Alberts, Gerard; Oldenziel, Ruth (Hrsg.): *Hacking Europe. From Computer Cultures to Demoscenes*. London: Springer London 2014. ISBN: 978-1-4471-5493-8; VIII, 269 S.

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Hacking is a word caught between definitions. Non-specialists use "hacking" to refer to virtually any crime that occurs near a computer. Many self-identified hackers, however, have decried these criminal associations as a corruption of the term. The true meaning of hacking, they maintain, involves creativity, experimentation, and the clever manipulation of technical systems. Thanks to this collision of meanings, the term hacking offers a useful index of the changing role of computers in society. Threat or opportunity? Control or liberation?

"Hacking Europe," a collection of essays edited by Gerard Alberts and Ruth Oldenziel, uses the idea of hacking as a starting point for a wide-ranging investigation of the social construction of microcomputing during the 1980s and 1990s. In the introduction, the editors define hacking as the playful appropriation of technology by those who use it, a type of tinkering with the potential to subvert or extend the capabilities of a machine beyond the intentions of its designer. This definition establishes a common theoretical framework for the book. Across nine chapters, the eleven authors of "Hacking Europe" argue convincingly that early users played a critical role in shaping the microcomputer according to the particular needs of their local environments.

Placing vanguard users, rather than states or firms, at the center of microcomputing history reveals a sub rosa trade of technologies and techniques among people and places that might otherwise have seemed cut off from one another. Patryk Wasiak's account of home computing in Poland features numerous such border crossings. According to Wasiak, a Polish enthusiast in the mid-1980s might purchase a ZX Spectrum while abroad in Hamburg, seek out a bootleg translation of the manual from a "computer bazaar" in Warsaw, and copy BASIC code out of an American computer magazine like Byte.

This grassroots exchange of computing materials and ideas was invisible to government officials who saw foreign computers as instruments of Americanization. Indeed, several of the contributors to "Hacking Europe" recount government efforts to resist American influence through the stimulation of domestic computing industries. While these programs rarely yielded lasting rivals to entrenched US firms like IBM, they nevertheless produced unusual admixtures of hardware and software, unique environments for the development of local microcomputing cultures.

Prevailing histories tend to locate the origin of hacking and hacker culture in the United States. The contributors to "Hacking Europe" repeatedly challenge the notion that hacker culture was a uniquely American phenomenon, and their efforts yield a variety of fascinating alternative origin stories. In the case of Yugoslavia, Bruno Jakić describes a hacking culture entwined with the legendary New Wave rock scene. With radio DJs broadcasting software alongside the latest punk singles, Yugoslav microcomputing took on a decidedly cool subcultural style with none of the geek stigma found in the US. Meanwhile, Theodoros Lekkas found very little evidence of a counter-cultural identity among microcomputing enthusiasts in Greece. Yet, because of structural exclusion from the formal software economy, nearly all computer owners were obliged to learn to hack simply to display Greek characters on their new machines.

The circulation of the terms "hacker" and "hacking" in the early 1980s reveals that English was lingua franca among European microcomputer enthusiasts. In some cases, the decision to communicate in English reflected an orientation toward the West during a moment of political division. The demoscene programmers in Northern and Western Europe documented by Antti Silvast and Markku Reunanen adopted English to signal their participation in a transnational imagined community. On the other hand, Caroline Nevejan and Alexander Badenoch describe the intensely local culture of in Amsterdam's De Digitale Stad as "a computer environment [...] where Dutch was spoken and where the agenda was set by Dutch social morals and codes" (p. 192).

But the prevalence of English was also a consequence of design. Users often found themselves facing keyboards imprinted with unfamiliar diacritics and currency symbols. Furthermore, programming languages and operating systems typically assumed fluency with English. While the hobbyists in Frank C. A. Veraart's history of Dutch home computing developed a standardized version of the BASIC programming language, the resulting "computer Esperanto" still required users to express themselves using commands derived from English: PRINT, PEEK, POKE, GOTO.

The events detailed in "Hacking Europe" occurred during periods of social change and political upheaval for many European states. Under these circumstances, Silicon Valley's zeal for deregulation and free trade did not hold the same appeal that it might have in parts of the US. In the book's most direct challenge to US-centric hacker histories, Kai Denker details the early years of the Chaos Computer Club, a West German organization that overtly connected the appropriation of new technologies with political activism. With the domestication of microcomputing, however, public opinion swung toward regulation and the Chaos Computer Club found itself increasingly marked and marginalized as a criminal outfit.

Beyond this, "Hacking Europe" does not engage very deeply with the criminalization of "hackers." Many authors prefer more neutral terms such as hobbyist, enthusiast, tinkerer, or user. But the whiff of criminality is what distinguishes hacking from mere tinkering. Even as hackers decry their misrepresentation, there remains a transgressive pleasure in the exploration of off-limits systems and acquisition of restricted information. In future research, it will be important to learn more about how microcomputer enthusiasts throughout Europe responded to the representation of hackers as criminals in film and TV during the 1980s and after.

Together, the nine chapters of "Hacking Europe" provide a vital account of the local appropriation of microcomputing during the 1980s and 1990s. The book grew out of a workshop held in Leiden in 2010 and, unlike many edited collections, it reads like a coherent intellectual endeavor, the result of authen-

tic collaboration. "Hacking Europe" show-cases a diversity of computing cultures rarely seen in previous scholarship. Ironically, the richness of this work reflects yawning gaps in the dominant American narratives. Between the garages of Silicon Valley and the labs of MIT, there are thousands of miles of cities and towns whose histories have yet to be written. "Hacking Europe" not only enriches our understanding of microcomputing in Europe but also provides a model for local histories of computing throughout the world.

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