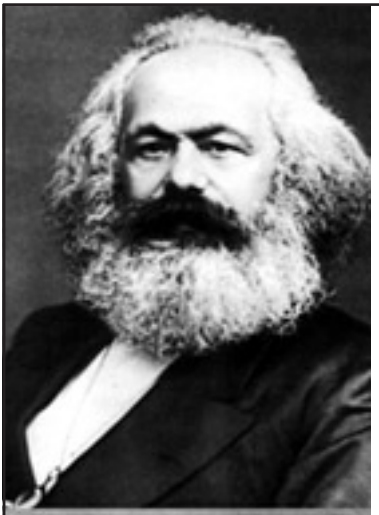

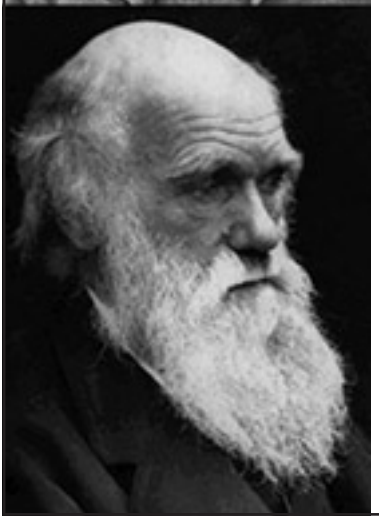

Marx, Engels and Darwin

How Darwin's theory of evolution confirmed and extended the most fundamental concepts of Marxism

by Ian Angus

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- *How to Avoid Action on Climate Change*
- *Confronting the Climate Change Crisis*

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Introduction

Socialists are accustomed to saying "Marx and Engels" as a phrase, as though the two men were a single entity. And indeed, they almost were. Karl Marx and Friedrich Engels worked together for forty years. They discussed every possible subject, and regularly edited each other's work. Many articles signed by Marx were actually written by Engels, and chapters in books signed by Engels were written by Marx.

As George Novack wrote, "History has rarely witnessed so close, harmonious, and unabated an intellectual and political partnership."

Marx and Engels had no such relationship with Charles Darwin: they never met him, never exchanged ideas with him. In 1872, Marx sent Darwin an autographed copy of *Capital*, and Darwin replied with a polite thank you letter, but they had no other contact.

So it may seem inappropriate to link Darwin's name with the founders of scientific socialism.

Nevertheless, Marx and Engels viewed Darwin's ideas not just as important and interesting, but as a *confirmation and extension* of the most fundamental concepts of Marxism. Marx said that Darwin's *Origin of Species* was "the book which contains the basis in natural history for our view."

This following article discusses what Marx meant by that, and why there is a profoundly important relationship between Darwin's theory of evolution and the Marxist view of history — between natural selection and historical materialism.

—Ian Angus, May 2009

Marx, Engels and Darwin

How Darwin's theory of evolution confirmed and extended the most fundamental concepts of Marxism

2009 is a dual anniversary year for Charles Darwin. February 12 was the 200th anniversary of his birth and November 24 is the 150th anniversary of the publication of his masterwork, a book that remains controversial to this day.

Although Darwin's political views were far from radical, his insights became the central weapons in the battle to establish materialist science as the basis for our understanding of the world, and contributed to the development of Marxism.

'The basis for our view'

Only 1,250 copies of the first edition of *On the Origin of Species* were printed, and they all sold in one day. One of those who obtained a copy was Friedrich Engels, then living in Manchester. Three weeks later, he wrote to Karl Marx:

> "Darwin, by the way, whom I'm reading just now, is absolutely splendid. There was one aspect of teleology that had yet to be demolished, and that has now been done. Never before has so grandiose an attempt been made to demonstrate historical evolution in Nature, and certainly never to such good effect."[1]

When Marx read *Origin* a year later, he was just as enthusi-

astic, calling it "the book which contains the basis in natural history for our view."[2] In a letter to the German socialist Ferdinand Lasalle, he wrote:

> "Darwin's work is most important and suits my purpose in that it provides a basis in natural science for the historical class struggle. … Despite all shortcomings, it is here that, for the first time, 'teleology' in natural science is not only dealt a mortal blow but its rational meaning is empirically explained."[3]

In 1862 Marx made a point of attending the public lectures on evolution given by Darwin's supporter Thomas Huxley, and encouraged his political associates to join him. Wilhelm Liebknecht, a friend and comrade who often visited the Marx family in London, later recalled that "when Darwin drew the conclusions from his research work and brought them to the knowledge of the public, we spoke of nothing else for months but Darwin and the enormous significance of his scientific discoveries."[4]

Although Marx and Engels criticized various aspects of his "clumsy English style of argument," they retained the highest regard for Darwin's scientific work for the rest of their lives.[5]

In his own masterwork, Marx described *On the Origin of Species* as an "epoch-making work."[6] In 1872 Marx sent a copy of *Capital* to Darwin, inscribing it "on the part of his sincere admirer, Karl Marx."[7]

And in 1883, at Marx's funeral, Engels said. "Just as Darwin discovered the law of development of organic nature, so Marx discovered the law of development of human history."[8]

Stealing the Darwinian mantle?

