Book Review

Life on Display: Revolutionizing U.S. Museums of Science and Natural History in the Twentieth Century

Reviewed by Eric Siegel

Historians Karen A. Rader and Victoria E. M. Cain have uncovered a rich, well-documented vein to mine in their book *Life on Display: Revolutionizing U.S. Museums of Science and Natural History in the Twentieth Century*.

The result is essential reading for contemporary museum professionals, particularly for those working in science or natural history museums. As a personal reflection, I have been working in botanical gardens and science centers for more than 30 years, and the book addressed many of my longstanding questions and concerns: how we might best inculcate a sense of engagement with and stewardship of the natural world; how institutions balance curatorial and educational functions; and how funding considerations shape collecting and display policies. Late-night discussions, online debates, panel sessions, articles, and other forums in which our field is dissected and analyzed by museum professionals will be immeasurably enriched by the historical contexts offered by *Life on Display*.

The book's outline is straightforward and does not break new ground. At the beginning of the 20th century, American natural history museums were shaped exclusively by scientists and curators who saw public display and education as secondary or even irrelevant. A variety of progressive education movements that arose in the early 1900s pushed these insular institutions toward public engagement, energized by the evocatively named "museum men" (a phrase the authors use often and without attribution to describe the first wave of reformers). The resulting tension between curators and educators will be familiar to contemporary museum professionals. Dioramas were at the center of a new wave of popularization that opened the museum to broader audiences. The scientific staff looked askance at these new visitors asking the eternal museum question, "But are they learning anything?" During the years between the world wars (major upheavals, such as world wars and the Great Depression are treated only glancingly in the book), various waves of experimentation with educational programming and display came and went, along with some seriously naïve notions about the value of push-button/turn-crank interactivity. The impact of Sputnik on science education is another familiar part of the emergence of broad public science education as a national priority. A new kind of institution—not based on collections, but on interaction and learning—began to take root in major cities, and snapped into focus with the emergence of San Francisco's Exploratorium, founded in 1969 by the physicist and educator Frank Oppenheimer.

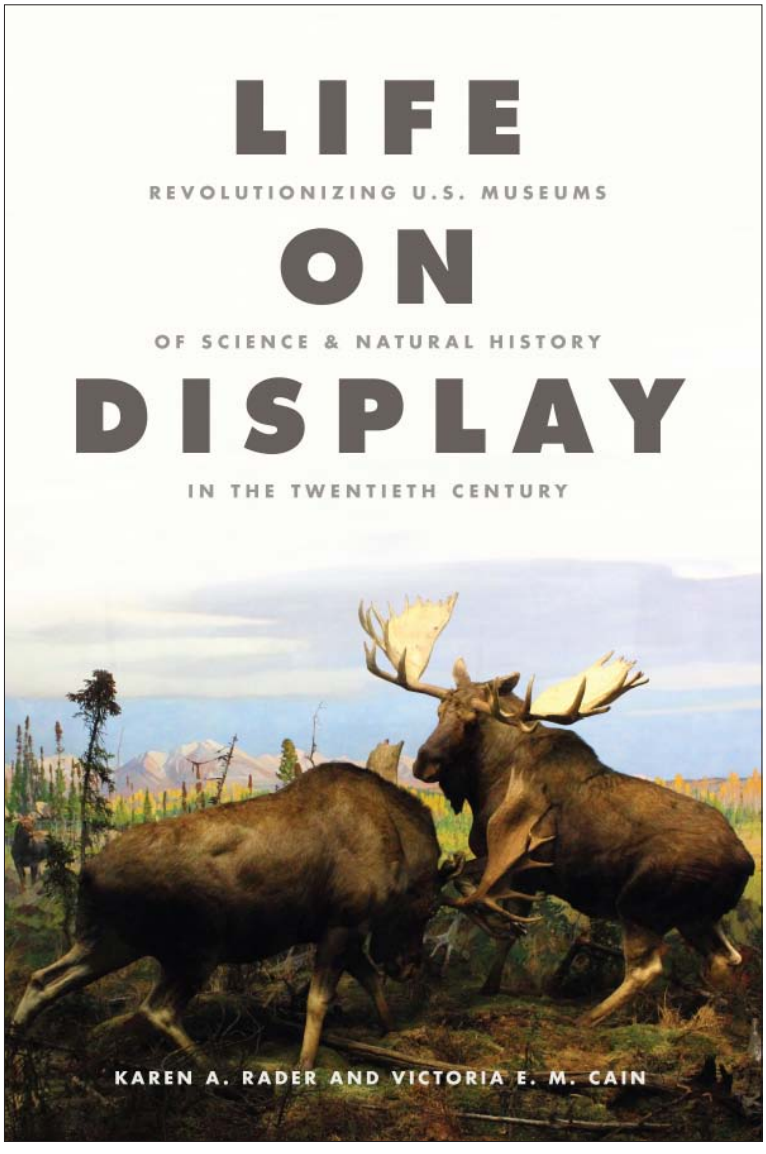
Following the Exploratorium's model, science museums took the lead over natural history museums in fostering public engagement with science, and federal and private funding ensue. Edutainment rears its dynamatronic head, along with blockbuster exhibitions that help to reestablish the value of natural history collections. And the century ends with the kind of tangled complexity that is the result of lack of historical distance.

