

► makes us the lucky ones” — he offers a detailed explanation of why it works that is, again, short on science.

Pinker is a good writer and a deeply humanistic one, and there are many bright moments here. His lists explaining right and wrong usage with a range of examples (enervate means to sap, not energize) are a useful desk reference. Among numerous good tips is one on, as Pinker has it, “the compulsion to name things with different words when they are mentioned multiple times”. “Heron are herons,” he writes, not “long-legged waders, azure airborne aviators, or sapphire sentinels of the sky”.

At times, however, Pinker’s own writing verges on the incomprehensible. Consider his critique of this sentence: “Toni Morrison’s genius enables her to create novels that arise from and express the injustices African Americans have endured.” Some might say ‘her’ is an error, because an adjective (‘Toni Morrison’s’) cannot be the antecedent of a pronoun. But Pinker explains it this way: “*Toni Morrison’s* is not an adjective, like *red* or *beautiful*; it’s a noun phrase in genitive case. (How do we know? Because you can’t use genitives in clear adjectival contexts like *That child seems Lisa’s* or *Hand me the red and John’s sweater*.)” After reading that several times, I think I know what he means. But it is tough to get through.

Pinker also reveals himself at the outset to be not a prescriptivist, like Strunk and White, but a descriptivist, who sees language as “a wiki that pools the contributions of millions of writers and speakers”.

I agree: we make the language. But if that is the case, science probably can’t do any better than *Strunk & White* at dictating style. The only legitimate data come from the people. So maybe it is too soon to jettison the classic style manuals: I suspect much of Pinker’s sense of style comes less from his science than from his own wonderful writer’s ear. ■

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The Compatibility Gene

Daniel M. Davis (Penguin, 2014)

At the heart of our immunological-response systems lie ‘compatibility genes’, which determine each body’s capacity to fight diseases or accept medication. Immunologist Daniel Davis explores these genes’ roles in successful skin grafts, ill-fated pregnancies and more.

EVOLUTION

Tribes like us

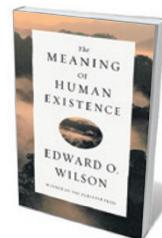
Tim Lenton is intrigued by E. O. Wilson’s sweeping perspective on humanity’s past — and possible futures.

What of that ultimate existential question, the meaning of life? Aristotle saw it as the achievement of happiness. UK comedy troupe Monty Python suggested that it involves reading “a good book every now and then”. In *The Meaning of Human Existence*, biologist E. O. Wilson offers a good book that adds to such prescriptions, but readers seeking a sense of purpose will be disappointed. What Wilson is after is really a deeper understanding of human existence.

Still, there can be few better guides through our species’ past journey and potential for the future. Wilson provides the literary equivalent of a greatest-hits album, giving us a pithy synthesis of his formidable body of work from *Sociobiology* (Harvard University Press, 1975) to *The Social Conquest of Earth* (Liveright, 2012), with a liberal dose of *Consilience* (Little, Brown, 1998). The result is a provocative and beautifully written collection of essays, although one that struggles to be more than the sum of its parts.

In the opening section, Wilson introduces his central premise that humans, like his beloved ants, are eusocial animals. Some individuals reduce their own lifetime reproductive potential so that they can raise the offspring of others (think of grandmothers after menopause). Key to the origin of eusociality is the creation of a nest, from which some of the population undertake risky foraging while the remainder stay safe at home. Wilson argues that our unique intelligence began to evolve when our ancestors tamed fire to cook, settled around the campsite and sent a fraction of the group off to risk life and limb hunting down energy-rich meat.

Thus began a tension between acting for ourselves and acting for our group, which Wilson argues is at the heart of our



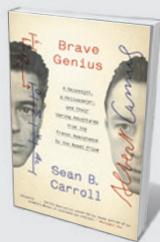
The Meaning of Human Existence
EDWARD O. WILSON
Liveright: 2014.

conflicted human nature. Here he parts company with most evolutionary theorists, revisiting an already acrimonious debate (aired in *Nature*) over the origin of eusocial traits. Wilson originally supported evolutionary biologist W. D. Hamilton’s theory of inclusive fitness, in which the

costs of altruism can be rationalized if they are outweighed by the product of the benefits to recipients and the recipients’ relatedness to the altruist. But in 2010, he and some colleagues rejected it (M. A. Nowak *et al.* *Nature* **466**, 1057–1062; 2010). In its place, they argued for a mixture of individual and group-level selection.

