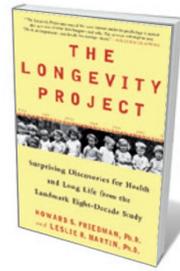


SUMMER BOOKS

As holidays beckon, *Nature's* reviewers and editors offer a selection of reading for researchers away from the bench and lecture hall.

EDITORS' PICKS



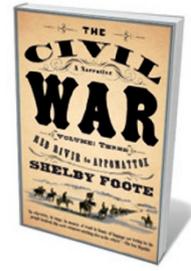
The Longevity Project

HOWARD S. FRIEDMAN AND
LESLIE R. MARTIN
*Hudson Street Press/Hay Hack
House: 2011.*

In 1921, a remarkable study began tracking the lives and loves of 1,528 US citizens from childhood to death. The study continues today, with research teams — led by Howard Friedman, a psychology professor at the University of California, Riverside — re-examining the data and keeping tabs on the few subjects who are still alive. With lucid prose and rigorous analysis, Friedman and his colleague Leslie Martin chronicle and interpret the findings from the 90-year project (*Nature* **471**, 443–444; 2011).

Analysing copious data, they establish what it is about the participants' personalities, life circumstances and behaviours that led some to stay healthy and others to fall ill or die before their time. Is longevity associated with being married, daily jogs, living with pets or faith in God? Is it more salubrious to retire early to a serene tropical island or to persevere in a stressful but challenging occupation? The book offers surprising lessons. Many a tenacious scientist will be gratified to learn, for example, that purpose, planning, prudence and persistence have important roles in maintaining a long life.

Sonja Lyubomirsky is professor of psychology at the University of California, Riverside, USA.



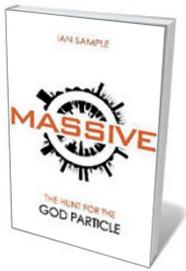
The Civil War: A Narrative

SHELBY FOOTE
*Vintage Books: 1958 (Vol. 1);
1963 (Vol. 2); 1974 (Vol. 3).*

To commemorate the 150th anniversary of the American Civil War, I've been staying up way too late, reading this savagely compelling epic history of the battles fought on the field and in the political arenas of Washington DC and Richmond, Virginia. The war showed the coming power of the Industrial Revolution. Soldiers fought with semi-automatic carbines and iron-clad ships, while railways and the telegraph transformed transport and communications. Yet military success ultimately hinged on old technology: bayonet charges, gruelling marches on foot and paper battle plans that often went astray.

Given my own work on conservation strategy, I found it fascinating to see the interplay between the best-laid plans and the challenges of enacting them in the fog of war. Like the generals, conservationists share a moral cause, incomplete information, limited resources, poorly trained troops and impatient political masters. Our success, too, depends on developing, sharing and implementing good plans, as well as adapting to changing circumstances in the most dire straits. I only hope our heroism matches even a fraction of that shown by the Civil War combatants.

Nick Salafsky is co-director of the conservation non-profit organization Foundations of Success, Bethesda, Maryland, USA.



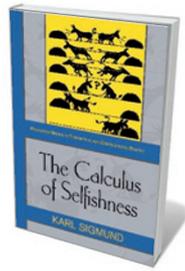
Massive: The Hunt for the God Particle

IAN SAMPLE
Virgin/Basic Books: 2010.

Massive describes the long search for the tiny Higgs boson, or 'God particle', the existence of which would verify the origins of mass and unravel many of the mysteries of the building blocks of the Universe. Although named after Scottish physicist Peter Higgs, the theory behind the boson was pieced together in the 1960s by three groups of scientists simultaneously (including Higgs) in different countries (*Nature* 465, 873–874; 2010).

