

mean when you say, “The cat is swimming” by recreating that bit of speech in my brain’s speech area. Language is Hickok’s area of expertise, and he reminds us of the experiments that saw MTSP shelved. For example, people with a disorder called Broca’s aphasia are unable to produce speech, but they can still understand it, as can children in the pre-speech language-learning phase of development and people born with cerebral palsy who have severely impaired speech production. Some researchers dismiss those flaws in MTSP on the grounds that the mirror-neuron story explains language understanding. The circularity here is not reassuring.

Not least of the problems with the mirror-neuron approach is that learning mind-reading skills cannot be just a matter of simulation, because such skills depend on a co-evolution of understanding of the self and of others. Recognition of one’s own inner states is not a computational freebie.

How fares the hypothesis that autism is fundamentally a mirror-neuron disorder? So far, it is mixed. A deeper perspective derives from post-mortem studies of the brains of youngsters with autism. These show patches of laminar disorganization — types of neuron in the wrong layer making the wrong connections — in wide swathes of the prefrontal cortex, including areas important for executive function, motor control and social cognition, as well as areas that probably contain some mirror neurons. This suggests that autism is not primarily or essentially a disorder of a hypothetical mirror-neuron system, but a broader disorder that affects many aspects of normal brain function, including cognition.

Hickok does not for a moment deny that we mind-read. Rather, his point is that the roles of mirror neurons and simulation have been oversold. The upshot of his inquiry is an analogue of the familiar warning: if it seems too good to be true, it probably is.

Hickok’s critique deserves to be widely discussed, especially because many scientists have bought into the mirror-neuron theory of action understanding, perhaps because they lack the time or inclination to peer into its workings themselves. Hickok performs a valuable service by laying out the pros and cons clearly and fairly. He ends by agreeing that although mirror neurons may well have a role in explaining communication and empathy, many other neural networks with complex responses are undoubtedly involved. Those networks and their roles are still to be clarified. ■

Patricia Smith Churchland is professor emerita of philosophy at the University of California, San Diego, and an adjunct professor at the Salk Institute in La Jolla, California. She is the author of *Braintrust* and *Touching a Nerve*.
e-mail: pschurchland@ucsd.edu

Books in brief



Invisible: The Dangerous Allure of the Unseen

Philip Ball BODLEY HEAD (2014)

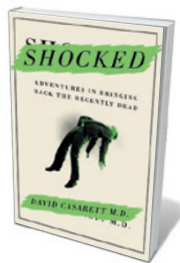
Young children, notes science writer Philip Ball, believe they vanish when they shut their eyes. Such beliefs wither, but “the dream and the desire” for invisibility remain, and Ball traces these through history. The urge has spawned occultism, stage magic, a fascination with camouflage, and legends centring on rings and cloaks. It re-emerged a century ago in the confluence of paranormal beliefs and the new physics — and, today, in optical physicists’ invisibility shields. Ball argues that this “mythical lens” we train on reality inspires scientific discovery, but we need to understand its calibration.



H is for Hawk

Helen Macdonald JONATHAN CAPE (2014)

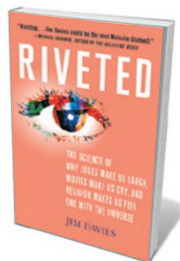
This extraordinary book is ostensibly about falconry. It actually tells how a human wild with grief came to fathom a wild mind — a process in which the question of who was being tamed was always up in the air. Writer Helen Macdonald, devastated by her father’s death, took on a goshawk. Her narrative interweaves exquisitely rendered observations — of hawk behaviour, her immersion in the bird’s world and what happens between them — with the life and work of author T. H. White, whose 1951 *The Goshawk* inspired her as a child. Soars beyond genres, and burns with emotional and intellectual intensity.



Shocked: Adventures in Bringing Back the Recently Dead

David Casarett CURRENT (2014)

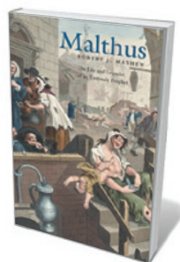
In 1986, a toddler named Michelle Funk drowned and lay dead for three hours before a medical team coaxed her back to life. Decades later, relates physician David Casarett, the science of resuscitation is very much alive. In this disarmingly amusing investigation, Casarett covers breakthroughs, devices, hazards and case studies. He visits resuscitative techniques of the past, such as blowing tobacco smoke into the victim’s rectum; the cellular effects of methods using electricity and low temperature; and potential future advances, including reducing metabolism.



Riveted: The Science of Why Jokes Make Us Laugh, Movies Make Us Cry, and Religion Makes Us Feel One with the Universe

Jim Davies PALGRAVE MACMILLAN (2014)

Moments that jolt or delight us punctuate our lives. But whereas shock might be salutary in an art gallery, it can trigger blind belief in other contexts, points out cognitive scientist Jim Davies. Expounding his theory of ‘compellingness foundations’, Davies synthesizes research on what makes us susceptible to gripping stimuli, such as our drives to discover patterns and to find incongruity, and our attraction to hope and fear. Scepticism, he argues, can help us to build resistance to riveting ideas that turn out to be duds.



Malthus: The Life and Legacies of an Untimely Prophet

Robert J. Mayhew BELKNAP (2014)

Loathed by Karl Marx and admired by Charles Darwin, Enlightenment scholar Thomas Malthus still polarizes, notes historian Robert Mayhew. The flashpoint was Malthus’s 1798 *An Essay on the Principle of Population*, which posits that although humans are prodigal, nature and resources are limited. Mayhew traces that theory through revolutionary and reactionary traditions, arguing that it remains pertinent in an era of economic downturn and shrinking resources, with predictions of 10 billion humans by 2050. **Barbara Kiser**