

would never have been able to graduate from medical school. Neanderthals would also make excellent army grunts, with their high levels of pain tolerance, and would be good tacticians in small combat units. They would never rewrite the tactical manual — although tearing it up, however thick, would not be a problem.

Underpinning this appreciation of Neanderthals are two models of how thinking works: expert and embodied cognition. In expert thinking, working memory is not just a short-term store for verbal information. It is important in the planning and execution of complex tasks such as hunting and making tools, as it retains the information necessary to focus the mind and resist interference.

The hand-held technologies of the Neanderthals lead us to embodied cognition. Neanderthals did not think only with their minds but, like us and other primates, through the senses and emotions of the body as well. The tools they used were, Wynn and Coolidge say, “extensions of perception, and

“A Neanderthal’s tool effectively became as much a part of their mind as their brain cells.”

hence extensions of mind”. Studies of artisans today indicate that a Neanderthal wielding a tool would have learned to respond flexibly through that tool,

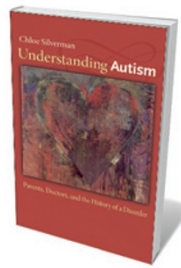
which effectively became as much a part of their mind as their brain cells.

Embodied cognition is a radical departure in the way the early mind is studied, overturning a long tradition of rational approaches to the mind as a problem-solving machine. In that view, Neanderthals, with their limited technology, did not solve much. However, introducing embodied cognition means that we begin to see many similarities in the emotions they must have felt and the way they dealt with others. The evidence remains the same, but the insights fundamentally change what we believe our distant relatives are capable of.

Read this book for the challenge it poses to the limits of what we can know about our fossil relatives. Delve into its discussion of theory of mind and the ability of humans other than ourselves to think imaginatively about one another’s intentions. You will find yourself frequently exclaiming, ‘How can they say that?’ But I think you will agree that our growing understanding of cognition in deep time could make ‘modern human’ the real oxymoron. ■

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Books in brief



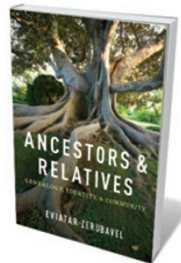
Understanding Autism: Parents, Doctors, and the History of a Disorder

Chloe Silverman PRINCETON UNIVERSITY PRESS 360 pp. \$35 (2011)
Autism remains a contested condition, and given the steep rise in research, diagnosis rates and media coverage, the debate is set to run and run. Science historian Chloe Silverman gives a balanced, sensitive social history of autism that unflinchingly covers many controversial byways. She explores the theory and biomedical advances, and how gene banks, schools and autism organizations have enriched understanding — augmented by parents of children with autism, whose experiences have informed and inspired much research.



Bird on Fire: Lessons from the World's Least Sustainable City

Andrew Ross OXFORD UNIVERSITY PRESS 320 pp. £17.99 (2011)
These days, Phoenix in Arizona is less eternal firebird than charred turkey. A sprawl of 4.5 million people in an area the size of Taiwan, the metropolis endures a killer combination of scant rainfall, Saharan temperatures and uncontrolled development. Social analyst Andrew Ross interviewed some 200 influential people for his political and environmental analysis, from city planners to eco-activists. Shifting to sustainable ‘green democracy’, he thinks, will be down to better governance, citing the return of water rights to the Gila River Indian Community, a Native American reservation.



Ancestors & Relatives: Genealogy, Identity, and Community

Eviatar Zerubavel OXFORD UNIVERSITY PRESS 256 pp. £15.99 (2011)
The issue of relatedness, says sociologist Eviatar Zerubavel, involves more than genealogy. Drawing on genetics, evolutionary biology, anthropology and sociology, Zerubavel looks at kinship and community, the huge role of culture and the “politics of descent” — massaging pedigrees by including distant, impressive ancestors or leaving out recent, mediocre ones. Erudite and amusing, this is also a serious examination of race and ethnicity, asking, for instance, why people with both African and caucasian roots (such as US President Barack Obama) are almost always labelled as black and not biracial.



The Brain is Wider Than the Sky: Why Simple Solutions Don't Work in a Complex World

Bryan Appleyard WEIDENFELD & NICOLSON 289 pp. £20 (2011)
Is the mind machine-readable? Science writer Bryan Appleyard answers with an emphatic ‘no’. Human complexity sits uneasily alongside a life tracked by smart phones and stymied by automated phone operators, he claims. He ponders the often poorly fitting interface between the mind and the new machine age, through a mix of memoirs, history, research and interviews with the likes of Microsoft pioneer Bill Gates. Appleyard concludes that the real issue is not machines, but getting our relationship with them right.



Concrete Planet: The Strange and Fascinating Story of the World's Most Common Man-made Material

Robert Courland PROMETHEUS 416 pp. \$26 (2011)
Forget fossils; the remains of our civilization are more likely to be crushed concrete and oxidized steel, says historian Robert Courland. Concrete may be ubiquitous, but it is a curious substance that repays study. Courland deftly negotiates the chemistry, hydraulics and artistry of concrete in a history that takes in the Neolithic discovery of lime, the ‘gold standard’ of the Roman Pantheon and the ticking time bomb of today’s crumbling concrete infrastructure.