NEUROBIOLOGICAL BASIS OF MIGRAINE.
Edited by Turgay Dalkara and Michael A. Moskowitz. Hoboken (New Jersey): Wiley Blackwell. $129.95. xxiv + 397 p.; ill.; index. ISBN: 9781118967195. [Published with the New York Academy of Sciences.] 2017.

THE BIOLOGICAL MIND: HOW BRAIN, BODY, AND ENVIRONMENT COLLABORATE TO MAKE US WHO WE ARE.
By Alan Jasanoff. New York: Basic Books (Hachette Book Group). $30.00. vii + 292 p.; ill.; index. ISBN: 9780465052684 (hc); 9781541644311 (eb). 2018.

The mind/body distinction has deep roots in Western philosophy. In this volume, the author rallies evidence from contemporary neuroscience to collapse that distinction and argues for a holistic understanding of personal identity. The book is organized into two parts and ends with a science fiction vignette that demonstrates Jasanoff's thesis: a person's identity cannot be reduced to his or her brain.

To advance that thesis, the author spends the first part of his book critiquing what he calls "the cerebral mystique," or people's tendency to idealize the brain as an independent agent containing a person's identity. Jasanoff seems to take it for granted that one's thoughts, emotions, and behaviors are constitutive of one's identity, and so he advances his critique by showing how forces outside the brain can influence one's thoughts, emotions, and behaviors. Some of his supporting examples, such as the case of Phineas Gage or Stanley Milgram's obedience experiments, will be familiar to anyone who has taken an introductory course in psychology. However, the author also deploys newer, less familiar examples from his primary area of expertise, neuroscience. When explaining the results of an experiment or the limitations of a research instrument, Jasanoff is engaging and accessible. But between his varied examples, he does not spend much time articulating how exactly each case bears on the abstract notion of personhood. The author's critique of the cerebral mystique proceeds in a clear case-by-case manner that is convincing at first glance, although Jasanoff does not fully explore the implications his cases have for problems of personhood.

Whereas the first part of the book focuses on critiquing the cerebral mystique, the second part traces the implications of that critique for psychiatric practice, the transhumanist movement, and the historical development of the behavioral sciences. That collection of topics may seem haphazard, but the author uses them to demonstrate how popular ideas about personhood can impact social movements and practices. Jasanoff's history of the behavioral sciences is approachable and includes more strands from the history of science than is usual for such a compact account. His examination of the transhumanist movement is also notable. Throughout the book, the author spends more time answering scientific questions about the brain than exploring philosophical questions about personhood, but by the time he examines the transhumanist movement at the end of the book, he has done enough scientific and philosophical work to show how some transhumanist projects suffer from a distorted view of personal identity.

This volume is not for readers seeking a philosophical thesis about how contemporary neuroscience ought to influence our conception of personhood. It is for readers seeking an accessible treatment of neuroscientific research that keeps an eye to popular philosophical and societal issues related to personhood. As a lucid source of neuroscientific cases framed by problems of personhood, Jasanoff's book may provide a good starting point for classroom discussions about the interplay between science and society or how scientific findings can inform philosophical debates.

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INVISIBLE MIND: FLEXIBLE SOCIAL COGNITION AND DEHUMANIZATION.
By Lasana T. Harris. Cambridge (Massachusetts): MIT Press. $40.00. xxxiii + 203 p.; index. ISBN: 9780262035965. 2017.

MATLAB FOR BRAIN AND COGNITIVE SCIENTISTS.
By Mike X. Cohen. Cambridge (Massachusetts): MIT Press. $50.00. xvi + 554 p.; ill.; index. ISBN: 9780262035828. 2017.

Since its first release in 1984, the mathematical computing platform and programming language MATLAB—aka the "Matrix Laboratory"—has come to dominate computational modeling, data analysis, and visualization in the cognitive sciences. As such, each generation of students in neuroscience and psychology is called upon to write, edit, and develop code within the MATLAB programming environment—a task that, at first, can be both intimidating and overwhelming. Fortunately, with this book, Cohen provides an invaluable tool for those students and anyone else who wishes to learn how MATLAB can be used to its full capability as a research tool.