Life on Display: Revolutionizing U.S. Museums of Science and Natural History in the Twentieth Century

Karen A. Rader and Victoria E. M. Cain

Published by the University of Chicago Press,

Hardback and eBook, 2014. 456 pages



The book does not dramatically revise this outline, which will be familiar to anyone who has studied museums. Rather, it animates it through astonishingly rich documentary research. With a few notable exceptions, such as Frank Oppenheimer, the authors resist the impulse to ascribe the evolution of museums to individual insights or efforts. Instead, the book explores and documents the accumulation of individual interactions—between museum staff with conflicting claims, with government officials, educators, scientists, and regular museum working staff—that adds dimension and nuance to the narrative. Over the course of a century, there is enough compromise, reemergence of old ideas and backtracking on new ones that I question the book's subtitle, which suggests that there has been a "revolution." Nevertheless, the more step-wise evolution is fascinating to follow, capturing and illustrating how museum trends rise and subside, subject to internal and external forces.

For example, let's go back to the 1920s to meet these "infectiously enthusiastic faction of reformers, known in the museum world as 'museum men,' [who] worked to realize exhibits' educational potential in these decades, encouraging fellow staff members to join them as they experimented with new approaches." The impact of museum men was transformative, if diffuse. They were behind the advances in lifelike taxidermy, the push for more natural displays of specimens, an increased focus on audience engagement and museum pedagogy, and a growing tension with curators and researchers. The book liberally sources board minutes, public and private letters, and period publications to add texture to the behind-the-scenes advocacy that progressive staff undertook to promote education and public engagement, with varying degrees of resistance from scientists and directors.

The rich and detailed portrait of the constant negotiation among pedagogy, the public, funders, museum men, and scientist/curators emerges early in the narrative, and remains a constant and illuminating reminder that the dynamics of contemporary institutions have their foundations in the history of public museums. I had been generally aware that the dioramas that so impressed me in my early years at the American Museum of Natural History were historically important, but I hadn't realized the profound impact that dioramas had on the public and on museum practitioners. In the 1920s, the American public developed a pre-electronic-media passion for panoramas, dioramas, and other immersive reconstructions of natural and historical settings, and this new format became a major attraction. In a typically "insider baseball" passage, the authors describe the importance of dioramas to the American Museum of Natural History:

> Thanks to private patronage, the American Museum's general income steadily climbed from $446,000 in 1910, to $946,000 in 1920, to $1,827,000 in 1930. Indeed, the number of donations in the 1920s was more than 10 times what it had been in the 1910s—an increase that museum administrators attributed almost exclusively to dioramas and expeditions.

For the first time, visitors could engage with tableaux that placed animals, plants, and landscape into a single experience, and some scientists were enthralled with the pedagogical opportunities, particularly since gathering specimens for new dioramas funded expeditions that allowed them to do more systematic collecting. As the decade progresses and the barely-alluded-to Great Depression of the 1930s began to bite, the enthusiasm for dioramas began to pale. One might also speculate, though the authors do not raise this possibility, that the wide popularity of movies removed some of the romance of the dioramas. The wildly popular dioramas, seen by some as populist pandering, by degrees become the dusty stale corridors of the late 20th-century natural history museum. As a side note, it is wonderful to see that these dioramas are again the focus of interest in some forward-looking natural history museums, and as the wheel of museum history turns, are treated as historically important and compelling.

Interactivity in all its forms becomes the new catchword in a long and rather diffuse section of the book that reflects the wide range of experimentation that characterized the period between the two world wars. Inspired by the Deutsches Museum, founded in 1903 as the first science and technology museum, and the 1939 New York World's Fair, interactive exhibitions became the focal point for the American science museum experience. The *New York Times* reported from the Chicago Museum of Science and Industry that a visitor could "do his own exploring and experimenting with the animated exhibits." He could "push a button or throw a switch …as long as he will, or until the machine wears out. The attitude of the officials toward the wearing out is: 'When they give out, we'll get another.'"

The authors share a well-grounded ambivalence for interactivity, suggesting that while it paralleled a new movement in formal education toward more engaged and hands-on learning, its theoretical underpinnings were shallow, and evidence of its success in museums even less well developed. As early as 1926, *Museum News*, the magazine of the American Association (today, Alliance) of Museums opined:

> It becomes increasingly evident that what people touch becomes a part of their personal experience more completely than

> anything they merely look at, especially through glass. Even the chance to press a button to start a piece of mechanism...relieves the sense of frustration due to the checking of Nature's most active means of individual research.

Against this speculation on the value of interactivity, a visitor is quoted as saying, "Great gobs of flame drop and drop in a big glass barrel. Something about phosphorus. Isn't it pretty?...Golly, salt molecules or something, a lot of big words."

