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1

Biology Is Destiny: Charles Darwin

"After having been twice driven back by heavy southwestern gales, Her Majesty's ship Beagle, a ten-gun brig, under the command of Fitzroy, RN, sailed from Devonport on the twenty-seventh of December, 1831....

"The object of the expedition was to complete the survey of Patheonia and Tierra del Fuego, commenced under Captain King in 1826 to 1830—to survey the shores of Chile, Peru, and of some islands in the Pacific—and to carry a chain of chrono-metrical measurements round the World. On the sixth of January, we reached Teneriffe, but were prevented landing by fears of our bringing the cholera; the next morning we saw the sun rise behind the rugged outline of the Grand Canary island, and suddenly illumine the peak of Teneriffe, whilst the lower parts were veiled in fleecy clouds. This was the first of many delightful days never to be forgotten. On the sixteenth of January, 1832, we anchored at Porto Praya, in St. Jago, the chief island of the Cape de Verde archipelago."

Charles Darwin, The Voyage of the Beagle (New York: New American Library, 1972; first published in 1839; known also as Journal of Researches into the Geology and Natural History of the Various Countries Visited by H.M.S. Beagle, 1832-36), p. 1.

Those are the opening words of a diary. Similar entries have been made in similar diaries in the early days of many a voyage from many a port down through history across the world. This entry, however, is something special. It is the beginning of a diary that was to become one of the most important in history, a diary that would chronicle a set of experiences that led to a decisive shift in thinking about the natural sciences, a change that would, in turn, influence the world of thought outside the natural sciences, leading ultimately to changes in the entire culture of many a nation.

So it was that in the introduction to a 1972 reprinting of the diary Walter Sullivan said:

This book was prelude to what became probably the most revolutionary change that has ever occurred in man's view of himself. The change, in fact, has still not fully run its course. It demands that we regard ourselves as inseparably a part of nature and accept the fact that our descent was from more primitive creatures and, ultimately, from the common origin of all life on earth. It is the view that we will never fully understand ourselves until we understand our origins and the traits—chemical, biological, and behavioral—that we share with other species.²

Those are large, ambitious words, but Sullivan is accurate in saying that the diary led to "the most revolutionary change that has ever occurred in man's view of himself," for the adventure that was so significant and informative for the writer that it grew into a set of concepts, then a book, and then an approach to life, was to change fundamentally man's very understanding of himself.

The writer of the diary was Charles Darwin.

The diary was The Voyage of the Beagle, Darwin's account of the expedition that embraced the five most exciting years of his life. In fact, most of what occurred in his life before the voyage Darwin held to be but the prelude to the expedition to the shores of South America, and most of what came afterward was meditative and sedentary, a life characterized by illness and reclusion, but mostly by the recounting of the observations of the Beagle voyage. It was as if Darwin lived on those memories.

What Darwin formulated came to be seen as a plausible new understanding of man and nature important enough to be thought the work of a genius and the beginning of a new epoch in world history. In the years following the publication of the diary (1836) and the books that grew out of the experiences described in the diary, most notably the landmark On the Origin of Species by Means of Natural Selection (1859), the academic world has attempted to repudiate its pre-Darwinist past and to think of mankind as part of a common continuum with nature and the universe. This intellectual revolution has caused man to reinterpret his past, rethink his present, and revise his anticipations for the future. Darwin is seen as giving the world a comprehension of itself so unlike the view held in the past that, in a sense, he restarted history. Darwin's influence continues to be pervasive today, and he holds a leading rank among those men who rule the world from the grave.

Who was this man, and what was the intellectual revolution he produced?

Charles Robert Darwin was born in 1809 to a family already given to a tradition of involvement in the world of thought as it intersected the world of biology and botany. Darwin's grandfather was the well-known Erasmus Darwin (1731-1802), a physician and man of letters, known especially for his poetry. Erasmus Darwin practiced medicine as a physician in Lichfield, England, and cultivated a botanical garden. He was the author of a long poem, The Botanic Garden, written in 1789, in which he expanded the botanical system of the earlier botanist Linnaeus. In another work, Zoonomia, Erasmus Darwin attempted to explain organic life along the lines of evolutionary principles, a presentation that anticipated Charles's later theories.