Charles Darwin, once condemned as a dangerous atheist, is today the object not only of great veneration, but also of a "Darwin industry" composed of academics and others who churn out an endless stream of books and articles about every possible aspect of his life and work.

But Marx and Engels are still beyond the pale, so it's not surprising that some in the Darwin industry argue that there is no real connection between Darwinism and Marxism. Marx and Engels, the claim goes, were illegitimately trying to hitch their wagon to Darwin's star. Among others:

- Allan Megill argues that "Marx and Engels were willing to appeal to Darwinism for propaganda purposes," but any impression that Darwinian evolution is similar to Marxism is "totally false."[9]
- Naomi Beck claims that for Marx and Engels, "Darwin's theory fulfilled for them only the function of a pretext and was not in reality connected with their views." Engels' comparison of Marx and Darwin was just an opportunist attempt to "establish Marx's independent scientific status as Darwin's equal."[10]
- D.A. Stack says that Engels' remarks at Marx's graveside were part of a "parochial propagandist campaign to steal the Darwinian mantle … The term 'Darwinian' was sought as an honorific title, nothing more." Engels was just "keen for Marxism to bask in the reflected glory of Darwinism."[11]

It's difficult to decide which is worse — the cynicism that suggests Engels would use his lifelong comrade's funeral as an occasion to win petty political advantage, or the ignorance these writers display of both the revolutionary implications of Darwinism and the importance of natural science to Marxist theory.

Anyone who seriously studies the works of Marx, Engels and Darwin will understand — even if they don't agree with him — that Marx was both honest and exceptionally insightful when he wrote that *On the Origin of Species* "contains the basis in natural history for our view"

To understand what Marx meant, we need to understand what Darwin wrote, and why his views marked a radical break with the dominant ideas of his day.

An unlikely revolutionary

Charles Robert Darwin was, to say the least, an unlikely revolutionary. His father was a prominent physician and wealthy investor; his grandfather was Josiah Wedgwood, founder of one of the largest manufacturing companies in Europe. He could have lived a life of leisure but instead he devoted his life to science.

In 1825 his father sent him to the University of Edinburgh to study medicine, but Charles was much more interested in studying nature, a subject not offered as a degree program at any university in Great Britain. After two years he dropped out of Edinburgh and enrolled in Cambridge, aiming to become an Anglican priest — a respectable profession that would allow him leisure time to collect beetles, stuff birds or search for fossils.

(This wasn't as improbable as it seems today. At the time, the great majority of naturalists in England, including all of the professors who taught science at Oxford and Cambridge, were ordained Anglican priests. Clergymen studied nature not just for its own sake, but as a contribution to "natural theology" — understanding God by studying His works.)

Darwin seems to have been a competent theology student, but he particularly impressed the men who taught science. After graduation in 1831, one professor took him on a three week geology expedition in North Wales, and then his botany professor recommended him to Captain Robert Fitzroy of the Royal Navy, who was looking for a gentleman naturalist to travel with him as an unpaid companion on a surveying voyage to South America and the South Pacific.[12]

And so it began. On December 27, 1831, 22-year-old Charles Darwin boarded the British survey ship *HMS Beagle*. Although plagued by seasickness, he traveled much more comfortably than the crew: he ate at the captain's table, was accompanied by a manservant, and had more than sufficient funds (provided by his doting father) to rent comfortable accommodations when the ship was in port. But it wasn't a pleasure trip: he

Charles Darwin: A Chronology

1809 Born February 12 in Shrewsbury, Shropshire.

1825-1827 Edinburgh University, medicine. Drops out.

1828-1831 Cambridge University, theology. Graduates.

1831-1836 Five year round-the-world voyage on the *Beagle*.

1836-1838 Works out the main elements of the theory of natural selection.

1838-1844 Writes and publishes scientific works based on his geological research on the *Beagle*, and a popular account of the voyage.

1839 Marries Emma Wedgwood.

1842 Writes a 35-page outline of his theory.

1844 Rewrites the 1842 outline as a 270-page essay. Asks Emma to arrange publication in the event of his death.

1847-1854 Comprehensive study of barnacles, published in four volumes.

1854 Resumes research on species. Confides in a few friends.

1856 Begins writing *Natural Selection*, a "big book on species."

1858 Receives essay from Alfred Russel Wallace, outlining a theory similar to his.

1858 Friends arrange joint presentation of extracts from Darwin's 1844 essay and Wallace's essay to a meeting of the Linnean Society.

1858-1859 Sets aside *Natural Selection* and writes a shorter "abstract," published as *On the Origin of Species,* November 24, 1859.

1860-1881 Writes five more editions of *Origin* and nine other scientific books, including *The Descent of Man* in 1871.

