

Marco Solinas
*From Aristotle's Teleology to Darwin's Genealogy:
The Stamp of Inutility*
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By the time Charles Darwin was born in 1809, the fixity of species was being challenged for this was also the year that Jean-Baptiste Lamarck's *Philosophie Zoologique* appeared. Lamarck's two-fold argument that species acquire new characteristics through environmental influences and that such changes are inherited never received wide acceptance although it opened a crack in the evolutionary door. Lamarck's theory foundered by both the force of science and the force of personality. The former was because of the lack of evidence to show the inheritance of acquired characteristics and the latter was by virtue of power wielded by Georges Cuvier.

Too often Lamarck is painted as the evolutionary progressive and Cuvier the creationist conservative. Such oversimplification ignores the fact that Cuvier was neither a biblical creationist nor a believer in an Aristotelean *scala naturae*. Cuvier argued for repeated and sometimes cataclysmic extinctions followed by multiple appearances of species he thought derived from elsewhere. It was only in the English language translations by Robert Jameson that the stamp of biblical creation was placed on Cuvier. As to the matter of the *scala*, it was of course Cuvier who burst its bounds with his four *embranchements*. In his own way and although never completely rejecting it, Lamarck was beginning to step off the *scala* in his work from the late 18th into the early 19th century. Charles Darwin's own grandfather Erasmus Darwin had presented a more lyrical, poetical version of Lamarckian ideas even before Lamarck and before Charles' birth, although generally without specifying how life was organized other than from simpler to more complex.

As Solinas explains in *From Aristotle's Teleology to Darwin's Genealogy: The Stamp of Inutility*, before these early 19th century harbingers of what was to come in "about the middle of the seventeenth century to the middle of the eighteenth century [...] Aristotle's fixist, essentialist and teleological framework substantially [held] its ground" (p. 64). Certainly, new ideas notably in how to arrange animal species were appearing but as Solinas writes, "Despite

Aristotle's being cited less and less, from the point of view of the three fundamental principles, at this time natural history can still legitimately be interpreted as a form of 'Christianized Aristotelianism'" (p. 64). The three fundamental principles to which Solinas refers are that creation produced fixed forms, the nature of the perfection of this creation precludes extinction, and that members of the same species share an essence separating them from other species. As is well known and Solinas recounts, it was Cuvier in 1796 who demolished the second of these fundamental principles. Extinction, and with it the idea that there was a perfection in life sometimes phrased as the fullness or *plenum* of creation, was demolished some 63 years before Darwin finally provided the proofs of the creative powers of evolution, which destroyed the fixity of forms along with any intrinsic essence they supposedly possessed. Thus, in a space of less than 100 years we went from Solinas' 'Christianized Aristotelianism' to a totally naturalistic explanation.

Even before problems with Aristotelian conceptions became apparent by the end of the eighteenth century, his ideas had seen an eclipse and then rebounded. With the ascendancy of Christianity dealing with all things corporal as well as spiritual Aristotle's earlier treatises on living things lost their potency. As Solinas notes it was not until the thirteenth century that a reconciliation of Aristotle and Christianity began, but with a much broader interest in natural history in the late fifteenth century and new translations this interest accelerated.

By the time we reach the early 19th century when Darwin was a young man, the struggle was in attempting to reconcile the Judeo-Christian accounts of creation and the pace of its unfolding in six days with the new narrative of an ancient earth from the young science of geology. Far harder were the attempts to escape the Aristotelian *scala naturae* that meshed so nicely with the biblical accounts of creation.

As Solinas and other authors before him recount, "Darwin had at last found a coherent solution to the issue of 'admirable adaptation' from a genealogical perspective. Such a perspective at the same time amounted to the deconstruction of the teleological, essentialist and fixist framework of Aristotelian origin" (p. 97). Darwin did this privately in the 1830s through 1850s but in 1859 brought his heretical views to the public. As his book title indicates, for Solinas the key point is the shift from Aristotelian teleology to Darwin genealogy. As he relates, Darwin initially used his natural selection in the literal sense of a 'final cause' only later to reject it as a Baconian 'barren virgin.' It explains nothing, and gives rise to nothing. This is understandable on Darwin's part as everyone was attempting to find and understand a final cause for life's diversity and origin. Later Darwin rightfully rejected the need to equate

natural selection with the barren final cause argument.

As Solinas argues, with the theory of descent with modifications by means of selection, Darwin replaced the “traditional Aristotelian fixist, essentialist and teleological framework begun towards the end of the eighteenth century with the first transformist theories. He replaced it with a new, coherent and relatively complete framework. Tackling the question of admirable adaptation head-on, he managed to demonstrate the intrinsic contradictoriness of the traditional theoretical teleological-functionalist cornerstone” (p. 111).

One of the continuing ironies is that although Darwin argued for the genealogical basis of life and the concomitant need for a biological taxonomy and systematics, we are by in large still stuck today in the Linnean system of taxonomy that while playing lip service to evolution, is still in a quasi-teleological realm. There have been a few attempts to break out of this, the most recent being the *International Code of Phylogenetic Nomenclature* or Phylcode, which has met with only limited success.

As a paleobiologist interested more in the history of science than in its philosophy, I found two difficulties with Solinas' treatments. Having recently written a book (2014) on visual representations of biological relationships – *Aristotle's Ladder, Darwin's Tree* – I was naturally intrigued by Solinas analysis of Aristotle's teleology compared to Darwin's genealogy. But for those more accustomed to the history rather than the philosophy of science, Solina's argumentation while interesting can be hard going. This is the first hurdle. The second is that as a translation, the difficulties with these already difficult ideas are compounded by sometimes long, convoluted sentences. This is far more the case in the first half of the book when we are dealing with the concepts more akin to Aristotle than when we are leading up to the, for me more graspable Darwinian concepts. Even with these quibbles, I found Solina's contribution well worth the effort.

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