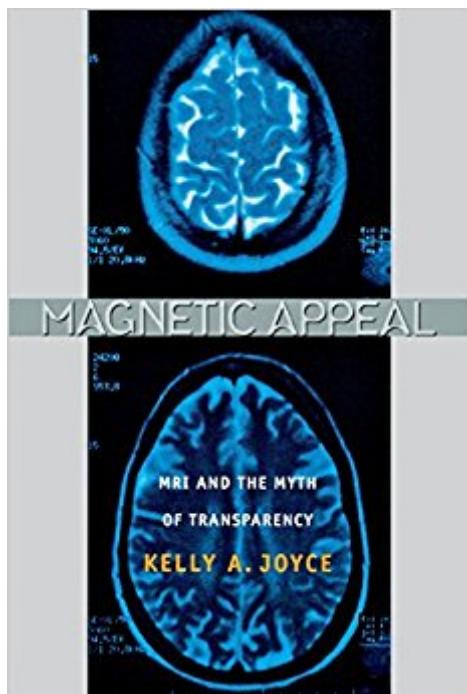


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# Magnetic Appeal: MRI And The Myth Of Transparency



## Synopsis

Magnetic Resonance Imaging, not so long ago a diagnostic tool of last resort, has become pervasive in the landscape of consumer medicine; images of the forbidding tubes, with their promises of revelation, surround us in commercials and on billboards. *Magnetic Appeal* offers an in-depth exploration of the science and culture of MRI, examining its development and emergence as an imaging technology, its popular appeal and acceptance, and its current use in health care. Understood as modern and uncontroversial by health care professionals and in public discourse, the importance of MRI—or its supposed infallibility—has rarely been questioned. In *Magnetic Appeal*, Kelly A. Joyce shows how MRI technology grew out of serendipitous circumstances and was adopted for reasons having little to do with patient safety or evidence of efficacy. Drawing on interviews with physicians and MRI technologists, as well as ethnographic research conducted at imaging sites and radiology conferences, Joyce demonstrates that current beliefs about MRI draw on cultural ideas about sight and technology and are reinforced by health care policies and insurance reimbursement practices. Moreover, her unsettling analysis of physicians' and technologists' work practices lets readers consider that MRI scans do not reveal the truth about the body as is popularly believed, nor do they always lead to better outcomes for patients. Although clearly a valuable medical technique, MRI technology cannot necessarily deliver the health outcomes ascribed to it. *Magnetic Appeal* also addresses broader questions about the importance of medical imaging technologies in American culture and medicine. These technologies, which include ultrasound, X-ray, and MRI, are part of a larger trend in which visual representations have become central to American health, identity, and social relations.

## Book Information

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## Customer Reviews

"Every chapter of *Magnetic Appeal* interrogates MRI from a different angle, each in turn questioning cultural assumptions in conjunction with the social, political, and economic relations that support and define the use of MRI. Taken together the chapters open a fascinating window into the realm of medical imaging technology. . . . A valuable read for those interested in medical technology, trends in healthcare, and science and technology studies, *Magnetic Appeal* brings to light the multiple factors that constitute our faith in medical technology." • Aleia Clark, *Sociology of Health and Illness* (Volume 31, Number 7, 2009)

"When a doctor orders an MRI, patients rarely think twice. After reading *Magnetic Appeal* you will be surprised and unsettled to find out how this seemingly infallible tool achieved its status as cultural icon and paradigmatic technology for health care in the twenty-first century." • Meika Loe, Colgate University, author of *The Rise of Viagra*

"Kelly A. Joyce's intriguing and insightful book about the emergence and use of MRI technology is a benchmark work in understanding the impact of visual technologies on medicine and society. Joyce's analysis of how images become authoritative knowledge will challenge notions of 'seeing is believing. *Magnetic Appeal* is a major contribution to medical sociology as well as science studies." • Peter Conrad, Harry Coplan Professor of Social Sciences, Brandeis University

"*Magnetic Appeal* gives depth and breadth to our understanding of the practices and political economy of MRI. The book offers a rich ethnography of MRI laboratory and clinical work. I regard it as a definitive work in the STS study of biomedical imaging technologies." • Lisa Cartwright, University of California, San Diego

Kelly A. Joyce is Assistant Professor of Sociology at the College of William and Mary. --This text refers to the Hardcover edition.