1882 Dies April 19 in Downe, Kent.

conducted extensive and detailed geological studies, wrote thousands of pages of scientific observations, and collected more than 1,500 specimens of living and fossil life.

Heresy

When he left England, Darwin seems to have been a conventional Christian who agreed with "the great majority of natu-

ralists who believed that species were immutable productions, and had been separately created."[13] Biblical literalists and deists alike agreed that species were fixed by divine law. Dogs might vary in appearance, but dogs don't turn into pigs or give birth to cats.

After five years of scientific research on the *Beagle* and two more years of study at home, Darwin came to a heretical conclusion: species were not immutable. All animals were descended from common ancestors, different species resulted from gradual changes over millions of years, and God had nothing to do with it.

It is difficult, today, to appreciate just how shocking this idea would be to the middle and upper classes of Darwin's time. Religion wasn't just the "opium of the masses"— it gave the wealthy moral justification for their privileged lives in a world of constant change and gross inequality.

One of the most popular hymns of the Victorian age clearly expressed the link between God the creator of all life and God the preserver of social stability:

> All things bright and beautiful,
> All creatures great and small,
> All things wise and wonderful,
> The Lord God made them all.
>
> Each little flower that opens,
> Each little bird that sings,
> He made their glowing colors,
> He made their tiny wings.
>
> The rich man in his castle,
> The poor man at his gate,
> God made them, high or lowly,
> And order'd their estate.

All Things Bright and Beautiful was published in 1848, shortly after a famine that killed more than a million people

in Ireland, and while revolutionary uprisings were sweeping across Europe. In the face of such social crises, hymns like this and the sermons that accompanied them taught both rich and poor that the status quo was divinely ordained. Anyone who questioned God's word was endangering the very fragile social order.

The mystery of mysteries

Nevertheless, by the 1830s educated people, including Darwin, knew that the Genesis creation story wasn't literally true. The expansion of capitalism in the 1700s had led to booms in mining and canal building: those works exposed geological layers and ancient fossils that proved that the earth was millions of years of old — not the six thousand years allowed by Biblical chronology. What's more, the fossil record showed that animals unknown today were once common, while modern animals appeared relatively recently, contradicting the claim that God created all species at once.

And in the same period, imperialism led to global exploration and the discovery of more varieties of plant and animal life than any European had ever imagined — far more than could have lived in Eden or found space on Noah's ark.

By the 1830s, scientists agreed that there were only two possible explanations for the accumulating evidence. The very influential Cambridge professor William Whewell summed up the choices:

> "Either we must accept the doctrine of the transmutation of species, and must suppose that the organized species of one geological epoch were transmuted into those of another by some long-continued agency of natural causes; or else, we must believe in many successive acts of creation and extinction of species, out of the common course of nature; acts which, therefore, we may properly call miraculous."

Whewell, like every other respectable scientist of the time,

had no doubt about the answer: animals and plants may vary in response to external circumstances, but "the extreme limit of variation may usually be reached in a brief period of time: in short, species have a real existence in nature, and a transition from one to another does not exist."[14]

If species could not change over time, only miracles could explain the fossil record. But how did God do it? What did the process of divine creation actually look like on earth?

"The replacement of extinct species by others," was, wrote astronomer John Herschell, the "mystery of mysteries."[15]

While some scientists and theologians insisted that God must personally intervene each time a new species is required, others were confident that the Creator had set up the universe so that new species were created through "secondary causes" — i.e. by natural means — whenever they were needed.

What's particularly noteworthy today is the fact that "God did it" wasn't just an acceptable answer to difficult questions, it was standard scientific methodology. Even scientists who believed that nature could be completely explained by natural laws believed that God established those laws to ensure that creation proceeded according to His will.

Evolution before Darwin

The very fact that the scientific establishment thought it necessary to vigorously deny "transmutation of species" shows that not everyone agreed that species couldn't change.

A noteworthy example was Charles Darwin's grandfather, Erasmus Darwin, who described something like evolution in his 1794 book *Zoönomia*, and again in 1803 in a book-length poem, *The Temple of Nature*. His evolutionary ideas don't seem to have influenced anyone — probably the result, as Charles later wrote, of "the proportion of speculation being so large to the facts given."[16]

Others offered similar speculations, but before Darwin, only two writers proposed worked-out theories of species change over time: Jean-Baptiste Lamarck and Robert Chambers.

Lamarck was appointed head of the invertebrate division of the Muséum National d'Histoire Naturelle in Paris when France's revolutionary government reorganized the country's scientific institutions in the 1790s. In the early 1800s, he argued that all modern animals are the descendants of less complex ancestors.

Unlike Darwin, Lamarck didn't suggest common descent, but rather a complex model in which every type of organism went through a separate evolutionary process. Nature constantly and spontaneously creates new evolutionary lines, beginning with single-celled animals, that have an innate drive to become more complex, or perfect, over time. Eventually, if the climb isn't interrupted, they reach the peak of perfection as human beings.

