FACTS SO ROMANTIC ON IDEAS

Why "Natural Selection" Became Darwin's Fittest Metaphor

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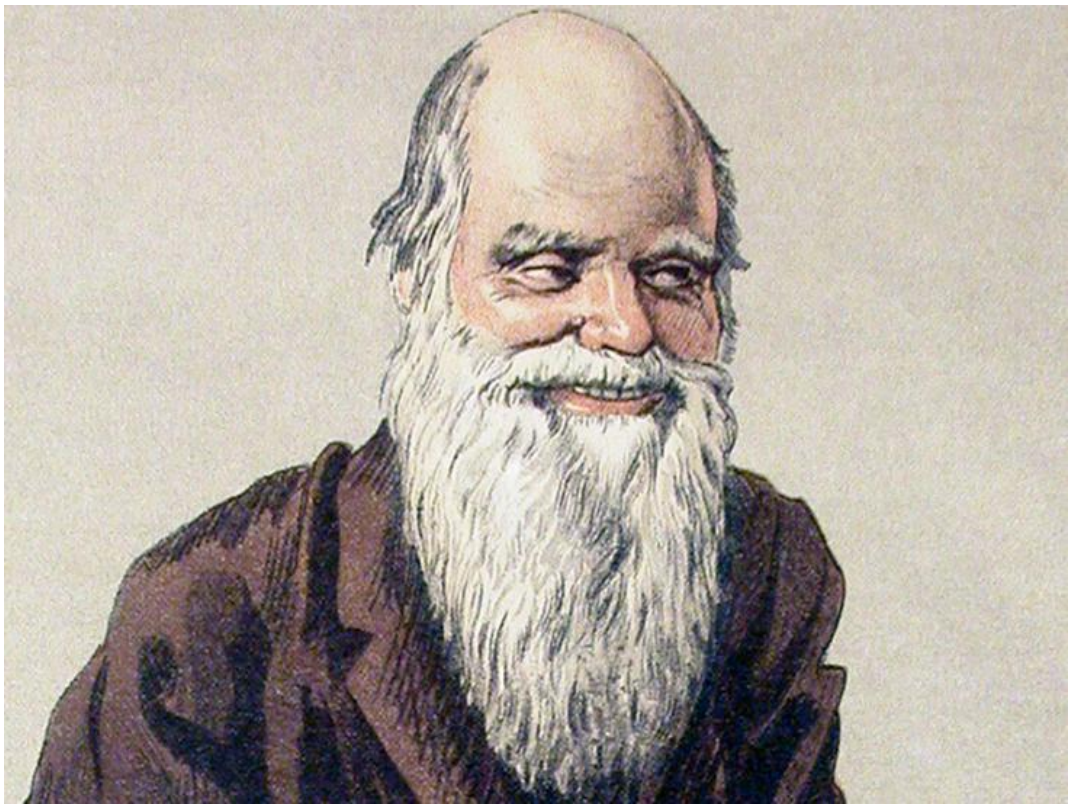

Illustration by Vanity Fair (1871)

Some metaphors end up forgotten by all but the most dedicated historians, while others lead long, productive lives. It's only a select few, though, that become so entwined with how we understand the world that we barely even recognize them as metaphors, seeing them instead as something real. Of course, why some fizzle and others flourish can be tricky to account for, but their career in science provides some clues.

Metaphors, as we all by now know, aren't just ornamental linguistic flourishes—they're basic building blocks of everyday reasoning. And they're at their most potent when they recast a difficult-to-understand phenomenon as something familiar: The brain becomes a computer; the atom, a tiny solar system; space-time, a fabric. Metaphors that tap into something familiar are the ones that generally gain traction.

Charles Darwin gave us both kinds, big winners and total flops. Natural selection, his best-known metaphor, is still a fixture of evolutionary biology. Though it's not always recognized as a metaphor today, that's exactly what it was to Darwin and his contemporaries. After all, evolution was a foreign and unwieldy concept. So Darwin set out to make it accessible by comparing it to a method employed in farmyards around the world.

