

viously disjointed country (the world as seen from a moving train), Muybridge's "instantaneous photography" both excited and unsettled observers with its ability (in the phrase of the day) to "annihilate space and time." Muybridge improved upon his static photographic sequences with the zoopraxiscope, a complicated, fidgety device of his own invention that could project a moving image onto a wall: the prototype of the motion picture. The "river of shadows" of the book's title is the artificially reconstituted reality whose uncanny imitation of natural motion amazed and delighted viewers who flocked to Muybridge's lectures.

By inventing this projector, and, more significantly, by creating the sequential images of bodies in motion that it relied on, Muybridge played a key role in the transformation of visual experience in the late nineteenth century. This technological accomplishment is only half of the Muybridge story, as Solnit presents it. The other half is his act of witnessing and recording images of a disappearing West—the ill-fated Modoc Indians and the new national parklands, such as Yosemite—that were attractive to prospective purchasers in the East only when safely corralled and controlled. If there is a gap in Solnit's narrative, it is between these two sides of Muybridge's story. In trying to link Muybridge the technologically robust inventor with Muybridge the nostalgic witness to the past, Solnit reaches for a familiar teleology: "Did the Modocs make way not only for settlers and miners," she asks, "but for a new idea of California?" This new idea encompasses Hollywood as well as Silicon Valley, the delightful play of images upon a wall, and the technological reconstitution of a disappearing, troubling, or otherwise distant reality. But it does not meaningfully inform Muybridge's own life. By representing the photographer's actions as emblematic of his time, Solnit is left trying to account for one man's biography in terms of the grander transformations of the nineteenth and twentieth centuries. More compelling is her identification of the fascinating ruptures in Muybridge's narrative, both in his personal life and in the ministories he told with his camera.

Toolmaker, Brain Builder

BEHIND BIG BLUE:

BUILDING THE COMPUTER THAT DEFEATED THE
WORLD CHESS CHAMPION

By Feng-Hsiung Hsu. Princeton University Press.

\$27.95.

Reviewed by DAVID SHENK

When the inscrutable silicon behemoth known as "Deep Blue" beat world chess champion Garry Kasparov in a formal match in 1997, the media coverage inevitably veered toward the heartlessness of it all. MACHINE OUT-THINKS MAN was the inevitable headline, and the press supported this not unreasonable assertion with ominous accounts of a giant, black, steel-frame structure that could silently—creepily—calculate two hundred million positions *per second* and play for thousands of hours on end without any breaks or even so much as a cup of coffee. It was unfeeling and virtually unbeatable. HAL had come to life.

But computers do not truly generate their own intelligence—not yet, anyway. Everything about their brute strength and profound decision-making capabilities is conceived, designed, and sweated over by particular human beings. Feng-Hsiung Hsu's new how-I-built-it memoir reminds us that Deep Blue was a deeply human accomplishment, not just in the general sense that computers are a human creation, but also in the way that this project was fueled by a potent mix of chutzpah, grit, patience, and vanity. Nothing simply *happened*. Creating Deep Blue was like building Frankenstein, with Hsu and his team custom-designing and redesigning and re-re-designing and re-re-re-designing tiny silicon "chess chips," porting them with miscellaneous bits of computer hardware and setting

~ David Shenk, author of *Data Smog* and *The Forgetting*, is writing a cultural history of chess.