But the climb is often interrupted by environmental changes to which the animal must respond. Giraffes develop long necks by stretching to reach high leaves, while fish that live in caves become blind because they don't use their eyes — and those changes are then inherited by their offspring. In Lamarck's works, this was a secondary process, but the term "Lamarckism" has since come to mean "inheritance of acquired characteristics" and nothing else.

Lamarck's views won little support from other scientists, even in France, but there was a significant "underground" Lamarckian current in England among radical democrats, socialists and secularists between 1820 and 1850. Many of them used Lamarckian arguments to criticize the undemocratic English state and the Anglican Church.

> "Cannibalized fragments of Lamarck's evolutionary biology — which provided a model of relentless ascent power-driven 'from below' — turned up in the pauper press. Lamarck's notion that an animal could, through its own exertions, transform itself into a higher being and pass on its gains — all without the aid of a deity — appealed to the insurrectionary

> working classes. His ideas were propagated in their illegal penny prints, where they mixed with demands for democracy and attacks on the clergy."[17]

Much more influential on broad public opinion in England was *Vestiges of the Natural History of Creation*, published anonymously in 1844 by Robert Chambers, a magazine publisher and amateur geologist from Edinburgh. He attributed the entire history of the universe to a God-ordained "Law of Development" that produced stars, planets, and eventually life. After the first life arose spontaneously on earth, animals and plants ascended the ladder of life.

> "It has pleased Providence to arrange that one species should give birth to another, until the second highest gave birth to man, who is the very highest."[18]

Chambers meant "gave birth" literally. Drawing on the theory that embryos pass through developmental stages similar to the adults of more primitive animals, he concluded that when it was time for a new species to arrive, females would somehow extend their gestation periods, so that their offspring would emerge as the next species up the ladder.

Universally condemned by the scientific establishment at the time, and nearly forgotten today, *Vestiges* was nevertheless a sensational bestseller. Before *On the Origin of Species*, *Vestiges* was the only book on evolution that most English readers might have read.[19]

Essentialism and teleology

As we've seen, the scientific discoveries of the late 18th and early 19th centuries provoked widespread speculation about Herschell's "mystery of mysteries." Most professional scientists and many amateurs and outsiders offered views on how the apparent extinction and creation of species could be explained or explained away.

While the explanations varied, they all rested on a common

ideology, on the twin concepts of essentialism and teleology.

Essentialism is based on the first law of formal logic: that a thing is always equal to itself, that A always equals A. That's a useful, even necessary assumption for many purposes, but it ignores the reality of change — that over time all things decay, or transform, or combine, so that A turns into something that is no longer A.

In nineteenth century natural science, essentialist thinkers assumed that the definition or idea of a species is more important, indeed *more real*, than the specific organisms we can actually observe. A species is a constant, unchanging type — the variations we observe in nature are accidental and transitory.

As we've seen, William Whewell believed firmly that "species have a real existence in nature, and a transition from one to another does not exist." Charles Lyell, the leading geologist of that time, devoted several chapters of his most important book, *Principles of Geology*, to a critique of Lamarck and the very idea that species can change. As Stephen Jay Gould points out, Lyell's argument was rooted not in actual study of nature, but in his essentialist philosophy:

> "The focus of Lyell's argument — and the reason for lambasting evolution defined as insensible transition between species — rests upon a view of species as entities, not tendencies; things, not arbitrary segments of a flux. Species arise at particular times in particular regions. They are, if you will, particles with a definite point of origin, an unchanging character during their geological duration, and a clear moment of extinction."[20]

It is obvious that those who rejected evolution held essentialist views. But people like Chambers, who held that one kind of organism could give birth to another, were also essentialists. In their view of evolution, species didn't change; rather, one natural kind was wholly replaced by a new one.

Teleology is the belief that all things are designed for or in-

herently directed toward a final result. Birds were given wings so that they could fly, giraffes got long necks so that they could reach high leaves, and the earth was created as a place for people to live.

The idea that the earth and everything in it was designed by God to achieve His divine ends was almost universally accepted by the leading philosophers and scientists in the nineteenth century. Serious thinkers claimed that coal deposits were laid down in England so that they could later be used by industry, or that the fact that the life-cycle of most plants equals the duration of the earth's revolution around the sun is an obvious case of Divine design.

Even Lamarck, who did not include God in his theory, held that there was a mysterious force driving all organisms to become ever more perfect, until they reach perfection as human beings.

Natural Selection

In *Origin*, Darwin argued that three factors combine to create new species: population pressure; variation and inheritance; and natural selection.

Population pressure: All organisms tend to have more offspring than can survive in the local environment. Many individuals either do not survive or are not able to reproduce.

Variations and heritability: There are many variations between the members of a given population: no two individuals are exactly alike. Most of these variations are inheritable — that is, they are passed on to the offspring of the individuals concerned. While most of these variations are insignificant (eye color, for example), some will increase or decrease the individual's chances of surviving and reproducing.

