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# CHARLES DARWIN : A BIOGEOGRAPHER PAR EXCELLENCE AND A FIGUREHEAD OF RATIONAL SCIENCE

2009 marks the bicentenary of the birth of Charles Darwin and, as well, November of this year, the 150th anniversary of the publication of his famous book, "*The Origin of Species*". Darwin's theory, the idea of evolution by natural selection, embodied in the book was a revolutionary departure from the deep-rooted, conservative line of thoughts on origin of life, with profound scientific and philosophical implications. Darwin's theory of evolution by natural selection impregnated its ethos and impact throughout biology. It is now widely commented as 'the best idea anyone ever had', and acclaimed world over as the most influential change in human thought in modern times.

Charles Darwin was born on February 12, 1809 into a wealthy family in Shrewsbury Town in England. Since his boyhood days, love for nature was in his blood. The marvelous diversity of life in nature amazed him; collecting beetles, birds' eggs and sea-shells was his fond hobby. As a

student, Darwin disliked the formal schooling, its stifling curriculum, and his frustration persisted until his university training. He tried, and dropped out, a medical education in Edinburgh. He joined the Anglican clergy at Cambridge and though he graduated in it, he was a misfit in that field too.

Darwin's innate drive to delve deep into the intricacies of the natural world and his zeal in geology inspired him to travel. His reputation as a naturalist earned him a place on a round-the-world trip on HMS Beagle, the British frigate, which primed him for his revolutionary ideas on evolution. The voyage took nearly five years from 1831 to 1836. Darwin spent two-thirds of his time on land, largely in the South American wilderness of Brazil, Argentina, Chile and remote areas such as the Galapagos Islands. During his expedition of the un-chartered frontiers of the continents and islands, Darwin was virtually in wonderlands amazingly observing, noting and collecting innumerable fossils and specimens, many of them unfamiliar and never before seen. Darwin was a precise and patient observer; ample evidences of changes that the Earth, climate and species had undergone over the geological times were unfolding before him. Darwin filled numerous notebooks with detailed observations on geology, fossils, plants and animals. The puzzling distribution of plants and animals in South America and the Galapagos Islands stirred his intellectual mind to question how species originated.

Darwin could send and receive mail from almost anywhere in the world since England was a thriving colonial power at that time, with a network of ships that literally spanned the globe. Darwin shipped crates of strange fossils/specimens of plants and animals, including detailed descriptions and geological observations, to Prof. Henslow, his Cambridge mentor. Despite his far flung isolation from the scientific community, the voyage helped Darwin move into their elite circle. Darwin was one among them when he got back to England, not just as an accomplished observer and collector, but a scientific celebrity, as an established biogeographer and theorist.

The Beagle voyage was "by far the most important event" in Darwin's life. When he set sail, the 22-year-old Darwin was a young graduate, and a budding naturalist. By the time he returned, he was an established naturalist. The Beagle voyage provided Darwin a lifetime of experiences to ponder and metamorphose from a promising observer into a probing theorist.

By the end of his voyage, Darwin was looking at species in a different way, rather than considering them as unique marvels of nature. His intuition prompted him to become inquisitive on how species might be related to one another. Back in England, the relationship between old and new species, as shown in fossils, became one of the main lines of evidence leading to Darwin's theory of evolution.

Before Darwin, the view about the world was different–the world as being stable and unchanging entity. Most people hardly believed humans were part of the natural world; rather nurtured the view that people were created by God to rule over animals, "over the fish of the sea and over the birds of the sky"–the Biblical story of creation. There were bold thinkers, like, Jean-Baptiste

Lamarck, who speculated that species had evolved, and that all life shared a common ancestor. But none could convincingly explain how it worked.

Darwin saw the world in a new way. Darwin, shortly after his return from the Beagle-voyage expedition, started formulating his thoughts/ideas on evolution. For his ideas, like, the struggle for existence and natural selection, he drew inspiration from the work of Thomas Robert Malthus, the English economist and demographer, whose principle of population had advocated that human populations always eventually out-run the means to sustain them.

Darwin made voluminous scientific correspondences with eminent scholars and even the back yard of his house became a field laboratory to work out proofs of natural selection. However, Darwin's thoughts on his theory, which remained just in scribbled noting and pencil-sketches of 1842, besides an essay of 1844, got delayed in the form of a solid publication until the late 1850s. "*The Origin of Species*" was first published in November 1859 when he was spurred into action by the parallel ideas and work of Alfred Russel Wallace, which hurried Darwin into the synthesis of his work.

"*The Origin of Species*" generated far-ranging brain-storms in the scientific world. While Darwin's ideas of evolutionary change and common ancestry were widely accepted, his principal mechanism for change–that is, natural selection–was not, even for a few decades after his death. However, in the mid-20$^{th}$ century, Darwin's intellectual legacy was legitimized with the Mendelian genetics in the form of the 'Modern Synthesis', manifesting the impact and influence of Darwin's theory of evolution. Even Alfred Russel Wallace, who had independently coined the same idea of evolution, made his remark: "Mr. Darwin has given the world a new science."

Since 1859, Darwin and his ideas have risen and fallen in favor, especially around 1900 with the fervor over new genetics, and again in the 1950s with the rise of molecular biology. But, the relevance of natural selection time and again resurfaces to reestablish its importance. Darwin's funeral was in 1882. The universal legitimacy and recognition to the Darwin's theory has evoked the impression that as modern science raced forward with high-tech tools and techniques, there was still a place for Darwin's simple, conventional tools–a pencil and paper–keen and curious observation, and, above all, an inventive, analytical mind.

Today, man by his willful selection is capable of producing great results. He can adapt organic beings, plants/animals, to his own use to a great degree of success, subjecting them to accumulate slight but useful variations that are found in nature. But 'Natural Selection' is an omnipotent mechanism incessantly working in nature, which is immeasurably superior to man's feeble and fleeting efforts.

Prof. Janet Browne, the authoress of a two-volume biography of Darwin, has rightly observed that his theory is "the central organizing concept of modern biology–the idea that evolution occurs through natural selection and provides a logical explanation of the diversity of life." The "clarity

and impact" of "*the Origin of Species*" has the explanatory power that still resonates 150 years later. And, disseminating his transcendental aura to horizon, Prof. Janet Brown further remarks : "Darwin is a transformative figure whose system of thought has propelled scientific transformations in two centuries, and now a third."

Yet, as a paradox, Darwin's thoughts and theory are now facing a fresh wave of ire and fire from the neo-protagonists of creationism, even while the world is marching ahead on rational approaches and opinions predominantly imbibed from the wisdom and vision of modern science. Whatsoever, Darwin's transformative idea of evolution through natural selection has been part of our culture for 150 years! The scientific community while commemorating his anniversary celebration is convinced of the view that Darwin's ideas have had a universality that transcends time and place in understanding the scientific essence of origin of species and their evolution. Any society of people upholding the tenets of rational science needs to confirm a collective identity to Darwin's scientific theory in order to reaffirm him his place as an eminent "figurehead of rational science" through his work "*The Origin of Species by Means of Natural Selection.*"

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