Science journalist Ian Sample enlivens the tale through anecdotes, spanning Higgs's initial presentation of his ideas about the particle at Princeton University, New Jersey, in 1966 to the current search for the boson using the Large Hadron Collider (LHC) at CERN, Europe's particle-physics lab in Geneva, Switzerland. He relates how technical problems with the LHC delayed the experiment, and how fears were spread in the media that the creation of exotic 'strangelet' particles could lead the world to collapse in a split second. Although some scientists, including Stephen Hawking, believe that the Higgs boson will never be found, Higgs and others are optimistic that the search is coming to an end.

Sara de Freitas is director of research at the Serious Games Institute at Coventry University, UK.



The Calculus of Selfishness

KARL SIGMUND
Princeton University Press: 2010.

By telling you how to behave so that people will like you, this book will help you become a well-regarded member of your community. 'Give and you shall receive' is a rule not only for religious believers — it is supported by evolutionary theory.

Even when we are acting selfishly, explains evolutionary game theorist Karl Sigmund in his aptly titled *The Calculus of Selfishness*, we gain most by being cooperative (*Nature* 464, 1280; 2010). It is a win-win strategy. Eighteenth-century economist Adam Smith knew it: "It's not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own self-interest."

Sigmund's insights are more sophisticated. Because trust is a lubricant of social life, he says, concerns for reputation have a vital role in how we behave. This preoccupation with how people perceive us is hard-wired into our brains. We unconsciously become nicer to others when we feel we are being observed — even a picture of watching eyes is enough to change our behaviour. Sharing information through gossip and paying to punish freeriders are also ways in which nice guys can finish first.

Manfred Milinski is director at the Max-Planck-Institute for Evolutionary Biology, Ploen, Germany.



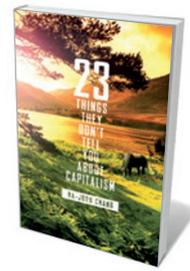
Virunga: The Survival of Africa's First National Park

EDITED BY MARC LANGUY
AND EMMANUEL DE MERODE
Lannoo: 2009.

Virunga National Park in the Democratic Republic of the Congo is Africa's oldest and most species-rich national park. Its mountain gorillas, of which only 790 remain, are powerful reminders of human evolutionary history. Yet the park is in great danger, caught between population growth, agricultural encroachment, poverty and the devastation of years of civil war. Its survival hinges on a network of dedicated people and organizations, some of who risk their lives: more than 130 rangers have been killed since the mid-1990s.

This book is a scientific account of 80 years of work at Virunga, co-edited by the park's current director, Emmanuel de Merode. It explores the park's natural wealth, its vulnerability and the challenges of safeguarding it. Beautiful images and maps throughout reconnect the reader with the richness that the world has brought forth — ours to preserve or squander. Reading the book left me concerned for Virunga's future, but also invigorated with the gift of being alive.

Wolfgang Lucht is professor of sustainability science at the Potsdam Institute for Climate Impact Research and at Humboldt University Berlin, Germany.



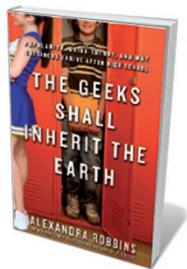
23 Things They Don't Tell You About Capitalism

HA-JOON CHANG
Allen Lane: 2010/Bloomsbury: 2011.

Ha-Joon Chang takes 23 oft-asserted 'truths' about markets, then debunks them in a witty way. Of the assumption that pay and productivity should be linked, he argues that chief executives in the United States cannot have become ten times more productive since the 1960s, even though their salaries have risen from 30–40 times that of the average worker to 300–400 times that today. And he puts paid to views that free markets left unchecked will make us all better off, noting the widening gulf between the super-rich and everyone else.

As the complexity of the world outstrips our ability to control it, he concludes that we need an intelligent state acting in the interests of society as a whole. We need to find a better balance between the finance sector and the real economy in which people make things. From my environmentalist's standpoint, Chang now needs to address two crucial issues: how economics should take into account the unpriced and undervalued natural world of soils, water and atmosphere on which our life depends; and how we can embed long-term thinking in government and corporate decisions.

Camilla Toulmin is director of the International Institute for Environment and Development (IIED), London, UK.



