf lives, and this one had expired years ago. The conservator cleaned up the mess and assessed whether any of the other pieces were damaged; they weren't. Pictures were taken; documentation was noted. But what to do now about the integrity of the work? Keep the old can, but not in the tackle box? The conservator did locate a very similar sardine can online, and purchased it. As with the Surrealist butterflies previously mentioned, should the can be replaced? Even if that would only start the clock for another explosion in the future?

Patterson had formerly worked as a librarian at the New York Public Library's Performing Arts branch, and so he was familiar with archives and library practices. He was living in Wiesbaden, Germany, and we were in occasional contact. We got in touch to ask about his intention for the work, but when asked what he would do, Patterson responded, "I don't care. It's yours now." Apparently he possibly considered the old sardine can garbage to be thrown away. Speaking for other Fluxus artists, most of whom had died by then, Patterson said he thought they would accept that their works deteriorate, and so it would be inappropriate to re-create a work that was intended to have a limited life span. This reinforced a principle of stewardship for the GRI's Fluxus and related collections—

Figure 11.8 Benjamin Patterson (American, 1934–2016), *Hooked*, 1980. Tackle box containing found objects with metal hooks attached to them, (closed): 22.2 × 43.5 × 22 cm. GRI 1408-672. Courtesy the Estate of Benjamin Patterson

namely, that Fluxus means change. The materials were selected by the artists with change as a given. Stabilizing the object and impeding this process denies the spirit of the works, which in most cases are still living long after their makers have died.

In case you are wondering, the old sardine can was retained (fig. 11.9); the newly purchased can, its near twin, was emptied but weighted similarly and placed in the tackle box.

How living matter is dealt with is finally also a curator's and conservator's ethical decision; it is a matter of respect, not only for the artist, but for all living matter. One of the most disturbing moments in my curatorial career involved finding in the archive of Los Angeles photographer Charles Brittin a small body part belonging to a woman who immolated herself during an LA civil rights protest in the 1960s. Observing city workers cleaning up, the artist saved what he could, boxed it, and forgot about it. It had been dutifully catalogued when I discovered it in the GRI special

Figure 11.9 Degraded sardine can from conservation document housed with Benjamin Patterson's *Hooked*. GRI 1408-672.

collections. Realizing this archival resting place was not respectful to the woman's memory, I worked with our legal counsel to place the fragment in the Los Angeles city morgue, from whence it would be returned to the family.

This is an extreme example but points to the truth that conservation of media should always return to and respect not just the artist's concept, but also the object itself. When we can, we do ask living artists for advice. But not all creators are still with us, and so the looming question concerns appropriate care and treatment as the life cycle of the work spirals onward. The answer: we talk, we test, and we talk some more. Collaborative communication among artists, conservators, curators, and scientists informs our stewardship of our collections.

NOTES

1. They are interleaved with nonwoven polyester and thin microchamber boards containing zeolites. These act as molecular traps to neutralize acids, pollutants, and other harmful by-products of deterioration. Thanks to Rachel Rivenc, GRI head of conservation, for this information.

2. ReFlux Editions was founded by Barbara Moore, a close associate of Fluxus leader George Maciunas, as a way to continue publication of Fluxus multiples, keeping them indefinitely in print. The works are collated from original vintage printed matter from Maciunas or his estate. The plastic boxes are either vintage or from original sources. See "ReFlux Editions at Printed Matter, Inc.," *e-flux*, March 26, 2002, https://www.e-flux.com/announcements/43512/reflux-editions-at-printed-matter-inc/.

BIBLIOGRAPHY

Gioni 2019
Gioni, Massimiliano, ed. 2019. *Appearance Stripped Bare: Desire and the Object in the Work of Marcel Duchamp and Jeff Koons, Even*. London: Phaidon.

Reed and Phillips 2018
Reed, Marcia, and Glenn Phillips, eds. 2018. *Artists and Their Books / Books and Their Artists*. Los Angeles: Getty Research Institute.

Roth 1967–68
Roth, Dieter. 1967–68. *Poeterei 3/4: Doppelnummer der Halfjahresschrift für Poesie und Poetrie*. Stuttgart, Germany: Edition H. Mayer.

Suzuki 2013
Suzuki, Sarah. 2013. *Wait, Later This Will Be Nothing: Editions by Dieter Roth*. New York: Museum of Modern Art.

12

Flora and Fauna as Art: A Contemporary Art Conservation Approach to Living Systems

Sherry Phillips
Sjoukje van der Laan

Conservation staff members working with contemporary art at the Art Gallery of Ontario have recently developed a simple and straightforward decision-making framework in response to the unique challenges presented by artworks that contain biological materials or living matter. In the spirit of interdisciplinary approaches toward innovative ways of working, the authors invoke the role of a dramaturge in the performing arts to refine and articulate the decision-making framework of contemporary art preservation and the evolving role of the conservator.

◆ ◆ ◆

Intentional inclusion of living materials in art exhibitions is not a recent development. Records indicate that the Art Gallery of Ontario (AGO) was working with artists fifty years ago to display artworks with living components in its exhibition spaces. For conservators, trained as they are to slow down or even stop deterioration processes, an artwork's intent regarding change or decay, both physical and conceptual, can pose a challenge. Responses to the conservation of contemporary art are often outside traditional conservation approaches. For clarity in communication with colleagues, the authors of this paper have developed an approachable decision-making framework to guide exhibition team members operating in an increasingly collaborative work environment and dealing with the unique challenges presented by artworks that contain living matter.

Our approach to these artworks has been dynamic; we are actively involved in the logistics of artwork and exhibition development, including health and safety, ongoing maintenance, and long-term preservation of the artwork. Can we better define our role to foster improved conversations with colleagues and create an evolved description of responsibilities? In the spirit of interdisciplinary approaches that lead to innovative ways of working, we have been exploring the role of a dramaturge in the performing arts to refine our evolving role in the conservation and preservation of contemporary art.

BRIEF HISTORY OF LIVING ART AT THE AGO

> *Any natural process, I think, eventually destroys itself. Even if you do a painting, destruction is an element in it. Everything grows, blossoms and eventually dies.*
>
> *—John Van Saun, 1969*

Living matter in art installations at the AGO began at least as early as 1969 with the organization and installation of the exhibition *New Alchemy: Elements, Systems, Forces* (fig. 12.1). The artists Hans Haacke, Charles Ross, Takis, and John Van Saun were selected by curator Dennis Young for their work with the physical, chemical, biological, and ecological aspects of earth, air, fire, and water (Young 1969). Following *New Alchemy* and its inclusion of growing grass, hatching chickens, and bread mold, the AGO installed *Realism(e)s Survey 70* the following year. *Did You Ever Milk a Cow?* (consisting of a cow, its enclosure, painting, straw, feed, water, plus the cow's other requirements) by artists Glenn Lewis and Michael Morris was installed indoors and featured Elsie, a local Jersey cow (fig. 12.2). And just over a decade later, in 1982, the AGO again hosted an installation containing living matter, in this case works by Noel Harding, an artist known for video, installations, kinetic sculpture, and public art. Chickens, a tree, and goldfish were all living components of Harding's solo exhibition (Cameron et al. 1988).

Figure 12.1 Hans Haacke (German, b. 1936), *Grass Mound*, 1967–69. Installation view, *New Alchemy: Elements, Systems, Forces*, Art Gallery of Ontario, 1969. Art Gallery of Ontario, © Hans Haacke / SOCAN (2019)

Figure 12.2 Glenn Lewis (Canadian, b. 1935) and Michael Morris (British, b. 1942), *Did You Ever Milk a Cow?*, 1970. Installation view, *Realism(e)s Survey 70*, Art Gallery of Ontario, 1970. Art Gallery of Ontario, © Glenn Lewis and Michael Morris

The AGO archives contain limited documentation, of varying thoroughness, from the artists or their associates regarding the care and maintenance of these flora and fauna. What conversations took place with them about the planning, installation, health, welfare, and safety of the living art, staff, and visitors? It is likely that these communications happened, but were not documented. Without contemporaneous records to guide us or artist's studio records to consult, we can only surmise the installation requirements. As noted by Stefan Michalski in *Modern Art: Who Cares?*, contemporary art objects are especially vulnerable to memory loss (Michalski 2006, 294). Until 1984 there were only two staff members in the AGO conservation department, both focused on traditional paintings, sculpture, and works on paper; they surely had very little, if anything, to do with the planning, installation, or maintenance of the living artworks.[1]

The cultural and institutional context of an installation should include the perceptions, observations, and experiences of not only the curator, the artist, and the many individuals who pack, handle, install, maintain, and even visit the work but also the documentation produced by conservators.

CASE STUDIES

Within the last five years, the AGO's contemporary art conservators have been working on four major contemporary artworks in the collection involving biological materials or living systems. Lessons learned from past living art installations underscore the need for careful documentation. All of these artworks are unique and demand an individualized approach to development and preservation.

Ron Benner's *Anthro-Apologies (and the trees grew inwards – for Manuel Scorza)* (1979–80, fig. 12.3) was acquired by the AGO in 1994 and first installed shortly thereafter. Fortunately for us, generous documentation was assembled at that time. The work includes four gelatin silver prints (two on the floor and two on the wall) that have been enhanced with photo-oil colors. Textiles, vintage newspapers, a variety of small objects of various materials, dried and fresh fruits, vegetables, seeds, and plants are arranged on top of the two floor photo panels. Desiccation and decay of the fresh produce is intentional and part of the artwork's concept. Fruit flies, sprouting seeds, mold, and decay are desired and part of the active nature of the work.

Although notes from the 1994 installation indicate an acceptance that the photo panels may be damaged by the natural processes of organic decay, and reprinting of the photos is authorized when necessary, the artist adjusted this statement during the most recent installation in 2016. Benner now prefers to preserve the original photo panels with as much of the original image layer as possible intact, complete with existing localized areas of damage. Preservation of "how it is now" has become the new benchmark. Replacement of one or both of the photo panels may still be considered an option when 50 percent of the image has been destroyed by the natural decay processes. Time and reflection, supported by past conservation documentation, probing questions, and open conversation, helped to refine the artist's expectations and our actions.

Pierre Huyghe's *Untilled (Liegender Frauenakt*) (2012, fig. 12.4) utilized the fabrication labor of honeybees to build a wax comb around the head and shoulders of a concrete reclining female nude sculpture. Coauthor Sherry Phillips was involved in the early conversations about the acquisition of the work and was able to engage in research to help guide the acquisition process.

The import of bee and bee products is strictly regulated by the Ontario Ministry for Agriculture, Food and Rural Affairs Bee Act.[2] The Huyghe studio was prepared to send a completed sculpture to Toronto, but inquires to the relevant Canadian government agencies governing animal product importation revealed that it would not be allowed into the country. The AGO received the concrete sculpture and separate base and began to develop the wax comb head and shoulders in Toronto with the assistance of a local urban beekeeper and a hive of Ontario honeybees. The health and welfare of the living beehive was foremost in the plans to create the sculpture; the Huyghe studio and AGO staff wanted to be able to demonstrate that their approach took the health and welfare of the bees seriously. (With increased emphasis in the media on the challenges faced by bee populations worldwide, visitors do ask about the humane treatment of the bees.) Once the sculpture was considered complete, the bees were transferred to a new hive and the artwork was brought into the museum building to become a static object, inactive, with no live bees.

Simon Starling's *Infestation Piece (Musselled Moore)* (2006–8, fig. 12.5) is a low-carbon-steel cast sculpture covered with mussels. To create this artwork, the steel sculpture was immersed for eighteen months in Lake Ontario specifically to become colonized by thousands of zebra mussels, a non-native invasive species in the Great Lakes region. Biologists at the University of Guelph and conservation scientists at the Canadian Conservation Institute and the Canadian Museum of Nature, who are experienced with shells and corroded marine metals, respectively, helped to formulate a plan to achieve the desired appearance and understand the potential aging expectations of the materials. As with the Huyghe piece, the components of this sculpture transitioned from active to inactive when it was brought into a gallery environment.

The AGO's most recent contemporary acquisition of an artwork with living matter is *Today We Reboot the Planet* (2013, fig. 12.6) by Adrián Villar Rojas. This room-size installation consists of a wide variety of materials, among which are plants such as sprouting garlic, potatoes, and grasses. Villar Rojas studio representatives were present during the first installation of the artwork at the AGO to guide us through the importance of the physical appearance and conceptual aspects. Most notably, the

Figure 12.3 Ron Benner (Canadian, b. 1949), *Anthro-Apologies (and the trees grew inwards – for Manuel Scorza)*, 1979–80. Gelatin silver prints, photo-oil colors, newspapers, *mantas* (Peruvian shawls), fresh and dried fruits, vegetables, flowers, seeds, nuts, metal, and wood, 300 × 300 × 214 cm. Art Gallery of Ontario, AGO 94/299. Art Gallery of Ontario, © Ron Benner

Figure 12.4 Pierre Huyghe (French, b. 1962), *Untilled (Liegender Frauenakt)*, 2012. Concrete with beehive structure and wax, 75 × 145 × 45 cm. Art Gallery of Ontario, AGO 2012/956. © Pierre Huyghe

Figure 12.5 Simon Starling (British, b. 1967), *Infestation Piece (Musselled Moore)*, 2006–8. Steel replica of Henry Moore's *Warrior with Shield* (1953–54) and Eastern European zebra mussels, 155 × 73 × 71 cm. Art Gallery of Ontario, AGO 2011/273. © Simon Starling, courtesy Casey Kaplan, New York

sprouting plants should appear to be struggling to survive in their postapocalyptic museum-like display.

The installation opened at the AGO in December 2019 and is expected to be on view for at least two years. Close collaboration with the artist's representatives occurs on a weekly basis for the duration of the installation. The sprouting garlic, potatoes, sweet potatoes, and grasses are constantly assessed and replaced when necessary to maintain the desired conceptual context for the installation. A replacements garden is located in the AGO's Conservation Department, partly for the practical reason that we have windows, and partly because we were the only department equipped to take on the responsibility for this part of the ongoing maintenance.

ACTIVE OR INACTIVE

Each of our living matter case studies was discussed or defined through our decision-making model. We have found that artworks with biological materials or living systems can be classified as either active or inactive. As with every organic element in nature, biological materials grow, flourish, die, and decay. The process is expected but often follows its own timeline. We need to adapt to the pace set by the materials.

Active artworks have a continuous, changing living system; the life cycle may be crucial to the authenticity of the concept. Pip Laurenson posits that authenticity in contemporary art and artistic intention are better articulated as work-defining properties (Laurenson 2006, 9). The pieces by Benner and Villar Rojas, as well as Harding, Haacke, and Van Saun thirty and fifty years prior, exemplify active artworks in a gallery environment, whether they are micro- or macro-biological. Active living systems require a dynamic and unique approach to their maintenance; living and changing components define the artwork.

For example, the Benner has actively decaying fruits and vegetables, and the Villar Rojas has actively growing but preferably struggling plants. When the display period has ended, the living organisms are rehomed, or dried and preserved, or discarded, while the concept is retained to allow for re-creation at a later date according to documentation and installation guidelines. The Starling and Huyghe works are currently inactive; the sculptures have become more like traditional museum objects. Their living systems were once active but by design became intentionally inactive when the artwork came into the gallery environment. Each will eventually be treated like a traditional artwork with a conservation plan based on the needs of the materials.

With experience gained through managing the many facets of biological organisms and artists' concepts, we began to see patterns that guided us in the formulation of a flowchart (fig. 12.7). The flowchart assists with planning, installation, and maintenance of an installation in the context of a busy institutional schedule, but also supports communication of a structure and strategy for these nontraditional contemporary artworks to others who are involved in an increasingly collaborative process.

Replacement, replication, or reconstruction of component parts may be part of the conservation strategy for active or inactive artworks containing living systems.[3] This contemporary strategy may be as simple as replacement of a handful of dislodged mussel shells to fill in an area

Figure 12.6 Adrián Villar Rojas (Argentinian, b. 1980), *Today We Reboot the Planet*, 2013. Organic, inorganic, human-made, and machine-made matter, including unfired clay, cement, handmade bricks, metal, and glass, all collected in London and Rosario, Argentina, 360 × 195 × 330 cm. Art Gallery of Ontario, AGO 2016/38. Art Gallery of Ontario, © Adrián Villar Rojas, courtesy the artist and Marian Goodman Gallery

that requires visual or physical support during consolidation treatment, or as extensive as reconstructing an entire wax comb with a new hive of bees when the artist determines that the comb (if or when irreparably damaged) no longer represents his vision. Replication may also be a strategy when components age or are lost, for example when a sprouting potato in the Villar Rojas installation deteriorates to the point that replacement is necessary to replicate the artist's original intent (Curtis 2007, 2).

Working through the flowchart, replacement, replication, or reconstruction strategies can be aligned with or equivalent to traditional conservation treatments, but also equivalent to sanctioned decay. Conservation of contemporary art is a productive activity, based in traditional practice but including interpretation and even coproduction of the artwork (van Saaze 2011, 252).

Secondary living systems may appear within the intentional living systems. In Benner's case, he appreciated the need to manage fruit fly populations but preferred to not altogether eliminate their part in the natural decay process. His thoughts on mold growth were similar, but he left it for us to decide and act as necessary if mold growth posed a hazard to the health of staff and visitors. Our strategy was ultimately to manage the decay of fruits and vegetables with camouflaged absorbent pads to reduce the impact on the original photo panels.

While on open display at the AGO, Starling's *Infestation Piece (Musselled Moore)* developed an infestation of webbing clothes moths (*Tineola bisselliella*) that were attracted to desiccated mussel flesh. The infestation put other works in the collection at risk and necessitated intensive treatment, first to eliminate the moths and second to restore the mussel array. The continued vulnerability has also led to artist-supported restricted loan status and the creation of a permanent display case for the sculpture.

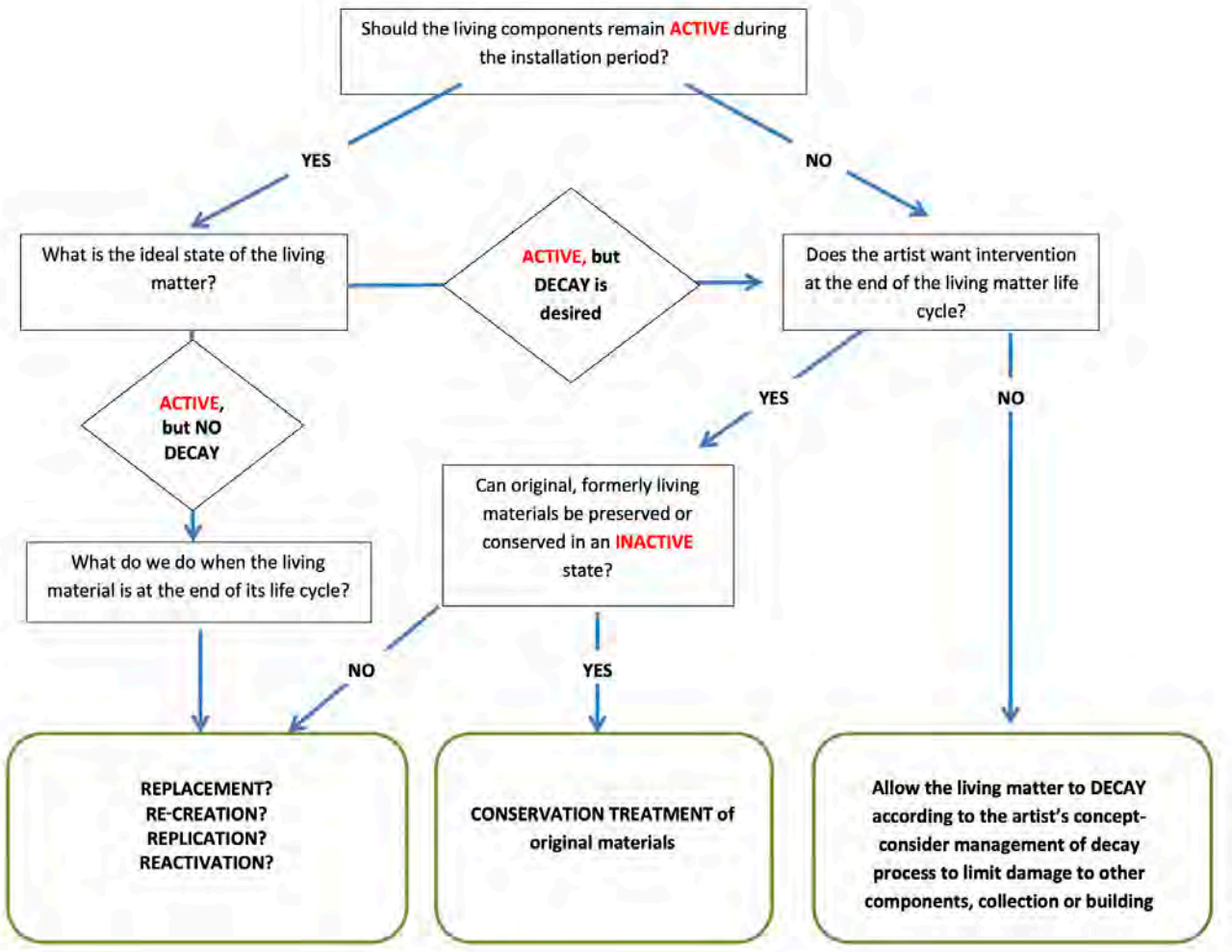


Figure 12.7

The Huyghe wax comb still contains organic matter that cannot be cleaned away; it will be vulnerable to unintended occupation by other living systems when displayed without a case at the AGO. Its installation plan includes establishing an emergency infestation response.

The Villar Rojas work has to date been pest free. Atypical pests in gallery spaces such as fungus gnats in the garden in the Conservation Department and grain mites on bread components can be resolved with simple proactive monitoring and cleaning, but they are not desired auxiliary active living systems, nor are they harmful to other artworks in the vicinity. We work closely with the artist's studio to manage the living components' decay, knowing that the form and rate of decay is only revealed once the installation is living within our specific gallery environment.

COLLABORATION AND THE ROLE OF A DRAMATURGE

Knowing the intent and establishing tolerances regarding how far components may deviate from the artist's original intent assists in the determination of if and how we replace, replicate, reconstruct, or preserve an artwork while keeping its appearance and conceptual intention animated. Careful and extensive documentation is vital, as is close collaboration with many different colleagues and stakeholders for a successful resolution to a project incorporating living systems. This includes the artist and their studio as well as AGO staff such as installers, curators, and technicians, along with external professionals such as biologists or engineers. Being open-minded, thinking laterally, and persevering through challenging installations are increasingly parts of our job. Experts external to the gallery and continuous collaboration and conversation are all tangible elements in

the appropriate presentation of contemporary art with living systems.

We gather together divergent expectations and information and mediate between what might be best for the artwork and potentially conflicting institutional expectations. As members of exhibition content and installation teams, we also try to think ahead to potential conflicts with visitor and staff safety and security concerns. In order to determine that how and what we do to install an artwork meshes well with existing procedures, it is convenient to have a model to describe how our work could fit within the larger context. Vivian van Saaze in *Installation Art and the Museum: Presentation and Conservation of Changing Artworks* (van Saaze 2013) provides an excellent discussion and overview of several individuals who have thought deeply about authenticity and artistic intent, and the evolution of how conservators work with and maintain the notion of authenticity in contemporary art. Performance theory, and dramaturgy in the theater arts in particular, has become a useful way for us to describe how and what we do with some works in the contemporary collection.

A dramaturge can have many different roles, but essentially they ask questions and start conversations in the development of a theater performance. It may be described as an exploration of the context in which a performance resides (McCabe 2001, 64; Cardullo 2005). Customary roles often come into clearer focus through the perspective of someone outside the familiar museum world. Dramaturgy was first mentioned to Phillips as she was working with a Toronto artist, Seika Boye, who was in residence at the AGO in August 2018. Boye's project, *This Living Dancer*, is a self-archiving exercise that examines her evolving life in dance performance.[4] During one session, as they prepared objects from Boye's personal archives, exchanging questions and conversations as a working partnership, Boye turned to Phillips and exclaimed, "You're a dramaturge!" The idea of a conservator proposing creative and pragmatic solutions within a museum and/or archival context to help the artist refine concepts for an installation seemed to Boye very much like the definition of a dramaturge.

The contemporary art conservator's role at the AGO has evolved since the position was first created in 1984. Alongside repairs or restoration, we tend to be primarily responsible for establishing, fostering, and actively maintaining appropriate physical care within the context of authenticity and the larger environmental needs of the work. Like a dramaturge, we are accustomed to guiding an artist by asking questions, listening to their answers, and then negotiating with a larger team to find practical, achievable means of authentically realizing their work.

CONCLUSION

When an artwork contains living matter, a conservator can utilize a decision-making framework to establish whether the work is meant to be inactive or active, and from there develop a suitable animation or preservation strategy. The physical artwork is not always a sufficient guide on its own to create the preservation or maintenance plan. Decaying biological materials each have their own rate of change, which depends on local environmental factors such as light, relative humidity, and temperature. Conservation of contemporary art may diverge from traditional and established conservation concepts; for example, acceptance of material loss or replication may be part of the strategy.

Conservators must be involved, from the earliest inception to the final deliberations, in care and maintenance. Our practical knowledge of materials and processes does not have to be prescriptive. Documentation and close collaboration with the artist and their studio is essential to determine the necessary baseline of desired visual and conceptual appearance and atmosphere, now and in perpetuity. A conservator not only takes care of the physical aspects of the artwork, but may also act as a mediator between the various stakeholders involved in the work's creation, installation, and preservation. How we define and improve our role in the process can come through other fields that have already established a similar role, for instance the role of a dramaturge in the theater arts.

Acknowledgments

The authors wish to express their sincere gratitude to the Michael and Sonja Koerner Fund for Conservation Initiatives for its support of Sjoukje van der Laan's participation in "Living Matter: The Preservation of Biological Materials in Contemporary Art / La Materia Viva: Conservación de materiales orgánicos en el arte contemporáneo" and ultimately our inclusion in this publication. We also thank Marilyn Nazar, AGO archivist, for her keen research assistance.

NOTES

1. Ralph Ingleton, personal communication to Sherry Phillips, July 2019.

2. See the organization's website, http://www.omafra.gov.on.ca/english/food/inspection/bees/apicultu.html.

3. Curtis 2007 discusses the concepts of replacement, replication, and reconstruction as part of contemporary art conservation. These papers were produced for "Inherent Vice: The Replica and Its Implications in Modern Sculpture Workshop," held at Tate Modern, London, October 18–19, 2007.

4. "Seika Boye Will Move You," *AGO Insider*, February 4, 2019, https://ago.ca/agoinsider/seika-boye-will-move-you.

BIBLIOGRAPHY

Cameron et al. 1988
Cameron, Eric, Claude Gosselin, Rick Rhodes, and Ritsaert ten Cate. 1988. *Noel Harding*. Toronto: Art Gallery of Ontario.

Cardullo 2005
Cardullo, Bert. 2005. *What Is Dramaturgy?* New York: Peter Lang.

Curtis 2007
Curtis, Penelope. 2007. "Replication: Then and Now." *Tate Papers*, no. 8 (Autumn): https://www.tate.org.uk/research/publications/tate-papers/08/replication-then-and-now.

Laurenson 2006
Laurenson, Pip. 2006. "Authenticity, Change and Loss in the Conservation of Time-Based Media Installations." *Tate Papers*, no. 6 (Autumn): https://www.tate.org.uk/research/publications/tate-papers/06/authenticity-change-and-loss-conservation-of-time-based-media-installations.

McCabe 2001
McCabe, Terry. 2001. *Mis-directing the Play: An Argument against Contemporary Theatre*. Chicago: Ivan R.Dee.

Michalski 2006
Michalski, Stefan. 2006. "Conservation Lessons from Other Types of Museums and a Universal Database for Collection Preservation." In *Modern Art: Who Cares? An Interdisciplinary Research Project and an International Symposium on the Conservation of Modern and Contemporary Art*, edited by IJsbrand Hummelen, Dionne Sillé, and Marjan Zijlmans, 290–95. Amsterdam: Foundation for the Conservation of Modern Art.

van Saaze 2011
van Saaze, Vivian. 2011. "Acknowledging Differences: A Manifold of Museum Practices." In *Inside Installations: Theory and Practice in the Care of Complex Artworks*, edited by Tatja Scholte and Glenn Wharton, 249–55. Amsterdam: Amsterdam University Press.

van Saaze 2013
van Saaze, Vivian. 2013. *Installation Art and the Museum: Presentation and Conservation of Changing Artworks*. Amsterdam: Amsterdam University Press.

Wharton and Molotch 2009
Wharton, Glenn, and Harvey Molotch. 2009. "The Challenge of Installation Art." In *Conservation: Principles, Dilemmas and Uncomfortable Truths*, edited by Alison Bracker and Alison Richmond, 210–22. London: Elsevier.

Young 1969
Young, Dennis. 1969. *New Alchemy: Elements, Systems, Forces = Nouvelle alchimie: Eléments, systèmes, forces: Hans Haacke, John Van Saun, Charles Ross, Takis*. Toronto: Art Gallery of Ontario.

13

Conserving Active Matter in Contemporary Design

Jessica Walthew
Sarah Barack

Cooper Hewitt's 2019 Design Triennial, Nature*, celebrated designers working at the cutting edge of synthetic biology, biomedical research, data visualization, urban agriculture, renewable energy, and additive manufacturing, among other design fields. The exhibition highlighted sixty-two projects, including live bacterial cultures, light-emitting textiles, and live plants growing in engineered microclimates. Cross-departmental and inter-institutional collaborations proved integral to the success of the exhibition, and in-depth discussions with the designers themselves minimized ongoing areas of concern. Still, the complex nature of many installations challenged the museum's conservators and pushed against entrenched paradigms, forcing the adoption of novel approaches to staging and maintaining the pieces.*

◆ ◆ ◆

Cooper Hewitt, Smithsonian Design Museum houses the United States' national collection of design, which ranges across all media, encompassing graphic and textile design, decorative arts, product prototypes, process materials, and archives. The museum's triennial exhibitions celebrate designers working at the cutting edge of their disciplines. The 2019 nature-themed Triennial inaugurated the first co-organized execution, with Cooper Hewitt partnering with Cube design museum in Kerkrade, the Netherlands, for a simultaneous display. The exhibition aligned well with the museum's recently enacted strategic plan, which envisions the museum as both a repository of historic collections and an active platform for contemporary design.

The use of "active" materials in contemporary design creates challenges for exhibiting and maintaining complex works in museums. "Active matter" has been the theme of several research projects across the globe examining responsive materials, and forms of material and conceptual "activity" inherent in art and design.[1] While interpretations of this phrase vary, this triennial exhibition presented projects ranging from truly live organisms and plants to synthetic media designed to react to its local environment. This paper considers this range of "active" media and its impact on conservation staff and practices. The featured case studies notably illuminated biases inherent to conservation practice and challenged the museum's conservators to accommodate and even facilitate uncertainty and change to display designers' innovative works. Reconceptualizing these works as process-oriented iterations that are constructed and

maintained through networks of feedback loops has shifted conservation approaches away from those typical for static objects, where maintaining stasis (limiting change) is usually the explicit goal.

The most challenging projects were examples of speculative design—proposals that examine contemporary problems and provoke visitors with visions for futuristic outcomes.[2] The projects featured bioengineered and bioresponsive media (which change rapidly in response to changes in light and temperature), living plants, and microorganisms that were to be exhibited for eight months and required both complex installations and intense maintenance. Other works, though not technically alive, displayed lifelike behaviors and demanded environmental management in a continual feedback loop. Together these works necessitated an interdisciplinary, cohesive approach to their care, and required conservators to interface creatively with colleagues across specialties.

Consistent with the goal of the Triennial, many of the featured designers hoped to exhibit examples of their most recent work, and thus the details of many projects were still being developed during the exhibition planning process. As a result, the specifics of many projects remained unconfirmed until dates very close to the installation. In several cases, the iteration displayed represented an ongoing technological development, with active refinement of the design strategy continuing beyond that iteration—a sort of snapshot of the project as communicated through a bespoke model. Cooper Hewitt's conservators worked closely with internal staff and the designers to realize their desired visions. This alone required flexibility, adaptability, and frequent communication among stakeholders—greatly eased by digital technologies, given that there were sixty-two international design teams. The following case studies highlight the projects that best capture these evolving challenges.

CASE STUDY: LIVING PLANTS

Supporting living plants in three projects involved substantial coordination of parties inside and outside the museum. While one project, Sam Van Aken's *Tree of 40 Fruits* (2008–ongoing, fig. 13.1), was sited in the garden and maintained by the museum's gardener, two other projects were located inside the galleries and required major resource investments from the designers themselves. The Open Agriculture Initiative (OpenAg) team at MIT Media Lab designed *Personal Food Computer v.3.0* (2018–ongoing, fig. 13.2), a 3D-printed growing chamber. Sensors track climate variables, and a coded "climate recipe" determines the lighting regimen and controls ventilation. Two of these self-sustaining chambers were displayed with growing hydroponic basil plants, which required maintenance: nutrients were replenished by staff twice weekly, and plants were pruned to prevent them from getting too tall. The designers, who had traveled to the museum for the initial installation to train staff, provided replacement plants when needed.

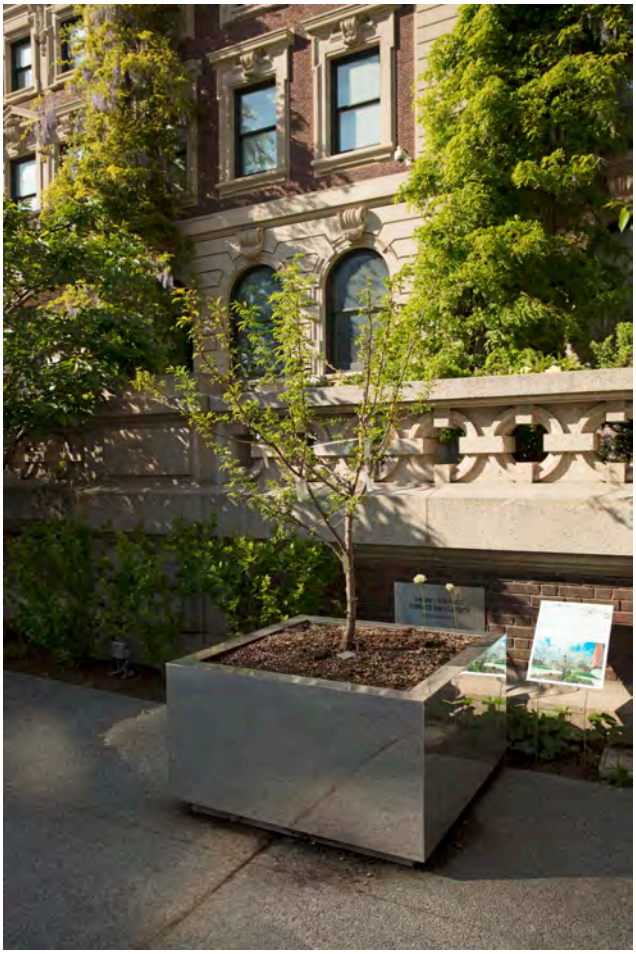


Figure 13.1 Sam Van Aken (American, b. 1972), *Tree of 40 Fruits*, 2008–ongoing. Grafted fruit tree. Installation view in the garden of Cooper Hewitt, Smithsonian Design Museum, New York. Matt Flynn for Cooper Hewitt, Smithsonian Design Museum

Figure 13.2 Caleb Harper (American, b. 1982), Hildreth England (American, b. 1978), Open Agriculture Initiative (American, active 2015–20), and MIT Media Lab (American, founded 1985), *Personal Food Computer v.3.0*, 2018–ongoing. PVC, polycarbonate, LEDs, electronics, and sensors, each unit 30.5 × 30.5 × 30.5 cm. Matt Flynn for Cooper Hewitt, Smithsonian Design Museum

Plant Properties (2016–ongoing, fig. 13.3) by Kennedy Violich Architects and the Strano Research Group at MIT likewise required plant replacements, but on a much more intense schedule. This work imagines how bioluminescent plants could be integrated into future architectural settings so as to reduce our society's dependency on electricity. The functional architectural model included living watercress plants along with complex lighting and irrigation systems. Due to the highly specialized plant treatment conducted at MIT to create the luminescing watercress, representatives from the lab traveled weekly to provide and install new plants. The success of this display, as with *Personal Food Computer v.3.0*, relied on active collaboration between internal museum staff and the external design studios, and a significant time investment. While replacement was a viable strategy in both cases, communication took on greater significance to coordinate ongoing intervention in the projects.

CASE STUDY: LIVING CULTURES

Living cell cultures were critical components of two Triennial projects: Teresa van Dongen's *Electric Life* (2018, fig. 13.4) and Oron Catts and Ionat Zurr's *BioMess* (2018–ongoing, fig. 13.5). Close coordination with the designers and their domestic scientific collaborators ensured that live cultures could be used, either transported across international borders or sourced domestically. In each case the bacteria or cultures were nonpathogenic, but still occasioned special handling concerns. Unlike a typical lamp that relies on traditional alternating current, the living lamp in *Electric Life* is powered by an aqueous anaerobic bacterial culture housed at its center. Prior to assembly, the bacterial culture required cultivation for more than one week until it was robust enough to generate the required current. With the designer unable to personally attend the installation, the conservators quickly adapted to the roles of ad hoc bacteriologists and electricians in close consultation with her. Continued feeding and care of the culture proceeded

Figure 13.3 Kennedy Violich Architects (American, founded 1990) and Strano Research Group, Massachusetts Institute of Technology Department of Chemical Engineering (American, founded 2003), *Plant Properties*, 2016–ongoing. Architectural model and nanobionic watercress plants, 152.4 × 106.7 × 61 cm. Matt Flynn for Cooper Hewitt, Smithsonian Design Museum

Figure 13.4 Teresa van Dongen (Dutch, b. 1988), *Electric Life*, 2018. Steel, aluminum, glass, and liquid with electroactive bacteria, 137 × 90.8 × 78.5 cm. Matt Flynn for Cooper Hewitt, Smithsonian Design Museum

in a similar fashion, with conservators as proxies for the designer, as had been the case at a previous installation of the work at the Centre Pompidou, Paris, in spring 2019.

BioMess also contains living cells, in this case a hybridoma culture (fig. 13.6) displayed inside a bioreactor, alongside specimens borrowed from the Smithsonian National Museum of Natural History and shown in backlit luxury display cases. The project probes the human fixation with creating new life forms by questioning what is recognized as life. The natural history specimens may be considered "life," but the only actual living matter—the hybridoma cells—is abstracted, completely devoid of environmental context. Made by humans, the hybridoma cells are contained in and dependent on a technological body, namely a bioreactor. Two bottles containing bright pink live cell cultures were installed by the designer but were not expected to live for the duration of the exhibition without activating the bioreactor, which the museum could not manage. Museum conservators and curators, along with the designers, agreed that if and when the color of the medium indicated that the cells had died, the conservators would remove and replace them with identical bottles, simulating the culture with an inert liquid. This decision was initiated following conversations with Catts during the installation, when he suggested this step. Though this request appeared an aggressive

Figure 13.5 Oron Catts (Australian, b. Finland, 1967), Ionat Zurr (Australian, b. United Kingdom, 1970), and the Tissue Culture & Art Project (Australian, founded 1996), *BioMess*, 2018–ongoing. Incubator, hybridoma cells, and natural history specimens in exhibition cases, dimensions variable. Matt Flynn for Cooper Hewitt, Smithsonian Design Museum

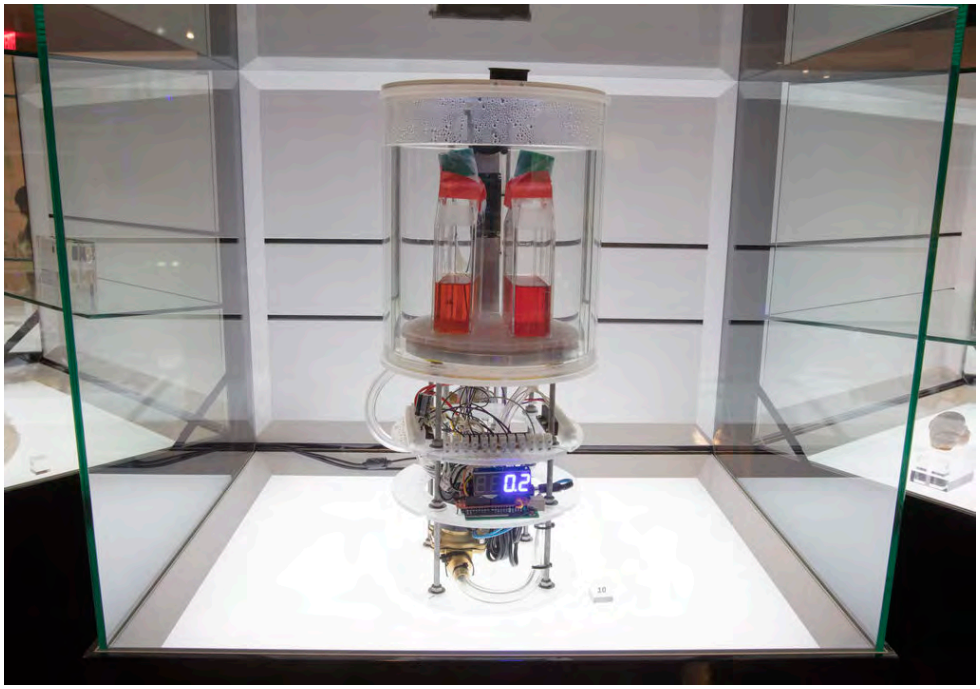


Figure 13.6 Oron Catts (Australian, b. Finland, 1967), Ionat Zurr (Australian, b. United Kingdom, 1970), and the Tissue Culture & Art Project (Australian, founded 1996), detail of living hybridoma cell culture, 2019–20. Matt Flynn for Cooper Hewitt, Smithsonian Design Museum

intervention, the staff felt it acceptable after considerable discussion, so that the display would not shift in appearance without ample public didactics. Further, as the cultures would by then be dead, exhibiting a replacement liquid would have the same net result as maintaining the original media—both would contain nonliving matter.

Following successful installations, the conservators grappled with both logistical concerns—safely discarding the *BioMess* culture; the proper feeding schedule for *Electric Life*—and others more philosophical in nature. For instance, is it ethical to obtain living cells but not provide them with the nourishment they need to thrive? Catts and Zurr have written that their work with dependent "semi-

living" cultures broaches but does not intend to resolve these concerns. The works are meant to provoke viewers to examine their own unsettled and ambiguous feelings with regard to what is living and nonliving by presenting them with something in between. In previous works, the designers had involved museum staff and visitors in the rituals of feeding and killing, to contribute to the performance and bring fuller meaning to the works (Zurr and Catts 2002; Catts and Zurr 2006). For Cooper Hewitt's iteration, the conservators assumed that they would eventually (uncomfortably) play the role of executioners. By the close of the exhibition, however, the cell cultures had not shifted significantly in color, and no replacement media had been required. This surprise left the staff with a sort of ironic understanding of the piece, as it became akin to Schrödinger's cat. Were the cells still alive or not? With no visible signs of die-off, but yet no means to test, the vials existed with a vague liminal status of possibly living and possibly deceased.

As opposed to a planned one-time intervention, conservators for *Electric Life* routinely made decisions that directly impacted the health of the bacteria in order to keep the lamp brightly lit. Van Dongen aims to engage owners of her lamps in intimacy through caretaking, while seeing the natural facets of her lamps as "something that exists on its own, in a way" (Design Indaba 2015).[3] Although museum visitors were not consulted, their presumed experiences weighed in on decision making, as did the appearance of the displays. As it turned out, the lamp's intensity waxed and waned as the bacterial culture changed over time, but these changes were imperceptible to the public.

CASE STUDY: ENVIRONMENTAL PASSIVITY/ACTIVITY?

The final case studies present simulations of nature in two contrasting artificial environments, one frozen in time and the other ever-changing. Terreform ONE's *Monarch Sanctuary* (2018–ongoing, fig. 13.7) proposes cladding a skyscraper in an architectural envelope that supports all phases of the butterfly life cycle with adequate heat, moisture, habitat, and food sources. Modern building construction could one day support biodiversity by providing alternate habitats for endangered species. Design studio mischer'traxler's *Curiosity Cloud* (2015–19, fig. 13.8) is an immersive environment featuring more than one hundred handblown glass bulbs, each outfitted with LED lights, a motor, and a model insect (fig. 13.9). Thermal sensors respond to gallery visitors moving among the pendants: sections of insects turn on and fly around inside the lit bulbs. The piece captures the magic and beauty of the natural world through synthetic media and fosters larger discussions on nature and our contemporary relationship to it. Both installations actually refer to acts of conservation, in this case of the natural world. The architects plan to eventually realize *Monarch Sanctuary* in New York, and are collaborating with butterfly keepers at the American Museum of Natural History to understand the optimal synthetic habitat. In *Curiosity Cloud*, the model insect species were carefully researched and crafted to create a simulation uniting extinct, critically endangered, commonly occurring, and recently discovered species that could never coexist in the real world, highlighting the fragility and mutability of "nature" in the Anthropocene (Lipps et al. 2019, 34–35).[4]

Figure 13.7 Mitchell Joachim (American, b. 1972), Vivian Kuan (American, b. 1966), and Terreform ONE (American, founded 2006), *Monarch Sanctuary*, 2018–ongoing. Architectural model, 411.5 × 350.5 × 121.9 cm. Matt Flynn for Cooper Hewitt, Smithsonian Design Museum

Figure 13.8 Katharina Mischer (Austrian, b. 1982) and Thomas Traxler (Austrian, b. 1981) as mischer'traxler Studio (Austrian, founded 2009), *Curiosity Cloud*, 2015–19. Blown glass bulbs, handmade artificial insects, aluminum hoods, custom-made circuit boards, motors, LED lights, cables, ceiling plate, and sensors, dimensions variable. Commissioned by Maison Perrier-Jouet. Matt Flynn for Cooper Hewitt, Smithsonian Design Museum

Figure 13.9 Katharina Mischer (Austrian, b. 1982) and Thomas Traxler (Austrian, b. 1981) as mischer'traxler Studio (Austrian, founded 2009), detail of *Curiosity Cloud*, 2015–19. Blown glass bulbs, handmade artificial insects, aluminum hoods, custom-made circuit boards, motors, LED lights, cables, ceiling plate, and sensors, dimensions variable. Commissioned by Maison Perrier-Jouet. Matt Flynn for Cooper Hewitt, Smithsonian Design Museum

Exhibition design concerns dictated the staging of each project in specific gallery locations, though in each case unavoidable localized environmental conditions influenced the function and performance of the work. While one may ordinarily perceive the museum environment as a passive player, in these two cases it was the source of major conservation concerns. *Monarch Sanctuary* was originally planned as a fully functional model containing live milkweed and butterflies in the museum's Conservatory, which in itself posed several challenges. The Conservatory lacks effective climate control, and so additional mechanical systems inside the model would be required. The museum staff is not trained to care for live butterflies, and the release of mature butterflies and introduction of new ones raised ethical concerns. Staff expressed ethical qualms about treating butterflies as disposable. Butterflies are attractive and popular (as insects go), potentially opening the museum up to public criticism, and also the sacrifice would undercut the conservation message of the work in a particularly ironic way. Sharing these concerns, the curators and the designers agreed that the museum would display the sanctuary design with simulated (3D-printed) butterflies, reconceptualizing the project's iteration/instantiation as a model without any functional systems or live inhabitants.

