

Had Reverend Jenyns Said Yes: A Small Decision With a Big Impact on Biology

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In 1831, one of the most important events in the history of biology took place in the village of Swaffham Bulbeck, England: Leonard Jenyns (Fig. 1A) declined an invitation.

In his diary, Reverend Jenyns wrote “This year I had the offer . . . as Naturalist . . . on [a] voyage to survey the coasts of S. America, afterwards going round the globe:—declined the appointment.”¹ He had been recommended by his brother-in-law John Henslow, a botanist at nearby Cambridge University. But sea voyages were long, arduous, and dangerous, and he said no because his health was not strong and he had to tend to his rising clerical career and his parishioners in Swaffham Bulbeck, adjoining the Jenyns family estate at Bottisham Hall. Jenyns’ health couldn’t have been too delicate, since he lived into his 90s, but in any case he declined, and Henslow suggested another protégé to Robert FitzRoy (Fig. 1B), Captain of the Beagle. And Charles Darwin said yes.

I was in Cambridge this year, and while reading about FitzRoy² the word “Bottisham” caught my eye because I’d biked through there many times. So I went another mile to Swaffham Bulbeck to pay homage and to see what the minister knew of his distinguished clerical ancestry. Bells were pealing the faith from the

church tower but, perhaps partly because of what Darwin discovered, church attendance has plummeted, and today Swaffham Bulbeck (Fig. 2) has only a roving vicar who has six parishes to care for. He wasn’t there, but an elderly woman watering flowers at the church assured me, as we talked among tombstones that had borne witness to the great event, that they indeed knew of their church’s brush with history. Today the minister is no longer a Jenyns, but the family still rules at Bottisham Hall (Fig. 2), where Darwin and Jenyns had occasionally scavenged for insects.³ And by ironic good fortune I was able to cross paths with Darwin, visiting Leslie Knapp,^{4,5} a bioanthropologist at Cambridge who now rents a wing of old Bottisham Hall, where she lives with her husband and two cats.

This experience led me to wonder how fragile is the thread of history, even in science. What might biology be like today if Reverend Jenyns had said yes to Captain FitzRoy’s offer? Reverend Jenyns would have shipped specimens back by the trunkload, but he would have been too busy discussing biblical facts with FitzRoy to have achieved Darwin’s insights. Meanwhile, Darwin would have passed into the dusty pages of family genealogies and books on shooting.

We know evolution would still have been discovered, because Alfred Russel Wallace (Fig. 3a) did just that, during a malarial fit in Ternate, East Indies, in 1858. Later that year, thirty-odd members of the Linnaean Society dozed peacefully while the paper Wallace sent to Darwin and some of Darwin’s private notes and letters were read to them. But the following year Darwin’s name, influence, and *On the*

Origin of Species by Means of Natural Selection put evolution on the front page, with Darwin as its chief spokesman.

If Jenyns had said yes, Darwin wouldn’t have been on the scene. Wallace would have sent his paper to some other London contact, perhaps geologist Charles Lyell or botanist Joseph Hooker. When he received Wallace’s paper in the mail, Darwin was stunned by its similarity to thoughts he’d been brooding over for some time, but actually the two views were rather different.⁶ Both Wallace and Darwin stressed natural selection and both were concerned with the existence of varieties and species. Wallace titled his paper, “On the Tendency of Varieties to Depart Indefinitely From the Original Type.”⁷

But Wallace had a more ecological concern. He wrote that “The life of wild animals is a struggle for existence both of individuals and of entire species.” Though he knew that individuals live to reproduce or not, “it is clear that what takes place among the individuals of a species must also occur among the several allied species of a group,—viz. that those which are best adapted to obtain a regular supply of food, and to defend themselves against the attacks of their enemies and the vicissitudes of the seasons, must necessarily obtain and preserve a superiority in population.” This, in turn, leads to “the excessive abundance of some species, while others closely allied to them are very rare.”

To Wallace, this relative abundance of species was “*entirely due to their organization and resulting habits.*”⁷ This is ecological thinking because “this new, improved, and populous race might itself, in course of time,

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Figure 1. **A.** Reverend Leonard Jenyns (1800–1893) who, in younger years, said no to **B.** Captain Robert FitzRoy, RN (1805–1865), who said no to evolution.



