

author argues, standardized patients embody the decisions made about how best to represent the world made by the standard-maker. These living proxies thus ‘have an impossible but necessary task of standing in for all of us’ as recipients of effective and humane medical practice (p. 181). Mulvin concludes in Chapter 6 by interrogating the way in which standards are concealed and their integration within infrastructure is made sensible, mundane or unremarkable. The book closes with a consideration of the tools and strategies available to those engaged in the excavation of proxies: iconic retextualization pioneered by artists to challenge conceptions of normality, the breakdown of infrastructure itself into a subject of analysis, and efforts to spot the tell-tale signs of the defence and maintenance of proxies. It is perhaps unsurprising that the reader is invited to ‘take stock of the common reference points’ of their knowledge infrastructures at the book’s end (p. 202). A deeply original piece of analysis backed by a rich bank of examples, *Proxies* succeeds in equipping – and provoking – historians of science and technology to ask, to whom or to what do we delegate the power to stand in for the world?

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Daniel S. Milo, *Good Enough: The Tolerance for Mediocrity in Nature and Society*

Cambridge, MA: Harvard University Press, 2019. Pp. 310. ISBN 978-0-6745-0462-2. \$28.95 (hardback).

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At a time of neoliberal ethics, when being better is best, there is heavy pressure on self-improvement. ‘Excellence’ is socially eminent. Or, some write, it is nonsense. Avram Alpert’s 2022 *The Good-Enough Life*, for example, says that ‘perfection’ can be pernicious, because we extend an ideal onto a complex reality. High standards make us unable to come down to earth to our limitations, necessary for a healthy, constructive lifestyle. Daniel S. Milo’s approach is not psychoanalytical, but, he writes, philosophical. Our ideal for competition and talent as the ritual for happiness is, he writes, supposedly based on the theory of natural selection – nature’s laws dictate that there be competition, that there be talent. But nature ‘legalizes’ no such thing, Milo argues. What we have is a perception of nature given to us by a specific culture – nature does not actually work how we are told it does. ‘Human society is not ruthlessly competitive’, he writes,

and neither is nature. Both are tolerant of excess, inertia, error, mediocrity, and failed experiment ... there are many who tell us that talent – sometimes rendered as fitness, sometimes as merit – is all that matters in nature and in human affairs, each following a deep Darwinian law of the universe. This is the dogma I seek to undermine. (p. 6)

The Olympians are the exception. In the book’s first part, Milo analyses cases where nature has supposedly chiselled organisms into efficient forms – the neck of the giraffe, the Galapagos finches or the human brain. Milo writes that nature is in fact characterized by the excess of those who are not particularly efficient. Giraffes, for example, might have long legs, but that surely also affects their ability to give birth, which they do while

standing. Moreover, we can see that organisms do not conform to perfection. Human kidneys, for instance, are highly variable in their nephrons (a kidney's functional unit): from 210,332, to as many as 2,702,079. 'Wide ranges and optimization are incommensurable', being 'evidence for natural selection's chronic fallibility' (p. 12). If natural selection really kept organisms at an optimum, then we should see them as having roughly the same characteristics. But any trait can exist if it does not lead to the death of the individual, or of the species. 'What is eliminated?' Milo asks. 'The lethal and the luckless'. Instead of natural selection, we should speak of 'natural elimination', which 'holds that even deleterious variations survive where environmental conditions allow, and beneficial ones are eradicated where conditions do not. It is not the chosen that survive but the fortunate' (pp. 63–4).

Talent is not even the default, because it implies change. Instead, we must recognize that 'organisms resist change, death being the ultimate case' (p. 175), their resistance creating excess, variation and rich diversity. This is 'nature's safety net'. For instance, organisms can be very flexible, accepting exaggerations, because of their mostly unchanging 'sound foundations', developed long ago, ensuring that organisms can add random traits, since their biological core remains highly functional. What are those foundations? They are 'the basics of metabolism, DNA replication, and membrane action, as well as cell and body plans', which are 'highly optimized because they are essential to the preservation of all forms of life' (p. 176). If organisms are optimized to survive the basics of life, they may enjoy excess. 'The safety net was so strong that the genetic lottery could produce all sorts of sustainable deviation' (p. 184). Natural selection built foundations, being the first evolution. Now, we live mostly in the cornucopia of the second evolution – natural elimination. Its comfort allows for creativity.