This is 'the' book to go to if you are interested in the use of MRI in the US from a cultural, sociological, and economic point of view. Nowadays (2009) articles are starting to appear in The NYTimes and Newsweek etc about how MRI is not perfect technology, always used in the best way, but that MRI use can be driven by cultural factors: a need for hospitals and imaging centers to make money, a need for legal protection, or simply because people believe that machines are somehow more accurate than doctors--even though MRI images have to be created by technicians and read

by doctors too. Well, this is the book that laid out all of the information and arguments those articles are catching up to today--in great depth and detail. Joyce did extensive primary research, interviewing doctors, technicians, and even the inventors of MRI, a couple of whom won Nobel Prizes and one, I believe, who was overlooked? Joyce covers the history of MRI, its development. She discusses in depth the whole idea of 'visual technology', taking a very careful modern look at the culture that surrounds visual machines and machines in general. She also includes a fascinating chapter on the workplace, the technicians who operate the MRI and run the actual exams, and the radiologists who read the exams, safety issues, the pressure on technicians to do more exams and on radiologists to read more exams. She lets everyone speak for themselves by including extensive quotes from referring doctors, radiologists, and technicians throughout the book. She visited the main radiology conference and gives a fascinating description of the MRI companies hawking their wares, the doctors presenting papers, etc. This book is really for a lot of different audiences--the chapters vary in complexity. The most obvious audience of course is sociologists, science and technology people, people who study risk, and visual culture people. The book is excellent for graduate and undergraduate sociology classes as a fine example of a rich and broad analysis, based on careful research, of a medical-sociological phenomenon. Teachers might pick a chapter or use the whole book, depending on their focus. But doctors will be interested too to read this book themselves, to see how a sociologist sees the profession in a certain situation--no doubt doctors will find much to agree with and also to disagree with, but it will certainly keep readers thinking. People interested in the history of science, the cultural sides of science, will certainly get a lot out of this book. And those involved with healthcare decisions, healthcare funding, locally and more broadly, of course. Joyce has also done work on Chagas. Regular layman eggheads and intellectuals will find a lot in this book too. Overall, a great book to have on the bookshelf for anyone involved in these issues or simply interested in the culture of science and medicine. And a must for libraries. There is no other book that comes even close to such an analysis of MRI.

Great title, very imaginative! The book looks at (no pun intended) the invention and use of MRI in clinical medicine. The interview quotes and fieldwork observations are rich and detailed, offering insight into how people who work with MRI think about it and why they use it. *Magnetic Appeal* offers a behind the scenes look at MRI use in medicine. Although the book focuses on one technology (MRI), it raises good questions about why we use other medical techs as well. People interested in medical anthropology, medical sociology and medicine will find the book of interest.

I thought this was a really interesting book on the sociology of MRI. It covers a lot of ground really thoughtfully. I'd recommend it especially to people who like Emily Martin's books.

