excavate archaeology, the occult practices of archaeologists, and "the inherently spooky nature of the material past" (p. 2). What follows, however, is little but a compilation of various details of the intellectual history of archaeology. Card's initial claim that the archaeological record and its practice are inherently mysterious and supernatural is never fully developed, beyond the insight that the roots of many popular myths and tropes of archaeology derive from archaeology itself and that we ignore them at our peril. How myth—and spookiness—relate to the current practices of archaeologists is not investigated. The final chapter, fleshing out the subtitle of the book, contrasts mainstream scientific archaeology with "alternative archaeology," which Card argues revives some very dubious Victorian ideas about the past and other cultures.

Among the foundations of spooky archaeology is also the contrast between chronological time that focuses on chosen episodes of the past and mythic time that provides a profound past for the present. Although that should open up a discussion about what kind of mythic time suits our age and the role of archaeology in bringing it about, Card does not go beyond a postcolonial critique of the way the pasts of indigenous, colonized populations have been subsumed under atemporal mythical concepts. The social power that lies in profound myths for the present is ignored, as are potent mythical concepts of the past that commonly occur outside the scientific paradigm, predating and competing with professional archaeology, even outside of the Victorian empire.

Spooky Archaeology excels in presenting many intriguing aspects and lesser-known details of the history of archaeology and archaeological interpretation. Yet the book sits oddly between different genres: it neither provides a fully developed academic analysis nor a sufficiently lighthearted exploration suitable for airport bookshops.

Spectacular Flops: Game-Changing Technologies That Failed. MICHAEL BRIAN SCHIFFER. 2019. Eliot Werner Publications, Clinton Corners, New York. xii + 308 pp. $32.95 (paperback), ISBN 978-0-9898249-9-6.

Reviewed by Payson Sheets, University of Colorado

This fascinating volume documents 12 spectacular technological flops from the late eighteenth century to today. They include early experimentation with steam power (both vacuum and pressure), electricity, interoceanic canals, nuclear power for bombers and earth sculpting, the Concorde supersonic airplane, hot and cold nuclear fusion, and a turbojet-powered automobile. Schiffer hoped to detect patterns and commonalities, but the diversity proved challenging. He was able to discern five common components in the cases: invention, development, manufacture, adoption, and use. To those five, we add failure, and failure can occur at any time in that series.

Many of the failures that Schiffer presents, along with so many other flops, have been given single-cause explanations, such as failures that occurred because of unforeseen economic conditions. Schiffer employs his anthropological sophistication to situate each technology in its historic, cultural, economic, social, political, and occasionally religious and ideological contexts, in order to more fully understand each project. That breadth often included significant successes that preceded the failures. For example, Ferdinand de Lesseps's success in building the Suez Canal was salutary for international commerce in the 1860s, and it has continued to today. Conditions in Panama, however, were so different—tropical diseases, the need for locks, demanding topography, and other problems—that his efforts in building the Panama Canal proved disastrous. Similarly, Nicola Tesla's experimentation with alternating electrical current was more successful than the direct-current motors that Edison determinedly advocated. Tesla's striking early successes led to his building a large experimental laboratory in Colorado. He demonstrated that direct current (DC) could be transmitted for only short distances and could power only relatively small motors. His greatest success was in pioneering systems and motors reliant on alternating current (AC), which have become standard. Tesla, however, greatly overextended himself in claiming that he could develop a worldwide system to distribute energy—including electricity—from a single transmitting tower, which proved impossible and became his career-ending flop.

Schiffer employs a behavioral and cultural-contextual approach to understand each case of technological innovation that ultimately led to failure. For example, the world's first automobile ("automobile," meaning a self-propelled vehicle) was invented in France in 1769. Steam-powered pumps were being developed in the late eighteenth century, in the course of the Industrial Revolution, and many were quite successful. The French military desired a better means of hauling heavy artillery over open ground than using animal power. A Frenchman named Nicolas-Joseph Cugnot took up the challenge and designed a steam-powered vehicle that had the power to pull the artillery. It was ingeniously designed, but the first version was accidentally driven into a wall

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and destroyed, and the revised version was never finished. Cugnot's accomplishments never made it into the public arena. They were kept secret because they were a French military project. The combination of an incompetent operator and military secrecy led to the spectacular flop of what could have developed into more automobiles.

Of considerable personal interest to me is the case of R. Buckminster Fuller, one of the great innovators of the early to mid-twentieth century. I attended many of his marathon sessions at the University of Colorado, Boulder—which typically lasted from mid-afternoon through midnight—during which he would discuss his technological innovations and give his assessments of conditions in the modern world. Those of us in his audience—usually a few thousand people—were encouraged to bring food, drink, and sleeping bags! We were enthralled with his rambling free associations, insights, speculations, successes, and failures.

As Schiffer notes, Fuller's greatest success was his invention and deployment of the geodesic dome. It is a hemispherical thin-shell structure employing triangular elements in a polyhedron. Consequently, it is very light while being extremely strong. A sizeable one spanning 145 feet was built in Hawaii in only 22 hours, and it is a concert hall that seats 2,000 people. Several thousand geodesic domes have been built around the world. Even some durable tents for expeditions employ his geodesic dome design principles.

Buckminster Fuller experienced several spectacular flops during his lifetime. Perhaps the best known is his Dymaxion car, introduced to the public in the early 1930s. This zeppelin-shaped car had an aerodynamic design, with a very fuel-efficient engine in the rear. Two front wheels supplied the power, and a single back wheel provided steering. The conservatism of the directors of Detroit's three major carmakers (Ford, Chrysler, and General Motors), along with the depths of the Great Depression, unfortunately led to the demise of that car, which was decades ahead in many aspects of its innovative design and engineering.

I believe that Schiffer's five components in technological change—invention, development, manufacture, adoption, and use—have applications beyond our postindustrial world. For instance, experiments with different materials for making Acheulean handaxes have found that obsidian and other more readily flakeable materials resulted in poor durability. The makers therefore often favored hard-to-flake quartzite. The same may apply to different tempering materials in early ceramics, fluting Clovis points, experiments with plant domestication, and a great deal more.

I highly recommend this book for anyone interested in successes and failures in technological change, as well as the various contextual elements that affect them. We are fortunate that Schiffer has taken on such broad, important subjects—well beyond the minutiae we often publish in books and papers about conventional archaeological topics. As in his books about portable radios, electric cars, and the history of electricity, Schiffer shows us here the myriad connections between technology and society.

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