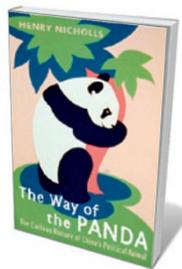
The Geeks Shall Inherit the Earth: Popularity, Quirk Theory, and Why Outsiders Thrive After High School

ALEXANDRA ROBBINS
Hyperion: 2011.

What do Bill Gates, Lady Gaga and J. K. Rowling have in common? They were all outsiders in high school. In this moving chronicle of US teens, journalist Alexandra Robbins proposes that the traits that mark students as different help them to succeed later in life. She followed seven students for a year, including a boy from Hawaii preoccupied with gaming, a Georgia girl concerned with her sexual orientation and a Virginia boy fascinated with IQ challenges. The students' courage and commitment to their own distinctiveness helped them to turn their talents into academic and social achievement.

Writing from the perspective of social psychology, Robbins says little about conditions such as autism spectrum disorders. But her assertion that diversity is more than race or ethnicity puts her in line with the neurodiversity movements. It is increasingly 'cool' to be smart or to have scattered skills in high school.

Roy Richard Grinker is professor of anthropology, international affairs and human sciences at George Washington University, Washington DC, USA.



The Way of the Panda: The Curious History of China's Political Animal

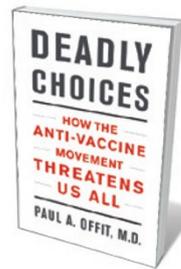
HENRY NICHOLLS
Pegasus/Profile Books: 2011.

There are now vastly more giant-panda products — including films, toys, blogs and books — than there are living giant pandas. Estimates put the number of wild and captive animals at around 3,000. Even with international efforts to save it, the giant panda is an iconic animal for all endangered species on the planet.

For those wishing to learn more about this captivating animal, three books stand out for veracity, clarity and history. The most recent is *The Way of the Panda*, by science writer Henry Nicholls, who splendidly relates the way giant pandas have taken hold of human hearts and politics (*Nature* 468, 503–504; 2010).

Nicholls generously cites the importance of two books by other naturalists: George B. Schaller's *The Last Panda* (University of Chicago Press, 1993) and *Men and Pandas* by Desmond and Ramona Morris (McGraw-Hill, 1967). Coming soon is *The Giant Book of the Giant Panda* (Smithsonian) by Pan Wenshi, the world's foremost giant-panda expert.

Nancy Lee Nash was a WWF consultant 1979–84 and wrote the successful proposal for China–WWF contact in 1979.



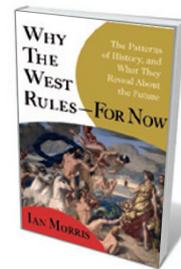
Deadly Choices: How the Anti-Vaccine Movement Threatens Us All

PAUL OFFIT
Basic Books: 2011.

I've been teaching a seminar on pseudoscience that deals with the anti-vaccine movement. We've been looking at Paul Offit's book, which discusses the parents and others whose lack of understanding of, or belief in, science leads to the growth of this movement. It points out the often serious and sometimes deadly consequences of not vaccinating your child. Offit discusses the herd immunity that we have counted on in the past, and how it diminishes as the anti-vaccine movement grows.

My own daughter, living in California, has been affected. Because of the whooping-cough epidemic that killed several babies in the state in the past year, she had to limit her baby's travel for several months until the infant could be vaccinated. When your granddaughter is endangered, it concentrates the mind on the foolish and unnecessary hazard that some have created by not vaccinating their children and recommending the same for others. By the end of the course, my students had a better appreciation of the downside of superstition and pseudoscience. If read with an open mind, Offit's book should convince the rest of the world as well.

Jay Pasachoff is director of the Hopkins Observatory, Williams College, Massachusetts, USA.