Figure 2. **A.** The Jenyns' family manor, Bottisham Hall. **B.** The Church of St Mary in Swaffham Bulbeck, where the hand of God changed history. (Photos by the author; permission to publish **A** courtesy of the Jenyns family).

give rise to new varieties, exhibiting several diverging modifications of form, any of which, tending to increase the facilities for preserving existence, must, by the same general law, in their turn become predominant.”⁷

If Wallace's view had prevailed in the absence of Darwin's, biology might have taken different turns at important junctions in its subsequent history. For example, in his study of inheritance in peas, Gregor Mendel had bred and scored individual plants, but they were chosen from populations of different types of pea varieties (tall, short; yellow, green). These were just the sort of varieties that had caught Wallace's eye, because only the artificially protected conditions of agriculture kept them from reverting to their ancestral wild type.

Wallace lived until 1913, well after the rediscovery of Mendel's work in 1900, but as far as I've been able to tell he never commented on that work. Indeed, for decades many biologists thought that Mendel's discovery of inheritance of particulate elements had nothing to do with Darwinian evolution, because evolution worked by gradual change and small variation⁸ while mutations, the known deviations from type, were rare and grotesquely harmful. If Jenyns had said yes and Darwin's ideas hadn't been around, Mendel might have been viewed mainly as using crosses between different plant types to reveal the mechanism by which the types are maintained so they can compete with each other, rather than as the source of individual variation.

What really happened instead was that by the 1930s Mendel's findings provided the basis for population genetics to become the formal theory of evolution. That theory is about competing individuals rather than populations. It defines fitness in terms of the relative reproduction of genotypes within a population basically ignoring the absolute or relative growth rates among species or “varieties.” In large measure the two perspectives are mathematically consistent, but they give a somewhat different understanding, rather like what we can learn about a house from considering its bricks versus the layout of its

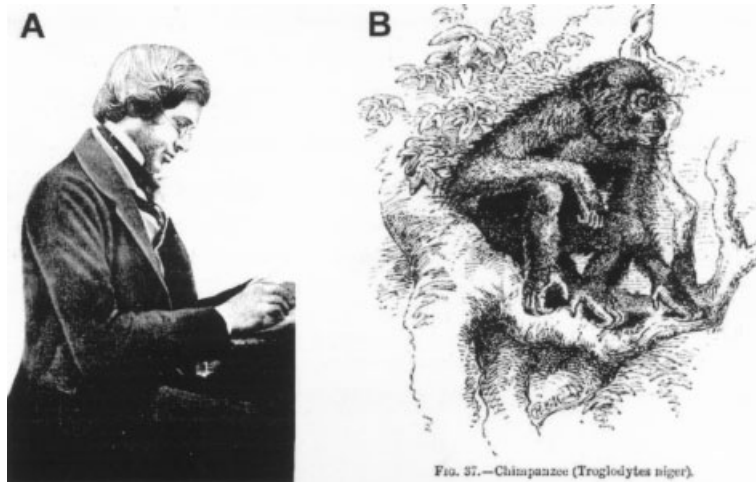


Figure 3. **A.** Alfred Russel Wallace (1823–1913). What if the field had been his alone? **B.** Wallace's chimps: Up a tree when it comes to mind?¹⁰

rooms. (Under some fitness relationships among genotypes at different genes, the dynamics of fitness may not actually be independent on the demographic circumstances.⁹)

These differences are not completely trivial: In the actual history of biology, ecology has often been treated as a soft, derivative field somewhat removed from the core of evolutionary science rather than at its center, which these days is basically defined as the study of competing genes. Who knows what evolutionary theory might be like today if population genetics had not been developed to formalize Darwin's particular take on evolution—that is, had Jenyns said yes?

We might think of behavioral biology differently, too. More weight might be given to cohesion and conformity within groups in relation to their environment, including other groups, and less weight to internecine warfare among individuals. This could apply even to the shared characteristics within species and the ecological "behavior" of nonsocial species. No one can deny that competitive selfishness exists in nature, but that might be seen as somewhat beside the main point that life is about what's good for the group. Not all cultures, even all Western cultures, are as obsessed with individual competition as American culture currently is. Cooperation is widespread at all levels of life, if you choose to look for it, but the

Darwinian approach chooses to interpret even that through competition-colored glasses.

