Preface: Report on a Research Project

Abstract

Conserving Active Matter *draws together the main lines and interim conclusions of a five-year research project embedded in a ten-year effort to reimagine the relationship between conservation knowledge and the humanistic study of the material world—Cultures of Conservation. The effort to conserve things is part of the human struggle with the pervasive activity of matter. For as long as people have made things and kept things, they have cared for them and repaired them. The field of conservation developed in Europe and the United States and then spread around the world. Today's conservator uses a variety of tools and categories developed over the last 150 years to do this work. But in the next decades, new kinds of materials and a new scale of change will pose unprecedented challenges. Thinking through the lens of "active matter," as understood by philosophers, historians, materials scientists, conservators, and those who work on Indigenous artifacts, this project raises questions and establishes new lines of inquiry for the future rethinking of conservation and the human sciences of the object.*

The Beginning of Conserving Active Matter

The project called Conserving Active Matter was undertaken at Bard Graduate Center under the auspices of Cultures of Conservation, a ten-year, $2.1-million initiative largely funded by the Andrew W. Mellon Foundation, that had as its aim connecting conservators and conservation

scientists on the one hand and the material culture–oriented human sciences (art history, history, anthropology, archaeology) on the other. It drove a teaching curriculum, research events, exhibitions, fellowships, and publications. The leading idea was that humanists were asking more and better questions than they ever had before about the way objects could, in principle, function as historical evidence, and conservators and conservation scientists were giving better and more precise answers to questions about the "what," "when," "how," and "where" of objects than ever before, but the usual siloing effect of disciplines and institutions worked to keep them apart. Putting the two groups together was no utopian venture but something concrete and attainable, especially in the context of the existing interdisciplinary environment at Bard Graduate Center.

Conserving Active Matter was designed from the outset as a research project. It shaped the second phase of Cultures of Conservation. But it was inspired by an accident, the kind of accident that was prepared for in advance. On Tuesday, October 18, 2016, at lunchtime, Wolfgang Schäffner, codirector of the excellence cluster "Image. Knowledge. *Gestaltung*" at the Humboldt University of Berlin spoke at Bard Graduate Center about the work of the cluster. Included in his talk was a discussion of "active matter"—a term he used to designate materials that were innately active or were designed to be active—and their impact on the future of architecture and design at every scale. In the question period, a visiting research fellow from Berkeley, Beth Piatote, asked about parallels in the traditions of Indigenous North Americans to the view of matter just presented. The very next lunchtime, Wednesday, October 19, Robert van Langh, head of the Department of Conservation and Science at the Rijksmuseum, spoke at Bard Graduate Center about the importance of research for art conservation. He sketched for his audience a scenario in which all treatment would be suspended for a generation while conservators researched their objects. For those in the audience for both talks, they seemed to speak to one other: What would a world of active matter and materials mean for art and object conservation?

Up to that moment, the concept of active matter had reached academic publics through two projects: one at MIT and one at the Humboldt University in Berlin.[1] An "Active Matter Summit" at MIT in 2015 featured three days of talks by materials scientists and was later published.[2] By contrast, the work of the excellence cluster "Image. Knowledge. *Gestaltung*" directed by Schäffner and Horst Bredekamp, spoke more directly to BGC thinking with its effort to present active matter

from the perspectives of art, architecture, and design.[3] An exhibition organized by the cluster at the Martin-Gropius-Bau in Berlin in 2016, *+Ultra*, presented the nineteenth century's technologies as built upon a division between blunt matter and spirit (as animating force) that then shaped the twentieth's horizon of possibility. At the end of the eighteenth century, Immanuel Kant had stated what came to be the received opinion on this question: "The possibility of living matter [*lebenden Materie*]," he wrote, "(the concept of which contains a contradiction, because lifelessness, *inertia*, constitutes its essential characteristic) cannot even be conceived."[4] According to Schäffner, however, "We are currently standing on the threshold of a new era in which knowledge will become a state of matter itself, while matter, on the other hand, will present itself as an active code." What this opened up, he argued, was a "new design horizon."[5]

Wood provided the Berlin group with their best example. Wood is matter that is active, sometimes notoriously so. But wood is also the urmatter. In Greek it is *hulê*, or construction wood, taken by Aristotle and generalized to refer to all substance that was not form. When translated into Latin as *materia*, whose original meaning was timber (it is used that way in Vitruvius), we gain our familiar "material." Architect Achim Menges is currently trying to harness this primordial activity for future building design: for instance, the hygroscopic workings of wood offer the possibility of self-powering ventilation systems.[6]

BGC asked how thinking in terms of matter's "natural" or "intended" activity would affect thinking about professional conservation, with its ambivalent, if no longer utterly agonistic, relationship to material change. The first phase of Cultures of Conservation had as its main goal the integration of conservation knowledge into the tool kit of the material culture scholar. Conserving Active Matter continued this path-widening conversation, but it also turned this widened perspective back on the field of conservation itself, asking how new research questions in the humanities and material sciences might expand conservation thinking and practice.

