

Structure and origins of Darwin's strategy of argument(s) in "The Origin of Species"

Part	Strategy	Tactic	Chapters
I Variation and selection under domestication	<i>Vera causa</i> existence (after Herschel)	Establish accepted idea	<i>I. Variation under domestication</i>
		Argue from analogy	<i>II. Variation under nature</i> <i>III. Struggle for existence</i>
II. Variation and selection in nature	<i>Vera causa</i> competence	Make case	<i>IV. Natural selection</i> <i>V. Laws of variation</i>
		Consider difficulties	<i>VI. Difficulties of the theory</i> <i>VII*. Miscellaneous objections.(added)</i> <i>VII. Instinct</i> <i>VIII. Hybridism</i>
III Explanatory trials of the theory	<i>Vera causa</i> responsibility	Present evidence favoring responsibility	<i>IX Imperfections of the geological record</i> <i>X. Geological succession</i> <i>XI. Geographic distribution</i>
	Consilience of inductions (after Whewell)	Make sense of a large class of otherwise disparate facts	<i>XII. Geographic distribution</i> <i>XIII. Mutual affinities of organic beings</i>
Recapitulation	Allay fears, Convert ready	Humility & Reverie (after Humboldt)	<i>XIV. Recapitulation and conclusions</i>

Darwin built his case in the 'Origin of Species' specifically to address Victorian expectations concerning the nature of sound scientific practices. In particular, Darwin presents a *vera causa* (= 'true cause') argument in Chapters 1-11 that is a direct response to the practices advocated by John Herschel in "Preliminary Discourse on the Study of Natural Philosophy" (1830). In a *vera causa* approach, one must first demonstrate the existence of some potentially causal process, then demonstrate that the process is in principle competent to explain the phenomenon of interest, and finally that the process is in fact responsible. In Chapters 12 & 13 Darwin follows the approach put forth by William Whewell, the first philosopher of science, in his "History (1837) and Philosophy (1840) of the Inductive Sciences." Whewell, who incidently coined the then rather controversial term 'scientist' in 1833, argued that the quality and utility of a scientific theory could be judged based on its capacity to makes sense of large class of otherwise apparently unrelated facts and coincidences. In carefully and intentionally structuring his argument in this way, Darwin was actively seeking the approval of Herschel and Whewell as a strategy for enhancing the likelihood of a positive scientific and public reaction to his theory of evolution by natural selection. In the final chapter, Darwin echoes the 'nature reveries' of Humboldt's "Personal Narrative of Travels to Equinoctial Regions of the New Continent" which Darwin had read as a youth and which shaped his rather Romantic views of nature throughout his life. Table adapted primarily from Hodge, M. 1977. The Structure and strategy and Darwin's 'Long Argument.' British Journal for the History of Science 10: 237-246 and Waters, K. The arguments in the Origin of Species. pp. 116-140. In: Hodge, M. & Radick, G. The Cambridge Companion to Darwin. Cambridge University Press. 2003; see also Sloan, P.R. 1991. The sense of sublimity: Darwin on nature and the divine. Osiris 16: 251-269.