Chapter 7
The Problem of the Human Being

Abstract This chapter narrates how A.R. Wallace, Charles Lyell, and Thomas Huxley disagreed with Charles Darwin on the question of whether the human being is different in kind from our closest animal ancestors or merely different in degree. Siding with the first three, it is explained how difference in kind in evolution can be created not only by genetic mutation, but also by behavioral innovation. Jean Baptiste Lamarck's important contribution is discussed, and it is explained how the concept of the econiche easily unites Lamarck's notion of behavior as an evolutionary force with Darwin's and Wallace's notion of evolution by natural selection.

The Secret

With human consciousness, we have come to the fourth subdomain in our general psychology. Human consciousness is not mind, which all mammals have; nor intentionality, which all animals have; nor sentience, which all living beings have; it is something that belongs exclusively to the human being. The secret of the human being—hilarious but true—is the story of the forbidden fruit Eve offered Adam in the ancient legend. To make that case, however, a load of preliminary work is needed.[1]

The Premise

That human consciousness makes us unique and qualitatively different from all other living beings is an old, old story, of course. But was not the notion of human exclusivity finally quashed by Darwinism? Well, the codiscoverers of evolution by

[1]"Impatience asks for the impossible, wants to reach the goal without the means of getting there," Hegel warned in *The Phenomenology of Spirit,* but if you want to shirk the work, just go to Chap. 10.

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natural selection, Charles Darwin and Alfred Russel Wallace, were divided on that issue.[2] Wallace wrote: "*The belief and teaching of Darwin was…that there was no difference in kind between man's nature and animal nature, but only one of degree. My view, on the other hand, was and is, that there is a difference in kind*."[3]

Darwin insisted upon difference in degree only because his theory was founded on the geological theory of his mentor Charles Lyell, who held that geological change is always uniform and gradual. Besides, Darwin believed he had witnessed the human being in its near animal stage when during his voyage with the HMS Beagle he had seen "a party of Fuegians on a wild and broken shore … absolutely naked and bedaubed with paint, their long hair tangled, their mouths frothed with excitement … man in his lowest & most savage state."[4]

It was also with Lyell in his rucksack, Wallace during a fever bout in the Moluccas independently had discovered evolution by natural selection, but his experience with the South American Indian had been a different one. He had not spied the natives from the upper deck of a British naval vessel, but had lived among them in their village in the Venezuelan jungle, and wrote: "The more I see of uncivilized people, the better I think of human nature on the whole."[5] So, where to Darwin (and most of his compatriots) the natives were halfway down the ladder to the animal kingdom, to Wallace, all human beings—savage and civilized—were on the top rung of evolution and of the same unique kind.

Wallace's heresy did not please Darwin. "I hope not you have murdered too completely your own and my child," he wrote in a despairing letter.[6] Thomas Huxley, the anatomy professor who fought Darwinism to victory in the famous debate with Bishop Wilberforce in Oxford in 1860, earning himself the epithet 'Darwin's bulldog,' only added to the aggravation; in his scholarly *Man's Place in Nature* in 1863, Huxley wrote that "no one is more strongly convinced that I am of the vastness of the gulf between civilized man and the brutes; or is more certain that whether from them or not, he is assuredly not of them."[7] Even Lyell, whose faithful agent and eyes Darwin had been during the Beagle voyage, and who had saved him when Wallace was pressing for publication, seemed willing to disown his own doctrine of gradualism. In *The geological evidences of the Antiquity of Man* in 1863, he wrote that on the evidence available it seemed that mankind "may have cleared at one bound the space which separated the highest stage of the

[2]Darwin discovered the theory first, but as he did not publish, he was scooped by Wallace. After Charles Lyell's intervention, the theory was jointly (without Wallace's prior knowledge) presented at a meeting at the Linnaean Society of London in 1858.

[3]Wallace (1905, p. 17).

[4]Darwin (1874, p. 618).

[5]Wallace (1905, p. 178).

[6]Darwin (1869).

[7]Huxley (1863, pp. 152–153).

unprogressive intelligence of the inferior animals from the first and lowest form of improvable reason manifested by Man."[8] It 'makes me groan,' wrote Darwin.[9]

Deserted by his closest allies and left to hold the fort alone, Darwin had to come up with a counter strike. It came with *The Descent of Man* in 1871. Dedicated to prove that in evolution there is difference in degree *only*, the book went through every trait conventionally considered uniquely human and attempted to show how it was already to be found—to a lesser degree—in subhuman animals; religious feeling Darwin recognized in his dog, language in Admiral Sullivan's father's parrot, and so on. Many thought it convincing.

