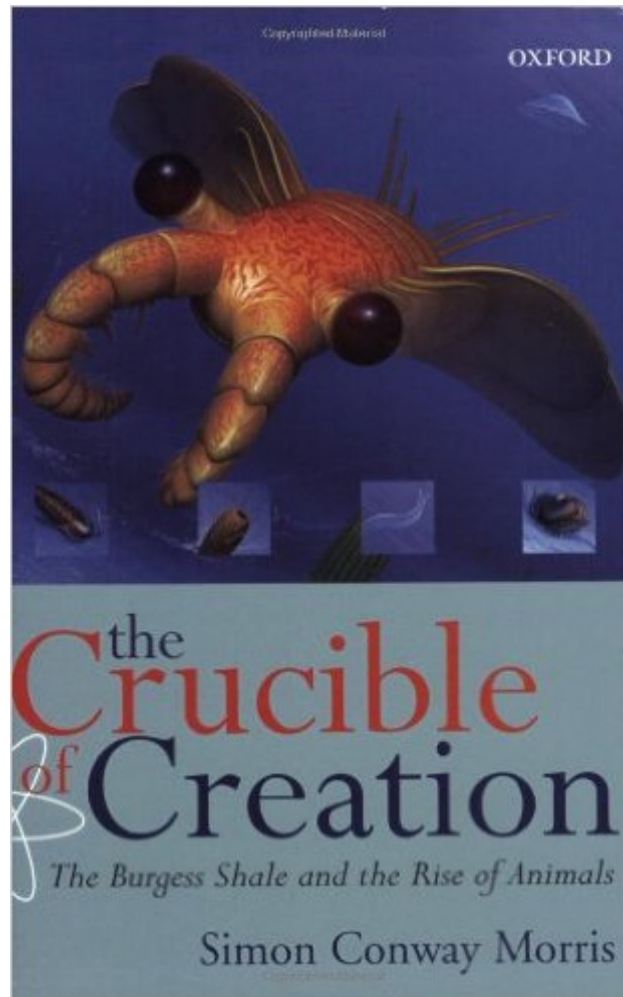


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The Crucible Of Creation: The Burgess Shale And The Rise Of Animals



Synopsis

In *The Crucible of Creation*, paleontologist Simon Conway Morris describes the marvelous finds of the Burgess Shale--a fantastically rich deposit of bizarre and bewildering Cambrian fossils, located in Western Canada. Conway Morris is one of the few paleontologists ever to explore the Burgess Shale, having been involved in the dig since 1972, and thus he is an ideal guide to this amazing discovery. Indeed, he provides a complete overview of this remarkable find, ranging from an informative, basic discussion of the origins of life and animals on earth, to a colorful description of Charles Walcott's discovery of the Burgess Shale and of the painstaking scientific work that went on there (as well as in Burgess collections held at Harvard and the Smithsonian), to an account of similar fossil finds in Greenland and in China. The heart of the book is an imaginative trip in a time machine, back to the Cambrian seas, where the reader sees first-hand the remarkable diversity of life as it existed then. And perhaps most important, Conway Morris examines the lessons to be learned from the Burgess Shale, especially as they apply to modern evolutionary thinking. In particular, he critiques the ideas of Stephen Jay Gould, whose best-selling book *Wonderful Life* drew on Conway Morris's Burgess Shale work. The author takes a fresh look at the evidence and draws quite different conclusions from Gould on the nature of evolution. This finely illustrated volume takes the reader to the forefront of paleontology as it provides fresh insights into the nature of evolution and of life on earth.

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Customer Reviews

This book begins with a rather difficult glossary, then goes on to confront the reader with sentences

that have opening clauses such as "Embedded in Spenglerian cyclicity..." The book does lighten up after a while (or perhaps the reader simply becomes accustomed to the style), but at the very least it seems fair to say that Morris doesn't underestimate the intellect of his readers. He has written an interesting book about the Burgess Shale that reviews familiar facts and adds some illuminating new material. Morris's prose does get out of hand from time to time, making dark hints or arch asides with no explication, leaving the reader thinking "and exactly what would THAT be?" (A case in point is his footnote reference to "the poisonous ideas of such individuals as Derrida." Huh? Deconstructionism is relevant to paleobiology? Spare me an explanation of THAT.) Still, most of the book is coherent and informative - particularly if you give up on reading the footnotes and stick with the main text. The book does annoy in its relentless disparaging of Steven J. Gould, not because Morris dares to disagree with the role of punctuated equilibrium and (more importantly) contingency, but because of his condescending and not altogether consistent dismissal of the larger implications that flow from Gould's ideas. In the first chapter, Morris tells us that Gould's "arid manifesto" is "unequivocal. The likelihood of Man evolving on any other planet is extraordinarily unlikely." This is a philosophical criticism because Morris doesn't like what he thinks Gould implies by this.

In a very interesting book, on a fascinating and inspiring topic, one of the key figures is making his ideas public, and does not convince. Simon Conway Morris tries to undermine or oppose the views of S.J. Gould, and while he might scientifically be the most likely person to succeed in such a feat, he utterly fails to do so. Conway Morris is very hostile to the views presented in Gould's "wonderful life", which were largely based upon his OWN earlier view, and does little justice to the man who brought him under the public (although by no means scientific, a task in which he succeeded extremely well on his own merit) spotlights. Conway Morris's arguments are based upon 3 major arguments: that of convergence, that of cladistics, and that of disparity. The first one is undoubtedly true, but trivial. Convergence can and will occur, but as it can be brought up by taxa belonging to extant groups, it has no bearing on the shape of the tree of life. Gould made no claim that ecological niches will not be filled - just that they will be filled later in evolution by more closely related taxa. The second argument is irrelevant and misleading. Again, Gould does not claim all the Burgess shale's weird wonders arose separately - quite on the contrary, but he does claim they arose early on the tree of life. Every life form can be fitted on a dendrogram, so the fact you can put Opabinia and Sidenyia on the same tree, is irrelevant to the argument presented. So we are basically left with the third argument. Throughout the book Conway Morris is claiming to have refuted the arguments of "Wonderful life", and as his own arguments are weak you are constantly waiting for him to pull the

smoking gun.

Morris, one of two contemporary specialists on the Burgess Shale, has produced an exceedingly well-written survey of the Burgess shale fauna and their meaning for evolutionary biology. The book is loaded with scores of B/W photos, 4 color drawings, a 13-page glossary of terms for the uninitiated, an imaginative underwater excursus with time-travelling paleontologists to the middle Cambrian, and a chapter on developmental evolutionary genetics (wherein he argues that many Burgess forms *are* related to contemporary forms). Stephen Jay Gould's view of the significance of the Burgess Shale is that the bizarre life-forms seen then demonstrate the historical contingency of evolution--rewind the tape and let it play out again, and things would turn out differently (a la Jimmy Stewart's "Wonderful Life"). Morris's thesis is that Gould's tape-player metaphor is misleading, overemphasizing contingency at the cost of ignoring the powerful role played by ecology. One need only consider the evolution of convergent traits in insular life-forms (e.g., Australian marsupial cat-like predators) to get the point. (I should point out that I am suspicious of monolithic theories from either pole of the necessity-chance spectrum.) I find it unfortunate that Gould never discussed Bradley Efron's Bootstrap, a technique used widely in evolutionary and population genetics, or cellular automata, a la Stuart Kauffman, which give rise to the same recurrent patterns with astonishing regularity.) Morris is an adaptationist sensitive to the power of ecology to shape evolution, who sees Burgess forms not as deviant freaks that accidentally went extinct but as ancestral to contemporary animals.

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