

meanings and values to these new technical developments, while redefining the value of old technologies such as vacuum tubes.

Hams also successfully overcame a social crisis. During the Cold War, ham amateurs, who could communicate freely with Soviet civilians, were frequently viewed as suspicious characters. Instead of stressing their role as peacemakers through such communication, hams emphasized their image as patriots and defined a role for ham radio in civil defense, as a potential provider of backup communication. This lessened the suspicion directed at hams and made them more acceptable in the Cold War context.

This book is the first scholarly monograph on the culture of ham radio operators. With its detailed and interesting analysis of the interaction between technical cultures and technical identities, it makes an important contribution to technology studies. It is highly recommended to anyone interested in the complicated interactions between technology, culture, and society.

SUNGOOK HONG

**Kelly A. Joyce.** *Magnetic Appeal: MRI and the Myth of Transparency.* viii + 198 pp., illus., app., bibl., index. Ithaca, N.Y./London: Cornell University Press, 2008. \$21.95 (paper).

MRI (magnetic resonance imaging) is a costly technology that was introduced in the United States in the 1980s. Since then, the number of MRI scanners, the number of MRI examinations performed in U.S. health care, and the associated costs have been steadily increasing, despite the absence of clear evidence that MRI contributes to improving patients' health. What social and cultural factors have made MRI so desirable?

In *Magnetic Appeal*, Kelly Joyce uses a multivisited sociological study to provide a convincing account of the overuse of MRI in the United States and of the appealing promises of bodily transparency promoted by—and promoting—the increasing use of the technique.

Joyce engages first with the history of the changing design of MRI representations, with the ambition to demonstrate how they have been culturally shaped since their introduction in U.S. clinical practice in the early 1980s (Ch. 2). She attempts to describe how and why MRI scans “turned visual”—that is, why the measurement data created through MRI examination disappeared in the early 1980s and why the visual coding of MRI data was stabilized as a grayscale mode of representation. Joyce relates this change to radiologists' quick establishment as

the dominant group of users of MRI technology, thereby promoting the adaptation of MRI scans to their own professional way of seeing the body. She also attempts to show how broad cultural contexts, such as the 1970s aesthetics of color, the proliferation of visual technologies in Western societies, and a popular fear of the nuclear, shaped the technological choices of professional users.

Joyce then delves into the making of MRI images as the bearers of transparent truth in clinical practice (Ch. 3). Analyzing cultural tropes that equate the MRI image with the body imaged and erase the human and technological intervention in the production of MRI examinations, Joyce gives an account of the cultural work by which MRI is produced as the provider of objective knowledge.

The fourth chapter, “The Image Factory,” further explores the work practices of MRI units. Joyce convincingly argues that MRI units function as assembly lines in the mass production of MRI examinations directed by imperatives of speed and production volumes. In her fifth chapter, Joyce exposes the mechanisms of the imaging economy that underpins the huge numbers of MRI examinations performed in the United States. She demonstrates the entanglement of the manufacturers' marketing practices with the MRI users' production of scientific knowledge and the media's production of information and stories about MRI. Joyce shows that the U.S. fee-for-service system of health care reimbursements, active public policies and investments from the 1990s, and physicians' fear of litigation have all created strong incentives toward increased MRI use and promote the technology as holding forth the promise of better health.

A weakness of *Magnetic Appeal* is its overly speculative historical account of the establishment of MRI's anatomical visibility (Ch. 2). Although interesting, Joyce's strong claims about the influence of specific cultural contexts on the shaping of MRI in this chapter are based on too few primary sources and interviews. Although the ambition to situate medical technologies in the cultural contexts of their emergence and use is highly relevant, further empirical work will be needed in order to identify the processes by which MRI has worked (and works) as a cultural object and has been shaped as one.

Joyce's use of the “visual” as a category that includes fundamentally different representational forms (e.g., graphs, anatomical depictions) is also problematic, with consequences for the validity of her conclusions in Chapter 2 and for the possibility of further theorizing the

shaping of MRI representations. Instead, the (re)production of the specific visualities at work in the history and practice of MRI needs more attention—for example, radiology’s anatomical gaze and chemistry’s laboratory gaze (cf. Amit Prasad, “Making Images/Making Bodies: Visualizing and Disciplining through Magnetic Resonance Imaging,” *Science, Technology, and Human Values*, 2005, 30:291–316; and Isabelle Dussauge, *Technomedical Visions: Magnetic Resonance Imaging in 1980s Sweden* [KTH, 2008]).