Young Darwin's educational career was somewhat inconclusive. He studied medicine at Edinburgh, but could not stomach surgery without anesthetics. He then changed to ministerial studies at Cambridge, though he lost interest in the ministry during those college years. Referring to that period of his life, Darwin said in his autobiography:

From what little I had heard or thought on the subject, I had scruples about declaring my belief in all the dogmas of the church

of England; although otherwise I liked the thought of becoming a country clergyman. Accordingly, I read with care Pearson on the Creed, and a few other books on divinity, and as I did not then in the least doubt the strict and literal truth of every word in the Bible, I soon persuaded myself that our creed must be fully accepted.³

He observed in his autobiography: "Considering how fiercely I have been attacked by the orthodox, it seems ludicrous that I once intended to be a clergyman." In later years he reacted against what he considered to be the narrowness of the orthodox literalists, who opposed him.

Darwin's interest in natural history led him in his college years to a friendship with J. S. Henslow, the well-known botanist of that day. It was through Henslow's urging and arrangements that young Darwin was invited to become the official naturalist aboard the Beagle for the five-year cruise. Darwin saw this as the vital period of his life in which his attentions were focused on the field that was to become the occupation of his life. On the cruise aboard the Beagle he gave himself to the accumulation, assimilation, codification, and intensive study of the data, work that led him to develop a theory to account for the way in which the various species came to be differentiated from one another.

That concept is now known as Darwinism.

In the introduction to Origin of the Species, the volume that grew out of the experiences described in the diary, Darwin recounted those days and the compelling influence they had upon his emergent young mind.

When on board the H.M.S. Beagle, as naturalist, I was much struck with certain facts in the distribution of the organic beings inhabiting South America, and in the geological relations of the present to the past inhabitants of that continent. These facts, as will be seen in the later chapters of this volume, seem to throw some light on the origin of the species—the mystery of mysteries, as it has been called by one of our greatest philosophers. On my return home, it occurred to me, in 1837, that something might

^{3.} Charles Darwin, Charles Darwin's Autobiography (New York: Henry Schuman, 1950), p. 26.

^{4.} Îbid., p. 26.

perhaps be made out on this question by patiently accumulating and reflecting on all sorts of facts which could possibly have any bearing on it. After five years' work, I allowed myself to speculate on the subject, and drew up some short notes; these I enlarged in 1844 into a sketch of the conclusions, which then seemed to me probable. From that period to the present day, I have steadily pursued the same object. I hope that I may be excused for entering on these personal details, as I give them to show that I have not been hasty in coming to a decision.⁵

What were the conclusions to which Darwin came as a result of his research as naturalist on the Beagle?

Let it first be noted that Darwin had a touch of humility about his conclusions. "I am well aware that scarcely a single point is discussed in this volume in which facts cannot be adduced, often apparently leading to conclusions directly opposite to those at which I have arrived."

The overarching conclusion, and what may well be called the index of Darwinism, is the concept he called, and we continue to call, natural selection. Darwin himself attempted to explain the concept:

As many more individuals of each species are born than can possibly survive; and as, consequently, there is a frequently recurring struggle for existence, it follows that any being, if it vary however slightly in any manner profitable to itself, under the complex and sometimes varying conditions of life, it will have a better chance of surviving, and thus be naturally selected. From the strong principle of inheritance, any selected variety will tend to propagate its new and modified form.⁷

Thus we have Darwin's definition of the core of his evolutionary faith—the natural selection of individuals who have won the competition for scarce resources. Those individuals whose distinctive capacities gave them a better chance of survival in the surrounding environment lived, and lived long enough to pass on their particular genetic makeup to the next genera-

^{5.} Charles Darwin, The Origin of the Species (New York: New American Library, 1958; first published in 1859 under the title On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life), p. 27.

^{6.} Ibid., p. 28.

^{7.} Ibid., p. 29.

tion. Over time these slight differences accumulated, with the result that eventually organisms emerged that no one would claim were the same species. Herbert Spencer was later to coin the phrase "survival of the fittest" to describe the effects of the action of natural selection.