Natural selection: Individuals with favorable variations will tend to have more offspring than average; those with unfavorable variations will tend to have fewer, so that over long periods of time unfavorable variations will tend to decrease in frequency, while favorable variations will become more common.

This implied a very different explanation of the giraffe's long neck. Contrary to Lamarck, Darwin suggested that the giraffe's ancestors had necks of various lengths. Those with longer necks could reach more leaves than those with shorter necks. Being better fed, they were stronger, tended to live longer and have more offspring — so over time the population's average neck-length increased.

Unlike Lamarck and Chambers, Darwin wasn't just speculating. His "theory of descent with modification through natural selection"[21] was developed and then fine-tuned in years of careful study and experimentation. In his home in rural Kent, south of London, he dissected all kinds of animals, raised pigeons to learn about variation and inheritance, experimented with plant germination and seed dispersal. Above all, he sought out and learned from people with practical, hands-on knowledge — gamekeepers, pigeon fanciers, sheep and cattle breeders, gardeners and zoo managers.

These materialist methods led him to an entirely materialist theory — at a time when materialism wasn't just unpopular in respectable circles, it was considered subversive and politically dangerous. Between 1838 and 1848, while he was first working out his ideas, England was swept by an unprecedented wave of mass actions, political protests and strikes. Radical ideas — materialist, atheistic ideas — were infecting the working class, leading many to expect (or fear) revolutionary change.

Darwin was never actively involved in politics, but he was a privileged member of the wealthy middle class and that class was under attack. As John Bellamy Foster writes, "Darwin was a strong believer in the bourgeois order. His science was revolutionary, but Darwin the man was not."[22]

Rather than risk being identified with the radicals and perhaps being ostracized by his fellow gentleman-scientists, Darwin wrote a 270-page account of his theory in 1844, attached a letter asking his wife to publish it if he died, and told no one else. Between 1840 and 1854 he wrote a popular account of

his voyage around the world, scientific books on coral reefs and volcanic islands, and an exhaustive four-volume study of barnacles. Only in the mid-1850s, when his scientific reputation was assured, and the social turbulence of the 1840s was clearly over, did he return to the subject he is now most famous for.

Even then he would likely have delayed into the next decade had not a younger naturalist, Alfred Russel Wallace, sent him an essay containing ideas similar to his own. Pressed by friends to publish, Darwin set aside "the big book on species" he was working on and prepared what he called an abstract. *On the Origin of Species by Means of Natural Selection, or, The Preservation of Favoured Races in the Struggle for Life* was published in November 1859.

Turning science right way up

Marx wrote that in Hegel's writings, the dialectic "is standing on its head," so it had to be turned right side up to discover "the rational kernel within the mystical shell."[23] That is what Marx and Engels did in the process of working out the fundamental basis of their views, historical materialism.

And that is exactly what Darwin did in *On the Origin of Species*. He overturned the fundamental concepts of nineteenth century science — he took an upside down view of nature, and turned it right side up.

He overturned essentialism. "I look at the term 'species' as one arbitrarily given, for the sake of convenience, to a set of individuals closely resembling each other."[24]

A species is not a thing, and change does not involve the transformation or replacement of that thing. A species is a population of real, concrete individuals. Variations are not exceptions or diversions from the species' essence — variation is the concrete reality of nature. The truth, a Marxist would say, is always concrete. Species are not fixed, immutable things: they have a real history, and can only be properly understood by studying how they change in time.

He overturned teleology. "Far from imagining that cats exist in order to catch mice well," wrote Darwin's close associate Thomas Huxley, "Darwinism supposes that cats exist because they catch mice well — mousing being not the aim, but the condition of their existence."[25]

Living organisms have changed and continue to change as a result of natural processes that have no purpose or goal. A giraffe is not in any sense a "more advanced" or "more perfect" animal than its shorter ancestors — it is simply better adapted to its local environment. Changes to that environment could eliminate its advantage at any time.

By the time Darwin died in 1882, the fact of evolution was accepted by the great majority of scientists — but it took much longer for most to accept the materialist core of Darwin's work, that variation and natural selection are the processes that drive species change. Even among Darwin's closest allies and supporters there were many who clung to the essentialist idea that new species must appear as sudden replacements, or to the teleological idea that the evolutionary process was guided or determined in advance by God.

Evolution and Marxism

Darwin did for nature what Marx and Engels did for human society — he overturned teleology and essentialism and established a materialist basis for understanding how organisms change over time. And that is precisely what Marx meant when he said that *On the Origin of Species* "contains the basis in natural history for our view."