In the middle 1800s, a core feature of British society was its organization by social units from class to nation. Despite the tumult of industrialization, individuals could rarely cross class barriers. Tiny Britain bestrode the world, and the reasons for its superiority were a topic of much discussion. Evolution as Wallace originally stated it might have provided an immediately convincing explanation. Social Wallacism is perhaps a better name than Social Darwinism for the justification of class inequity and colonialism. Indeed, the opposing view of Karl Marx (1818–1883) and others held that the nature of Nature was that through class conflict cooperation and group gain would ultimately succeed over selfishness. Wallace was a socialist who championed the lower classes, a population rather than individualistic view. Thomas Huxley (1825–1895), despite being Darwin's strong advocate, also took as a mission in life the advancement of the working classes against the established aristocracy. This group-based view was rather at odds with purely Darwinian theory, but Huxley felt that human culture had finally overcome ruthless natural selection among individuals.^{11–13} The crucible of thought was ready for a Wallace view, had Jenyns said yes and Darwin stayed home.

The ideas of Wallace and Darwin were presented jointly, despite the priority of Wallace's openly circulated paper, in what has been called a delicate arrangement. Darwin and his colleagues were in the same social stratum and on-hand in London, in contrast to the absent Wallace, who had to sweat out a living shooting birds of paradise for display in the salons of Darwin's social class. I think Darwin and his friends acted honorably toward Wallace, but they knew the result would be Darwin's *de facto* dominance within the scientific community. His best-selling *Voyage of the Beagle* had given him a willing publisher, and he had the time and money to write and thus stake his claim publicly as well. Darwin was a kindly man and very generous to his runner-up, to be sure, helping Wallace financially and introducing him to scientific society when he returned from the field. But it was Darwin, not Wallace, who was in the superior position, and the weight of this advantage was telling.

In fact, from a modern point of view some of Wallace's ideas were even ahead of Darwin's.^{6,13} For starters, Darwin, unlike Wallace, accepted aspects of Lamarckian inheritance.¹⁴ But Wallace graciously acknowledged his place in the hierarchy and Darwin's preeminence by entitling his 1889 book *Darwinism*.¹⁰ This was a popularized update that even resembled on the *Origin of Species* in style and form, designed to carry Darwin's torch after the Master's death by giving "such an account of the theory of Natural Selection as may enable any intelligent reader to obtain a clear conception of Darwin's work, and to understand something of the power and range of his great principle."¹⁰ By then, Wallace's thought had been modified and subsumed under the Darwinian Standard. Wallace even felt he had to point out a few specific places where he dissented from the Master, and by then his ecological stress had become muted. His view would not have been absorbed into or co-opted by Darwin's shadow had Jenyns said yes.

Of course, Jenyns did say no, a decision he later regretted,¹⁵ and during the famous voyage Darwin's acceptance of religious explanations of life

gradually gave way to the facts. FitzRoy was a fine sea captain; the *Beagle's* nautical charts of South America have only recently been improved by the use of aerial photography. FitzRoy also invented scientific weather forecasting. But he bitterly parted ways with Darwin over evolution, and held fast to biblical literalism until his final suicidal bout with depression in 1868.

ON OUR FAMILY TREE

Had Jenyns said yes, the effect on anthropology might have been great, if not for the better. Wallace said he was an even stronger proponent of natural selection than was Darwin himself.¹⁰ Darwin eventually inspected humans under the glass of natural selection,^{16,17} but Wallace differed from him fundamentally about humans, and in an interesting way.

Both men recognized the physical similarities of humans to primates, traits that had been modified by natural selection from earlier primate ancestors. But to Wallace, unlike Darwin, our unique mental capacities could not have evolved through the same processes, because these traits had no primate antecedents and would have had no selective advantage before the advent of civilization. Though he dealt with the subject at least as early as 1864, the quotes that follow are from Wallace's treatment of this subject in *Darwinism*.¹⁰ "It is not, therefore, to be assumed, without proof or against independent evidence, that the later stages of an apparently continuous development are necessarily due to the same causes only as the earlier stages. Applying this argument to the case of man's intellectual and moral nature, I propose to show that certain definite portions of it could not have been developed by variation and natural selection alone, and that, therefore, some other influence, law, or agency is required to account for them."

As an example of this, "The present gigantic development of the mathematical faculty is wholly unexplained by the theory of natural selection, and must be due to some altogether distinct cause." Wallace held similar views of artistic and musical abilities, and here he drew a conclusion that

placed human evolution within a grand nineteenth-century Theory of Everything: These human traits "point clearly to an unseen universe—to a world of spirit, to which the world of matter is altogether subordinate. To this spiritual world we may refer the marvelously complex forces which we know as gravitation, cohesion, chemical force, radiant force, and electricity, without which the material universe could not exist for a moment in its present form, and perhaps not at all, since without these forces, and perhaps others which may be termed atomic, it is doubtful whether matter itself could have any existence."

