part and parcel of a great economical process” (Gray 1963, 308, 310). It would seem that historical injury has not been avoided despite Darwinian calisthenics.

Bowler’s counterfactual expedition has many merits, and the planks of his central thesis were laid down clearly in earlier publications. I agree that it is essential to emphasize Darwin’s uniqueness: “no one else had the kind of career and research opportunities to position them to duplicate all of Darwin work” (36). And Bowler succeeds in expanding the historical imagination, flagging assumptions that lead to disagreements among historians, encouraging us to more vigorously countenance historical contingency, and helping us get at the point of view of historical actors. But the deeper significance of Bowler’s book comes from its limitations, which provoke us to rethink the philosophical categories used in counterfactual historical analyses. It is crucial to scrutinize more than theories and not assume there is a single partitioning of relevant theory elements; it is necessary to decouple realism and inevitabilism, distinguish different kinds of contingency, and examine the consequences of a pluralist outlook on the conceptualizations embedded in scientific models. This is what it really means to be “forced to think more carefully about the complexity of scientific theorizing and its relationship to the wider world” (27). Forty years of Darwinian calisthenics do not guarantee injury-free competition; even an Olympic athlete can pull a hamstring.¹

Robert J. Richards

What if Charles Darwin, during the Beagle voyage, had been swept overboard and had drowned, never to have developed his theory of the descent of species by natural selection, never to have written On the Origin of Species? How would the intellectual world of the last half of the nineteenth century have been different? Peter Bowler imagines answers to these questions by constructing a counterfactual history in his provocative new book Darwin Deleted. He intends by this history principally “to undermine the claim that the theory of natural selection inspired the various forms of social Darwinism” (6), particularly Nazi biology and the eugenics movement at the turn of the century. Bowler argues that even
without Darwin, social Darwinism (under a different name) would yet have flourished. And without the intellectually disruptive phenomenon of Darwinism, religion, in Bowler’s parallel history, would have reconciled itself to a more compatible, Lamarckian evolutionism of the sort proposed by Herbert Spencer and Ernst Haeckel. The wars of religion and science would have become minor skirmishes.

Recently in the *Guardian* newspaper, Richard Evans, the distinguished historian of the Hitler regime, dismissed with prejudice counterfactual reconstructions of the First World War (Evans 2014). Most historians would agree with Evans that “what if” is a waste of time,” since constructing the actual course of historical events and giving an explanatory account of those events prove hard enough, even when the evidence is available and abundant. When the evidence of an imagined world can only itself be imagined, the task of retrocasting a reasonable trajectory of events becomes exponentially difficult.

Two specific objections might be lodged against a counterfactual history. Some historians would object in principle to counterfactual considerations. But this objection fails to recognize that in every historical account, in every explanation of decisions taken and events occurring, the historian must, implicitly at least, imagine what the situation would have been like if the explanatory antecedent causes had not occurred. If the historian were to decide that the event of interest would nonetheless take place with the antecedent causes eliminated, then the account would explain nothing. What is taken as the antecedent cause must make a difference in the occurrence of the event of interest, otherwise the explanation fails.

This use of counterfactual thinking, a kind of thinking all historians employ, reminds us of the constructed character of written history—as does Bowler’s own effort. The historian builds the history of a period from the shards and detritus that remain in the present; the historian constructs a past that has no existence except in the construction itself. And that existence is curious. It is not quite the past experienced by any one individual in the past or even a collection of individuals. The historian can perceive things the individual actors cannot and can detect causes that, at
the time, were not noticed by anyone—think of episodes of the condemnation of witches done by individuals completely ignorant of the psychological causes behind the bizarre behavior of those condemned. So Bowler’s counterfactual history might appear just another example of the way historians go about their work, just a more obviously constructed instance. Yet, I think it is not, and the problem goes to the second objection to a counterfactual history.

