Rule of Logistics: Walmart and the Architecture of Fullfillment by Jesse LeCavalier (review)

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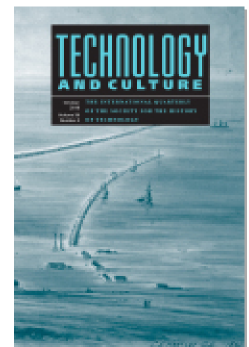

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potential downsides of increasing reliance on cockpit automation as well, including the horrifying case of Air France Flight 447, which in 2009 plunged into the Atlantic Ocean killing all aboard after the pilots were unable to control the highly-automated aircraft (due to lack of practice) in an otherwise survivable emergency situation (p. 130).

While many historians address the present and future only briefly in their conclusion, Schultz is writing for two separate audiences: fellow historians of technology as well as mid-career military officers who represent the rising generation of top commanders and policymakers. This may seem a tall order, but the author's diverse background—retired military pilot, Ph.D. in History of Technology, former Commandant and Dean of the U.S. Air Force School of Advanced Air and Space Studies—allows him to bridge this gap. He invokes Thomas Hughes's reverse salients (p. 24), Edward Constant's presumptive anomalies (p. 31), Thomas Kuhn's paradigm shifts (p. 58), and Norbert Wiener's theory of cybernetics (p. 71) to help explain why and how technological changes occurred throughout the past century of flight, offering succinct descriptions of each concept in the text for an educated but non-scholarly audience of military professionals. In this way, Schultz provides readers with both the historical case studies and the theoretical tools to clearly demonstrate what too few policymakers seem to fully grasp: there is no such thing as technological determinism (p. 121).

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Rule of Logistics: Walmart and the Architecture of Fullfillment.

By Jesse LeCavalier. Minneapolis: University of Minnesota Press, 2016.
Pp. 296. Paperback $30.

In *Rule of Logistics*, Jesse LeCavalier brings a sophisticated analysis and a facility with visual tools to help us understand the scale and scope of Walmart as a territorial and organizational system. It is a careful and precise analysis of the speed of capital at the end of the twentieth century. LeCavalier works through the details of Walmart's supply chain and business practices with clarity, organizing and re-evaluating the history of management and logistics in a way that reveals the seemingly invisible while connecting micro-phenomena to structural conditions.

Rule of Logistics joins a number of compelling texts that look to management and organization directly as a realm of knowledge and as substantive to processes of historical change. The book is indebted to Keller Easterling's deft re-assessment of infrastructure, finance capital, and political boundaries (*Extrastatecraft*, 2015) and to the Aggregate Architectural

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History Collective's deployment of Foucault's governmentality as a rubric for placing architecture amidst its socio-political complexities (*Governing by Design*, 2015). While there is a long history to the importance of management, more recent interest in the more time-focused, deployable, and profit-driven ideas around logistics shift the ground on which such analyses have been made (Benjamin H. Bratton, *The Stack*, 2015; Michael Osman, *Modernism's Visible Hand*, 2018).

Walmart is a convenient and compelling spectacle to be dismantled by the text and its images. It is a strangely pleasant journey; narrative turns and analytic illustrations make for a compelling and almost entertaining reading experience. Walmart is an attractive subject for such a wide-reaching analysis, having obvious scope and scale, interest for a range of political affinities, and detailed information about supply chains and resource structures.

LeCavalier's diagrams, drawings, and photographs do more than enliven the narrative; they are evidence of a broad range of research tools being deployed to understand, document, and to some extent critique both supply chains and chains of effect. In a folio at the middle of the book, these images take center stage, including a pair of exploded axonometrics comparing a Walmart warehouse to a data center. These analytic forms are useful in understanding Walmart and its operational effectiveness, and also in appreciating the capacities of design research.

The images also bring to the fore any sort of political project embedded in deepening the understanding of infrastructure. This is a challenge in the scholarship on infrastructure—does the ever-presentness of it complicate its political agency? (Yaneva, *Make Architecture Political* 2016). How can an all-over system be both described and critiqued, illustrated and interrogated? The images seem to offer a suggestion—of tools, of the depth of research, of affiliations between what is available as evidence and what is considered as a possible future. These analytic images, "technical images" to use Vilem Flusser's term that LeCavalier repeatedly cites, also augur a possible discussion, a different realm for understanding and engaging in infrastructure as politics.

Thus, another complication: the historical nature of the subject. Walmart logistics seem a bit old fashioned in the era of Cambridge Analytics, of humans as processors of capital for Facebook ads and fake news, of Amazon's global empire. *The Rule of Logistics* is more of a history than the book itself seems to realize. Potent yet heterogeneous questions of the effects of Walmart's spatial and logistical innovations—on race and class relations, on the reconfiguration of the American political landscape, of the resilient pathways available at the scale and scope of Walmart's operations—are opened up but also left for later conclusions. *Rule of Logistics* seems strangely nostalgic for a more straightforward relationship between people and data.

It is a strong book, well-presented and -described, and *Rule of Logistics* has already proven itself to be an influential book in terms of its subject and its method. It is a compelling and necessary chronicle of the acceleration and intensification of capital.

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Daniel A. Barber is an associate professor of architectural history at the University of Pennsylvania. His next book *Brise-Soleil: Architecture and the Culture of Climatic Adaptability* is forthcoming from Princeton University Press.

The Genealogy of a Gene: Patients, HIV/AIDS, and Race.

By Myles W. Jackson. Cambridge, MA: MIT Press, 2015.
Pp. 344. Hardcover $35.

In *The Genealogy of a Gene*, historian of science Myles W. Jackson traces the history of one human gene, CCR5, using it as a means of probing various aspects of the public and private world of biocapitalism. CCR5 proves an appropriate topic, because its history reveals and intersects with many major issues in recent biomedicine, including patenting and commercialization, efforts at personalized medicine, HIV/AIDS drug development, and debates about genetics and race. Historians of science and technology who work on these issues are likely to be already quite familiar with much of the ground covered in this book but will be impressed by the depth and breadth of Jackson's primary source analysis.

Jackson's main argument is that the biocapitalism sector is more diverse in its efforts and motivations than scholars have previously demonstrated. Rather than a clear division in the interests of public and private entities, Jackson seeks to show the multi-faceted considerations of various firms and government institutions. *The Genealogy of a Gene* comes up somewhat short in this regard, due in part to a lack of explicit and sustained engagement with the previous studies and arguments of other biocapitalism scholars, which are largely buried in footnotes. As a result, historians not well-versed in this literature will have trouble assessing the strength of Jackson's claim that scholars have oversimplified this history.

Throughout *The Genealogy of a Gene* Jackson deftly shows the role—often unintentional—of U.S. Government agencies in opening up opportunities that biocapital firms exploited. Most notable was the U.S. Patent Office's (USPTO) hesitance to address human gene patenting, with all of its implications for biomedical research—not to mention its significance for our collective sense of humanity—as being distinct from patents on other chemical compositions of matter. As Jackson describes it, the USPTO's willingness to allow gene patents led to a flood of applications that it could not possibly assess sufficiently. Thus, gene patents were granted based on little or no laboratory work, limited knowledge of protein function, and some-