So who were right, Darwin or Wallace, Huxley, and Lyell? Obviously, we have to side with the last three as our Aristotelian general psychology is premised on differences in kind. It also seems unreasonable to deny differences in kind in evolution. Darwin was fond of repeating that nature does not make leaps, but—just to take the first major innovations—the evolution from prokaryotic to eukaryotic cells, from single celled to multicellular organisms, and from invertebrates to vertebrates, all seem to be leaps producing truly different kinds. So why should not another difference in kind separate the human being from our closest animal ancestors? I doubt that anyone outside the seminar rooms would not agree. Anyway, it is the premise for the following.

Innovation in Evolution

Difference in kind means true novelty; how does that enter evolution? Natural selection cannot do it as it can only select among already existing variations. There are two basic ways, genetic mutation and behavioral innovation.

The cause of the spontaneous variations his theory needed was unknown to Darwin, but the theory was not helped when genes were discovered. On the contrary, the theory was nearly given up when the rediscovery of Mendel's Laws made plain that genetic recombination in sexual reproduction can only reshuffle the deck, not produce new cards. In the last moment, however, the theory was saved by Hugo de Vries' discovery of genetic mutations, which do create new cards. Armed with mutations, and relaunched as Neo-Darwinism, the theory ventured forth again and never looked back.

By now everyone knows that genes are the bread and butter of evolution and natural selection the knife that slices and spreads; less known is that a living and breathing chef sometimes enters the picture in a decisive way. By changing their behavior in novel ways, animals can simply change the direction of evolution. Darwin provides a perfect example in *Origin of the Species* when he narrates the story of a North American bear, "swimming for hours with widely open mouth,

[8]Lyell (1863, pp. 504–505).

[9]Darwin (1888, p. 12).

thus catching, like a whale, insects in the water."[10] With a constant supply of insects and no better suited competitors about, Darwin could easily imagine how this behavior, in conjunction with natural selection, would in time transform the bear into an aquatic creature like a whale.

While Darwin's bear may have been anecdotal, the fact remains that the aquatic mammals did descend from terrestrial forebears that took to water, and that, much earlier, terrestrial animals did ascend from sea-living creatures that went ashore. Since—as all beach-goers know—going in and coming out are well-defined acts of individual behavior, acts of individual behavior can obviously direct evolution in radical new directions when passed on to the next generations. But is such passing on not Lamarckism?

Lamarck and Darwin

Jean-Baptiste Lamarck, the first discoverer of organic evolution, is a hero in our story. Against the Romanticist spiritualism and vitalism that would come to rule science in the long post-revolutionary period, Lamarck insisted that only the known physical forces were at work in the body, and—forecasting almost exactly—Stanley Miller's famous 1953 experiment described how simple life could have originated from the interaction of ordinary chemical and electrical forces. Using other words, he correctly defined life and nonlife in terms of entropy and the second law, still waiting to be formulated by science. Against the timescale of the Bible, a timescale everybody believed, whether they believed in creation or not, he introduced the modern and hugely larger timescale to make room for the evolution, which he described comprehensively, in tentative detail, and basically correct. In his main work, *Philosophie Zoologique,* published in 1809, the year Darwin was born, he described what today is the standard story, how our progenitors were a race of primates, which descended from the trees; how with the freeing of the hands, better dexterity and manipulative skills these proto-humans gradually evolved, with growing intelligence and progressively better sign communication, and so on.[11]

Insisting that the animals were not permanently fixed but could rise above their station by their own activity, Lamarck's theory of evolution was an activity theory and the crowning achievement of the French Enlightenment. It should, of course, have been recognized as such, only Lamarck was late and was overtaken by *the Restoration*, as the counter revolution was called. His books were not burned, as were the writings of Protagoras, Averröes, and Hobbes, but his reputation was, apparently for all time. His nemesis was George Cuvier, a brilliant paleontologist and professor colleague at the Natural Museum, who also happened to be Minister of the Interior in the new regime with responsibility for the public order. He pointed

[10]Darwin (1859, p. 184).

[11]Lamarck (1809, pp. 349–357, 1914/2012, pp. 169–173).

out every little flaw, inexactitude, and unsupported proposition in Lamarck's work, an easy enough task for any good scientist when dealing with an early and unfinished theory, and Cuvier was a truly eminent scientist. Upon Lamarck's death, Cuvier hammered the final nail in the coffin by making the eulogy he was called to make as President of the French Academy of Science so scathing and denigrating that the Academy at first refused to publish it. This basically became the final word. To the world, Lamarck became the curious Frenchman who ridiculously claimed that the giraffe got its long neck from stretching after leaves in high trees, and Lamarckism the wrong belief that acquired characters are inherited by the offspring.

