

Darwin and Darwinism: An Introduction

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The year 2009 marked the sesquicentennial of the original publication of Charles Darwin's *On the Origin of Species* (and the bicentennial of his birth). Thousands of events, conferences, museum exhibitions and other events throughout the world were held in honor of Darwin.¹ It was a time for broad reflection on our current understanding of evolution, and also the broad and pervasive impact Darwin and his ideas have had on other disciplines and society in general. In anticipation of this important milestone, Michael R. Matthews invited us to co-edit a special Darwin issue of *Science & Education*, which (over the course of two years and literally thousands of email messages) ultimately led to eight invited essays and 33 submissions (14 of which were, after review and revision, accepted).

While Darwin's theory of evolution by natural selection (as subsequently modified, refined, and elaborated upon) is universally recognized by scientists to be at the core of our understanding of the history of life on our planet, his views (and their implications) remain controversial to this day. And it is precisely because of its controversial nature that evolution, while central to an understanding of the biological world, remains a particular challenge to science teachers. Evolution has an enormous impact on domains that lie beyond science and, thus, teachers often face students' resistance to accepting evolution because students are (mistakenly) afraid that their moral views and their religious beliefs are threatened by "Darwin's dangerous idea". In the articles that follow Darwin's views are clarified and some of their implications are discussed. Then conclusions from evolution education research are presented and specific suggestions on how evolution should be

¹ An attempt at a comprehensive listing of the many special publications and events held in Darwin's honor is located here: <http://darwin-online.org.uk/2009.html>. See also Shapin (2010).

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taught are made. Finally, the importance of local contexts and culture for the reception of Darwinism and some major features of Intelligent Design creationism are discussed.

Our special Darwin issue is subdivided into two sections, one focused on historical, philosophical and cultural studies; and another on a host of pedagogical issues. The first (Nos. 4 & 5) begins with three invited essays by David J. Depew, Michael Ruse and John Hedley Brooke, that discuss controversies surrounding Darwin and Darwinism. Depew provides an overview of historical research on controversies surrounding evolutionary theory, calling attention to a plurality of views that fall under the heading Darwinism. Ruse discusses tensions within Darwin's thought surrounding form and function. Brooke discusses Darwin's religious views, whether and how they affected his scientific views, drawing attention to multiple misconceptions associated with the juxtaposition of science and religion. A fourth essay, written by John Cartwright, considers what is often regarded as the most controversial aspect of Darwin's theory, namely its implications for morality.

Next are three case studies of early popularizers of Darwin's view of evolution. Sherrie Lynne Lyons discusses the important role played by Thomas Huxley, often referred to as "Darwin's bulldog" owing to the very public way he promoted and defended Darwin's views. Bill Cooke and Julie Homchick discuss less well known popularizers, Joseph McCabe (a former Catholic seminary professor) and Henry Fairfield Osborn, respectively. The latter is particularly valuable in providing insight into how controversies surrounding evolution played out at the American Museum of Natural History. The section concludes with an essay by Leslie L. Heywood, Justin R. Garcia and David Sloan Wilson, which discusses Darwinism in the context of C. P. Snow's famous "two cultures problem", namely the alleged tension between scientific and humanistic approaches to the study of people, culture and history.

The second section (Nos. 6–8) begins with two important invited review articles of current evolution education research by Michael U. Smith. The first surveys a host of philosophical and epistemological issues associated with the teaching and learning of evolution; the second discusses related pedagogical issues. This sets the stage for two empirical studies of student's learning of evolution. Marina L. Tavares, Maria Pilar Jiménez-Aleixandre, and Eduardo F. Mortimer report on an empirical study of argumentation practices among high school Brazilian students. Maria Fátima Marcelos and Ronaldo L. Nagem discuss pedagogical issues associated with the use of metaphors in evolution.

Paul Thagard and Scott Findlay, in another invited essay, discuss cognitive and emotional obstacles students often have in accepting evolution, drawing attention to the important role philosophy of science and psychological theory can play in improving acceptance of Darwinian ideas. Next are three essays that provide specific advice for instruction. Kostas Kampourakis and William F. McComas discuss how teachers can use biographical information about Charles Darwin to promote learning of issues associated with the nature of science. Esther M. Van Dijk and Thomas A. C. Reydon provide a conceptual analysis of evolutionary concepts for teachers. Tonie Louis Stolberg draws attention to important insights teachers of evolution can gain from religious education.

The section then shifts to a consideration of the reception of Darwin's views. Thomas Glick's invited essay briefly surveys historical research on this topic,² setting the stage for two studies of the reception of Darwin's ideas in India and Turkey. C. MacKenzie Brown draws attention to how the reception of Darwinism has been influenced by cultural, historical and religious influences within Hindu thought. Deniz Peker, Gulsum Gul Comert and Aykut Kence provide a broad overview of how Darwin's views have fared with

² For a fuller account, the reader is encouraged to consult Glick (1988) and Glick and Engels (2008).

respect to past and current educational practices in Turkey, which draws attention to a systematic promotion of creationism in the Turkish educational system.

The special issue concludes with three essays that directly discuss controversial issues associated with creationism and intelligent design. An invited essay by Rob Pennock analyzes a previously unrecognized connection between the intelligent design movement and postmodernism. Anya Plutynski and Joachim Allgaier complete the special issue by discussing whether intelligent design should be taught in public science classrooms and further how the controversies surrounding creationism have been portrayed in the UK press.

Informed and competent reviewing is a time-consuming and arduous task, but it is crucial to the integrity and quality of published work. Editors, authors, readers, and the scholarly enterprise more generally, benefit from this mostly anonymous labour. We thank the dozens of reviewers, listed at the end of nos. 6–8, who assisted us in bringing these special issues to fruition.

In closing, we would especially like to thank Michael R. Matthews for providing us with the opportunity to work with him for more than two years on this special issue. It has been both an honor and a privilege.

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