

Books & arts

Storytelling must exist alongside, not within, epidemiological methods.

To bring a human dimension absent from the historical record, Downs offers fictionalized accounts. The book begins by recounting details of an enslaved man on board a ship. Originally from “Ghana”, he was sold in “revenge” when accused of “witchcraft” after quarrelling with a “chief”. In my view, these clichés detract from the purpose of imagining the real people who were subjected to brutality.

Erased histories

Maladies of Empire also adds to better-known histories. It reminds us that Florence Nightingale, the pioneering nineteenth-century British nurse, was an accomplished statistician. Her graphical representations of data on mortality presaged sociologist W. E. B. Du Bois’s equally striking visualizations of demographic characteristics of the newly freed Black population at the end of the nineteenth century. Downs also examines evidence that during the US Civil War, which ended legal slavery in the country, Southern physicians intentionally infected enslaved children to produce material for smallpox vaccinations.

“He recovers lost and untold stories and makes visible things that need to be seen.”

A chilling chapter tracks how the US Sanitary Commission (USSC), a private relief agency that supported Union soldiers – including Black soldiers – during the Civil War helped to solidify the idea that races were biologically distinct. For example, USSC physicians made “scientific” studies of alleged differences, dispatching doctors to monitor Black soldiers as they bathed, and score various physical characteristics. As a result, race, rather than the terrible living conditions of the newly freed Black population, was thought to explain poor health. The legacy of this history lives on in present-day public health and medicine – for example, in algorithms that propagate race-based decisions in the clinic.

As many institutions and disciplines attempt to resituate imperialism, slavery and colonization as central elements, not aberrations, of the modern era, Downs contributes to the studies showing that medicine and public health share these erased histories. He recovers lost and untold stories and makes visible things that need to be seen.

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How ancient DNA hit the headlines

The origins, politics and motivations of the people who sequence age-old genomes. **By Victoria L. Herridge**

In 1993, the day after the film *Jurassic Park* premiered in Washington DC, *Nature* reported the sequencing of DNA from a weevil encased in amber more than 120 million years ago. Then, in 2015, days before the global premiere of a sequel, *Jurassic World*, *Nature Communications* published evidence for the preservation of red blood cells and proteins in a 75-million-year-old dinosaur sample. Coincidence? The authors of the 1993 paper (R. J. Cano *et al. Nature* 363, 536–538; 1993) insisted it was, notes historian of science Elizabeth Jones. One of the co-authors of the 2015 paper (S. Bertazzo *et al. Nature Commun.* 6, 7352; 2015) told me theirs was, too: “100%”.

These tantalizing parallels between life and art open Jones’s book *Ancient DNA*, a fun and thought-provoking introduction to the origins, politics and motivations of research into age-old genomes. Through interviews with more than 50 scientists who work in ancient DNA or collaborate with people in the field, Jones builds a wry, often wise, study of science as a very human endeavour. She makes a powerful case that ancient-DNA research feeds off media attention as much as the media feeds off it: they are twin stars locked in a binary system, each with storytelling at its core.

This relationship is exemplified by what one of her interviewees calls the ‘Jurassic Park effect’. The blockbuster novel by Michael Crichton on which the film was based burst onto the scene in 1990 while the field was still young and testing its limits (the first ancient-DNA conference took place the following year), capturing the imaginations of scientists and the public alike. Jones’s participants report that early attempts to extract DNA from amber were inspired by the novel. The 1993 movie is credited with prompting £2 million (US\$2.6 million in today’s terms) in UK government funding for ancient-biomolecule



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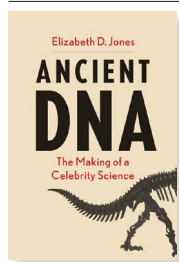
Ancient DNA has been extracted from insects trapped in amber.

research. But this is, as Jones shows, a more complex situation than science jumping onto a popular bandwagon.

In April 1984, seven months before the first ancient-DNA sequence was even published, she recounts, newspapers across the United States announced the genetic resurrection of a woolly mammoth. They had fallen for an April Fool’s Day prank in *MIT Technology Review*. People, it seems, were ready to believe. When, that November, a pioneering biomolecular group reported a 229-base-pair sequence of DNA extracted from the 140-year-old skin of a quagga (*Equus quagga quagga*), it was the hope of ‘bringing back’ the extinct subspecies of zebra that made the headlines – something not mentioned in the paper (R. Higuchi *et al. Nature* 312, 282–284; 1984).

De-extinction was part of the zeitgeist, attracting a disparate group of scientists, futurists and writers such as Crichton, Jones suggests, that formed the basis of both the *Jurassic Park* franchise and the research field now recognized as ancient DNA.

Despite many efforts, none of the early reports of dinosaur-era DNA have stood the test of time. The current record for oldest



Ancient DNA: The Making of a Celebrity Science
Elizabeth D. Jones
Yale Univ. Press (2022)

recovered DNA sequence, from a mammoth, stands at a more cautious, although still remarkable, one million years old (T. van der Valk *et al. Nature* **591**, 265–269; 2021). In the three decades since *Jurassic Park*, the field has tried to distance itself from de-extinction and dinosaurs in a quest for credibility, shifting its focus to other headline-grabbing topics including human origins and prehistory. Nonetheless, Jones argues, that first quagga paper set the template for ancient-DNA research: newsworthy studies, published in ‘top-tier’ journals.