Why the West Rules – For Now: The Patterns of History, and What They Reveal About the Future

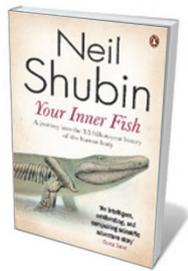
IAN MORRIS
Farrar Straus and Giroux: 2010.

Are the Western civilizations that spread from Egypt, Sumeria, Greece and Rome predestined to get ahead of those in the East? Yes and no, according to historian Ian Morris. The society with the edge is the one that can best organize and direct people, technology and finance into systems that work for the time. This now favours the West, but that hasn't always been true and needn't be so in the future.

Morris answers the question quantitatively. He begins with the DNA-dispersion patterns laid down when people moved out of Africa. Incorporating evidence of worship, urbanization, centralized authority, tools and the harnessing of energy, he analyses many societies, over 100- and 1,000-year intervals. The West usually scores higher than the East, but not always.

He sees the next 40 years as the most crucial in human history: will we be able to manage what has been unleashed by consumption and energy use? Morris contends that less liberal, more centralized approaches will pull ahead. This is a thought-provoking book for science and history buffs alike.

Margaret Catley-Carlson is chair of the Crop Diversity Trust, Rome, Italy.



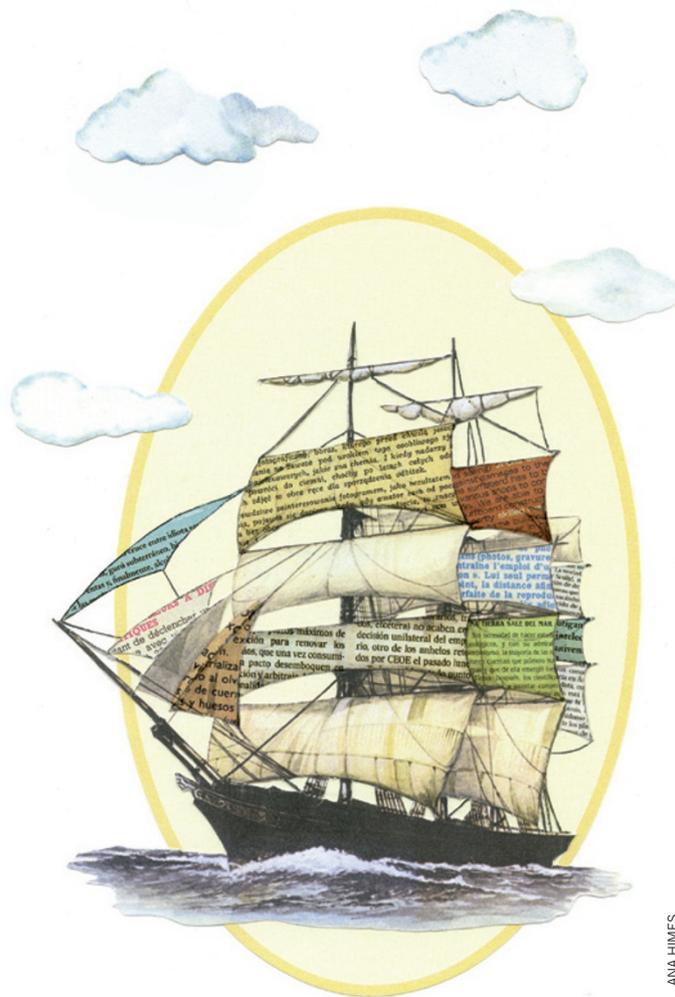
Your Inner Fish: A Journey Into the 3.5 Billion-Year History of the Human Body

NEIL SHUBIN
Vintage/Allen Lane: 2008.

When you prepare your next salmon for dinner, think about how similar its body plan is to yours, at least relative to other phyla such as corals or oysters. Neil Shubin, palaeontologist and co-discoverer of *Tiktaalik*, the 'fish-with-hands' fossil unearthed in the remote Inuit land of northern Canada, tells the intriguing story of the uncovering of new links in the evolutionary chain from fish to amphibians (*Nature* 451, 245; 2008).