The volume begins with a clear and intuitive introduction to MATLAB as a general programming language, describing the different classes of variable, function syntax, and control statements that MATLAB recognizes, as well as methods for plotting figures and importing and exporting data. Next, some essential mathematical background to common analyses employed in the cognitive sciences is provided.

Finally, there are several sections detailing how those analyses can be carried out in MATLAB, including: the manipulation and frequency decomposition of time series data; common methods for spike sorting and spike timing analysis; the segmentation, smoothing, and sharpening of neuroimaging data; linear and nonlinear model fitting; and a brief introduction to the creation and application of graphical user interfaces (GUIs).

The main strength of this resource is the clear and intuitive style with which each topic is introduced. One of the greatest barriers to progress for those learning to program for the first time is confidence—to persevere in the face of error messages, and recognize that every experienced programmer went through the same process. Fortunately, the author's commonsense explanations help to bolster the confidence of readers and render some fairly complex concepts clear and easy to understand. The inclusion of interviews with several well-known researchers demonstrates that all programmers continue to make mistakes and learn new skills. Moreover, by highlighting common errors and describing simple tips for generating more robust and efficient code, Cohen helps readers to establish better practice and thereby reduce the number of potential pitfalls they face in developing their own programs.

The other essential step toward becoming a proficient programmer is practice. To this end, the book is accompanied by a wealth of sample code online, as well as links to online data repositories and skeleton solutions to the exercises provided at the end of each chapter. These allow readers to develop their skills by working with real data to solve problems that closely resemble those they will deal with in their research career. If I were to have one criticism, it would be that relatively little time is spent describing or dissecting the various error messages that MATLAB produces when things go wrong. These can often provide valuable information, and learning to treat them as a resource to be utilized—rather than a symbol of failure—is a critical step on the path to becoming a proficient MATLAB user.

In summary, I would (and frequently do) recommend this volume to any student in the cognitive sciences who wishes to become a competent MATLAB programmer. It provides a thorough and accessible introduction both to the basics of programming, and to specific applications in neuroscience and psychology that are likely to be essential for any successful research career.

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CELL AND MOLECULAR BIOLOGY

Prion Biology. *Cold Spring Harbor Perspectives in Biology.*

Edited by Stanley B. Prusiner. Cold Spring Harbor (New York): Cold Spring Harbor Laboratory Press. $135.00 (hardcover); $79.00 (paper). vii + 456 p.; ill.; index. ISBN: 9781621820932 (hc); 9781621822844 (pb). 2017.

The introduction of the concept that proteins can act as infectious agents in certain fatal transmissible neurodegenerative diseases in animals stimulated considerable debate and provoked a degree of incredulity. The term "prion" was coined in 1982 by Stanley Prusiner to describe those host-encoded proteins that uniquely could take up alternative, self-propagating conformations. Yet, as exemplified by the authors contributing to *Prion Biology*, our views of what a prion is and how it impacts on the "infected" host have changed radically in last decade.

This is a collection of 23 articles first published in *Cold Spring Harbor Perspectives in Biology*, an online, review-based publication from the same publisher. Editorial responsibility lies with Prusiner and he has coaxed many of the leading researchers to contribute to this timely and provocative volume. *Prion Biology*—and its partner volume *Prion Diseases* (S. Prusiner. 2017. Cold Spring Harbor (NY): Cold Spring Harbor Laboratory Press)—actually represent an update of an earlier single volume, *Prion Biology and Diseases* published in 2004 and also edited by Prusiner (Second Edition. Cold Spring Harbor (NY): Cold Spring Harbor Laboratory Press). In the 13 years between editions has much changed in our knowledge of prions and their biological impact to warrant the current edition? The answer is an unequivocal yes.

One of the most striking and significant changes that is the focus of a number of the articles in this volume is that we should no longer just associate prions with fatal transmissible spongiform encephalopathies such as scrapie, bovine spongiform encephalopathy, or Creutzfeldt-Jakob disease. Prions can also have nondetrimental, perhaps even beneficial, functional roles in the host. This first emerged from the discovery of prions in fungi and Riek and Saupe in particular highlight how gain-of-function prions can be of benefit to the host. This and other articles also effectively illustrate how prion research has benefitted from the interplay between fungal genetics and structural biology bringing important new insights into structure-activity relationships that are of broader significance.

The emergence of the concept of "functional prions" is not restricted to fungal prions. This is high-