

Review

On the history of knowledge: The Evolution of Evolution

Wednesday 27 March 2013, by [FAYYAZUDDIN Ansar](#) (Date first published: March 2013).

***Darwin's Ghosts*, by Rebecca Stott. Spiegel & Grau/Random House, 2012, 416 pages, \$17 paperback.**

REBECCA STOTT'S *DARWIN'S Ghosts* is structured as a collection of episodes in the history of biology. The episodes, labeled by the names of individuals and an associated date, are chapters in a prehistory of evolution. Conceived initially as tracing Darwin's attempt at identifying historical precursors to his own theory of evolution, the book in the end becomes Stott's own personal and idiosyncratic take on this history, which by its nature is incomplete, yet highly instructive and enjoyable.

In the preface, the author explains her own relationship to Darwinian thought. Stott, it turns out, grew up in a creationist household. Barred from reading Darwin or other books on evolution, Stott was not dissuaded from learning about evolution, which soon became a passion. Although in time her parents lost their religious orthodoxy, and ultimately their faith, those early years left an indelible mark on her.

While scholarly and academically ambitious, the book is written modestly in an accessible style suitable for a wide audience. Stott writes beautifully. Employing techniques of historical fiction with those of the biographer and historian, she brings her subjects vividly to life.

Each chapter has a biographical episode at its center, which provides an anchor for a particular period of time and space as well as a set of characters. From each vividly reconstructed incident, Stott zooms out to give a more panoramic view, situating the particular episode in a larger biographical, social and historic setting.

Stott's episodes span the period 344 BC to 1858. Aside from the first three episodes, all occur in the 18th and 19th centuries. These first three center on Aristotle, al Jahiz (a scholar working in the 9th century Abassid Islamic empire in what is now Iraq), and Leonardo da Vinci. None of these three can be considered to be evolutionists in any modern sense; indeed, they believed in the fixity of species. Nevertheless, they were engaged in observing and drawing conclusions about the natural world, particularly in areas we would now call geology, botany and zoology.

An intriguing aspect of these three early thinkers, who worked in such widely different periods of time and geographic locations, was their engagement in direct observation of the natural world and reliance on farmers, fishermen and other working people both for their knowledge and for help acquiring specimens for study.

This represents an interesting rejection, but only in part, of the idealist split between mental and physical labor. This is particularly striking in the case of Aristotle, whose rejection of platonic idealism — the view that reality is an imperfect realization of ideal forms — is, to say the least, precocious.

Aristotle and al Jahiz were intrigued by certain problems of taxonomy that brought them close to questions central to evolution. They were intrigued by the existence of species that displayed features defying available taxonomic classification. Particularly interesting to them were examples of organisms with features compatible with being both plants and animals. These questions were also to occupy later evolutionists.

Ancient to Enlightenment to Evolutionism

Among these three early naturalists, Aristotle holds a central place in Stott's narrative. In my opinion, the first episodes are Stott's way of explaining how Aristotle's ideas were transmitted from the ancient world to the world of enlightenment Europe and then the period of bourgeois revolutions in the 18th and 19th centuries.

Indeed, the episode concerning al Jahiz allows Stott to relate how the Abassid period of the Islamic empire was central to the excavation and preservation, through translation into Arabic, of ancient scholarship that had been left, quite literally, in ruins. The Leonardo da Vinci chapter, similarly, explains how that Greek scholarship in Arabic found its way into da Vinci's library via the translations carried out by Renaissance humanists.

Once the narrative reaches the 18th century, things really pick up! There are striking differences in the shift from the ancient world and the Middle Ages to the Enlightenment and beyond. The earlier scholarship had been the exclusive preserve of ruling elites: Aristotle's investigations, the Abassid translations and al Jahiz's work were all made possible through royal patronage.

In the absence of the printing press, scholarship had no means of wider circulation. Furthermore, investigations into nature carried out in the ancient world and the Middle Ages remained narrowly limited in scope.

In the ferment of the Enlightenment, the ideological expression of the rising bourgeoisie, scientific modes of explanation reached far greater sections of the population and challenged the system of privilege that characterized life under aristocratic rule. By providing non-theological explanations of natural phenomena, scientific inquiry threatened church and state authority implicitly and, quite often, explicitly.

Several of Stott's chapters on the 18th and 19th centuries concern philosophers who were not directly engaged in observational natural history. The chapter on the Encyclopedist Denis Diderot and the group around him is one. Diderot and his collaborators lived under the increasingly intolerant, insecure and belligerent regime of Louis XV of France. The regime employed a special section of the police to confiscate subversive literature and to imprison dissenters. Diderot spent time in jail for work that he had written anonymously and which was considered to be heretical.

Stott describes Diderot in the mid-1740s:

"For Diderot and for many of his friends, politics, the natural sciences, metaphysics, and theology were all intimately connected. Their questions multiplied, multiheaded, like the polyp itself. They could not be contained, branching and forking into anatomy, philosophy, microscopy, physics, mineralogy, mathematics and optics...The light — the new knowledge — was not in the pulpit, he

declared to anyone who would listen; instead, the answers were in the shaft of a microscope, in experiment, in what you could touch, in the branches of knowledge.” (136)

Diderot appears in the book because he believed in a material origin of life and a natural origin of all species. Like others before him, he could only write on the topic anonymously and obscurely, which he did in *Thoughts on the Interpretation of Nature* and later in the unpublished *D’Alembert’s Dream*.

Stott goes on to explore the thought of Erasmus Darwin, Charles Darwin’s paternal grandfather, whose *Zoonomia*, or *The Laws of Organic Life* was published in 1794. Erasmus’ work is perhaps the first case discussed by Stott that Darwin actually read before formulating his own theory of evolution. It contained, hidden quite a way into the thick tome, “one astonishing claim, the claim Erasmus had been avoiding uttering for 20 years: that species — the human species, indeed all living species — had descended from minute aquatic filaments swimming in a prehistoric sea.” (174)

Erasmus wrote this book at considerable risk. In the years following the French revolution, and particularly during its most radical phase under the Jacobins, any hint of subversion could result in serious personal harm. In 1790, Erasmus’ friend, the chemist Joseph Priestley, was forced to evacuate to London when his house and meeting place was burned down by a group provoked by the celebration of the first anniversary of the fall of the Bastille.

Another fascinating chapter, “The Jardin des Plantes,” discusses three major French biologists simultaneously employed at the French botanic garden of the chapter title in the immediate aftermath of the French revolution: Jean-Baptiste Lamarck, Georges Cuvier, and Etienne Geoffroy Saint-Hilaire (often referred to simply as Geoffroy).

Lamarck is quite well known for his pre-Darwinian evolutionary theories, while the others are perhaps not as widely known. I did find the focus on their personal rivalries distracting. Inexplicably, there is no account of Cuvier’s most famous and lasting contribution that helped establish paleontology as a science, and his conclusion from fossil evidence of the fact of extinction.

Darwin’s Ghosts does not claim to be a comprehensive history of the idea of evolution, but it does provide some fascinating chapters in that history. These, like all good books, are a series of launching points for further exploration.

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P.S.

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