Curiosity Cloud's complex system requires particular environmental conditions to allow it to respond to visitors' thermal presence. In this iteration, it was customized for Cooper Hewitt's gallery space and prominently sited at the exhibition entrance. Gallery temperature required tight control to avoid tripping the thermal sensors meant to respond only to actual visitors' bodies. When no sensors are activated (that is, when the temperature is below the 23.5ºC "action threshold"), the program activates "allure mode," illuminating just a few bulbs at a time to tempt visitors into the gallery. The precariously balanced system could be viewed as a complex interaction between the human actors (visitors, designers, museum staff) and the electronic elements in the constructed environment.

The environment itself, usually invisible except to collections preservation specialists (as numbers or graphs on data loggers), further assumed status as an active player in the network. When the room became too warm, all the insects were activated, preventing the piece from being experienced as designed. In response, museum staff (conservators and building engineers) participated in a delicate dance with the display, resetting room temperature controls to levels that would be practical from a visitor and gallery perspective but would not inappropriately activate the piece. Exhibition design elements (stanchions to direct visitor flow) also contributed to the work's performance. The designers, working remotely from Austria, modified the code that controlled the sensors and motors, and sent an additional room sensor midway through the exhibition to improve calibration. In this way, multiple actors massaged the installation throughout the exhibition's run, caring for the simulated insects with almost as much attention as they would give living organisms.

DISCUSSION AND CONCLUSIONS

The nature-themed Design Triennial featured cutting-edge designs that engaged with, manipulated, simulated, and re-created the natural world. Installations included micro- to macro-ecology and digitally interactive elements, encouraging the museum's conservators to reconceptualize conservation goals and approaches to working with designers. Considering the complexities of the works early in the planning process, the conservators began to (reflexively) categorize projects—living/nonliving, inactive/active, reactive/interactive—in other words, high maintenance versus low maintenance for conservation. The department further dissected internal conservation assumptions and strategized around proactive versus reactive approaches to planning, installation, and ongoing maintenance. With the designers continually refining their own projects, advance preparation proved challenging. Flexibility and collaborative approaches were key to success, along with clear communications among all parties. Reflecting on the works now, these lines of communication might be considered inextricable links between all stakeholders and components, who together created an interwoven network operating within the boundaries of the museum environment. Much as actor network theory (ANT, see Latour 1996; Sayes 2014) activates nonliving components of a system, the exhibits both reacted to and acted on all engaged parties, regardless of their initial classification as synthetic or authentic biology.

ANT and other frameworks from material culture studies that seek to understand complex interactions between objects, people, and meanings have been employed infrequently with regard to conservation decision making (van Saaze 2013). However, for many years, conservators have embraced their roles as intermediaries and interpreters, transmitting and translating information between objects and various parties (curators, scholars, artists, students, the public) and serving as advocates for the typically nonverbal objects. In the Design Triennial, concerns for safe display went beyond the customary packing and shipping, mount making, and environmental guidelines, extending conservation's reach into truly intimate interaction with the materiality of the works on view. Instead of focusing on concrete objects, envisioning the works in the Triennial as systems or networks allowed further progression of the idea of managing change over the duration of the exhibition: as feedback builds in a network, the footprint shifts, the players react, and new paths are formed.

WHAT DOES IT MATTER IF THE MATTER IS ACTIVE?

The instinct to classify the works as living versus nonliving, digital versus analog, or according to other binaries did not serve us well in understanding their full complexity. While natural/artificial and analog/digital are often understood as in opposition, many works in the Triennial specifically challenged such dichotomies by blurring boundaries. Designers of active matter often work in explicitly transdisciplinary or anti-disciplinary modes. As Danny Hillis has argued regarding today's era, pulling from anthropological theory, "Entanglement artifacts are simultaneously artificial and natural; they are both made and born. In the Age of Entanglement, the distinction has little significance" (Hillis 2016; Ito 2016).

As conservators working with these highly complex installations, more boundaries began to blur, these in terms of responsibility: between those in charge of creating the works, those delimiting their boundaries, and those maintaining them (in fact, participating intimately in their making and their meaning). It is indeed an interesting coincidence that the work of conservators is often described in the same terms as the fields of bioart or active matter: at the intersection of art and science. Does the distinction between these arenas retain significance? Perhaps only in reevaluating conservation's attempts to engage in scientific, "objective" decision making. In these case studies, there was no "objective" path forward that could have been determined in advance. With so many variables in flux, and actors involved, it was at most times impossible to predict the course of an installation. Works transgressing boundaries between hardware, software, and "wetware" certainly bristle against traditional divisions of museum labor.[5] While conservation and A/V tech sometimes work together, we had never before collaborated as closely as we did for this exhibition. As Jens Hauser argues, in contemporary biodesign, "synthetic biology is being approached as a discipline in which both top-down and bottom-up approaches, and the virtual and the actual, oscillate" (Hauser 2018, 265). Indeed, although conservators attempted predictions and projections to manage change, uncertainty held a much greater role in this exhibition than in typical installations.

Those conserving active matter in contemporary design in a museum context will continue to confront troubling issues of classification. When the works privilege process over representation, how does this change the way we need to conserve them? Neil Leach and other philosophers have already engaged with the provocations of these new media, finding that self-assembling systems push against traditional epistemologies in which forms derive significance from the either hylomorphic (representational, top-down) or morphogenetic (bottom-up, process-oriented) processes that constitute them (Leach 2017, 20–22). Conservators too must wrestle with the philosophical in our decision making. Do we need to actively participate in processes to ensure that the meaning of the work is carried through? What does substitution or simulation of parts do to the meanings of these works? How is disclosure or transparency (conversely, deception) part of the conservation process? It might not matter to visitors that conservators periodically feed the bacteria or replace ailing plants with healthy new ones, but they might be distressed to find out that the hybridoma culture had been replaced with tinted water, essentially Kool-Aid.[6]

Given that many of the Triennial projects discussed here are part of active research programs, feedback from the exhibition may influence future decisions made by the artists and designers—carrying the feedback loop further outside the museum's walls and into the future as new networks build. Among conservators of contemporary art, it is still debated to what extent we should consult on or interfere with artists' practices—acknowledging that conservation interventions can substantially affect both material and meaning of present as well as future works. The projects in the Design Triennial were presented as snapshots, iterations, or test cases, providing valuable data for the designers as processes were negotiated in a new (museum) environment, lacking the controlled conditions of the laboratory or the tidiness of a digital rendering. Yet as conservators, curators, and other museum staff, along with visitors, take part in the enacting of these works, the museum also provides a context where great attention is paid to the controlled framing and staging of the projects. As many of the designers are searching for practical applications for their yet-unrealized concepts, this consideration contextualizes the value of change and iteration. Here change is desirable, encouraged, and an indispensable part of the design process.

Acknowledgments

Thanks to the Cooper Hewitt Triennial team, the designers mentioned in this paper, and especially Larry Silver, Rick Jones, Emily Frank, Andy Wolf, and Emma Mooney, who helped maintain the living exhibits through the duration of the Triennial.

NOTES

1. See Tibbits 2017. The Matters of Activity group at Humboldt-Universität, Berlin, explores "materials' own inner activity, . . . a new source of innovative strategies and mechanisms for rethinking the relationship between the analog and the digital and for designing more sustainable and energy-efficient technologies." See https://www.matters-of-activity.hu-berlin.de/en. Bard Graduate Center's Conserving Active Matter initiative focuses on conservation, exploring the lenses of materials science, history, philosophy, and Indigenous ontologies "that never made the assumption that matter was inactive." See https://www.bgc.bard.edu/research-forum/projects/3/cultures-of-conservation. In this paper, the usage incorporates aspects of both of these conceptions as well as conservation's traditional focus on matter's change over time.
2. See "Next Nature," an interview between Michael John Gorman and Koert van Mensvoort (Lipps et al. 2019, 49–55).

3. According to the artist's website: "A future owner of this living light installation will have to feed and nurture it; a bit of tap water with some additional nutrients and a teaspoon of vinegar a week will do. Van Dongen imagines that having to feed and thus take care of Electric Life, could result in a closer relationship between the light installation and its owner" (van Dongen 2019).

4. The term "Anthropocene" refers to the most recent geological epoch, in which human activity has caused irreversible climatic and environmental shifts. For a concise discussion see https://www.smithsonianmag.com/science-nature/what-is-the-anthropocene-and-are-we-in-it-164801414/.

5. Wetware utilizes cells, protocols, or molecular devices used in synthetic biology, but as applied to art can encompass bioart or the various biotechnological developments highlighted in the Design Triennial (Hauser 2018).

6. For comparison, consider the installation of Josh Kline's *Skittles* (2014) at the Museum of Modern Art, New York, in 2019, in which authentic (wildly eccentric) recipes were reproduced by conservators and the artist's studio working together (Moody, Kavaliunas, and Kuo 2019).

BIBLIOGRAPHY

Catts and Zurr 2006
Catts, Oron, and Ionat Zurr. 2006. "The Tissue Culture and Art Project: The Semi-Living as Agents of Irony." In *Performance and Technology: Practices of Virtual Embodiment and Interactivity*, edited by S. Broadhurst and J. Machon, 153–68. London: Palgrave Macmillan.

Design Indaba 2015
Design Indaba. 2015. Interview with Teresa van Dongen, April 15, 2015. https://youtu.be/-wukvLHp6Cc.

Hauser 2018
Hauser, Jens. 2018. "Art and Agency in Times of Wetware." *Stream* 4: https://www.pca-stream.com/en/articles/jens-hauser-art-agency-in-times-of-wetware-107.

Hillis 2016
Hillis, Danny. 2016. "The Enlightenment Is Dead, Long Live the Entanglement." *Journal of Design and Science*: https://doi.org/10.21428/1a042043.

Ito 2016
Ito, Joichi. 2016. "Design and Science." *Journal of Design and Science*: https://doi.org/10.21428/f4c68887.

Latour 1996
Latour, Bruno. 1996. "On Actor-Network Theory: A Few Clarifications Plus More Than a Few Complications." *Socziale Welt* 47:369–81. http://www.bruno-latour.fr/sites/default/files/P-67%20ACTOR-NETWORK.pdf.

Leach 2017
Leach, Neil. 2017. "Matter Matters, a Philosophical Preface." In *Active Matter*, edited by Skylar Tibbits, 18–23. Cambridge, MA: MIT Press.

Lipps et al. 2019
Lipps, Andrea, Matilda McQuaid, Caitlin Condell, and Gene Bertrand. 2019. *Nature: Collaborations in Design.* New York: Cooper Hewitt, Smithsonian Design Museum.

Moody, Kavaliunas, and Kuo 2019
Moody, Ellen, Lina Kavaliunas, and Michelle Kuo. 2019. "Strange Brew." *MoMA Magazine*, May 9, 2019, https://www.moma.org/magazine/articles/51.

Sayes 2014
Sayes, Edwin. 2014. "Actor-Network Theory and Methodology: Just What Does It Mean to Say That Nonhumans Have Agency?" *Social Studies of Science* 44 (1): 134–49.

Tibbits 2017
Tibbits, Skylar, ed. 2017. *Active Matter*. Cambridge, MA: MIT Press.

van Dongen 2019
van Dongen, Teresa. 2019. "Electric Life." http://www.teresavandongen.com/Electric-Life.

van Saaze 2013
van Saaze, Vivian. 2013. *Installation Art and the Museum: Presentation and Conservation of Changing Artworks*. Amsterdam: Amsterdam University Press.

Zurr and Catts 2002
Zurr, Ionat, and Oron Catts. 2002. "An Emergence of the Semi-Living." In *The Aesthetics of Care?*, edited by Oron Catts, 63–68. Nedlands, Australia: Symbiotica.

14

Research, Conservation, and Exhibition of a Contemporary Art Installation Containing Living Organisms as Part of the Creative Process

Claudia Barra
Cristina Bausero
María Pía Cerdeiras
Silvana Alborés
Belén Estévez
Soledad Martínez

The installation Lo que mata es la humedad *(It's the Humidity That Kills, 2017) by the Uruguayan artist Federico Arnaud in the collection of the Museo Juan Manuel Blanes in Montevideo, Uruguay, includes elements of living matter. A collaborative effort was formed with the Department of Biosciences at the Universidad de la República, also in Montevideo, to identify microorganisms in the work and in the surrounding environment. Preliminary results indicated the presence of fungi of the genus* Penicillium *and signs of* Alternaria*. Taking into account the artist's intention and the microbiological findings, an interdisciplinary team prepared protocols for preserving the components containing living matter while in storage as well as during exhibition.*

◆ ◆ ◆

The collections of the Museo Juan Manuel Blanes (fig. 14.1) in Montevideo, Uruguay, initially consisted of donations and acquisitions by the city of Montevideo. Starting in 1940, these were supplemented by acquisitions of prizewinning works from the Salones Municipales (Municipal Exhibitions), which brought in pieces by the more renowned Uruguayan artists of the twentieth century, such as José Cuneo, Carmelo de Arzadun, Alfredo De Simone, Amalia Nieto, Joaquín Torres García, Eduardo Yepes, María Freire, Miguel Ángel Pareja, and Hilda López, to name a few. Their works generally employed traditional techniques such as oil on textile support or on wood, drawings in graphite or ink, watercolor on paper, or sculpture in marble, bronze, wood, or plaster. As the twentieth century unfolded, many works began to be created using cardboard as a support, notably by Joaquín

Torres García and his fellows in the Escuela del Sur (Southern School), Pedro Figari, and others. The pictorial language evolved as well from figurative to abstract, covering a wide range of expressions. Screenprinting appeared in the 1950s and 1960s, and left a strong mark on Uruguayan art. In the mid-twentieth century, works of art using new materials and formats such as video art, installations—and, importantly for our discussion here, biological material and digital art—entered the museum's collection.

Figure 14.1 Museo Juan Manuel Blanes, Montevideo. Javier Ventura, courtesy the author and Museo Juan Manuel Blanes

Contemporary art requires that we consider traditional concepts of conservation, deterioration, and sustainability in a new light, in which the artist's intent and the functionality of the objects often take on crucial roles. With this in mind, new challenges in their preservation must be faced, ranging from aspects of the infrastructure required for storing large-format works to the preservation of new materials, novel combinations of elements, including objects originally intended for industrial or domestic use, and new requirements for the preservation of immaterial functionality and content. Knowledge of the artist's intentions and an interdisciplinary approach are required to establish criteria for registering and documenting works and for storage and exhibition.

The installation *Lo que mata es la humedad* (It's the Humidity That Kills, 2017, fig. 14.2, fig. 14.3) by Uruguayan artist Federico Arnaud (b. 1970) won Second Acquisition Prize in the Montevideo city government's 2017 Premio Montevideo competition (the new name for the Salones Municipales). The installation consists of a metal desk with a swivel office chair and a portable lamp, which directly illuminates a photograph album and nine binders.[1] The desk has a surface layer of dirt that was applied by the artist in the form of mud. Dirt also covers the outsides of the binders and the other elements, with the exception of the album. A video is projected on the wall behind the desk, showing photographs from the album in slide format. An audio track accompanies the imagery in the video; the sound of a working slide projector bursts with each new image that appears.

Figure 14.2 Federico Arnaud (Uruguayan, b. 1970), *Lo que mata es la humedad* (It's the Humidity That Kills), 2017. Paper, cardboard, glass, metal, mud, various synthetic polymeric materials, microorganisms, and insects, approx. 200 × 120 × 130 cm. Museo Juan Manuel Blanes, Montevideo. Installation view, *48 Premio Montevideo*, Museo Juan Manuel Blanes, Montevideo, 2017. Rodrigo Arrillaga, courtesy the author and Museo Juan Manuel Blanes

Figure 14.3 Detail of *Lo que mata es la humedad*. Rodrigo Arrillaga, courtesy the author and Museo Juan Manuel Blanes

The installation testifies to the military dictatorship in Uruguay, which is conveyed in the album's photographs showing military and political leaders from the period. In the artist's own words: "There is a silent violence in the images that is being lost to the mold of humidity" (Álvarez 2017, 28–31). Arnaud is alluding to a parallelism between the idea of the deterioration of those who played a part in that period and the deterioration of the photographic evidence. As digitized in the video that is part of the installation, these images are preserved, thus safeguarding a testament to those times.

CONSERVING THE INSTALLATION

Once the primary technical and photographic records of the installation were made, an evident need emerged to utilize new criteria in recording, documenting, and conserving it. The artist was invited for an interview for the purpose of hearing his thoughts regarding the future conservation of the work and to prepare protocols for mounting it for exhibition. These interviews revealed the express need to keep alive the microorganisms that were contributing to the deterioration of the photographs in the album, of the cellulose material contained therein, and of the binders. Research on these aspects was thus begun after assembling an interdisciplinary team. Docents specializing in photographic conservation were called in from the Centro de Fotografía de Montevideo,[2] and studies of microbiological contamination were carried out in collaboration with specialists from the Universidad de la República.[3] The documentation and records team worked with the conservation team to prepare an identification file (also called a unique object record) and enter it into the museum's digital database. A report was prepared on the installation's state of preservation and the requirements for preserving it while in storage and when exhibited.[4]

The interview required that the artist acknowledge the difficulties of conserving the work and the risks entailed in its conservation. He was also informed of the need to research new conservation strategies by which materials in the installation containing microorganisms would be conserved (namely, at low temperatures).[5] The interview led to a protocol of documenting the artist's intentions and a proposal for mounting, in which the artist stated: "I

admit that I am aware that the photograph album is affected by mold that will eventually obscure the images. I feel it is useless to attempt its conservation because the meaning of the work is that the memories it contains are disappearing due to the circumstances of their abandonment, and that that has material and political consequences."[6]

MICROBIOLOGICAL STUDY OF THE WORK AND ITS SURROUNDING ENVIRONMENT

The objectives of the museum's plan for preventive conservation and a program of scientific research include a plan to determine the level of microbiological contamination present in both the photograph album and the binders, and in the environment of Store F, where the work resides when not on view.[7] Specific objectives include isolating and identifying the mold species present in and on the photograph album and binders, and the mold species present in the environment surrounding the installation. The investigation included determining whether there is any correlation between the microorganisms present in the room and those present in the installation's elements under study, as well as understanding the pathogeny of the species found.

For the study, samples were taken from three photographs from the album and the exterior surface of one binder. The samples were taken in the museum, in triplicate, using sterile commercial cotton swabs minimally dampened with physiological saline solution, sampling areas where the presence of mycelium and stains, apparently from mold contamination, were observed (fig. 14.4). The swabs were immediately put into test tubes with NaCl 9 g/L (physiological serum) for transportation. In the laboratory, the samples were inoculated in petri dishes with potato dextrose agar (oxoid) (PDA) with chloramphenicol and incubated at 25°C, in the dark, for five days. After the growth period, to obtain pure cultures, three petri dishes with PDA were inoculated consecutively and incubated at 25°C for five days. In the cases in which isolated colonies were not obtained, monosporic cultures were performed, making adequate dilutions with spores of the mold under study, introducing them into the PDA and incubating them at 25°C for five days (fig. 14.5, fig. 14.6, fig. 14.7).

Figure 14.4 Taking a microbiological sample from the photographic album with a swab. Natalia Boero

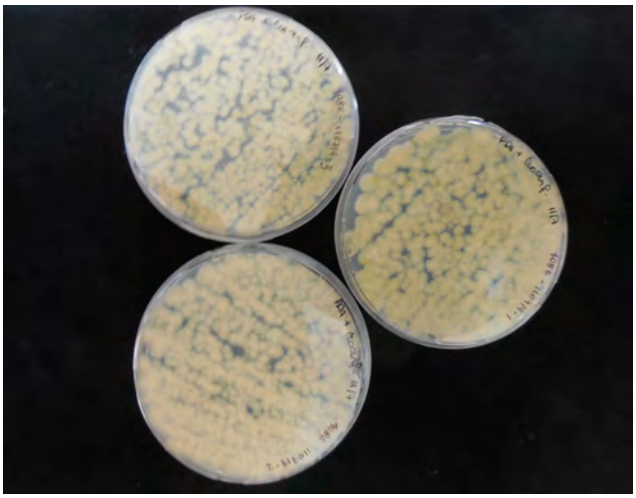


Figure 14.5 Detail of sample from the photo album after five days on potato dextrose agar. Claudia Barra

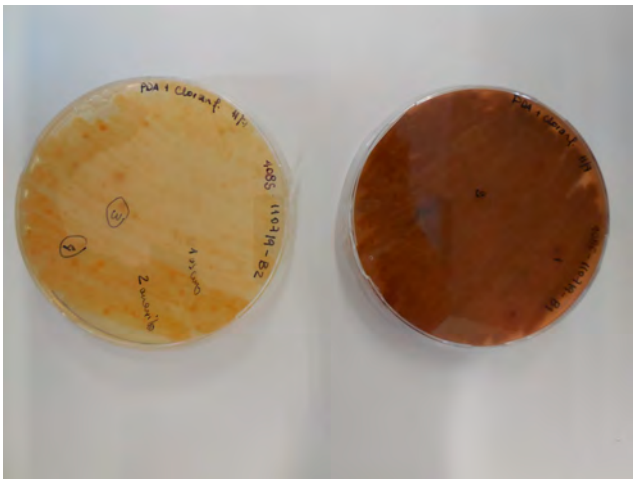


Figure 14.6 Culture from the cardboard surface after five days on potato dextrose agar. Claudia Barra

Figure 14.7 Inoculated colonies from growing plates corresponding to the file cabinet after five days on potato dextrose agar. Claudia Barra

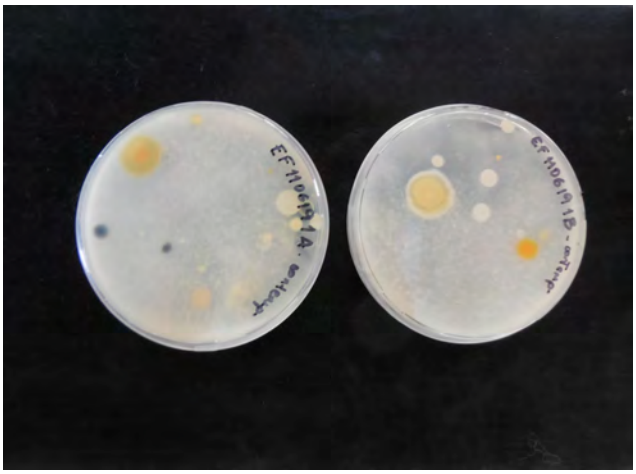


Figure 14.8 Growth from environmental samples from Space F after five days on potato dextrose agar. Claudia Barra

At the same time that samples were taken from the components of the installation, samples were also taken from the surrounding environment of Space F. The environmental conditions during the sampling were 16°C and 58 percent relative humidity, during the winter season. This was done by placing open petri dishes with the PDA culture medium containing chloramphenicol in the room for thirty minutes. The number of dishes set out was based on the area to cover, and they were placed in duplicate (fig. 14.8).

First the genus was identified through observation of the macro- and micro-morphological characteristics of the colonies, following the keys according to J. I. Pitt and R. A. Samson (Pitt and Samson 2000; Samson et al. 1995; Frisvad and Samson 2004). Fresh samples from the isolated colonies were examined under a Nikon ECLIPSE E200 microscope with a digital Y-TV55 camera. From the set of six samples taken from the objects, species corresponding to the *Penicillium* genus were isolated based on their morphological characteristics (fig. 14.9). Since they could be seen with the naked eye, a high number of fungus colonies were isolated from the objects. Confirmation of the presence of species of the *Alternaria* genus on the samples from the binder is still pending.

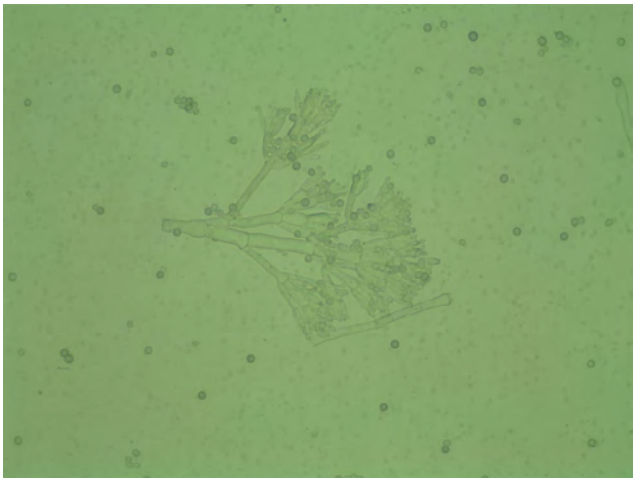


Figure 14.9 Samples viewed under a 40X optical microscope. Belén Estévez, courtesy the author and Laboratorio de Microbiología, FQ/Udelar

Although the researchers have not yet obtained final results, they were able to observe that the fungi isolated from the room environment did not match those isolated from the installation's components. The result of the samplings from the room environment was promising: the number of colonies that deposited on the dishes within the thirty minutes of exposure was not high.

The genera of fungi found so far are the usual agents of deterioration in organic materials. They proliferate in enclosed, damp places with low air ventilation. They are in the air and on the floor, and they disperse through spores. The risk for contamination of different materials can be evaluated in relation with water activity.[8] Different ranges of this parameter have been reported that are linked to the growth of fungi (Valentin 2010, 2). The method chosen for identifying the species was amplification and sequencing of the rDNA of ITS1 and ITS2. (These studies were done outside the country, along with another group of environmental samples that were taken from the museum's collection.) The sequences obtained will be entered into the appropriate software that will identify them by comparing them to fungus nucleotide sequencing reports from the database of the National Center for Biotechnology Information (NCBI) using the BLAST tool.[9]

Once we know for certain the species of fungi present in the room's environment and in the stored components, we can draw conclusions regarding the risks of contamination in that part of the museum, in the rest of the collection, and to the health of staff and visitors (Di Carlo et al. 2016). Among the great variety of fungi genera that are usually found in closed rooms, *Penicillium* and *Alternaria* stand out as significant allergens. Their pathogenicity may affect people who are immunocompromised, such as children, the elderly, and the immunosuppressed (Al-Doory and Domson 1984). Among these fungus genera, certain species have a greater pathogenic potential than others, so it is important to continue the study until they are identified (Valentin 2010, 5).

Safekeeping and conservation of artworks made with living matter, as is the case with the installation at hand, is a new situation for the Museo Blanes to address and research. The challenge does not end with the need to ensure the safekeeping, preservation, and accessibility of the work; additionally, it is necessary to ensure that conservation of the rest of the museum's collection is not affected and that healthy conditions are maintained for staff and the public. It was confirmed that the components contaminated with living matter must be isolated, taking into account the intentions of the artist.

CONSERVATION STRATEGIES

Keeping microorganisms alive is a complex matter, both for conservation of the museum's collection and for this particular work, as has been mentioned, due to the high risk of contamination to the rest of the collection and due to these particular microorganisms' adverse effects on people. Considering the artist's intentions, the museum ruled out applying biocide treatments and consequently made the choice to freeze the material containing living biological matter during periods of storage, and to isolate the installation during exhibition. The components of the installation containing living matter will be kept at a low temperature when in storage (likely somewhere between -10°C and -20°C) to prevent microbial development without the effects that a biocide would have on the microorganisms. When they are returned to favorable temperature and relative humidity, they will regain the ability to proliferate. As opposed to a standard procedure, and based on the conservation objectives established, there will be no packing protocol to minimize deterioration due to variations in humidity during these processes (Voellinger and Wagner 2009). Only selected pages of the album will be interleaved with polyester film in order to avoid adhesion between pages, as the album is exhibited in an open position. Based on the same conservation objectives established, this interleaving will not be necessary to the conditioning inside of the binders, as they are exhibited closed. Each of the ten components will be individually packed in a hermetically sealed, double polyethylene bag and placed in containers with polypropylene inside a freezer at a temperature around -10°C.

The flash drive containing the audio and video was backed up in triplicate on the institution's server and on two other external memory drives. It has been packed and put into storage under controlled environmental conditions (18°C to 20°C and 48 to 55 percent relative humidity). All digital material will be migrated to appropriate media every five years or sooner to avoid obsolescence.

The dirt that is on the desk will be the subject of future studies. Plans call for it to be stored at a low temperature, and its potential replacement will be considered. The remaining components of the installation will remain in Space F.

PROPOSAL FOR FUTURE EXHIBITION

The proposal is to exhibit the installation inside an enclosure with side walls and a glass wall in front, a double back wall of white plaster with access for staff, and a lightweight roof. The size and type of lighting will depend on the curatorial proposal and the funds available for carrying it out. Inside will be a dehumidifier and an air-conditioning unit to maintain the appropriate environmental conditions to prevent possible condensation on the front glass wall. Ideally, the exhibition hall should have controlled conditioning of temperature and relative humidity. The video projector will be placed inside the enclosure, centered with respect to the desk, and the audio will play outside the enclosure, near the projector, following the instructions in the assembly protocol. A drawing of the proposal can be seen in figure 14.10. The need to refresh and filter the air should be assessed (Valentín, Muro, and Montero 2010).

FINAL CONSIDERATIONS

This study of the conservation, storage, and exhibition of this installation revealed the importance of having the artist's input and of conducting interdisciplinary research. The conducting of microbiological studies and exchange of criteria and experiences with different specialists exemplify collaboration among specialists, and were highly significant for the purpose of proposing and assessing new

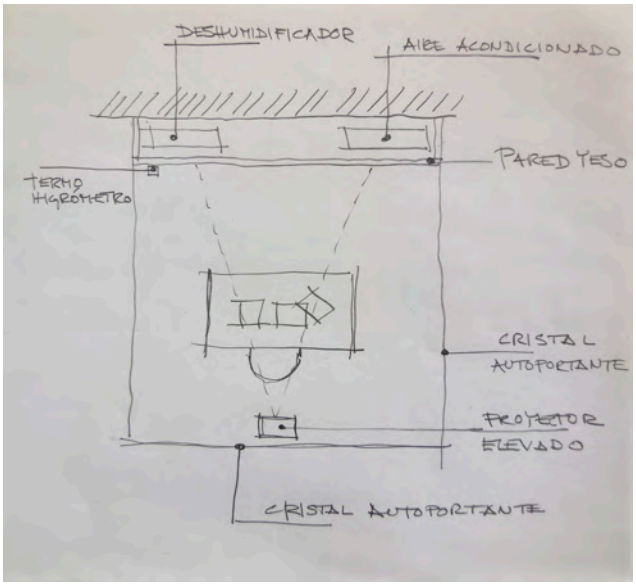


Figure 14.10 Cristina Bausero, sketch proposal for the exhibition installation. Cristina Bausero

conservation strategies. Aspects such as the sustainability of these strategies continue to be subjects for debate concerning how to resolve the various situations we encounter in dealing with contemporary art.

Acknowledgments

The authors wish to express their gratitude to the organizers of the Getty Conservation Institute symposium, MUAC and ENCRyM; visual artist Federico Arnaud; Nilda Mila of the Archive and Documentation Area of the Blanes Museum; Leire Escudero, Natalia Boero, and Marcos Delgado of the Blanes Museum Conservation Area; Daniel Sosa, director of the Photography Center of Montevideo; docents Fernando Osorio and Gisa Villanueva; and Rachel Rivenc for encouraging us to take part in this symposium.

NOTES

1. Área de Documentación y Archivo, Museo Juan Manuel Blanes, admission of works, ST records, C5-CR-209/2018.
2. Fernando Osorio Alarcón and Gisa Villanueva, Centro de Fotografía de Montevideo, Intendencia de Montevideo, Uruguay.
3. Department of Biosciences, School of Chemistry, Universidad de la República, Uruguay.
4. Claudia Barra, 2018 technical documentation, Área de Documentación y Archivo, Museo Juan Manuel Blanes, Informe de Conservación_Inv. 4085-18.
5. Cristina Bausero, interview with Federico Arnaud, October 18, 2018, Área de Documentación y Archivo, Museo Juan Manuel Blanes.
6. Federico Arnaud, "Protocolo de montaje e intenciones de conservación para la instalación: Lo que mata es la humedad," 2019, Archivo del Museo Juan Manuel Blanes, Ingreso de obras; ST:C5-CR-209.
7. Store F is an open area in the basement that is currently undergoing transformation into an isolated and equipped storage area.
8. Water activity (a~w~) is the quantity of water available for growth of microorganisms. The term comes from food engineering and is determined as a ratio of pressures of water vapor.
9. On BLAST see the US National Library of Medicine website: http://www.ncbi.nlm.nih.gov/BLAST.

BIBLIOGRAPHY

Al-Doory and Domson 1984
Al-Doory, Y., and J. F. Domson. 1984. *Mould Allergy*. Philadelphia: Ed. Lea & Febiger.

Álvarez 2017
Álvarez, Raúl (Rulfo), ed. 2017. *48 Premio Montevideo de Artes Visuales 2017*. Montevideo: Centro de Exposiciones SUBTE, Intendencia de Montevideo.

Di Carlo et al. 2016
Di Carlo, Enza, Rosa Chisesi, Giovanna Barresi, Salvatore Barbaro, Giovanna Lombardo, Valentina Rotolo, Mauro Sebastianelli, Giovanni Travagliato, and Franco Palla. 2016. "Fungi and Bacteria in Indoor Cultural Heritage Environments: Microbial-Related Risks for Artworks and Human Health." *Environment and Ecology Research* 4 (5): 257–64.

Frisvad and Samson 2004
Frisvad, Jens C., and Robert A. Samson. 2004. "Polyphasic Taxonomy of Penicillium Subgenus Penicillium: A Guide to Identification of Food and Air-borne Terverticillate Penicillia and Their Mycotoxins." *Studies in Mycology* 49:1–174.

Pitt and Samson 2000
Pitt, J. I., and R. A. Samson. 2000. *Integration of Modern Taxonomic Methods for Penicillium and Aspergillus*. Amsterdam: CRC Press.

Samson et al. 1995
Samson, R., F. Ribera, V. Sanchis, and R. Canela. 1995. *Introduction to Food-Borne Fungi*. Baarn, the Netherlands: Central Bureau for Schimmel Cultures.

Valentín, Muro, and Montero 2010
Valentín, N., C. Muro, and J. Montero. 2010. "Métodos y técnicas para evaluar la calidad del aire en museos: Museo Nacional Centro de Arte Reina Sofía," edited by CARS – IIC Grupo Español, 63–81. Madrid: Museo Nacional Centro de Arte Reina Sofía. https://www.museoreinasofia.es/sites/default/files/actividades/programas/metodos_y_tecnicas_restauracion.pdf.

Valentin 2010
Valentin, Nieves. 2010. "Microorganisms in Museum Collections." *Coalition*, no. 19 (January): 2–5. http://www.rtphc.csic.es/issues/19_01.pdf.

Voellinger and Wagner 2009
Voellinger, T., and S. Wagner. 2009. "Cold Storage for Photograph Collections: Vapor-Proof Packaging." *Conserve O Gram*, no. 14/12: 2–5.

15

When Installation Art Depends on Live Surroundings to Survive

Camilla Ayla Oliveira dos Anjos
Magali Melleu Sehn

This paper investigates the genesis of Aqui Estão *(Here They Are, 1999), a site-specific installation by Anna Maria Maiolino in the Museu do Açude, Rio de Janeiro, an institution in the middle of one of the largest urban forests in Latin America. It discusses Maiolino's artistic intentions; the issues arising from the lack of any documentation about the outdoor site-specific installation since its construction; the decisions and actions made in order to conserve it; and the installation's specific needs for preservation, which take into account its living surroundings. The use of a risk management tool intended to minimize discrepancies and misunderstandings created by the near-complete lack of documentation is proposed, and parameters to guide the installation's preservation and establish priorities are discussed.*

◆ ◆ ◆

Although living matter in art is often associated with rapid decay, the artwork discussed here, *Aqui Estão* (Here They Are, 1999, fig. 15.1) by Anna Maria Maiolino (b. 1942), is made from a material that is organic yet relatively stable: wood. The living matter that supports the existence of this artwork is the tree to which it is attached. For this installation, the natural surrounding is as important as the wood sculpted by the artist's hand.

The Museu do Açude in Rio de Janeiro is a historic museum founded by Raymundo Ottoni Castro Maya (1894–1968) using property and money that he acquired through his family's lucrative coffee business, with a collection primarily composed of objects collected in Brazil and during his travels across the world.[1] Castro Maya was an important patron of the arts in Rio de Janeiro in the mid-twentieth century. The museum was inaugurated during his lifetime, in 1964, and until the 1990s was focused on its historical collection. In 1983 the Castro Maya Foundation ceased to exist and the museum became federal property when the estate transferred the responsibility for its administration to the Instituto do Patrimônio Histórico e Artístico Nacional.

What sets the Museu do Açude apart from other historical institutions is its location in one of the largest national parks inside a huge urban area in Brazil: the Tijuca Forest.[2] In the 1990s, increased awareness of the importance of the surrounding natural space prompted the director of the museum at the time, Carlos Martins, along with the artist Tunga, to invite artists to submit proposals for site-specific

Figure 15.1 Anna Maria Maiolino (Brazilian, b. 1942), *Aqui Estão* (Here They Are), 1999, pictured here in 1999. 750 rolls made using five different wood types: cedar, *freijó* (jenny wood), yellow heart, mahogany, and *jatobá* (courbaril or purpleheart). Museu do Açude, Rio de Janiero. Vicente de Mello, courtesy Castro Maya Museums

installations within the forest. In 1993 the first such, entitled *Aquadorado*, was realized by Shelagh Wakely: Wakely sprinkled a thin layer of powdered gold in the waters of one of the museum's outdoor fountains. After this first experience with contemporary art outdoors, Martins decided to host an exhibition called *Potências do Orgânico* (Organic Potencies) in 1994 consisting entirely of temporary site-specific installations, curated by Marcio Doctors. Some of the installations were meant to decay and eventually disappear; for example, Tunga created an art installation using tables covered in syrup and a UV light to attract insects, which became incorporated into the installation. Artur Barrio wrapped a gate in raw meat.

Following this first outdoor exhibition, the new museum director, Vera de Alencar, implemented a project for the occupation of the museum's forest space with permanent, site-specific installations. Called *Espaço de instalações permanentes* (Space of Permanent Installations), it was inaugurated with two works: Anna Maria Maiolino's *Aqui Estão* (Here They Are) and Iole de Freitas's *Dora Maar na Piscina* (Dora Maar in the Pool). This collection eventually grew to include ten works by different artists and was renamed *Circuito de Arte Contemporânea* (Contemporary Art Track). The most recent additions came in 2016. Since 2013 the museum has also hosted annual temporary exhibitions of site-specific works in its outdoor spaces.

AQUI ESTÃO

Aqui Estão is one in a series of works exploring composition, material, and gesture initiated by Anna Maria Maiolino in the beginning of the 1990s. The manufacturing by Maiolino's hand (fig. 15.2) is as important as the aesthetic result. The repetition of the same gesture created "primitive forms," which look alike but are never exactly the same (Doctors 1999, 32). The gesture imprints a singularity in each one (fig. 15.3). The art critic Suely Rolnik regards *Aqui Estão* as the climax of this series:

> *Solid cylinders with rounded ends made from a variety of wood shaped on a lathe, providing a rich range of colors, shades and nuances. The forms are linked by a metal wire that goes through a hole made at one end and binds them to the trunk of an ancestral tree in its natural forest habitat. The work establishes a living composition comprised in the natural trunk and its exuberant cloak of artificial fruit. In this intimate contact, the woods of the artwork evolve with the natural changes in the wood of the trunk; exposed to the same milieu, they are again covered with moss and take on the textures and colors of the trees they originally came from.* (Rolnik 2002, 110–11)

Maiolino notes that she chose wood because it would last longer than the unfired clay she had been using thus far in the series. She selected five kinds of wood, made 750 basic forms, and tied them to a huge tree beside the main structure of the Museu do Açude (fig. 15.4). The installation was specifically created for that spot, and only exists as long as the tree and all the cylinders are there. The following passage is from the only known extant interview about the work. Conducted by the curator at the Museus Castro Maya (the parent organization), it has since 2003 played continuously in the Museu do Açude's reception area:

> *I don't mean to compete with nature but clearly nature is powerful—it contains the elements, the wind, the storms. In other words, the artwork should be something to stay there. At the same time, I want to cherish a concept that I have been developing for a long time and is still important to me: it is about repetition, about the gesture in the action of basic forms in repetition. Then I thought about using wood. Then I produced almost eight hundred wood cylinders, shaped them on a lathe, with different kinds of wood, I mean, the idea was to return the matter to the*

Figure 15.2 Anna Maria Maiolino working on a lathe, 1999. Vicente de Mello, courtesy Castro Maya Museums

Figure 15.3 Anna Maria Maiolino hanging the wood rolls to dry, 1999. Vicente de Mello, courtesy Castro Maya Museums

> *original matter, right? I felt that the artwork's power takes place from an accumulation, right?! In addition, this installation produces these basic handmade forms, rescuing the idea of a collective labor, those forgotten ideas, and those gestures—not those forgotten ideas—those forgotten gestures. Then the people regain themselves in their labor. The point about the accumulation is that the more time stretches, with more accumulation, the more powerful the artwork is.*[3]

In the exhibition catalogue, Doctors, the curator, also underlines the importance of the installation's color nuances:

> *Those who saw the locale before the work was placed in it probably remember it as a neutral space, a space to pass through. Now, what becomes evident is the chromatic explosion of this space, which has been unleashed by the richness of the tones of the wood into many nuances of greens and yellows.* Aqui Estão *draws us close to the landscape (illusory representation) to usher in an experience of the immanence of this space (installation).* (Doctors 1999, 52)

ARTIST INTENT MODIFICATION: COLOR APPEARANCE VERSUS MATERIAL DECAY

Aqui Estão was initially meant to decay. With the passing of time, it would increasingly blend in with nature to the point that it might no longer, at first glance, be recognizable as an artwork made by human hands. Microbiological attacks and patination would cause the wood to lose its rich nuances of color and blend with the tree that supports it. But the museum staff reported that Maiolino changed her mind when she realized that the alterations brought about by gradual deterioration were not going the way she had imagined (the only documentation for this is the oral testimony of former museum staff). Apparently the artist once visited and disliked the visual aspect of her installation so much that she requested a restoration. The artwork was restored around 2014, but again the documentation is very scarce, and consists only of staff recollections and a few digital images.

Two pictures show the process of detachment of the wood pieces from the tree and their reinstallation, but there is no

Figure 15.4 Anna Maria Maiolino attaching the wood rolls to the tree, 1999. Vicente de Mello, courtesy Castro Maya Museums

image of the whole work and no documentation of the installation's condition or the reasons why the restoration was done. Two additional pictures are known, depicting what appears to be the application of a coating, but no one on staff was able to provide information on what precisely they show. One after-treatment picture was found as well, showing just one side of the installation.

The photos and information on the installation's inauguration in the exhibition catalogue constitute most of the accessible documentation (Doctors 1999). The Açude has not maintained any records of the installation's history besides the images described above.

RISK MANAGEMENT: A TOOL TO IDENTIFY PRIORITIES

The decision-making model for the conservation and restoration of modern and contemporary art proposed by the Foundation for the Conservation of Contemporary Art (SBMK) in 1999 and recently revised was initially suggested for *Aqui Estão*, but could not be practically applied because of the lack of documentation on the work, which is a prerequisite for the model.[4] Instead, the risk management process (ABC method) was used, as it had successfully been applied to another indoor installation (Ankersmit et al. 2011; Michalski and Pedersoli 2016). Because there was no data about how the installation had interacted with its surroundings, the model was deemed generative of more potential approaches to its conservation. The following steps were followed for evaluating the artwork and its associated risks and future status.

Thirty-three primary risks were enumerated in the evaluation and used to generate table 15.1. The red bars represent the A score (risk probability or damage accumulation), the yellow bars represent the B score (risk impact in the installation), and the green bars represent the C score (chances for reversing the damage). The blue lines represent the uncertainty.

Some of the main considerations in an application of risk management were the importance of the color nuances for the artist and critics, as discussed above; the manufacturing by the artist's hand as an important aspect of the concept; that the installation is site specific and tied to actual living matter; its location, in the sense of both being outdoors and in this specific geographic site; the interaction of the materials and the environment over time; the work's current conservation status; and any possible link between present damage and possible causes. Information to identify possible problems was drawn in part from the media (news and digital archives from magazines, and other images and information from secondary sources on the internet with specific dates associated) and past museum publications.

The major risks are linked to the geographic location of the Açude and its administration. The seasonal rains—and their physical force—had destroyed two site-specific installations in the past, and damaged the museum buildings themselves. Besides that, the museum suffers from a lack of funding and staff, which is in great part responsible for the absence of documentation and monitoring. The scarcity of planning and funds leads to delayed responses toward conservation, which in this case had led to the loss of important material and immaterial characteristics.

The location outdoors is the major cause of damage to *Aqui Estão*, yet nothing can be done about that: the work is site specific and impossible to relocate, and its environment cannot be modified. The forest, as a national park, cannot be altered in any way, and the installations will therefore suffer daily the consequences of being outdoors. As a result, the most immediate, urgent, and

Risk Type	C Score	B Score	A Score	Uncertain Positive	Uncertain Negative
Landslide	-2	4	3	1	2
Car Crash	-2	3.5	1	1	2
Branch or fruit fall	-2	2.5	2	1	2
Fall of surrounding trees	-1	4.5	2.5	1	2
Fall of the tree the installation is attached to	0	5	1	1	0
Human action that results in physical forces	-3	3	1	1	2
Rain	-2	3	5	3	2
Floods	-1	3.5	1	1	2
Pipe burst	-3	4.5	2	1	2
Forest fire	0	5	1	1	2
Acidental fire	0	4.5	1.5	2	2
Fire from electric malfunction	0	4	1	2	2
Fire from flammable materials	0	4.5	1	2	2
Termites	-3	4.5	3	1	2
Plants	-4	2	5	1	2
Birds, mammals, and insects living in the installation	-3	1.5	5	1	2
Pollutants	-2	2	5	1	2
Dirt and particulate	-2	1.5	5	1	2
Mircobiotic degradation	-1	4	5	2	2
Animal excrement	-4	3	5	1	2
Natural light	-2	3.5	5	1	2
Natural temperature	-2	2.5	5	1	2
Natural humidity	-1	4	5	1	2
Lack of documentation	-4	5	5	2	3
Dissociation or dispersal of the installation's components (wood rolls)	-1	4	1	3	2
Vandalism	-3	3	1	3	2
Artwork component theft	0	2	4	1	3
Arson	0	5	1	2	2
Lack of or inadequate maintenance	-1	4.5	5	1	2
Lack of or nonexistent documentation	0	5	5	2	3
Lack of previous condition reports	0	4.5	3.5	1	2
Lack of funds for preservation programs/proposals	-1	5	5	1	2
Change of wood natural nuances from outdoor display	-2	3.5	2.5	1	2

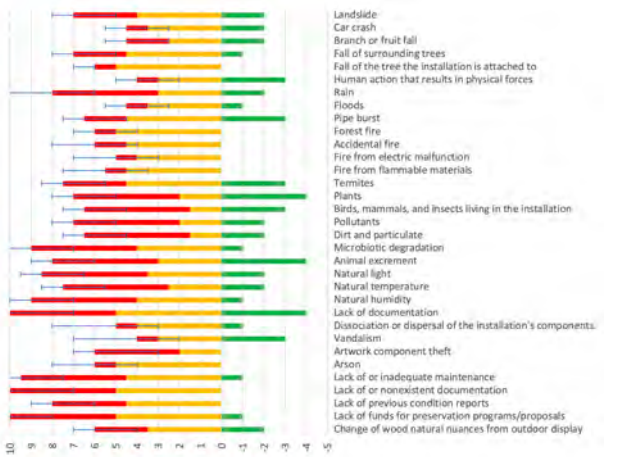


Table 15.1 *Aqui Estão* risk management. Camilla Ayla Oliveira dos Anjos, 2019

cheap preservation measure that can be taken is to adequately document the work.