Back from the firmly prodded ants’ nest of evolutionary theorists came a predictably forceful defence (see, for example, P. Abbot *et al.* *Nature* **471**, E1–E4; 2011), but Wilson remains unmoved by this stinging riposte. The frustration for the neutral reader is that both sides agree that the gene is the fundamental unit of selection, so the squabble is over different flavours of standard evolutionary theory. Neither side seems to see the Pythonesque irony of fighting over how to understand cooperation. Still, nothing could better demonstrate the tribal nature of humanity, which provides a focus for the rest of the book.

Wilson’s enthusiasm for a mixture of individual and group-level selection goes further, as he struggles to resist an “oversimplistic” portrayal that “individual selection promoted sin, while group selection promoted virtue”. The inconsistency in this



Brave Genius

Sean B. Carroll (Broadway, 2014)

Against the tumult of the Second World War, biologist Sean Carroll tells the interwoven stories of philosopher Albert Camus and geneticist Jacques Monod, friends who worked for the French resistance and won Nobel prizes. (See Jan Witkowski’s review: *Nature* **501**, 487–488; 2013.)



is soon exposed when he argues that religion has been crucial in reinforcing group-level tribalism, but is a collective sin that humanity needs to grow out of. One wonders what the publishers were thinking when they put on the dust jacket the promise of Wilson addressing “our greatest moral dilemma since God stayed the hand of Abraham”, given that inside, he decries belief in God with Dawkinsian fervour.

Yet Wilson’s route to species self-knowledge is rather omniscient, because it involves comparing ourselves to other known or imagined life forms, be they ants or aliens. As we decimate biodiversity, leaving ourselves lost in an Age of Loneliness — the ‘Eremocene’ — Wilson looks skyward for salvation. He is excited about exoplanets and brimming with existential confidence that

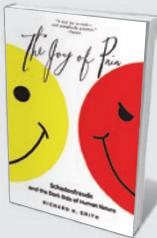
we are not alone in the Universe, offering a very anthropomorphic “portrait of E.T.”

Wilson’s imaginary aliens are, I think, really his prescription for humanity’s future. They have chosen not to supplement their intelligence or engineer their genetics, because their technological creations have long surpassed them physically and intellectually. They are not so foolish as to attempt interstellar travel — were it possible — because they have worked out that invading an independently evolved world would be a biological train wreck. Instead, they have made peace with their home planet and achieved a long-term sustainable state.

Back in the here and now on Earth, Wilson argues that we should relish our evolutionary legacy of internal conflict and the creativity it sparks. He sees a short future

for scientific progress but a long one for the humanities, arts and social sciences. Surprisingly optimistic that brain-activity mapping is going to solve the riddle of human consciousness sooner rather than later, Wilson feels that we will be left clutching the sensation of free will, which he thinks is just an adaptation necessary for our sanity. If the resulting nihilism does not lead us to despair, the way forward will be to unify the sciences and humanities to reach a higher state of human “meaning”. Anyone fancy the ride? ■

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The Joy of Pain

Richard H. Smith (Oxford Univ. Press, 2014)

Psychologist Richard Smith explores the roots of Schadenfreude (joy in others' pain) in society, from reality television thriving on public humiliation to cases of envy-incited crimes, including Nazi persecution of Jewish people. (See Dan Jones' review: *Nature* **500**, 147; 2013.)



Dosed: The Medication Generation Grows Up

Kaitlin Bell Barnett (Beacon, 2014)

Journalist Kaitlin Bell Barnett, herself medicated in youth, tells the stories of five people who from childhood have been treated with psychotropic drugs for conditions such as depression and attention-deficit hyperactivity disorder, addressing their sense of lost freedom and identity.