With its catchy title, "Magnetic Appeal" was directed at a wider audience than the makers and operators of nuclear magnetic resonance imaging (MRI ) instruments. The change from "NMR" as used by Chemists for decades to "MRI" was correctly described as a reaction to the anti-nuclear frenzy of the late 1970s. The author's purpose was unclear until the last third of the book, which was that there are possible dangers to patients who are scanned from the magnetic fields, and from misinterpretation of the images. Broader issues such as fee-for-service vs. fee-for-patient were examined, as well as the financial stress of the million-dollar instruments demanding rapid patient throughput likened to a mass-production line. MRI images are shown to be artificial constructs easily altered by changing the computer settings of the instruments (p63), and not really a substitute for hands-on clinical examinations. They are often misinterpreted because no patient history or blood tests are available to the radiologists. They are often ordered to prevent malpractice lawsuits from succeeding. MRI is said the be "gold standard" of imaging when lower cost Xrays, PET scans, CAT scans or ultrasounds might give better results in a given case. The very useful electron beam tomography (EBT) and thermography are missing altogether. Assistant Professor Joyce took the trouble to attend MRI conventions, search the literature, and conduct 48 interviews of MRI personnel of all types, from technologists, radiologists, physicians to inventors. Their interactions, pay scales, and hierarchy are all described. Joyce made an attempt to explain the MR process, which did not satisfy my curiosity beyond the understanding that the magnetic properties of the nuclei of the hydrogen atoms in water are utilized to make the scans because the environment of the water molecules changes those properties. Not very edifying. A sample of a chemist's NMR spectrum was provided, but with no identification of the substance whose spectrum was shown, let alone which hydrogen atoms in the substance were responsible for which peaks. As a book production, this one had all the marks of a professional job, with well-defined chapters, sections, many citations in Harvard style as endnotes, and a number of footnotes of explanation as well. Many interesting photos were included. There was an index. But there were no photos of actual scans showing how easily the images could be manipulated. However, MRI devices are called machines when they should be called instruments. Research is not a verb. The words "trope" and "biomedicine" were not seen in Taber's Medical Dictionary. Palpitation was used instead of palpation (p68). Unfortunately, not minor, I found the writing style to be obscurantist for about the first 70 pages, but progressively less so from there on. For example, on p17: "The [Visible Human]

project, funded by the National Library of Medicine, dissected and scanned two people who donated their bodies to science into thousands of images." On p20: "By tracing the political effects of different views of MRI examinations, I assert that popular perceptions that equate the image with neutral knowledge make it harder to understand how health care policies, the desire to create revenue, and time constraints shape image quality." On p48: "In analyzing these narratives [from interviews?], I attend not only to those discourses most visible but also to processes rendered invisible, showing how dominant accounts "black box" crucial decisions made by technologists and the interpretive work of radiologists and referring physicians." Huh? On p80 the MRI production line is compared with an old Ford line in a manner that implied lower quality of scans when they were produced faster, where such quality problems due to speedup on the Ford line were not mentioned. On p82: "Humans, like the raw materials on the Ford assembly line, can and do disrupt production on the imaging assembly line." Those must have been clever raw materials. On p96 and elsewhere "metal objects" are said to be violently attracted to the magnets in an MRI instrument. I thought that only iron and its alloys were, not all metals. An example of Joyce's difficulties with technology on p105: "Yet the radio frequency waves and magnetic fields created by MRI excite hydrogen nuclear spins to higher energy states during the exam thereby deeply interacting with the atoms of the body." Those spins have two equal energy states called up or down or north or south. MRI or NMR do not cause chemical reactions. On p135 the footnote exemplifies the current delusion that detection is prevention. In trying to show that MRI safety and value has not been sufficiently evaluated, Joyce falls for the propaganda that FDA regulations for new drugs require trials with stringent standards. Joyce is utterly unaware of the 30 or more ways to subvert those randomized clinical trials, and the hundreds of thousands of Americans' lives cut short by shoddy testing of drugs. Read "Deadly Medicine" and "Prescription for Disaster" by Thomas J. Moore and "Overdose" by Jay S. Cohen, MD, and "Overdo\$ed America" by John Abramson, MD. Hence "Evidence-Based Medicine" has become a euphemism for biased trial results. On p141 there are three citations to comparisons of MRI with other imaging types said to produce "a hodge-podge knowledge base" and that comparisons of MRI with non-imaging tests are mostly missing. A Google Scholar search on "comparison of MRI with other methods modalities tests" produced 87,000 hits to peer-reviewed papers! "Magnetic Appeal" has interesting detail on how the field developed and operates. Sadly most of the worries, many of which may be well-founded, are not supported by real evidence in the book, which seems to exist to a greater extent than claimed. Assistant Professor Joyce appears to do well in her field of Sociology, but stumbled over some of the science and technology of MRI and medicine in general.

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