

easily understandable and inviting for the beginning scientist and dabbling college student alike. The authors provide ample visual and interactive features that clarify the bulk of the information found in the text. These include figures, diagrams, and “visual summaries” provided at the ends of chapters, as well as a companion website at [www.minds-machine.com](http://www.minds-machine.com). Clearly written and well-organized, the book is an ideal introduction to neuroscience.

The strengths of *The Mind's Machine* far outweigh the weaknesses. It is worth noting that, perhaps because it is written by neuroanatomists, the text is slightly lacking in molecular and physiological detail. Additionally, the authors go into too much detail in tangentially related areas such as endocrinology, leading to a lack of focus in some sections of the book that could lose the interest of student readers. In some instances, important concepts are over-simplified, such as the complicated multi-pronged effects of psychoactive pharmacological agents. For example, in some cases, the book is somewhat biased and can come across as a public service brochure on the dangers of drug use rather than an explanation of their biological effects. This type of bias can be distracting, particularly to college undergraduates. Regardless, *The Mind's Machine* is overall an engaging and accurate introduction to neuroscience for the undergraduate student.

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***Consciousness: Confessions of a Romantic Reductionist.*** By Christof Koch. Cambridge, MA: MIT Press; 2012. 184 pp. US \$24.95 Hardcover. ISBN: 978-0262017497.

For centuries, consciousness has fascinated philosophers, artists, and scientists. In modern times, advances in neuroscience have firmly established the crucial role of specific brain regions in maintaining consciousness, but fundamental questions re-

garding the mind-body relationship remain controversial as ever. Can the conventional scientific method, relying on empirical observation and “objective” reasoning, be used to address the inherently subjective concept of consciousness? Christof Koch’s perspective on the matter is deeply rooted in the camp believing that consciousness, or at least significant aspects of it, are amenable to rigorous, experimentally based neurobiological inquiry. An intense collaboration between Koch and Francis Crick during the 1990s and 2000s brought consciousness to the limelight of the neuroscience community.

*Consciousness: Confessions of a Romantic Reductionist* is a tale of two stories that, like the two strands in Crick and Watson’s double helix, intertwine and complement each other. The first story is autobiographical: from Koch’s upbringing in a Roman Catholic family and his fascination with computing-machines as a child to his current views on faith, science, and the universe. “I’ll tell you about myself,” writes Koch, “insofar as my life is relevant to the questions: Why was I motivated — consciously or otherwise — to pursue certain problems? And, why did I adopt a particular scientific stance?” The second story is about science: an up-to-date account of experimental and theoretical studies aimed at unraveling the neurobiological basis of consciousness.

The book is engaging, fluent, thought provoking, and appeals to a wide audience, scientists and non-scientists alike. It describes methodologies and concepts, such as functional magnetic resonance imaging (fMRI), optogenetics, and information theory, in concise, clear, and non-technical language. The book starts by introducing the millennia-old mind-body problem and the general approach taken toward this problem in Koch’s work. The following chapters discuss a gamut of topics and questions pertaining to consciousness, illustrating its centrality in human life: why certain sensory stimuli reach awareness and others do not; how conscious and unconscious forces shape our social life; what happens in disor-

ders of consciousness and how they impact patients' life and our society. In contrast to the solid science and impeccable logic guiding most of the book, the last few chapters lead toward a deliberately speculative, abstract, and futuristic climax that is likely to elicit a raised eyebrow at one point or another. At the same time, Koch's optimism and passion regarding the quest for consciousness makes the story compelling and enjoyable to its very last pages.

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***A First Course in Systems Biology.***  
By Eberhard O. Voit. New York: Garland Science; 2012. 496 pp. US \$125 Paperback. ISBN: 978-0815344678.

*A First Course in Systems Biology* is intended to serve as the textbook for a semester-long course in systems biology directed toward advanced undergraduate or graduate students. The book meets this goal admirably. Eberhard O. Voit writes in a style that is both interesting to read and highly informational. *A First Course in Systems Biology* manages to combine the fields of mathematics, engineering, and biology in a textbook that could be read and assimilated (with varying degrees of difficulty) by students of all three disciplines.

The text is broken into three main sections: mathematical modeling, "molecular inventories" of the requisite biological systems, and case studies. Despite the extensive mathematical component, *A First Course in Systems Biology* is not set up like a traditional mathematics textbook. Instead of long proofs and stark equations, concepts are first introduced intuitively before the equations are formalized, and readers are walked through a concrete example. A number of plots and descriptive images accompany the math, ensuring that even a novice number-cruncher can grasp the basics of Boolean network models, stability analysis, and parameter estimation. The middle third of the text covers the most pertinent biological de-

tails required for studying gene regulatory systems, protein interaction networks, metabolic pathways, and cell signaling cascades from a systems biology perspective. The book closes with a series of case studies that focus on the proper selection and application of biological models. For example, in Chapter 12, Voit demonstrates the type of experimental data and computational simulation that would be required for modeling several aspects of heart function, from a physiological model of blood flow through the atria and ventricles to one that examines oscillations of calcium signaling.

Throughout, Voit provides clear and concise explanations of the most important and basic modeling and biological concepts without resorting to oversimplification, though explanations can sometimes be vague. Further, some topics, particularly that of epigenetics, are disappointingly terse. However, the brevity is always compensated for with extensive references for the curious reader. Indeed, despite the approachability of the text, this book requires great concentration and interaction on the part of the reader. Frequently, Voit urges that "the reader should confirm" the mathematical conclusions stated in the text. Extensive and open-ended exercises are given at the end of each chapter. These problems are not for the faint of heart and often require additional research, computer coding, or essay writing to complete. While *A First Course in Systems Biology* does not teach students precisely how to code mathematical models or provide protocols for biological experiments, the book does grant students an entry into the proper mindset of systems biologists. The continual emphasis on determining how to choose an appropriate model for a given problem and understanding what type of information disparate models could provide prepares readers well for generating systems biology questions and models of their own.

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