Forget *Ichthyostega*, the famous hybrid fossil you learned about in school; it is practically an amphibian, its fins already evolved into fingers and toes. The earlier stages in the evolution of our wrist, palm and digits are apparent in *Tiktaalik*, implying that the basic skeleton of our hands and feet emerged more than 360 million years ago. From the reptiles that lived 250 million years ago to today, the five-finger hand has been the optimal solution. But imagine what might have been if seven fingers per hand was instead the norm? How would piano concertos for fourteen-finger hands sound? Shubin's fine book raises thoughts such as these.

Birger Schmitz is professor of geology at the University of Lund, Sweden.



ANA HIMES

Dog Days, Raven Nights

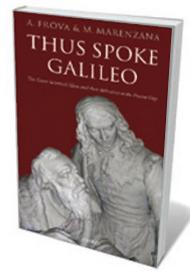
JOHN M. MARZLUFF AND COLEEN MARZLUFF
Yale University Press: 2011.



Ravens are intensely social and famously clever; but elusive to those who would observe them. John and Coleen Marzluff team up with veteran raven expert Bernd Heinrich in the Maine woods to study an important aspect of raven social behaviour: why they recruit other ravens to a food source. The picture that emerges is far from a simple tale of instinct and reflexes. Social life among ravens, like that of primates, is intricate, flexible and subtle.

Behind the scenes, Sitka, a Siberian husky, and Topper, a black Labrador, are working dogs who pull dead calves on a sled to feed the ravens in the aviary. Husky pups are trained to pull sleds, and are mentored by the experienced Sitka. In a race, these spirited animals maintain a pace of more than 5 kilometres a minute, running the equivalent of five marathons a day for ten days. Full of the grittiness of experimental persistence — and the splendour of ravens and dogs — this is a warm tale of wonderful science.

Patricia Churchland is professor of philosophy at the University of California, San Diego, USA.



Thus Spoke Galileo: The Great Scientist's Ideas and Their Relevance to the Present Day

ANDREA FROVA AND
MARIAPIERA MARENZANA
Oxford University Press: 2011.

Most people have heard of Galileo Galilei, but few have read his words. This book lets him speak, conveying his message of reason, intellectual honesty and free thinking, which is of great relevance today. It made me realize that Galileo still influences the modern world; for instance, in defending the supremacy of rationality above dogmatic beliefs. As he argued, we should not accept from science only what is impossible to refute, but we should value the concept of a mutable truth and the use of reasoning in general.

At a time when irrationality is rife in society, we should incorporate these basic tenets of the Galilean enterprise into the education of young people. This anthology, by physicist Andrea Frova and literature scholar Mariapiera Marenzana, spans the scientific, historical and literary viewpoints of Galileo's arguments. Even the errors made by the great Tuscan scientist are a source of further understanding. Galileo can still teach us how to appreciate the marvellous and simple ways in which nature operates.

Bruno Scrosati is professor of electrochemistry at the University of Rome Sapienza, Italy.

REVIEWS: GO.NATURE.COM/ZWU9JQ

an uncertainly outlined face blends into a landscape annotated like a map. Rocke's drawings dismember the image and evolve into forms that recall elements of asylum life, such as the cells in which patients were held.

Prinzhorn saw the creations of the mentally ill, who were uninfluenced by shifting trends in the art world, as a raw depiction of an individual's condition and a valuable

way to externalize the psyche to the outer world. The exhibition is not an enquiry into the origins of mental disorders, but into their lived experience. Noticeable among the contemporary works is the absence of any reference to the brain.

At a time when psychiatry is undergoing huge change — the genetic revision of diagnoses, the search for biological markers

and the use of functional magnetic resonance imaging — this exhibition reminds us of the irreplaceable ability of personal narratives to enter the depths of the mind through doors that are not open to biological analysis. ■

Giovanni Frazzetto is at the BIOS Centre of the London School of Economics, UK.
e-mail: g.frazzetto@lse.ac.uk

NEUROSCIENCE

Literary inspiration

Jorge Luis Borges' writings on memory foretell modern research, **Gabriel Kreiman** finds.