In 1844, while Darwin was secretly writing his first full account of natural selection, Karl Marx was in Paris, developing his critique of contemporary political and philosophical thought. In his notebooks he wrote:

> "History itself is a real part of natural history and of nature's development into man. Natural science will, in time, incorporate into itself the science of man, just

> as the science of man will incorporate into itself natural science: there will be one science."[26]

A year later, Marx and Engels wrote *The German Ideology*, the first mature statement of what became known as historical materialism. Initially they included this passage, which is similar to the 1844 statement, but more complete.

> "We know only a single science, the science of history. One can look at history from two sides and divide it into the history of nature and the history of men. The two sides are, however, inseparable; the history of nature and the history of men are dependent on each other so long as men exist."[27]

They deleted that paragraph from the final draft, deciding not even to mention a subject they had no time to investigate and discuss properly.

These passages show why Marx and Engels were so excited by Darwin's work. As Peter Heyer writes, "both the historical character of nature and the natural character of history" were fundamental to their worldview.[28]

Fifteen years before *Origin*, they were confident that nature could be explained using the same non-essentialist and non-teleological — that is, historical and materialist — principles that underlay their analysis of human societies. By providing a thoroughly researched and powerfully argued confirmation of that assumption, Darwin's book *completed* historical materialism. This was the materialist explanation of the historical character of nature they knew must be possible. As Engels wrote in *Socialism: Utopian and Scientific*:

> "Nature works dialectically and not metaphysically … she does not move in the eternal oneness of a perpetually recurring circle, but goes through a real historical evolution. In this connection, Darwin must be named before all others. He dealt the metaphysical conception of Nature the heaviest blow by his proof

> that all organic beings, plants, animals, and man himself, are the products of a process of evolution going on through millions of years."[29]

Nature and Society

A key element of D.A. Stack's claim that Engels tried to "steal the Darwinian mantle," but wasn't really committed to Darwinism, is his assertion that Engels did not make "any meaningful or successful attempt to unite Marxist politics with Darwinian science."[30]

If we accept a very narrow definition of politics, as Stack seems to do, then this charge is absolutely true. Engels didn't just fail to propose a political program based on Darwin's science — he explicitly denied that such a program was appropriate.[31]

The idea that the theory of Natural Selection was an appropriate basis for understanding and governing human societies originated with the English libertarian philosopher Herbert Spencer, the man who originated the phrase "survival of the fittest." He argued that natural selection would eventually produce a perfect society, but only if it had free reign to operate so that the unfit could be eliminated. To that end he opposed public education, compulsory smallpox vaccination, free libraries, workplace safety laws and even charitable support for the "undeserving poor."

Such views, later labeled "Social Darwinism," were eagerly adopted by defenders of unfettered capitalism. The billionaire oil tycoon John D. Rockefeller famously told a Sunday school class in New York City:

> "the growth of large business is merely a survival of the fittest … The American Beauty rose can be produced in the splendor and fragrance which bring cheer to its beholder only by sacrificing the early buds which grow up around it. This is not an evil tendency

> in business. It is merely the working out of a law of nature and a law of God."[32]

Engels was scathing in his rejection of attempts to apply biological laws to human society. In a letter to the Russian socialist Pyotr Lavrov in 1875, he pointed out that the "bourgeois Darwinians" — referring to a political current in Germany that claimed to be applying Darwin's views — first claimed that the political concept "survival of the fittest" applied to nature, and then reversed the process:

> "All that the Darwinian theory of the struggle for existence boils down to is an extrapolation from society to animate nature of Hobbes' theory of the *bellum omnium contra omnes* [war of all against all] and of the bourgeois-economic theory of competition together with the Malthusian theory of population. Having accomplished this feat … these people proceed to re-extrapolate the same theories from organic nature to history, and then claim to have proved their validity as eternal laws of human society. The puerility of this procedure is self-evident, and there is no need to waste words on it."

These political Darwinians, Engels concluded, can be described, "firstly as bad economists and secondly as bad naturalists and philosophers."[33]

In 1845, in *The German Ideology*, Marx and Engels had argued that the ability to produce life's needs distinguishes humans from other animals:

> "Men can be distinguished from animals by consciousness, by religion or anything else you like. They themselves begin to distinguish themselves from animals as soon as they begin to produce their means of subsistence, a step which is conditioned by their physical organization. By producing their means of subsistence they are indirectly producing their material life."[34]

Engels repeated and extended that argument in the late 1870s, in his unfinished book *Dialectics of Nature*:

> "Let us accept for a moment the phrase 'struggle for existence,' for argument's sake. The most that the animal can achieve is to collect; man produces, he prepares the means of subsistence, in the widest sense of the words, which without him nature would not have produced. This makes impossible any unqualified transference of the laws of life in animal societies to human society."[35]

Engels was restating a fundamental element of the Marxist view of nature — that different forms and complexities of matter involve different scientific laws. The laws governing the movements of atoms and molecules are not the same as the laws that govern the movements of billiard balls. And, if recent developments in astrophysics are to be believed (the hypothetical existence of dark matter and dark energy, for example) the movements of galaxies follow still different laws.

