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Wie die Welt in den Computer kam: Zur Entstehung digitaler Wirklichkeit [How the world came to be in the computer: On the creation of digital reality] by David Gugerli (review)

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Technology and Culture, Volume 62, Number 2, April 2021, pp. 657-658 (Review)

Published by Johns Hopkins University Press

DOI: <https://doi.org/10.1353/tech.2021.0084>



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Wie die Welt in den Computer kam: Zur Entstehung digitaler Wirklichkeit [How the world came to be in the computer: On the creation of digital reality]

By David Gugerli. Frankfurt a. M.: S. Fischer Verlag, 2018. Pp. 256.



“How was the world transferred into the computer?” This question is the starting point of the fascinating book by David Gugerli, a renowned historian of technology from Switzerland. With his book, he turns the standard narrative of the history of computing on its head. While many historians have asked how the computer changed the world, Gugerli investigates how parts of the world were transferred into the digital. Since the mid-twentieth century, companies, state organizations, individual inventors, and computer users have modeled their respective spheres of influence into digital data—or at least the aspects they deemed important. Gugerli analyzes the grave implications of this costly, lengthy, and sometimes frustrating process in his well-written book.

Methodologically, Gugerli draws on the works of Michael S. Mahoney, one of the founding fathers of software history. Mahoney often demanded a closer look at the social history of computerization. It is important to think of the computer not as exceptional but as ordinary. The social practices that are structured around the machine then come into view. Gugerli elegantly avoids the luring danger of technological determinism, the theory of the machine structuring the world, through examining how users shaped the way their world was modelled to fit into the computer. He also succeeds in moving the history of computing away from heroic stories of men ahead of their time. Even though the academic history of computing has overcome this type of story at least since the end of the Dot-Com boom, it still appears in many popular works. It is therefore an even bigger achievement that the publisher of the book, S. Fischer, also aims at a popular audience. The change of perspective from inventors to users results in a different source base. Instead of interviews or memoirs of computer pioneers, Gugerli’s endeavor is informed by scientific papers, reports, announcements, and advertisements. Here, historians find the work procedures, rules, and implementations of how actors prepared the world for computerization. At the same time, these documents generated the attention and the aura of newness that were necessary to keep computerization running.

Gugerli follows this process of computerization in seven chapters in a more or less chronological order. First, he investigates traditional methods of calculation before the computer and how they were changed to fit the machine (ch. 1). It is telling that the engineers described the act of calculating only at the first presentations of calculating machines and only

briefly. The boring, tedious, and complicated task was not to distract the audience from the great future of these machines. In contrast, applications in science, the military, and big business were spectacularly advertised. Consequently, Gugerli does not start with the common first machines, such as Konrad Zuse's Z3 or ENIAC, but with the UNIVAC. This in turn also questions narratives heavily oriented towards IBM.

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2021
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From a conceptual perspective, it is really helpful how Gugerli breaks down the functions of the computer into four core aspects: sort, classify, calculate, and decide (ch. 2). Programming, often forgotten in many stories of the computer, is the main theme of chapter 3. Drawing on the notion of the “software crisis” of the late 1960s, when software costs rose, demand increased and skilled programmers were scarce (cf. Ensmenger, *The Computer Boys Take Over*, 2010: 83–110), Gugerli shows how programming became a bottleneck for transferring the world into the computer. With deep technical knowledge and attention to the development of core concepts of computer science, he draws on his earlier work—and that of his working team—on the programmer, end users, and data bases here. The most fascinating chapter of the book is on “synchronization” (ch. 4). Gugerli zooms in on the mission control center of NASA, showing in a nearly ethnographic manner inspired by media studies how digital and analog tools were used hand in hand. In the following chapters, Gugerli demonstrates the changes and technical preparations users had to make to install and continuously use this new machine after it was not new anymore. This includes the Personal Computer and computer networking, even though Gugerli slightly underestimates the role the Cold War played in the work of computer scientists like J. C. R. Licklider, Robert W. Taylor, and their environment (p. 142). Notwithstanding, Gugerli's book is a highly recommended read for everyone interested in critical approaches on technology. It is not only well informed but a great pleasure to read.

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Martin Schmitt is working as a post-doc at the Technical University of Darmstadt, Germany. He was co-editor of the recent *Histories of Computing in Eastern Europe* (Springer, 2019).

Citation: Schmitt, Martin. “Review of *Wie die Welt in den Computer kam: Zur Entstehung digitaler Wirklichkeit* by David Gugerli.” *Technology and Culture* 62, no. 2 (2021): 657–58.