Darwin's views were similar to those of an earlier French scientist, Jean-Baptiste de Monet, chavalier de Lamarck (1744-1829), though with an essential difference. Both men claimed that evolution accounted for the differences in the various species, but whereas Darwin held that evolution was the result of the transmission of inborn genetic traits from one generation to another, Lamarck believed that evolution was the result of acquired traits being passed on to progeny. Lamarck's views have been thoroughly discredited. For them to be correct, there would need to be the transmission of acquired capacities in the muscles, tissues, brain cells, and so on, to the actual genes of the individual so that genetic transmission could advance the strengths of the father into the son—something for which no evidence has been forthcoming. It has never been shown that there is a necessary transmission of acquired characteristics from the parents to the offspring. Yet it is important to mention Lamarck, for both the proponents and opponents of the theory of evolution sometimes merge Darwin's and Lamarck's views in the course of arguments for or against evolution. Moreover, even though Darwin's concept of evolution was different from Lamarck's, and though Darwin was not intending to study ultimate origins but merely the differentiation of species, both theories invite a study of ultimate origins and both assume as a given an "other" outside the organism that leads to a change in the organism. Carried back to ultimate origins, both Darwin and Lamarck offer as many questions as they supply answers.

Darwin strongly argued that the evidence of what he called "variation under domestication" was proof of this process of generic change. He argued that if the breeder of a certain species could bring into being changes he preferred (color, size, and so on), then nature could do far better. He wrote an entire chapter on the subject of variation under domestication. He said, for instance, that

when we compare the individuals of the same variety or sub-variety of our older cultivated plants and animals, one of the first points which strikes us is that they generally differ more from each other than do the individuals of any one species or variety in a state of nature. And if we reflect on the vast diversity of the plants and animals which have been cultivated and which have varied during all ages under the most different climates and treatment, we are driven to conclude that this great variability is due to our domestic productions having been raised under conditions of life not so uniform as, and somewhat different from, those to which the parent species had been exposed under nature.⁸

Darwin concluded a lengthy discussion of the concept with the interesting observation: "To sum up on the origin of our domestic races of animals and plants, changed conditions of life are of the highest importance in causing variability, both by acting directly on the organization, and indirectly by affecting the reproductive system."⁹

Darwin built many disclaimers and conditions into his argument. He said, for example, that

it is not probable that variability is an inherent and necessary contingent under all circumstances. The greater or less force of inheritance and revision, determine whether variations shall endure. Variability is governed by many unknown laws, of which correlated growth is probably the most important. Something, but how much we do not know, may be attributed to the definite action of the conditions of life. Some, perhaps a great effect, may be attributed to the increased use or disuse of parts. The final result is thus rendered infinitely complex. . . . Over all these causes of Change, the accumulative action of Selection, whether applied methodically and quickly, or unconsciously and slowly but more efficiently, seems to have been the predominant Power. 10

Darwin was a collector. He collected insects, beetles, flora, and fauna on his trip to the Galapagos on the Beagle. He wrote extensively about differences in coloration, shape, size, beak length, and other variations among the birds he observed from one island to another. He used these observations to press the

^{8.} Ibid., p. 31.

^{9.} Ibid., p. 57.

^{10.} Ibid., p. 57.

assumption that the mysterious force called natural selection had produced these differences.

In later life, Darwin raised pigeons and observed their development closely. Also, he paid great attention to various flowers in his garden and assembled what he called "data" from those observations. In fact, so numerous were Darwin's observations and so voluminous was his data that the sheer weight of his writings tended to be a part of the proof of his contention for the survival of the fittest.

The world of the natural sciences was impressed. It is almost as if the scientists were waiting for such a view. However, the scientists so impressed with Darwin's theory seemed to forget or ignore the fact that no way presently exists whereby data from the present can prove, of itself, anything about ultimate origins. Proof, to live up to its name, must mean demonstrating that something we do not know conforms exactly to something we do know. Consequently, there is simply nothing we know either by observation or through logical proof concerning the origin of individual species or the origin of life itself. Our observations in the present are exactly that—present data. What we think they tell us about the past are subjective considerations. They cannot be held to be science at all.

In considering Darwin's theory, we find ourselves curious about this thing called a species.

What really is a species? This question bedeviled Darwin all his life, and it has not, in fact, been answered to this very day. It is a simple fact of science that no two things anywhere are exactly alike. There are no two birds, elephants, eyes, feet, claws, or feathers that can be declared alike by the standards of provable science. Similarities are there, but everyone knows that similarities often prove to be embarrassingly superficial. Mistaken identity due to "similarity" is an experience common to us all.