Darwin himself did not think about the second evolution because, Milo writes, he thought only of the first. He says that Darwin did so because he made too much of the practice of farmers/breeders selecting their best stock. In the *Origin of Species*, then, the hand of the farmer was made equivalent to competition for limited resources. 'This analogy', Milo says, 'has haunted us ever since, provoking fantasies of natural selection as an agent endlessly optimizing species' performance in the struggle for life' (p. 59). But Darwin was a complex man, his name thus branching out to many uses. In 1979, Stephen Jay Gould and Richard Lewontin believed that the word 'Darwin' ought to be attached to 'pluralism'. Darwin himself, they said, believed that natural selection played only a part in modifying species. They cite the last edition of the *Origin of Species*, in which Darwin said, 'I am convinced that natural selection has been the main but not the exclusive means of modification' (p. 589). Many pixels have been spent on the analogy, most recently by the recent *Darwin's Argument by Analogy* (2021), which argued that, for Darwin, organisms in nature were also modified by other forces.

If 'Darwinism' is Milo's main target, then neo-Malthusian fears encapsulated in today's 'climate change' are visibly absent from Milo's fine pen. Milo writes that 'there is such a thing as a free lunch', and that 'luck can be more important than talent' (p. 6, original emphasis), his theme being that nature does not dictate that the world be for the talented. But historically some have not so much been troubled to make culture work based on nature. Alison Bashford's *Global Population* has shown convincingly that, for many, fears of 'waste' and 'excess' have contributed to initiatives for planned reproduction, and social hierarchies. Julian Huxley, for instance, thought that culture anyway diverges from nature. The problem is exactly that, culturally, excess thrives. So excessive luck must be planned, and thus be directed, for overcrowding makes degradation makes low quality of life. If nature now is also excessive, as Milo writes, then maybe it, and society, should be tamed relative to environmental constraints. Evolution may not dictate, but, to some, the environmental carrying capacity just might. Murray Bookchin, amongst others, wrote the *The Ecology of Freedom* (1982) to grapple with this latter issue.

Darwin and ‘excess’ aside, Milo’s book is deeply insightful when focused on the theme of the dangers of superimposing culture onto nature. The Galapagos finches, with their specialized beaks, are usually taken as an example that solely natural selection modifies organisms. But, Milo says, this is not true in all cases. ‘It does not convincingly demonstrate that traits are, in general, selected for optimal performance in the struggle for life, but the strength of the example alone combats skepticism’ (p. 83). The point about the fallacy of extrapolation is not new. What is new is the connection with Milo’s brilliant chapter – ‘the Invention of Tomorrow’. Humanity’s capacity to imagine the future is the analogue of nature’s safety net. It allows humans to project and simulate possible futures, and, unlike other organisms, not be stuck in their present. One such future was to see ‘Darwin’ (i.e. natural selection) as ‘thought to explain everything in the development of species and much more besides’ (p. 248). By suggesting that his view might be closer to nature, Milo attempts to paint another future: ‘to rescue evolution from the evolutionary ethics that have been used since Darwin to justify the excellence conspiracy’ (p. 249). We might excavate this ‘rescue’ more – the impetus being another great merit of Milo’s *Good Enough*.

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Gordon Barrett, *China’s Cold War Science Diplomacy*

Cambridge: Cambridge University Press, 2022. Pp. 300. ISBN 978-1-1088-4457-4. £75.00 (hardback).

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Gordon Barrett’s excellent study of ‘how eminent Chinese scientists ... became crucial international interlocutors for the early PRC [People’s Republic of China] through their involvement in an interconnected cluster of organizations, events and networks’ (p. 3) during the first two or three decades of the Cold War throws new light on the importance that the revolutionary regime placed on international scientific collaboration. Dedicated Chinese scientists sought both to enhance national scientific capacity and to promote the social model that was under construction in China by working along with left-wing organizations and sympathetic individuals in the capitalist ‘West’ and the socialist world. Barrett describes in detail China’s role in the World Federation of Scientific Workers in the first decade after the war, in the early Pugwash Conferences on Science and World Affairs up to the Sino-Soviet split in 1960, and in organizing huge international conferences in Beijing in the mid-1960s that explicitly targeted developing countries. The bridges built with a number of British socialists are given a chapter of their own.

I found this book particularly interesting, not simply for the quality of its scholarship, but also for the light it throws on the dynamics of transnational knowledge flows that are often obscured in studies of science diplomacy. Indeed the transnational scientific exchanges described by Barrett had a number of specificities that tethered them to the space-time context in which they occurred: this is a story of *China’s* science diplomacy in the *Cold War*.

First question: is this science diplomacy at all? Or what form of science diplomacy is it? In its ‘standardized’ version, science diplomacy brings together scientists in different