

in size between the animals that segregate seems to be the keystone of the segregation behavior. However, less evident are the recommendations of future research that the authors put forward.

All in all, this book is a must read for lecturers and researchers who want to know about the theoretical background, actual hypotheses, and work carried out on sexual segregation in vertebrates.

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HUMAN BIOLOGY & HEALTH

THE SINGING NEANDERTHALS: THE ORIGINS OF MUSIC, LANGUAGE, MIND AND BODY.

By Steven Mithen. *Cambridge (Massachusetts): Harvard University Press.* \$25.95. ix + 374 p; ill.; index. ISBN: 0-674-02192-4. [Originally published by Weidenfeld & Nicolson, London, 2005.] 2006.

This book is not about singing Neanderthals. Indeed, it is not really about Neanderthals at all. It is about us, and specifically about why music is almost universally so important in our lives. Mithen gives away his own answer to this fascinating question on the very first page of *The Singing Neanderthals*: music “has been encoded into the human genome during the evolutionary history of our species” (p 1). In his erudite and readable investigation into this history, the author links music very tightly to language, a human attribute whose origins have received much closer scrutiny than those of music ever have. To some of us, this apparent link most likely exists because both music and language are grounded in a much more generalized underlying human capacity; but being of a distinctly sociobiological bent, Mithen seeks a more specifically selective mechanism.

Before tackling the origins of music via an energetic gallop through the human fossil and archaeological records, the author sets the scene by surveying the vast literature on such diverse subjects as the structure of language, musical impairment and brain function, and primate communication. Once he gets to the fossil record he is particularly interested in what can be inferred about early human society and communication, with an ear to finding evidence for the notion that music and language derived from a single precursor. One cannot do justice to Mithen’s long and nuanced argument in a short review, but he finds reason to suggest that this precursor was in exist-

tence by around two million years ago; that the more specific quality of musicality was acquired not too long after; and that the activities of singing, dancing, and storytelling (albeit in a “holistic” protolanguage) were well established by half a million years ago. Music then became an increasingly important (and selected for) social activity as hominid society became ever more complex and cooperative. And although the author concludes that the nonsymbolic Neanderthals lacked language in our sense, he believes that they may have been intensely musical precisely for that reason.

As one would expect from the author of *The Prehistory of the Mind: A Search for the Origins of Art, Religion, and Science* (1996. London: Thames and Hudson), this book is rich in both fact and speculation. No matter what your predilections, it will probably have you both applauding and fuming by the time you reach the end. Read it for both.

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TECHNO-CULTURAL EVOLUTION: CYCLES OF CREATION AND CONFLICT.

By William McDonald Wallace. *Washington (DC): Potomac Books.* \$26.95. xxvi + 267 p; ill.; index. ISBN: 1-57488-966-4. 2006.

Human culture evolves, and the changes can be fast and bring unanticipated consequences. Technology is critical to cultural evolution, and the changes that come with new tools often have a dominant effect on societal interactions as well as economic growth. For example, in the past decade, we have witnessed a cultural revolution wrought by the Internet and wireless technology: the nature of human connectedness has been altered within social and business realms and, in the wake of recent changes, a schism has widened between Western and traditional societies. Both the causes and effects of technological change are of great interest to many, including biohistorians, social scientists, economists, and the public. Recently, there has been a trend of books about technology and culture, and a common goal of authors is to inform economic and social sciences with the theory of evolution. One question of interest is why some cultures thrive while others go extinct. Biological evolution can serve as a fundamental model for the processes, mechanisms, and consequences of cultural change. However, the rules of evolution only partially apply to cultural change, and the fact that humans are shaped by both culture and biology presents a challenge to any clear understanding of how humanity changes over time.