This objection is more serious: in a complex matrix of interacting events, the conceptual addition or elimination of a significant cause must have unpredictable ramifying consequences. The turbulence produced by that butterfly flitting across a river in Argentina could have deleterious consequences for the ratings of municipal bonds in Chicago—at least this is the kind of potential that chaos-theorists discuss. If the cause added or subtracted is magnitudes more powerful than the ripple of a butterfly wing—for example, the deletion of Darwin from the intellectual world of the late nineteenth century—the echoing perturbations must shatter all expectations. Only a couple of ways exist by which to control the explosive potential of a counterfactual insertion or, in this case, deletion. The historian might narrowly define the deleted cause and brand it such that its mark on other events would be obvious and therefore easily excludable from the imagined history; or the historian might assume that the causal lines of interest have an inherent trajectory, goals that would be achieved despite the perturbations produced by extrinsic influences. Bowler employs both of these strategies.

AQ1

Darwin is usually credited with two significant accomplishments in the *Origin of Species*: a convincing demonstration of the transmutation and descent of species over vast periods of time, “evolution” for short; and advancing a cause by which such evolution could be explained, natural selection. Anyone familiar with mid-nineteenth-century science will grant these as the two, intellectually tremendous results of Darwin’s “long argument” in the *Origin*, but will still insist on many other extraordinary aspects of his achievement, for instance, his ingenious theory of moral
behavior, which occupies several chapters of the *Descent of Man*. Bowler, however, slims down Darwin’s theory specifically to natural selection and argues that without Darwin, natural selection “‘ought’ to have been discovered” half a century later than it actually was, likely in the collaboration of Karl Pearson and W.F.R. Weldon, given the latter’s data and the former’s statistical prowess (195–197). In this conjectured instance, natural selection would arise in the course of ordinary research at the beginning of the twentieth century and not 50 years before with the disruptive discovery of natural selection by Darwin, who “pulled off a coup that no one else at the time was in a position to do so” (197).

Bowler, of course, knows that Alfred Russel Wallace is usually credited with independently discovering natural selection, which discovery would seem to open up another ramifying path, a possible detour from the parallel history he has laid out. Wallace’s essay “On the Tendency of Varieties to Depart Indefinitely from the Original Type” caused Darwin severe anxiety when he received it from this obscure naturalist in 1858. He was astounded at the similarities of their views and fearful that his originality had been waylaid. He wrote his friend Lyell that “if Wallace had my MS. Sketch written out in 1842, he could not have made a better short abstract.”

Bowler maintains that Darwin was wrong about the similarities, and so attempts to restrain the imaginative possibilities of this counterfactual history. He argues that by competition among varieties, Wallace meant not struggle between individuals displaying varietal traits, Darwin’s principle, rather, between varietal groups in a kind of “group selection” (62). Bowler would have to say something like this to hold steady along the path: Natural selection was uniquely Darwin’s achievement and without the master natural selection would not have played a role in the intellectual landscape of Victorian England. While Wallace’s usage of the term “variety” might seem a bit vague to us, he is clear enough that it is individuals who are selected for or against in the struggle for life, for example: “as the individual existence of each animal depends on itself, those that die must be the weakest … while those that prolong their existence can only be the most perfect in health and vigour”; and “the individuals composing the species, those forming the least numerous and
most feebly organized variety would suffer first.” Vagueness aside, Wallace cannot be proposing group selection because of the very logic of the situation: He does not refer to traits of groups per se, rather to traits common to the individuals composing a group. Were he proposing group selection, the traits would have to be something like flocking in birds or schooling in fish, traits predicated of the group as a group. An individual bird cannot flock. If all individuals of a variety are “feebly organized,” then they will be selected against individually one by one. So Darwin’s principle was not as improbably contingent as Bowler concludes. And since Wallace and Spencer were friends, they might both have advanced the principle of survival of the fittest, as Spencer rechristened natural selection. But who knows?