CONSERVATION PROPOSAL: MODEL FOR DOCUMENTATION AND PRESERVATION

Since the institution's documentation is not sufficient to evaluate the alterations that *Aqui Estão* has already undergone, and given that these same changes cannot be ignored as part of the installation's history, a model of documentation is proposed that should remedy some lack of information. Models presented in publications from Getty (Beekens and Learner 2014; Pullen and Heuman 2007; Levin 2012; Learner and Rivenc 2014; McNally and Hsu 2012; Verbeeck 2016), Tate (Heuman 1999), the University of Amsterdam (Hummelen, Sillé, and Zijlmans 1999, 179–90, 191–95), and the publications *Modern Art: Who Cares?* (Hummelen, Sillé, and Zijlmans 1999) and *Inside*

Installations (Scholte and Wharton 2011) exemplify this suggestion of documentation. The model presented here is the first step for preserving the installation. A model file for documentation of the museum's site-specific installations that integrates the contemporary outdoor collection was proposed. To make this model, already-revised reports systems in relevant contemporary collections were used.

Since the museum already possesses valuable (albeit unorganized) documentation, mostly photographs and information in exhibition catalogues, the main goal for the initial phase is to organize this information and combine it with additional sources such as artist interviews and newspaper clippings. At the same time, we propose to give the museum staff tools and methods to complete the information bank. Hopefully, compiling the existing information will also encourage the museum to study the various installations' surroundings and how nature is impacting their preservation.

Once the first steps of the documentation are completed, an interview in situ should be conducted to ask the artist detailed questions about her intentions for the creation of the work and its appearance, and her wishes for its preservation. This should serve as the base to design a conservation plan. It would also be important to create an institutional memory by recording oral histories with staff who were working at the museum when the artwork was created.

The documentation is the most urgent measure because it is the tool and guide when any preservation measure is necessary. The conservation and restoration measures need financial resources to be completed, and one way to obtain these is by presenting the government with a proposal. It is impossible to demonstrate any urgency about these measures if there are no records of the material damage, its rate of occurrence, and by what standards it should be preserved. Having consistent documentation is necessary to show what should be done and how to do it, and obtain the necessary financing. The model file could then be applied to all of the Açude's outdoor site-specific installations.

With the record of the artist's current opinion about how the installation should look, a path for preservation in consonance with its material and immaterial aspects can be drawn. Even if the artist decides to accept the material's decay, the documentation will still be paramount as a way to record its existence—how it has passed through the years and eventually dissolved back into nature.

If instead a decision is taken to mitigate the damage of time, different actions are suggested. First, a study of the microorganisms present on the wood's surface would be useful to eliminate them in a targeted way. The wooden cylinders would need to be detached from the tree, with adequate documentation of the process and mapping of the cylinders' positions. The treatment of the wood should include cleaning and removing microbiological attack, consolidating the wood, and filling losses and retouching surfaces as necessary. Most importantly, a protective surface coating should be applied. Finally, the cylinders would be reattached to the tree with a material that does not degrade the artwork, damage the tree, or impede the tree's continued growth. It would be important, after the restoration, to create a maintenance routine, including periodic application of a biocide and regular monitoring of the artwork's appearance.

CONCLUSION

The main threat to *Aqui Estão* is its location outdoors, yet the work is site specific. In establishing a conservation plan, it is paramount to start by clarifying the artist's position in regard to the acceptability of decay. Two main pathways are envisaged: one where the work is allowed to decay and slowly disappear, and one in which the wood is treated and its color nuances restored. In both cases, systematic documentation is needed. But the economic reality of the Museus Castro Maya and its overall priorities also must be taken into consideration. There are more than ten thousand items in the collection, and the Açude has only four staff responsible for all its works, both indoors and outdoors.

Unfortunately, considering the resources needed to preserve the site-specific outdoor installations on the one hand, and the pressing needs of the entire collection on the other, one realizes that there is little chance of being able to address the conservation of the outdoor installations. Funding is needed to implement any preservation measures, and the reality of federal museums in Brazil has been, for a long time, one of a lack of funds. This tendency has been worsening in recent years, but we can only hope that the trend will be reversed in the future.

NOTES

1. “Castro Maya was the son of Raymundo de Castro Maya, a renowned engineer with connections to Emperor D. Pedro II, and Theodozia Ottoni de Castro Maya, heiress of a traditional liberal intellectual family. From his father, Castro Maya inherited the taste for collections of art objects, and from his mother, the fondness for literature. The family lived in France when his father occupied the position of Brazilian vice consul in Paris, a city to which Castro Maya returned several times, and which influenced his cultural formation.” From the museum’s website: http://museuscastromaya.com.br/castro-maya/?lang=en.

2. The Tijuca Forest is a mountainous place covered with human-made reforestation. What was once a natural forest had been devastated during colonial times to grow sugar and coffee. Replanting was initiated in the second half of the nineteenth century in part to protect Rio’s water supply, and in part by order of the Portuguese Royal Family, who moved to Rio de Janeiro in the nineteenth century and ordered a wholesale redesign of the city along European lines. They hired landscapers and other professionals to enact the transformation from a coffee plantation to a tropical European-inspired forest. In 1961 Tijuca Forest was declared a national park. It contains most of the city’s natural and human-made attractions, such as the sculpture of Christ the Redeemer atop Corcovado mountain; Mayrink Chapel, decorated with murals painted by Cândido Portinari; and imperial-era constructions such as the pagoda-style gazebo at Vista Chinesa outlook. Other attractions include natural heritage such as the Cascatinha Waterfall and a colossal granite picnic table called Mesa do Imperador (Imperator’s Table).

3. My transcript and translation. The recording in the original Portuguese is available here: https://vimeo.com/125530548.

4. The decision-making model is available at https://sbmk.nl/source/documents/decision-making-model.pdf.

BIBLIOGRAPHY

Ankersmit et al. 2011
Ankersmit, Bart, Agnes W. Brokerhof, Tatja Scholte, Simone Vermaat, and Gaby Wijers. 2011. “Installation Art Subjected to Risk Assessment: Jeffrey Shaw’s Revolution as Case Study.” In *Inside Installations: Theory and Practice in the Care of Complex Artworks*, edited by Tatja Scholte and Glenn Wharton, 91–101. Amsterdam: Amsterdam University Press.

Beekens and Learner 2014
Beekens, Lydia, and Tom Learner, eds. 2014. *Conserving Outdoor Painted Sculpture*. Los Angeles: Getty Conservation Institute.

Doctors 1999
Doctors, Marcio, ed. 1999. *A forma na floresta: Espaço de instalações permanentes: Iole de Freitas, outubro, 1999: Anna Maria Maiolino, novembro, 1999.* Rio de Janeiro: Museu do Açude.

Heuman 1999
Heuman, Jackie, ed. 1999. *Material Matters: The Conservation of Modern Sculpture*. London: Tate Gallery Publishing.

Hummelen, Sillé, and Zijlmans 1999
Hummelen, IJsbrand, Dionne Sillé, and Marjan Zijlmans, eds. 1999. *Modern Art: Who Cares? An Interdisciplinary Research Project and an International Symposium on the Conservation of Modern and Contemporary Art*. Amsterdam: Foundation for the Conservation of Modern Art.

Learner and Rivenc 2014
Learner, Tom, and Rachel Rivenc. 2014. *Conserving Outdoor Painted Sculpture: Proceedings from the Interim Meeting of the Modern Materials and Contemporary Art Working Group of ICOM-CC*. Los Angeles: Getty Conservation Institute.

Levin 2012
Levin, Jeffrey, ed. 2012. “Conservation of Public Art.” Special issue, *Conservation Perspectives: The GCI Newsletter* 27 (2): https://www.getty.edu/conservation/publications_resources/newsletters/pdf/v27n2.pdf.

McNally and Hsu 2012
McNally, Rika Smith, and Lillian Hsu. 2012. “Conservation of Contemporary Public Art.” *Conservation Perspectives: The GCI Newsletter* 27 (2): 4–9.

Michalski and Pedersoli 2016
Michalski, Stefan, and José Luiz Pedersoli Jr. 2016. *The ABC Method: A Risk Management Approach to the Preservation of Cultural Heritage*. Ottawa: Government of Canada, Canadian Conservation Institute, and ICCROM.

Pullen and Heuman 2007
Pullen, Derek, and Jackie Heuman. 2007. “Modern and Contemporary Outdoor Sculpture Conservation: Challenges and Advances.” *Conservation Perspectives: The GCI Newsletter* 22 (2): https://www.getty.edu/conservation/publications_resources/newsletters/22_2/feature.html.

Rolnik 2002
Rolnik, Suely. 2002. “Flowerings of Reality.” In *Anna Maria Maiolino: Vida afora = A Lifeline*, edited by Catherine de Zegher and Paço Imperial, 110–11. São Paulo: Museu de Arte Moderna de São Paulo; New York: Drawing Center.

Scholte and Wharton 2011
Scholte, Tatja, and Glenn Wharton, eds. 2011. *Inside Installations: Theory and Practice in the Care of Complex Artworks*. Amsterdam: Amsterdam University Press.

Verbeeck 2016
Verbeeck, Muriel. 2016. “There Is Nothing More Practical Than a Good Theory: Conceptual Tools for Conservation Practice.” *Studies in Conservation* 61, supplement 2: 233–40.

16

Building Communities and Conserving Living Matter in the Collection of the Museo Universitario Arte Contemporáneo, MUAC-UNAM, Mexico City

Claudio Hernández

This paper describes work carried out by Mexico's professional community in the field of contemporary art conservation, and especially the ongoing collaboration between the Restoration Laboratory of the Museo Universitario Arte Contemporáneo (MUAC) and the Seminario Taller de Restauración de Arte Moderno y Contemporáneo (Workshop-Seminar on Restoration of Modern and Contemporary Art) of the Escuela Nacional de Conservación, Restauración y Museografía (ENCRyM), both in Mexico City. It describes two case studies in the preservation of art in which organic and biological materials were used by artists Marta Palau Bosch (b. 1934) and Teresa Margolles (b. 1963). These works belong to the MUAC collection.

◆ ◆ ◆

The "Living Matter" symposium offered a great opportunity to celebrate the tenth anniversary of the Restoration Laboratory of the Museo Universitario Arte Contemporáneo (MUAC), Mexico City, while also reflecting on and contributing some solutions to the problem of preserving biological materials used in contemporary art. As one of the organizers of this gathering, the museum reaffirms its commitment to the study and conservation of contemporary collections, as well as to promoting the professional training of conservators specializing in contemporary works in Mexico, in collaboration with the Escuela Nacional de Conservación, Restauración y Museografía (ENCRyM), also in Mexico City and part of the Instituto Nacional de Antropología e Historia (INAH).

The first collaboration between MUAC's Restoration Laboratory and ENCRyM's Seminario Taller de Restauración de Arte Moderno y Contemporáneo (Workshop-Seminar on Restoration of Modern and Contemporary Art) was established in 2010. Since that time, a dynamic has evolved that allows for discussions

with professors on conservation issues anchored in several case studies from the MUAC collections, which the students are able to address with the advice of various specialists. One of the questions the collaboration strives to answer regards how theory and practice should be combined in the conservation of contemporary art. The answer proposed: via strategic collaborations between academia and the spaces where conservation is practiced, namely museums (fig. 16.1).

Figure 16.1 Students of the Escuela de Restauración carrying out diagnoses at MUAC, September 2017. Claudio Hernández

In this institutional collaboration, MUAC's contributions have been to supplement student training through the case study method, thereby contributing to research on and conservation of a significant diversity of materials. The students have also followed guidelines for conducting interviews with artists and other cultural agents for the purpose of understanding the artist's intention for each work and the material and conceptual significance of the materials used. Lastly, they come to understand how the passage of time may or may not alter a work. Through this dialogue between students and specialists, the students come to understand the needs of a public institution like MUAC, where research and intervention proposals go hand in hand with guidelines for conserving collections.

Additionally, long-term accessibility is fundamental, since the entire collection belongs to the Universidad Nacional Autónoma de México.

In the last decade, Mexican contemporary art conservators have been a very active professional group working through public and private institutions to discuss and solve issues together, and to contribute to the international scene with Mexican case studies and context. One of the main takeaways has indeed been the need to work as a professional community and broaden networks and teams, due to the characteristics and adversities in the context of Mexico's contemporary cultural heritage and institutional complexities.

Following are two case studies from the MUAC collection in which the research, diagnosis, stabilization proposals, and conservation treatments were carried out by students and professors from ENCRyM in dialogue with other specialists and staff from the MUAC Restoration Laboratory. Note that the conservation treatments were concluded in the first case, but in the second case the treatment is still in progress.

CASE STUDY: MARTA PALAU BOSCH

The work of artist Marta Palau Bosch (b. 1934) is characterized by the use of organic materials such as textile fibers, handmade paper, branches, and mud, although she has also used synthetic fibers to a lesser extent. Her sculptural textiles are noted for the diversity of their subjects (migration, myths, femininity) as well as their excellent manufacture and concern for material significance. Historian Jorge Alberto Manrique has referred to her *Mis caminos son terrestres XVII* (My Paths Are Earthly XVII, 1985, fig. 16.2) as a "textile work," or perhaps a "woven shape," as opposed to a tapestry. The work shares two elements inherent in sculpture: it occupies real three-dimensional space (even though it is a rectangle, its volume requires a head-on view) and has tactile qualities (Manrique 1978, 12). MUAC chief curator Cuauhtémoc Medina notes that critics have used the terms "soft sculpture," "multi-dimensional textile," and "sculpture in textile material" to refer to Bosch's work (Medina 2006, 65). These definitions help us differentiate Palau's artistic practice from that of other artists of the period.

Figure 16.2 Marta Palau Bosch (Spanish, b. 1934), *Mis caminos son terrestres XVII* (My Paths Are Earthly XVII), 1985. Low-warp henequen and totomoxtle (corn), dyed, two parts, 165 × 385 cm overall. Museo Universitario Arte Contemporáneo, UNAM, Mexico City. Registration photo courtesy Seminario Taller de Restauración de Arte Moderno y Contemporáneo

Mis caminos son terrestres XVII is made of henequen (a type of agave) and totomoxtle (a type of corn). Since the time of its making, deformations had occurred in the work's textile support due to poor distribution of weight. Further, there was an accumulation of dust, decoloring of the dyed maize leaves, salts on some parts of the leaf surfaces, and overall rigidity and poor flexibility of the organic materials.

Preservation of this work required an understanding of its material authenticity based on the function to which the artist put the materials. The dyed maize leaves and their deployment in the textile is the most relevant component and holds the greatest significance. Therefore, intervention focused mainly on eliminating the deformations in the textile support and modifying its hanging system, since the original system was inconsistent and largely the cause of the deformation.

Following that, it was locally dry-cleaned to remove dirt and salt deposits. Controlled humidity (steaming) was also applied (within a chamber) to relax the deformations and make the leaves and the textile more flexible. Taking into account the meaning of the work, the fading coloration on the maize leaves was addressed. One ethical dilemma involved understanding and trying to reproduce Palau's dyeing technique using new maize leaves. Because of her advanced age, Palau was unable to participate in an interview, so the students interviewed her assistant, Roberto Guillén Rodríguez. After conducting a test to identify the colorants used as dyes, the results revealed that the artist had used indigo and that the preparation techniques were very irregular, since the tones ranged from a darker black and some blue parts to others that were more reddish (Ortega Espinoza 2014, appendix 26). For that reason, it was decided not to attempt to replace, intensify, or retouch the original color. The researchers concluded that trying to match the colors seen in the piece would be highly complicated, and after assessing the alterations in the work, it was agreed that the present fading did not mar an appreciation of the work, and retaining the existing appearance better preserved its authenticity.

A sheet of Tyvek was used to wrap and store the work to prevent the accumulation of dust and to reduce exposure to light.

This research was important not only because of the significance of this specific artwork, but also because MUAC's collection includes other Palau artworks. This case study established criteria for conservation of those as well as other textile works.

CASE STUDY: TERESA MARGOLLES

The work of Teresa Margolles (b. 1963) is noted for its rawness and its appropriation of materials associated with violent acts, mainly in northern Mexico. In the case of *Encobijados* (The Covered Ones, 2006, fig. 16.3), she arranged blankets that had been used to cover corpses on metal pipes. Medina writes of contemporary Mexican art,

Figure 16.3 Teresa Margolles (Mexican, b. 1963), *Encobijados* (The Covered Ones), 2006. Mass-produced blankets used to wrap the bodies of victims of organized crime, metal T-shaped pipes, seven parts, 94 × 116 cm each. Museo Universitario Arte Contemporáneo, UNAM, Mexico City. Irene Barajas, courtesy MUAC

"Installation has been the privileged medium for expressing conceptual, activist, and experimental exploration since the 1970s. . . . Installation suddenly became common in galleries and museums, and demanded the type of contemplation that was appropriate for paintings and sculpture. . . . The work is altered to adapt to the museum enclosure" (Medina 2017, 13). In this sense it is significant that Margolles has been working in installation since the 1990s.

The blankets bear organic bodily fluids, remains of plant matter (grass, dirt, dead insects), and adhesive tape because of their former use to wrap corpses (fig. 16.4). As they were never given any treatment to preserve the biological remains, the fluids have noticeably degraded. Some stiffened areas have also been noted, corresponding to the stains on the blankets, and some sections of tape have lost their adhesive and come loose. The last elements of the installation are metallic T pipes, which present no conservation issues.

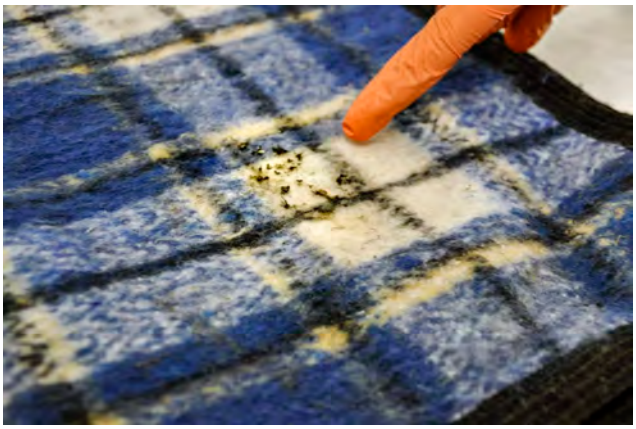


Figure 16.4 Detail of *Encobijados*. Claudio Hernández

It should be mentioned that only the diagnosis and proposal for stabilization have been conducted for this work; no interventions have yet been carried out. The main ethical dilemma regarding conservation of this piece is that its material authenticity is based on the function to which the artist puts the materials. Consequently, any intervention could irreversibly alter the meaning. Since the work's acquisition in 2006, it has been in storage in an isolated drawer, under stable temperature and relative humidity (20°C, 55 RH) in order to reduce organic degradation and oxidation processes. It is wrapped in

Tyvek and thus not in contact with other artworks. The installation has been exhibited only once—in 2008, at MUAC's inaugural show.

The diagnosis undertaken proposes treatments to disinfect the biological residue and document the stains under different specialized lights (UV, oblique, clear) as well as the locations of the pieces of adhesive tape in case it proves necessary to apply some type of bonding agent to keep them from coming loose (Mata and Coronado 2018, 8). Lastly, the remains of grass, dirt, and insects should be analyzed to obtain more information on the place where the blankets were found. A biologist also provided important health and safety recommendations for handling of the work: as it contains bodily fluids, it is necessary to avoid direct contact with the skin (wear disposable globes, a face mask, eye protection, and a lab coat), and the artwork needs to stay in a stable environment (Mata and Coronado 2018, 8).

It is relevant to continue researching and studying Margolles's artworks, since MUAC holds in its collection other objects and installations by her and the group SEMEFO (active in the late 1980s and 1990s), of which she was a part.

CONCLUSION

Recent years have witnessed many productive collaborations in the Mexican conservation community involving partnerships between academia and museums, combining theory and practice in the care of contemporary art. Museums have served as spaces for practice and professional training for students, and for promotion of active dialogue among a range of specialists.

In the case studies above, the first conclusion is that it is essential to research the significance of organic and biological materials in artworks and to understand the intent of the artists, since these works must be understood as outcomes of a process, thus making them records of actions. The second conclusion is that the organic and biological materials used in contemporary art are extremely sensitive and delicate, so preventive conservation is key to preserving this type of work.

In the field of global contemporary art conservation, the Mexican community needs to study and publicize the context of Mexican art through case studies, new methodologies, and proposals for study and intervention. We should continue to disseminate internationally an understanding of the profession's role and concepts in order to conserve our contemporary cultural heritage.

BIBLIOGRAPHY

Eder and Palau 1985
Eder, Rita, and Marta Palau. 1985. *La intuición y la técnica*. Mexico City: Comité editorial del gobierno de Michoacán.

Hernández, Yasky, and Learner 2017
Hernández, Claudio, Caroll Yasky, and Tom Learner. 2017. "The Conservation of Modern and Contemporary Art in Latin America: Recent Approaches in Chile and Mexico." *Conservation Perspectives: The GCI Newsletter* 32, no. 2 (Fall): https://www.getty.edu/conservation/publications_resources/newsletters/32_2/feature.html.

Manrique 1978
Manrique, Jorge Alberto. 1978. *30 escultoras en materiales textiles*. Mexico City: Museo de Arte Moderno, INBA.

Mata and Coronado 2018
Mata, Lizeth, and Claudia Coronado. 2018. *Diagnóstico de conservación y propuesta de estabilización de la obra Encobijados, de Teresa Margolles*. Mexico City: Seminario Taller de Restauración de Arte Moderno y Contemporáneo, ENCRyM-INAH.

Medina 2006
Medina, Cuauhtémoc. 2006. "Escultura suave, disidencia suave." In *Marta Palau. Nahualli*, edited by Virginia Ruano. Mexico City: CONACULTA, Gobierno del estado de Michoacán, UNAM, Centro Cultural Tijuana, and BBVA Bancomer.

Medina 2017
Medina, Cuauhtémoc. 2017. *Abuso mutuo: Ensayos e intervenciones sobre arte postmexicano (1992–2013)*. Mexico City: Editorial RM.

Ortega Espinoza 2014
Ortega Espinoza, Daniela. 2014. *Informe de los trabajos de restauración de la obra "Mis Caminos son Terrestres XVII" de Marta Palau*. Mexico City: Seminario Taller de Restauración de Arte Moderno y Contemporáneo, ENCRyM-INAH.

Rinehart and Ippolito 2014
Rinehart, Richard, and Jon Ippolito. 2014. *Re-Collection: Art, New Media, and Social Memory.* Cambridge, MA: MIT Press.

van Saaze 2013
van Saaze, Vivian. 2013. *Installation Art and the Museum: Presentation and Conservation of Changing Artworks*. Amsterdam: Amsterdam University Press.

Part Four

Different Approaches and Responses

17

Stabbing Our Own House: A Biography of Joseph Beuys's *Wirtschaftswerte*

Rebecca Heremans
Katrien Blanchaert

Historic treatments of Joseph Beuys's Wirtschaftswerte *(1980) were carried out without taking into account the context of the work as a whole, and the varied approaches to treatments over an extended period of time have proven problematic for decision making around the long-term care of the work. The need to make decisions about future restoration treatments in a systematic, reasoned manner became obvious to the professionals caring for the work starting around 2014. Historical, ethical, and technical aspects of the installation were investigated by the Collection Department at S.M.A.K. in Ghent, Belgium. Utilizing the results from this research, a tailor-made decision tree was created that will govern future restoration treatments.*

◆ ◆ ◆

Wirtschaftswerte (1980, fig. 17.1), an installation artwork by Joseph Beuys (1921–1986), is one of the most iconic artworks in the collection of the S.M.A.K. museum in Ghent, Belgium. Its history and conservation appeal to the imagination, mainly due to the ephemeral nature of some of its elements.

To understand the origin and history of *Wirtschaftswerte*, it is necessary to first sketch the museum's history. S.M.A.K. is a museum with a collection of contemporary artworks dating from the 1940s to the present. In 1957 an organization called Vereniging voor het Museum voor Hedendaagse Kunst (VMHK, or Association for the Museum for Contemporary Art) was founded by a group of private collectors and art lovers interested in contemporary art. From 1975 to 1999, Jan Hoet, founder and former director of S.M.A.K., was given the opportunity to put the VMHK collection (and more) on display in parts of the Museum voor Schone Kunsten (Ghent Museum of Fine Arts). In 1999 VMHK moved to its own building on the other side of the street and changed its name to the Stedelijk Museum voor Aktuele Kunst (S.M.A.K.).

Before that, in 1980, Hoet curated the legendary exhibition *Kunst in Europa na '68* (Art in Europe after '68), in which Art and Language, Mario Merz, Gilbert & George, Panamarenko, and many other artists took part. It was at that time, in one of the smaller halls near the center of the museum building, that Beuys created *Wirtschaftswerte* with his assistants. Several of the works made specifically for this exhibition were later added to the museum's collection, and Beuys's installation was one such. *Wirtschaftswerte* was acquired in December 1980. Hoet

Figure 17.1 Joseph Beuys (German, 1921–1986), *Wirtschaftswerte*, 1980, as it appeared in 2014. Mixed media, 330 × 400 × 266 cm. S.M.A.K., Ghent, Belgium. Dirk Pauwels, © S.M.A.K.

bought it from Beuys himself, at a friend's price. Since VMHK was a municipal museum, the acquisition of this piece needed to be approved by the city council. There are records of heated discussions among the Ghent councilors about the purchase. Some had doubts about its "artistic qualities"; others expressed concerns about the transient nature of certain constituent materials and their conservation (Blanchaert 2014, 180–81).

The title, *Wirtschaftswerte*, can be translated as "economic values." The content and concept was part of Beuys's so-called *Wirtschaftswertprinzip* (economic value principles), an idea that had occupied the artist since 1977. He used art as a changing medium to raise social and/or political issues. This installation suggests reflection on the contrasts between East and West, and all their different aspects (Verhoeven 2019).[1]

The components break down into four general categories. First, there are six metal racks. These were bought by the German publisher Gerhard Steidl at a pawnshop or metal dealer in Berlin (Blanchaert 2014, 178).[2] Since they were secondhand, the racks already showed wear in 1980.

Positioned on the racks are a variety of packaged food items and other provisions: sugar, cookies, beer, rice, sulfur, honey, tea, barley, millet, salt, rabbit pâté, chocolate, bandages, batteries, and more. Beuys began collecting these packages from the former German Democratic Republic several years before the creation of *Wirtschaftswerte*. His friend, the graphic designer Klaus Staeck, had family in the GDR and regularly brought packages to West Germany for Beuys. While it is assumed that in 1980 there were about 510 packages in the installation, today there are only 462 packages. Every item shows the artist's signature and the inscription "1 Wirtschaftswert" (fig. 17.2). The third element of the installation is a rectangular plaster block. This block had been in the artist's studio since the 1960s and became part of a fixed work in 1980, specifically in front of the metal racks of *Wirtschaftswerte* (Hoet and De Baere 1990, 21). The corners of the block were intentionally damaged by the artist, and he used butter—a common product in his oeuvre—to restore the rectangular shape (fig. 17.3). On the top of the block, Beuys has written "Der Eurasier läßt schön Grüßen. Joseph" (The Eurasier sends kind

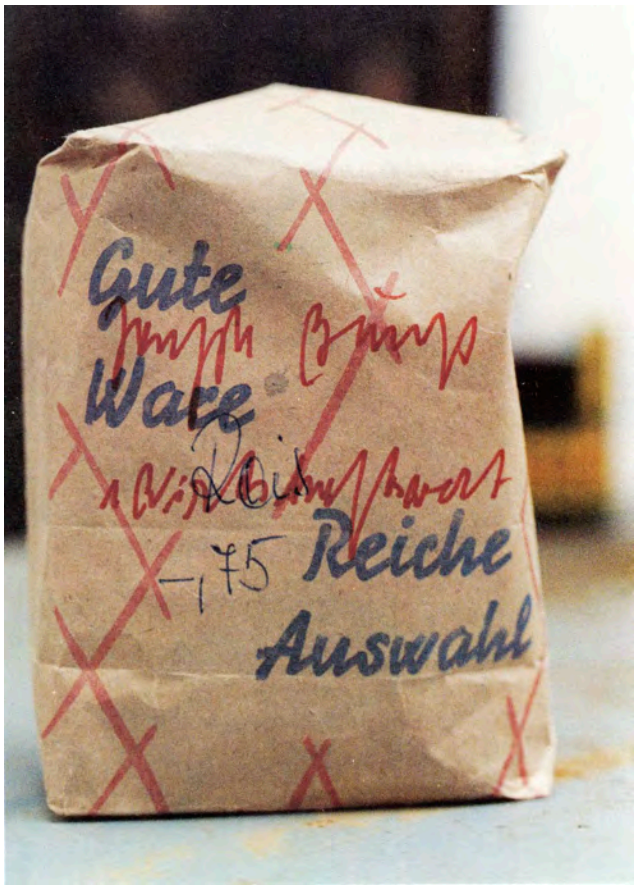


Figure 17.2 Inscription detail of *Wirtschaftswerte*. © Gerhard Steidl + Klaus Staeck, from *Joseph Beuys – Das Wirtschaftswertprinzip* (Göttingen, Germany: Steidl Verlag/Edition Staeck, 1997)

greetings). While the butter is removed at the end of each exhibition, it has penetrated the plaster over the years, giving the work quite a specific aroma. And last but not least, wherever *Wirtschaftswerte* is displayed, several paintings are shown alongside it. There are no specific paintings that belong to the installation; the subject matter may vary, but, per a S.M.A.K. condition report from 1999, the paintings must date from between 1818 and 1883, the life span of Karl Marx.

RESEARCH

In order to create a decision tree to assist in the future conservation and/or restoration of the installation, particularly the packaged food items, it was necessary to conduct research that highlighted its different aspects. The rich history of the work, the variety of materials present, and the ethical issues that arose when thinking about the conservation and restoration of specific elements were all investigated. In this way, it was possible to make substantiated compromises between different considerations (Foundation for the Conservation of Modern Art and the Institute for Cultural Heritage 1999).

To better understand the work's current condition, its history was investigated from its purchase to the present day. In 1990 *Das Wirtschaftswertprinzip* was published: a book full of photographs by Klaus Staeck and Gerhard Steidl showing the original installation process of *Wirtschaftswerte* at *Kunst in Europa na '68*. This book was crucial for the historical and technical research on the installation's various elements and materials.

Also, apart from its origin story, a few key events are worth noting. A thorough search through the S.M.A.K. archives in 2014 revealed that *Wirtschaftswerte* had definitely been displayed at least thirty-eight times, and perhaps more than that. Regarding the conservation of the work, several treatments had been undertaken since the establishment of the museum's restoration department in 1998. Notes referencing a treatment in 1999 were found, but no specific details were mentioned. Presumably it was for controlling insects.[3] In 2002 a design for crates and packaging of the different parts was formulated. The intent was to store the packaged items in an environment with reduced oxygen levels, but this was too difficult to realize in loan situations (Gilman 2015, 180). In 2011 seventy-two packaged food items were treated by two freelance restorers. Information about the treatments is available, but no other research on *Wirtschaftswerte* was carried out at that time. And since this intervention, no further conservation treatments have been completed to date.

The further one goes back in time, the less is known about the conservation and management of the installation. There are no written records about *Wirtschaftswerte*'s conservation between 1980 and 1999; most of the information from that period comes from oral sources and loan documentation. The latter proves that Beuys was closely involved when *Wirtschaftswerte* was requested for loan from the VMHK in 1984 for the exhibition *Von hier aus. Zwei Monate neue deutsche Kunst in Düsseldorf* presented by the city of Düsseldorf (Blanchaert 2014, 187). In Düsseldorf, Beuys made a few changes to the installation, the most obvious of which was the addition of chicken wire around the metal racks to prevent the packaged items from being stolen. Afterward it was decided that this mode of presentation was a one-off. The installation was the first time *Wirtschaftswerte* was put together with Beuys present since the original in Ghent. He noted at that time that more than half of the packages present on the racks no longer contained their original contents. These replacements were made in 1983 or 1984 by a then

Figure 17.3 Joseph Beuys applies butter to the plaster block for the exhibition *Kunst in Europa na '68*, Vereniging voor het Museum voor Hedendaagse Kunst, Ghent, 1980. © Gerhard Steidl + Klaus Staeck, from *Joseph Beuys – Das Wirtschaftwertprinzip* (Göttingen, Germany: Steidl Verlag/Edition Staeck, 1997)

museum employee due to biological attack by insects.[4] Beuys objected to the difference in weight of the substituted material compared to the original and suggested replacing the affected contents with champagne chalk or sand (Hoet and De Baere 1990, 24). Alas, this all happened during a stage in which, as previously mentioned, no records were kept, making it impossible to understand the thoughts behind those decisions. The exact number of packaged items present in 1984 is uncertain, but of the 462 that remain today, 292 contain non-original content.

Packages that had their contents replaced were filled with a variety of materials. Many of these were not suitable for long-term conservation, and some even caused damage to the packaging. Among the replacement materials were wooden lath, sawdust, and chalk, but the majority of the foodstuff packages were filled with polystyrene (fig. 17.4a, fig. 17.4b). In order to document the packages' different contents, an inventory was made in 2014 with a focus on the materials present and their condition (table 17.1). This document also includes suggestions for suitable restoration treatments for the exterior of each package. More than a handful of damage types were observed: fading and/or discolorations, brittle paper, faded artist signatures, mechanical damage of the paper support, sticky and/or dirty plastic or glass jars, splintered plastic foils, bulging tins, and so on (fig. 17.5a, fig. 17.5b). It was also noted that identical-looking packages sometimes had different contents.

Figure 17.4a

Figure 17.4b

Examples of packages with nonoriginal fillings. Rebecca Heremans © S.M.A.K.

Figure 17.5a

Figure 17.5b

Examples of damage. Rebecca Heremans © S.M.A.K.

Rack	Object	Material(s)	Condition of whole (good/ moderate/ bad)	Condition support (outside) (good/moderate/ bad)	Original content present? (Yes + what /No)	Non-original content (What?)	Secondary support present? (Yes + what/No)	Other, previous restorations (What?)	Current damage (What?)	Conservation/ restoration treatments: suggestions
5A	Ricolit Rotbraun Holzschützender Anstrichstoff (green label)	Metal can + paper label	Good	Moderate	Yes, sort of varnish	/	No	No	Corrosion Loss of paint layer - can Drips of content - outside can Deformation (dent) - can Stains	Dry cleaning Treatment of corrosion (?)
5A	Ricolit Rotbraun Holzschützender Anstrichstoff (red label)	Metal can + paper label	Good	Moderate	Yes, sort of varnish	/	No	No	Corrosion Loss of paint layer - can Drips of content - outside can Small deformation (dent) - can Stains	Dry cleaning Treatment of corrosion (?)
5A	Roggen Vollkorn Waffeln	Paper + sort of tracing paper + piece of transparent tape	Moderate	Moderate	No	Styrofoam	No	No	Discoloring Thinned/weakened support Tears/holes Exit holes by bugs Yellowed + brittle tape Loose sealing Stain of adhesive - removed sticker	Dry cleaning Reinforcement of weakened zones Mending of tears/holes Mending of sealing Removal of tape/adhesive rests Adding a secondary support (?)
5A	Berliner Knusperbrot	Paper + sort of tracing paper	Moderate	Moderate	No	Ethafoam + silicone	Yes, tyvek	Yes (2011): Mending of tears New content Secondary support	Discoloring Thinned/weakened support Tears Loose sealing	Dry cleaning Reinforcement of weakened zones Mending of tears Mending of sealing
5A	Kinderberuhigungstee	Cardboard	Good	Moderate	Yes (?), tea	/	Yes, plastic (audible)	No	Discoloring Thinned/weakened support Stains	Dry cleaning Reinforcement of weakened zones Adding a secondary support (?)
5A	Stoffwechseltee	Cardboard	Good	Moderate	Yes (?), tea	/	Yes, undefined plastic (audible)	No	Discoloring Thinned/weakened support Stains	Dry cleaning Reinforcement of weakened zones Adding a secondary support (?)
5A	Schlankheitstee (blue sticker "5")	Cardboard	Good	Moderate	Yes (?), tea	/	Yes, undefined plastic (audible)	No	Discoloring Thinned/weakened support Stains	Dry cleaning Reinforcement of weakened zones Adding a secondary support (?)
5A	Schlankheitstee (blue sticker "6")	Cardboard	Good	Moderate	Yes (?), tea	/	Yes, undefined plastic (audible)	No	Discoloring Thinned/weakened support Stains	Dry cleaning Reinforcement of weakened zones Adding a secondary support (?)
5A	Hunger's Familien Frühstückstee (blue sticker "7")	Cardboard	Good	Moderate	No (?)	Styrofoam + piece of cardboard (?)	No	No	Discoloring Thinned/weakened zones Loose pieces	Dry cleaning Reinforcement of weakened zones Adding a secondary support (?) Mending of loose piece
5A	Hunger's Familien Frühstückstee (blue sticker "8")	Cardboard	Good	Good	No	Styrofoam	No	No	Discoloring Thinned/weakened zones	Dry cleaning Reinforcement of weakened zones Adding a secondary support (?)
5A	Hunger's Familien Frühstückstee (blue sticker "9")	Cardboard	Good	Good	No	Styrofoam + piece of cardboard (?)	No	No	Discoloring Thinned/weakened zones Glue stain at bottom	Dry cleaning Reinforcement of weakened zones Removal of glue stain Adding a secondary support (?)
5A	Hunger's Familien Frühstückstee (blue sticker "10")	Cardboard	Moderate	Moderate	No	Styrofoam	No	No	Discoloring Thinned/weakened zones Loose piece Leaking content package	Dry cleaning Reinforcement of weakened zones Mending of loose piece Closure of packing Adding a secondary support (?)

RACK 5, SHELF A
12 (?) objects in 1980
12 objects on sketch between 1980-1988
12 objects on German list in 1988
12 objects before 2004
12 objects in 2014

Table 17.1 Detail of inventory: materials and damage of objects on shelf 5A. Rebecca Heremans, © S.M.A.K.

Both the appearance and the physical condition of the packaging were taken into account, and terms such as "good," "moderate," or "bad" soon came to seem too limited to identify the treatment requirements of the entire object. Also quickly realized was that the failure of the physical structure of the packaging instantly affects the contents, including potential loss. Loss of the package contents complicates the manipulation of the package, and may even disrupt its perception. All these factors confirmed the need for a more elaborate and tailor-made decision-making model for *Wirtschaftswerte*.

OTHER WORKS BY BEUYS AND ETHICAL ISSUES

To clarify and define the future needs of *Wirtschaftswerte*, the research also looked beyond the immediate walls of the museum. Reading about the conservation of other three-dimensional pieces by Beuys and talking to other conservators who care for his work clarified some similarities and differences between this case and others.[5] Besides the presence of specific organic materials that he typically used, such as felt, fat, and honey, and the fact that these are often in need of cleaning or other conservation treatments, the most striking similarity appeared to be that caretakers of other sculptures and installations by the artist also asked themselves: "When should conservation stop?" This is because Beuys's opinion on aging and alteration differed with every artwork, and often these opinions were not recorded at the time they were expressed. It is known that Beuys was aware of the ephemeral aspect of his art (Bader 2017, 215). He once said: "My sculpture is not fixed and finished. Processes continue in most of them: chemical reactions, fermentations, color changes, decay, drying up. Everything is in a *state of change*" (Barker and Bracker 2005, 8). But it would be reductive to conclude from this quote that Beuys wouldn't mind letting his work simply decay. After all, it is also known that he gave advice to the employees of VMHK on "treating" the packages damaged by insects, which shows that he acknowledged the need for conservation treatments (Hoet and De Baere 1990, 24).

On the other hand, *Wirtschaftswerte* differs most clearly from other Beuys installations in that it doesn't have a fixed exhibition space. It was shown in numerous venues, and repeated handling caused specific damages. The presence of non-original content in many food packages and the damages that occurred during replacement also seem to be exclusively linked to *Wirtschaftswerte*. The presence of these non-original contents raised many ethical questions regarding future conservation and/or restoration treatments of the packaged items: What did Beuys think about the aging of this installation in particular? What is more important to the installation: concept or material? Do the non-original contents blemish the meaning of the work? Should non-original content be replaced if it hasn't harmed the packaging? Are materials that are suitable for long-term conservation in conflict with the artistic intent? What types of damage could or should be tolerated? If the original content is still present, can it be replaced as a preventive intervention if needed? When should a package be considered a total loss? To what extent should the museum let the installation "fade away"? When should the installation as a whole be considered a total loss? Should exhibition copies of the packaged items be considered?

These are just some of the questions that the museum asked itself when thinking about the conservation of *Wirtschaftswerte*. Since the artist's current opinion on the conservation of his work can no longer be procured, a compromise must be found between Beuys's concept and the vision of the museum regarding the conservation of the installation. Considering the varied nature of the packaged items and the different opinions of museum staff, it was not easy to reach conclusive answers. Taking all different aspects of the research into account, it can be concluded that there is no straightforward solution for treating an installation like this one. The most important thing is that decisions made for conserving the packages have a rationale, can be justified, and are implemented uniformly.

DECISION-MAKING MODEL

The most important ethical questions concerned how far a conservation treatment should go, and what should happen with the current content of the packaged items. To find answers, the most compelling questions about the condition of the packages were included in the decision tree. All packaged items will go through the different steps of the diagram, since all show damage or changes (fig. 17.6).

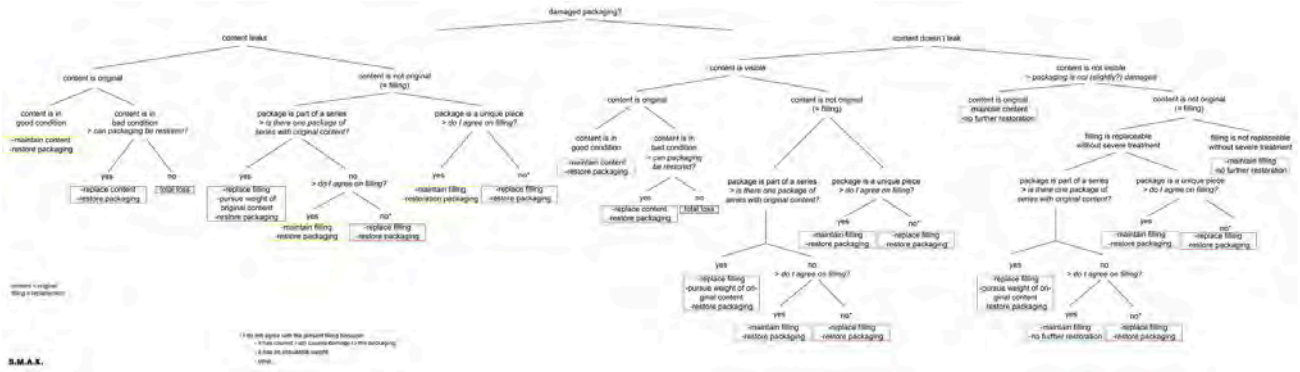


Figure 17.6 Decision tree for restoration treatments of packages. See detail views in figures 17.7 and 17.8. Katrien Blanchaert + Rebecca Heremans, © S.M.A.K.

The model starts from the following question: “Is the package leaking?” The answer to this question can be yes or no. If a loss of content is noted, further steps proceed on the left side of the decision tree (fig. 17.7). Every effort is made to retain original contents unless they are in poor condition or pose a threat to the condition of the packaging. When the original packaging is in such bad condition that no restoration treatment can improve its structure or appearance, the package might be considered a total loss. If the contents are not authentic, the presence of similar or non-similar packages and their content is considered. If there are several identical packages present—called “a series” in the model—and one or more of them still contain original content, this is taken into account when considering a replacement material.

The next step is a consideration of a material that gives the packaging the “look and feel” it had with its original enclosed matter. Günter Schott, a former conservator at the Hessisches Landesmuseum Darmstadt who often worked with Beuys, and even restored some works together with the artist, said that to him, it is clear that when restoring works by Beuys, “one cannot use any material that looks like the original but being something else. One should always use the original material” (Berlinghof 2014, 72). In the case of *Wirtschaftswerte*, the condition of the original packaging makes it ineligible for replacing non-original content with new, “original” content. If the package is unique, the suitability of the current contents is evaluated. If it has caused or still causes damage to the original packaging, or when the weight of the whole doesn’t match the information on the packaging (for instance if a one-kilo bag of salt is filled with polystyrene balls), this can be defined as an unsuitable filling.

If the content of a package doesn’t leak, decision making proceeds on the right side of the model (fig. 17.8). The next question asks whether the content is visible. If yes, this is due either to the shape of the package or to serious damage. The next steps are then identical to the left side of the decision tree as in the case of lost content. If the content is not visible, the packaging is usually barely or only superficially damaged. If the content is not authentic, then opening the package is considered along with the accompanying risks: if further treatment poses more risk to the package than the non-original content, the package is left untouched. When a treatment is simple and without further risk to the packaging, the branch continues and the uniqueness of the package is assessed. The further outcome is similar to those mentioned elsewhere in the decision model.

The division will finally result in five different treatment proposals, which concern both the restoration of the packaging and the preservation of its contents. In addition, it is also defined when a package should be considered a total loss. The more severe the damage, the more urgent it is to carry out a restoration treatment. The five treatment proposals each have a different color code, which corresponds to the urgency of treatment (fig. 17.9). Red and yellow indicate the most urgent treatments, and green and blue indicate the least urgent; pink is in the middle. The urgency is unconnected to whether the content of the package is original. As mentioned earlier, the most crucial question is if the content leaks or not.