In his book *Techno-Cultural Evolution*, William McDonald Wallace traces the history of human

technological advancement and extends the patterns he finds to predict our future as well. The author draws out an expansive narrative that describes how technology has driven human cultural change. A central theme enunciated by Wallace is that great transitions in technology are often followed by crashes and stagnation. The book is intended for a general audience, and the author brings together broad facets of economics, technology, history, and biology that will be interesting and thought provoking for many nontechnical readers. Wallace begins his tour of human cultural evolution with our origins in Africa. Thereafter, he walks readers through the emergence and ultimate dominance of agricultural societies, the rise and fall of Rome, the Age of Enlightenment, and the origin and ascendance of American power. In each stage of human history, he shows how technology offers novel benefits to societies, but he always highlights the costs as well. As Wallace extends his tour into the future, he focuses on two banes of technology. The first is the unsustainable growth that technology spurs. The second describes clashes between advancing societies and traditional based cultures that are almost inevitably supplanted.

The author covers a broad swath of subjects, and while he masters most topics, he also appears to overstep his knowledge at times. This is evident in the few places when biology is discussed in depth. Wallace introduces his perspective on cultural evolution with a discussion of biological models of evolution. His parable of human cultural and technological transition is based on the theory of "punctuated-equilibrium," the prediction that evolution generally occurs in short bursts of dramatic change separated by long spans of stasis. He outlines how technology has dominated key transitions in human culture with a parallel process in which bursts of new technologies are followed by painful, but inevitable lulls. This "boom and bust" theme is interesting and perhaps the most instructive aspect of the book, yet the discussion is marred when he misses the mark on some key details of biological evolution. For example, Wallace describes chimps as human ancestors when both emerged from a species that no longer exists. Despite this and other missteps, he manages to use biology as an informative metaphor.

A key strength of this book is his vivid depiction of what we can learn from our cultural and biological history, perhaps to make adjustments for a more benign future. Wallace makes a strong case that the competitive nature of business will always forestall adjustments made to prevent overexploitation of resources. In this view, economic and environmental crashes are necessary before real

changes can occur. The author offers two alternate views of the future. The first he describes as a "meta-crash," the culmination of technology-driven cycles in which we inexorably do major damage to both our environment and society. The second view is that our advancing technology can eventually free ourselves from ever-expanding growth. Although the second view is rosier, it fits uncomfortably into the theme of inevitable crashes that he has built up in the previous chapters. In either case, technology and conservation are tightly linked, and Wallace makes a strong case that any solutions we find to save our planet must be based on firm principles of economics.

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MIND: PRIMARY CAUSE OF HUMAN EVOLUTION. *Volume 1.*

By Clare V Merry. *Victoria (Canada): Trafford Publishing.* \$30.00 (paper). viii + 381 p; ill.; index of authors and index of pioneering ideas. ISBN: 0-4120-5457-5. 2005.

A self-published title can be a successful endeavor. For years, the promise of electronic publishing, the expansion of publishing on demand, and the ability to employ automated editing made the future of self-publishing a seemingly inevitable reality. The capability of such publishing has certainly been seen in terms of "blogs" and "lay-reporting," which has given further hope for the future of cutting out the middleman (i.e., editors and the editorial process). Although there have been certain false starts (such as the development of e-books), the success of personalized Web pages (e.g., www.myspace.com) and user-contributed databases makes one imagine that self-publishing has a very bright future.

Clare Merry's volume is a self-published offering from Trafford Publishing whose website proclaims "Your book, your way." Examining the relationship among variables such as intelligence, evolution, brain development, pelvic morphology, and bipedalism, the topics discussed in this book are certainly worthy of consideration. Given the strength of the subjects covered, and the possibility for reaching a diverse audience, the presentation and research of Merry's volume demonstrates that editors and the editorial process may still yet play a role in the world of publishing. The book has the feel of an incomplete project, which is particularly frustrating as the ideas brought forth by Merry are interesting (although not as novel as she might have us believe). Further, the research is somewhat lacking, and the author even indicates that she did not read many of the references (she read those