

PREFACE

```
<?XML VERSION="1.0" ENCODING="UTF-8"?> <OBJECT XMLNS:MYCUSTXSL=
"URN:XSEXTENSIONS" XMLNS:MSXSL="URN:SCHEMAS-MICROSOFT-COM:XSLT">
<OBJECTDATA> <TITLE>WASHINGTON CROSSING THE DELAWARE</TITLE>
<ARTIST> <ARTISTNAME>EMANUEL LEUTZ</ARTISTNAME> <ARTISTDATE>
AMERICAN, SCHWÄBISCH GMÜND 1816–1868 WASHINGTON, D.C.</ARTIST-
DATE> <ARTISTROLE>ARTIST</ARTISTROLE> </ARTIST> <LOCATIONSTRING
/> <DATED>1851</DATED> <MEDIUM>OIL ON CANVAS</MEDIUM>
<OBJECTNUMBER>97.34</OBJECTNUMBER> <OBJECTID>11777</OBJECTID>
<CREDITLINE>GIFT OF JOHN STEWART KENNEDY, 1897</CREDITLINE>
<CHAT>THIS DEPICTION OF GEORGE WASHINGTON (1732–1799) CROSSING
THE DELAWARE RIVER INTO NEW JERSEY TO LAUNCH AN ATTACK ON THE
HESSIANS, GERMAN SOLDIERS HIRED BY GREAT BRITAIN ON DECEMBER 25,
1776—A TURNING POINT IN THE REVOLUTIONARY WAR—WAS A GREAT SUCCESS
IN BOTH GERMANY, WHERE LEUTZE PAINTED IT, AND AMERICA. ITS
POPULARITY LAY CHIEFLY IN THE CHOICE OF SUBJECT, APPEALING AS IT
DID TO FLOURISHING NATIONALISM AT MIDCENTURY NOT ONLY IN THOSE
TWO COUNTRIES BUT AROUND THE WORLD. THE WORK’S MONUMENTAL SCALE
ADDED TO ITS EFFECTIVENESS. DESPITE SOME HISTORICAL INACCURACIES,
THE PAINTING REMAINS AN OBJECT OF VENERATION AND IS ONE OF
THE BEST-KNOWN AND MOST EXTENSIVELY PUBLISHED IMAGES IN AMERICAN
ART.</CHAT> <ROOMCHAT /> </OBJECTDATA> <GALLERYLOCATION>
<CASESECTION DATATYPE="VARCHAR" FIELDTYPE="SYSTEM.STRING" />
<SHELF DATATYPE="VARCHAR" FIELDTYPE="SYSTEM.STRING" /> </GALLERY-
LOCATION> ...
```

Source: Metropolitan Museum of Art (excerpt, not full record)

The ideas in this book began to take shape in 2006, many years before I started writing it. At the time, I was a graduate student at MIT in Cambridge, Massachusetts, but I traveled to New York City on a regular basis to work on an information technology master plan for the American Wing of the Metropolitan Museum of Art. The largest institutional collector in New York, “the Met” sits at the eastern edge of Central Park. It might seem monolithic at the base of its imposing Fifth Avenue entry stairs. But the institution is actually a composite of independently curated collections. Under the umbrella of a major architectural renovation of the spaces that house the American collection, I was contracted by the Met as part of Small Design Firm, an information and interaction

design outfit also based in Cambridge.¹ Our scope of work included the design of way-finding aids, such as label graphics for the artwork and maps to help visitors explore the collection firsthand as well as a series of digital media installations meant to offer a new kind of museum experience. The challenges that I now address, thirteen years later, in *All Data Are Local*, first presented themselves as I considered how visitors might use data to navigate the Met's vast holdings of American art.

The American Wing's "collections data" have been a work in progress since the mid-nineteenth century when the branch was still a separate building in the park. Since that time, almost twenty-five thousand individual objects, ranging in scale from colonial-era teaspoons to an entire room designed by the architect Frank Lloyd Wright, have been cataloged by the staff as data. Those data have served as a resource for generations of curators seeking to either register or uncover answers to everyday questions about the provenance, authorship, taxonomy, label text, or other assorted details of the myriad objects in the collection.

A reader unfamiliar with collections data might think of them as the contents of a spreadsheet: rows for each object in the collection, and columns for various attributes of those objects. But the attribute fields do not simply register commonplace facts about the artwork. Rather, they contain the kinds of locally relevant details that professional curators rely on for their daily work. The attribute column titled "gallery location," for instance, helps curators track where a piece of the collection is being held, even if only for a moment to clean it or snap a new publicity photograph for an upcoming special exhibition. This list of locations is manually updated in real time to reflect the mundane passage of objects from one room to another. Such records are considered vital, for theft is an ongoing concern of the museum staff.