A species in the field of science, therefore, has never been exactly defined. Even the most modern scientific journals discuss this fact only when forced to, and then only under the most general terms. One can therefore easily argue that a species exists only by human definition and not in exactly provable objective fact. Darwin himself said, "I was much struck how entirely

vague and arbitrary is the distinction between species and varieties."¹¹ In fact, Darwin suggested the methodology to decide the matter of species:

Hence, in determining whether a form should be ranked as a species or a variety, the opinion of naturalists having sound judgment and wide experience seems the only guide to follow. We must, however, in many cases, decide by a majority of naturalists, for a few well-marked and well-known varieties can be named which have not been ranked as species by at least some competent judges.¹²

What do we have here? An entire book built around the word species, which word can only be defined by a vote of the naturalists. Appropriate comment could be made to this methodology, but it at least demonstrates that the idea of species and their origins is built on troubled logic, inexact science, and the absence of clear definitions.

Really, then, is "the doctrine of the survival of the fittest" true? This amounts to what is well called "the law of the jungle."

But when we think about it, there is no law of the jungle.

The rule, it is said, that obtains in the jungle is that the strong overcome the weak. The strong, therefore, survive, and the weak become fodder for the strong. With the help of Darwin, this rule was dignified by being called *natural selection*.

Mind you, Darwin called this a law.

Darwin professed to have "seen," indeed discovered, this "law" when he proceeded to elevate it to an axiom of life. Because biology is destiny for many, this "principle" has become for them the law of life. Whatever we may say, this is the way it is in the thinking of most people.

But is this the way it really is? We submit to each thinking person that this is not the way it is. The argument against it is painfully simple: if the law of the jungle were indeed a law, if the survival of the fittest were the way it is, there then would be only one being on earth—the strongest—and that not for long.

^{11.} Ibid., p. 63.

^{12.} Ibid., p. 62.

Let us think about this.

The male of the species is normally stronger than the female, and is therefore more fit. Under the law of the jungle, the male should kill the female, and that would be that. The lion would kill the lioness. Soon there would be no more cubs, and if there were, the lion would kill them too.

"But no!" the Darwinist would say. "The law of natural selection is conditioned by 'filial forbearance.' You just don't eat your relatives."

But still, what about the strong lion killing all the females and the cubs of another lion family? "They are protected by the strong lion of that family." Why, then, does not that strong lion eat the cubs and females of the first family? Here the Darwinist would say that natural selection is conditioned not between individuals but within a species.

Why does not the strong lion eat *all* the jackals, elephants, or zebras? "These are fast runners." But that is not true when they are asleep or when they are drinking at the water hole. The lions *do* eat *some* of those. "Aha!" says the Darwinist. "They do not eat them *all* because they are not always hungry."

So, another condition of the law is "the presence of hunger." The "variations" to this law, as we see, go on and on.

For instance, we may be sure that some animals have died by desiccation in a drought, by hunger in a famine, or by heat in a fire. Some, even the strong, are still here only because they lived in a different part of the jungle when the flames came, or because they didn't get bitten by a spider when another did.

Yes, so many conditioning factors make for survival that we must see that it is not possible to name a *constant*, a *law* concerning the matter of survival. Accident, sickness, surprise, falling trees, lightning strikes, stray bullets, and a thousand other variables impinge upon the life of any animate thing. In fact, a near infinity of conditioning factors is present. So many are there that the argument dissolves into absurdity.

Therefore, there is no animal or species of which one can say with certainty, "He will survive. He is the strongest." The only way to define a survivor is to point to those individuals and species that have, in fact, survived. Therefore, the argument, being circuitous, is false. The survival of the fittest only means the survival of the survivors. A survivor can only be defined ex post facto. Therefore, to make natural selection the determining factor in history is to make a false assumption. And even if the assumption were true, it could not be proved to be true.

Circuitous arguments are common fallacies, but initially they are sometimes unrecognized because the circle is too large to be observed by some minds all at one time.

So obvious is this that one wonders why science has become the object of such wide and uncritical respect. It even now sees itself as the custodian of the great truths that matter. The broad, largely unquestioned acceptance of Darwinism by "the world of science" and "the men of science" is a present condition that should not go unchallenged.

The circuitous arguments on which Darwinism and other of the axioms of science are built have become virtually foundational in modern education. In this, there is great peril to the culture of our time. The modern mind must force itself to rethink what it means when it speaks of this great, all-pervading, and sure knowledge that is called *science*.