A candle in the dark

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Dawkins vs. Gould: Survival of the Fittest

by Kim Sterelny

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This is a book we have long been waiting for. At last, a simple, straightforward and direct description of the Dawkins/Gould 'debate'—on one side is Richard Dawkins who believes that natural selection sufficiently explains evolution, while Gould and his followers believe that natural selection, although a very important force, is not the only one. But what is it that makes biologists from different persuasions so vehemently oppose the other side's view? What really differentiates their ideas, and why is the debate so intense? Into this morass of ideas and personalities steps philosopher-cum-theoretical biologist, Kim Sterelny, to describe simply and clearly 'what the fuss is all about'.

Sterelny's first goal is to explain where the two sides agree, where they disagree, when a comment on the other's view is reasonable or not, and what are the implications of the two main positions. And it is done so simply and elegantly that we wonder why such a book did not appear long ago. After all, there have been many

books written by protagonists giving their differing views. Why not a book that simply describes the viewpoints so that we can decide for ourselves?

The outline of the book is simple. An introductory chapter gives a context of some of the more acrimonious exchanges, together with the intellectual traditions from which each stems—population genetics and animal behaviour for Dawkins, palaeontology for Gould. There are then five short chapters on Dawkins' World, and similarly for Gould's. Here, we find simple explanations of many complex concepts: gene teams; gene lineages; the extended phenotype; differences between selection at the gene, individual, species and group levels; cumulative selection; correlation and causation; disparity and diversity; the application of evolutionary ideas to explain human behaviour. The aim here is simply to help the reader understand the questions.

Only in the last two chapters does the author step in and make some comments of his own, and on how the different ideas fit into science as a whole. He sees Dawkins as the more 'mainstream' scientist, producing objective knowledge about the world—knowledge that must supplant earlier theistic views that have 'mostly had socially unfortunate consequences'. Gould's views are much more cautious in this respect, and perhaps put stronger limits on science. Sterelny's overview is achieved in just 140 short pages, at the end of which we come away with a host of clearly explained areas for future work.

My own opinion is that the book is too gentle towards Gould's explanation. The first example is that Sterelny concedes too much on the importance of mass extinctions in evolution. Recent molecular work is showing that both birds and mammals were diversifying tens of millions of years before the impact marking the Cretaceous–Tertiary boundary. Consequently, if these two groups were already diversifying, then it is expected that this must have been at the expense of small dinosaurs and pterodactyls. There is no evidence that these latter groups would still dominate the terrestrial sphere today if the

impact had not occurred and thus the question of its significance is still open.

Similarly, Gould's emphasis that 'disparity' has not increased over several hundred million years is no startling revelation. (Okay, you haven't read the book yet, such terms are explained well.) Under a Darwinian model of evolution, we do not expect new body plans of multicellular animals to appear continually. Think about it. Any individuals with the beginnings of a new body plan would be competing with many species that had already gained a head start of hundreds of millions of years. Darwin knew this when he described a 'warm-pond' where new forms of life might appear. Any 'new' form of life would be food for all the existing ones. Likewise, we do not find new forms of life arising with completely new triplet codes for proteins and we do not find new forms of multicellular organisms continuing to arise. So indeed, we could say that 'disparity' is not increasing in multicellular eukaryotes—big deal! It is thus absurd to argue that 'because the processes of natural selection are not producing new animal body plans in the present, they were insufficient in the past.' Disparity is trivia, and repeated over and over again, it is still trivia and even worse... But hold on. This is exactly the reason we need Sterelny's book! I have become a protagonist. We need someone to just describe the arguments and explain the specialised terms. There are already more than enough protagonists waiting to jump in and sort out the other side.

Perhaps all molecular biologists interested in evolution should read this book. Give a copy to the graduate students. Graduate students, give a copy to your supervisor but sneak a read first. Non-biologists too will find the book interesting and easy to read. Thank you Kim, we really need your book.

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