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Silvia Casini. *Giving Bodies Back to Data: Image Makers, Bricolage, and Reinvention in Magnetic Resonance Technology.* Leonardo Series. Cambridge: MIT Press, 2021. Illustrations. 312 pp. \$45.00, cloth, ISBN 978-0-262-04529-2.

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Commissioned by Penelope K. Hardy (University of Wisconsin-La Crosse)

How are bodies translated into diagnostic images? The aim of Silvia Casini's work is to give bodies back to data by attending to the role that aesthetics, affectivity, and craft practice play in the making of early and emerging technologies within biomedical imaging. *Giving Bodies Back to Data: Image Makers, Bricolage, and Reinvention in Magnetic Resonance Technology* consists of two main parts. The first, "Opening the Black Box," focuses on both the history of magnetic resonance imaging (MRI), the first body scanner, and the current advances of the technology in the form of fast field-cycling MRI (FFC-MRI). Through laboratory ethnography and archival research, Casini depicts the background of the technology and the living hopes and promises that are steering its development today. In a seamless fashion, Casini places the quantification, datafication, and mathematical foundations behind the technologies next to both the clinical use and the aesthetic and embodied matters of the work in the laboratory. This shows how the technical, the clinically useful, and the aesthetic are not opposites but coevolving aspects of medical and diagnostic imaging.

The second part of the book is dedicated to this relationship and the form it takes in art-sci-

ence collaborations. Casini focuses on a range of art practices that are used to explore the translation from data from neuroscience into visualizations. One strength of the book is the way it discusses how these practices are performed both by artists, who ask questions about the data, the body, and knowledge-producing practices, and by scientists in the lab, who turn signals into colors and aesthetics to make images interpretable and useful. It shows how disconnected experimentation and data develop into full machines and bodies to be seen. In the end, Casini considers how the images were made to be seen by the human eye and interpreted by the brain of the observer, but they are now increasingly made purely as operational images, configured to be deciphered and "seen" solely by machine-learning algorithms.

In total, the book is an eminent contribution to the literature on the embodied and situated practices of data visualizations. It takes into account the materiality of the human body as an object for MRI to process, with its tissues and fluids and movements, and the way to make the invisible visible as well as clinically useful. A deeper exploration could have been made from the patient perspective, yet the book shows, in both art

and science practices, how the patient is a difficult basis for imaging data, with operators having to fit the scanner for different bodies, control movement, and arrange the coils in perfect position to pick up the best signals as close to the body as possible. The book also addresses the matter of science collaborations, art-science work, the acts of speaking for emerging technologies, and the struggles to provide proofs of concept and to make others see what you see.

The book is beautifully written in how it tells the story of the relational character of data, in the hands of the artist and in the hands of the scientist. It offers a great contribution to the body of work conducted within science and technology studies and builds on the analyses made by, for example, Amit Prasad on MRI and the visualization of pathologies, and previous research on computer-based visualizations.[1] However, Casini sheds new light on the material and aesthetic interrelations embedded in MRI and the ideas underpinning the technology as well as imaginations of its contribution. Moreover, the book speaks with adjacent fields, such as history and philosophy of science, medicine, art, and information; challenges such ideas as the consistency and truthfulness of information as deriving from data; and advances the research on the visual and aesthetic aspects of data and algorithmic practices within physics and computational medicine.

Note

[1]. Amit Prasad, "Making Images/Making Bodies: Visibilizing and Disciplining through Magnetic Resonance Imaging (MRI)," *Science, Technology, & Human Values* 30, no. 2 (2005): 291-316; and Annamaria Carusi, Aud Sissel Hoel, Timothy Webmoor, and Steve Woolgar, *Visualization in the Age of Computerization* (New York: Routledge, 2015).

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