As an interdisciplinary, advanced humanities institute whose faculty come from history, art history, philosophy, anthropology, archaeology, and most recently, chemistry departments, BGC is well positioned to explore the potential meaning of active matter for conservation through the different lenses constituted by history, philosophy, materials science, and Indigenous ontologies of activity. The four working groups that were created to explore along these axes would probe the meaning of active matter from their different vantage points and

also reflect on its usefulness for those looking out from those vantage points. This meant thinking about both conservation and active matter in broader cross-disciplinary perspectives but also in terms of the actual people (makers, users, conservators, custodians, researchers, curators, museum visitors, originating communities) who are stakeholders in shaping the field of professional conservation (as well as its more vernacular aspects). If "conservation" includes all this, "activity" can too.

Conceiving of the project in this way raised two challenges. The first was establishing a new field of questions at the junction of two distinct and up to that point unrelated spheres of inquiry, "active matter" (in the sense of materials science used by the teams at MIT and Humboldt University) and "conservation" (in the narrower field of professional art and object conservation). Moreover, we were interested in exploring the potential to expand the usage of the pair of terms beyond their immediate application to wider conceptions of activity in matter and of the care and repair of material things. This meant, in practice, getting the attention of people who might be interested in these themes (both narrow and expanded) and convincing them that there was a worthwhile question to be explored at their junction. The second challenge was created by the very means employed to deal with the first one, namely, that the fourfold approach of the working groups, each with its own focus, risked encouraging siloed inquiry. To see the methodological challenge of the project as ultimately balancing the centrifugal and the centripetal is, then, to place it in the dynamics of "comparison."

As I've discussed in an earlier volume in this series, the realm of comparative scholarship has had a liminal status in a humanities structure that remains anchored in discipline.[7] Discipline *is* crucial to teaching skills. And in all fields of inquiry disciplines do excel at solving the questions they acknowledge as significant. But that's just it: What about the questions they do not acknowledge as significant? What about questions forced upon disciplines by the unruly character of the world? Here disciplinary scholarship often produces lackluster research, what Thomas Kuhn thematized long ago in terms of "normal science," because of the decreasing ambitiousness of the questions being asked. Comparative scholarship, while not necessarily linked to interdisciplinarity—you could have comparative history within history, comparative literature within literature, comparative politics within politics—has tended in the direction of interdisciplinarity.[8] Standing outside a discipline's questions and horizons makes comparison exciting but also diminishes its probative force. And, sociologically

speaking, it puts practitioners outside, if not at risk of marginalization from, sources of power and patronage, most of which remain tied to discipline, whether institutional or professional. For all these reasons, urging transformation from the perspective of the comparative is not an obviously winning proposition. And yet, as we are all aware, at least from time to time, it is only by comparison that we can make sense of something new, only by comparison that some hidden details emerge, only by comparison that obscured connections are revealed. In short, the whole clumsy epistemology of "splitting" and "lumping" from Charles Darwin through Max Weber and on to us has evolved out of the struggle of discipline-based scholarship with comparison. It was only much later that Roger Caillois, the lapsed surrealist, articulated the premise of a "diagonal" science that compared but in nonlinear ways, and thus stood somewhere between lazy lumping and dogmatic splitting.[9] In Conserving Active Matter, the four working groups operated relative to each other, and to the overall theme, in this kind of diagonal fashion. Although we eschewed the working-group distinctions in the layout of the concluding exhibit and its digital publication, we deemed it appropriate to maintain them in the structure of this volume as it is a report from a research project that took this shape.

How to Use This Book

Between 2017 and 2020, the four working groups scheduled workshops (see Appendix: Events of the Research Project Conserving Active Matter) with invited guests to explore the idea of active matter from their different perspectives. The working-group events, and the scholarship that flowed from them into this volume, spoke in very different disciplinary and professional languages. For example, the conservators and conservation scientists presented work in detail. The philosophers also spoke in detail—but very different details. The same was true for those addressing Indigenous approaches to activity and the historians exposing presences of activity in European and Asian epistemologies (including Kabbalah and Buddhism). Some speakers focused on the activity of *matter*—the core of the project inherited from the Berlin and MIT groups—and others addressed activity in terms of human agents who *activate* the matter at hand through their questions. The speakers did not always engage with the arguments or conclusions of the groups working on either side. Humanists did not always talk about either object "conservation" or material "activity," and the scientists and conservators did not always

address the historical and philosophical implications of what they were talking about. Some of this talking past survives in the published book.