For years, Darwin—a fancy pigeon breeder—obsessed over what he called artificial selection, what cattle-breeders, gardeners, and crop-growers did to create new varieties of plant and animal: allowing just the ones with desirable traits to reproduce.[1] Darwin's first-hand experience with breeding set the stage for his now-famous metaphoric leap. Much like the pigeon breeder, Darwin suggested, nature selects traits. If a certain pattern of plumage aids survival, the trait will spread as though nature were playing favorites. By choosing some traits and rejecting others over the course of many generations, nature coaxes new species into being. Of course, nature doesn't really select anything. It doesn't have agency of its own. But Darwin suspected the suggestion of agency would be valuable. Thus, "natural selection" was born. It wasn't Darwin's only metaphor for evolution, though. Nor was it his first.

In the 1830s, Darwin sent a breathless letter from South America to his mentor John Henslow, of his recent forays in the high passes and plateaus of the Andes. (He had a longstanding love of geology—as a budding scientist he'd spend days with hammer in hand, breaking open rock specimens and pondering the histories of peculiar landscapes.)[2] In the letter, he describes a scene full of "wedges of variously coloured rocks...in every possible shape and formation." Visions of this likely lodged in his mind. A few years later, in 1838, puzzling over the birth of new species, he was seized by an image different and stranger than natural selection. He wrote in his notebook of "a hundred thousand wedges trying [to] force every kind of adapted structure into the gaps in the economy of Nature, or rather forming gaps by thrusting out weaker ones." In his vision, space was tight—if one species wedged its way in, another had to pop out. Those species that fit well withstood the jostling and remained in place, while those that didn't would eventually be ejected.

Over the next 20 years, as he wrestled his theory of evolution into shape, Darwin returned to the idea of wedges regularly. In the metaphor's fullest treatment, written in an unpublished precursor to *The Origin of Species,* he describes species as "packed closely together and...driven in by incessant blows," as though they were wedges being struck again and again by a mallet. The wedges, he wrote, were of varying shapes and the shocks from each blow traveled across the field in all directions.

The wedges-as-species comparison made it as far as Darwin's first edition of *The Origin of Species,* published in 1859. But at some point soon after Darwin abruptly removed it, and it never appeared again. Today, a century and a half later, Darwin's eerie metaphor of a vast and wedge-filled landscape, pounded by the blows of an unseen hammerer, is (almost) all but forgotten. He never explained why he dropped it, but one possible reason is that he doubted people would like it. To those with no interest in rocks, such a metaphor would have seemed bleak and alien: An invisible hammer drives one wedge down, then another, with no obvious rationale. It's nature as whack-a-mole, with humans as just another mole being whacked into—and perhaps one day out of—existence. One modern scholar describes the idea as "grotesque" and even "shockingly sadistic."[3] To Darwin's readers, imagining the history of life in such violent and mechanical terms might have been at least unpalatable, and at most unbearable.

Whatever his reasons for abandoning the wedges, it was likely not a rash decision. Darwin did not take metaphors lightly. He honed them, defended them, and held on to them tightly, defying detractors. Several of his contemporaries, for instance, were displeased with "natural selection." His one-time rival turned comrade-in-arms, Alfred Russell Wallace, was particularly critical. In a letter to Darwin, sent after publication of the *Origin*, Wallace argued—no doubt with a wink—that the metaphor was not well "adapted" to convey his theory of evolution to the public. He was concerned that the word "selection" encouraged readers to view nature as a forward-looking, intelligent designer that was shaping the evolutionary course of life.

Wallace, it turns out, was astute in his reading of Darwin's language. According to Darwin biographer Janet Browne, Darwin often seemed to imagine nature as an "all-seeing farmer in the sky," a benevolent overseer that selects, scrutinizes, and rejects. As Wallace saw it, the problem with this rosy view is that, strictly speaking, it's wrong. There is no nice, celestial farmer—just a struggle for existence, with winners and losers.

Over the objections of Wallace and others, Darwin clung to "natural selection" even as he discarded the wedges. Perhaps he sensed the power of his "all-seeing farmer" and, in doing so, intuited something deep about human psychology. People are deeply familiar with the logic of purposeful design, and research has shown that they like to view the world through this lens. When faced with hard-to-explain phenomena, they invoke higher powers or hidden plans—concepts like God, fate, and karma all speak to this impulse. The idea of nature as a selecting agency plays to our biases to brilliant effect.

Darwin's theory of evolution is often credited with removing the notion of intentional design from biology. But perhaps its genius was in doing so gently: The language in which it's couched allowed readers to hold onto the idea for just a little while longer. When Wallace described Darwin's use of the phrase "natural selection" as not well adapted for public understanding he could hardly have been more wrong. It was, and still is, stunningly apt.

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References

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