The laws that govern inorganic matter also apply to living matter — but they are enhanced and in many respects replaced by biological laws that cannot be reduced to or deduced from Newtonian physics. Similarly, human beings are physical and biological objects, subject to the same physical and biological laws as other animals, but we are also social beings who produce our means of existence, so our lives and history cannot be fully explained by physics and biology.

As Engels wrote, "The conception of history as a series of class struggles is already much richer in content and deeper than merely reducing it to weakly distinguished phases of the struggle for existence."[36]

Darwin's achievement

The materialist victory in science is one of humanity's greatest achievements. For that reason alone, no matter what his hesitations, delays or middle class prejudices, Charles Dar-

win deserves to be remembered and honored by everyone who looks forward to the ending of superstition and ignorance in all aspects of life.

Darwin was not a political radical: apart from his lifelong opposition to slavery and his involvement in the affairs of the small town where he lived, he seems to have had little interest in political activity or theory. And yet, as the evolutionary biologist Ernst Mayr wrote, "in his scientific works he systematically demolished one after the other of the basic philosophical concepts of his time and replaced them with revolutionary new concepts."[37]

By doing that, Darwin unwittingly contributed to and strengthened the most revolutionary social theories ever developed, the ideas we know today as Marxism.

It is obviously possible, as Paul Heyer points out, to be a Darwinian in biology while rejecting Marxism, but it is not possible to be a consistent Marxist and reject Darwin.

> "The reason is basic. Central to Marx's vision is the assumption that nature and history fit together to comprise a totality. Since man emerged from and continues to depend on and transform nature, history as a science will remain incomplete until this foundation is fully comprehended. And no one has contributed more toward this comprehension than Darwin."[38]

The idea that nature has a history, that species come into existence, change and disappear through natural processes, is just as revolutionary, and just as important to socialist thought, as the idea that capitalism isn't eternal, but came into being at a given time and will one day disappear from the earth.

Endnotes

1 Karl Marx and Friedrich Engels, *Marx-Engels Collected Works* [*MECW*.] (Moscow: Progress Publishers) vol. 40: 441

2 Karl Marx and Friedrich Engels, *Selected Correspondence 1846-1895* (New York: International Publishers, 1975) 126. In *MECW* vol. 41: 232 this passage is translated as "the book which, in the field of natural history, provides the basis for our view."

3 *MECW* vol. 41: 246-7

4 *Reminiscences of Marx and Engels* (Moscow: Foreign Languages Publishing House, n.d.) 106

5 With one brief exception. In 1866 Marx wrote to Engels that a book on evolution by Pierre Tremaux represented "a very significant advance over Darwin." Engels, who followed scientific issues much more closely than Marx, replied that Tremaux's book was "utterly worthless" and drew conclusions that were "totally mistaken or incredibly one-sided and exaggerated." Marx dropped the subject *MECW* vol. 42: 304, 320, 324

6 *MECW* vol. 35: 346n

7 John Bellamy Foster, *Marx's Ecology: Materialism and Nature* (New York: Monthly Review Press, 2000) 207. Darwin sent a polite thank you note, but didn't read the book.

8 *MECW* vol. 24: 467

9 Allan Megill, *Karl Marx: The Burden of Reason* (Lanham MD: Rowman & Littlefield, 2002) 54.

10 Naomi Beck. "The Origin and Political Thought." in Michael Ruse and Robert J. Richards, eds, *The Cambridge Companion to the Origin of Species* (Cambridge: Cambridge University Press, 2000) 313, 310.

11 D.A. Stack. "The First Darwinian Left: Radical and Socialist Responses to Darwin, 1859-1914." *History of Political Thought*, Winter 2000. 683-4. Stack repeats most of these comments, word for word, in *The First Darwinian Left: Socialism and Darwinism, 1859-1914* (Cheltenham: New Clarion Press, 2003) 4

12 The rigid class hierarchy on naval ships meant that a captain could not socialize with other officers or the crew, but the Navy permitted captains to bring appropriate passengers at their own expense. See Stephen J. Gould, "Darwin's Sea Change," in *Ever Since Darwin* (New York: WW Norton, 1992) 28-33

13 Charles Darwin. "An Historical Sketch of the Progress of Opinion on the Origin of Species." Published in the third and subsequent editions of *On the Origin of Species.* (London: Penguin Books, 1985 [1861]) 53

14 William Whewell, *History of the Inductive Sciences*, volume 2. (London: John W. Parker, 1837) 563-565.

15 Herschell's letter to Lyell was published in 1837 in Charles Babbage *The Ninth Bridgewater Treatise* (London: John Murray, 1838) 225-236. Darwin quoted it in the first paragraph of *On the Origin of Species*.