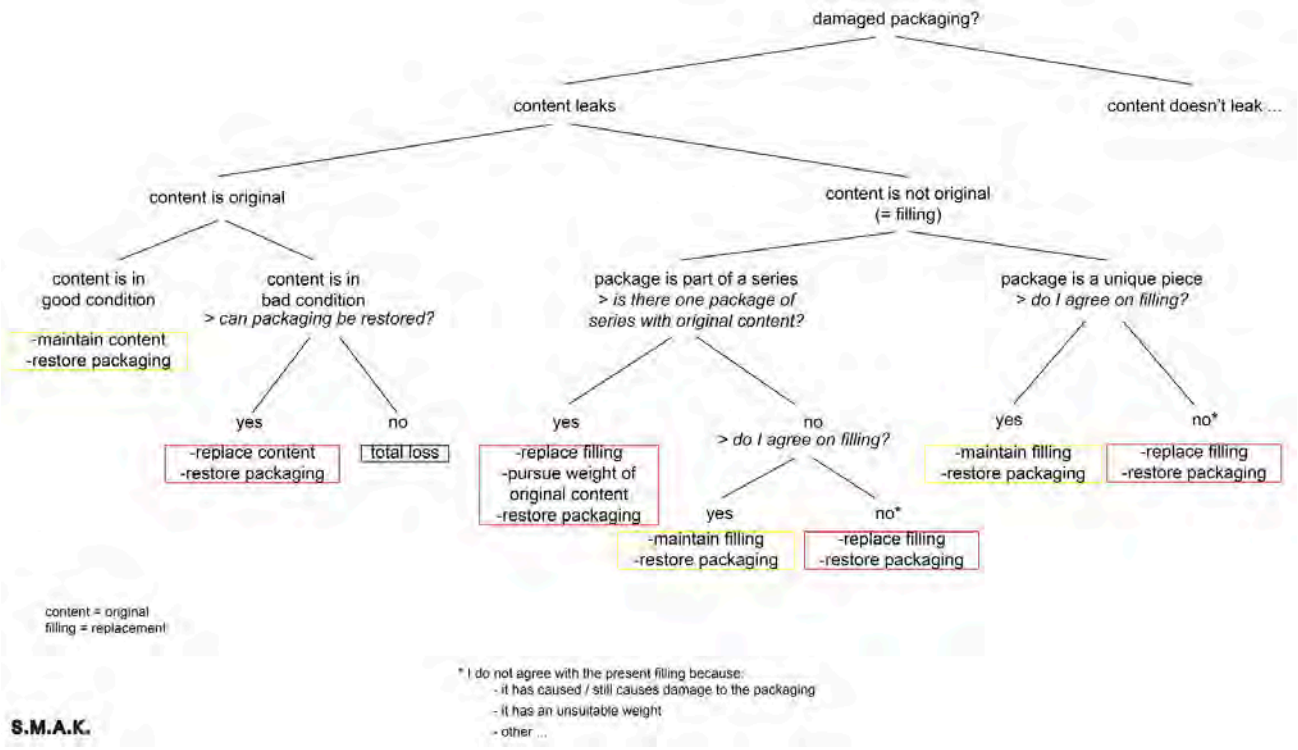


Figure 17.7 Left side of the decision tree: "content of package leaks." Katrien Blanchaert + Rebecca Heremans, © S.M.A.K.

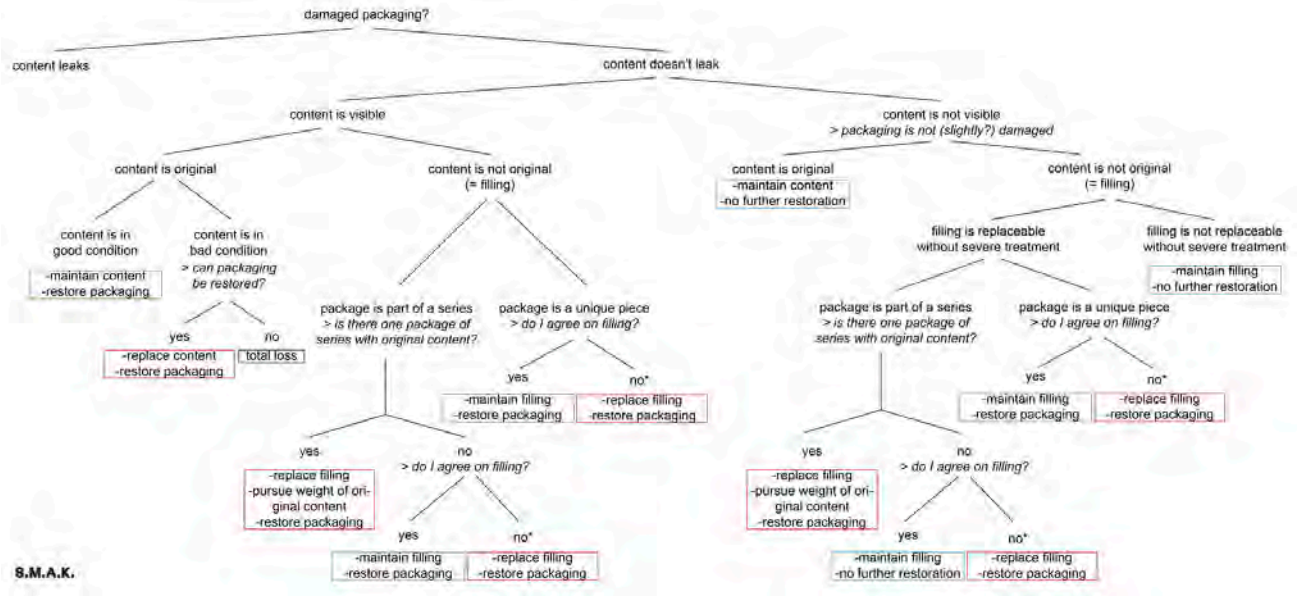


Figure 17.8 Right side of the decision tree: "content of package doesn't leak." Katrien Blanchaert + Rebecca Heremans, © S.M.A.K.

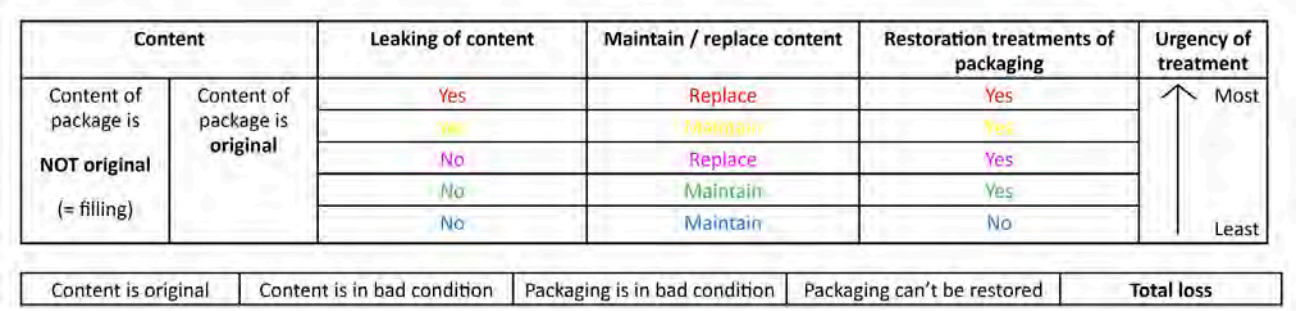


Figure 17.9 Quick overview on urgency of treatments. Rebecca Heremans, © S.M.A.K.

CONCLUSION

The development of this decision-making model was challenging due to the many different aspects of the research and different opinions on treatment, but it was essential to take the past and present condition of this installation into account in order to think in an organized manner about its future. Because *Wirtschaftswerte* will continue to degrade, it is certain that this "patient" will need ongoing care. There is a lot of work still to be done, and S.M.A.K. is aware that the time and budget necessary for realizing treatments will be spread over several years. Now that the decision tree exists, it is possible to carry out future treatments following the same decision-making pattern—a pattern that is consistent with the vision of the museum. In this way it is hoped that *Wirtschaftswerte* can be exhibited for as long as possible, while avoiding future damage and having a consistent plan in place should damage occur.

Acknowledgments

Many thanks to Eva Bader, Rachel Barker, Frances Berry, Gesine Betz, Katrien Blanchaert, Dr. Carolin Bohlmann, Charlotte Bouteligier, Leonie Colditz, Nav Haq, Frederika Huys, Sebastian Köhler, Claudia Kramer, Iris Paschalidis, Dirk Pauwels, Eva Rieß, Philippe Van Cauteren, and Thibaut Verhoeven for your help and inspiring ideas during the research.

NOTES

1. It is clear that this particular work mostly concerns contrasts between East and West Germany, but Beuys's ideas about *Wirtschaftswertprinzip* concern the contrasts between East and West on a global scale.
2. Gerhard Steidl is the founder of the Steidl publishing house, which together with Klaus Staeck put out the book *Joseph Beuys – Das Wirtschaftswertprinzip* (1990/1997).
3. Personal communication to author, May 8, 2019, from Frederika Huys of the Protocol Room, formerly S.M.A.K.
4. Personal communication to author, February 6, 2019, from Véronique Van Bever, a colleague at S.M.A.K. who worked at the museum at the time this treatment happened.
5. Oral and written communications were conducted with Rachel Barker (Rachel Barker Associates), Sebastian Köhler (Kaiser Wilhelm Museum, Krefeld), Leonie Colditz (freelance conservator), Eva Rieß (Hamburger Bahnhof Museum für Gegenwart, Berlin), Dr. Carolin Bohlmann (Hamburger Bahnhof Museum für Gegenwart, Berlin), Gesine Betz (Hessisches Landesmuseum, Darmstadt, Germany), Eva Bader (Das Städel Museum, Frankfurt am Main, Germany), Nav Haq (M HKA, Antwerp, Belgium), Frederika Huys (Protocol Room, formerly S.M.A.K.), Dirk Pauwels (formerly S.M.A.K.), and others.

BIBLIOGRAPHY

Bader 2017
Bader, Eva. 2017. "Die 'Barraque D'Dull Odde' 1961–67 von Joseph Beuys. Dokumentation, Oberflächenreinigung und Sicherung einer ortsspezifischen Installation im Vorfeld der Sanierung des Kaiser Wilhelm Museums in Krefeld." *ZKK Zeitschrift für Kunsttechnologie und Konservierung* 31 (2): 203–24.

Barker and Bracker 2005
Barker, Rachel, and Alison Bracker. 2005. "Beuys Is Dead: Long Live Beuys! Characterising Volition, Longevity, and Decision-Making in the Work of Joseph Beuys." *Tate Papers*, no. 4 (Autumn): https://www.tate.org.uk/research/publications/tate-papers/04/beuys-is-dead-long-live-beuys-characterising-volition-longevity-and-decision-making-in-the-work-of-joseph-beuys.

Berlinghof 2014
Berlinghof, Harald. 2014. "BLOCK BEUYS Erinnerungen von Günter Schott 1969 bis 2010 Restaurator am Hessischen Landesmuseum Darmstad." Interview by Inge Lorenz, Jan Peter Thorbecke, and Klaus-D. Pohl. Darmstadt, Germany: Hessisches Landesmuseum Darmstadt.

Blanchaert 2014
Blanchaert, Katrien. 2014. “Joseph Beuys – *Wirtschaftswerte* (1980).” In *Kunst in Europa na ’68 = Art in Europe after ’68 Ghent / 21st June–31st August 1980*, edited by S.M.A.K., 177–94. Ghent: S.M.A.K.

Foundation for the Conservation of Modern Art and the Institute for Cultural Heritage 1999
Foundation for the Conservation of Modern Art and the Institute for Cultural Heritage. 1999. “The Decision-Making Model.” In *Modern Art: Who Cares? An Interdisciplinary Research Project and an International Symposium on the Conservation of Modern and Contemporary Art*, edited by Ijsbrand Hummelen, Dionne Sillé, and Marjan Zijlmans, 164–72. Amsterdam: Foundation for the Conservation of Modern Art.

Gilman 2015
Gilman, Julie. 2015. “The Role of Science in Contemporary Art Conservation: A Study into the Conservation and Presentation of Food-Based Art.” PhD diss., Ghent University Faculty of Arts and Philosophy.

Hoet and De Baere 1990
Hoet, Jan, and Bart De Baere. 1990. “Ekonomische Waarden.” In *Joseph Beuys – Das Wirtschaftswertprinzip*, edited by Klaus Staeck and Gerhard Steidl, 21–25. Heidelberg, Germany: Edition Staeck.

Verhoeven 2019
Verhoeven, Thibaut. 2019. “Joseph Beuys – *Wirtschaftswerte* (1980).” In *S.M.A.K. De Collectie A–Z*, edited by S.M.A.K., 149. Ghent: S.M.A.K.

18

Pieces of the People We Love: Challenges in Caring for Works by Adrián Villar Rojas in the Moderna Museet Collection

Thérèse Lilliegren
Tora Hederus
My Bundgaard
Sara Norrehed
Tom Sandström

In 2015 the Moderna Museet in Stockholm presented Adrián Villar Rojas's exhibition Fantasma *and subsequently acquired two of the featured works, a then eight-year-old sponge cake and a large installation involving diverse objects made of organic and inorganic materials in various stages of decay. How can the field of conservation engage with such works, which are fundamentally characterized by decay and entropy? In preparation for storage and future display, a strategy to balance conservation issues and artistic intent was sought. Defining the ephemeral parameters of the pieces was a prerequisite. A project to investigate the possibilities for anoxic long-term storage was formulated, and the creation of a combined storage-showcase solution was initiated.*

◆ ◆ ◆

> *No doubt there is a paradox within my practice: In order to keep on existing it has to be somehow preserved, and at the same time it involves disappearance and the political rejection of commodification as represented by the capitalocene-submissive form of art practiced in the twenty-first century.*
>
> *—Adrián Villar Rojas, 2018*

The conservation of artworks made from unconventional or unstable organic materials—materials that decay and change in galleries and storage spaces—poses challenges to traditional museum principles. This became evident in the encounter with works by Adrián Villar Rojas (b. 1980) at the Moderna Museet in Stockholm (fig. 18.1) in 2015. How should conservation meet and embrace the decay and entropy that are important to this work? A balance between artistic intent, curatorial needs, and conservation care was sought.

A central notion in Villar Rojas's work relates to time and life spans; ephemeral qualities are significant. Few of his former pieces still exist, and his previous productions are

Figure 18.1 Adrián Villar Rojas (Argentinian, b. 1980), *Los teatros de Saturno III* (The Theaters of Saturn III), from the series *Fantasma* (Ghost), 2014. Mixed media on plinth, dimensions variable. Moderna Museet, Stockholm; kurimanzutto, Mexico City; and Marian Goodman Gallery. Installation view, *Fantasma*, Moderna Museet, Stockholm, 2015. Åsa Lundén / Moderna Museet

now mainly experienced through documentation. In this context, the decisions regarding any conservation action need to be carefully considered and executed. This paper describes the ethical and practical conservation concerns that were encountered in caring for the work of Villar Rojas. The initial challenges appeared when preparing the 2015 exhibition, but the later acquisition of two works in the show highlighted issues of long-term conservation. The project is a work in progress, and we are presenting our thoughts and actions so far.

FANTASMA

In 2015 the Moderna Museet in Stockholm produced one of the first major museum solo exhibitions by Adrián Villar Rojas. The featured works included materials such as bread, fruit, vegetables, a lobster tail, and a then eight-year-old sponge cake.

The starting point for the projects created by Villar Rojas and his team is often site-specific—indeed, interaction with the site is taken to its utmost limits. The exhibition at Moderna Museet, entitled *Fantasma*, was such a case.[1] A central theme was interrelated with the museum context, highlighting issues of memory and the shaping of objects, inclusion and exclusion of objects and audiences, and the question of who determines and who has access to museum contents. The self-consuming practice of the artist confronted the museum's traditional perspective of eternity.

The space was designed to partly disorient visitors in order to heighten their awareness of the museum's features. Villar Rojas wanted to create what he described as "a crazy passage, where people would wonder what is going on or what went wrong in terms of display of objects, use of walls, use of textures, use of the space" (Villar Rojas 2015). Typical museum features and details were distorted by narrowed passages, raised podiums, and faux wall panels. Slick, pristine, shiny surfaces and illuminated showcases were used. These features surrounded objects consisting of various kinds of organic and inorganic materials, partly in decay, creating a contrasting setting that highlighted and commented on the works as museum pieces. In the film introducing the exhibition, Villar Rojas stated how he wanted to reflect on the concept of documents and on the objects as documents, and what that means to him specifically, since most of his earlier works no longer exist (Villar Rojas 2015).

For this project, adhering to a core feature of museum practice, Villar Rojas for the first time chose to reinstall works from earlier exhibitions. "This show is a big mirror, in a way, of these wrinkled objects," he noted (Villar Rojas 2015). The objects were effectively "elevated" to museum

https://vimeo.com/592950662/292edbfb3d

Figure 18.2 *Fantasma*, Moderna Museet, Stockholm, 2015. Stefan Wrenfelt / Moderna Museet

documents, and the vulnerable, originally temporal pieces, in this setting, challenged classical museum terms like permanence, inherent value, treatability, and transportability (fig. 18.2).

INITIAL CHALLENGES

On arrival in Stockholm, some of the objects were found to be infested by insects—mainly biscuit beetles (*Stegobium paniceum*)—and mold. Since the exhibition was to take place amid the permanent collection, rather than in the more separate galleries that usually host the temporary exhibitions, the infestation risk called for an immediate action plan. An entomologist and a mold expert were consulted. Due to the short time available prior to installation, the infested parts were treated with Vikane gas (sulfuryl fluoride). Mold spores were analyzed before further exposure to museum staff or visitors was allowed. Fortunately, the examination showed low concentrations and no toxic spores.

During preparation and through the exhibition period there was an open dialogue between the conservators and the artist regarding the display of objects. Dilemmas, big or small, were attended to with perfect attention to minute detail by the Villar Rojas studio. For example, there were discussions about vulnerable pieces that could not be secured or protected, and about the handling of debris and losses, namely whether these should be removed or retained. Images were exchanged and mutual decisions made. Conservators had to work outside their comfort level, accepting change and losses, and the artist had to be understanding toward necessary treatments and limitations of display.

The long exhibition period, April to October, required daily monitoring by conservators. It went well, the only exception being that of recurring minor infestations, which were heat treated in the conservation department.[2]

ACQUISITION: *PEDAZOS DE LAS PERSONAS QUE AMAMOS*

Two of the more challenging works in *Fantasma* were acquired by Moderna Museet after the exhibition. Despite the inherent museological challenges, the works were selected because they were central to *Fantasma* and also represent key characteristics of how the artist addresses the time-based, the ephemeral, and the cinematic in sculpture. During the exhibition, the main aim was to control and stop infestations. The options available for this

Figure 18.3 Adrián Villar Rojas (Argentinian, b. 1980), *Untitled*, pictured in 2006 when it was first baked but not yet part of the 2007 artwork, and in 2015. Sponge cake, marzipan, milk chocolate, and plastic, 18 × 50 × 51 cm. Moderna Museet. Courtesy the artist and kurimanzutto, Mexico City / New York (2007) and Åsa Lundén / Moderna Museet (2015)

were limited given that the works were on view. With the later acquisition came long-term conservation concerns related to the works' essential nature. Should they be allowed to decay, or could they be approached in a more traditional way?

Untitled (fig. 18.3) is a cake originally baked in 2006, which at the time of acquisition was nine years old. The materials are described as sponge cake, marzipan, milk chocolate, and plastic, and it measures 18 × 50 × 51 cm. It was baked by the artist's aunt and was originally part of *Pedazos de las personas que amamos* (Pieces of the People We Love), a large installation shown in 2007 at arteBA, a contemporary art fair in Buenos Aires. The original installation was arranged on a large wooden table and depicted the universe from God's point of view, with objects following a life cycle ending with an intentional death (fig. 18.4). The cake was the final and pivotal scene of the tragedy, a miniature landscape in the shape of a cemetery where the heartbroken main character dies inside a giant robot shell, surrounded by small crosses (Essling and Villar Rojas 2015, 9).

Villar Rojas never intended for the cake to be saved after this initial installation, but it was collected by the artists' parents and brought to their hometown of Rosario, Argentina, where it was stored in a warehouse for eight years before traveling to Stockholm. In *Fantasma* it was displayed in a wall vitrine with a rounded inner back wall, behind glass and on a white underlit (LED) surface of acrylic (fig. 18.5).

Since entering the Moderna Museet collection, its visual appearance has not changed significantly, but the cake shows heavy signs of passing time. Colors are faded, and

Figure 18.4 *Pedazos de las personas que amamos*, arteBA, Buenos Aires, 2007. Courtesy the artist and kurimanzutto, Mexico City / New York

dimensions and textures show dramatic changes, with cracks and many losses. Past infestations are visible as bore holes, and dead beetles are fused to the surface—easy to mistake, at first, for sprinkles.

ACQUISITION: *LOS TEATROS DE SATURNO III*

Los teatros de Saturno III (The Theaters of Saturn III, fig. 18.6) consists of eighty-five different parts, each with different measurements and made of diverse materials, including plants, bread, fish, sneakers, electronics, and a lobster tail. The objects were originally shown at kurimanzutto in Mexico City in 2014, where they were part of the larger installation *Los teatros de Saturno* (fig. 18.7). Components of this installation were produced by the Villar Rojas team in a temporary workshop in Mexico.

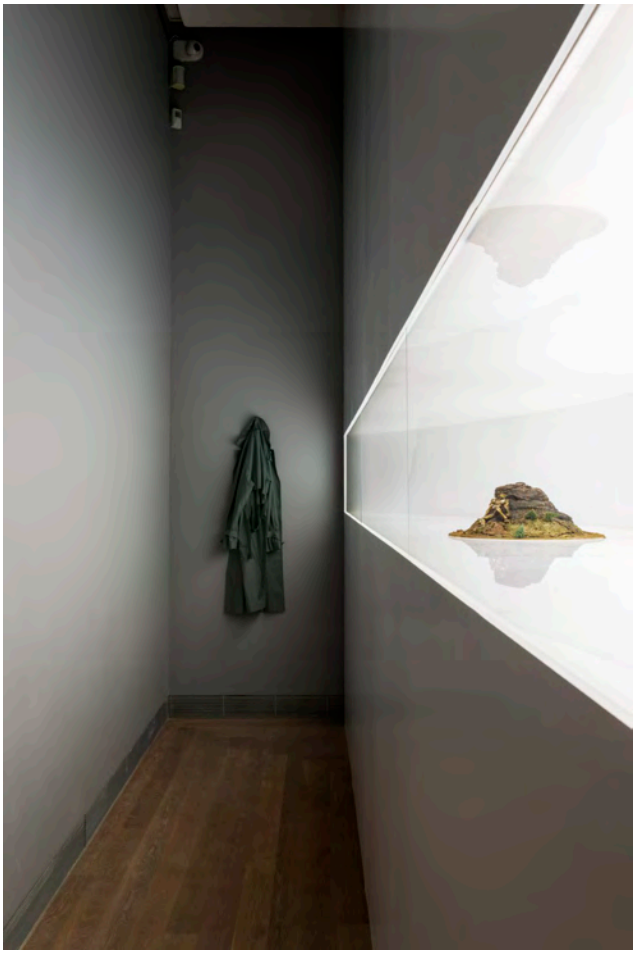


Figure 18.5 *Untitled*, from the series *Pedazos de las personas que amamos*, as installed at *Fantasma*, Moderna Museet, 2015. Åsa Lundén / Moderna Museet

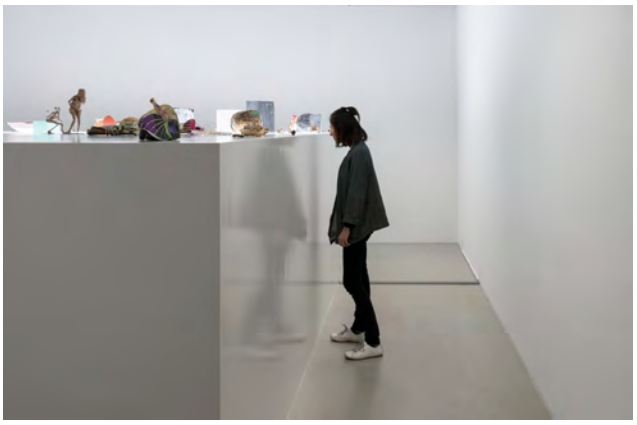


Figure 18.6 *Los teatros de Saturno III*, Moderna Museet Malmö, 2016. Åsa Lundén / Moderna Museet

Figure 18.7 *Los teatros de Saturno*, kurimanzutto, Mexico City, 2014. Courtesy the artist and kurimanzutto, Mexico City / New York

Found objects were combined with organic material and foodstuffs; for instance fresh vegetables and fruits were molded into shapes using gesso. The resulting objects were spread out over the gallery floors, which during the exhibition were covered with soil, and they changed by growing, rotting, and decaying throughout the exhibition period (fig. 18.8).

In *Fantasma*, a selection of 284 objects were shown, including epoxy figures from the series *The Work of the Ocean*.[3] They were put on a large white podium 1.55 meters high. Half of the surface holding the objects was painted, and the other half was opaque white acrylic lit from below with LED lights. These two very different presentations show that the artist does not have a static approach, and that objects can transform according to context.

After the exhibition, the installation was split into four parts, of which Moderna Museet acquired one, consisting of eighty-five objects. Shortly after the acquisition, the work was shown at Moderna Museet Malmö, a subsidiary of the Stockholm museum. In dialogue with Villar Rojas, it was decided that the objects should be exhibited on a podium of the same construction and height as in *Fantasma*, but one-fourth the original size. The surface was still half underlit opaque white acrylic, and half a painted surface. Even if the same type of presentation was chosen for the exhibition in Malmö, the artist is open to other display constellations, with these possibilities still to be determined.

Objects from *Los teatros de Saturno* are in different stages of decay. The most significant and dramatic changes, mainly to the organic parts, occurred already during the exhibition at kurimanzutto, but degradation is an ongoing process, albeit now a lot less dramatic. Vegetables, fruits, and other matter were hard to recognize upon arrival at Moderna Museet, and so documentation from the production in Mexico was used to trace and identify the materials of the objects.

Figure 18.8 The life cycle of one of the objects displayed in *Los teatros de Saturno*: first in the production mold, 2014, and later as displayed at kurimanzutto, 2014. Courtesy the artist and kurimanzutto, Mexico City / New York (2014)

Today, both of the artworks that were acquired are stored in the conservation department, continuously being monitored for infestation while awaiting a complete conservation plan.

ETHICS: ACCEPTING CHANGE?

When an ephemeral work enters a museum collection, its status needs to be determined, and the artist's intention identified. Ephemeral works can vary in nature, and different approaches can be adopted. There is a wide spectrum of possible conservation strategies, from a total non-intervention policy to the possibility of replacing components.

Villar Rojas has described his works as diachronic objects that transform and mutate over time (Villar Rojas 2017). Time and life spans are important in his practice. Parallel to this is his interest in what will be the last artwork on the planet, and an engagement in the aging of the objects and their conservation care: "They are so fragile; they need so much care. That's another of my extreme fantasies: maybe the children of the children of the people I work with will still have to be restoring and preserving and taking care of these objects, whichever are left. It will be an endless battle against time" (Villar Rojas 2015).

At the creation point, both works were clearly ephemeral, and degradation was originally a natural part of their life cycle (Villar Rojas 2014). Different circumstances made the continuation of their existence possible, and with the reinstallation in the Stockholm exhibition, their lives took a new turn. Between the two venues, the identity of the *Los teatros de Saturno* objects went through a change from actively performing as "mutant sculptures" living in the soil at kurimanzutto in 2014 to passive highlighted museum pieces at Moderna Museet in 2015. This transformation has implications for future care and points to the importance of defining the identity of the objects.

As the artist put it: "The Moderna Museet is the very first moment where I am introducing objects that were previously shown in another exhibition. And I think that was the key motor, the engine, of this show" (Villar Rojas 2015). The habit of reusing materials from former works was not new to the artist, but the Stockholm exhibition was the first time that objects as complete entities were stored and reinstalled in their same configuration. The museum context and the way the theme of the exhibition related to this will be an important factor in any future reinstallations, and should be taken into account in the decision making and conservation approach.

Defining the nature of and temporal aspects governing the ephemerality of these objects is not straightforward. Could the conservation care and activities be incorporated in their life cycle, given the particular context in which they were exhibited? One could claim that fundamental, defining factors of the objects' existence changed when they became museum artifacts in the *Fantasma* context, and that this continues into their future life at Moderna Museet, thus making conservation care a part of their natural change. The dialogue between artist, museum curators, and conservators regarding any larger decisions is ongoing. A thorough artist interview was completed on December 4, 2019. It will be an important tool for any decisions regarding the definition of objects and how to proceed with conservation care.

PREPARATIONS FOR STORAGE AND FUTURE DISPLAY

Regardless of the guidelines that will be set, preparations for storage needed to be made, and insects are in no way acceptable in storage spaces. A project was initiated to investigate options for long-term storage, with the primary aim being to avoid infestation. The project is a collaboration with the Heritage Science laboratory at the Swedish National Heritage Board through the Guest Colleague program. This program offers scientific support, including relevant instrumentation and analyses, to assist conservators working with public collections. The project is ongoing and is planned to be presented in the near future.

The project investigates the prerequisites for anoxic storage, which early in the process was suggested as a sustainable option to avoid infestations. This would also slow all deterioration caused by oxygen-related processes. Normally this is a desired effect for conservation, but in this case one might not want this disturbance to degradation processes, due to the work's intentionally ephemeral qualities.

Another concern was how to detect and predict emissions from the materials—the objects themselves but also the materials chosen for storage and packing (Canosa and Norrehed 2019). For the *Los teatros de Saturno* objects, an effort has been made to identify the different plastic materials to determine how best to store the items and minimize their negative effects on one another. This has primarily been done using Fourier-transform infrared spectroscopy (FTIR). A study of volatiles and emissions is planned in order to see if there is a need for additional absorbents in anoxic storage. Dye-coated pH-sensitive A-D strips have been used to detect acidic gases. Still, many of the individual objects involve multiple materials, and so a complete identification of all constituents does not take away from the fact that a strategy for co-storing materials is needed. Therefore, the possibility of adding adsorbents to the storage system in order to mitigate emissions has been considered, with activated charcoal likely being the best suited. To minimize storage space, the objects need to be stored together. Storage boxes will be transparent to facilitate monitoring.

The final storage solution should leave the objects visible, facilitate monitoring without opening, offer minimal contact points to the vulnerable objects, and avoid unnecessary handling. The packing materials need to be long-term, sustainable, and not emit any gases that could be harmful to the collection. All the potential packing materials are therefore being Oddy tested as a starting point in determining what is suitable (Thickett and Lee 2004, 9).[4]

Possibilities for documenting changes in dimension, shape, and color are also being sought. A first step was to perform photogrammetry to generate a 3D model of the sponge cake (fig. 18.9). Care was taken to document the performance of the photogrammetry in order to accurately replicate the investigation at a later time, so as to visualize dimensional and color changes; specifically, small hidden markers were placed under the base plate of the cake to facilitate comparative photogrammetry in the future. This method, if successful, could be applied to all the Villar Rojas objects.

A planned X-ray examination will, in the best scenario, give us structural information and make it possible to see the impact of insects on the inner structure.

DEVELOPMENT OF A SHOWCASE PROTOTYPE

Together with the Swedish National Heritage Board, the conservators started planning for an oxygen-free storage solution for the cake. A transparent hemisphere shape was chosen to minimize the amount of air and to facilitate monitoring. When a digital sketch was rendered, it was reminiscent of a hibernation pod, a recurring reference in Villar Rojas's work (fig. 18.10). There were sci-fi connotations and suggestions of a survival sphere connecting it to the last-art-object-on-Earth thoughts, and to the aesthetics of later Villar Rojas projects.[5] This, in turn, led to the idea of a combined storage and showcase solution, a way to permanently keep the piece in an oxygen-free environment.

A plan for this was drawn and a digital mockup produced. In this, the work is placed on a white acrylic support. The bottom part holds the devices monitoring and adjusting the air quality: relative humidity, temperature, pH, and oxygen levels. A port will make it possible to extract small amounts of air for control measurements. When exhibited, the white acrylic support can be integrated to hide the bottom part housing the controls. Since it is transparent, it can still be lit from underneath, as in the *Fantasma* installation. The initial presentation to the artist and to collection curators elicited positive responses. The first brief was well received, and the digital sketch will be a useful tool.

The hemisphere raises many questions. Can we keep the piece oxygen-free without compromising the intent of the artist? In the event that the permanent hemisphere is

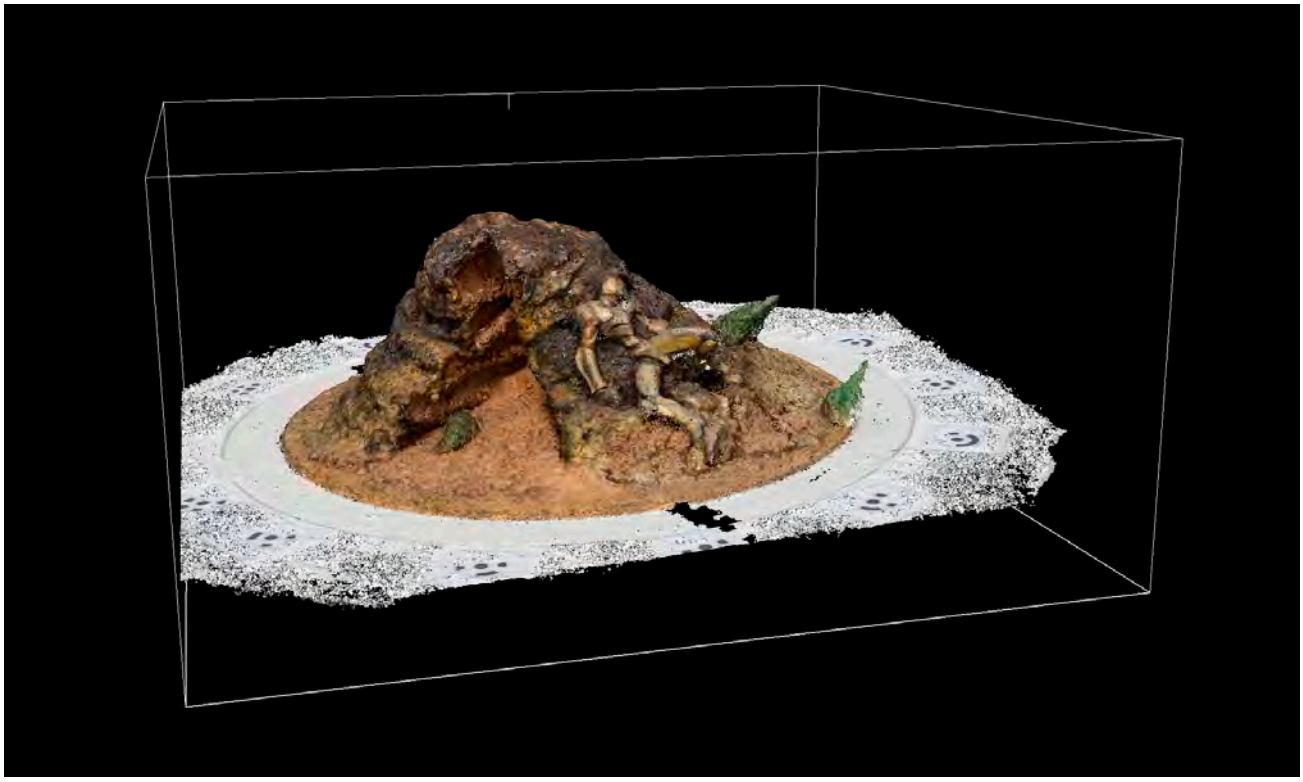


Figure 18.9 Photogrammetry rendering of *Untitled* carried out in 2019. Albin Dahlström / Moderna Museet

Figure 18.10 Digital sketch of storage/showcase for *Untitled* carried out in 2019. Albin Dahlström / Moderna Museet

found to be acceptable, how will it affect the integrity of the work? Will it in fact make it a new piece, or will it remain the same work dated 2007? Had we, in the moment we presented the sphere, stepped out of our roles as conservators and affected the future display and perception of this work? Again, continued conversations with Villar Rojas in order to more closely define the work are crucial to any further decisions.

CONCLUSION

Caring for the works by Villar Rojas in the Moderna Museet collection is a work in progress. Research into the development of these works has indicated that their ephemeral nature might have changed when entering the museum, from being active, performing, deteriorating objects to more passive artifacts. This eventual redefinition will open possibilities for conservation measurements that at first were considered impossible.

Conservation and collection management must be open to the fact that the identity and appearance of artworks can change over time and prepared to redefine approaches. The acquired works are examples of objects being both materially transformed and affected by different presentations. Professional roles are also shifting. Conservation crossed traditional professional borders by taking an active part in the life span and aesthetic future of the *Pieces of the People We Love* cake by presenting the idea of the permanent showcase. Villar Rojas and collection curators have had and will hopefully continue to have active roles in the development of the conservation strategy.

NOTES

1. Curated by Lena Essling and Matilda Olof-Ors, April 25–October 25, 2015.
2. Inner temperature 60°C for two hours.
3. Exhibition by Adrián Villar Rojas at De 11 Lijnen, Oudenburg, Belgium, 2013.
4. The Oddy test is an accelerated corrosion test that involves putting a small amount of material in a sealed enclosure at 60°C and 100 percent relative humidity for twenty-eight days, together with metal coupons (silver, lead, and copper), and observing the effect of the material emissions on the metals.
5. Examples include *The Theater of Disappearance*, Geffen Contemporary at MOCA, Los Angeles (2017), and *The Theater of Disappearance*, National Observatory of Athens (2017).

BIBLIOGRAPHY

Canosa and Norrehed 2019
Canosa, Elyse, and Sara Norrehed. 2019. *Strategies for Pollutant Monitoring in Museum Environments*. Visby, Sweden: Swedish National Heritage Board. https://www.diva-portal.org/smash/get/diva2:1324224/FULLTEXT01.pdf.

Essling and Villar Rojas 2015
Essling, Lena, and Sebastián Villar Rojas. 2015. "Fantasma Adrián Villar Rojas." Exhibition booklet. Edited by Maria Morberg. Stockholm: Moderna Museet.

Thickett and Lee 2004
Thickett, D., and L. R. Lee. 2004. "Selection of Materials for the Storage or Display of Museum Objects." British Museum Occasional Paper 111. London: British Museum.

Villar Rojas 2014
Villar Rojas, Adrián. 2014. Filmed interview by Jordan Bahat at kurimanzutto, Mexico City. https://www.youtube.com/watch?app=desktop&v=qJEE-yNCHQM.

Villar Rojas 2015
Villar Rojas, Adrián. 2015. Filmed interview by Lena Essling, Moderna Museet, Stockholm. https://youtu.be/g6yv6qKJjG4.

Villar Rojas 2017
Villar Rojas, Adrián. 2017. Filmed interview by Elina Kountouri, Neon, Athens, June 3, 2017. https://player.vimeo.com/video/224171178.

Villar Rojas 2018
Villar Rojas, Adrián. 2018. "In the Studio: Adrián Villar Rojas." Interview by Gabriel Roland. *Collectors Agenda*, August 20, 2018, https://www.collectorsagenda.com/en/in-the-studio/adrian-villar-rojas.

19

Nature and Its Energy: Considerations on the Processes of Conserving Organic Matter

Mercedes Isabel de las Carreras

The collection of the Museo Nacional de Bellas Artes in Buenos Aires includes Víctor Grippo's Analogía I *(Analogy I, 1970–71), which features potatoes connected via cables to a voltmeter. These materials—unconventional in the museum environment—require unusual conservation procedures and methodologies. The conservation condition of the potatoes is essential to the functioning of the work, as it impacts the energy measurements—a potato's energy fades as it deteriorates. Therefore, protocols had to be established to ensure that there would always be measurable energy. The conservation of organic matter requires time and specific resources, which must be factored into the protocol if this work is to be exhibited for long periods.*

◆ ◆ ◆

The Museo Nacional de Bellas Artes in Buenos Aires was inaugurated on December 25, 1896. The founding works came through donations from private collections. The museum's first director, Eduardo Schiaffino, encouraged friends and collectors to give generously, and he visited Europe on buying trips with the mission to build out the collection. Over time, there have been significant additional legacies, acquisitions, and donations, and the collection nowadays, numbering around twelve thousand works, continues to grow while supporting the mission to disseminate the history of art from all periods. Víctor Grippo's work *Analogía I* (Analogy I, 1970–71, fig. 19.1) was donated by Fundación Antorchas in 1990.[1] The organic materials comprising the piece give it ephemeral characteristics and present specific conservation requirements that museum conservators had not previously needed to consider.

Grippo was born in Buenos Aires in 1936.[2] His education in chemistry, industrial design, visual communication, and fine arts brought about a convergence of art and science in his works. Finding his voice as an artist involved the creation of an innovative school of thought in which he gave new meanings to ordinary objects. His first paintings aligned with geometric abstraction and were done in oil paint. They were shown in his first solo exhibition in 1966. His greatest development as an artist occurred later, in the 1970s, when Buenos Aires's political climate was conducive to intellectual stimulation and growth.

Figure 19.1 Víctor Grippo (Argentinian, 1936–2002), *Analogía I* (Analogy I), 1970–71. Potatoes, painted wood, electrical connectors, voltmeter, and text, 47.4 × 153 × 10 cm. Museo Nacional de Bellas Artes, Buenos Aires. © Museo Nacional de Bellas Artes. Origen: Donación Antorchas

Analogía I was the first in his series of *Analogías* (Analogies), or "potatoes with wires," as they are colloquially called. It consists of a circuit of forty potatoes, each placed in an individual cubicle in a wooden case, interconnected via small electrochemical means consisting of two electrodes, one copper and the other zinc, inserted into each potato. In this way, electrical current is obtained from each potato, and, linked together, they produce a total amount of direct current that is measured precisely and displayed via a central voltmeter. The mechanism measures the total energy output of the potatoes and provides an empirical demonstration of their energy capacity. The center of the structure also bears a text panel explaining the artist's intended analogy between the potato as an object and consciousness as an intangible, thereby incorporating the viewer into the work as a conceptual participant. The work sets up dualities such as visible and invisible, tangible and intangible. It establishes an analogy between the potato and human awareness—between the meaning of each object, its daily function, and other possible meanings of that function.

Grippo's motifs always centered on ideas of transformation, daily life, the world of farm labor, food, and the energy that food produces. The artist sought to produce power-generating processes through very simple material and technical resources such as the potato, which originated in the Americas and was subsequently cultivated around the world. The unconventional materials and media in his objects and installations reflect on the social and spiritual conditions of workers and artists. Considering that the potato is the most popular food in Argentina, consumed by all social classes, the poorest in particular, his choice was highly significant. Based on the potato's cultural symbolism and the relationship between plant life, the soil, and farm laborers, using potato energy as an electrical battery expresses how humanity is transformed by engaging in a rural occupation related to the soil.

Grippo's artwork also demonstrates the underlying power that is present in plant life and the energy that can be liberated by human creativity. It is an alchemical transfiguration of the material world from invisible to visible. The concept expressed is the result of the artist's research in science and art, in which humanity is an essential medium in the symbolism of conceptual art. This type of work was characteristic of Grippo, and he developed it across different installations around the world.

This work in many ways falls under the umbrella of conceptual art, which swept the art world just as Grippo was finding his artistic voice. It invites the audience to find satisfaction in following the creator step by step through his thought processes, without asking that those processes take a concrete form. The underpinning ideas have precedence over its material or tangible aspects, favoring intellectual reflection over visual stimulation. The viewer participates in the process of formulating the concept, and follows the creative steps that comprise the idea. In this way, the artist's constructive inquiries influence the viewer's momentary conceptualization, and the idea prevails over the physical artwork itself.

In *Analogía I*, the ephemeral materials also speak of the transience of life—of the limited length of time in which matter undergoes a transformation and then disappears, leaving only the idea. Conservators become part of the maintenance of that idea by periodically changing the organic materials, which to some extent is a detriment to the concept of originality and uniqueness, demonstrating

Figure 19.2 Detail of the potatoes' deterioration; they leave stains on the wood and smell bad.

that, for the artist, the work exists within his intellectual process.

Since 1990, *Analogía I* has been exhibited at the museum several times.[3] In terms of conservation, it has presented problems since its first installation. Potatoes are organic and deteriorate very quickly depending on their quality, environmental conditions, the amount of time that has passed since they were harvested, and the conditions under which they were transported. The potato peel is coarse and resistant, but thin, and if it breaks, decomposition accelerates. The internal liquids produced during decomposition ooze out through the weakest part of the peel, which takes on a dark color and a bad smell over time (fig. 19.2, fig. 19.3).

The conservation challenges are various, and so specific protocols to facilitate control of the work's state of conservation for the duration of an exhibition were prepared. These cover procedures for installing the work, quality requirements for the organic matter, environmental conditions in the room, exhibition duration, and more. The protocols establish organized methodologies for conserving the organic matter and using staff resources prudently. The seemingly simple task of changing the potatoes on a regular basis requires funds and an interdisciplinary team of technicians and conservators to be regularly available at just the right time.

Figure 19.3 Detail of the rotten potatoes; they begin to sprout depending on their quality and environmental conditions.

The protocols first detail all the procedures for installing the artwork. The painted wood structure is cleaned, and insulating material is placed in each cubicle to prevent the fluids exuded by decomposing potatoes from staining it.

Choosing the potatoes at the market is no minor task. Although there are no specifications from Grippo regarding which variety should be used, we do try to buy potatoes similar to those he himself employed, and we sometimes encounter certain difficulties in this due to variation in supply at the local market. Furthermore, empirical research conducted on the different qualities of

potatoes based on their origins and physical history has enabled us to reach certain interesting conclusions. Among the supplies at the market we find potatoes of different colors, some scrubbed, some not, in a variety of sizes and qualities.

Conservation depends to a large extent on the potatoes' quality and state of conservation at the time they are installed. They must all be of similar size so they will fit into the cubicles. The peel must be healthy, without cuts or sprouts growing. Any soil on them is removed with a soft cloth or brush, while avoiding injuring or dampening the surface, both of which accelerate decomposition (fig. 19.4). Purchase of the potatoes is ideally scheduled for the same day as the change-out in order to maximize the good condition of the organic material.

Figure 19.4 Cleaning the potatoes with a dry cloth is important for their material conservation.

After the potatoes are installed, we confirm that each electrical connection is still functioning. The connection requires good contact between the cables and connectors in order for the total energy output to be measurable by the voltmeter (fig. 19.5). We periodically monitor the state of conservation of the living matter to confirm that it is functioning correctly. The experience of the conservator in observing the deterioration of the organic matter helps guide appropriate choices regarding when to change the potatoes, taking into account the time it takes to obtain new ones. Experience has shown that the potatoes must be changed every fifteen days or so in order for them to have sufficient energy to be measurable. Despite having protocols in place, conserving the work is still difficult due to the fragility of the system of electrical connections and the influence of the quality of the potato.

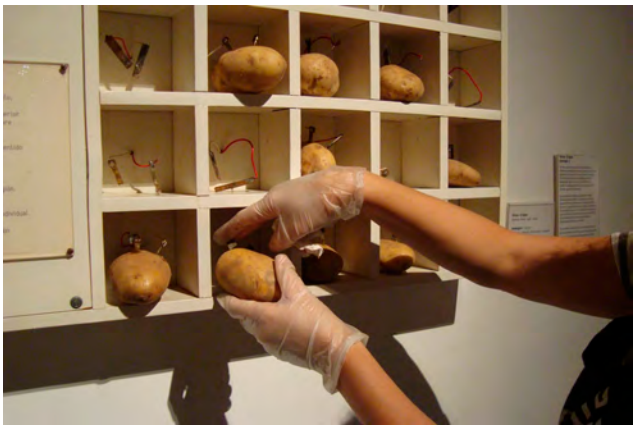


Figure 19.5 Swapping out new potatoes for deteriorated ones; in the process of inserting the new potatoes, one must take care not to break the connector soldering.

