

emotionally detached from the characters. The audience members then became aware that they were witnessing fiction and were able to critically question the social realities represented in the play.

The cognitive processes underlying the suspension of disbelief have been the subject of several scientific studies. In 2010, Marie-Noëlle Metz-Lutz of the University of Strasbourg, France, and her colleagues used functional magnetic resonance imaging (fMRI) to scan the brains of people watching a play to pinpoint when they were transported into another reality. This was defined as when the subject's brain response tallied with a passage in the script intended to elicit such a response. The brain regions that fired at those moments included two areas involved in processing language and, specifically, in understanding metaphor, denoting the power of language to capture a spectator's attention. Both regions are also involved in processes of social and aesthetic judgements, probably governing appreciation of the writing style, plot or characterization.

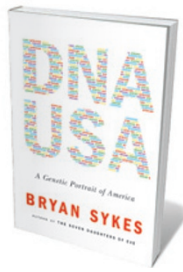
The French team also found that the subjects' heart rates slowed during transportation, and that brain activity fell in areas involved in building consciousness about the self and the external world. Without activity in these regions, an observer will take the fictionalized reality of the play at face value, despite the sensory perception of the stage, set and actors. Such results point to complete absorption in a play as a sort of hypnotic state involving the temporary loss of self-reference, and a disconnection from immediate sensory information — a distinct feeling of being 'carried away'.

In theory, such scanning experiments might help playwrights to identify specific language and theatrical devices that trigger audiences to become as absorbed as possible, and so enrich acting as an art and theatre as a vehicle of meaning and 'enchantment'. With a nod to Stanislavski, playwrights could focus on what movements or expressions are the most poignant, and which are most effective at conveying grief, compassion or joy. Such studies could also reveal which metaphors express an action or thought with the most brevity and wit, and what elements of plot device or vocal emphasis can make a difference in the brain.

Yet fMRI images and statistics will never replace the unpredictability and revelatory power of what is born in the rehearsal room. Acting is predicated on technique and craft, but remains visceral and intuitive. ■

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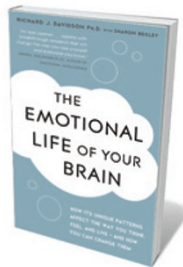
Books in brief



DNA USA: A Genetic Portrait of America

Bryan Sykes W. W. NORTON 320 pp. £19.99 (2012)

The US human population is a bouillabaisse of DNA. Geneticist Bryan Sykes took on the challenge of identifying its ingredients on an epic cross-country trip. He recounts the detective work — including interviews with genealogists and fellow geneticists — and methodology behind the findings. How did European genes appear in the DNA of Native Americans some 10,000 years ago, for instance? And why does the southwestern Hispanic population contain genes typically found in Jewish people? Ultimately, Sykes suggests, the country is an even richer human mix than we thought.



The Emotional Life of Your Brain: How Its Unique Patterns Affect the Way You Think, Feel, and Live — And How You Can Change Them

Richard J. Davidson and Sharon Begley HUDSON STREET PRESS 279 pp. \$25.95 (2012)

Why do some people plod stoically through crises while others collapse? Science writer Sharon Begley and neuropsychologist Richard Davidson argue that each of us has an 'emotional style': a pattern of responses to life's events that is allied to underlying brain systems. Looking at dimensions from social intuition to context sensitivity, the authors suggest that we can achieve better equilibrium by rewiring our emotional style through research-inspired exercises.



Game Changer: Animal Rights and the Fate of Africa's Wildlife

Glen Martin UNIVERSITY OF CALIFORNIA PRESS 243 pp. £20.95 (2012)

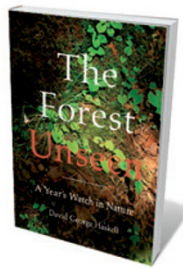
Africa's wild megafauna are caught in the crossfire between animal-welfare campaigners and conservationists, argues environmental reporter Glen Martin. In this pacy, unsentimental account, Martin interviews seasoned conservation biologists, zoologists and game wardens, focusing on practice in Kenya, Namibia and Tanzania. He concludes that holistic strategies incorporating habitat conservation, controlled hunting and respect for local people's needs are workable — and points out that measures such as ecotourism and protection for iconic species have backfired dramatically.



The Undead: Organ Harvesting, the Ice-Water Test, Beating Heart Cadavers — How Medicine Is Blurring the Line Between Life and Death

Dick Teresi PANTHEON 368 pp. \$26.95 (2012)

The moment of death, suggests science writer Dick Teresi, is harder to pin down than ever. He introduces us to those who work at this borderline: cell biologists, specialist doctors, undertakers and people who have recovered from comas. Charting historical definitions of death, the thinking of research greats and debates over near-death experiences, Teresi notes that the ethical challenges are immense, asking, for instance, whether all organ donors are unrevivable.



The Forest Unseen: A Year's Watch in Nature

David George Haskell VIKING 288 pp. \$25.95 (2012)

Training a biologist's eye on ecology, geology and climate, David Haskell visited a square metre of old-growth forest in southeastern Tennessee nearly every day for a year. His observations — of lichens, snowflakes, salamanders and more — are deftly interwoven with the science. His account is fascinating, whether he's stripping off in January to experience the physiological effects of severe cold, describing the symphonic sounds of trees in a high wind, or wondering at the bacteriocidal properties of a vulture's digestive tract.