But this is nothing to be surprised about. In practice, with work on a very new subject that involves bringing two unrelated fields and undefined terms into conversation, one cannot expect people to be immediately comfortable working in those two areas and synthesizing them. What one is doing in a project (book and exhibition) of this sort is bringing a faceted presentation of the particular fields into a common space and then, at a "second order," stepping in to draw the possible contours of a new question that builds convincingly on some of that local detail. The goal is to persuade a wider audience of the worthiness of the larger question. So, in fact, having discrete pieces of work that bring out specific arguments in nugget-rich detail is desirable, even though—and sometimes *because*—the collected, commissioned scholarship does not try to do the work of comparison at the local level. This may not be everyone's vision of comparative scholarship—indeed, we might all like new fields of interdisciplinary learning to burst fully formed from their creators' institutional context—but the sociology of jump-starting new research agendas has its own logic. Getting people to do the comparative work at the beginning of a field's existence is very difficult because, aside from those doing the commissioning, it is to be expected that everyone else is commanded by their existing research paradigms.

One model that has evolved to pursue this kind of work is grant-based and involves paying postdoctoral scholars to pursue the work of the visionary project directors. But with more junior scholars one is even less likely to find scholarship based firmly in two disciplines simply because of the time it takes to master even one. Where our project has left us, by design, I need repeat, is with a series of discrete inquiries at the local level—philosophy, materials, Indigenous ontologies, history—that at the "section" and "volume" level provide us with the rudiments for a new way of looking at conservation through the lens of activity. We, the editors of this volume and each of its constituent sections, have done our best to tie things together. You, the readers, will have to participate in this work of "closing the circuits," "connecting the dots," and framing the implications. And if, twenty or even thirty years from now, it is not considered worth commenting on conservators curating exhibitions or historians describing themselves as conservators or scholars producing work that resists easy categorization as art historical, conservation, curatorial, or historical, then this necessarily imperfect beginning will have done its work.

To help us get to this future, the volume begins with two introductions, one written by a conservator and the other by a historian. The conservator, who also curated the eponymous exhibition, presents Conserving Active Matter as an experiment in showing how a conservator can think with humanistic disciplines in order to broaden the understanding of what it means to conserve and to be a conservator. The historian, who also formulated the project Cultures of Conservation, presents Conserving Active Matter as an experiment in showing how a historian can think with conservation knowledge in order to broaden the understanding of what history is and how to be a historian. The two approaches may or may not meet at some equidistant point; what they do is provide an example of what can be gained by the shift in perspective they each represent.

Where once upon a time Euro-American conservation practice viewed activity as a threat to be resisted, conservators now are more comfortable managing—even on occasion facilitating—change. We hope that our volume will encourage this tendency and will provide intellectual resources for those already inclined to view activity with less anxiety, if not more sympathy. Bringing in the perspective of Indigenous ontologies, referring to practices in Japan, and, in fact, showing that even within European traditions discomfort with activity was a choice among alternatives, will, we hope, provide conservators of the future with the ability to formulate a more complex set of responses to what surely will be a more complex set of challenges.[10] We believe that looking through the lens of active matter will help contribute to the future of conservation thinking among both conservators and humanists.

On July 13, 2017, on page A11, the *New York Times* reported the results of a startling experiment. Scientists had inserted digital video with its pixels recoded in combinations of adenine, guanine, thymine, and cytosine into a bacterium's genome, taking advantage of the fact that all DNA contains a large quantity of "junk." This had the effect of turning one species into a storage device for another (bacteria as external "hard drive"). Even more startling, when the bacterium reproduced, it passed along that digital code to its descendants with enough fidelity to be retranslated into a recognizable video image. Life—active matter—is doing the conserving, and active matter—the now-living code—is conserved.

Self-driving cars, smart textiles, self-regulating buildings, and artworks that change themselves are already with us. Our twenty-first-century future will turn all these from science fiction to humdrum. What will be the impact of this sea change on the field of conservation?

Or on our notion of preservation more broadly? Of course, less dramatic versions of this process have been with us for a long time. The human body itself could be said to pose the most acute example of "active matter"—and its conservation has been a challenge to philosophers and medical doctors from diverse cultures for millennia. But, in terms of scale and audaciousness, the twenty-first century will likely pose an especial challenge to conservation because of active matter. If we add to this the impact of planetary climate change on cultural heritage, it is clear that the field of conservation will be addressing new questions on an unprecedented scale. This volume, its companion, and the accompanying exhibition project are contributions toward this future thinking.