Environmental conditions in the gallery space matter a great deal as well, since the damp, warm climate of Buenos Aires accelerates decomposition. In the most recent installation, the work was on view for a long period of time, during which more than ninety potatoes per month were purchased. If a particular collection rotation were to last two years, 2,160 potatoes and more than 120 conservator work hours would be needed to make the two changes per month (fig. 19.6, fig. 19.7). This has prompted conservators to occasionally consider possible alternatives that might save both financial and human resources, such as replacing the organic matter with something less perishable that would still produce electrical power, but sacrificing the aesthetic aspects was dismissed as a potential solution, despite the acknowledgment that the artist's primary intent was the expression of his idea. It would change the piece too much. In the end, our valuation and appreciation of this piece of art warrants every effort of conservation. The compromise that was finally reached consisted of shortening exhibition durations and carefully planning the allocation of human resources.

Figure 19.6 The potatoes are generally changed two or three times per month.

Figure 19.7 Potatoes may be retained even if they have visible sprouting, as long as they have not leaked liquid to stain the wood or cause a bad smell. Experience over time has shown the limits of tolerance.

NOTES

1. The museum's web page devoted to the work is at https://www.bellasartes.gob.ar/coleccion/obra/9336/.
2. Read more about the artist at the websites of the Centro Virtual de Arte Argentino (http://cvaa.com.ar/03biografias/grippo.php), Ludion (http://ludion.org/archivos/articulo/260411_rocha-margarita_v%C3%ADctor-grippo.pdf), Clarin (https://www.clarin.com/tema/victor-grippo.html), and Fundación Malba (https://malba.org.ar/sobre-vida-muerte-y-resurreccion-de-victor-grippo/?v=diario).
3. As in *Homenaje*, a solo presentation staged on the ten-year anniversary of the artist's death: https://malba.org.ar/evento/victor-grippo-homenaje/.

20

Conservation as an Enhancing Factor in the Interpretation of Living Materials Artworks

Flavia Parisi
Maura Favero
Rosario Llamas Pacheco

Conservation, as an inclusive discipline that encompasses material and conceptual challenges, can expand interpretive perspectives for works of art. Research on Precipitazioni Sparse *(Scattered Precipitations, 2005), an installation by Bruna Esposito made of onion skins scattered on a marble slab, exemplifies the need to share conservation questions with all the professionals involved in staging a work in order to close the gap between the artist's intention and its transmission among diverse stakeholders. The authors' investigation included interviews with the artist, private collectors, dealers, and a museum director, and analysis of archival documentation. Like peeling an onion, the artwork's concept was explored layer by layer, removing existing interpretive assumptions toward a more comprehensive understanding of the values embedded in the artwork's materials.*

◆ ◆ ◆

Conservation issues are usually key to a comprehensive understanding of an artwork, and foster dialogue between art historians and those physically working with artworks such as curators and collectors. If the art history approach tends to focus on the past context and life of the artwork, providing an essential background for its interpretation, conservation expands this perspective to its present and future life, offering a deep framework for specific interpretive readings. By questioning what is valued and what needs to be preserved, conservation investigates some of the most relevant and distinctive aspects of an artwork.

The display of contemporary artworks made with living materials highlights the strong interdependence of practical and interpretive issues, which must be addressed through an integration of conservation and art historical approaches. The importance of such materials, food in particular, can be overlooked if interpreted only for what they immediately represent and not for their function in the specific context of the artwork. As artistic materials, their color, shape, and texture are relevant.

Public institutions and private art galleries often constitute the channels through which an artwork and its significance

are made accessible to a broader audience. Their understanding of the multiple layers of interpretation of the artwork's material and symbolic values as intended by the artist, and of the layers of meanings related to the work's historical and artistic context, is essential to accompany the work through its journey into society.

In the case study presented here, the fact that no conservators were directly involved in the display of the work in question, especially given the very specific nature of the materials and composition, meant that it was not fully understood by those taking care of exhibiting it, and skewed the way it was presented to the public. *Precipitazioni Sparse* (Scattered Precipitations, 2005) is a work of art by the Italian artist Bruna Esposito (b. 1960) composed of white, golden, and red onion peels placed randomly on a marble slab. There is no additional material applied to secure the peels to the marble. The artist calls this work an "impermanent sculpture," since the onion peels can shift with the slightest air movements, creating continuous changes in the work's composition.[1] Onions are a familiar cooking ingredient in most regions of the world. Marble is a strong and noble material that evokes classical aesthetics. So if onions are an ordinary material of daily life, in this composition, they are elevated into an artistic material thanks to the marble.

Precipitazioni Sparse has been exhibited only twice, and the way it was presented on both occasions offers an opportunity to consider the interrelations between various assumptions and interpretations of the work and its documentation. In order to explore these issues, our research included analysis of archival documents and interviews with the artist, the two collectors owning the artwork, an art dealer who has worked with the artist for many years, and a museum director who is particularly familiar with Esposito's research and has curated several shows of her work.

BACKGROUND

Esposito is well known for her multimedia and sensory works that engage sound, sight, smell, and more. Her artistic practice includes sculptures, videos, installations, performances, site-specific projects, drawings, photographs, and collages. Her works are often made with simple, ordinary materials and techniques, which are ennobled by poetic associations. Her collaborations with artists, poets, and musicians have produced work that blends these various disciplines, defying classification.

Precipitazioni Sparse was specifically commissioned for the Venice Biennale in 2005 (Martinez and de Corral 2005). The artist realized the project on site. She ordered the marble slab from Carrara and organized its delivery to Venice, where it was mounted to a wooden grid in order to keep it perfectly aligned and stable on the Arsenale's irregular ground. Esposito then meticulously selected the onion peels and personally dispersed them on the marble in an apparently accidental composition that harmoniously covered the entire surface area (fig. 20.1).

The project was subsequently purchased by two Italian collectors who have been patrons of Esposito for many years and were immediately seduced by its beauty. The same collectors, who are also the directors of a private foundation dedicated to the promotion of contemporary artists, decided to reproduce and exhibit the work in 2011 on the occasion of a local art fair in Rome, titled Road to Contemporary Art.

At the moment the work is only accessible through photographic images, which are easily found online and represent the work in the two exhibitions, and even a casual observation of these photographs reveals differences. In the image published by the Archivio Storico delle Arti Contemporanee (ASAC, or Historical Archives of the Venice Biennale), the onion peels are all concentrated at the center of the marble slab in a way that does not correspond to the picture taken when the artwork was realized (fig. 20.2).[2] And in photographs taken during the art fair in Rome, the color tone of the marble slab looks very different from its appearance in Venice, and the work looks cramped in the stand, with not much room for the air movements the artist intended (fig. 20.3).

Looking at these photographs elicits some obvious questions: Why are there differences across the pictures? Did the onion peels and marble slab remain the same from one exhibition to another? How else has the artwork been documented?

UNPACKING PRECONCEIVED IDEAS

The first findings resulting from our research were the many preconceived ideas everyone involved had, including the authors of this paper. Before interviewing the owners of the work, the authors had assumed that, after dismantling the work, a most likely difficult decision had been faced regarding what to do with the onion peels, and that the collectors had kept the marble. On the contrary: during the interview, the authors found that the issue of retaining the original materials chosen by the artist was easy to resolve for the collectors, who in the end didn't keep *anything* from the original installation. For them, the beauty and value of the work lay in the harmonic contrast

Figure 20.1 Bruna Esposito (Italian, b. 1960), *Precipitazioni Sparse* (Scattered Precipitations), 2005. Marble slab and onion skins, 3 × 400 × 400 cm (marble). Private collection. Installation view, *Always a Little Further*, 51st Venice Biennale, 2005. Enzo de Leonibus, courtesy the artist

Figure 20.2 *Precipitazioni Sparse* after dusting by Venice Biennale staff. Giorgio Zucchiatti, © ASAC

Figure 20.3 *Precipitazioni Sparse* at Road to Contemporary Art, Rome, amid artworks by Maria Thereza Alves. Yamina Tavani

between onion peels and marble—not in these specific peels or stone (for instance marble tone, color, and veins, or the colors and shapes of the selected onion peels). The collectors were eager to discuss art and poetry in general, separating that discourse from any specific artistic designation of the materials themselves.

At first sight, especially for those who are not directly involved in conservation issues, the work seems quite simple, being composed only of two elements. For the owners of *Precipitazioni Sparse*, the incredible poetry of the work resides in its immediateness and simplicity. Over the course of the interview, many of our conservation-related questions were interpreted as obvious, for instance: "We do not have the fetishism. . . . It is obvious that after a while you have to throw the onions away and buy new ones. We do not have such type of obsession with the artwork, because we are used to working with art, and we know very well the oeuvre of the artists we work with."[3] In their view, having worked closely with an artist in the past somehow guarantees an understanding of their artistic intent in all cases. If they reported an urgency to enter into, in their words, "the spirit of the artist" in order to relay it to an audience, the so-called spirit lies, in their eyes, largely in the overall concept and not much in the specificity of the materials, nor, importantly, in the particular characteristics of the space and lighting conditions in which the work is assembled and exhibited.

The collectors' decision to not preserve the onion peels was approved by the artist, who confirmed this in a recent interview with the authors. But a subsequent reinstallation took liberties she would not have approved of. Six years after Venice, on the occasion of the 2011 Rome art fair, the artist unfortunately could not participate in the installation and the owners made some decisions independently. During our interview, Esposito mentioned that she did not approve of the marble used in the second exhibition, which was "too pink" and "too veined"—too different from the marble chosen for Venice (fig. 20.4). Apparently, she only became aware of the importance of this aspect after realizing that the two collectors exhibited the work using that type of pink marble. Had she been consulted, she would have provided more opinions regarding other aspects of the work as well. For instance, in the Rome exhibition the neon lights above affected the perception of

Figure 20.4 Detail of onion peels and marble coloration at Road to Contemporary Art, Rome. Yamina Tavani

the work, whereas now a pointed but gentle light that produces no reflections on the marble is recommended by the artist.

Other problems in presenting the work arose from misunderstandings on the part of the staff in Venice involved with maintaining it. In one instance, Esposito recalled friends who had seen the show telling her how much they appreciated the "flower petals." She could not understand how that confusion came about until she saw the picture published on the ASAC website (see fig. 20.2). During the Biennale, dust accumulation was greatly affecting the aesthetic of the work, so she suggested that maintenance staff periodically remove the onion peels, clear the dust, and then reposition the peels on the marble; unfortunately, the staff repositioned the peels carefully at the center of the platform, not scattered as before. The marble platform was quite big—four by four meters—which put the centered peels relatively far from the eyes of visitors, who, in the dark atmosphere of the Arsenale, could not see them properly and mistook them for flower petals.

Assumptions—by all parties involved—have a strong impact on the way artworks are exhibited and understood, and rely on the conviction that the available information and its subsequent interpretation is enough. It is almost impossible to completely avoid assumptions, especially when dealing with installation, performance, and other nontraditional forms of art. But awareness of the tendency can help stimulate both the artist and those working with them to keep questioning the specificities of the work and its context.

DOCUMENTATION

Documentation played a crucial role in our research for this paper, as it had the potential to connect practical and interpretive issues. Preliminary research related to the work's exhibition history revealed the different ways it had been presented and interpreted, but did not immediately explain the reasoning behind these differences. So we sought out further information.

Among the first documents analyzed was one provided by ASAC, after they were contacted as to why their website published a photograph representing the work in a condition so different from the original installation. They provided a document, written and signed by the artist at

the moment of creating the work, that included the work's description and recommendations related to its maintenance during the exhibition. Although the artist's phrasing was ambiguous, it does not appear that the Biennale contacted her for clarifications regarding what she meant by "ricollocare le bucce al centro e ben sparse" (position the peels at the center and well dispersed).[4] The instructions were interpreted literally, without questioning the difference in appearance before and after the dusting treatment.

The fragility of the onion peels, further complicated by the potential interactivity with the surrounding context, was not considered by any of the actors involved in the staging of the work. Their condition was not documented, and the numerous directives by the artist in the data sheet made after creating the work were not further clarified (these included the minor movements of the onion peels on the marble; the eventual need to replace some of the peels during the exhibition; and the visitors' potential interaction with the peels). Developing thorough documentation of an installation determines not only the accuracy of future installations, but also their accessibility. The information provided by diverse types of documents such as data sheets and photographs is certainly beneficial to specialists and researchers, but in some cases it can be as well to the general public. This is the case with archival material made accessible through websites such as ASAC's.

The case of *Precipitazioni Sparse* now challenges both the artist and ASAC from its two iterations. The artist does not recognize the ten images at ASAC's website as authentic representations of her work, and so she has proposed taking them down; in her view they are inaccurate documents. ASAC, for its part, seems disinclined to eliminate or modify a document that has undergone an archival process, which renders it in their mind official and definitive. If imagery provided by the artist is not made available, collective memory of the work will remain inaccurate—as confused as the idea that the onion peels were flower petals. This demonstrates quite powerfully how documentation related to contemporary artworks is crucial but cannot necessarily be relied upon. It is a tool needed to preserve the artist's intention and the artwork's memory, but also to provoke questions about its future.

INTERPRETATION

An insightful curator has compared Esposito's works to "poetic compositions, where power and lightness continually encounter each other in an apparently fragile balance, capable, however, of opening up profound spaces of reflection."[5] If the artist regards her materials as like words in a poem (Beccaria 2002, 6), how each material is interpreted by different stakeholders becomes particularly significant. The parallel with poetry might be especially useful if one equates installation with translation, and how both constitute an interpretation. Let us consider, for example, the translations of Wisława Szymborska's poem "The Onion," from the 1976 book *A Large Number*, from Polish into English and Spanish. The poem can be understood at its most basic level in other languages, but whether the reader can appreciate the nuance of each word, its sound and the image it conjures, depends completely on the careful work of the translators. Translators are the vehicles through which the poem can reach a broader audience. Their work involves a deep thinking behind each word, and the balance of literal and free interpretive choices. Their role has such a strong impact on the text's interpretation that their name is always reported.

In the two versions of *Precipitazioni Sparse* not approved by the artist, the literal execution of the work was followed, but the effect created by the composition was quite different from what she had planned. As words and their sound matter in poetry, so do material specificity and the exhibition context in art. The particular value attributed to the materials is far more a priority for Federico Luger, a dealer who holds *Sereno Variabile* (2000), a series of Esposito's works made with onion peels (Esposito 2001). During our interview with him, he mentioned the enthusiastic feedback on the work from visitors at numerous art fairs, and the symbolic meanings he attributed to this material: "The onion, one of the poorest and cheaper aliments, it is the only food that makes you cry when you open it. You can easily imagine that there was something before the onion peels: someone who cried. . . . A situation that can be changed by the moving possibility of the composition."[6]

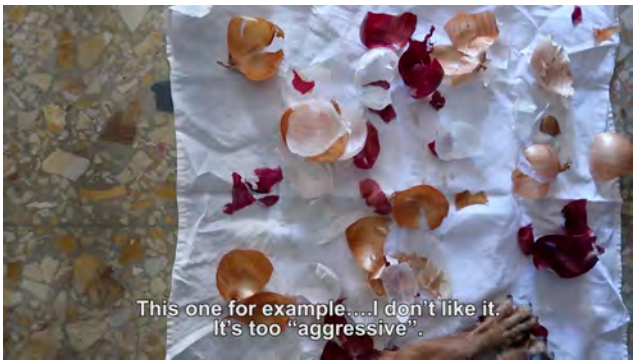
In our recent interview with the artist, we asked about her criteria for selecting the materials for *Precipitazioni Sparse*, in particular the types of onions she chose. She replied that the choice was easy and based on three types of colors. We then showed her a basket containing many different onion types. Confronted with the variety of choices, and the possibility to manipulate the material over the course of the interview, the artist realized that her criteria were more articulated in her mind than what she had initially stated. She finally verbalized her thoughts, and explained in detail all the aesthetic qualities she seeks in the onion peels (fig. 20.5, fig. 20.6). For instance the driest, most external, thin and rounded skins are used, including

Figure 20.5 Esposito explains her selection process for the onion peels during an interview in her Rome studio, May 22, 2019. Courtesy the authors, with permission of the artist

Figure 20.6 Onion peels in Esposito's Rome studio, May 22, 2019. Courtesy the authors, with permission of the artist

small pieces, and any peels with mold on them are discarded. She does not want any signs of degradation to be visible (including dust on either the marble or the onions), since this would add a dramatic component that would distract from the beauty of the composition. The artist shared her enthusiasm for the infinite play of colors, shapes, and combinations that one can find in onions: "One day I saw the onion. I saw them like I have never seen them before. I decided to work with them. They are so beautiful. Can't you see how much they are beautiful? With my work I wish to make visible something that is usually difficult to see. It is all about looking. We do not know how to look at things."

While sorting through the onions, the artist also made an impromptu demonstration of how to disperse them on the marble, which we recorded on video (fig. 20.7). This offers the intriguing opportunity to reflect on the gestures of dispersal she likely used for the initial installation in Venice (fig. 20.8). Bartolomeo Pietromarchi, director and curator of the MAXXI Museum, who has collaborated with Esposito



https://vimeo.com/592954957/6b7516fbed

Figure 20.7 Esposito demonstrates the correct method of selecting and distributing onion peels in her Rome studio, May 22, 2019. Video, color, sound, 1:44 min. Courtesy the authors, with permission of the artist

Figure 20.8 Esposito installing *Precipitazioni Sparse* at *Always a Little Further*, 51st Venice Biennale, 2005. Enzo de Leonibus, courtesy the artist

on various occasions, noted how these gestures are very much related to some of her other works involving performance, even though *Precipitazioni Sparse* itself does not have a performative element.[7]

CONCLUSION

Those exhibiting contemporary artworks, whether in the public or the private sector, have a responsibility to transmit the values embedded into the works' materials and history to audiences. This should be guided by a deep understanding of the work, its production, its context, and how it will likely be perceived by those experiencing it. The artist's intention is crucial to an understanding of the work, but it needs to be investigated and questioned, along with its surrounding context. The meanings to which the artist in this case assigned the most importance depended on material appearance. This can create interpretive challenges for those who intend to reinstall the work. How important is it for the artist that the actual material be preserved from one exhibition to another? What is her specific opinion about each onion peel and its position on the marble? Or about the marble color tone? These characteristics are not always easy to interpret, or replicate; in this case, most of the artist's choices crystallized in the moment of creating, or when thinking later about the work, but not when she was preparing instructions for its maintenance while on view.

Selection of materials and display choices are therefore the most challenging aspects concerning the installation of *Precipitazioni Sparse*. Studying the different ways in which the work was previously presented and the reactions of the artist toward these situations has shed new light on her criteria. Furthermore, sharing conservation concerns with different stakeholders can help them formulate more precise questions related to the work, and facilitate the emergence of new ways of interpreting it. The specificity of the materials with which the artist works is the starting point to fascinate audiences with an artwork's potential to transform something prosaic, like an onion, into a poem.

Acknowledgments

The authors wish to thank Bruna Esposito, Federico Luger, Sara Petracca, Mario and Dora Pieroni, Bartolomeo Pietromarchi, and Yamina Tavani.

NOTES

1. Unless otherwise noted, comments of this nature about the intent behind the work mostly derive from our author interview with Bruna Esposito, May 22, 2019.
2. The ASAC web page in question is http://asac.labiennale.org/it/documenti/fototeca/ava-ricerca.php?scheda=97513&p=1.
3. Author interview with Mario and Dora Pieroni, April 26, 2019.
4. From the data sheet signed by the artist and conserved by ASAC: Fondo_storico_arti_visive_b_840_4_ Bruna Esposito_*Precipitazioni Sparse*.
5. Marcella Beccaria, curator's comments written on the occasion of the artist's show at Castello di Rivoli, Turin, Italy, 2002, https://www.castellodirivoli.org/en/mostra/bruna-esposito/.
6. Author interview with Federico Luger, May 22, 2019.
7. Author interview with Bartolomeo Pietromarchi, July 16, 2019.

BIBLIOGRAPHY

Beccaria 2002
Beccaria, Marcella, ed. 2002. *Bruna Esposito*. Milan: Charta.

Corzo 1999
Corzo, Miguel Angel, ed. 1999. *Mortality Immortality? The Legacy of 20th-Century Art*. Los Angeles: Getty Conservation Institute.

Esposito 2001
Esposito, Bruna. 2001. "Sereno-variabile." *Cahiers intempestifs*, no. 13 (October–December): 32–35.

Llamas-Pacheco 2018
Llamas-Pacheco, Rosario. 2018. "The Ephemeral, the Essential and the Material in the Conservation of Contemporary Art: Decision-Making for the Conservation of a Work of Art Made with Butterfly Wings." *Studies in Conservation* 63, no. 8 (July): 441–49.

Martinez and de Corral 2005
Martinez, Rosa, and Maria de Corral, eds. 2005. *La Biennale di Venezia. 51a International Art Exhibition. Always a Little Further*. Venice: Marsilio – Fondazione La Biennale di Venezia.

Pietromarchi 2017
Pietromarchi, Bartolomeo, ed. 2017. *Bruna Esposito. E così sia . . . /Amen*. Imola, Italy: Manfredi Editore.

Subrizi 2012
Subrizi, Carla. 2012. *Azioni che cambiano il mondo. Donne, arte e politiche dello sguardo*. Piacenza, Italy: Postemedia Books.

Zevi 2005
Zevi, Adachiara. 2005. *Peripezie del dopoguerra nell'arte italiana.* Turin, Italy: Einaudi.

21

A Crumb(ling) Display: Conserving Bread in the Collection of the Museum of Contemporary Art, Zagreb

Mirta Pavić
Jasna Jablan
Ivana Bačić
Harald Fitzek

Nailed Bread *(1973) is a conceptual work by the artist Dragoljub Raša Todosijević in the collection of the Museum of Contemporary Art, Zagreb. It consists of a piece of bread into which three nails have been hammered. Over the several decades of its existence, it has begun to show signs of decay. In 2010 it was consolidated with a solution of Paraloid B-72 in ethanol, and was subjected to gamma irradiation. Eight years later, again changes were noted and further consolidation was deemed necessary. Four consolidants were tested with the aim of comparing their characteristics and determining the most appropriate for use: Paraloid B-72 (same as previously used), Mowilith 50, Aquazol 200, and Aquazol 500.*

◆ ◆ ◆

One's first association with bread is likely food. But this simple ingredient found a place for itself in an entirely different context in the work of Dragoljub Raša Todosijević (b. 1945), a pioneer in the field of conceptual art in the former Yugoslavia. *Nailed Bread* (1973, fig. 21.1) belongs to Zagreb's Museum of Contemporary Art (MSU), and is among the most exciting artworks on permanent view, judging by public feedback. It is no less interesting from a conservation point of view. In order for this perishable material, through which the artist rejects the idea that an artwork is merely an object, to retain its original form and consistency, it must be preserved with particular care.

Nailed Bread is an unmistakable example of an artwork made of a material that is at the same time its primary bearer of meaning. Bread is the material from which it is made, but it simultaneously brings to mind staple foods, and the Crucifixion, in this way breaking down the barrier between art and life.

In 2009 the MSU moved to a new purpose-built building, where *Nailed Bread* was exhibited as part of the permanent collection from the very beginning. The permanent collection is not static, but periodically rotated within the gallery space. In 2010 *Nailed Bread* was exhibited in close

proximity to other organic materials, such as Philip Corner's installation *Piano Bed* (1999, fig. 21.2), which is made of an upright piano, hay, and a cap. This probably contributed to the changes that were noted on the bread in the same year, almost four decades after its creation.

Figure 21.1 Dragoljub Raša Todosijević (b. 1945, Belgrade), *Nailed Bread*, 1973. Bread, wood, and nails, 26 × 35 × 14.5 cm. Museum of Contemporary Art, Zagreb, inv. no 1810. Jovan Kliska

EARLIER TREATMENTS

Raša Todosijević's work is, for the most part, focused on communicating with viewers through the production of a deceptively realistic piece (Tijardović 1978) and performances and texts in which he discusses his own works, rather than through static objects.[1] The MSU work speaks through its symbolism and belongs to the museum's collection of sculpture. In 2010, when the first changes—drying, cracking, and crumbling—were noted, it was therefore logical to telephone the artist (who is still living, and resides in Belgrade) to determine his attitude toward the preservation of this piece from 1973. Given that the artist used bread in many of his works, he immediately suggested that he donate a new piece of bread to the museum to replace the existing one; he had been unaware that there was even a possibility of conserving the original bread. But for us, the fact that ours is not the only bread piece by Raša Todosijević was an additional motive to attempt conservation of the original bread. The artist was informed that our intention was to consolidate the bread and expose it to gamma irradiation to eliminate insect

Figure 21.2 *Nailed Bread* on display next to Philip Corner's *Piano Bed* (1999) at the Museum of Contemporary Art, Zagreb, 2010. Goran Vranić

https://vimeo.com/592945326/13d80ae4e1

Figure 21.3 Testing the consolidated sample in comparison to a sample with no consolidant. Museum of Contemporary Art, Zagreb

Figure 21.4 *Nailed Bread* during the first conservation treatment in 2010. Mirta Pavić

infestation. He was very surprised, happy, and eager to hear about the results.

A solution of ethyl-methacrylate copolymer Paraloid B-72 in ethanol (6 percent) was tested on a dried piece of bread baked from the same type of flour as the original. The consolidated sample was stable, and showed the desired characteristics during a test where it was dropped to the floor, in comparison to a sample that was not consolidated, which broke apart into little pieces (fig. 21.3). The original bread was then taken apart into the elements that it had already broken into through the natural process of drying out (fig. 21.4). Small decayed parts were removed from the interior, and the nails were cleaned and coated with an anti-corrosive liquid. Paraloid B-72 was then injected into the material (fig. 21.5). The separated parts of *Nailed Bread* were then successfully joined using the same consolidant. Thereafter, the object was exposed to gamma irradiation at the Ruđer Bošković Institute in Zagreb.[2]

https://vimeo.com/592948810/c62783c8d6

Figure 21.5 Consolidation with Paraloid B-72, 2010. Museum of Contemporary Art, Zagreb

Changes in the bread once again appeared in late 2018, namely minor local disintegration and tiny flying insects around it, which led to the suspicion that the consolidant had not been homogenously spread out across the material. It was therefore decided that the piece would be reexamined, and various consolidants tested in order to compare their characteristics to Paraloid B-72. The primary characteristics sought in the consolidant were: zero or minimal impact on visual appearance and aesthetics; the possibility of dissolving in a solvent that evaporates quickly (as the authors were concerned that prolonged contact with the bread could harm it) and that it not break down the starch; stability; and resistance to parasites.

Four consolidants were tested on the bread samples, all synthetic resins that could dissolve in a fast-evaporating solvent: polyvinyl acetatehomopolymer (Mowilith 50),[3] poly (2-ethyl-2-oxazoline) (Aquazol 200 and 500),[4] and Paraloid B-72.[5] Every sample of bread tested with a consolidant was compared to a sample of the original consolidated bread.

MATERIALS AND METHODS

Samples of bread having the same qualities as the original bread (a white bread commonly used in this region and available in all grocery stores) were prepared and consolidated with the four different polymer resins (fig. 21.6). Solutions were made using different concentrations of the consolidants (6, 10, and 15 percent solutions in ethanol). The consolidants were injected into each sample using a syringe with a needle.

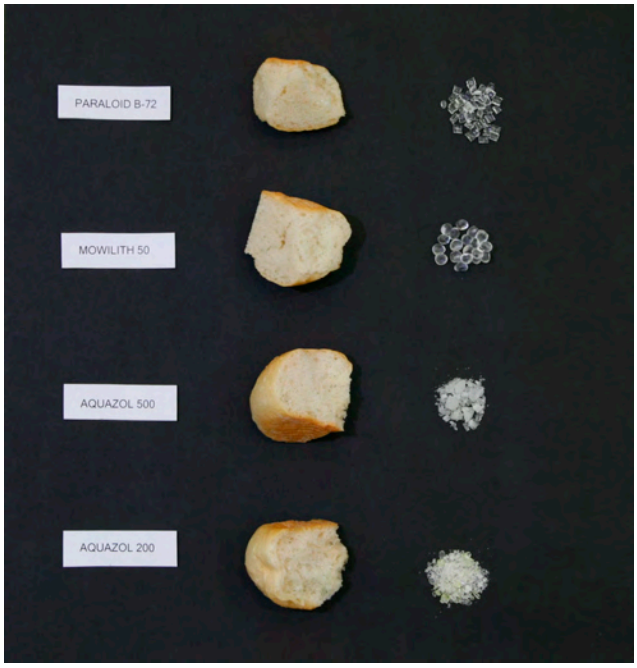


Figure 21.6 Samples consolidated with four different consolidants. Mirta Pavić

Optical microscopy, Raman microscopy, Fourier transform infrared spectroscopy–attenuated total reflection (FTIR-ATR), and correlative scanning electron microscopy (SEM)–Raman microscopy (Hollricher, Schmidt, and Breuninger 2014) provided the details necessary for the conservators to make decisions.[6] The aim was to gather information on the behavior of the consolidant applied in the first treatment (Paraloid B-72) over the period of nine years in comparison with the four new consolidants applied to the test samples. Surface characterization, changes due to conservation treatment, and evaluation of spatial distribution of the constituents were determined with FTIR-ATR. There are many advantages to this technique: it is nondestructive, does not require any sample preparation, and gives molecular information on inorganic and organic components. FTIR-ATR spectroscopy provides information about functional groups present in molecules based on the energy of vibrational transitions.

A complete picture of the chemical distribution of the components within a test sample may be obtained using Raman microscopy, which can provide chemical analysis on a micrometer scale. In addition, correlative SEM-Raman microscopy was performed as a novel technique that combines the high spatial resolution and depth of focus of SEM with the chemical analysis of confocal Raman microscopy.

Consolidated bread samples with various resins and concentrations were prepared and cured. These included samples of the original bread consolidated nine years ago as well as the newly prepared and consolidated samples. Samples used for SEM-Raman microscopy were prepared by simple cut. Parts of these samples were embedded in epoxy resin using flat embedding molds, dried at room temperature, and cut with ultramicrotomy (Leica UC6; Histo diamond knife) in order to produce a flat block surface for microscopic measurements and for Raman mapping (fig. 21.7).

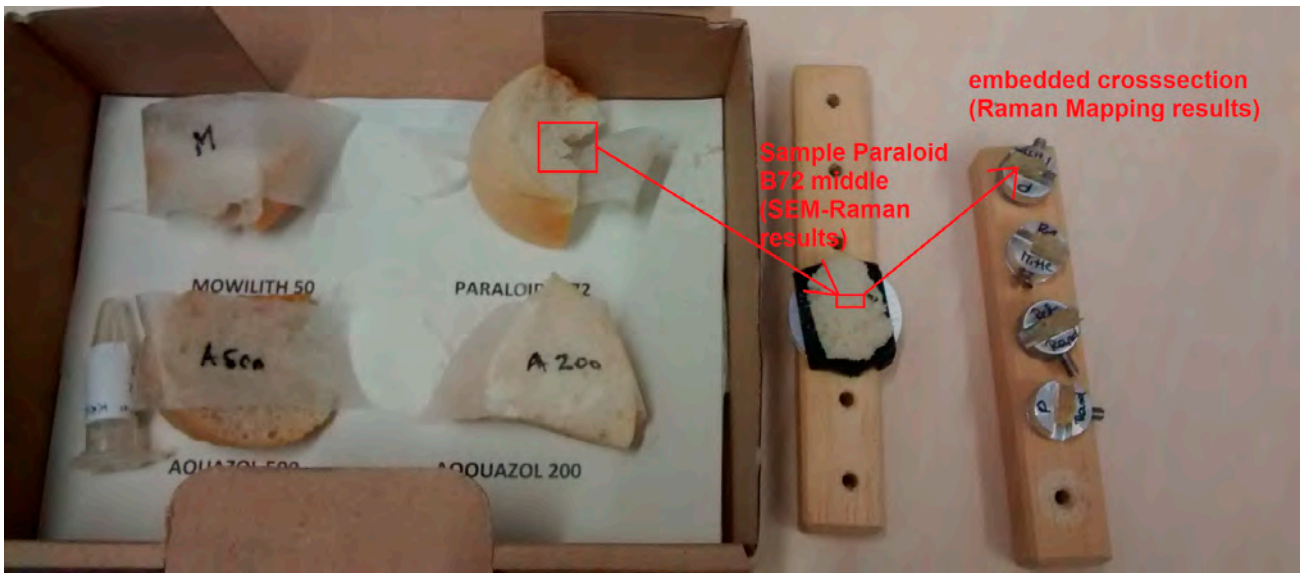


Figure 21.7 Sample preparation—the microtome cross sections. Harald Fitzek

RESULTS

FTIR-ATR was used to determine how homogeneously the consolidant had penetrated the bread samples. The obtained spectra for untreated bread (without any consolidant), samples taken from the original object consolidated with Paraloid B-72, and pure solution of Paraloid B-72 in ethanol are shown in fig. 21.8. The line drawn at 1723 cm^{-1} signals the absorption band related to carbonyl stretching (ν C=O) characteristic for Paraloid B-72. This band was used as a marker for determining the presence of Paraloid B-72 in the sample, since it is not present in untreated bread. In addition, the variations in intensity as a function of location provided semi-quantitative information on the concentration of Paraloid B-72. The significant variations in intensity indicate an uneven distribution of Paraloid B-72 (Vahur et al. 2016).

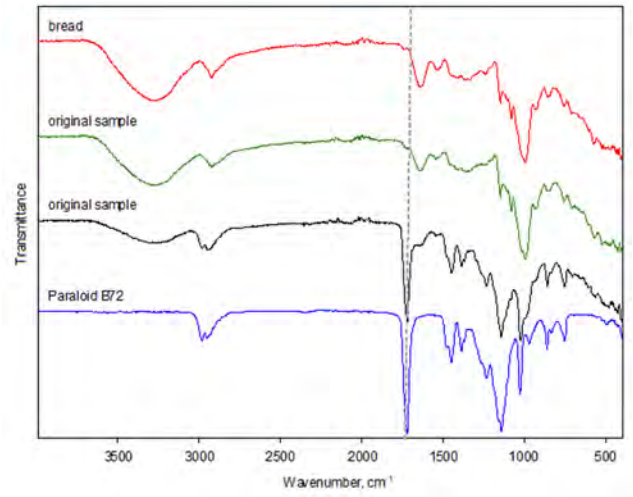


Figure 21.8 FTIR-ATR spectra of the untreated bread (red), original sample (green and black), and Paraloid B-72 (blue). Ivana Bačić

Unlike the Paraloid B-72 and Mowilith 50, as a marker for the Aquazol 200 and Aquazol 500, an absorption band with a maximum at 1195 cm^{-1} was used, since this band is not present in untreated bread. According to literature, this band is most likely attributable to the stretching of C–C bonds (Colombo et al. 2015).

Similar results were obtained for all the other samples analyzed. FTIR measurements were taken randomly at five different locations inside of each bread sample. At some points of measurement, very low concentrations of the consolidant were observed, while at some other points the concentration of the consolidant was very high. The characteristic absorption bands for each are listed in table 21.1, with the respective areas per location and per sample. The results indicate that the consolidant is unevenly distributed in all samples irrespectively of the concentration. The results also show that the consolidation of the new test bread samples as well as the original bread sample taken from the object that was consolidated with Paraloid B-72 in 2010 did not cause any change to the vibrational modes of the starch and selected polymer materials, suggesting that the consolidant is chemically stable, and compatible with the bread.

	Paraloid B72	**Mowilith 50**	**Aquazol 200**	**Aquazol 500**
characteristic absorption band	1723 cm^{-1}	1723 cm^{-1}	1195 cm^{-1}	1195 cm^{-1}
	Area of characteristic absorption band (average of 2 measurements)			
Pure consolidant	18.96	18.73	2.15	12.95
	Area of characteristic absorption band analyzed at 5 different positions			
Bread with consolidant in 6% ethanol	2.07	0.67	0.36	0.08
	4.06	0.04	0.32	0.07
	0.56	0.17	0.27	0.09
	0.50	0.15	0.09	0.07
	1.38	0.05	0.05	0.15
Bread with consolidant in 10% ethanol	4.47	7.70	0.13	0.26
	1.23	1.07	0.13	0.16
	3.79	4.05	0.10	0.19
	0.92	7.63	1.03	0.26
	0.72	1.67	0.12	0.10
Bread with consolidant in 15% ethanol	2.21	9.20	0.69	0.45
	1.08	1.52	0.05	0.18
	2.50	17.74	0.90	1.28
	1.88	12.70	0.27	0.04
	1.59	4.07	0.10	0.04

Table 21.1 Area of the characteristic absorption band. Ivana Bačić, Jasna Jablan

Optical microscopy and confocal Raman microscopy were used as further experimental analytical techniques.[7] To confirm the results obtained by FTIR spectroscopy and for material characterization, optical microscopy on ultra-microtome cut samples was used. In the optical microscope image (fig. 21.9) it is fairly obvious that large droplets of Paraloid B-72 have formed. Raman measurements performed on ten different positions confirmed that the chemical composition of the bubbles observed using light microscopy corresponds to the

composition of Paraloid B-72 (the spectra shown are 3 and 7, fig. 21.10). On the other hand, on all other positions analyzed, the presence of the consolidant used was not confirmed (the spectra shown are 6 and 9, fig. 21.10). Direct measurements on an unprepared piece of bread excluded any influence from our sample preparation. In all samples, the obtained results have confirmed the presence of starch and an additive (zein), and the presence of Paraloid B-72 was confirmed in the treated samples of bread.

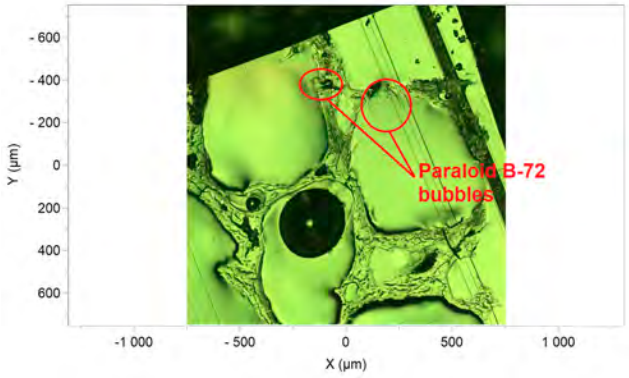


Figure 21.9 Light microscope image of the cross section of a sample with Paraloid B-72. Harald Fitzek

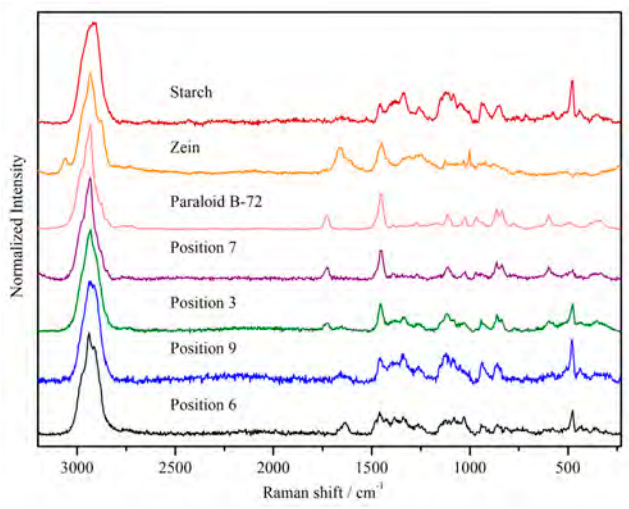


Figure 21.10 Spectra of a bread sample obtained using Raman point measurements (positions 3 and 7 with Paraloid; positions 6 and 9 with no Paraloid). Harald Fitzek

The results of light microscopy were also confirmed using a sophisticated Raman-SEM technique (Tarnowski and Morris 2001). Two correlative Raman-SEM measurements of an unembedded part of the sample were performed. The SEM's good depth of field was used to obtain reasonable images, and Raman point measurements were used to confirm the chemistry (fig. 21.11a, fig. 21.11b). The results obtained also showed the presence of droplets of Paraloid B-72 on the top of the bread.

Based on observations obtained using light microscopy, Raman mapping was performed on one thread of the bread with no bubbles close by (fig. 21.12a, fig. 21.12b). In the mapping, only components belonging to the bread (starch and zein) and one unidentified contamination particle in the middle of the thread (but not Paraloid B-72) were found. The physical resolution of the mapping is approximately 1 µm and the pixel resolution is 0.75 µm, confirming that there is no thin coating of Paraloid B-72.

The results of Raman point and mapping analysis confirmed the inhomogeneous distribution of Paraloid B-72 in the analyzed sample, present mostly in clusters of large droplets.

All other samples were analyzed in precisely the same way, and the same results were obtained for all the consolidants used (Mowilith 50, Aquazol 200, and Aquazol 500) (results not shown) through optical microscopy. Large droplets of consolidants had formed. Some droplets of the consolidant were found on the treated bread, but the threads of the bread were not completely covered by any consolidant, which was in each case confirmed using Raman point measurements. These measurements confirmed the results of the mapping of all analyzed samples, with some positions showing consolidants and others showing no consolidants (Schmidt, Ayasse, and Hollricher 2016). The inhomogeneous distribution was observed in all analyzed samples.

MYCOLOGICAL ANALYSIS

Because the presence of microorganisms was noted in *Nailed Bread*, a mycological analysis (examining test samples for the presence of fungi) was also performed. Dry swabs were taken from six spots on the object and inoculated on the surface of malt extract agar (MEA). Control swabs were taken from an indoor environment and inoculated on MEA. Samples were incubated at 25°C in the dark for ten days.

Afterward, the incubation plates were examined under an optical microscope. Object samples recovered white mycelia on two plates, *Penicillium* spp. and *Chaetomium* spp. on one plate and one unidentified colony, while two plates remained sterile. Control samples recovered *Aspergillus* from the section *Nigri*, *Flavi*, and *Versicolores*, *Phomopsis* spp., and *Alternaria* spp.

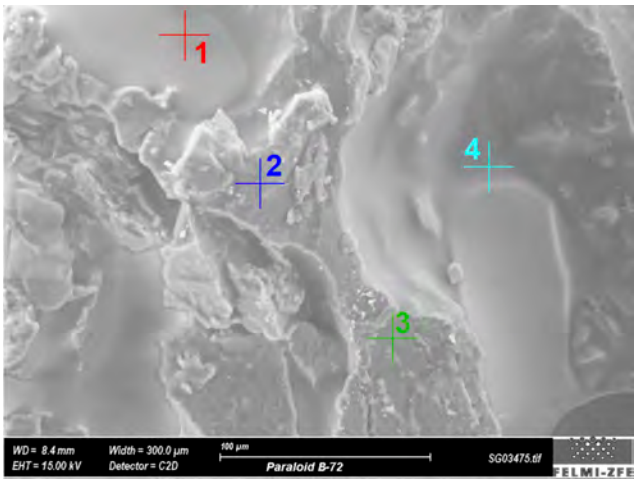


Figure 21.11a

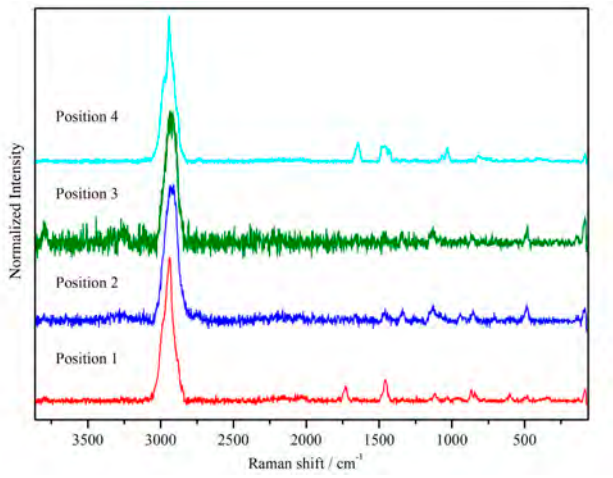


Figure 21.11b

SEM (a) and Raman point measurements, (b): Position 1 (Paraloid), positions 2 and 3 (starch), position 4 (zein). Harald Fitzek

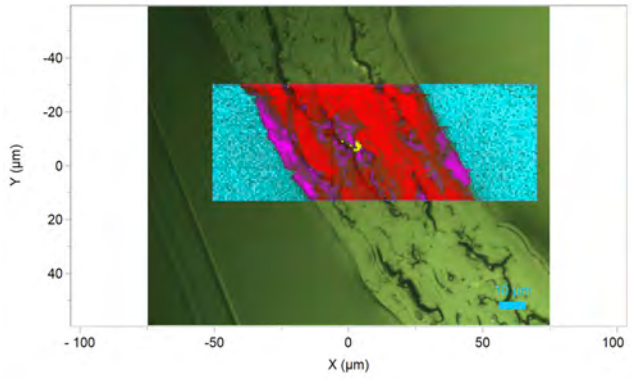


Figure 21.12a

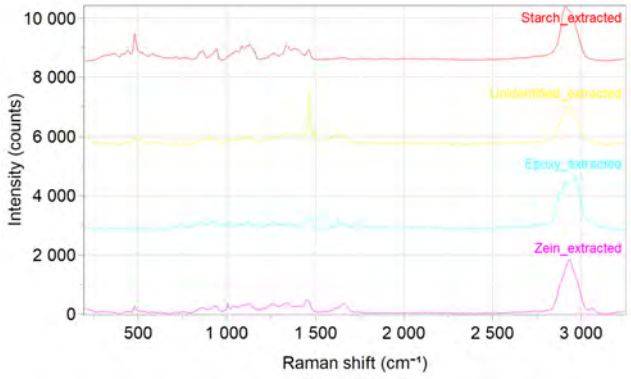


Figure 21.12b

Raman mapping of (a) sample Paraloid B-72 with reference spectra (b). Harald Fitzek

The only unusual finding on the object is *Chaetomium* spp., known as a tertiary colonizer of damp indoor materials. Since the object is kept in optimal environmental conditions, dry and with no visible mold growth, it is possible that some insects, perhaps flies, transferred the mold from another source to the surface of the object.

CONCLUDING THOUGHTS

The research carried out thus far has led to a few significant findings. When it comes to biological material, it is important to act immediately, as soon as changes appear; if not, the material might be lost. To avoid the development of mold, it is important to isolate the piece inside a vitrine while it is on display and maintain optimal environmental conditions.

The aim of the research was to analyze the characteristics and behavior of the chosen consolidants. A lot of effort was put into this initial phase of research in order to better understand the biological material and improve its long-term preservation. The selection of consolidant is limited by the type of solvent used. Water, for example, should be avoided, as it breaks down bread. All the consolidants tested showed similar characteristics, but Paraloid and Mowilith might be a little shinier in appearance than Aquazol.

Results indicated that the consolidants tested did not cause a chemical change in the starch or its incorporation into the structure of the polymer backbone, which means that they are all potential consolidants for the conservation of this type of material. Confocal Raman microscopy indicated that all consolidants distribute unevenly and tend to accumulate as large droplets. Research into application methods that might improve the dispersion of

the consolidant will continue, but overall, even with this imperfect application method, it was observed that the consolidants do prolong the life span of the bread.

Another observation on the method of application of the consolidants is that it is rather invasive: to spread the consolidant within the material, the needle needs to reach the depth of the material, in this case the bread. That said, this procedure did not affect the structure of bread due to its porosity and flexibility.

The different techniques have straightforward applications for the investigation of formation processes, mechanisms of degradation (chemical and physical), and interaction with the consolidant. Accelerated aging tests still need to be carried out on all of the samples with each of the consolidants in order to see how the consolidants react over a longer time period, as well as to test a greater variety of application methods.