Wallace was not arguing for what passes today as Intelligent Design. He saw the ubiquitous blind force of selection itself as the telling fact when it comes to humans. If evolution proceeds strictly by the "rigid law of natural selection," then Bach sonatas or differential equations, which were not part of the life of early hominids, could not originally have had fitness advantage and been favored by selection (though the size of Bach's family shows it may later have done so). By extending Darwinism to its extreme, Wallace deduced that man's "body may have been developed from that of a lower animal form under the law of natural selection; but it also teaches us that we possess intellectual and moral faculties which could not have been so developed, but must have had another origin; and for this origin we can only find an adequate cause in the unseen universe of Spirit."

This is an ironic legacy of Jenyns' decision. As firmly as Wallace insisted on it, the Darwinian view from then to now just as firmly views spiritualism as inadmissible evidence for scientific explanation. I am not implying a defense of Wallace's view. However, Darwinism rests its case on the assumption that we'll eventually explain Newton and Bach in terms of natural selection. Even though the specific evolutionary details are not yet known, that idea is no harder for us to swallow than that human vision evolved by selection before Gutenberg invented the printing press—for example, perhaps by having originally been useful for something other than reading. Darwin made such argu-

ments,¹⁶ but here I am wondering what might have happened if Darwin had been off grouse-hunting instead.

You can take this as postmodernist if you wish, but we know enough about history that science sees what it is prepared to see at any given time.¹⁸ The facts don't speak for themselves, and we can't assume that by now we would have moved to our present Darwinian view without Darwin. It's hubris to think so, even if we would eventually have meandered to something like our modern view. The current resurgence of fundamentalist religiosity in the world, and the widespread and rather convenient view even among many mainstream scientists that there is a special, totally separate place for religious truth shows that unalloyed material empiricism doesn't always prevail. Had Jenyns said yes, Wallace's tolerance for nonmaterial explanation might have found at least a temporary home. After all, his view was consistent with a main thread even of scientific thought at the time. That might not have been good for science, but it could have happened that way.

Had Wallace's pre-Darwinized view ruled the day, anthropological research might not search today for rudiments of language and tool-use by apes in order to prove their ancestral connection. Instead, we might be trying to understand "mind" by some investigative means that we don't know but that would have been developed if Wallace's view had prevailed. If Jenyns had said yes, we might dismiss claims that tool use and grunts by apes are precursor states of the human mind, viewing them as forced attempts by crackpots to discredit our Wallacean theory. Instead of being driven to find "the" brain genes, our interest might be in understanding the mysterious fact that such genes can interfere with "mind" when damaged by mutation, yet not account for it.

Despite the preeminence of Darwinism's unflinching materialism, Wallace looked widely into mysticism, especially séances. He strongly maintained that he did so in a scientific way, and was no dupe for charlatans. It's a subtle point, but Darwin's influence and Wallace's consequent staunch defense of

uncompromising selectionism, which drove him to view human mental traits as unexplainable, might ironically have pushed Wallace in a mystical direction. I suggest this because in 1861, before addressing human origins, Wallace wrote, "I remain an utter disbeliever in almost all . . . the most sacred truths."¹⁹ Might he actually have remained more of a materialist, and less a mystic, in Darwin's absence?

The idea that life had a natural explanation as an historical process was circulating among many scientists during the early 1800s. That idea comes in various flavors, but our today's are the product of our yesterdays and, for historical reasons, the era became Darwin's century.¹³ Of course, a good deal of modern biology is done every day without assuming any particular flavor of evolutionary theory. Major areas that might generally be the same today, even had Jenyns said yes, include interpretations of fossils and comparative functional adaptation, much of biochemistry, and comparative molecular genetics, clocks, and phylogenies.

Important aspects of our view of life do depend on what we mean by "evolution," and I've tried to suggest how those areas might differ today. This has just been for amusement, of

course, because nobody can really say what we might know that we don't know because we don't look in ways that we might have looked if Rev. Jenyns had said yes. But I'll offer the final Crotchety suggestion that Jenyns' refusal was itself an ironically important instance of intelligent design by which God cleverly engineered that Darwin would discover the true nature of life. Because had Jenyns said yes, things would be different today. And to biologists, Wedgwood would just mean dishes.

NOTES

I welcome comments on this column: kenweiss@psu.edu. I have a feedback and supplemental material page at http://www.anthro.psu.edu/weiss_lab/index.html. I thank Anne Buchanan, Leslie and Dan Knapp, the current Jenyns family, and John Fleagle for assistance.

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