16 Charles Darwin. *Autobiography.* http://www.stephenjaygould.org/library/darwin_autobiography.html

17 Adrian Desmond, *The Politics of Evolution: Morphology, Medicine and Reform in Radical London* (Chicago: University of Chicago Press, 1989) 4

18 Robert Chambers. *Vestiges of the Natural History of Creation and Other Evolutionary Writings*. (Chicago: University of Chicago Press, 1994 1844) 234

19 James A. Secord, *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of Vestiges of the Natural History of Creation*. (Chicago: University of Chicago Press, 2000) 526

20 Stephen Jay Gould, *Time's Arrow, Time's Cycle: Myth and Metaphor in the Discovery of Geological Time* (Cambridge: Harvard University Press,1987) 146-147.

21 Charles Darwin, *The Origin of Species* (London: Penguin Books, 1985 [1859]). 435. Darwin did not use the word "evolution" at all in *Origin*: at that time the word implied the unfolding of characteristics already present in the organism — the evolution of an embryo into an animal, for example. That concept was alien to Darwin's theory.

22 Foster, *Marx's Ecology*. 179.

23 *MECW* vol. 35: 19

24 Darwin, *Origin*: 108

25 Thomas Huxley. "Criticisms of 'On the Origin Of Species.'" 1864 in *Lay Sermons, Addresses and Reviews*. (London: Macmillan, 1888) 303

26 *MECW* vol. 3: 303-4

27 *MECW* vol. 5: 28n

28 Peter Heyer. *Nature, Human Nature, and Society: Marx, Darwin, Biology and the Human Sciences*. (Westport CT: Greenwood Press, 1982) 49

29 *MECW* vol. 24: 301

30 Stack, *First Darwinian Left*. 684

31 Stack discusses this in his essay, a fact that makes his cynical dismissal of Engels' words at Marx's graveside hard to understand.

32 Quoted in Richard Hofstadter. *Social Darwinism in American Thought*. (Boston: Beacon Press, 1993 [1944]) 45

33 *MECW* vol. 45: 107-108. This passage has frequently been cited by historians as a criticism of Darwin's theory, but the context clearly shows that he is referring to people who applied Darwin's views to politics.

34 *MECW* vol. 5: 31

35 *MECW* vol. 25: 584

36 Ibid., 585

37 Ernst Mayr. *One Long Argument: Charles Darwin and the Genesis of Modern Evolutionary Thought.* (Cambridge: Harvard University Press,1991) 50

38 Heyer, *Nature, Human Nature and Society*. 27

Suggestions for further reading

Darwin's life

There are more Darwin biographies in print than anyone could possibly read. A good short overview of Darwin's life and ideas is *A Brief Guide to Charles Darwin, His Life and Times*, by Cyril Aydon. (Robinson Publishing, 2008)

At the other end of the time-to-read spectrum is Janet Browne's definitive work, published in two 600-page volumes: *Charles Darwin: Voyaging* and *Charles Darwin: the Power of Place*. (Princeton University Press, 1996 and 2003) Despite its length, it is very readable, with a minimum of intrusive scholarly apparatus.

Adrian Desmond & James Moore focus much more on the social context in *Darwin: The Life of a Tormented Evolutionist*. (W. W. Norton, 1994) It's an important book, but rather mechanistic in its explanation of the social origins of Darwin's ideas.

Desmond & Moore's latest book, *Darwin's Sacred Cause: Race, Slavety and the Quest for Human origins*, (Allen Lane 2009) has the same weakness, but it is worth reading for its insight into the relationship between racism and biological theory in Darwin's thinking and in the 19th century more generally.

The science of evolution

Ernst Mayr's *What Evolution Is.* (Basic Books 2002) isn't light reading, but it provides a superb materialist account of modern evolutionary theory for non-scientists.

The late Stephen Jay Gould wrote hundreds of popular essays on evolution and related topics: all of his books are worth reading, but a good place to start is *The Richness of Life: The Essential Stephen Jay Gould*. (W. W. Norton, 2007)

Richard Lewontin's *The Triple Helix: Gene, Organism and Environment* (Harvard University Press, 2000) is a concise dialectical critique of the idea that genetics explains everything.

And for a broader Marxist view of evolutionary biology, *The Dialectical Biologist,* which Lewontin wrote with Richard Levins (Harvard University Press, 1985), is indispensable.

Marxism and evolution

Chapter Six of John Bellamy Foster's *Marx's Ecology: Materialism and Nature* (Monthly Review Press, 2000) is essential reading on the relationship between Marxism and Darwinism.

Critique of Intelligent Design: Materialism versus Creationism from Antiquity to the Present, (Monthly Review Press, 2008) by John Bellamy Foster, Brett Clark and Richard York, is a clearly written account of the philosophical issues that underlie the fight between evolution and creationism.

Back to the source

Last but certainly not least, Charles Darwin's *On the Origin of Species* may be the only great work of science that is also a work of literature. It's available from many publishers, and the full text is available online at http://darwin-online.org.uk/

When *Origin* was published in November 1859, one of the first people to buy a copy was Friedrich Engels: he read it quickly and told Marx that it was "absolutely splendid." That should be recommendation enough.