One of the most creative literary thinkers of the last century was Argentinian author Jorge Luis Borges (1899–1986). In his stories, Borges stretched the meaning and basic rules of space, time and infinity. He pondered instruments that could view the entire Universe, the effects of allowing one second to instantly become one year, infinite labyrinths and endless cyclic books. Borges was also intrigued by memory, its functions and its malfunctions.

A book in Spanish (English translation pending), *Borges y la Memoria* (*Borges and Memory*) by neuroscientist Rodrigo Quian Quiroga, eloquently links Borges' ideas with the latest research on memory. Focusing on the protagonist of Borges' 1942 essay, *Funes el Memorioso* (*Funes the Memorious*), and examining real experiments and consequences, Quian Quiroga offers a fascinating account of the connections between science and art.

The scientific study of memory often focuses on how we learn, how information is stored in circuits of neurons and how short-term memories are consolidated into long-term ones. Less attention is paid to the important ability to generalize and to forget. Borges explored both through the fictional character of Funes, who receives a brain injury after falling from a horse.

Because of his prodigious memory, Funes always knows the precise time without having to consult his watch, learns languages after merely checking a dictionary and can enumerate all the people he has ever met. Although these abilities seem admirable, there is a catch. Every leaf of every tree that he has ever seen remains in his mind. It disturbs him that a front view of a face is assigned the same identity as the profile view. He is almost incapable of understanding or creating abstract ideas.

NATURE.COM
For more on *Funes*
and *the Memoriosus*:
go.nature.com/5de4vm

Quian Quiroga re-examines Funes, and real people with similar amazing memory



Borges y la Memoria
RODRIGO QUIAN QUIROGA
Sudamericana: 2011 (in Spanish). Pp65 (US\$15)

capacities, from a modern neuroscientific perspective. We now know that the hippocampus has a crucial role in memory formation. In the 1950s, neurosurgeons observed that bilateral removal of the hippocampus for clinical purposes had profound effects on patients' abilities to establish memories. A landmark case study described patient H. M., who could easily recollect information from before his hippocampal surgery but had difficulty retaining subsequent experiences. He would meet a new person and hold a pleasant conversation, yet the next day he would have no recollection of what the person looked like or what they had spoken about.

Several important investigations ensued. Behavioural studies in rodents and

non-human primates characterized the effects of lesions in the medial temporal lobe and confirmed the central role of the hippocampus in learning. Listening in on the activity of neurons by inserting thin needles into rodents' brains revealed that hippocampal neurons can change their connection strengths in ways that correlate with learning and memory formation. Similar recordings in humans uncovered neurons in the hippocampus that showed sparse and invariant responses that are reminiscent of abstract elements of perceptions and memories.

Despite these breakthroughs, our scientific understanding of memory processes is in its infancy. We do not know how the hippocampus and cortical structures communicate to allow memory consolidation; how circuits of neurons store long-term information; whether there are capacity limits to human memory; or how to apply the properties of fault-tolerance, abstraction and speed so nicely implemented by the human brain to the design of other circuits.

Quian Quiroga's thoughtful book reminds us that elucidating the mechanisms that lead to generalization and abstraction constitutes a key step towards characterizing human intelligence. As Borges put it: "To think is to forget a difference, to generalize, to abstract". ■

Gabriel Kreiman is assistant professor in the Departments of Ophthalmology and Neurology at Children's Hospital Boston, Harvard Medical School, Boston, Massachusetts 02115, USA.
e-mail: gabriel.kreiman@tch.harvard.edu

CORRECTION

Patricia Churchland's review (*Nature* **475**, 35; 2011) incorrectly stated that huskies run at a pace of more than 5 kilometres (3.2 miles) a minute. The pace should have been '3.2-minute miles'.



The mind's labyrinth intrigued Jorge Luis Borges.