

Is there a method to the chaos of evolution?

Is the natural world creative? Just take a look around it. Look at the brilliant plumage of tropical birds, the diverse pattern and shape of leaves, the cunning stratagems of microbes, the dazzling profusion of climbing, crawling, flying, swimming things. Look at the “grandeur” of life, the “endless forms most beautiful and most wonderful,” as Darwin put it. Isn’t that enough to persuade you?

Ah, but isn’t all this wonder simply the product of the blind fumbling of [Darwinian evolution](#), that mindless machine which takes random variation and sieves it by natural selection? Well, not quite. You don’t have to be a benighted creationist, nor even a believer in divine providence, to argue that Darwin’s astonishing theory doesn’t fully explain why nature is so marvelously, endlessly inventive. “Darwin’s theory surely is the most important intellectual achievement of his time, perhaps of all time,” says evolutionary biologist Andreas Wagner of the University of Zurich. “But the biggest mystery about evolution eluded his theory. And he couldn’t even get close to solving it.”

What Wagner is talking about is how evolution innovates: as he puts it, “how the living world creates.” Natural selection supplies an incredibly powerful way of pruning variation into effective solutions to the challenges of the environment. But it can’t explain where all that variation came from. As the biologist Hugo de Vries wrote in 1905, “natural selection may explain the *survival* of the fittest, but it cannot explain the *arrival* of the fittest.” Over the past several years, Wagner and a handful of others have been starting to understand the origins of evolutionary innovation. Thanks to their findings so far, we can now see not only *how* Darwinian evolution works but *why* it works: what makes it possible.

Read full, original article: [The Strange Inevitability of Evolution](#)