After the Second World War, exhibitions began to focus on topics of immediate relevance to their audiences. According to the authors, this so-called "life adjustment" movement was prevalent in formal education in the 1940s and 1950s. Its aim was to develop knowledge as a tool of civic competence, improve health awareness, and promote other useful, practical aspects of the life sciences. The 1940s' discovery of penicillin on the one hand and the devastation of the atomic bomb on the other brought home the relevance of science to our individual and collective futures. The museum icon of this era was the famous and enduring walk-through heart—reflecting new advances in treating heart disease—that found its way into dozens of museums after it first appeared at the Chicago Museum of Science and Industry in 1952.

The authors recount the increased emphasis on science as a result of the Soviet-American space competition, spawned by Sputnik, and the race to reach the moon. Other accounts of science education in the 20th century emphasize the emerging need for engineers, physicists, and mathematicians. *Life on Display* downplays the distinction between the physical sciences and the life sciences, in part by claiming that discipline-based science gave way to an effort to improve "science literacy," a term used to describe a complex of skills and competencies that enhance a person's overall familiarity and comfort across all scientific disciplines. At the same time, the authors recognize that "despite its immediate popularity, the parameters of scientific literacy remained vague," and that in fact, its "malleability was likely what made the concept so appealing."

By the 1960s, science museums were advancing more rapidly than natural history museums in terms of innovation and even organization. Increasingly, science museum leaders made direct appeals to the U.S. government for federal funding for museum-based science learning. Though research in museums based upon botany, paleontology, and zoology collections were heavily supported by the National Science Foundation (NSF) in the 1950s, science centers—which typically do no collections-based research—were repeatedly rebuffed in their efforts to gain a foothold at NSF for their educational programs.

In one of the rare instances in which *Life on Display* cites an individual as the cause for a major transformation, Frank Oppenheimer is credited with a revolution in museum-based science learning that synthesized his passion for experimental physics with the artistic and individualistic gestalt of 1960s San Francisco. The creation of the Exploratorium echoes the founding myths of Apple and Hewlett Packard. Charismatic individuals, with few resources but the right idea at the right time, attracted attention, followers, and money, and created a genuinely new category of science learning. Because this book focuses on life sciences in museums, the authors dig into the relatively few exhibitions that give biology, as opposed to physics, the Exploratorium treatment. Nonetheless, Oppenheimer's vision was (and remains) compelling for educators, scientists, policy makers, and funders. Through his work and the work of his

contemporaries, NSF finally yielded to museum-based science learning, and became a leading source of funding for the further evolution of the field.

This set the stage for the rapid dissemination of Exploratorium-like science centers, with exhibition strategies and educational programs modeled on the hands-on, inquiry-based approach pioneered by the San Francisco group. Relatively quickly, though, cracks appeared in the consensus around the kinds of context-free, purely curiosity-driven science learning that Oppenheimer (or at least his followers of the ensuing decades) created. As the scientific underpinnings of evolution and environmental challenges emerged, the importance of natural history museums—with their historical collections, systematic biologists, and content expertise in earth sciences—was reasserted. The book touches on the nature of these controversies, but even in the few years since it was published in 2014, the stakes have been raised as science education has become increasingly politicized.

As I suggested at the beginning of the review, the book becomes less lucid in its narrative as it approaches the present. Historical distance is very useful for discerning the important strains of work at museums in the past century, and the current period appears as an interval of experimentation and uncertainty. I suspect when a few decades have passed, the patterns will be more apparent and the current generation of life sciences work in museums will be more readily analyzed.

A persistent flaw in this rich narrative is a kind of hermetically sealed quality to the history of museums, with only passing reference to the social, political, economic influences that shaped these institutions. Waves of immigration, access to international travel, social upheavals (such as wars, the Depression, and 1960s activism and counterculture) are variously ignored or glimpsed at a distance. This book seems somewhat old-fashioned in how it defies the trend in contemporary social histories of public institutions that place them firmly in the context of broader historical and social forces. For example, I was surprised to see the term "museum men" used unselfconsciously and with no reference to the gender imbalance that I assume shaped museum culture. Similarly old-fashioned is the book's focus on the major players in the museum business in New York, Washington, DC, and Chicago, leaving me curious about the thousands of smaller museums throughout the country that participated in the century's changes. Finally, I would have appreciated some reference to the living collections, zoos, botanical gardens, and aquaria that have contributed to public engagement in the life sciences over the past century.

But overall, I was enthralled by *Life on Display*. It is truly an insider's book, but for those of us fortunate enough to have made our careers in science-based museums in the past few decades, it provides irreplaceable insights into the history and continuity of this work and will help to enrich museum practice in the coming decades.

Finally, the phrase "museum man" that the authors used to describe progressive, committed, thoughtful, and artistically gifted museum practitioners of the past reminds me of our friend and colleague Sean Duran, an authentic museum man, who we were so sad to lose this past year. I'd like to dedicate this review to him, as *Life on Display* reminds me of the conversations we did have and the conversations we might have had.

Eric Siegel is Director, University of California Botanical Garden, Berkeley, California. etsiegel@berkeley.edu