Jones’s interviewees are frank about the extent to which media attention sets their research agenda. They often choose charismatic subject matter and species, thinking these carry weight with funders and journal editors. Who, asks one researcher, “cares about *Arabidopsis*?!”. (Answer: all of us, given that the tiny brassica is a workhorse of genetics and plant science.)

I suspect Jones is concerned that her characterization won’t go down well with her interviewees, aware that celebrity is often equated to superficiality. She needn’t worry: cognoscenti will be having far too much fun guessing which researcher said what, about whom, among the frank and often witty quotations (“That’s some of my best material,” a colleague told me, bemoaning their anonymity). Jones is at pains to stress that these media skills are a good thing, propelling the field forward.

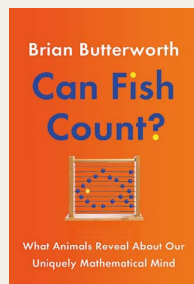
She judges success by the same inward-looking lights as her interviewees – funding, top-tier papers and ‘impact’ are good for careers, but are they good for science? In charting the history of this relatively young field that has developed in tandem with metric- and impact-led agendas in academia, Jones’s book provides a window into how these shape (and maybe narrow) research that is relevant to us all, not just a ‘celebrity science’ such as ancient DNA.

As a ‘celebrity’, it seems only fitting that ancient DNA should get its own funny, revealing biography before it turns 50. So what is next? The growth and success of ancient-DNA research means that it is no longer a coherent field, so much as a tool used by other disciplines, and better for it. Its technical limits are still being pushed, and there’s growing attention to other ancient biomolecules, such as RNA and proteins. At the same time, increasingly credible reports of remarkable biomolecular preservation in fossils tens of millions of years old, including dinosaurs, are being published.

Will the ancient-DNA big-hitters go back in time once more? The latest film in the franchise, *Jurassic World Dominion*, premieres in June; perhaps we’ll find out.

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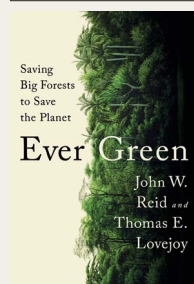
Books in brief



Can Fish Count?

Brian Butterworth *Quercus* (2022)

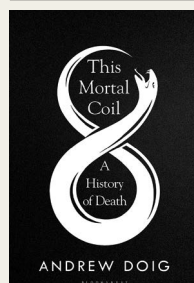
Whales make amazing journeys between their foraging and breeding grounds, as do fish, turtles, birds and even invertebrates. All measure distance to keep track of their location and how to return by the shortest route. These computations must involve numbers, argues cognitive neuropsychologist Brian Butterworth — although the process is far from understood. His densely detailed but remarkably clear exploration, illuminated by fascinating experiments, maps our understanding of numeration in the animal kingdom.



Ever Green

John W. Reid & Thomas E. Lovejoy *W. W. Norton* (2022)

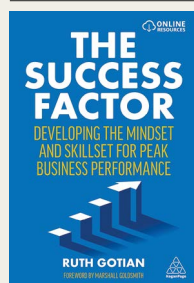
Earth’s five largest intact forests are the focus of this heartfelt survey by the conservationist John Reid and Thomas Lovejoy, who is credited with founding climate-change biology. The Taiga runs from the Pacific Ocean across Russia and northern Europe. The North American boreal extends from Alaska to Canada’s Atlantic coast. The other three are in the Amazon, the Congo and New Guinea. Their protection from industrial development — aided by their inhabitants, who vividly people this book — is key to halting increases in global temperature.



This Mortal Coil

Andrew Doig *Bloomsbury* (2022)

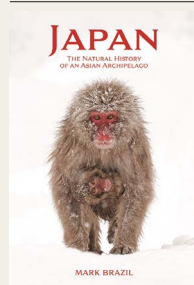
“Science is why we now live in the healthiest and wealthiest period that we have ever had,” writes biochemist Andrew Doig in his history of death, from earliest times to COVID-19. Much of it concerns killer diseases, such as plague, cholera and smallpox, but part covers human behaviour, including farming, famine, violence and accidents. It foresees a future in which 60-year-olds routinely receive new sets of biomedically engineered organs. Impressively wide-ranging and appealingly written.



The Success Factor

Ruth Gotian *Kogan Page* (2022)

In her book on success, leadership coach Ruth Gotian interviews and quotes some 60 leaders, largely in the United States. Their fields cover the armed forces, business, education, law, politics, science, show business, space flight and sport; four are Nobel laureates in science and nine are Olympic champions. She seeks attitudes they share, and identifies four: intrinsic motivation, perseverance, strong foundation and tendency to embrace learning through informal means. All “love what they do and would do it for free if they could”.



Japan

Mark Brazil *Princeton Univ. Press* (2022)

Japan’s more than 6,000 islands span 3,000 kilometres, from Okinawa in the southwest to Hokkaido in the northeast, and exceed Germany in area. Each spring, as part of the custom of *hanami*, the Japan Meteorological Agency charts the cherry-blossom front moving up the archipelago. The country hosts earthquakes, volcanoes and unusual species of bear, crane, dragonfly, eagle, frog, monkey and snake. All enliven this gloriously illustrated, deeply informed introduction by naturalist Mark Brazil, who lives in Hokkaido. **Andrew Robinson**