

BOOKS & ARTS

Exposing the longevity business

From caloric restriction to red-grape skins, the anti-ageing industry goes beyond scientific results to market treatments to those who hope to cheat death, cautions **S. Jay Olshansky**.

Eternity Soup: Inside the Quest to End Aging
by Greg Critser
Harmony: 2010. 256 pp. \$26

The conquest of death has preoccupied the minds of countless scientists, businessmen and charlatans throughout history, and has emptied the pockets of millions who sought immortality. Clearly they didn't succeed in their quest: all those who shared this vision in the past are dead. Yet the search for eternal youth is very much alive.

In *Eternity Soup*, science writer Greg Critser reminds us that the pursuit of everlasting life has resurfaced, with a cast of characters that are as entertaining, convincing and, in some cases, more dangerous than their predecessors. He also explains how science is inching closer to offering an intervention that slows ageing in people — but it is not there yet.

The book's title refers to a recipe for a long and healthy life that was invented by an Italian nobleman in the sixteenth century. Yet it is still appropriate, as the science and business of life extension are intermingled. For example, Critser describes how his elderly parents, after consulting an anti-ageing practitioner, have come to believe that they will live healthily to age 100 or more. The chances are they will be disappointed, but they derive some comfort from the vision of ageing they purchased.

Critser begins with a discussion of the supposedly life-extending effects of caloric restriction, a reduction in food intake that is thought to prolong life in many species. His account is entertaining but sells the reader short because he fails to question the science behind the claim. Experiments in the early twentieth century demonstrated not the life-extending effects of eating less, but the life-shortening effects of gluttony. Recent studies suggest that caloric restriction does not work in some species and even shortens life in others. Moreover, it has never been demonstrated to make people live longer. Those eating fewer calories might have favourable cholesterol levels and lower blood pressure, but some of the practice's most ardent supporters have died at about the same age as those who did not restrict dietary intake.

This opening section aside, Critser's book is a brilliant exposé of the increasingly popular anti-ageing industry and how its practitioners



Claiming to be 129 years old, Antisa Khvichava of Georgia would seem to know the secret of a long life.

have misled many people into believing that they can stop or reverse the effects of ageing. Proponents seem to argue: ageing is your fault; we have an unproven cure for sale that no one has disproved; scientists and physicians who disagree with us operate in a failed paradigm; and our patients tell us they feel better, therefore our treatments work.

Critser's methodical portrayal of a host of anti-ageing practitioners reveals some fascinating people who seek to convince others that they can purchase longer and healthier lives like any other commodity. He makes clear that many anti-ageing treatments are based more on faith healing than on science, and that the industry defends them and presents them to the public with evangelical zeal. Scientific gerontologists who point out the lack of empirical evidence behind the claims are shouted down, sued for libel or made fun of as lab technicians or statisticians with no experience in treating patients.

Critser became aware during his research of why the ridiculed scientific gerontologists find the anti-ageing industry so aggravating. The industry closely monitors the field for any advances, and when it spots something that

might be turned into a commercial enterprise, the product is repackaged, branded and sold to the public as the next great breakthrough of its own invention. Examples of scientific advances that have ended up as sham treatments or that have been sold prematurely to the public as longevity therapies include various hormone concoctions, resveratrol — found in the skin of red grapes — and bogus DNA tests.

This is an extraordinary time to be a scientist in any of the disciplines associated with ageing because developments are occurring so rapidly. Yet the lure of money can be as distorting here as in the 'faith-based' anti-ageing trade, because it can encourage scientists to interpret their results liberally to tantalize investors. By contrast, it enables research to take place that might not otherwise occur. At a conference I attended recently, one chief executive claimed that his company was on the verge of curing cancer, securing a 100-year life expectancy for all and re-engineering humans so they could run a mile in two minutes. These claims echo those made centuries ago by the inventors of alchemy.

Because ideas are the currency of science,

D. MDZINARISHVILI/REUTERS

even those taking a fringe approach should be given their due. But as *Eternity Soup* makes clear, it is important to know when the line is being crossed. By openly engaging in uncontrolled non-scientific experiments on patients, with the rationale that there is no time to wait for science to prove them right, the anti-ageing industry has stepped beyond it. ■

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Learning from history's trials