This left the field open for the rediscovery of evolution 50 years later, this time as a direct descendant of the counter revolution. In 1798, the English priest and economist Thomas Malthus had anonymously published a tract titled *An Essay on the Principle of Population as it effects the future Improvement of Society, with remarks on the Speculations of Mr. Godwin, M. Condorcet, and other Writers.* William Godwin and Marquis de Condorcet were prominent and energetic advocates for the idea that humans by their own efforts can create a better and more equal society, and this idea Malthus wanted to dispel before it got too much traction. How much a world without want and misery is to be wished for, he said, alas, it is impossible; nature would not allow it; there would always be too many people, too little food, and unavoidably some would have to bottom out; the invisible hand of nature—disease, pestilence, poverty, and starvation—would see to it. It was when reading this in 1838 Darwin got the idea of evolution by natural selection. Like the invisible hand of market competition—not unknown to Darwin whose affluent maternal Wedgwood family wrung their hands over the horrors of the child labor that competition had forced them to adopt in their industrial potteries—competition in nature would pick the winners and the losers by natural selection, and make certain *the survival of the fittest,* a phrase adopted in the fifth edition of *Origin*.

Econiches and Answer Keys

Lamarck's notion of transgenerational inheritance of acquired characteristics was basically wrong but shared by everyone, Darwin included. One should think it would have been easy to disprove, but in an age where sons inherited their fathers' occupation and occupational attributes, and with evidence from epigenetic inheritance[12] providing some corroboration, the notion was not so easily dispelled. With no better alternative available until the later discoveries of genetics, it simply seemed the only choice. Still, that the bodily changes acquired in individual

[12]*Nongenetic* transgenerational inheritance of acquired characteristics. Commonly found in plants, it was well known to botanists and agriculturalists. Lamarck was a botanist; the hapless Lysenko an agriculturalist.

behavior are not being genetically passed to the progeny, does *not* mean that individual behavior cannot pilot evolution in new directions. In fact, it can, as the notion of *the econiche*, the business of a species, will help to explain.

In the business world competition favors those on top of their game and punishes those lagging in business acumen, and so it is in nature. But the rules of the game are different in different occupations. Improvements introduced in the plumber's business may not be of advantage if introduced in the accountant's; likewise, improvements sharpening the claws of the bird of prey would certainly be of disadvantage if introduced to the wading bird. Changes that make one species more fit could make another unfit, often disastrously; the answer to a math test that the answer key will reward with an A, the answer key in civics would probably fail. From this follows that in order to decide who should pass the exam of fitness, natural selection must have a different answer key for each business or econiche, and every little spontaneous variation will be judged according to this particular answer key. Mutations that gave giraffes a longer neck would be impermissible if the elongation of the neck did not suit the giraffe's business plan, so, of course did the giraffe get its long neck from stretching, only not directly, but by welcoming the appropriate mutations and flunking the inappropriate.

Now while, contrary to what Lamarck believed, present behavior has no hand in the variations that appear in the next generation due to spontaneous mutation, it can decide what answer key the variations should be judged after. Behavior can do that by simply changing the animal's business in a new and hitherto unseen way and thus creating a new econiche. The insects that first invaded dry land did. The fishes that later went ashore did; and so did the mammals that turned back to the sea, each time radically changing the criterions of subsequent selection. In evolution, it must have happened time and again.

This means that Lamarck's idea that individual behavior can shape the future evolution of a species is correct; it can. Only it cannot do so directly, but only by affecting the answer key that guides Darwin's natural selection, which is the mechanism by which evolutionary changes become fixed. First, the animal by its action creates a new econiche, then it must adapt to the demands of the econiche it has created through natural selection, precisely as in Darwin's bear example. In many cases, natural selection will work alone, of course, but it is also possible that individual acts of behavior take charge, and if radical, as the leaps in and out of water mentioned above, create new kinds of living beings when the new behavior, by circumstantial necessity, imitation, or cultural learning, is adopted in the population. This model is what we need to be able to claim that the human being is such a radical leap, creating a new econiche and a difference in kind. We only need to identify the act of individual behavior that set it off. So what did Leontiev, our Russian trailblazer, have to offer?

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