Food as an artistic material transmits a message by being precisely what it is. The musealization of such materials opens up many ethical and technical questions (Temkin 1999), as contemporary art often does, as well as collaborations with experts in different scientific fields. Artworks that contain organic materials especially require the establishment of methodologies for their maintenance. *Nailed Bread* belongs to the 1970s, a very productive time for conceptual art in the former Yugoslavia, on which Raša Todosijević left a mark. The object itself, made of the original material by the artist in this particular period, has an authenticity and a special meaning for the artist and for the museum. Replacing it with a new loaf of bread would require re-hammering the nails—an action that would not only change the work's meaning, but alter its time and dating because it would take place in a new moment and under different circumstances.

The answers to some of the questions we encountered—Why this material in particular? Why is it important to preserve this particular piece of bread? What is so unique about it?—speak to the very fundamentals of our work, to thinking about and understanding what we do and why we do it.

Acknowledgments

The authors are thankful to Professor Maja Šegvić Klarić from the Department of Microbiology of the University of Zagreb, Faculty of Pharmacy and Biochemistry, for helping with the mycological analysis, and to the Austrian Center for Electron Microscopy and Nanoanalysis, Graz, and Sanja Šimić for their help in conducting the SEM-Raman experiments.

NOTES

1. Raša Todosijević began his work in the informal Oktobar (October) group, together with Marina Abramović, Era Milivojević, Neša Paripović, Zoran Popović, and Gergelj Urkom, and they continued working in specific spheres of artistic activity, for instance the body-artistic activities of Abramović, and Raša Todosijević's analysis of the social, as well as the political, function of art (Susovski 1978, 3–4).
2. This method is the easiest for eliminating insects that may be present, and when dealing with bread, irradiation of no more than 2 kGy is recommended; anything higher may lead to changes in the material, such as yellowing.
3. This has a medium molecular weight and very good penetration and drying properties, and is effective on a wide range of substrates. Its excellent light stability means that it can be used in applications subjected to intense UV radiation.
4. These have broad solubility in water and polar organic solvents, have good thermal stability, maintain a neutral pH, and have good solubility. They can be used as an adhesive, in painting medium, as consolidant, and as binder. Aquazol 500 molecular weight: 500,000; Aquazol 200 molecular weight: 200,000
5. This is a durable and non-yellowing acrylic resin more flexible than many other adhesives typically used. It tolerates more stress and strain on a join.
6. Infrared spectra were recorded on a Bruker Alpha FTIR spectrometer with the single-reflection diamond ATR technique. Spectra were collected in frequency range of 4000 to 400 cm^{-1} with a spectral resolution of 4 cm^{-1}. In this study, samples were characterized using a novel correlative method combining SEM and Raman microscopy. The instrument used is a combination of a scanning electron microscope (Zeiss Sigma 300 VP) and a fast confocal Raman microscope (RISE, WiTec) operating independently in the same vacuum chamber and allowing correlated imaging between SEM and Raman for structural and chemical information in the same region of interest without complicated manipulation of the sample.
7. Confocal Raman microscopy is a powerful characterization tool that allows collection of chemical information via Raman spectra with the same spatial resolution of a confocal laser microscope. The measurements were performed on a LabRAM HR 800 (with Olympus BX41) using a 532 nm laser (excitation power approximately 10mW) and an Olympus x50 LMPLFLN (NA=0.5) objective.

BIBLIOGRAPHY

Colombo et al. 2015
Colombo, Annalisa, Francesca Gherardi, Sara Goidanich, John Delaney, René de la Rie, Maria Ubaldi, Lucia Toniolo, and Roberto Simonutti. 2015. "Highly Transparent Poly (2-Ethyl-2-Oxazoline)-TiO2 Nanocomposite Coatings for the Conservation of Matte Painted Artworks." *RSC Adv.* 5 (October): 84879–88.

Hollricher, Schmidt, and Breuninger 2014
Hollricher, Olaf, Ute Schmidt, and Sonja Breuninger. 2014. "RISE Microscopy: Correlative Raman and SEM Imaging." *Microscopy Today* 22 (November): 36–39. https://doi.org/10.1017/S1551929514001175.

Schmidt, Ayasse, and Hollricher 2016
Schmidt, Ute, Philippe Ayasse, and Olaf Hollricher. 2016. "RISE Microscopy: Correlative Raman and SEM Imaging." In *European Microscopy Congress 2016: Proceedings*, 1023–24. Wiley Online Library.

Susovski 1978
Susovski, Marijan, ed. 1978. *Nova umjetničkapraksa 1966–1978*. Zagreb: Galerija suvremene umjetnosti [Gallery of Contemporary Art].

Tarnowski and Morris 2001
Tarnowski, C. P., and M. D. Morris. 2001. "Raman Spectroscopy and Microscopy." In *Encyclopedia of Materials: Science and Technology*, edited by K. H. Jürgen Buschow, Robert W. Cahn, Merton C. Flemings, Bernhard Ilschner, Edward J. Kramer, Subhash Mahajan, and Patrick Veyssière, 7976–83. Oxford: Elsevier.

Temkin 1999
Temkin, Ann. 1999. "Strange Fruit." In *Mortality Immortality? The Legacy of 20th-Century Art*, edited by Miguel Angel Corzo, 45–50. Los Angeles: Getty Conservation Institute.

Tijardović 1978
Tijardović, Jasna. 1978. "Marina Abramović, Slobodan Milivojević, Neša Paripović, Zoran Popović, Raša Todosijević, Gergelj Urkom." In *Nova umjetničkapraksa 1966–1978*, edited by Marijan Susovski, 55–59. Zagreb: Galerija suvremene umjetnosti [Gallery of Contemporary Art].

Vahur et al. 2016
Vahur, Signe, Anu Teearu, Pilleriin Peets, Lauri Joosu, and Ivo Leito. 2016. "ATR-FT-IR Spectral Collection of Conservation Materials in the Extended Region of 4000-80 Cm^{-1}." *Analytical and Bioanalytical Chemistry* 408 (13): 3373–79.

Part Five

Artists' Reflections

22

Living Matter: Research as Creative Process

Gabriel de la Mora

A core element of Gabriel de la Mora's artistic output involves the conservation and restoration of artworks. He considers himself a creator of questions and explorations because each concept in a given work of art requires a specific technique that might give him control over potential variables. Resolved questions have become essential elements of his production—gateways to more complex concrete experiences. The materials are not only repositories for stories or patterns, but explorations of the durability and resilience of such. The shift from the two-dimensional nature of drawing into textures and three-dimensionality has proven an ideal space for experimentation, as he has evolved into planning, consolidating, and assembling works of art in increasingly complex materials.

◆ ◆ ◆

On June 5, 2019, I gave this presentation at the "Living Matter" symposium, where the discussions centered on the challenges involved in the conservation of contemporary works of art created with biological materials. I will begin by saying this: I believe that just as matter occupies a place in space, has mass, and endures or transforms over time, research into the conservation of the materials used in an artist's production is indispensable to the artist's career or artwork. Thanks to this invitation, I was able to reflect on the exact moment when I became aware of the inevitability of decay of the organic elements in a work of art.

Consideration of living or organic matter has been present in my work as an artist from the start of my career, and perhaps since my youth. I recall an anecdote from my childhood: I was at my family home in the city of Colima, Mexico. One morning I took two clear drinking glasses from the kitchen. I filled one with water from the water faucet, and I filled the other with clear alcohol. I went to the pond in the garden and took out two fish that looked as much alike as possible. I held one in each hand about ten centimeters from the liquid in each glass, and I dropped them both into the glasses at the same time. The fish that fell into the water swam easily, while the other twisted and contorted until, a few seconds later, it was motionless, lifeless. Within my capabilities at that age, I was able to conclude that, in both glasses, although the fish and the liquids looked the same, they were actually different; in one, life continued, and the other held only death.

I was drawing before I spoke or wrote, and drawing has always been my best form of expression toward the outside world. I was a child who discovered his environment through questions, experiments,

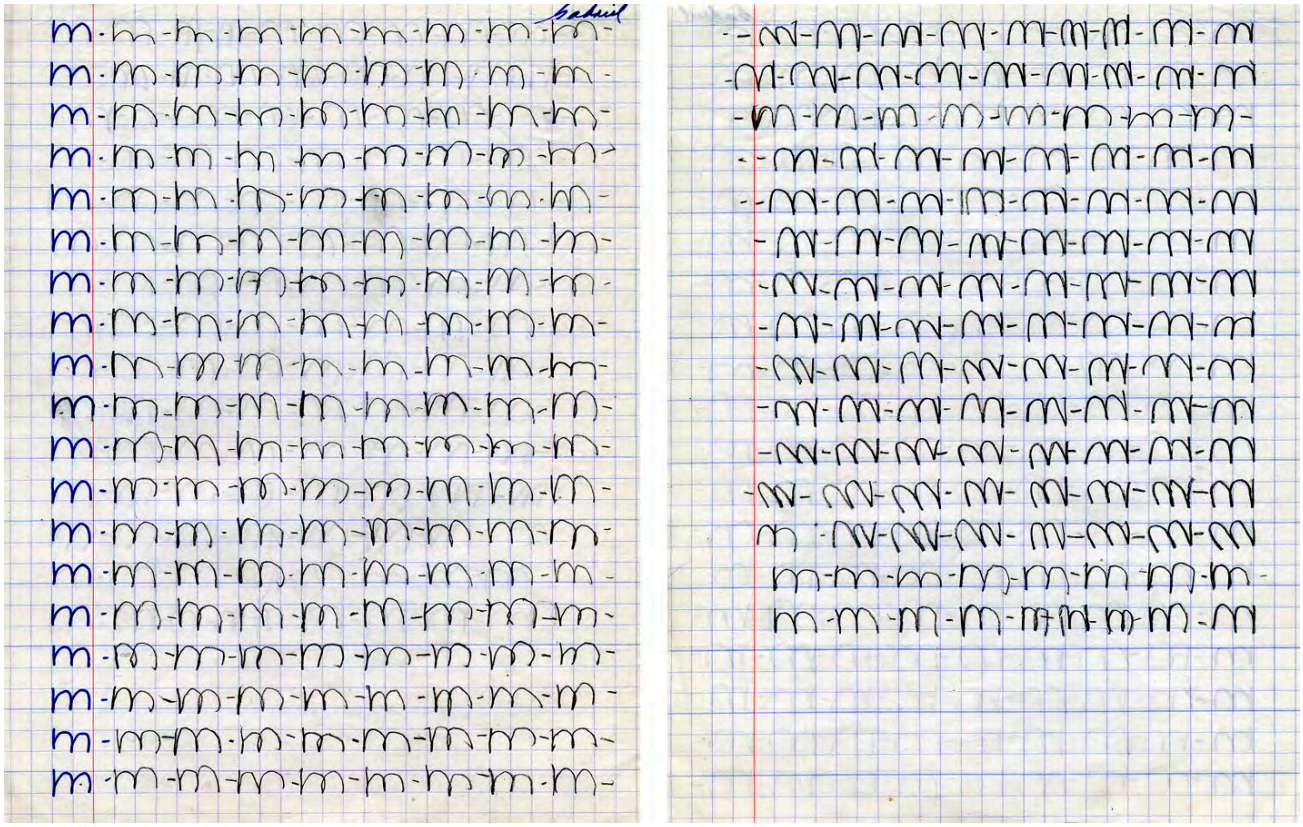


Figure 22.1 Gabriel de la Mora (Mexican, b. 1968), *m-294*, 1972. Pencil and ink on printed paper, 27.9 × 21.6 cm. Courtesy the artist and Proyectos Monclova

observations (fig. 22.1). I consider this the background to the importance of living matter and research in my creative process. From the perspective of the practice of art, now that I am an adult, that youthful experimentation has led to this type of question: When does an artist begin to be an artist? Are they born an artist, or do they become one when they pursue studies in the visual arts? Or at the moment when they decide to devote themselves to art? Should art be eternal, or will it have continual changes? Will all works of art disappear in the end?

I studied architecture and practiced it for five years, until August 1996, when I exchanged architecture for art. Since the beginning of my career as an artist, I began to experiment with different found materials, mostly discarded items such as latex, feathers, hair, eggshells, and many others. Since then I have enjoyed experimenting with different material elements, and that is why I always conduct a large number of tests to see which materials are ideal for the piece I am creating. All the materials present in my work, besides functioning as containers of stories, memories, or customs, are repeated tests of the durability and resistance of matter. The leap from the two-dimensionality of drawing to the texture and three-dimensionality of all those materials has been the perfect field for experimentation, as I have moved from the simplicity of direct drawing on a support to the complexity of schematization, consolidation, construction, and assembly of pieces with increasingly complex materials.

This process of *trial-error-trial-result* entailed in my creations has led me to not only posit many questions, but seek solutions that allow me to continue using all the materials I want in building my body of artwork. When answered, these inquiries have become an essential element of my work and have opened doors to material adventures of ever greater complexity.

At some point in my creative processes, I try to seek the advice of conservators, because experience has taught me how fundamental it is to have the counsel of experts. To a large extent,my early works were either destroyed or disappeared over time, leaving only the photographic record and some negatives to speak of their existence, which showed me the importance of risk control, conservation, and restoration of the materials used in the art world (fig. 22.2).

Figure 22.2 Gabriel de la Mora (Mexican, b. 1968), *Emiliano 20:30 hrs*, 1998. Latex, artist's pubic hair, postcard, and newspaper mounted on a wooden structure, 17.8 × 12.7 cm. Courtesy the artist and Proyectos Monclova

When I saw that many of my early works disappeared with the passing of time, I devoted myself to finding someone to constructively accompany me in my explorations and inquiries into the durability of certain materials, for instance the types of adhesives and compounds I should use so that the works would remain as intact as possible for as long as possible. That search led to me working hand in hand with a great conservator in Mexico City, to whom I will always be grateful for providing me with that expert support. This collaboration created countless possibilities for exploration, experimentation, and improvement in my processes. Based on this experience, I began to document as best I could, from the conception of an idea through the entire process of creation, the behavior of the finished pieces over time, and the different environmental conditions that each one underwent as it moved from the studio to the museum, the private collection, or the art gallery.

When I was young, I had the naive belief that art was obliged to survive intact over time. Now, due to all the experience I have gained over more than twenty years of work, I can accept that eventually, after many, many transformations and material changes, everything will disappear. I have learned that there are even pieces whose manifest existence includes, per se, the fact that they will gradually vanish over time, such as the late nineteenth-century and early twentieth-century photographic images that I have worked with. One example is *Fotografía intervenida* (Intervened Photography, 2008–ongoing), a series involving faded daguerreotypes, water-damaged photographs, first-generation vintage photographs, and destroyed, semi-destroyed, or exposed negatives. This small collection was classified by subject, source, period of origin, and state of conservation. The photograph—as a technological development that made a faithful record of reality possible—gradually becomes an archive of absences, of the invisible and the phantasmagorical, that creates no certainty and even asks how reliable an image can be, even if it is generated by a machine rather than a human being. The pieces have been severely affected by time. The images are about to disappear given their exposure to sunlight, and that disappearance represents the birth of a monochrome, resulting from a process in which the artist has no influence at all beyond merely drawing attention to something. In *Fotografía intervenida* the alteration to the pieces begins with the detachment of partial and random fragments of an image. Sometimes I only cut a millimeter off the edge at a time, and continue until I reach the center of the print. Or I simply print negatives that have been accidentally ruined by floods or humidity.

However, I think that all works change, and even if a work is destroyed, it will continue to be the same work, since art does not vanish; it only changes. If a piece breaks, it exists as the same piece, only broken. It simply changes its existence through conditions, its character, time itself. The piece will be in continual evolution. That is the immanent of the permanent. There is a series in which I decided to use my blood (fig. 22.3), which in addition to containing energy, contains my genetic information. I diluted it in acrylic varnish and applied it to a cloth in various layers, perhaps thereby creating my first monochromes. Some time later, a collector who had bought one of these contacted me to report that although the work was not in direct sunlight, it had lost almost all its color after several years. This made me think that the work remains the same work even when it has lost color, because the genetic information is still there. Even though light or UV rays made the color disappear, the work continues to exist as such. I explained this to the collector and told him I was willing to take the piece back in exchange for something else. He asked me about the final destination of the piece he would be returning, and I told him I would keep it as

part of the collection. On hearing this, the collector decided to keep it because he still liked it a lot—he was just worried about the color. In fact, from my perspective, the piece could not be remade, or discarded, or even less conserved and restored, its color brought back by reapplying diluted blood. The piece continues to be the same piece, only different, changing in some way as everything changes over time. This experience also supports the premise that Willy Kautz used for the book and exhibition *Lo que no vemos, lo que nos mira* (What We Don't See, What's Watching Us), presented at the Amparo Museum in Mexico City in 2014 (Kautz 2015).

Figure 22.3 Gabriel de la Mora (Mexican, b. 1968), detail of *G.M.C. O+ / 14,565.6 cm2*, 2009. (G.M. O+) blood on Masonite. Twenty-eight parts, 102 × 142.8 cm overall. Private collection. Courtesy the artist and Proyectos Monclova

My works only allow for maintenance, never replacements. What breaks off or disintegrates cannot be brought back through conservation. If I use waste, what interests me is consolidating and arresting as far as possible certain processes of degradation or deterioration. But I cannot go against the passing of time or the lasting nature of some materials. On the other hand, I am also interested in the paradox of the temporal within the constant—for example, how something so ephemeral as burning a sheet of paper makes the paper eternal through the chemical reaction.

The series of burned papers was, in some way, the start of a phase in my career. I began in October 2007 in Mexico City, simply burning a sheet of white paper (fig. 22.4). The process of transformation was fascinating: seeing a flat, white sheet of paper turn into an irregular, black surface, then the black turns to gray and the paper is destroyed (fig. 22.5). I burned hundreds of sheets of paper until, for some reason, the change from black to gray stopped happening and the last sheet remained burned but intact. With this experiment, I started the series that took me ten years to finally finish in December 2017. It consists of sixteen works in total: forty-three burned papers in various individual groupings—diptychs, triptychs, and polyptychs of four, five, and six pieces. Four pieces of this series currently belong to MOCA in Los Angeles, and the rest, which are constituted of the thirty-eight pages of my 2003 MFA thesis, belong to the Pratt Institute in New York. Those thirty-eight pages ended up as eleven pieces in the Pratt Institute because I wanted to respect the number of elements in polyptychs according to the number of pages of each chapter of my thesis. For conservation purposes, all I do to stabilize the ashes of the papers is to apply three layers of aerosol fixative for charcoal drawings to their backs. What is interesting about the series is how I start a process, and all the rest is far beyond my control. This led to several series afterward and, in addition to being some wonderful pieces, they formally and conceptually fulfill my idea of seeking a balance between the formal and the conceptual. The burned papers represent some of the more important pieces in my portfolio as an artist. The adhesives and paper I use are generally acid free, so under normal conditions they should keep well over time. It is important to mention that to date, fifteen years after starting the series, I have not had to conserve any piece.

Figure 22.4 Gabriel de la Mora (Mexican, b. 1968), *Catalogue of the Exhibition*, 2003–9. Burned paper, three parts, 8.1 × 28.7 × 22.5 cm each. Private collection. Michael Zabé, courtesy the artist and Proyectos Monclova

Figure 22.5 Gabriel de la Mora (Mexican, b. 1968), still from *21 intentos*, 2017. HD video, color, silent, 35:25 min. Edition of 5, 1 AP. Ramiro Chaves, courtesy the artist and Proyectos Monclova

After much consideration, I have reached a definition of art as a reflection of the definition of energy in the physics of Lavoisier-Lomonosov, in which the atoms of an object cannot be created or destroyed, but can be moved around and change into different particles. I take it to the field of aesthetic practice and say that art is not created or destroyed; it is only transformed. As an artist I don't consider myself a painter, a draftsman, or a sculptor, since I feel that reducing art to a single technique is entirely unjust. I believe that art goes beyond that, and that is why I consider myself a crafter of inquiry, experimentation, and exploration: every idea or concept that ends up as a concrete work of art requires specific techniques in which I must try to control the greatest number of variables possible.

My creative space is not just an atelier. When I am in my studio, I regard it as a laboratory more than an artist's workshop, and I think my body of work is closer to that of a scientist—although there are series in which the hand and the work occupy a greater amount of time.

I use a great diversity of organic and inorganic materials, such as human hair, fingernails, human blood, bird feathers, fish scales, butterfly wings, leaves from various trees (fig. 22.6), tortillas, eggshells, edible materials such as soup noodles, or used elements such as discarded plastic, leather soles of shoes, ceiling tiles from late nineteenth-century homes, sheets of rubber, old

Figure 22.6 Gabriel de la Mora (Mexican, b. 1968), *131*, 2016. 131 dry leaves on wood, 15 × 22.5 cm. Courtesy the artist and Proyectos Monclova

aluminum printing plates, and laboratory microscope slides, or countless new (thus canceling the function for which they were created) materials that I gradually collect and classify. Things not being used for any series live in a storeroom as part of my archive.

In my series of drawings on paper with human hair (2004–ongoing, fig. 22.7), although the hair is organic matter, it lasts a very long time as the container of a person's energy. In the pieces with pigmented turkey feathers (fig. 22.8) and natural-colored feathers from various birds (fig. 22.9), I use acid-free materials, as suggested by conservators. To preserve the color, whether natural or artificial, I enclose them in museum glass, which protects the pieces from 99 percent of ultraviolet rays. If the works lose some color, they are still the same works, just aged over time, which I believe adds something special. The series made with eggshells, titled *CaCO3*, which I began in 2013 and continues to date, portrays my compulsion to reach degree zero in painting, which has led me to explore the medium itself outside of itself—that is,

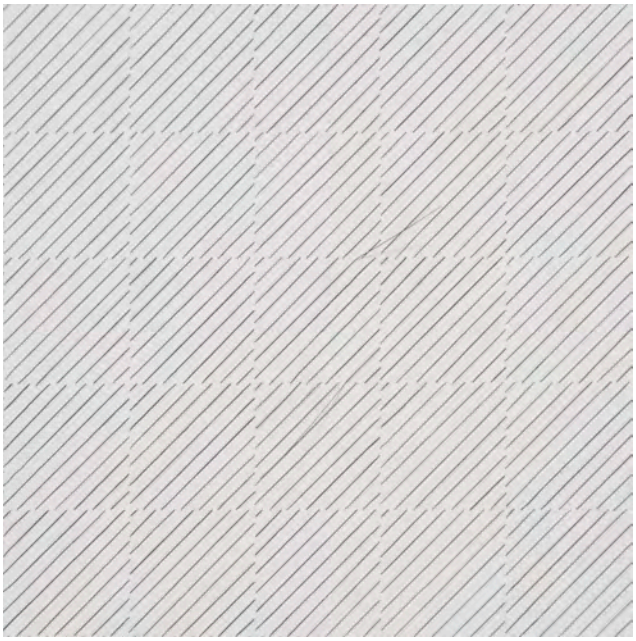


Figure 22.7 Gabriel de la Mora (Mexican, b. 1968), *3,757 I*, 2018. 3,757 human hairs (K.L.) on paper, 60 × 60 × 4 cm framed. Private collection. Courtesy the artist and Proyectos Monclova

the idea of painting without painting. The entire surface, prepared with the same care as a canvas that will slowly disappear as it is impregnated with oil paint, will be covered with tiny pieces of this material. The eggshells, previously selected and catalogued by color, are broken up, counted, and placed on the surface so that no empty space is left and, at all costs, they never overlap (fig. 22.10). Control during the process is absolute; I keep a record of the time it takes to cover the entire surface and also how many pieces fit on it. This information provides the title.

Before using any material, I conduct countless tests with advice from conservators, always keeping records and photographs of each exploratory process. All this information is generally requested by the more sophisticated collectors and by institutions or museums before acquiring any work in which the materials may entail some risk for conservation. I believe there are some series within my oeuvre in which the conservator is more like the figure of an alchemist, since they study the materials to be used and provide me with guidelines for the manipulation, work, conservation, and preservation of the elements, so they can be conserved as well as possible for the longest amount of time. What is important is not whether the piece loses commercial value or not, but rather how much it differs from its original state, with changes that differ from those that occur with the passing of time. I think it is important, and to a certain point a great responsibility, that artists receive advice on, or

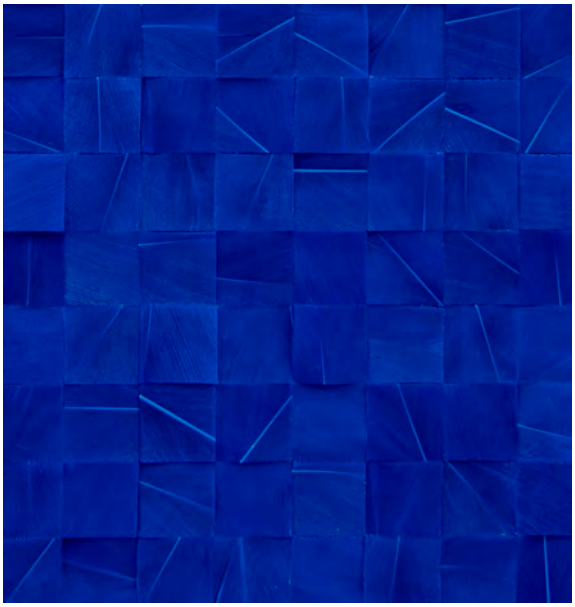


Figure 22.8 Gabriel de la Mora (Mexican, b. 1968), detail of *1,156 VI*, 2019. Feathers and pigment on museum cardboard, 60 × 60 × 4 cm. Private collection. Guillame Ziccarelli, courtesy the artist and PERROTIN Galerie

Figure 22.9 Gabriel de la Mora (Mexican, b. 1968), detail of *8,100 I*, 2019. Guinea chicken feathers on museum cardboard, 75 × 75 × 4 cm. Private collection. Courtesy the artist and Proyectos Monclova

Figure 22.10 Eggshell pieces for potential use in the series *CaCO3*, 2013–ongoing. Courtesy the artist and Proyectos Monclova

explore the nature of, the materials they use, as well as trying to utilize optimal methods and processes, and materials that can best extend the life of the pieces.

CONCLUSIONS

As a young, self-taught artist, I followed a path of experimentation in terms of materials, which led me to learn over the years the importance of the elements constituting each of my pieces. The most important lesson, in addition to an awareness of the material and its futile existence, was the ability I acquired to be always alert to the creation of the pieces, from their conception as an idea to their production, and to keep records of all my processes because, ultimately, it is the life history of each one of them.

Although art is always undergoing change, it is very important that the presence of conservators be a constant in the production of art, particularly in series that involve organic or biological materials. The artist must be always aware of the importance of the formation of his or her pieces, the quality of the materials, the level of risk entailed in the constituent elements, and, above all, the ultimate durability of almost all materials available for the practice of art. Nothing lasts forever, it's true, but the counsel of experts in matters of conservation can make the difference between an ephemeral piece and one that endures.

This responsibility must also be extended to everyone who works with or owns art, such as collectors and gallery owners, considering that museums, foundations, and centers for specialized studies have much greater expertise in this type of task than any other person involved in the art world. It is well known that some collectors who keep collections of clocks and even wines in the best conditions of humidity, temperature, and movement don't do the same with their works of art, which may be exposed to direct sunlight, or suffer from incorrect cleaning processes, or any number of risks. A person who acquires a work of art has the responsibility to conserve it in their collection in the best condition possible. The same is true for a gallery owner who handles and safeguards works of art for differing periods of time.

Art is not created or destroyed; it is only transformed.

All will ultimately disappear.

Mexico City, September 2019

BIBLIOGRAPHY

Kautz 2015
Kautz, Willy, ed. 2015. *Lo que no vemos, lo que nos mira.* Mexico City: Museo Amparo.

23

Murmelte Instrumente: The Body, Like a Hand to an Instrument

Kelly Kleinschrodt

This essay highlights the conceptual and material circumstances of Kelly Kleinschrodt's breastmilksoap *works (2013–14), which are part of the ongoing project* mother /cut*, focusing on feminine embodied experiences (creating, nurturing, consuming), attendant banal activities (pumping breast milk, sterilizing, preparing food), and the materials she uses to reflect these experiences. Glycerin, castor oil, honey, and breast milk are cast into soap bars and contrasted with "stable" materials such as acrylic. A series of anecdotes, or "movements," liken the repurposing of breast milk into another "useful" state to music making. As the* breastmilksoap *works are exhibited, circulated, and stored, each bar continues to slowly shift and absorb its changing contexts. Each is an object that encapsulates a performance and that also performs.*

◆ ◆ ◆

We make music which is not Music, poems that are not Poetry, paintings that are not Painting, but music that may fit poetry, poetry that may fit paintings, paintings that may fit . . . something, something which gives us the chance to enjoy a happy, non-specialized fantasy.

—Festival of Misfits flyer, 1962[1]

PRELUDE I: ELSEWHERE

Murmelte Instrumente is the title of a chapter within a larger ongoing project of mine: *mother /cut.* As a visual artist, mother, and arts educator, I find myself perpetually multitasking. I ask the same of my work.

My artistic practice is ultimately an experience and evocation of "moving between"—between bodies and objects, photography and sculpture, sculpture and performance, performance and video, video and photography. In *mother /cut*, this fluidity in approach seeps into the evolution of its central material: mother's milk. I began the project symbolically alluding to the elusive nature of this vital liquid, but then I began producing the material myself, and incorporated actual breast milk as an integral living material and sculptural cornerstone of *Murmelte Instrumente*.

Similar to the epigrammatic title of Marcel Duchamp's alter ego, Rrose Sélavy (pronounced *Eros, c'est la vie*), there are many transformations happening in *Murmelte Instrumente.* The German phrase translates to "muttering instruments." *Murmelte* is literally an "utterance" or "mutter," while

Mutter is the German cognate for "mother," and so we have *either* muttering instruments *or Mutter*ing instruments *and* mothering instruments. And, with my artworks toggling between multiple identities in this either/or/and paradigm (*either* photographs *or* sculptures *and* photo-sculptures), and with the referent toggling between "mutter" or *Mutter*, there is also momentary lapse. A reckoning with a lost moment of bodily exchange.

This text, too, is an evocation of moving between. The exchanges I describe herein—between bodies and objects—chart the shift in my practice toward music making, wherein materials are incited to *enact* a composition, to perform over time. This spurs a mode of artistic output reflective of the slipperiness of embodiment in life and art, the blurring and playful prodding of boundaries of artistic production / maternal production / music / consumption, wherein living matter occupies and inhabits space "like a hand to an instrument."[2]

PRELUDE II: ANOTHER ELSEWHERE

> *Ah, the joy of suckling! She lovingly watched the fishlike motions of the toothless mouth and she imagined that with her milk there flowed into her little son her deepest thoughts, ideals, and dreams.*
>
> *—Milan Kundera,* Life Is Elsewhere*, 1973*[3]

Outside the frame, my cousin, a nurse, pauses to pump milk before leaving for her shift. I am visiting her and happen to have my video camera. Natural light pours in from the window and her dark-green velvet couch miraculously registers as a black fabric studio backdrop.

In this moment, my work shifts from ambiguous depictions of the body (or of objects that look like bodies) toward an investigation of the ambiguity of the maternal body, wherein a breast can operate like a fallacious phallus and can perform with an outward fecundity by this *vacuumous* recipient, the breast pump. In the resulting video work, *sonata* (2010, fig. 23.1), the breast pump is an unapologetically transparent and melodious accompaniment to its instrumental soloist, the *body-of-mother*.[4]

FIRST MOVEMENT: DRIP

Shortly after I moved to Los Angeles in 2005, a confluence occurred in the form of a drip. Art historian Natilee Harren invited me to participate in an exhibition she was curating in response to George Brecht's event score *Drip Music (Drip Event)* (1959–62). Harren's *Drip Event* of 2007 was a one-night happening at a small art space in LA, and it featured a community of artists asked to interpret Brecht's mimeographed text:

Figure 23.1 Kelly Kleinschrodt (American, b. 1983), still from *sonata*, 2010. Mini-DV video, color, sound, 5:19 min. (looping). Courtesy the artist

> DRIP MUSIC (DRIP EVENT)
>
> For single or multiple performance.
>
> A source of dripping water and an empty vessel are arranged so that the water falls into the vessel.
>
> Second version: Dripping.
>
> G. Brecht
>
> (1959–62)

I somewhat nervously accepted the provocation and platform. It was my first performance before a live audience, and so, naturally, I chose a gesture that would hide my face. For *pillow / breath*, I breathed face-down into a pillow until my saliva wet the outer contours of my face (fig. 23.2).[5]

The proposition to perform a rendition of Brecht's score had me post-posthumously erecting a performance from a work previously considered "done." From this event, iterations and multiples expanded outward, from resolved works into a state of always-in-process. My subsequent absorption of Fluxus ideology vis-à-vis Harren has had me experimenting with an "allographic . . . model of iterative production," in which an artistic gesture is never fully done being realized.[6] And another focus has emerged—toward *feminine* embodied experiences such as nurturing, creating, sterilizing, preparing food, and consuming while listening (aka "multitasking"). Banal activities like pumping breast milk, washing hands, preparing food, and listening

Figure 23.2 Kelly Kleinschrodt (American, b. 1983), *pillow / breath*, 2007. Chromogenic print, 27.9 × 35.6 cm. Courtesy the artist

Figure 23.3 Kelly Kleinschrodt (American, b. 1983), *soymilkstyrofoam*, 2007. Chromogenic print, 27.9 × 35.6 cm. Courtesy the artist

are now centrally studied and elongated gestures in my practice. And, like Brecht's score, my practice has evolved into a site in itself, a vessel perpetually *in medias drip*.

SECOND MOVEMENT: PROXY

Several years before I had my daughter and began to work with the material of my own body's milk, I came across Wolfgang Laib's *Milk Stone* (1978), an imperceptible collapsing of two iconic natural materials: marble and milk. I was completely enamored. Laib had delicately sanded a depression into the face of a thin, rectangular slab of Carrara marble, and then ritualistically poured milk in to fill the absence; at the surface level, the boundary between the reflective liquid and the opaque marble appears virtually seamless.[7]

I began making miniature variations of Laib's *Milk Stone*, meddling nonchalantly with milk and, instead of hard marble, soap. I watched again and again as the lip I carved into soap bars dissolved upon contact with the milk, never to retain the illusion of synthesis. My efforts resulted in milk-soap puddles, which I documented in photographs made with a four-by-five camera. I then found modern substitutes for marble and milk, and made *soymilkstyrofoam* (2007, fig. 23.3). The soy milk was creamy in color and looked nothing like the stark-white Styrofoam base into which I poured it. I found these material and color differences amusing and visually appealing. It felt sentient, forthright, and somehow more alive.

Later, during my graduate studies at UCLA between 2009 and 2011, this tension between liquid and solid materials extended to the frame of the image. At this time, coinciding with the development of *sonata*, I began to make photographs of breast milk dripping down silky pink fabric.[8] I decided to design and fabricate peculiar ivory-colored acrylic frames that would allude to colostrum, the rich breast milk produced in the days immediately after a baby's birth (fig. 23.4). The frames were at once rigid and full of glossy depth, like a liquid surface. I also wanted a striking contrast between the surface of the frame and the surface of the print, so I decided not to glaze or protect the surfaces of the photographs. I would allow the naked final print to function as a skin, subject to time, UV light, dust, fingerprints. Just allowing. Each work would have a life span, slowly shifting over time—a proxy for the bodies I record with my camera.

In 2011, for my solo show *distant already* at Carter & Citizen in Los Angeles, I used the gallery space as an incubator for a thirty-day live performance, *theme and variations (for solo violinist and breast pump)*, developed in collaboration with violinist Morgan Paros.[9] During the run of the exhibition, Paros played daily at lunchtime to the amplified sounds of a breast pump that I had prerecorded (fig. 23.5). One important aspect of the work is that the written score provided to the violinist is suggestive, and so she becomes a coauthor/co-creator when playing the work. The violinist uses the theme melody as a foundation, but improvises variations in response to the breast pump's distinctly changing rhythms. This collapse of artistic production—via surrogate author (the violinist) of maternal production (the artist's) whetted via surrogate recipient (breast pump in place of infant)—had me wanting to push the idea of embodiment via proxy still further.

Figure 23.4 Kelly Kleinschrodt (American, b. 1983), *falling (for Jim)*, 2010. Chromogenic print in artist's acrylic frame, 104.1 × 85.1 × 2.5 cm. The Deighton Collection. Courtesy the artist

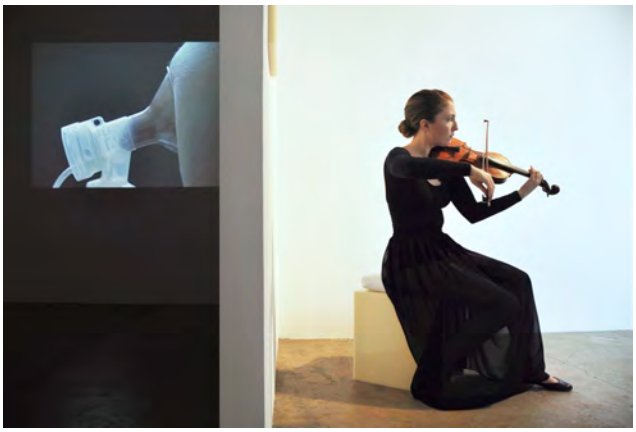


Figure 23.5 Installation view, *Kelly Kleinschrodt: distant already*, Carter & Citizen, Los Angeles, 2011. Left: *sonata (for breast pump) variation II*, 2011; right: *theme and variations (for solo violinist and breast pump)*, 2011. Courtesy the artist and Carter & Citizen, Los Angeles

For the closing of *distant already*, I decided to serve breast milk hors d'oeuvres from a close friend's pumped and pasteurized breast milk, and I recruited artists Sarah Beadle and Emily Marchand to collaborate on the performance with me. Both women have an established practice of incorporating thematics of service, care, and embodiment into edible artworks. I provided the concept and framework of the *muttermilch* hors d'oeuvres, while Marchand brought an extensive knowledge of cheese making and Beadle concocted conceptual plant and pollen elements for the garnishes (fig. 23.6). The scanned receipts for the purchased ingredients that we combined with the breast milk to make the hors d'oeuvres remain as our pseudo-scores/recipes for future iterations.[10] The hors d'oeuvres were casually passed and consumed adjacent to the video projection of an incessantly pumping breast.

Producer of milk.

Producer of meaning.

Producer of sound.

Producer of space.

Figure 23.6 *muttermilch* hors d'oeuvres in artist's kitchen, 2011. Courtesy the artist

THIRD MOVEMENT: MUTTER

Two years after, in 2013, I became a pumping mother myself, with an ever-present, hissing metabolic metronome. The breast pump, which had formerly appeared in my artworks as an instrument for "music making," became an intensely familiar companion—an instrument laden with associations of self-preservation and obsessive sterilization, a reflection and measure of my own performance as a mother. Luckily for myself and my infant, I was overperforming, and much milk was accumulating in my freezer.[11] As some was set to expire, or was already too iffy to feed to my baby, I decided to repurpose my breast milk into soap sculptures.

I purchased a basic oval soap mold as well as an organic glycerin soap base and began making bars of *breastmilksoap.* The ingredients were minimal and motivated by personal associations: a clear glycerin soap

Figure 23.7 *breastmilksoap* works in artist's home, 2013. Courtesy the artist

base (which, having endured a terrible post-Cesarean infection, I associated with sterilization); frozen, then pasteurized breast milk (some of which was actually the first milk I produced at the hospital); castor oil (I self-induced using it); and honey (my only caloric intake during labor). One morning I sat at the kitchen table and held my young infant while my assistant, Taryn Haydostian, became an extension of my hands. We kept loose notes and labeled each bar numerically. We stirred the pot of ingredients at low heat, increasing the complexity of the base. The proportions of the ingredients in each bar of breast-milk soap were improvised. They involved an impressive variety of surfaces and textures (fig. 23.7). My kitchen thermometer happened to be broken. We were eyeballing, and there is no way to exactly replicate what happened that day. We got incredibly lucky.

My gallerist, Whitney Carter, caught wind of these works and provided a platform for them in a group show of small sculptures, titled *heroes*, at Carter & Citizen in 2013. It was during this exhibition that I realized the complexity of caring for these objects. The bars of soap with honey and castor oil were slightly sticky and attracted dust. In warm conditions, beads of sweat might form on their surfaces, uniformly distributed; if a sweating bar was handled, a fingerprint might later appear once the air temperature cooled. Several bars without honey and castor oil, made only of breast milk and glycerin, developed a delicate white crust and did not mark as noticeably. I would regularly stop by the gallery to attend to the soap works with canned air or a dry fingertip. But attending to them daily was not always feasible, and so Whitney became their surrogate caretaker. And so began the inevitable relinquishment of control.

With more exhibitions on the horizon, I started to incorporate the bars of *breastmilksoap* as components of, or companions for, other works. One such sculpture, *mothersink* (2014, fig. 23.8), features a satirical merging of a surgeon's scrub sink and a domestic sink; on an acrylic

Figure 23.8 Kelly Kleinschrodt (American, b. 1983), *mothersink*, 2014. Acrylic, glycerin, and breast milk, 88.9 × 58.4 × 40.6 cm. Galia's Collection, Belgium. Courtesy the artist

soap dish platform that extends from the sink's backsplash rests a *breastmilksoap* bar. In another work, the diptych *bodyofmother / breastmilksoap (for E.)* (2014, fig. 23.9a, fig. 23.9b), the soap is juxtaposed with a photo-sculpture; it sits on an independent platform directly screwed into the drywall, just below and to the right of the framed photograph, which pictures a body of water tinted to resemble a body of milk. This is an imagined view for my daughter, a view from the *body of mother*—contained, but separate.

POSTLUDE I: ELSEWHERE (CONTROL LAPSE)

Murmelte Instrumente started traveling. The *breastmilksoap* works were included in exhibitions and art fairs in the United States and abroad. To an exhibition in Chicago in 2014, I was able to hand carry the soap works, wrapping

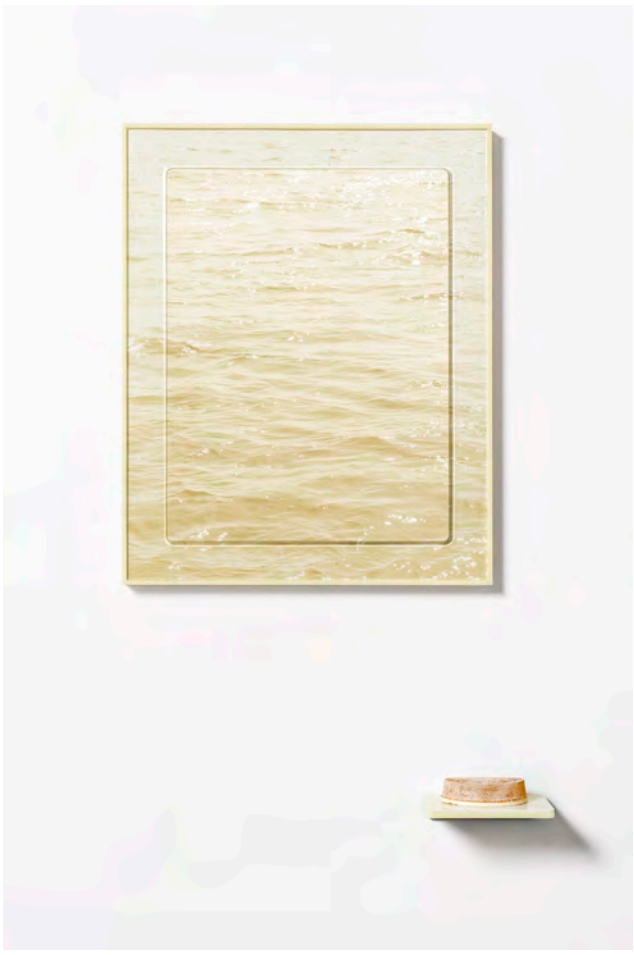


Figure 23.9a

Figure 23.9b

Kelly Kleinschrodt (American, b. 1983), *bodyofmother / breastmilksoap (for E.)* and detail, 2014. Inkjet print, acrylic, glycerin, breast milk, castor oil, and honey, 52.1 × 41.9 × 2.5 cm (print); 5.1 × 14 × 10.2 cm (soap and stand). Collection of the artist. Courtesy the artist

the bars in glassine before placing them in individual plastic soap containers (purchased from the Dollar Tree). Soon after, Josh Lilley gallery in London requested a selection of *breastmilksoap* for the group show *Control Lapse* (2014). Lilley also hand carried the bars in makeshift packaging, and they miraculously arrived unscathed. But, interestingly, in the exhibition documentation I noticed that *breastmilksoap (variation V)* (2013, fig. 23.10) had acquired visible fingerprints from being handled. The marks (most likely my own, but quite plausibly from airport security or someone at the gallery) had become acutely visible because of temperature and humidity. At first I was uncomfortable with the sharpness of the surface marks, which rupture the pristine, gemlike quality of the semitranslucent objects. But these marks provided an alternate latency, one that worked within me, and circled me back toward the philosophical origins of my work as a photographer. It became somehow necessary that I embrace the fingerprints as *punctum*—as poignant but unintended occurrences within the works, "a kind of subtle *beyond* . . ."[12] And although the soap works were not photographs, I came to understand them as encapsulations of moments, and the fingerprints as indexical evocations of *being held*.

Figure 23.10 Kelly Kleinschrodt (American, b. 1983), *breastmilksoap (variation V)*, 2013. Glycerin, breast milk, castor oil, acrylic, 5.1 × 14 × 10.2 cm. Private collection, New York. Courtesy the artist and Josh Lilley, London

When Lilley sold three bars of soap to a New York–based collector, I was asked by the gallery to provide conservation advice. I had not yet researched what "best practices" would mean for such delicate objects. I reached out to the Getty Research Institute (GRI) and Getty Conservation Institute (GCI) for a consultation, having heard of Fluxus works containing canned biological matter in the GRI Special Collections.[13] Conservators Mary Sackett and Rachel Rivenc graciously provided conservation recommendations as best they could without having seen the physical objects. I passed this information on to the gallery in a highly detailed document meant for both the gallery and the collector regarding long-term storage measures and guidelines for interacting with the objects. This document not only covers best conservation practices, but also includes my own guidelines for permissible handling of the works: "latex gloves or simply clean, dry hands." I further indicate that if the soap collects dust to an "unsavory and distracting" extent, its surface can then be "re-smoothed and dusted with a wet finger." This advice is, of course, in keeping with my conclusion that the handling of the work and any resulting marks are a conceptual component of the work; once relinquished by me, the soap bar is to be handled at the discretion of the caretaker.

I often wonder what happens on the receiving end of my objects. For *breastmilksoap*, how have they held up in the colder climates of London, New York, and Brussels? What was each collector's compulsion to own a sculpture with an uncertain expiration date or life span? What has been the recent history of the objects—how have they been displayed or stored?

I recently attempted to contact the various collectors of *breastmilksoap*. To date, I have received one ebullient but brief response from the collector of *mothersink* (2014): "The work is in storage but that is only a physical aspect. It is in my heart and mind. Therefore close to me." Although this response is short, and reveals that the stored work's precise condition may be unknown to the collector, it is the memory of the initial encounter—or, rather, the re-remembering of the initial encounter—that appears to be the most revered "site" of the work. So perhaps for this collector, the work has less to do with the object's state in this particular moment, and more with how it occupies and transgresses time.