Bowler argues that natural selection would not be discovered in this hypothetical history till the turn of the century because in the actual history, not only were Darwin’s arguments uniquely disruptive, but “most of his contemporaries found the theory either hard to understand or totally unacceptable” (197). I am not sure about what ought to happen in the imagined history, but the claim that in the actual history Darwin’s principle was “hard to understand” and “totally unacceptable” to contemporaries—that claim itself seems counterfactual. Huxley, after reading the Origin, famously exclaimed to himself: “How extremely stupid not to have thought of that” (Huxley 1900: 183). Both Spencer and Haeckel thought the principle of natural selection did not need any empirical proof because it was an obvious, a priori proposition, like those found in mathematics (Spencer 1864: 445; Haeckel 1868: 133). Moreover, almost every naturalist accepted the principle. What was often doubted was whether it could explain all traits (and not even Darwin believed it could). The Catholic naturalist St. George Jackson Mivart, who advanced his own evolutionary theory in rebuttal to Darwin’s, declared that the object of his book On the Genesis of Species was “to maintain the position that ‘Natural Selection’ acts, and indeed must act, but that still, in order that we may be able to account for the production of known kinds of animals and plants, it requires to be supplemented by the action of some other natural law or laws as yet undiscovered” (Mivart 1871: 17). Mivart’s
response was quite common. Once the principle of natural selection was hit upon, it seemed obvious and necessary, and thus some inglorious naturalist, someone like Wallace perhaps, might well have led the company of biologists along the same path as was actually taken by Darwin. But who knows?

In deleting Darwin from the Victorian world, Bowler simply removes natural selection from the biological repertoire of the period, leaving all else much the same. The gap, he suggests, would be filled by Lamarckian evolutionism, which would come to dominate the purview of naturalists. But would it? Darwin not only advanced the principle of natural selection, but he also provided powerful and undeniable arguments for evolution, that is, for descent with modification. During the half century before the publication of the *Origin*, only a few naturalists, inclining to the minor (e.g., Robert Grant in England, Geoffroy St.-Hilaire in France), offered flickering avowals of Lamarckism; but those of greater stature did not. Lyell and Huxley in England, Cuvier in France, and von Baer in Germany all rejected Lamarckian evolution with powerful and disdainful dismissals; yet, not long after the appearance of Darwin’s book, Lyell and Huxley became evolutionists, von Baer developed his own evolutionary theory, and the French rediscovered Lamarck. Spencer became the “Philosopher of the Doctrine of Development,” in Alexander Bain’s terms, only after Darwin had scientifically demonstrated the theory. Ernst Haeckel had every opportunity to conceive his morphological work in Lamarckian terms, but did so only after being converted to evolutionary theory by reading the *Origin*. Without Darwin, would most naturalist have converged on Lamarckian transmutation theory after 1859? They certainly had not in the 50 years before the *Origin*. But who knows?

Bowler simply assumes a kind of inherent, progressive development of Lamarckism throughout the later part of the nineteenth century even without Darwin’s powerful demonstration of evolution. He proposes that Lamarckian evolutionary theory would have been relaunched in 1844 by the *Vestiges of the Natural History of Creation*, authored anonymously by Robert Chambers, an editor and founder of the famous publishing house
(215). As a result of *Vestiges*, Bowler confidently asserts, “scientists would have gradually begun to support evolutionism over the course of the 1860s” (215). Chambers’ book certainly achieved popular success, with readers trying to guess who the author might be—even Albert, the Prince Consort, was a candidate. But the scientific men of the period—Adam Sedgwick, Charles Lyell, John Herschel, and Roderick Murchison—savaged what they regarded as the work of a rank amateur. Even Richard Owen, who might be thought to have some sympathy for Chambers’ work, wrote a friend: “It is difficult to deal with the Vestiges, for it takes hold of people in proportion to their ignorance and unphilosophical character; so that you can find in them no handle to set them right by.” Although Darwin himself initially evoked critical responses, no one thought of him in the same terms as they did Chambers, whose stock continued its decline through the decades: Huxley’s review of the tenth edition of *Vestiges* in 1855 began with a quotation from *Macbeth*: “Time was when the brains were out the man would die” (Huxley 1903). If *Vestiges* simply failed to spark the fortunes of descent theory among scientists before 1859, why would one expect a sudden ignition thereafter? But who knows?

