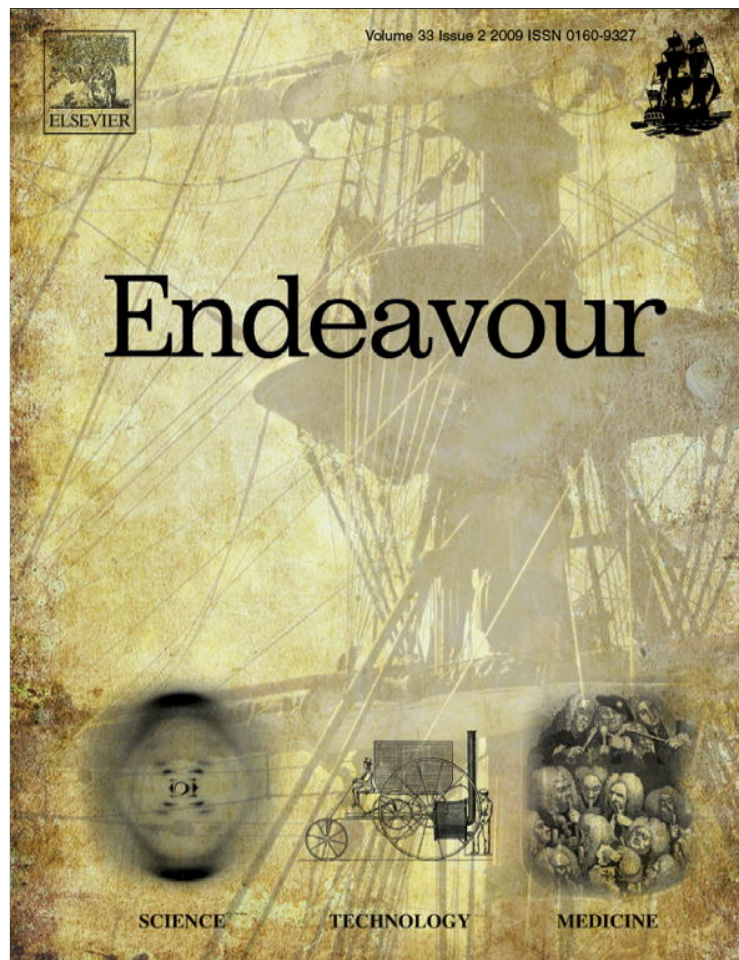




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identifying regular laws on the model of Newton's physics. Darwin, in contrast, was looking to establish natural selection as a *vera causa*, in accordance with Sir John Herschel's philosophy of science, hence his emphasis on the analogy with artificial selection in the early chapters of the *Origin*. Darwin, Gliboff notes, was writing to convince an audience of fellow Englishmen familiar with Bishop Paley's argument about how only something like an intentional agent could be responsible for the design-like features of living organisms. Darwin also assumed his audience to be familiar with the breeds of hunting dogs and fancy pigeons he discussed. Such references flummoxed the urbane German professor, however, and the metaphorical talk of Nature selecting certain varieties of organisms over others struck him as *unwissenschaftlich*, since the results could be expected to be neither regular nor predictable.

As a final chapter of his translation Bronn appended a critical essay laying out his reservations and criticisms of Darwin's theory. Gliboff insists these critical remarks deserve special attention, since Haeckel, in 1860 a young zoologist working on the taxonomy of the radiolaria (a group of single-cell marine plankton), read them and made it his personal mission to answer them on Darwin's behalf. On Gliboff's reading Haeckel was a much better Darwinian and much less of a dogmatic recapitulationist or Lamarckian than has been so frequently maintained.

Part of the reason for the harsh judgment of German biology, Gliboff argues, is that an older generation of biologists (beginning with Karl Ernst von Baer in the

nineteenth and then Erik Nordenskiöld and E. S. Russell in the early twentieth century), mischaracterized the positions of contemporaries with whom they were engaged in professional debate. These mischaracterizations shaped later histories written by people like Daniel Gasman, Steven Jay Gould and Peter Bowler, who have portrayed Bronn and Haeckel as retrogressive thinkers who distorted the true Darwinian theory by continuing to use older transcendentalist terminology of 'types' and 'perfection'. Gliboff maintains, however, that Bronn and Haeckel, like Darwin himself, were pouring new wine into old bottles – thereby transforming the meaning of these central terms of pre-Darwinian morphological discussion, so as to *reform* the older morphology, not simply to perpetuate it in spite of the new Darwinian ideas.

Gliboff assumes a non-essentialist construal of scientific theories, making Darwinism an historical entity under continual development. Gliboff warns then against Whiggishly pronouncing elements currently out of favour as *pseudo-*, *pre-*, or *anti-* Darwinian. 'Darwin's gift to modern science' he concludes '...was not just "a theory by which to work" as he said, but rather a theory *on* which to work'. This valuable contribution to the history of biology will challenge professional biologists, historians, philosophers and sociologists of science to re-evaluate much of what they thought they knew about the history of Darwinian thought.