—Peter N. Miller

NOTES

This volume captures the state of the research project at the point it took on a curatorial form. A separate publication will reflect the knowledge created by the exhibition process. For a parallel to this introduction, see Giard, "Histoire d'un recherche," esp. xvi–xxiii. I am grateful to Aaron Glass for a careful reading of an earlier draft of this essay and some very good suggestions, many of which I have incorporated.

1. Like-minded initiatives, such as Lee, *Material Alchemy*, aim at this same target through a vernacular design focus on synthetic design and bio-inspiration.
2. Perkins, *Active Matter*.
3. BGC had been collaborating with Bredekamp in one of his predecessor projects, The Technical Image, which resulted in a postdoctoral fellowship, exhibition, and publication at BGC in 2012 (Samuel, *Islands of Benoît Mandelbrot*) as well as a translation project (Bredekamp, Dunkel, and Schneider, *Technical Image*).
4. Kant, *Critique of the Power of Judgment*, II.2, § 73, 265.
5. Schäffner, "Immateriality of Materials," 23, 26. See also Schäffner, "Interdisziplinäre Gestaltung."
6. In Doll, Bredekamp, and Schäffner, *+Ultra*, see Schäffner, "Immateriality of Materials," 25; Michael Friedman and Karin Krauthausen, "Inspired Mechanics: Active Matter as Machine and Structure," 169–70; Peter Fratzl, "The Bioinspired Design of Materials," 177. For Menges's work,

see Reichert, Menges, and Krieg, "*HygroSkin—Meteorosensitive Pavilion*." For a deeper look at wood from this perspective, see Eder et al., "Wood and the Activity."

7. Miller and Louis, introduction.
8. For instance, *Comparative Studies in History and Anthropology*.
9. For this notion, see Caillois, "New Plea." An inspiring model for this kind of cross-cutting study, albeit more sideways than diagonal, is Eggert, *Securing the Past*.
10. Conservation thinking in Japan and India will be part of *Conserving Active Matter: Exhibition and Afterthoughts*, also to be published by Bard Graduate Center in this series.

BIBLIOGRAPHY

Bredekamp, Horst, Vera Dunkel, and Birgit Schneider, eds. *The Technical Image: A History of Styles in Scientific Imagery*. Chicago: University of Chicago Press; New York: Bard Graduate Center, 2015.

Caillois, Roger. "A New Plea for a Diagonal Science." In *The Edge of Surrealism: A Roger Caillois Reader*, edited by Claudine Frank, 343–47. Durham, NC: Duke University Press, 2003.

Doll, N., H. Bredekamp, and W. Schäffner, eds. *+Ultra: Knowledge & Gestaltung*. Leipzig: E. A. Seemann, 2017.

Eder, M., W. Schäffner, I. Burgert, and P. Fratzl. "Wood and the Activity of Dead Tissue." *Advanced Materials* (2020): https://doi.org/10.1002/adma.202001412.

Eggert, Paul. *Securing the Past: Conservation in Art, Architecture and Literature*. Cambridge: Cambridge University Press, 2009.

Giard, Luce. "Histoire d'un recherche." In *L'invention du quotidien. 1. Arts de faire*, by Michel de Certeau, i–xxx. 2nd ed. Paris: Gallimard, 1990.

Kant, Immanuel. *Critique of the Power of Judgment*. Edited by Paul Guyer. Translated by Paul Guyer and Eric Matthews. Cambridge: Cambridge University Press, 2007.

Lee, Jenny, ed. *Material Alchemy*. Amsterdam: BIS, 2014.

Miller, Peter N., and François Louis. Introduction to *Antiquarianism and Intellectual Life in Europe and China*, 1500–1800, edited by Peter N. Miller and François Louis, 1–24. Ann Arbor: University of Michigan Press, 2012.

Perkins, Schuyler, ed. *Active Matter*. Cambridge, MA: MIT Press, 2017.

Reichert, Steffen, Achim Menges, and Oliver David Krieg. "*HygroSkin—Meteorosensitive Pavilion*." In *Fabricate*, edited by Fabio Gramazio, Matthias Kohler, and Silke Langenberg, 272–79. London: UCL Press, 2014.

Samuel, Nina, ed. *The Islands of Benoît Mandelbrot: Fractals, Chaos, and the Materiality of Thinking*. New York: Bard Graduate Center, 2012.

Schäffner, Wolfgang. "Immateriality of Materials." In Doll, Bredekamp, and Schäffner, *+Ultra*, 23–31.

———. "Interdisziplinäre Gestaltung: Einladung in das neue Feld einer Geistes- und Materialwissenschaft." In *Haare hören—Strukturen wissen—Räume agieren. Berichte aus dem Interdisziplinären Labor Bild Wissen Gestaltung*, edited by Horst Bredekamp and Wolfgang Schäffner, 199–213. Bielefeld: Transcript, 2015.