Random Readers 2009

Reading guide for *Wonderful Life: The Burgess Shale and the Nature of History* by Stephen Jay Gould

Abstract:

Gould uses the story of the analysis of the fossils of the Burgess Shale to illustrate historic misconceptions regarding evolutionary progress and pattern, and thereby to advance a now-famous view of evolutionary history as strongly dependent on historical contingency.

Overview:

The book interleaves three main themes or narratives.

A. The first is the nature of iconography in the representation of biological evolution. Gould identifies three ways in which one might think of evolutionary history. One is the "ladder of progress," scientifically discredited since Darwin but oh-so-popular to this day. A seemingly improved vision (but still, according to Gould, "a great error") is the "cone of increasing diversity" which correctly views the history of life as a branching tree but neglects to account for the predominant outcome of most evolutionary branching experiments: spectacular failure, in the form of extinction. Gould's model is one of "diversification and decimation," resulting in a cone that is inverted, with greatest diversity at the bottom.

B. The second is the story of the discovery, interpretation, and reinterpretation of the fossils of the Burgess Shale. One major player is Simon Conway Morris, and the story is taken from personal knowledge and interviews with the scientists who engineered the "momentous" change in the understanding of the animals of the Burgess Shale.

C. The third is Gould's assertion of the contingent nature of evolutionary history and his defense of that view.

Suggestions for reading the book, depending on your preferences:

A. Just get to the point, Steve.

To find Gould's articulation of the contingency-based view, start on page 277 at "The Burgess Shale and the Nature of History." To get important context, consider breezing through pages 27-45 (lots of pictures and Gouldian ranting; it'll go fast) then attending to 45-52. The "Walcott shoehorn" is briefly described on page 24 in the last paragraph before the break.

To find his defense of the view, read chapter V as carefully as you can. The first section ("A Story of Alternatives") is annoyingly full of wonderful biological jargon, but the basic points are pretty straightforward. One story is about extinct worms and their past dominance, and the second is about birds conquering mammals. Note that one of the examples was provided by Simon Conway Morris. At the very least, note the "experiment" described beginning in the penultimate paragraph on page 397. The next section, "General Patterns That Illustrate Contingency," contains thoughts on randomness that are surely of interest. The last section, "Seven Possible Worlds," is speculative and interesting, but not (in my opinion) important.

More simply: read chapter I, the end of chapter IV starting at page 277, and the first 2/3 of chapter V.

B. Spare me the paleontological details.

You can find a summary of the "drama" of the interpretation of the Burgess Shale on pages 24 and 25. Then you could breeze through chapter II for interesting background, and sample chapter III without reading the whole paleontological chronicle. The section called "The Two Great Problems of the Burgess Shale" starting on page 227 is valuable, and it is on page 171 that Gould identifies the point at which the "Burgess transformation" was complete.

C. Just steer me away from the obnoxious Gouldian preaching.

You'll want to skip the bulk of chapter IV, up to page 277.