Natural Experiments of History

Edited by Jared Diamond and James A. Robinson

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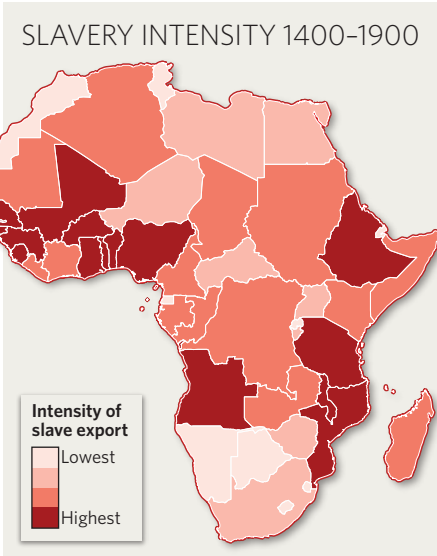
Natural Experiments of History is a short book packed with huge ideas. Its collected essays advocate how controlled experiments can be applied to the messy realities of human history, politics, culture, economics and the environment. It demonstrates productive interdisciplinary collaborations but also reveals gulfs between different cultures of academia.

The editors, geographer Jared Diamond and political economist James Robinson, have ensured that the volume of essays is cohesive and tightly argued. Many of the authors choose to start arguments, not finish them, by venturing important and controversial claims, together with clear explanations of their comparative regional studies.

The idea of a natural experiment is simple: find two or more cases that share some significant attributes but not others, and probe the similarities and differences systematically. Using studies of islands to make two opposing arguments, Diamond's essay may surprise critics who dismiss him as a geographic determinist. Comparing Haiti and the Dominican Republic — two nations that split one island — he argues that their different histories of colonization and rule have trumped environmental factors in determining how each side has developed. Today, the Dominican Republic has a functioning democracy, an average per capita income that is six times that of its neighbour, and 28% intact forest compared with just 1% in Haiti. Attributing that success to "cultural, economic, and political differences" is a fair generalization, but in history, the devil is always in the details.

The second case study in Diamond's essay is more quantitative. Across 69 Pacific islands, he analyses nine environmental variables — including the geological age of soils, deforestation, rainfall, temperature and

wind-borne deposition of dust and ash — and four agricultural practices, namely wet and dry cultivation of root crops, and arboriculture of breadfruit and nuts. He concludes that Easter Island was deforested because its inhabitants "had the bad luck to find themselves living on one of the Pacific's most environmentally fragile islands." This may confuse those who have read Diamond's arguments that it was Easter Islanders' failure to adapt culturally to their limited environment that caused their society to collapse. Was it their own fault, bad luck, or



The historical intensity of slave export from Africa correlates with poverty there today.

both? Diamond seems to want to have it both ways.

History trumps geography in another provocative essay, 'Shackled to the past', by economist Nathan Nunn. He examines the relationship between the historical trade in slaves from different parts of Africa, and modern per capita income and gross domestic product in those areas. His statistical analysis reveals that the more slaves that were taken from an African country, the poorer it is today

(see graphic). Nunn estimates that, without the slave trade, per capita incomes in Africa today would be between 45% and 180% higher than the US\$1,834 average annual income in 2000. It is a persuasive argument for targeted reparations for the slave trade.

This daring reach for revealing patterns is both a strength and a weakness of *Natural Experiments of History*. Devilish details are necessarily left behind. Historian James Belich's essay, for example, is condensed from his book *Replenishing the Earth* (Oxford University Press, 2009), a lengthy, nuanced history of Anglo settler societies. In this short version, Belich compares the remarkably similar patterns of explosive population growth and cycles of economic boom and bust that were experienced by disparate settler societies in the western United States, western Canada, Argentina, Australia, New Zealand, Siberia and South Africa in the nineteenth and early twentieth centuries. He argues that each of these societies went through a three-step rhythm: an initial boom fuelled by settlement itself, followed by a bust when these economies proved internally unsustainable, and then a phase of 'export rescue', in which settler colonies supplied commodities to an increasingly networked global economy.

Belich's quest to identify shared 'initial conditions' to explain this world-spanning phenomenon is audacious. He identifies important historical, economic, technological and cultural patterns: the 'peace bonus' of 1815 at the end of the Napoleonic and British-American conflicts, the growing mass transfer of international trade owing to fast clipper ships and a marked shift from a negative to a positive view of emigration, aided by a blossoming print culture. But Belich himself admits that the evidence is mixed when one looks closely at the particulars in each place.

All of the essays in *Natural Experiments of History* will trigger debate. Diamond and his co-authors will be ready: they are on a mission to import a scientific approach to history to tease out causal factors and build predictive theories. Social scientists also gravitate to this approach. But many historians will argue that there is nothing natural about these experiments, and that they are not experiments anyway because history cannot be replicated. Ultimately, most historians fall back on contingency; stuff happens and the details make all the difference. The power of comparison, pattern, theory and prediction, however, will not be so easily dismissed. ■

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