

DARWIN'S ARGUMENT BY ANALOGY

In *On the Origin of Species* (1859), Charles Darwin put forward his theory of natural selection. Conventionally, Darwin's argument for this theory has been understood as based on an analogy with artificial selection. But there has been no consensus on how, exactly, this analogical argument is supposed to work – and some suspicion too that analogical arguments on the whole are embarrassingly weak. Drawing on new insights into the history of analogical argumentation from the ancient Greeks onward, as well as on in-depth studies of Darwin's public and private writings, this book offers an original perspective on Darwin's argument, restoring to view the intellectual traditions which Darwin took for granted in arguing as he did. From this perspective come new appreciations not only of Darwin's argument but of the metaphors based on it, the range of wider traditions the argument touched upon, and its legacies for science after the *Origin*.

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The cover image shows a Victorian Newfoundland water dog – bred not to fetch dead or wounded ducks but to save brave fishermen from drowning. In Darwin's *Notebook E*, p. 63, probably dated first week of December 1838, he wrote: "Are the feet of water-dogs at all more webbed than those of other dogs. — if nature had had the picking she would make such a variety far more easily than man, — though man's practiced judgment even without time can do much. — (yet one cross, & the permanence of his breed is destroyed)." It is the earliest surviving text reflecting Darwin's argument by analogy, any earlier ones having been cut out of this notebook by Darwin and not found since.

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From Artificial to Natural Selection

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Preface

What can the actions of stockbreeders, as they select the best individuals for breeding, teach us about how new species of wild animals and plants come into being? Charles Darwin raised this question in his famous, even notorious, *Origin of Species* (1859). Darwin's answer – his argument by analogy from artificial to natural selection – is the subject of our book. We aim to clarify what kind of argument it is, how it works, and why Darwin gave it such prominence. As we explain more fully in our Introduction, we believe that the argument becomes much more intelligible when set, contextually, in a story stretching from classical Greek mathematics to modern evolutionary genetics: a long story, and a broad one too, encompassing everything from Darwin's earliest notebook theorising on the births and deaths of species, to agrarian capitalism as a distinctive form of economic life, to shifting Western reflections on art–nature relations.

A lucky conjunction led to our collaboration. On retiring from full-time teaching duties at the University of Leeds, RW (a philosopher who had written on analogy and metaphor) and JH (a historian of science often writing on Darwin) were asked to share an unusually spacious office. They quickly found that they had a common interest in Darwin's selection analogy, with RW seeing the first four chapters of the *Origin* as a shining example of how an argument by analogy ought to be conducted, and JH concerned to establish the place of the argument in the 'one long argument' of the *Origin* overall. They soon decided to try out their ideas in a seminar. It became clear that, approaching the same text from different angles, they had arrived at essentially the same interpretation of the argument, even though it was an interpretation at odds with much in the secondary literature. After the seminar, GR, also at Leeds, urged them to collaborate in writing about it for publication. Moreover, as he was himself a Darwin specialist, who had co-edited with JH *The Cambridge Companion to Darwin*, it was plain that this team of three friends should take on the task. The initial plan was for a long article, but it rapidly

became clear that the material was so rich and complex that it demanded book-length discussion. In the course of working together we have arrived at a consensus on virtually all of the most important issues in the understanding of Darwin's text. We have much enjoyed learning a lot from each other, and strongly recommend such interdisciplinary teamwork as a way of academic life.

We are very appreciative of the encouragement and advice given us by Hilary Gaskin, our editor at Cambridge University Press. We have extensive debts to many people who have generously helped us as we have revised our draft chapters over several years. It is a pleasure to have this chance to thank André Ariew, Alex Aylward, David Depew, Jeanne Fahnestock, John Henry, Emily Herring, Tim Lewens, Xuansong Liu, Charles Pence, Evelleen Richards, Robert Richards, Michael Ruse, Neeraja Sankaran, Prue Shaw, Elliott Sober, Susan Sterrett, Jonathan Topham, John van Wyhe, Pete Wetherbee, Gabrielle White, Polly Winsor and all who participated in several seminars over the last decade or so, culminating in a day-long workshop on the final draft in February 2020 at the Leeds Arts and Humanities Research Institute. Additionally, GR is grateful to the School of Philosophy, Religion and History of Science for the semester's leave which enabled him to complete his work on the book. All of us are grateful to Charlotte Sleight for her expert indexing, and to our families for their patient support.