Joyce’s most convincing contribution to the sociological study of medical imaging is undoubtedly her analysis of the imaging economy of MRI (Chs. 4–5). She shows how the structures of health care funding and reimbursement in the United States and the cultural trope that the MRI image equals the body interact with one another and contribute to the excessive and sometimes inappropriate use of MRI examinations, to the detriment of other diagnostic methods that might be cheaper, more accurate, or more humane. Although historians will have to turn to other works for a history of MRI and its visual culture, *Magnetic Appeal* does succeed in linking traditional microanalyses of biomedical practices to critical studies of the national structures of health care services. It also demonstrates that STS studies of medical imaging can, and should, play a role in analysis of contemporary social issues.

ISABELLE DUSSAUGE

**W. Patrick McCray.** *Keep Watching the Skies! The Story of Operation Moonwatch and the Dawn of the Space Age.* xvi + 308 pp., illus., figs., index. Princeton, N.J.: Princeton University Press, 2008. \$29.95 (cloth).

The last few years have been the season of fiftieth anniversaries in the world of science and technology, reflecting the accelerated pace of activity in science during the late 1950s. Among those anniversaries are the beginning of the Space Age with the launch of *Sputnik I* on 4 October 1957, the birth of NASA one year later, and the International Geophysical Year (IGY), an unparalleled research effort that spanned the eighteen months from July 1957 through December 1958. In *Keep Watching the Skies!* W. Patrick McCray has given us a highly nuanced, eminently readable, and meticulously researched account of an unusual subject that encompasses all three events.

The story is important at many different levels. Operation Moonwatch (also known as Project

Moonwatch) was the brainchild of Harvard astronomer Fred Whipple, who transformed the Smithsonian Astrophysical Observatory (SAO) into a Space Age giant for astronomical research. Spurred by President Eisenhower’s announcement in July 1955 that an artificial satellite would be launched as part of U.S. participation in the IGY, Whipple proposed that the SAO would track these satellites. Accordingly, he organized a network of camera stations that would transmit their data to the SAO. But in order for the cameras to know where to look, he also organized a trained cadre of amateur observers who would use simple small telescopes to scan the skies optically at dawn and dusk. It was this amateur effort, guided by professional astronomers, that came to be known as Moonwatch—referring to artificial moons rather than the actual Moon (which was being watched by another IGY program of Markowitz Moon cameras sponsored by the U.S. Naval Observatory). Preparations began in 1956, and when *Sputnik* surprised some—though not the U.S. government, which early on simply failed to realize the importance of the Space Age—the Moonwatchers were ready. Over the next two years thousands of Moonwatchers at two hundred stations worldwide made more than ten thousand observations of artificial satellites. The Smithsonian discontinued the program in 1975.

In addition to providing the technical details on Moonwatch, McCray places the program in its broad cultural context. He finds that the amateur enthusiasm for Moonwatch participation was part of a broader interest in post-World War II science, an interest that included not only Buck Rogers, Flash Gordon, and Mr. Wizard but also citizen vigilance in the midst of the Soviet challenges of the Cold War. Science fiction was on the upswing—the title of McCray’s book is taken from the final words of the 1951 science fiction movie *The Thing from Another World* (“Watch the skies. Everywhere. Keep looking. Keep watching the skies!”); Wernher von Braun was proselytizing for space exploration in magazines such as *Colliers*, and all the while hundreds of thousands of volunteers in the Ground Observer Corps attempted to spot incoming nuclear-armed Soviet bombers. The skies came to represent both promise and peril, dual futures that are still with us fifty years later.

Similarly, the demise of Moonwatch in the mid-1970s is attributable to a blend of technical and cultural factors: Whipple’s retirement as the SAO director in 1975, declining funding from NASA at the end of the Apollo program, and improved satellite-tracking techniques. More broadly, McCray plausibly concludes that the