In following with their original purpose as curators' tools, the American Wing's collections data were long held in what the sociologist Erving Goffman would call the "back stage."² Indeed, these data were never intended for outsiders' eyes. So when our team first encountered them, the collections data appeared justifiably strange. They had confounding gaps and curiously dated details, such as label text from other eras. Most peculiar of all, many of the visually striking objects in the collection were represented by tiny black-and-white photographs, only of use as identifiers for in-house staff who already knew the objects intimately.

Our master plan established a strategy for translating and, in a few cases, re-creating these data for the "front stage," where visitors could see and interact with them.³ Parts of the existing data set were inadequate. For example, our digital media designs required the use of recognizable color images for each object in the collection; the existing black-and-white likenesses would not do. The Met agreed to update their photographs, but not without some hesitation, for this was a serious undertaking, both expensive and time consuming.

While in some ways the American Wing data needed more detail before they appeared in front of visitors, in other ways they contained too much. Visitors, for

instance, didn't need to know the history of every time an object was removed from its case for a routine dusting; they only needed to know whether or not the object was on display. In other words, the local specificities of the Met's collections data had to be understood and reframed to make those data more broadly accessible as well as meaningful to visitors.

Even as I worked on the museum master plan, I was also completing a doctorate in which my research focused on the social implications of information technologies for professional life. This research spanned domains as varied as architecture, space exploration, nuclear weapons design, and the life sciences. I was in training to study subjects from a "sociotechnical" perspective: an approach in which the technical operation of a system is examined in tandem with the social relations that it creates or preserves.⁴

I was fortunate to train under a group of eminent scholars of science, technology, and society—a field that might be defined by its focus on locality. This field has illustrated how materially based, everyday patterns of work—locally defined within laboratories, field sites, conference rooms, and even living rooms—can explain the success of science and technology and their expansion throughout the world.⁵ My early work with these colleagues has since been documented in two books: *Simulation and its Discontents*, a crosscutting collaborative project on information technologies and professional identities, and *Co-designers: Cultures of Computer Simulation in Architecture*, a more focused exploration of related changes in the building professions, based on my own doctoral dissertation.⁶

Despite my skills as a social researcher, I was hired to work on the museum master plan primarily because of my technical abilities. Educated in both computation and design (I also hold a professional degree in architecture), I was well positioned to think about how emerging information technologies could expand the space of the museum into a new virtual dimension. Yet I could not help but see the museum as a social space too—composed of everyday patterns of work that resembled the sites I was studying in grad school—in addition to a space for design. Before long, I decided to confront the social and cultural contexts for data at the museum, believing that it might help our team develop a master plan that worked locally rather than in the abstract for the sake of the curators and their visitors.

My training in sociotechnical research taught me to delve into contexts like the museum through ethnography: an "interpretative science" in search of meaning, practiced through a combination of close observation and interviews.⁷ Ethnography requires an immersive venture into the local. On the museum project, these skills helped me develop an intimate understanding of the museum's data as well as rapport with its staff: those who created and maintained the data. The curators were, by necessity, an integral part of our project. My experiences learning about how they organize their work through data, as well as how those practices have changed over time, rank among the most formative of my professional career. But that was only one part of the story of the museum's data.

Another part—how the data might come into use by visitors—was one that the curators could not easily tell. For that, I had to turn to the visitors themselves and other intermediary informants. I eventually brought my questions about data use to the museum guards, hired to mind the galleries and watch over the art. Notwithstanding their characterization by the museum as “security,” I could see that these were important members of the American Wing staff who spent considerable time answering questions from visitors and helping them navigate the building’s circuitous plan. Moreover, the guards knew better than anyone what visitors do: how they move, where they go, and even why they get lost. The guards proved to be among the best sources of insight about the potential contexts of data use within the American Wing galleries. It also became apparent that they would be mediating visitor interactions with whatever information technologies we put into place.

Unfortunately, the American Wing’s curators didn’t initially understand my attempts to include the guards in the design process. From the curators’ perspective, the guards were not part of the museum’s information infrastructure, or at least they were not intended to be. Nevertheless, an unofficial series of interviews with the guards prompted a turning point in my thinking for the project and more broadly. The insights that I gleaned from speaking with these overlooked experts on visitor activity were revelatory and a long time in the making; the guards were happy to be asked about what they knew. Their conceptions of the museum layout and knowledge about visitor practices proved indispensable for the work of putting together our master plan, including the way that we numbered the floors. Because the American Wing was once a separate building, its floors do not line up with the rest of the Met complex. I learned that the layout of the American Wing and its odd relationship to the rest of the museum meant that visitors had trouble orienting themselves using the museum’s own maps.