I relinquished the soap works in January 2014, only a few months after they were made. Having released them to circulate in contexts beyond my control, I find myself embracing this uncertainty as a central quality of the work. It tempers and healthfully reframes my own attachment to these highly charged objects, made during an incredibly personal and vulnerable moment. In making these works, in choosing studio time over time spent with my child, I had to pump milk. Most of the milk went to my child, but the remaining ounces went *elsewhere*.

The markings on the surfaces of *breastmilksoap* are literally indexical of exchanges, and specifically of being held. Implicitly, each mark is an index of a lost moment of bodily exchange—between mother and child, mother and breast pump, hand and soap, artist and preparator, artist and

collector. I find that it is precisely this condition of "moving between" that makes works with biological matter conceptually rigorous, and utterly human. Each bar of soap will ever so slowly shift, absorb, acclimate, and inhabit space. This is an object that encapsulates a performance and can also perform. It is neither a thing nor a body; it's *like a hand to an instrument*.

NOTES

1. From a flyer for the Festival of Misfits, Gallery One and ICA, London (1962). Natilee Harren writes: "In this statement we see, crucially, that within Fluxus intermedia the language of individual mediums was roundly disrupted but not abandoned. Rather, new practices are seen to emerge from artists' engagement with multiple mediums at once, mediums set into new relations with one another or that are coarticulated while remaining individually legible" (Harren 2015).

2. "Our body is not in space like things; it inhabits or haunts space. It applies itself to space like a hand to an instrument, and this is why, when we want to move about, we do not move the body as we move an object. We transport it without instruments as if by a kind of magic, since it is ours and because through it we have access directly to space. For us the body is much more than an instrument or a means; it is our expression in the world, the visible form of our intentions" (Merleau-Ponty 2007).

3. Kundera 1974, 9. Before this Kundera quotation was co-opted here, it was a viral Instagram post by Alyssa Milano after ten ounces of her breast milk were confiscated at Heathrow Airport in 2014. Coincidentally, *Ignorance* (2002), a novel by Milan Kundera, is currently on my bedside table. Michi Jigarjian and Qiana Mestrich, *How We Do Both: Art and Motherhood* (New York: Secretary Press, 2015), is also currently on my bedside table.

4. *Body-of-mother* is a term I use in my work to refer to the poetic terrain of the mother's body. It is a horizonless gulf, an endless supply of _____, the ultimate site of projection. *sonata* has primarily been exhibited as a video installation. *sonata (for breast pump), variation I* (2011) has an audio component; *sonata (for breast pump), variation II* (2011) does not.

5. I still have this pillowcase and pillow. The pillowcase has been washed between iterations; the pillow has not.

6. "Fluxus developed an allographic as opposed to autographic model of iterative production, in which artworks—both performances and objects—were created or realized over and over again to differing results. In Fluxus performance practice, works such as Brecht's *Drip Music (Drip Event)* (1959–62) gradually morphed in appearance from concert to concert, producing also sculptural versions; and by design, Fluxus's editioned multiples, whose production was overseen by [George] Maciunas, never promised to contain the same items from one 'copy' to the next. In work after Fluxus work, we see the marriage of a general set of processes or qualities materialize in unique, specific situations. Furthermore, the manifold outcomes of an individual Fluxus score, instruction, diagram, or idea would be seen as inherently relatable to one another" (Harren 2015).

7. For a re-creation of the work see https://vimeo.com/68268886.

8. The images of this series, *falling* (2011), were made in response to an anecdote my cousin shared as she was pumping milk while I shot video for *sonata.* She recounted her first day back at work, as a nurse, after maternity leave. To her dismay, an attending physician pulled her aside to let her know that breast milk was leaking through her scrubs. The images of *falling* are also direct quotations of James Welling's *Drapes* (1981), photographs of phyllo dough flakes falling down luscious folds of fabric. Welling was my graduate school mentor at UCLA, and his conceptual abstractions have provided a foil for my theatrics of maternity.

9. Morgan Paros was one of three violinists who answered my Craigslist ad looking for a violinist. She is currently my child's legal guardian (my posthumous proxy).

10. We developed three hors d'oeuvres, each with a human and animal milk base (as human milk isn't fatty enough to make cheese). One paired, for example, fennel pollen with poached pear and breast-milk chèvre. The hors d'oeuvres were passed around by artist Tiffany Smith, who reported that 85 percent of attendees sampled them.

11. As of September 2019, I still have an entire drawer of frozen breast milk from 2013–14.

12. "The *punctum*, then, is a kind of subtle *beyond . . .*" (Barthes 1981, 59). Barthes's philosophical approach reads images by articulating the *punctum* as the small, often overlooked "detail" within the photograph that ultimately has "a power of expansion" (45). Importantly: "Nothing surprising then, if sometimes, despite its clarity, the *punctum* should be revealed only after the fact, when the photograph is no longer in front of me and I think back on it" (53).

13. For example, Harren has mentioned Piero Manzoni's *Artist's Shit* (1961), an edition of canned excrement. Harren and I have also discussed Benjamin Patterson's *Hooked* (1980), a tackle box with a plethora of rotting matter—most odiferously, a disintegrating can of sardines in tomato sauce. See Harren's contribution to this volume.

BIBLIOGRAPHY

Barthes 1981
Barthes, Roland. 1981. *Camera Lucida*. Translated by Richard Howard. New York: Hill and Wang.

Harren 2015
Harren, Natilee. 2015. “The Crux of Fluxus: Intermedia, Rear-guard.” Walker Art Center, http://walkerart.org/collections/publications/art-expanded/crux-of-fluxus.

Kundera 1974
Kundera, Milan. 1974. *Life Is Elsewhere*. Translated by Peter Kussi. New York: Alfred A. Knopf.

Merleau-Ponty 2007
Merleau-Ponty, Maurice. 2007. “An Unpublished Text by Maurice Merleau-Ponty: A Prospectus of His Work,” translated by Arleen B. Dalery. In *The Merleau-Ponty Reader*, edited by Ted Toadvine and Leonard Lawler, 285. Evanston, IL: Northwestern University Press.

24

Dissolving Matter: Notes on *Símbolo descarnado*

Darío Meléndez

This paper addresses the origins, process, and potential cultural resonances of the installation Símbolo descarnado *(2013), presented at ATEA, Mexico City, in 2013, which invoked the earthly presences of the eagle and the serpent, symbols on the Mexican flag, using organic matter that was undergoing decomposition. In this approach to the image as a Warburgian force field, the work proposes viewing the material and symbolic decomposition of Mexico's foundational legend as rendering it a formless territory whose detritus appears to whisper that another nation is possible.*

◆ ◆ ◆

> *Thus* formless *is not only an adjective having a given meaning, but a term that serves to bring things down in the world, generally requiring that each thing have its form. What it designates has no rights in any sense and gets itself squashed everywhere, like a spider or an earthworm. In fact, for academic men to be happy, the universe would have to take shape. All of philosophy has no other goal: it is a matter of giving a frock coat to what is, a mathematical frock coat. On the other hand, affirming that the universe resembles nothing and is only formless amounts to saying that the universe is something like a spider or spit.*
>
> —*Georges Bataille,* The Sacred Conspiracy*, 1936*

Why am I interested in working with organic matter? Not intending to provide a definitive answer, I could point out that my initial training as a traditional painter in the studio of artist Luis Nishizawa awoke in me a taste for process and for the emanative nature of materials undergoing transformation, which soon led me to become disenchanted with the fixed image that takes shape within a pictorial object. Even in those days, I had an irrepressible impulse for the uncertain and the vague, for all those intermediate phases in the construction of a painting in which the image would appear to be forming and/or disappearing. Drawings superimposed, glazes that melt the underlying layers, and varnish drippings were some of the visual experiences that led me to fall in love with unstable materials. What was behind that impulse? I could start by saying that maybe those evolving materials reverberate with what I am seeing, experiencing, and breathing in Mexico, and in Mexico City in particular. The stench of death is nothing more than the scent of change.

THE WORK

Símbolo descarnado was a collective installation exhibited from February 9 to 24, 2013, at ATEA in Mexico City (fig. 24.1).[1] It consisted of an ephemeral mural of the national coat of arms, drawn with cochineal by Omar Soto; a sound spatialization by Diana Bravo based on amplified noises made by larvae; and the rotting carcasses of an eagle and a serpent inside a glass case, created by me, Darío Meléndez. The main intent was to present, in the white cube, the atmosphere of deterioration in which my country is submerged and to question the viewer through an experience of formlessness in contrast to the asepsis of the site. The strategy for delivering criticism of the eroding structure and validity of the Mexican state—symbolized by the eagle and serpent on the nation's coat of arms—was to utilize the aesthetic, performative, and sonic possibilities of material and symbolic corruption through different approaches.

In Soto's ephemeral work, the corruption consisted of those attending the opening using their hands to erase (redraw?) a mural based on a nineteenth-century lithograph of Mexico's national coat of arms (fig. 24.2, fig. 24.3, fig. 24.4). In this way, the death of the state, present in its own foundational image, was deformed by the viewers themselves. In addition, because the mural had been made with cochineal, a reddish organic colorant with a heavy historical weight, the hands that blurred the image came away stained, evoking a criminal complicity. Instead of existing only as an intellectual dialogue with the viewer, this drawing sought to involve the bodies of the attending public. Having a collective participate in this piece demonstrated that the ideals of our nation were devoured when they took the form of institutions and political figures.

Figure 24.1 Poster for *Símbolo descarnado*, ATEA, Mexico City, 2013.

Figure 24.2 Omar Soto (Mexican, b. 1984), *Símbolo descarnado*, 2013. Cochineal on wall, 300 × 1100 cm. Pablo Martínez Zárate

Figure 24.3 Gallery visitor manipulating Soto's *Símbolo descarnado*. Pablo Martínez Zárate

Figure 24.4 Soto's *Símbolo descarnado* after visitor interventions. Pablo Martínez Zárate

Bravo's sound spatialization consisted of an audio system that amplified the tiny sounds of insect larvae devouring rotting meat. Despite the morbid concept, the sound, instead of being terrifying, was almost a white noise, somewhat aquatic, evoking oceanic movement. Bravo revealed death as a subtle process of disappearance, disassociated from the horrible, abject images provided by our daily imaginary. Also, the sound was not continuous, but would gradually crescendo, filling the space little by little. Initially almost imperceptible, the insects' hushed chewing would rise in volume to become the opaque roar of the night sea of which we are perhaps a part.

This treatment of sound, unnoticeable at first, took me back to a literary reference from the early years of my education: the poem "A Carcass" by Charles Baudelaire:

My love, do you recall the object which we saw,
That fair, sweet, summer morn!
At a turn in the path a foul carcass
On a gravel strewn bed,

The blowflies were buzzing round that putrid belly,
From which came forth black battalions
Of maggots, which oozed out like a heavy liquid
All along those living tatters.

And this world gave forth singular music,
Like running water or the wind,
Or the grain that winnowers with a rhythmic motion
Shake in their winnowing baskets.[2]

As can be seen in the foregoing sonorous lines, the resonances between readings, media, and authors seem to address the reappearance of the forms of ancient art in times subsequent to those described by Aby Warburg (Warburg 2005, 20). I would like to point out that in this case it is not so much the reappearance of the form itself; that is, it is not a simple replica, but more like making the energy emerge from the present. Thus the importance of the act, of the presence of the matter itself in its contingency.

The last part of the installation was a partially sealed glass case containing the carcasses of an eagle and a serpent in suspension, like a monstrous apparition (fig. 24.5, fig. 24.6, fig. 24.7, fig. 24.8, fig. 24.9). Both were rotting, and they were clearly alluding to the nation's coat of arms. As in the other cases, corruption of the symbol was the essential agent of the piece, but in this case the deterioration was real. In counterpoint to the idea of representation in the recording and amplification of the sound of the larvae in Bravo's contribution, and in the participatory drawing and erasing of Soto's mural, this part included the presence of the actual symbol in and of itself deteriorating. This situation gave the installation greater corporeality—and another unforeseen factor that enriched the initial idea, namely the smell of death. Thus, the intention of evoking the atmosphere of corruption of the site from which the piece was submitted, Mexico City, appeared to be complete.

In the words of the art critic Sandra Sánchez, what the piece reveals to us is that there can be life even in the midst of destruction (Sánchez 2013). In the aquatic sounds and the red stains throbbing on the wall, in the fly larvae, and in the beetles issuing from the carcasses, we find the prelude to a new beginning. Decomposition is merely a journey toward another place. From this angle, the whole could be read as a rite of farewell, a return to the earth

Figure 24.5 Darío Meléndez (Mexican, b. 1985), *Símbolo descarnado*, 2013. Decomposing organic matter behind tempered glass, 80 × 155 × 50 cm. Daya Navarrete

Figure 24.6 Detail showing moisture on glass. Daya Navarrete

Figure 24.7 Detail. Daya Navarrete

Figure 24.8 Detail showing detritus. Daya Navarrete

Figure 24.9 Detail showing larvae. Daya Navarrete

with a view toward transformation, or an elevation of the spirit (of the ideal in this case).

The latter idea, which speaks of a connection between decomposition and the spiritual world, has already been addressed by the twentieth-century alchemist Fulcanelli when he mentions the works of José Mateo Orfila and Marie-Guillaume-Alphonse Devergie, nineteenth-century French physicians who conducted experiments on the slow, gradual decomposition of human cadavers:

> *The odor gradually diminishes, eventually reaching a stage where all the soft parts scattered on the ground are nothing but a blackish, muddy debris, with a somewhat aromatic smell. As for the change from stench to scent, one must observe its striking similarity with what Old Masters said about the Great Work of Physics, two of them in particular, Morienus and Ramon Llull, who state that the foul smell [*odor teter*] of the dark decay is followed by the sweetest scent, because it is the scent of life itself and heat [*quia et vitae proprius est et caloris*].* (Fulcanelli 1974, 11)

FINAL NOTES

First, I believe that although the emotive, formal, and acoustic presence of the installation was powerful, it was circumscribed within the innocuous circle of emerging contemporary art. Originally presented at ATEA, a space that is part gallery, part workshop, and part cultural company, the work was contained, not only in terms of its visibility, but also in terms of its capacity to influence our daily imaginary. This last thought is due to the political implications of the work. If the piece were really to be ferocious, it should have been shown in a public space, without the aid of the sanctifier (here I am referring to the sacred in its most domesticated sense) of the white cube. Leaving the piece with no other defense than its own corporeality and seeing how it would be exploited, erased, or ignored in real life is the most desirable treatment for this type of proposal. Truly caustic criticism is done in the open air.

In addition, the presence of the decayed matter, even placed in this sociopolitical expression, implores us as well, as bodies undergoing decay. On viewing its slow, fascinating fall, we seem to return to a sense of mortality and fragility, as in the words of Radiohead's song "Fake Plastic Trees": "But gravity always wins."[3]

NOTES

1. Arte Taller Estudio Arquitectura (ATEA, or Art Architecture Study Workshop) is a cultural center founded in 2010 devoted to promoting dialogue between different disciplines. This building, located on Calle Topacio, Mexico City, holds the multidisciplinary collective Somosmexas, founded in 2006 and consisting of ten young artists. These artists promote art exhibitions, workshops, and projects with institutions both on site and externally. They also link art to the surrounding context: the heart of the La Merced neighborhood (Valdivia 2017).
2. Baudelaire 2005, 163–65.
3. Radiohead, "Fake Plastic Trees," from the 1995 album *The Bends*. Watch the video on YouTube: https://youtu.be/n5h0qHwNrHk.

BIBLIOGRAPHY

Baudelaire 2005
Baudelaire, Charles. 2005. *Las flores del mal*. Madrid: Cátedra.

Fulcanelli 1974
Fulcanelli. 1974. *El misterio de las catedrales*. Buenos Aires: Editorial rotativa.

Sánchez 2013
Sánchez, Sandra. 2013. "La historia no existe (cuatro artistas bordeando los hechos)." GASTV, n.d., https://gastv.mx/la-historia-no-existe/.

Valdivia 2017
Valdivia, Mónica. 2017. "ATEA: Renovación cultural en la Merced." *NEXOS*, April 10, 2017, https://cultura.nexos.com.mx/?p=12524.

Warburg 2005
Warburg, Aby. 2005. *El renacimiento del paganismo: Aportaciones a la historia cultural del Renacimiento europeo*. Madrid: Alianza.

Bibliography

Adams and Gruen 2014
Adams, Carol J., and Lori Gruen, eds. 2014. *Ecofeminism: Feminist Intersections with Other Animals and the Earth*. New York: Bloomsbury.

Al-Doory and Domson 1984
Al-Doory, Y., and J. F. Domson. 1984. *Mould Allergy*. Philadelphia: Ed. Lea & Febiger.

Álvarez 2017
Álvarez, Raúl (Rulfo), ed. 2017. *48 Premio Montevideo de Artes Visuales 2017*. Montevideo: Centro de Exposiciones SUBTE, Intendencia de Montevideo.

Angelova et al. 2017
Angelova, Lora V., Bronwyn Ormsby, Joyce H. Townsend, and Richard Wolbers. 2017. *Gels in the Conservation of Art*. London: Archetype.

Ankersmit et al. 2011
Ankersmit, Bart, Agnes W. Brokerhof, Tatja Scholte, Simone Vermaat, and Gaby Wijers. 2011. "Installation Art Subjected to Risk Assessment: Jeffrey Shaw's Revolution as Case Study." In *Inside Installations: Theory and Practice in the Care of Complex Artworks*, edited by Tatja Scholte and Glenn Wharton, 91–101. Amsterdam: Amsterdam University Press.

Appelbaum 2007
Appelbaum, Barbara. 2007. *Conservation Treatment Methodology*. Oxford: Butterworth-Heinemann.

Bader 2017
Bader, Eva. 2017. "Die 'Barraque D'Dull Odde' 1961–67 von Joseph Beuys. Dokumentation, Oberflächenreinigung und Sicherung einer ortsspezifischen Installation im Vorfeld der Sanierung des Kaiser Wilhelm Museums in Krefeld." *ZKK Zeitschrift für Kunsttechnologie und Konservierung* 31 (2): 203–24.

Barker and Bracker 2005
Barker, Rachel, and Alison Bracker. 2005. "Beuys Is Dead: Long Live Beuys! Characterising Volition, Longevity, and Decision-Making in the Work of Joseph Beuys." *Tate Papers*, no. 4 (Autumn): https://www.tate.org.uk/research/publications/tate-papers/04/beuys-is-dead-long-live-beuys-characterising-volition-longevity-and-decision-making-in-the-work-of-joseph-beuys.

Barthes 1981
Barthes, Roland. 1981. *Camera Lucida*. Translated by Richard Howard. New York: Hill and Wang.

Baudelaire 2005
Baudelaire, Charles. 2005. *Las flores del mal*. Madrid: Cátedra.

Beccaria 2002
Beccaria, Marcella, ed. 2002. *Bruna Esposito*. Milan: Charta.

Beekens and Learner 2014
Beekens, Lydia, and Tom Learner, eds. 2014. *Conserving Outdoor Painted Sculpture*. Los Angeles: Getty Conservation Institute.

Benjamin [1935] 2006
Benjamin, Walter. (1935) 2006. *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit = The Work of Art in the Age of Mechanical Reproduction*. Frankfurt am Main: Suhrkamp.

Bennett 2010
Bennett, Jane. 2010. *Vibrant Matter*. Durham, NC: Duke University Press.

Berlinghof 2014
Berlinghof, Harald. 2014. "BLOCK BEUYS Erinnerungen von Günter Schott 1969 bis 2010 Restaurator am Hessischen Landesmuseum Darmstad." Interview by Inge Lorenz, Jan Peter Thorbecke, and Klaus-D. Pohl. Darmstadt, Germany: Hessisches Landesmuseum Darmstadt.

Bertalanffy 1949
Bertalanffy, Ludwig von. 1949. *Das biologische Weltbild. Band 1. Die Stellung des Lebens in Natur und Wissenschaft*. Bern, Switzerland: Francke. English version published as *Problems of Life: An Evaluation of Modern Biological Thought*. New York: John Wiley & Sons, 1952.

Blanchaert 2014
Blanchaert, Katrien. 2014. "Joseph Beuys – *Wirtschaftswerte* (1980)." In *Kunst in Europa na '68 = Art in Europe after '68 Ghent / 21st June–31st August 1980*, edited by S.M.A.K., 177–94. Ghent: S.M.A.K.

Botfeldt, Gelting, and Hovmand 2009
Botfeldt, K. B., U. Gelting, and I. Hovmand. 2009. "Conservation and Restoration Methods Used for Waterlogged Archaeological Leather: A Retrospective." In *Proceedings of the 10th ICOM Group on Wet Organic Archaeological Materials Conference, Amsterdam, 2007*, edited by K. Strætkvern and D. J. Huisman, 707–21. Amsterdam: Rijksdienst voor Archeologie, Cultuurlandschap en Monumenten.

Bouchard 2010
Bouchard, Gianna. 2010. "ORLAN Anatomized." In *ORLAN: A Hybrid Body of Artworks*, edited by Simon Donger, Simon Shepard, and ORLAN, 62–72. London and New York: Routledge.

Bowley 2020
Bowley, Graham. 2020. "It's a Banana. It's Art. And Now It's the Guggenheim's Problem." *New York Times*, September 18, 2020, https://www.nytimes.com/2020/09/18/arts/design/banana-art-guggenheim.html.

Brenner 2014
Brenner, Erich. 2014. "Human Body Preservation: Old and New Techniques." *Journal of Anatomy* 224 (3): 316–44. https://dx.doi.org/10.1111%2Fjoa.12160.

Burnham 1968
Burnham, Jack. 1968. *Beyond Modern Sculpture: The Effects of Science and Technology on the Sculpture of This Century*. New York: George Braziller.

Buskirk 2003
Buskirk, Martha. 2003. *The Contingent Object of Contemporary Art*. Cambridge, MA: MIT Press.

Butler 1872
Butler, Samuel. 1872. *Erewhon: or, Over the Range*. London: Trübner and Ballentyne.

Cameron et al. 1988
Cameron, Eric, Claude Gosselin, Rick Rhodes, and Ritsaert ten Cate. 1988. *Noel Harding*. Toronto: Art Gallery of Ontario.

Canosa and Norrehed 2019
Canosa, Elyse, and Sara Norrehed. 2019. *Strategies for Pollutant Monitoring in Museum Environments*. Visby, Sweden: Swedish National Heritage Board. https://www.diva-portal.org/smash/get/diva2:1324224/FULLTEXT01.pdf.

Cardullo 2005
Cardullo, Bert. 2005. *What Is Dramaturgy?* New York: Peter Lang.

Catts and Zurr 2002
Catts, Oron, and Ionat Zurr. 2002. "Growing Semi-Living Sculptures: The Tissue Culture & Art Project." *Leonardo* 35 (4): 365–70. http://www.tca.uwa.edu.au/atGlance/pubMainFrames.html.

Catts and Zurr 2003
Catts, Oron, and Ionat Zurr. 2003. "Are the Semi-Living Semi-Good or Semi-Evil?" *technoetic arts—an international journal of speculative research*, no. 1, 1–12. http://www.tca.uwa.edu.au/atGlance/pubMainFrames.html.

Catts and Zurr 2006
Catts, Oron, and Ionat Zurr. 2006. "The Tissue Culture and Art Project: The Semi-Living as Agents of Irony." In *Performance and Technology: Practices of Virtual Embodiment and Interactivity*, edited by S. Broadhurst and J. Machon, 153–68. London: Palgrave Macmillan.

Chávez 2018
Chávez, Jorge Villacorta. 2018. "A Presentation." In *Lección de cosas*. Lima: Sala Luis Miró Quesada Garland. https://www.academia.edu/36890339/Nydia_Negromonte.

Cologne Institute of Conservation Sciences and Technology Arts Sciences 2019
Cologne Institute of Conservation Sciences and Technology Arts Sciences. 2019. *The Decision-Making Model for Contemporary Art Conservation and Presentation*. Rev. ed. Cologne: Cologne Institute of Conservation Sciences and Technology Arts Sciences. https://www.th-koeln.de/en/decision-making-model-for-contemporary-art-conservation-and-presentation--revisited_63959.php.

Colombo et al. 2015
Colombo, Annalisa, Francesca Gherardi, Sara Goidanich, John Delaney, René de la Rie, Maria Ubaldi, Lucia Toniolo, and Roberto Simonutti. 2015. "Highly Transparent Poly (2-Ethyl-2-Oxazoline)-TiO2 Nanocomposite Coatings for the Conservation of Matte Painted Artworks." *RSC Adv.* 5 (October): 84879–88.

Corzo 1999
Corzo, Miguel Angel, ed. 1999. *Mortality Immortality? The Legacy of 20th-Century Art*. Los Angeles: Getty Conservation Institute.

Curtis 2007
Curtis, Penelope. 2007. "Replication: Then and Now." *Tate Papers*, no. 8 (Autumn): https://www.tate.org.uk/research/publications/tate-papers/08/replication-then-and-now.

Design Indaba 2015
Design Indaba. 2015. Interview with Teresa van Dongen, April 15, 2015. https://youtu.be/-wukvLHp6Cc.

Di Carlo et al. 2016
Di Carlo, Enza, Rosa Chisesi, Giovanna Barresi, Salvatore Barbaro, Giovanna Lombardo, Valentina Rotolo, Mauro Sebastianelli, Giovanni Travagliato, and Franco Palla. 2016. “Fungi and Bacteria in Indoor Cultural Heritage Environments: Microbial-Related Risks for Artworks and Human Health.” *Environment and Ecology Research* 4 (5): 257–64.

DiNoia 2019
DiNoia, Megan. 2019. “Decomposing Art: How Museum Professionals Treat Living Matter.” *Heritagebites*, April 15, 2019, https://heritagebites.org/2019/04/15/decomposing-art-how-museum-professionals-treat-living-matter/.

Dixon 2016
Dixon, Deborah P. 2016. *Feminist Geopolitics: Material States*. London: Routledge.

Doctors 1999
Doctors, Marcio, ed. 1999. *A forma na floresta: Espaço de instalações permanentes: Iole de Freitas, outubro, 1999: Anna Maria Maiolino, novembro, 1999.* Rio de Janeiro: Museu do Açude.

Duff 2018
Duff, Tagny. 2018. “Wastelands: A Dirty Future.” *Centre for Sustainable Practices in the Arts Quarterly* 21 (September 18, 2018): 31–35.

Eder and Palau 1985
Eder, Rita, and Marta Palau. 1985. *La intuición y la técnica*. Mexico City: Comité editorial del gobierno de Michoacán.

Esposito 2001
Esposito, Bruna. 2001. “Sereno-variabile.” *Cahiers intempestifs*, no. 13 (October–December): 32–35.

Essling and Villar Rojas 2015
Essling, Lena, and Sebastián Villar Rojas. 2015. “Fantasma Adrián Villar Rojas.” Exhibition booklet. Edited by Maria Morberg. Stockholm: Moderna Museet.

Foster 2015
Foster, Hal. 2015. *Bad New Days: Art, Criticism, Emergency.* London and New York: Verso.

Foundation for the Conservation of Modern Art and the Institute for Cultural Heritage 1999
Foundation for the Conservation of Modern Art and the Institute for Cultural Heritage. 1999. “The Decision-Making Model.” In *Modern Art: Who Cares? An Interdisciplinary Research Project and an International Symposium on the Conservation of Modern and Contemporary Art*, edited by Ijsbrand Hummelen, Dionne Sillé, and Marjan Zijlmans, 164–72. Amsterdam: Foundation for the Conservation of Modern Art.

Fredrickson 2019
Fredrickson, Laurel Jean. 2019. “Life as Art, or Art as Life: Robert Filliou and the Eternal Network.” *Theory, Culture & Society* 36 (3): 27–55.

Frisvad and Samson 2004
Frisvad, Jens C., and Robert A. Samson. 2004. “Polyphasic Taxonomy of Penicillium Subgenus Penicillium: A Guide to Identification of Food and Air-borne Terverticillate Penicillia and Their Mycotoxins.” *Studies in Mycology* 49:1–174.

Fulcanelli 1974
Fulcanelli. 1974. *El misterio de las catedrales*. Buenos Aires: Editorial rotativa.

Ganado and Herrera 1994
Ganado, Edgardo, and Carolina Herrera. 1994. “SEMEFO, Museo de Arte Carrillo Gil. Catálogo de Exposición.” Consejo Nacional para la Cultura y las Artes. Instituto Nacional de Bellas Artes. Mexico City: Museo de Arte Contemporáneo Alvar and Carmen T. de Carrillo Gil.

Gedrim 2007
Gedrim, Ronald J. 2007. “Edward Steichen’s 1936 Exhibition of Delphinium Blooms: An Art of Flower Breeding.” In *Signs of Life: BioArt and Beyond*, edited by Eduardo Kac, 347–69. Cambridge, MA: MIT Press. First published in *History of Photography* 17, no. 4 (1993): 352–63.

Gessert 1993
Gessert, George. 1993. *Scatter*. Eugene, OR: Green Light.

Gessert 2003
Gessert, George. 2003. “Notes sur l’art de la sélection végétale.” In *L’art biotech*, edited by Jens Hauser, 47–55. Nantes, France, and Trézélan, France: Filigranes.

Giachi et al. 2010
Giachi, Gianna, Chiara Capretti, Nicola Macchioni, Benedetto Pizzo, and Ines Dorina Donato. 2010. “A Methodological Approach in the Evaluation of the Efficacy of Treatments for the Dimensional Stabilisation of Waterlogged Archaeological Wood.” *CULHER Journal of Cultural Heritage* 11 (1): 91–101.

Gilman 2015
Gilman, Julie. 2015. “The Role of Science in Contemporary Art Conservation: A Study into the Conservation and Presentation of Food-Based Art.” PhD diss., Ghent University Faculty of Arts and Philosophy.

Giménez Gatto 1999
Giménez Gatto, Fabián. 1999. “Obscenidad a la mexicana: Los juegos transestéticos de Rocío Boliver (I y II),” *H Enciclopedia*, http://www.henciclopedia.org.uy/autores/FGimenez/Obscenidad1.htm, http://www.henciclopedia.org.uy/autores/FGimenez/Obscenidad2.htm.

Gioni 2019
Gioni, Massimiliano, ed. 2019. *Appearance Stripped Bare: Desire and the Object in the Work of Marcel Duchamp and Jeff Koons, Even*. London: Phaidon.

González 2018
González, María Luisa. 2018. “La transubstanciación. El performance en el performance. Un abordaje a La perforMANcena, ‘North America Cholesterol Free Trade Agreement’ (1999) in César Martínez Silva.” In *Aproximaciones interpretativas multidisciplinarias en torno al arte y la cultura*, edited by Raúl Wenceslao Capistrán Gracia, 135–45. Aguascalientes, Mexico: Universidad Autónoma de Aguascalientes.

Graeber 2014
Graeber, David. 2014. “Spotlight on the Financial Sector: Did Make Apparent Just How Bizarrely Skewed Our Economy Is in Terms of Who Gets Rewarded [interview with Thomas Frank].” *Salon*, June 1, 2014, https://www.salon.com/2014/06/01/help_us_thomas_piketty_the_1s_sick_and_twisted_new_scheme/.

Grantz 1969
Grantz, Gerald J. 1969. *Home Book of Taxidermy and Tanning*. Harrisburg, PA: Stackpole.

Gregory et al. 2017
Gregory, David, Yvonne Shashoua, Nanna Braunschweig Hansen, and Paul Jensen. 2017. “Anyone for a Nice Cup of Tea? The Use of Bacterial Cellulose for Conservation of Waterlogged Archaeological Wood.” In *ICOM-CC 18th Triennial Conference, 2017, Copenhagen*, edited by J. Bridgland. Paris: International Council of Museums. https://pure.kb.dk/en/publications/anyone-for-a-nice-cup-of-tea-the-use-of-bacterial-cellulose-for-c.

Guasch 2011
Guasch, Anna María. 2011. *Arte y archivo. Genealogías, tipologías y discontinuidades*. Madrid: Akal.

Harren 2015
Harren, Natilee. 2015. “The Crux of Fluxus: Intermedia, Rear-guard.” Walker Art Center, http://walkerart.org/collections/publications/art-expanded/crux-of-fluxus.

Harren 2016
Harren, Natilee. 2016. “The Provisional Work of Art: George Brecht’s Footnotes at LACMA, 1969.” *Getty Research Journal*, no. 8, 177–97.

Harren 2020
Harren, Natilee. 2020. *Fluxus Forms: Scores, Multiples, and the Eternal Network*. Chicago: University of Chicago Press.

Hauser and Strecker 2020
Hauser, Jens, and Lucie Strecker, eds. 2020. “On Microperformativity.” *Performance Research: A Journal of the Performing Arts* 25 (3): https://www.tandfonline.com/doi/full/10.1080/13528165.2020.1807739.

Hauser 2006
Hauser, Jens. 2006. “Biotechnology as Mediality: Strategies of Organic Media Art.” *Performance Research: A Journal of the Performing Arts* 11 (4): 129–36.

Hauser 2008
Hauser, Jens. 2008. “Observations on an Art of Growing Interest: Toward a Phenomenological Approach to Art Involving Biotechnology.” In *Tactical Biopolitics: Art, Activism, and Technoscience*, edited by Beatriz Da Costa and Kavita Philip, 83–103. Cambridge, MA: MIT Press.

Hauser 2010
Hauser, Jens. 2010. “Sculpted by the Milieu: Frogs as Media.” In *Praeter Naturam. Brandon Ballengée*, edited by Claudio Cravero, 38–41. Turin, Italy, and Biella, Italy: Eventi & Progetti Editor.

Hauser 2014a
Hauser, Jens. 2014a. “Biotechnologie als Medialität – Strategien organischer Medienkunst.” PhD diss., Ruhr Universität Bochum.

Hauser 2014b
Hauser, Jens. 2014b. “Molekulartheater, Mikroperformativität und Plantamorphisierungen.” In *Wahrnehmung, Erfahrung, Experiment. Wissen, Objektivität und Subjektivität in den Künsten und den Wissenschaften*, edited by Susanne Stemmler, 173–89. Zurich: Diaphanes.

Hauser 2016
Hauser, Jens. 2016. “Biomediality and Art.” In *Artists-in-Labs: Recomposing Art and Science*, edited by Jill Scott and Irene Hediger, 201–19. Berlin: Springer.

Hauser 2018
Hauser, Jens. 2018. “Art and Agency in Times of Wetware.” *Stream* 4: https://www.pca-stream.com/en/articles/jens-hauser-art-agency-in-times-of-wetware-107.

Henaro et al. 2019
Henaro, Sol, Alejandra Moreno, Christian Aravena, and Brian Smith. 2019. *Arte-acción en México. Registros y residuos*. Mexico City: MUAC-UNAM.

Hernández, Yasky, and Learner 2017
Hernández, Claudio, Caroll Yasky, and Tom Learner. 2017. “The Conservation of Modern and Contemporary Art in Latin America: Recent Approaches in Chile and Mexico.” *Conservation Perspectives: The GCI Newsletter* 32, no. 2 (Fall): https://www.getty.edu/conservation/publications_resources/newsletters/32_2/feature.html.

Heuman 1999
Heuman, Jackie, ed. 1999. *Material Matters: The Conservation of Modern Sculpture*. London: Tate Gallery Publishing.

Hickey and Pelling 2019
Hickey, R. J., and A. E. Pelling. 2019. “Cellulose Biomaterials for Tissue Engineering.” *Front. Bioeng. Biotechnol.* 7 (45): https://www.frontiersin.org/articles/10.3389/fbioe.2019.00045/full.

Higgins 2011
Higgins, Hannah. 2011. “Food: The Raw and the Fluxed.” In *Fluxus and the Essential Questions of Life*, edited by Jacquelynn Baas, 13–21. Hanover, MA: Hood Museum of Art.

Hillis 2016
Hillis, Danny. 2016. “The Enlightenment Is Dead, Long Live the Entanglement.” *Journal of Design and Science*: https://doi.org/10.21428/1a042043.

Hoet and De Baere 1990
Hoet, Jan, and Bart De Baere. 1990. “Ekonomische Waarden.” In *Joseph Beuys – Das Wirtschaftswertprinzip*, edited by Klaus Staeck and Gerhard Steidl, 21–25. Heidelberg, Germany: Edition Staeck.

Hölling 2015
Hölling, Hanna. 2015. *Revisions—Zen for Film*. New York: Bard Graduate Center.

Hölling 2017
Hölling, Hanna. 2017. *Paik’s Virtual Archive: Time, Change, and Materiality in Media Art.* Oakland: University of California Press.

Hollricher, Schmidt, and Breuninger 2014
Hollricher, Olaf, Ute Schmidt, and Sonja Breuninger. 2014. “RISE Microscopy: Correlative Raman and SEM Imaging.” *Microscopy Today* 22 (November): 36–39. https://doi.org/10.1017/S1551929514001175.

Hummelen 1999
Hummelen, IJsbrand. 1999. “Decision-Making Model for the Conservation and Restoration of Modern Art.” In *Modern Art: Who Cares? An Interdisciplinary Research Project and an International Symposium on the Conservation of Modern and Contemporary Art*, edited by IJsbrand Hummelen, Dionne Sillé, and Marjan Zijlmans, 4–18. Amsterdam: Foundation for the Conservation of Modern Art.

Hummelen, Sillé, and Zijlmans 1999
Hummelen, IJsbrand, Dionne Sillé, and Marjan Zijlmans, eds. 1999. *Modern Art: Who Cares? An Interdisciplinary Research Project and an International Symposium on the Conservation of Modern and Contemporary Art*. Amsterdam: Foundation for the Conservation of Modern Art.

Hunter 2019
Hunter, WhiteFeather. 2019. “Culturing Creativity, and a Little Bit of Shit-Stirring.” *Musings* 2019:2–10. https://www.academia.edu/41620679/Culturing_Creativity_and_a_little_bit_of_shit_stirring.

ICOM 2006
International Council of Museums (ICOM). 2006. *ICOM Code of Ethics for Museums*. Paris: ICOM.

ICOM 2013
International Council of Museums (ICOM). 2013. *ICOM Code of Ethics for Natural History Museums*. Paris: ICOM.

Ippolito and Rinehart 2014
Ippolito, John, and Richard Rinehart. 2014. *Re-collection: Art, New Media, and Social Memory*. Cambridge, MA: MIT Press.

Ito 2016
Ito, Joichi. 2016. “Design and Science.” *Journal of Design and Science*: https://doi.org/10.21428/f4c68887.

Joselit 2013
Joselit, David. 2013. “The Readymade Metabolized: Fluxus in Life.” *RES: Anthropology and Aesthetics*, nos. 63/64, 190–200.

Kallergi 2008
Kallergi, Amalia. 2008. “Bioart on Display: Challenges and Opportunities of Exhibiting Bioart.” Leiden, the Netherlands: Leiden University. https://www.researchgate.net/publication/266333742_Bioart_on_Display-_challenges_and_opportunities_of_exhibiting_bioart.

Kaplan 2017
Kaplan, Isaac. 2017. “When Is It Okay to Use Animals in Art?” *Artsy*, May 11, 2017, https://www.artsy.net/article/artsy-editorial-animals-art.

Kautz 2015
Kautz, Willy, ed. 2015. *Lo que no vemos, lo que nos mira.* Mexico City: Museo Amparo.

Keshk 2008
Keshk, Sherif M. A. S. 2008. “Homogenous Reactions of Cellulose from Different Natural Sources.” *Carbohydrate Polymers* 74 (4): 942–45.

Khandekar 2016
Khandekar, Narayan. 2016. “Inherent Vice and the Ship of Theseus.” In *Doris Salcedo: The Materiality of Mourning*, edited by Mary Schneider Enriquez, Doris Salcedo, and Narayan Khandekar, 141–52. New Haven, CT: Yale University Press.

Kite and Thomson 2006
Kite, Marion, and Roy Thomson. 2006. *Conservation of Leather and Related Materials*. Boston: Elsevier Butterworth-Heinemann.

Knoeff and Zwijnenberg 2016
Knoeff, Rina, and Robert Zwijnenberg, eds. 2015. “The Fate of Anatomical Collections.” Special issue, *Social History of Medicine* 29 (4).

Knowles 1971
Knowles, Alison. 1971. *Journal of the Identical Lunch*. San Francisco: Nova Broadcast.

Kuhn 1962
Kuhn, Thomas. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Kundera 1974
Kundera, Milan. 1974. *Life Is Elsewhere*. Translated by Peter Kussi. New York: Alfred A. Knopf.

La Brooy et al. 1981
La Brooy, Susan J., Fendick Avgerinos, C. B. Williams, and J. J. Misiewicz. 1981. “Potentially Explosive Colonic Concentrations of Hydrogen after Bowel Preparation with Mannitol.” *The Lancet* 317, no. 8221 (March): 634–36.

Latour 1996
Latour, Bruno. 1996. “On Actor-Network Theory: A Few Clarifications Plus More Than a Few Complications.” *Socziale Welt* 47:369–81. http://www.bruno-latour.fr/sites/default/files/P-67%20ACTOR-NETWORK.pdf.

Laurenson 2006
Laurenson, Pip. 2006. “Authenticity, Change and Loss in the Conservation of Time-Based Media Installations.” *Tate Papers*, no. 6 (Autumn): https://www.tate.org.uk/research/publications/tate-papers/06/authenticity-change-and-loss-conservation-of-time-based-media-installations.

Leach 2017
Leach, Neil. 2017. “Matter Matters, a Philosophical Preface.” In *Active Matter*, edited by Skylar Tibbits, 18–23. Cambridge, MA: MIT Press.

Learner and Rivenc 2014
Learner, Tom, and Rachel Rivenc. 2014. *Conserving Outdoor Painted Sculpture: Proceedings from the Interim Meeting of the Modern Materials and Contemporary Art Working Group of ICOM-CC*. Los Angeles: Getty Conservation Institute.

Lee 2011
Lee, Susan. 2011. “Grow Your Own Clothes.” TED Talk, March 2011. https://www.ted.com/talks/suzanne_lee_grow_your_own_clothes.

Levin 2012
Levin, Jeffrey, ed. 2012. “Conservation of Public Art.” Special issue, *Conservation Perspectives: The GCI Newsletter* 27 (2): https://www.getty.edu/conservation/publications_resources/newsletters/pdf/v27n2.pdf.

Lippard 1973
Lippard, Lucy R. 1973. *Six Years: The Dematerialization of the Art Object from 1966 to 1972*. New York: Praeger.

Lipps et al. 2019
Lipps, Andrea, Matilda McQuaid, Caitlin Condell, and Gene Bertrand. 2019. *Nature: Collaborations in Design.* New York: Cooper Hewitt, Smithsonian Design Museum.

Llamas-Pacheco 2018
Llamas-Pacheco, Rosario. 2018. “The Ephemeral, the Essential and the Material in the Conservation of Contemporary Art: Decision-Making for the Conservation of a Work of Art Made with Butterfly Wings.” *Studies in Conservation* 63, no. 8 (July): 441–49.

López Guzmán 2010
López Guzmán, Javier. 2010. “Informe de los trabajos de conservación sobre la obra: Lavatio Corporis / Grupo SEMEFO.” Seminario Taller de Restauración Arte Moderno y Contemporáneo. Temporada de trabajo agosto-diciembre 2010. Unpublished.

Macedo and Henriques da Silva 2010
Macedo, Rita, and Raquel Henriques da Silva, eds. 2010. *A arte efímera e a conservação: O paradigma dos bens etnográficos e da arte contemporânea = Ephemeral Art and Conservation: The Paradigm of Contemporary Art and Ethnographic Objects.* Lisbon: Instituto de História da Arte, IHA FCT-UNL. https://run.unl.pt/bitstream/10362/16429/1/Livro_Actas_Completo.pdf.

MALBA 2012
MALBA. 2012. “Víctor Grippo: Homenaje.” https://malba.org.ar/evento/victor-grippo-homenaje/.

Manrique 1978
Manrique, Jorge Alberto. 1978. *30 escultoras en materiales textiles*. Mexico City: Museo de Arte Moderno, INBA.

Martinez and de Corral 2005
Martinez, Rosa, and Maria de Corral, eds. 2005. *La Biennale di Venezia. 51a International Art Exhibition. Always a Little Further*. Venice: Marsilio – Fondazione La Biennale di Venezia.

Martínez Silva 2013
Martínez Silva, César. 2013. “Permanencia en el tiempo de esculturas hinchables realizadas con hule látex vulcanizado, mecanismos de aire y sensores electrónicos; La conservación del futuro.” Presentation at the 14th Jornada de Conservación de Arte Contemporáneo, Museo Nacional Centro de Arte Reina Sofía, Madrid.

Mata and Coronado 2018
Mata, Lizeth, and Claudia Coronado. 2018. *Diagnóstico de conservación y propuesta de estabilización de la obra Encobijados, de Teresa Margolles*. Mexico City: Seminario Taller de Restauración de Arte Moderno y Contemporáneo, ENCRyM-INAH.

Matheron 2019
Matheron, Aurelie. 2019. “Performing Waste, Wasting Performance: The Ecology of Fluxus.” *Resilience: A Journal of the Environmental Humanities* 6 (1): 102–17.

Maximiliano Tello 2015
Maximiliano Tello, Andrés. 2015. “El arte y la subversión del archivo.” *Aisthesis*, no. 58, 125–43. http://dx.doi.org/10.4067/S0718-71812015000200007.

McCabe 2001
McCabe, Terry. 2001. *Mis-directing the Play: An Argument against Contemporary Theatre.* Chicago: Ivan R.Dee.

McNally and Hsu 2012
McNally, Rika Smith, and Lillian Hsu. 2012. “Conservation of Contemporary Public Art.” *Conservation Perspectives: The GCI Newsletter* 27 (2): 4–9.

Medina 2006
Medina, Cuauhtémoc. 2006. “Escultura suave, disidencia suave.” In *Marta Palau. Nahualli*, edited by Virginia Ruano. Mexico City: CONACULTA, Gobierno del estado de Michoacán, UNAM, Centro Cultural Tijuana, and BBVA Bancomer.

Medina 2017
Medina, Cuauhtémoc. 2017. *Abuso mutuo: Ensayos e intervenciones sobre arte postmexicano (1992–2013)*. Mexico City: Editorial RM.

Meléndez and Mata Delgado 2012
Meléndez, Darío, and Ana Lizeth Mata Delgado. 2012. "Tilma Porca." In *Memorias del 5º Foro Académico*, edited by ENCRyM, 33–40. Mexico City: ENCRyM-INAH. https://www.repositoriodepublicaciones.encrym.edu.mx/pdf/4-TilmaPorca.pdf.

Merleau-Ponty 2007
Merleau-Ponty, Maurice. 2007. "An Unpublished Text by Maurice Merleau-Ponty: A Prospectus of His Work," translated by Arleen B. Dalery. In *The Merleau-Ponty Reader*, edited by Ted Toadvine and Leonard Lawler, 285. Evanston, IL: Northwestern University Press.

Michalski and Pedersoli 2016
Michalski, Stefan, and José Luiz Pedersoli Jr. 2016. *The ABC Method: A Risk Management Approach to the Preservation of Cultural Heritage*. Ottawa: Government of Canada, Canadian Conservation Institute, and ICCROM.

Michalski 2006
Michalski, Stefan. 2006. "Conservation Lessons from Other Types of Museums and a Universal Database for Collection Preservation." In *Modern Art: Who Cares? An Interdisciplinary Research Project and an International Symposium on the Conservation of Modern and Contemporary Art*, edited by IJsbrand Hummelen, Dionne Sillé, and Marjan Zijlmans, 290–95. Amsterdam: Foundation for the Conservation of Modern Art.