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Book Review

Our special bomb

Five Days in August: How World War II Became a Nuclear War by M.D. Gordin, Princeton University Press, Enfield, NH, USA, 2007, 226 pp., Price: US\$ 24.95, ISBN 978-0-6911-2818-4

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Why is an atomic bomb different from any other kind of bomb? Why was Hiroshima different than Tokyo or Dresden? When, exactly, did the atomic bomb win the Second World War? When did the atomic bomb become something 'special', something unique in the history of war? If the questions seem silly, all more the point to ask them, says Michael Gordin in *Five Days in August*. That the answers are

obvious today only highlights how important it is to see *when* and *why* they became that way, especially since, as he argues, such answers were none too clear at the time.

Gordin's five days are from 9 August through 14 August 1945: from the bombing of Nagasaki to the Japanese

surrender. During this period, he argues, the question of how to think about the atomic bomb was hammered out. It was clear that an atomic bomb was *quantitatively* different from the aerial bombs that came before it: one atomic bomb, dropped by one plane, could do the work of a squadron's worth of firebombs. But was it *qualitatively* different? Was it just a convenient way to execute a firebomb raid or was it a new category of weapon? Did it bring with it novel moral and political considerations that the firebomb raid did not? Would it radically change warfare or simply augment existing strategies? What, in essence, was the ontology of the bomb?

The book thoroughly documents that the answers were in no way clear to those on the ground in 1945. That two bombs, rather than three, would be 'enough' was not a foregone conclusion for those in charge of dropping them. Policymakers, military men and scientists debated whether the new weapons were anything more than very

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large firebombs. Gordin describes this 'frantic and confused time' with a feeling of historical contingency that has been lost in modern retellings.

The heart of the book involves carefully tracing the myriad of stances on the bomb *after* its use but *before* Japan's surrender – a time when the interpretation of what the bomb 'meant' was still very much in flux. Gordin shows convincingly that many of those close to the production and use of the first atomic bombs considered them large firebombs: powerful weapons, but usable ones. Not all shared this view, of course. Many scientists in particular judged the weapon to be 'revolutionary' long before its use, but for many others it was at least up for debate.

Gordin's book is a new and novel contribution to the ever-growing literature on the use of the atomic bombs in the Second World War. More than others, it addresses the question as largely historiographical: at the moment we knew the bomb had 'won the war', the idea that it could have been any other way became almost unthinkable, and all of our narratives of the use of the bomb have been written with that fact first, not last. The narrative we have today, the same one used even by those who think the bombing was unnecessary, buys into this 'revolutionary' argument about the bomb, assuming it to be something different, something radical. Gordin demonstrates that this narrative was just one possible plausible interpretation of the bomb in its time, one that was specifically mobilized by the United States government to enhance the 'shock' of the bomb.

There is, of course, the nagging question of whether it matters that military men thought the atomic bomb was

just another type of bomb, that it would not revolutionize warfare. Do we need to consider whether their interests affected their appreciation of the revolutionary quality of the bomb, particularly if that might have meant overcoming institutional inertia, rejecting old ways of doing things and possibly endangering their institutional identity? Does it matter than the specialists who were charged with priming the first atomic bombs regarded it as just another weapon? Do the opinions of these technicians 'matter' as much as, say, the US President or the Japanese Emperor? Should we regard all opinions as equally important or equally valid? One could argue that some of these opinions held far more sway than others, both then and now.

Gordin's main point, that our conceptions of the atomic bomb are culturally and historically contingent, is a powerful one. This well-written, accessible and important book ambitiously strives to recast over a half-century's worth of technological determinism and to problematize a teleological view of the Second World War. Gordin aims, in part, to make us question how much of what we know about nuclear weapons comes from their technical 'facts' and how much is part of an elaborate cultural and political production, one dating to a specific time and a specific place. At a time when many commentators have proclaimed that we are, again, in a new 'nuclear age', the notion that the atomic narrative is rather more plastic than it would first appear is welcome and intellectually fruitful.

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Book review

All the fish of the sea

Trying Leviathan: The Nineteenth-Century Court Case That Put the Whale on Trial and Challenged the Order of Nature by D. Graham Burnett, Princeton University Press, 2007. xvi+266 pp., \$32.95 ISBN 978-0691129501

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Finding the right trial is like striking historical pay dirt. Of course, very few trials are right in this sense, because legal procedures are designed to resolve disputes of immediate personal or social interest to the parties involved, rather than to debate intellectual issues that will turn out to engage future historians. Every so often, however, a trial happens to raise such issues, and, better still, its plaintiffs,

defendants, witnesses, lawyers and presiding officers happen to articulate and personify a range of perspectives similar to the range that historians would retrospectively tease out. The sixteenth-century trial of Martin Guerre (or

Arnaud du Tilh) is the best-known example of such serendipity. In a sense, Graham Burnett has been even luckier, or more perspicacious, than Natalie Zemon Davis and the many other modern scholars and writers who have revisited the Martin Guerre story. After all, human identity fraud predictably engages the machinery of justice, which is less true of arguments about marine taxonomy.

But, as Burnett shows, what is on the surface does not necessarily reflect what lies beneath. *Maurice v. Judd*, the trial at the center of *Trying Leviathan*, took place in 1818. James Maurice was the inspector of fish oils in New York City, and Samuel Judd was a merchant who dealt in spermaceti, as well as in other fats and oils. Maurice accused Judd of having bought three casks of fish oil that had not previously been inspected, as was required by a recently passed state law. Judd acknowledged that he had made the purchase in question, but claimed that since the

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