Building on our work with the American Wing’s curators as well as its cadre of insightful guards, our team from Small Design proposed and later implemented a variety of public uses for the collections data. One of the most memorable designs involved the presentation of data inside the American Wing’s main elevators. The architects of the renovation, Kevin Roche, John Dinkeloo, and Associates LLP, had already designed beautifully detailed glass cabs and elevator shafts to replace the existing ones. In each cab, all but one of the walls was to be transparent, allowing views directly out of the elevator and into the galleries. But this design had an unfortunate limitation: the spaces visible from the cabs would have few objects on display. Our team had the idea to use large data displays in order to make the single opaque wall of each elevator cab into a virtually transparent surface.⁸

Today, more than ten years after we completed the installation, the elevator displays are still in operation. From within the cabs, visitors can see three-dimensional digital representations of each floor, annotated by details from the museum’s collections data. But getting the displays right took some tinkering. Our early designs included

everything in the collection. Only after many iterations and feedback from the staff did we converge on a more modest design, with carefully chosen elements to represent each floor. This approach resulted in simpler images that don't replace the experience of the collection but rather invite visitors to step off the elevator and see the objects themselves. We made use of the reconstituted collections data as well as the guards' advice on how to orient visitors. The resulting displays show first-person perspective views of the museum layout, not just the data, and highlight a small number of objects that can be used as landmarks for navigation.

Participating in the American Wing project was one of my earliest experiences helping general audiences to see through data. Today, the notion that data might convey transparency, the appearance of looking beyond the boundaries of our material surroundings, is increasingly common. Yet as I learned at the Met, the view through data is always curated. In ways that are often invisible, data and their experience must be carefully composed, if they are to be comprehensible by a broad audience.

Although we may acknowledge that data and their interpretations are the products of narrowly prescribed practices, we still sometimes expect data to reveal everything or simply the truth of the matter. Whether searching through the extensive records of an institution like the Met, comparing items for sale online, or trying to unpack a complex political event, such as the 2016 US election, we imagine data on their own will grant us insight. Data that are encountered in a museum, created for consumer settings, or collected using political polling, however, are not simply facts. They are cultural artifacts, manufactured and presented within contexts that matter. When data do seem to confer transparency, it is because we are shielded from important details about the context of their creation or display.

As of this writing, the displays that we made for the American Wing elevator are still visible. Yet sadly they are no longer being updated with real-time data. Visitors who step into the elevator today are watching a video on a loop, distantly based on our original interactive visualizations. It was painful and disappointing to learn about this change. Nonetheless, it reinforces my current sensibility about data-driven systems: they are locally contingent and even fragile. Designs dependent on data must be maintained and repaired on a regular basis to ensure that they are in sync with changes in the data themselves or the encompassing infrastructure of the place.

Working on projects intended to produce transparency has taught me much about what—beyond the data—goes into creating that illusion. I have learned to confront the locality of data: the ways in which they are shaped by the context of both their creation (think of the black-and-white photographs useful only for curators) and use (think of the conflicting conceptions of the museum revealed by the guards).

I wrote this book to explain what I have gleaned from years of experience working with unruly data sets in a range of settings. My message to the reader can be summed up as follows: you must learn to look *at data*, to investigate how they are made and

embedded in the world, before you can look *through data*. Do not take the apparent transparency of data for granted. When confronted with the task of understanding a new data set, thinking locally is thinking critically.

Lessons from my years of practice and many more as an academic researcher have informed the title claim of this book: all data are local. The book sets out not merely to defend this claim but also to demonstrate its implications for how to engage locally with a range of data sources that the reader might encounter in the public realm: a scientific collection, platform for cultural history, archive of the news, and online marketplace for housing.

Many years after signing on to the Met project, I am both a designer and scholar of information. I wrote *All Data Are Local* from the position of this dual allegiance, and my hope is that the book will resonate with colleagues in both fields. For designers, it is a primer on the social lives of data. For scholars, it demonstrates how design can extend and embody the work of sociotechnical studies.⁹ But the book is also intended for a more general audience, for whom both data and design might be equally opaque. I believe it can help uninitiated readers begin to think critically about data as well as the design of systems that are data driven.¹⁰ Across scales, from software applications to social media communities to smart cities, critical thinking about data is poised to become the new basis for identifying effective and ethical design.

Yanni Loukissas

Atlanta, Georgia

August 2018