Modulevsky, Cuerrier, and Pelling 2016
Modulevsky, D. J., C. M. Cuerrier, and A. E. Pelling. 2016. "Biocompatibility of Subcutaneously Implanted Plant-Derived Cellulose Biomaterials." *PloS one* 11 (6): e0157894. https://doi.org/10.1371/journal.pone.0157894.

Moody, Kavaliunas, and Kuo 2019
Moody, Ellen, Lina Kavaliunas, and Michelle Kuo. 2019. "Strange Brew." *MoMA Magazine*, May 9, 2019, https://www.moma.org/magazine/articles/51.

Museum of Modern Art 1936
Museum of Modern Art. 1936. "Press Release: Steichen Delphiniums." June 22, 1936. New York: Museum of Modern Art. https://assets.moma.org/documents/moma_press-release_325057.pdf.

Negromonte 2016
Negromonte, Nydia, ed. 2016. *D.U.C.T.O: Nydia Negromonte.* Belo Horizonte, Brazil: Autêntica.

Novero 2010
Novero, Cecilia. 2010. *Antidiets of the Avant-Garde: From Futurist Cooking to Eat Art.* Minneapolis: University of Minnesota Press.

ORLAN 1998
ORLAN. 1998. "Intervention" (1995). In *The Ends of Performance*, edited by Peggy Phelan and Jill Lane, 315–27. New York: New York University Press.

ORLAN 2010
ORLAN. 2010. "The Poetics and Politics of the Face-To-Face." In *ORLAN: A Hybrid Body of Artworks*, edited by Simon Donger, Simon Shepard, and ORLAN, 103–18. London and New York: Routledge.

Ortega Espinoza 2014
Ortega Espinoza, Daniela. 2014. *Informe de los trabajos de restauración de la obra "Mis Caminos son Terrestres XVII" de Marta Palau*. Mexico City: Seminario Taller de Restauración de Arte Moderno y Contemporáneo, ENCRyM-INAH.

Patlán 2010
Patlán, Lorena. 2010. "Career Profile: Albrecht Gumlich, Objects Conservator." *Iris: Behind the Scenes at the Getty*, November 24, 2010, http://blogs.getty.edu/iris/career-profile-albrecht-gumlich-objects-conservator/.

Pietromarchi 2017
Pietromarchi, Bartolomeo, ed. 2017. *Bruna Esposito. E così sia . . . /Amen*. Imola, Italy: Manfredi Editore.

Pitt and Samson 2000
Pitt, J. I., and R. A. Samson. 2000. *Integration of Modern Taxonomic Methods for Penicillium and Aspergillus*. Amsterdam: CRC Press.

Pullen and Heuman 2007
Pullen, Derek, and Jackie Heuman. 2007. "Modern and Contemporary Outdoor Sculpture Conservation: Challenges and Advances." *Conservation Perspectives: The GCI Newsletter* 22 (2): https://www.getty.edu/conservation/publications_resources/newsletters/22_2/feature.html.

Quigley 2015
Quigley, Christine. 2015. *Modern Mummies: The Preservation of the Human Body in the Twentieth Century*. Jefferson, NC: McFarland.

Quinn 2007
Quinn, Marc. 2007. "Genomic Portrait." In *Signs of Life: Bio Art and Beyond*, edited by Eduardo Kac, 309–11. Cambridge, MA: MIT Press.

Rebolledo et al. 2019
Rebolledo, Karla, et al. 2019. "Incontenible: Entre la creación artística y la conservación." *Estudios sobre conservación, restauración y museología* 5:157–70. https://www.repositoriodepublicaciones.encrym.edu.mx/pdf/13%20incontenible_corregido2019.pdf.

Reed and Phillips 2018
Reed, Marcia, and Glenn Phillips, eds. 2018. *Artists and Their Books / Books and Their Artists*. Los Angeles: Getty Research Institute.

Rinehart and Ippolito 2014
Rinehart, Richard, and Jon Ippolito. 2014. *Re-Collection: Art, New Media, and Social Memory.* Cambridge, MA: MIT Press.

Robinson 2004
Robinson, Julia. 2004. "The Sculpture of Indeterminacy: Alison Knowles's Beans and Variations." *Art Journal* 63 (4): 96–115.

Rolnik 2002
Rolnik, Suely. 2002. "Flowerings of Reality." In *Anna Maria Maiolino: Vida afora = A Lifeline*, edited by Catherine de Zegher and Paço Imperial, 110–11. São Paulo: Museu de Arte Moderna de São Paulo; New York: Drawing Center.

Roth 1967–68
Roth, Dieter. 1967–68. *Poeterei 3/4: Doppelnummer der Halfjahresschrift für Poesie und Poetrie*. Stuttgart, Germany: Edition H. Mayer.

Salabert 2004
Salabert, Pere. 2004. *La redención de la carne, hastío del alma y elogio de la pudrición.* Murcia, Spain: Editorial Centro de Documentación y Estudios Avanzados del Arte Contemporáneo (CENDEAC).

Salter 2010
Salter, Chris. 2010. *Entangled: Technology and the Transformation of Performance*. Cambridge, MA: MIT Press.

Samson et al. 1995
Samson, R., F. Ribera, V. Sanchis, and R. Canela. 1995. *Introduction to Food-Borne Fungi*. Baarn, the Netherlands: Central Bureau for Schimmel Cultures.

Sánchez 2013
Sánchez, Sandra. 2013. "La historia no existe (cuatro artistas bordeando los hechos)." GASTV, n.d., https://gastv.mx/la-historia-no-existe/.

Santos et al. 2016a
Santos, Sara M., José M. Carbajo, Nuria Gómez, Ester Quintana, Miguel Ladero, Arsenio Sánchez, Gary Chinga-Carrasco, and Juan C. Villar. 2016a. "Use of Bacterial Cellulose in Degraded Paper Restoration. Part I: Application on Model Papers." *Journal of Materials Science* 51 (3): 1541–52. https://doi.org/10.1007/s10853-015-9476-0.

Santos et al. 2016b
Santos, Sara M., José M. Carbajo, Nuria Gómez, Ester Quintana, Miguel Ladero, Arsenio Sánchez, Gary Chinga-Carrasco, and Juan C. Villar. 2016b. "Use of Bacterial Cellulose in Degraded Paper Restoration. Part II: Application on Real Samples." *Journal of Materials Science* 51 (3): 1553–61.

Sayes 2014
Sayes, Edwin. 2014. "Actor-Network Theory and Methodology: Just What Does It Mean to Say That Nonhumans Have Agency?" *Social Studies of Science* 44 (1): 134–49.

Schmidt, Ayasse, and Hollricher 2016
Schmidt, Ute, Philippe Ayasse, and Olaf Hollricher. 2016. "RISE Microscopy: Correlative Raman and SEM Imaging." In *European Microscopy Congress 2016: Proceedings*, 1023–24. Wiley Online Library.

Schneider Enriquez 2016
Schneider Enriquez, Mary. 2016. "Organic and Ephemeral: Salcedo's Recent Material Challenges." In *Doris Salcedo: The Materiality of Mourning*, edited by Mary Schneider Enriquez, Doris Salcedo, and Narayan Khandekar, 119–39. New Haven, CT: Yale University Press.

Scholte and Wharton 2011
Scholte, Tatja, and Glenn Wharton, eds. 2011. *Inside Installations: Theory and Practice in the Care of Complex Artworks*. Amsterdam: Amsterdam University Press.

Schultz n.d.
Schultz, Michael. n.d. "Sonja Alhäuser." https://www.schultzberlin.com/de/sonja-alh%C3%A4user.

Sehn 2013
Sehn, Magali Melleu. 2013. "El problema de la conservación de arte contemporáneo en el contexto de los préstamos a largo plazo," 87–94. Conservación de arte contemporáneo 14. Madrid: Museo Nacional Centro de Arte Reina Sofía.

Sehn 2014
Sehn, Magali Melleu. 2014. *Entre resíduos e dominós: Preservação de instalações de arte no Brasil*. Belo Horizonte, Brazil: C/ARTE.

Self 2009
Self, Will. 2009. "Bring Me the Head of Marc Quinn!" http://marcquinn.com/assets/downloads/Bring_me_the_Head_of_Marc_Quinn_Will_Self_FULL.pdf.

Serexhe 2013
Serexhe, Bernhard, ed. 2013. *Preservation of Digital Art: Theory and Practice: The Digital Art Conservation Project.* Vienna: Ambra V.

Skloot 2010
Skloot, Rebecca. 2010. *The Immortal Life of Henrietta Lacks*. New York: Crown.

Spindler et al. 1996
Spindler, Konrad, Herald Wilfing, Elisabeth Rastbichler-Zissernig, Dieter ZurNedden, and Hans Nothdurfter, eds. 1996. *Human Mummies: A Global Survey of Their Status and the Techniques of Conservation*. New York: Springer Science and Business Media.

Subrizi 2012
Subrizi, Carla. 2012. *Azioni che cambiano il mondo. Donne, arte e politiche dello sguardo*. Piacenza, Italy: Postemedia Books.

Susovski 1978
Susovski, Marijan, ed. 1978. *Nova umjetničkapraksa 1966–1978*. Zagreb: Galerija suvremene umjetnosti [Gallery of Contemporary Art].

Suzuki 2013
Suzuki, Sarah. 2013. *Wait, Later This Will Be Nothing: Editions by Dieter Roth*. New York: Museum of Modern Art.

Taddei 2009
Taddei, Jean-François. 2009. *Les Perméables = The Permeables.* Paris: MeMo.

Takita 2008
Takita, Jun. 2008. "Light, only light." In *sk-interfaces. Exploding Borders: Creating Membranes in Art, Technology and Society*, edited by Jens Hauser, 141–43. Liverpool, UK: Liverpool University Press.

Tarnowski and Morris 2001
Tarnowski, C. P., and M. D. Morris. 2001. "Raman Spectroscopy and Microscopy." In *Encyclopedia of Materials: Science and Technology*, edited by K. H. Jürgen Buschow, Robert W. Cahn, Merton C. Flemings, Bernhard Ilschner, Edward J. Kramer, Subhash Mahajan, and Patrick Veyssière, 7976–83. Oxford: Elsevier.

Temkin 1999
Temkin, Ann. 1999. "Strange Fruit." In *Mortality Immortality? The Legacy of 20th-Century Art*, edited by Miguel Angel Corzo, 45–50. Los Angeles: Getty Conservation Institute.

***The Economist* 2009**
The Economist. 2009. "Planned Obsolescence." March 23, 2009, https://www.economist.com/news/2009/03/23/planned-obsolescence.

Thickett and Lee 2004
Thickett, D., and L. R. Lee. 2004. "Selection of Materials for the Storage or Display of Museum Objects." British Museum Occasional Paper 111. London: British Museum.

Tibbits 2017
Tibbits, Skylar, ed. 2017. *Active Matter*. Cambridge, MA: MIT Press.

Tijardović 1978
Tijardović, Jasna. 1978. "Marina Abramović, Slobodan Milivojević, Neša Paripović, Zoran Popović, Raša Todosijević, Gergelj Urkom." In *Nova umjetničkapraksa 1966–1978*, edited by Marijan Susovski, 55–59. Zagreb: Galerija suvremene umjetnosti [Gallery of Contemporary Art].

Tsing 2015
Tsing, Anna Lowenhaupt. 2015. *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton, NJ: Princeton University Press.

Tsing et al. 2017
Tsing, Anna Lowenhaupt, Heather Swanson, Elaine Gan, and Nils Bubandt, eds. 2017. *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*. Minneapolis: University of Minnesota Press.

Vahur et al. 2016
Vahur, Signe, Anu Teearu, Pilleriin Peets, Lauri Joosu, and Ivo Leito. 2016. "ATR-FT-IR Spectral Collection of Conservation Materials in the Extended Region of 4000-80 Cm^{-1}." *Analytical and Bioanalytical Chemistry* 408 (13): 3373–79.

Valdivia 2017
Valdivia, Mónica. 2017. "ATEA: Renovación cultural en la Merced." *NEXOS*, April 10, 2017, https://cultura.nexos.com.mx/?p=12524.

Valentín, Muro, and Montero 2010
Valentín, N., C. Muro, and J. Montero. 2010. "Métodos y técnicas para evaluar la calidad del aire en museos: Museo Nacional Centro de Arte Reina Sofía," edited by CARS – IIC Grupo Español, 63–81. Madrid: Museo Nacional Centro de Arte Reina Sofía. https://www.museoreinasofia.es/sites/default/files/actividades/programas/metodos_y_tecnicas_restauracion.pdf.

Valentin 2010
Valentin, Nieves. 2010. "Microorganisms in Museum Collections." *Coalition*, no. 19 (January): 2–5. http://www.rtphc.csic.es/issues/19_01.pdf.

van Dongen 2019
van Dongen, Teresa. 2019. "Electric Life." http://www.teresavandongen.com/Electric-Life.

van Saaze 2011
van Saaze, Vivian. 2011. "Acknowledging Differences: A Manifold of Museum Practices." In *Inside Installations: Theory and Practice in the Care of Complex Artworks*, edited by Tatja Scholte and Glenn Wharton, 249–55. Amsterdam: Amsterdam University Press.

van Saaze 2013
van Saaze, Vivian. 2013. *Installation Art and the Museum: Presentation and Conservation of Changing Artworks*. Amsterdam: Amsterdam University Press.

Verbeeck 2016
Verbeeck, Muriel. 2016. "There Is Nothing More Practical Than a Good Theory: Conceptual Tools for Conservation Practice." *Studies in Conservation* 61, supplement 2: 233–40.

Verhoeven 2019
Verhoeven, Thibaut. 2019. "Joseph Beuys – *Wirtschaftswerte* (1980)." In *S.M.A.K. De Collectie A–Z*, edited by S.M.A.K., 149. Ghent: S.M.A.K.

Villar Rojas 2014
Villar Rojas, Adrián. 2014. Filmed interview by Jordan Bahat at kurimanzutto, Mexico City. https://www.youtube.com/watch?app=desktop&v=qJEE-yNCHQM.

Villar Rojas 2015
Villar Rojas, Adrián. 2015. Filmed interview by Lena Essling, Moderna Museet, Stockholm. https://youtu.be/g6yv6qKJjG4.

Villar Rojas 2017
Villar Rojas, Adrián. 2017. Filmed interview by Elina Kountouri, Neon, Athens, June 3, 2017. https://player.vimeo.com/video/224171178.

Villar Rojas 2018
Villar Rojas, Adrián. 2018. "In the Studio: Adrián Villar Rojas." Interview by Gabriel Roland. *Collectors Agenda*, August 20, 2018, https://www.collectorsagenda.com/en/in-the-studio/adrian-villar-rojas.

Voellinger and Wagner 2009
Voellinger, T., and S. Wagner. 2009. "Cold Storage for Photograph Collections: Vapor-Proof Packaging." *Conserve O Gram*, no. 14/12: 2–5.

Warburg 2005
Warburg, Aby. 2005. *El renacimiento del paganismo: Aportaciones a la historia cultural del Renacimiento europeo*. Madrid: Alianza.

Warren 1997
Warren, Karen J., ed. 1997. *Ecofeminism: Women, Culture, Nature*. Bloomington: Indiana University Press.

Wharton and Molotch 2009
Wharton, Glenn, and Harvey Molotch. 2009. "The Challenge of Installation Art." In *Conservation: Principles, Dilemmas and Uncomfortable Truths*, edited by Alison Bracker and Alison Richmond, 210–22. London: Elsevier.

Wharton et al. 2016
Wharton, Glenn, et al. 2016. "The Artist Archives Project: David Wojnarowicz." In *Saving the Now: Crossing Boundaries to Conserve Art Works*, edited by Austin Nevin et al., 241–47. Los Angeles and London: Studies in Conservation (IIC).

Wittgenstein 1953
Wittgenstein, Ludwig. 1953. *Philosophical Investigations*. New York: Macmillan.

Woods 2014
Woods, Nicole L. 2014. "Taste Economies: Alison Knowles, Gordon Matta-Clark and the Intersection of Food, Time and Performance." *Performance Research: A Journal of the Performing Arts* 19 (3): 157–61.

Yap 2009
Yap, Chin-Chin. 2009. "Murder at MoMA?" *ArtAsiaPacific* 62:49–50.

Young 1969
Young, Dennis. 1969. *New Alchemy: Elements, Systems, Forces = Nouvelle alchimie: Eléments, systèmes, forces: Hans Haacke, John Van Saun, Charles Ross, Takis*. Toronto: Art Gallery of Ontario.

Zevi 2005
Zevi, Adachiara. 2005. *Peripezie del dopoguerra nell'arte italiana*. Turin, Italy: Einaudi.

Zurr and Catts 2002
Zurr, Ionat, and Oron Catts. 2002. "An Emergence of the Semi-Living." In *The Aesthetics of Care?*, edited by Oron Catts, 63–68. Nedlands, Australia: Symbiotica.

Zylinska 2002
Zylinska, Joanna, ed. 2002. *The Cyborg Experiments: The Extensions of the Body in the Media Age*. London: Continuum.

Contributors

Silvana Alborés
Silvana Alborés holds a bachelor's degree in biochemistry, a master's degree in biotechnology, and a doctorate in chemistry. She has worked in the field of microbiology since 1999. She is currently a full-time adjunct professor in microbiology at the Universidad de la República, Uruguay, carrying out teaching, outreach, management, and research activities, and responsible for tracks related to researching new antimicrobials and nanotechnology. She is a researcher for PEDECIBA (Basic Science Development Program) and the National Network of Researchers (ANII / National Agency for Research and Innovation).

Camilla Ayla Oliveira dos Anjos
Camilla Ayla Oliveira dos Anjos holds a bachelor's degree in conservation and restoration of cultural heritage from the Universidade Federal de Minas Gerais, Brazil. She first worked with conservation and restoration of Baroque and classical art, but became more interested in the conservation of modern materials and art concepts after her first contact with contemporary art. In 2019 she concluded her master's in preservation of cultural heritage at the Graduate Art Program from the Fine Arts School in the Universidade Federal de Minas Gerais with the dissertation "Outdoors Installations and Their Connections with Their Surroundings: Reflections on Preservation." The same year, she specialized in contemporary art at the Universidade Estadual de Minas Gerais. The case study discussed in her article in this volume is the result of her master's research.

Ivana Bačić
Ivana Bačić is a forensics expert for fire and explosions at the Forensic Science Centre "Ivan Vučetić" of the Ministry of the Interior of the Republic of Croatia. She received a doctoral degree in chemistry in 2016 in the field of nanomaterials and corrosion protection of stainless steel. Her work involves numerous spectroscopic, chromatographic, and elemental analysis methods.

Sarah Barack
Sarah Barack studied art history and art conservation at the Conservation Center, Institute of Fine Arts, at New York University; she also holds an MBA from Columbia Business School. Barack recently joined the Cooper Hewitt, Smithsonian Design Museum in Washington, DC, as head of conservation and senior objects conservator. She is also the current treasurer of the boards of the American Institute for Conservation and the Foundation for Advancement in Conservation.

Claudia Barra
Claudia Barra holds a degree in pharmaceutical chemistry from the Universidad de la República, Uruguay, and is a researcher in natural science for cultural heritage. She began her career in conservation and restoration of paintings in 1983, and is currently a conservator and restorer of paintings at the Museo Juan Manuel Blanes, Montevideo. She is also an instructor in both preventative conservation of cultural heritage and pictorial techniques at various departments at the Universidad de la República.

Cristina Bausero
Cristina Bausero is a graduate of the School of Architecture, Universidad de la República, Uruguay, and a doctoral student in architecture in the Facultad de Arquitectura, Diseño y Urbanismo, Universidad Nacional del Litoral; she also holds a graduate degree in project research. She is an associate professor at the School of Architecture, Design, and Urbanism, Universidad de la República; director of the Museo Juan Manuel Blanes, Montevideo; director of the Centro Cultural Dodecá and the Escuela de Cine Dodecá, Montevideo; and a member of Uruguay's National Commission for Visual Arts.

Katrien Blanchaert
Katrien Blanchaert graduated with a master of architecture degree in 2008 at Sint-Lucas, Ghent, following a one-year postgraduate course on the presentation and conservation of contemporary art at KASK, Ghent. From 2009 to 2017 she worked as a collections researcher for S.M.A.K., Ghent, focusing mainly on the conservation of installation artworks. Alongside this, she started working as an assistant at KULeuven, Department of Architecture, Sint-Lucas, Ghent, in 2015. She currently works as a collection, archive, and exhibition coordinator at Herbert Foundation, Ghent.

Courtney Books
Courtney Books is a conservator specializing in easel paintings and murals. Internationally trained, she is currently assistant paintings conservator at the Saint Louis Art Museum. Books received her MAC in paintings conservation from Queen's University in 2018 and an MA in art history from McGill University in 2013. An interest in biodeterioration and bioremediation of art fuels her collaborative research with practicing bioartists.

My Bundgaard
My Bundgaard is an object and sculpture conservator at Moderna Museet in Stockholm. She holds a BSc and an MSc from KADK – Royal Danish Academy of Fine Arts, Schools of Architecture, Design, and Conservation. Her current research focus is kinetic sculpture and installations involving varied and ephemeral elements.

María Pía Cerdeiras
María Pía Cerdeiras holds a master of science in biotechnology from the University of London. She has worked in the field of microbiology in the bioscience division of the School of Chemistry, Universidad de la República, Uruguay, since 1986. She is a specialist in the study of filamentous fungi, with special concentrations in the production of enzymes for industrial use, improvement of lignocellulosic substrates in agriculture, contaminant degraders such as colorants and agrochemicals, and compound producers with antimicrobial activity. She teaches graduate and postgraduate courses.

Davison Chiwara
Davison Chiwara's research focuses on the conservation of heritage and museum and gallery practice. He has presented several research papers at American Institute of Conservation annual meetings, International Institute of Conservation congresses, the Culture in Crisis Conference, and other regional conferences in Africa. He has published in *Museum International* and IIC's *Studies in Conservation*.

Claudia María Coronado García
Claudia María Coronado García holds a bachelor's degree in restoration of movable property with a specialization in museum studies from the Escuela Nacional de Conservación, Restauración y Museografía of the Instituto Nacional de Antropología e Historia, Mexico City, and a master's degree in contemporary and modern art from Casa Lamm. Since 2014 she has been an adjunct professor at ENCRyM's Seminario Taller de Restauración de Arte Moderno y Contemporáneo, which has allowed her to coordinate and participate in various restorations and train future restorers.

Gabriel de la Mora
Gabriel de la Mora was born in 1968 in Mexico City, where he still lives and works. He completed an MFA at the Pratt Institute and a licentiate's degree in architecture at Anáhuac University North Campus in Mexico City. His work has been exhibited in solo and group shows in museums and galleries in Mexico, the United States, Canada, Colombia, Brazil, Spain, the UK, and elsewhere. He is represented by Timothy Taylor, London; Sicardi Gallery, Houston; and Proyectos Monclova, Mexico City. Through a meticulous and obsessive process of searching, gathering, selecting, classifying, cataloging, and manipulating otherwise heterogeneous materials, de la Mora explores the finite and the permanent, the passage and suspension of time, and the transformation of both material and energy.

Mercedes Isabel de las Carreras
Mercedes Isabel de las Carreras holds a graduate degree in museum studies, specializing in the restoration of easel paintings, polychrome sculptures, and contemporary art. Since 2008 she has been head manager of collections for the Museo Nacional de Bellas Artes in Buenos Aires. She has participated in events and symposia with grants received from the Getty Conservation Institute, the Gabo Trust, APOYO, and Fundación Antorchas. She formerly worked as a restorer at Fundación TAREA, Buenos Aires, and has organized restoration projects and contemporary art conferences and published articles on restoration.

Belén Estévez
Belén Estévez holds a degree in clinical biochemistry from the Universidad de la República, Uruguay. She is currently a doctoral student in chemistry and an intern at the School of Chemical Science, Universidad Nacional de Córdoba, Argentina, and the Instituto de Nanociencia de Aragón, Spain. She has received grants from CAP (Center for Professional Development), ANII (National Agency for Research and Innovation), and CSIC (Spanish National Research Council). She is a microbiology assistant (grade 1), has presented at national and international conferences, and publishes in peer-reviewed international journals.

Maura Favero
Maura Favero holds a PhD in contemporary art history from Sapienza – Università di Roma, where she was also awarded her diploma in the postgraduate school in the science of historic and artistic heritage. She collaborates with MAXXI – Museo nazionale delle arti del XXI secolo, Rome, and also works on projects related to the structuring and management of artists' private archives.

Harald Fitzek
Harald Fitzek has been working since 2018 as a senior scientist with a specialization in vibrational spectroscopy, scanning electron microscopy, and correlative microscopy at the Austrian Centre for Electron Microscopy and Nanoanalysis. In 2018 he obtained his PhD with a focus on surface-enhanced Raman spectroscopy at the Institute for Electron Microscopy and Nanoanalysis at Graz University of Technology.

Natilee Harren
Natilee Harren is an assistant professor of art history at the University of Houston and the author of *Fluxus Forms: Scores, Multiples, and the Eternal Network* (University of Chicago Press, 2020) and "The Provisional Work of Art: George Brecht's Footnotes at LACMA, 1969" (*Getty Research Journal*). Her research and teaching engage the conservation of modern and contemporary art from philosophical, art historical, and curatorial perspectives.

Jens Hauser
Jens Hauser is a Paris- and Copenhagen-based media theoretician and art curator focusing on interactions between art and technology. He is currently a guest researcher at the University of Copenhagen's Medical Museion, a distinguished affiliated faculty member at Michigan State University, and a guest professor in the Department of Arts and Sciences of Art at Université Paris I Panthéon-Sorbonne.

Tora Hederus
Tora Hederus is a paper conservator holding a BSc and an MSc from KADK – Royal Danish Academy of Fine Arts, Schools of Architecture, Design, and Conservation. Since graduation, Hederus has been working for three years as a conservator at the Moderna Museet, Stockholm, and has had opportunities to work with objects composed of a mix of paper and plastic.

Rebecca Heremans
Rebecca Heremans graduated in 2011 with a master's degree in conservation and restoration studies of photographic objects from Universiteit Antwerpen. Since 2012 she has worked as a restorer at S.M.A.K., Ghent, Belgium. She focuses on the preventive conservation of a highly diverse range of artworks from the collection, in particular the conservation and restoration of paper objects.

Claudio Hernández
Claudio Hernández holds a bachelor's degree in restoration of movable property from the Escuela Nacional de Conservación, Restauración y Museografía of the Instituto Nacional de Antropología e Historia, Mexico, and a master's degree in conservation of new media and digital information from the Freie Kunstschule Stuttgart. Since 2009 he has led the restoration laboratory at the Museo Universitario Arte Contemporáneo, Mexico City. His work focuses on documentation, research, and conservation of contemporary art. He has completed internships and organized national and international conferences on preservation. Since 2011 he has been teaching collections management and conservation as part of the master's program in art history, with a specialization in curatorial studies, at the Universidad Nacional Autónoma de México.

Jasna Jablan
Jasna Jablan is an assistant professor in the Department of Analytical Chemistry, Faculty of Pharmacy and Biochemistry, University of Zagreb, Croatia. After obtaining graduate degrees in both medical biochemistry and pharmacy, she received a doctoral degree in biomedicine and health in 2014. Her scientific interests include the application of existing analytical methods and the development of new ones for different kinds of samples.

Kelly Kleinschrodt
Kelly Kleinschrodt is a studio artist and independent arts educator who lives and works in Los Angeles. She has presented solo projects in Chicago with Andrew Rafacz, in Los Angeles and Miami with Carter & Citizen, and in London and Los Angeles with Crisp London Los Angeles. Kleinschrodt's work has also been exhibited and screened in the United States and internationally at such venues as Steve Turner, Los Angeles; Five Car Garage, Los Angeles; (OFF)ICIELLE, Paris; Josh Lilley, London; UNTITLED, Miami; Samson Projects, Boston; L.A.C.E., Los Angeles; The Wand, Berlin; Moving Image, New York; Kavi Gupta, Berlin; Museo Ex Teresa Arte Actual, Mexico City; and OPEN Contemporary Art Center, Beijing. Her work is held in private collections throughout the United States and Europe as well as in the Franks-Suss Collection, London. Kleinschrodt received her MFA at UCLA, where she was the recipient of the Elaine Krown Klein Award.

Thérèse Lilliegren
Thérèse Lilliegren is a senior paintings conservator at the Moderna Museet in Stockholm. She holds a BA in art history and conservation from Stockholms Universitet. Her research interests focus on modern and contemporary art, with a special emphasis on political and ephemeral art, conservation ethics, and the development of a digital report tool.

Rosario Llamas Pacheco
Rosario Llamas Pacheco is a professor in the Conservation and Restoration of Cultural Heritage Department, and assistant director of the Instituto de Restauración del Patrimonio, at the Universitat Politècnica de València. She specializes in conservation and restoration of contemporary art and has written numerous articles on this topic for industry journals, as well as books and chapters of books. She has led various competitive research projects and has directed numerous doctoral dissertations and master's theses.

Eugenia Macías
Eugenia Macías is a restorer for the Escuela Nacional de Conservación, Mexico City, and winner of the Paul Coremans Prize (2000) awarded by Mexico's Instituto Nacional de Antropología e Historia. She holds a master's degree in social anthropology from the Centro de Investigaciones y Estudios de Antropología Social and a doctorate in art history from the Universidad Nacional Autónoma de México. She was formerly a curator at the Museo de Arte Moderno, Mexico City, and a researcher at the Centro de Documentación Arkheia at the Museo Universitario Arte Contemporáneo. She is currently a research professor at the Escuela Nacional de Conservación, Restauración y Museografía, Mexico City.

Soledad Martínez
Soledad Martínez holds a bachelor's degree in chemistry and clinical biochemistry from the School of Chemistry, Universidad de la República, Uruguay, and is currently pursuing graduate work in chemistry there. She was an intern at the Department of Civil and Structural Engineering at the University of Sheffield, and a G1 assistant, microbiology, Department of Bioscience (since 2015), as well as a recipient of study grants from CAP (Center for Professional Development), ANII (National Agency for Research and Innovation), and PEDECIBA (Basic Science Development Program). She presents research results at national and international science events.

Ana Lizeth Mata Delgado
Ana Lizeth Mata Delgado holds a *licenciada* degree in restoration from the Escuela Nacional de Conservación, Restauración y Museografía of the Instituto Nacional de Antropología e Historia and a master's degree in history and art history from the Universidad Nacional Autónoma de México. She is a professor-researcher and head of the Seminario Taller de Restauración de Arte Moderno y Contemporáneo at ENCRyM, and currently the academic coordinator of ENCRyM's degree program in restoration.

Darío Meléndez
Darío Meléndez is a professor at the School of Arts and Design at the Universidad Nacional Autónoma de México. He pursued his bachelor's and master's degrees in visual arts with a specialization in painting, as well as his doctorate in arts and design, at that university. His artistic research focuses on material explorations based in painting, while also touching on the fields of drawing, action art, installation art, and beyond.

Sara Norrehed
Sara Norrehed is an advisor and conservation scientist at the Swedish National Heritage Board. Her main interests are in organic materials and analytical methods for organic molecules. Previous work focused on developing tools for analyzing flexible organic molecules by nuclear magnetic resonance, but recently she entered the field of conservation and heritage science. She holds a PhD in organic chemistry, including a master's degree in natural sciences, from Uppsala Universitet, Sweden.

Barbara Ursula Oettl
Barbara Ursula Oettl has studied art history, American and Italian linguistics, and art at Universität Regensburg, Germany, and at the University of Urbana-Champaign, Illinois. Her books include *White*, *Transgressions of Art*, and *Richard Serra*; she has also authored essays on photography, gender and body art, bioart, Land art, and the material turn. Oettl is alternately teaching at the Cologne Institute of Conservation Sciences, Kunstakademie Düsseldorf, and Universität Regensburg.

Flavia Parisi
Flavia Parisi holds a PhD from the Universitat Politècnica de València with a specialization in the interdependence of conservation and education in contemporary art museums. She collaborates with different institutions, such as the International Centre for the Study of the Preservation and Restoration of Cultural Property (2013–19) and MAXXI – Museo nazionale delle arti del XXI secolo, Rome (2017, 2019). She previously worked for the Dallas Museum of Art, the Italo-Latin American Institute of Rome, and private galleries.

Mirta Pavić
Mirta Pavić is head of the Conservation Department at the Museum of Contemporary Art, Zagreb, Croatia. She received her MA in conservation from the University of Ljubljana, Slovenia. Pavić teaches a compulsory course on modern and contemporary art conservation at the University of Split. Her research interests include modern materials, new media, modern museum practice, and the educational role of the conservation field.

Flavia Perugini
Flavia Perugini holds a master's degree in architecture from the University of Florence, and a BSc with honors in conservation and restoration from Guildhall University, London. Since 2006 she has been an associate conservator for contemporary art and time-based media art at the Museum of Fine Arts, Boston. She is a fellow of the International Institute for Conservation and the American Institute for Conservation.

Sherry Phillips
Sherry Phillips has worked at the Art Gallery of Ontario, Toronto, since 1989, and specifically as a conservator of contemporary art since 1996. Following an honors BSc in microbiology and zoology from the University of Toronto, she studied art history and studio techniques before continuing her education at Queen's University's Master of Art Conservation program.

Marcia Reed
Marcia Reed is chief curator and associate director for special collections and exhibitions at the Getty Research Institute, Los Angeles. The exhibitions she has curated include *China on Paper* (2007), *The Edible Monument: The Art of Food for Festivals* (2015–16), *Cave Temples of Dunhuang* (2016), and *Artists and Their Books / Books and Their Artists* (2018). Research in progress includes a publication and exhibition on the Jean Brown Collection of avant-garde and Fluxus works.

Cristina Reyes
Cristina Reyes studied visual arts at the School of Arts and Design at the Universidad Nacional Autónoma de México, where she is now a professor. She is a member of the Imago Post Aural research group, coordinated by Víctor Monroy. She works at the Centro de Documentación Arkheia at the Museo Universitario Arte Contemporáneo, Mexico City.

Rachel Rivenc
Rachel Rivenc is the head of conservation and preservation at the Getty Research Institute, Los Angeles. Prior to that she worked at the Getty Conservation Institute, Los Angeles, as part of the Modern and Contemporary Art Research Initiative. She was the coordinator for the Modern Materials and Contemporary Art working group of ICOM-CC for six years and sits on the steering committee of the International Network for the Conservation of Contemporary Art. Rivenc holds a master's degree in paintings conservation from Université Paris 1-Sorbonne and a PhD from the Université de Versailles Saint-Quentin-en-Yvelines.

Kendra Roth
Kendra Roth is the conservator of modern and contemporary art at the Metropolitan Museum of Art, New York. She holds a bachelor's degree in fine arts from Tufts University and a master's degree in art conservation from the State University of New York at Buffalo, and did postgraduate work at the Straus Center for Conservation and Technical Studies at Harvard University. She serves in the Conservation Advisory Group for the Public Design Commission of the City of New York and as assistant coordinator of the Modern Materials and Contemporary Art Working Group of ICOM-CC.

Tom Sandström
Tom Sandström is a conservation scientist at the Swedish National Heritage Board. He holds a MAC from Queen's University. His work focuses on the conservation of organic material, including archaeological wood, and the technical analysis of paintings and other works of art.

Magali Melleu Sehn
Magali Melleu Sehn is an associate professor of conservation of modern and contemporary art of the Conservation-Restoration Course of the Universidade Federal de Minas Gerais, Brazil. She is also a tenured professor in that university's graduate program in arts at its the School of Fine Arts and chief editor of the graduate program's academic journal. She was a conservator of paintings and sculptures for twelve years at the Museu de Arte Contemporânea da Universidade de São Paulo. She holds a bachelor of visual arts, a master's degree, and a PhD in visual poetics in art history from the University of São Paulo – ECA/USP. She authored the book *Entre resíduos e dominós: Preservação de instalações de arte no Brasil* (C/ARTE, 2014) with the support of FAPEMIG (Qualis L3).

Sjoukje van der Laan
Sjoukje van der Laan holds a master's degree and a professional doctorate (PD Res) in modern and contemporary art conservation from Universiteit van Amsterdam. She has been employed at the Art Gallery of Ontario, Toronto, since 2015 as an assistant conservator of contemporary art. Her specialization gives her a strong familiarity with the conservation of a wide variety of modern (synthetic) materials, kinetic art, electronic art, and complex contemporary art installations.

Adrián Villar Rojas
Adrián Villar Rojas creates immersive, situated, and perishing worlds using materials both organic and inorganic, human-made and machine-made, that undergo change over time. Tied to their production and exhibiting contexts, these worlds generate irreproducible experiences relying on collaborative exchange between the artist, his team, and local agents. His projects that extend over open-ended periods of time allow him to question the aftermath of the normalized production of art in the Capitalocene era. He lives and works nomadically.

Sebastián Villar Rojas
Sebastián Villar Rojas is a writer, playwright, and theater director who is currently generating "androgynous" projects that inhabit the borderline between artistic fields, taking advantage of the ontological ambiguity of this liminal zone. He studied political science at the Universidad Nacional de Rosario, Argentina, and holds a diploma in playwriting from the School of Philosophy and Letters, Universidad de Buenos Aires.

Jessica Walthew
Jessica Walthew holds an MA in art history and archaeology with an advanced certificate in conservation from the Conservation Center at New York University's Institute of Fine Arts. At Cooper Hewitt, Smithsonian Design Museum, Washington, DC, she works primarily with the product design and decorative arts collection and digital acquisitions. She is a professional associate of the American Institute for Conservation.

Symposium Participants

This reflects titles and affiliations at the time of the symposium "Living Matter: The Preservation of Biological Materials in Contemporary Art / La Materia Viva: Conservación de materiales orgánicos en el arte contemporáneo," held in Mexico City June 3, 4, and 5, 2019.

Coline Ardouin, Conservator, Museo Universitario Arte Contemporáneo, Mexico

Mariana Arenas, Assistant Registrar, Museo Universitario Arte Contemporáneo, Mexico

Ana Lauara Avelar, Biologist, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Ivana Bačić, Chemist, Ministry of the Interior, Croatia

Gabriel Baldomá, Conservator, Instituto Iicramc, Argentina

Claudia Barra, Pharmaceutical Chemist, Museo Juan Manuel Blanes, Uruguay

Cristina Bausero, Architect, Museo Juan Manuel Blanes, Uruguay

Courtney Books, Andrew W. Mellon Fellow, Paintings, Balboa Art Conservation Center, USA

Alejandra Braun, Conservator of Cultural Heritage, Museo de Arte Moderno, Mexico

María Eugenia Desirée Buentello García, Student, Deakin University / Brandenburg University, Australia

Martha Burgoa, Cultural Manager, CCD, Mexico

Rosa Maria Castellanos Perez, Art History Professor, Universidad Nacional Autónoma de México, Mexico

Adalberto Charvel, Exhibition Designer, Museo Universitario Arte Contemporáneo, Mexico

Davison Chiwara, Lecturer, Midlands State University, Zimbabwe

David Colorado Solis, Chemist, Museo Universitario Arte Contemporáneo, Mexico

Yamile Fernanda Contreras García, Student, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Claudia María Coronado García, Professor, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Andrea de Caso, Curatorial Assistant, Museo Universitario Arte Contemporáneo, Mexico

Magnolia de la Garza, Director, Colección Isabel y Agustin Coppel, Mexico

Gabriel de la Mora, Visual Artist, Mexico

Mercedes Isabel de las Carreras, Chief of Collection Management, Museo Nacional de Bellas Artes, Argentina

María Jimena Díaz Guzmán, Instituto Nacional de Antropología e Historia, Mexico

Megan DiNoia, Graduate Intern, Getty Conservation Institute, USA

Camilla dos Anjos, Graduate Student, Universidade Federal de Minas Gerais, Brazil

Alexandra Sasha Drosdick, Andrew W. Mellon Fellow, Brooklyn Museum, USA

Henry Estipona, Chief Executive Officer, King Financial Consultancy, Mexico

Maura Favero, Collection Department, MAXXI – Museo nazionale delle arti del XXI secolo, Italy

Leticia Fundora Rangel, Professor, Instituto Superior de Arte, Cuba

Pilar Garcia, Curator of the Collection, Museo Universitario Arte Contemporáneo, Mexico

Norma Alicia García Huerta, Chief Executive Officer, L'atelier Patrimonio y Conservación, Mexico

Aura Ximena García Reynoso, Student, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Silvia Ixchel García Valencia, Conservator, Instituto Nacional de Bellas Artes – Centro Nacional de Conservación y Registro del Patrimonio Artistico Mueble, Mexico

Diego González, Student, Escuela Nacional de Pintura, Escultura y Grabado "La Esmeralda," Mexico

Zuelma Ayerin Gonzalez Gamboa, Conservator, Coordinación Nacional de Conservación de Patrimonio Cultural, Mexico

María Antonia Gónzalez Valerio, Professor, Universidad Nacional Autónoma de México, Mexico

Mariana Grediaga, Conservator, Taller de Restauracion EME – Grediaga, Mexico

Guillermo Guevara, Musician, Mexico

Natilee Harren, Assistant Professor of Art History, School of Art, University of Houston, USA

Jens Hauser, Researcher, University of Copenhagen, Denmark

Sol Henaro, Curator of Documentary Collections, Museo Universitario Arte Contemporáneo, Mexico

Rebecca Heremans, Paper Conservator, S.M.A.K., Belgium

Claudio Hernandez, Head of Conservation, Museo Universitario Arte Contemporáneo, Mexico

Silvia Hernández Villegas, Conservator, Programs, Instituto Nacional de Bellas Artes y Literatura, Mexico

Elizabeth Herrera, Temporary Loans Manager, Museo Universitario Arte Contemporáneo, Mexico

Carla Patricia Herrera del Valle, Art Director, Sedart, Mexico

Raquel Huerta, Conservator, Mexico

Jasna Jablan, Assistant Professor, Faculty of Pharmacy and Biochemistry, University of Zagreb, Croatia

Luis Jimenez, Student, Universidad del Claustro de Sor Juana, Mexico

Kelly Kleinschrodt, Artist, USA

Verónica Kuhliger, Conservator, Museo Nacional de Historia, Mexico

Angel Lartigue, Artist and Researcher, USA

Tom Learner, Head, Science, Getty Conservation Institute, USA

Karla Leyva, Artist, Mexico

Ana Belen Lezana Iberry, Registrar and Logistics, Colección Isabel y Agustin Coppel, Mexico

Thérèse Lilliegren, Conservator, Moderna Museet, Sweden

Rosario Llamas Pacheco, Professor-Researcher, Universitat Politècnica de València, Spain

Mariana López, Assistant Registrar, Museo Jumex, Mexico

Eugenia Macías, Investigator, MUAC Centro de Documentación Arkheia, Mexico

Jorge Martinez Perez Salazar, Director, CDMX ARTE, Mexico

Ana Lizeth Mata Delgado, Professor Researcher, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Darío Meléndez, Artist, Mexico

Magali Melleu Sehn, Associate Professor of Contemporary Art, Universidade Federal de Minas Gerais, Brazil

Luz Elena Mendoza, Head Registrar, Fundación Jumex AC / Museo Jumex, Mexico

Daniela Merediz Lara, Conservator, Museo Universitario Arte Contemporáneo, Mexico

Natalia Meza Mercado, Student, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Natalia Millàn, Museo Universitario Arte Contemporáneo, Mexico

Julia Molinar, Deputy Director of Collection Management, Museo Universitario Arte Contemporáneo, Mexico

Jo Ana Morfin, Advisor, Universidad Nacional Autónoma de México, Mexico

Rocío Mota, Conservator, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Mónica Nuñez Hernández, Museo Universitario Arte Contemporáneo, Mexico

Barbara Ursula Oettl, Art Historian, University of Regensburg, Germany

Lena Ortega, Artist and Researcher, Universidad Nacional Autónoma de México, Mexico

Jose Ortiz, Conservator, Instituto Nacional de Bellas Artes – Centro Nacional de Conservación y Registro del Patrimonio Artistico Mueble, Mexico

Flavia Parisi, PhD Candidate, Universitat Politècnica de València, Spain

Mirta Pavić, Head, Conservation Department, Museum of Contemporary Art, Croatia

Chantal Peñalosa, Visual Artist, Mexico

Catalina Perez, Librarian, Universidad Nacional Autónoma de México, Mexico

Luis Daniel Pérez González, Independent Artist, La Comedia Humana, Mexico

Flavia Perugini, Associate Conservator, Museum of Fine Arts, Boston, USA

Sherry Phillips, Conservator of Contemporary and Inuit Collections, Art Gallery of Ontario, Canada

Paloma Ramirez, Conservation Student, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Patrick Ravines, Director and Associate Professor, Garman Art Conservation Department, Buffalo State College, USA

Maria Rebora, Student, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Marcia Reed, Chief Curator, Associate Director, Getty Research Institute, USA

Martha Reta, Registrar, kurimanzutto, Mexico

Cristina Reyes, Researcher, MUAC Centro de Documentación Arkheia, Mexico

Renee Riedler, Conservator, American Museum of Natural History, USA

Rachel Rivenc, Head, Conservation and Preservation, Getty Research Institute, USA

Kendra Roth, Conservator, Metropolitan Museum of Art, USA

Paola Ruisanchez, Conservator, Museo Nacional de Antropología, Mexico

Ana Sacristan Civera, Professor, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Sintija Saldāboa, Preventive Conservator, National Library of Latvia, Latvia

Juan Gerardo Salinas, Conservation Student, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Andrea Sanchez Ibarolla, Freelance Conservator and Graduate Student, University of British Columbia, Mexico

Tom Sandström, Advisor, Swedish National Heritage Board, Sweden

Diego San Vicente Charles, Production Manager, kurimanzutto, Mexico

Barry Smith, Director of the Institute of Philosophy, University of London, United Kingdom

Pontus Solden, Bookdealer, Rönnells Antikvariat, Sweden

Francisca Sousa, Registrar, Museu Berardo, Portugal

Sofia Terán, Student, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Sarah Thompson, Administrative Assistant, Conservation, Menil Collection, USA

María del Carmen Tostado Unzueta, Restorer-Conservator, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Giovanna Paola Tress, Conservator, Instituto Nacional de Bellas Artes – Centro Nacional de Conservación y Registro del Patrimonio Artistico Mueble, Mexico

Sjoukje van der Laan, Assistant Conservator, Contemporary Art, Art Gallery of Ontario, Canada

Ana Vargas, Conservator, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Montserrat Vazquez, Conservator, Perpetua Restauración, Mexico

Irais Velasco Figueroa, Professor, Instituto Nacional de Conservación Restauración y Museografía, Mexico

Diana Velázquez, Paper Conservator, Museo Universitario Arte Contemporáneo, Mexico

Elizabeth Villanueva, Intern, Secretaría de Pueblos y Barrios Originarios y Comunidades Indígenas Residentes, Mexico

Sofia Villanueva Bello, Student, Universidad Autónoma Metropolitana Unidad Xochimilco, Mexico

Adrián Villar Rojas, Artist, Argentina

Ana Elena Vivas, Conservator, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," Mexico

Jessica Walthew, Conservator, Cooper Hewitt, Smithsonian Design Museum, USA

Herendira Yáñez García, Conservator, Museo Nacional de Antropología, Mexico