One of Bowler’s aims in this counterfactual history was to show that developmental Lamarckism, which assumes an inherently progressive force, would have been friendlier to religion than an evolutionism driven by a principle of combative struggle. “In a world where Spencer and Haeckel were not tempted by the Darwinian alternative, the Lamarckian component of their thought,” surmises Bowler, “would be more clearly apparent and its appeal to religious thinkers would be unmistakable” (222). The purring lion would lie down with the starry-eyed lamb. But does Darwin’s principle of natural selection per se have much to do with the antagonism between religion and evolutionary science? When Adam Sedgwick railed against an evolutionary work put before the eyes of “glorious maidens,” a tract filled with “seductive” language that instructs them “that their Bible is a fable,” “that they are the children of apes and the breeders of monsters,” a tract that “has annulled all distinction between physical and moral,” and that is supported by a “progression and
development of a rank, unbending, and degrading materialism”—he was referring, not to the book of his acquaintance, Charles Darwin, or to natural selection, but to the *Vestiges of the Natural History of Creation* and to its progressive teleology, which in Bowler’s counterfactual history should have laid the ground for a science less hostile to religion (Sedgwick 1845, quotations from p. 3). By contrast, the American botanist and Presbyterian deacon Asa Gray rendered Darwinian natural-selection theory perfectly compatible with his religion. And Haeckel?—after 1864, when his cherished wife died after six short months of marriage—Haeckel dipped his pen in the ink of vitriolic despair and etched in virtually all his scientific works his complete disdain for the promise of religion; Darwinism became only a tool of his rejection, not a motivation for all-out war against the reviled superstition. Had Ernst Haeckel, rather than Darwin, not lived, then the peace and reconciliation spreading from the likes of Gray might have washed over European and American shores. But who knows?

The last chapter of *Darwin Deleted* tries to satisfy the principal aim of the book: To show that natural-selection theory did not inspire the various forms of social Darwinism, particularly the eugenics movement and Nazi biology during the first few decades of the twentieth century. At this point, however, Bowler’s counterfactual history begins to consume itself logically. The imaginary history that eliminated Darwin should play no role in the discussion of social Darwinism, since, as Bowler supposes, by the turn of the century natural-selection theory would have been discovered by the likes of Pearson and Weldon, and thus we are back on the grounds of real history, a history that includes natural selection. The reader is thus left wondering about the point of the counterfactual exercise in the previous chapters. About this real history, Bowler reasonably contends that it is unlikely that a scientific theory could bear the burden for the horrors of Nazi atrocities, despite what is argued by such critics of evolutionary thought as Richard Weikart, who lays responsibility for Hitler’s project at Darwin’s feet, and Daniel Gasman, who side steps Darwin to find in Haeckel the chief culprit. But Bowler begs off a deeper historical analysis of Gasman’s charge with the faint “I am no expert on
German culture and will pass no judgment on this topic” (261). But then, he does pass judgment, a logically troubled one. At the beginning of the chapter, he doubts any scientific theory could have produced Nazi atrocities, but later suggests that Haeckel’s directed evolutionism (without the Darwinian component) would have been even more influential and “so it seems reasonable to imagine that the extreme form of scientific racism would also be more powerful” (261). And then what? Drive the Nazi’s to even greater atrocities? Yet, he begins with the premise that scientific theories cannot really account for the viciousness of such acts as the Nazis committed. This might be justifiable as poetry—Marianne Moore’s imaginary gardens with real toads in them—but as historical analysis it is a logical bramble, the way out of which is not obvious.

Like Gasman, Bowler attempts to exculpate Darwin at the expense of Haeckel. Had he explored just a bit the literature surrounding Haeckel’s supposed role in Nazi thinking, he would have discovered that while a few German writers did attempt to recruit the ghost of Haeckel—dead a decade and a half before Hitler came to power—to the Nazi side, along with Johann Wolfgang von Goethe and Alexander von Humboldt, those efforts were officially staunched. The Nazis banned Haeckel’s books as representing “the superficial scientific enlightenment of a primitive Darwinism and monism.” Evans, I think, is correct. Real history with real evidence is hard enough.

Bowler has carved into a large stone the history of evolutionary theory in the nineteenth century, removed a center part, and then shoved the two ends together, so that it looks just about the same as it did, maybe a bit shorter. That stone is his monument to counterfactual history.

**Author’s response: Peter J. Bowler**

It is quite a challenge to respond to two scholars who approach my book from very different backgrounds and who have very different positions on the value of the counterfactual approach. Alan Love is clearly interested in the potentialities, but has concerns about my effort to construct a hypothetical world without Darwin. Robert Richards seems much more