Book Review

Review of Michael J. Behe's Book: The Edge of Evolution: The Search for the Limits of Darwinism

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ABSTRACT

Michael J. Behe, in "The Edge of Evolution", shows himself to be an evolutionist. He believes in common descent, but he questions the limit of Darwin's theory. Behe sees Darwin's theory as describing only micro evolution. You can find this book at Amazon http://www.amazon.com/Edge-Evolution-Search-Limits-Darwinism/dp/0743296206/ref=cm_cr-mr-title .

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Michael J. Behe, in "The Edge of Evolution", shows himself to be an evolutionist. He believes in common descent, but he questions the limit of Darwin's theory. Behe sees Darwin's theory as describing only micro evolution. In his (page 83) words: "Charles Darwin deserves a lot of credit. Although it had been proposed before him, he championed the idea of common descent and gathered a lot of evidence to support it. Despite some puzzles, much evidence from sequencing projects and other work points very strongly to common ancestry. Darwin also proposed the concept of random variation/natural selection. Selection does explain a number of important details of life - including the development of sickle hemoglobin, drug and insecticide resistence, and cold tolerance in fish - where progress can come in tiny steps."

Behe relates Darwinian evolution to a "trench warfare" that turns off life-giving functions by "burning molecular bridges". His evaluation of the human struggle with malaria shows only small genetic changes to both human and parasite. He (page 42) writes "the data show trench warfare, with acts of desperate destruction, not arms races, with mutual improvements." The burning of bridges seems to work as with the appearance of the sickle-cell trait (among others), but the desperation shows only that "the edge of evolution is indeed past the point of many [desperate] responses to parasites" (page 21). Behe finds the same pattern with the human struggle with HIV, he (page 139) writes: "HIV employs the same modest tricks that malaria uses to evade drugs - mostly simple point mutations to decrease the binding of the poison to its pathogen target."

From studies (where there is the most data) on malaria, HIV and E. coli, Behe is able to set a conservative estimate on what is possible for Darwinian evolution in a constructive sense (not just in a destructive sense) to build protein-protein interactions. Behe's conservative estimate is roughly matched against the likelihood of chloroquine resistance in malaria, otherwise no new protein-protein interactions have been found in drug resistence studies involving HIV or E. coli. Because of the astronomical numbers of malaria parasites, Behe (page 61) makes this projection: "No [random or undirected] mutation that is the same complexity as chloroquine resistance in malaria arose by Darwinian evolution in the line leading to humans in the past ten million years." Behe (page 146) writes: "The immediate, most important implication is that complexes with more that two different binding sites - ones that require three or more different kinds of proteins - are beyond the edge of evolution, past what is biologically reasonable to expect Darwinian evolution to have accomplished in all of life in all of the billion-year history of the world... With the criterion of [greater than] two

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protein-protein binding sites, we can quickly see why stupendously complex structures such as the cilium, the flagellum, and the machinery that builds them are beyond Darwinian evolution. The flagellum has dozens of proteins parts that specifically bind to each other; the cilium has hundreds."

Behe's critics might complain that more data is needed beyond malaria, HIV and E. Coli, and that simple two-protein interactions (possible intermediates) can be found in nature. Nevertheless, at least Behe is trying to look at this question in a serious way. And it remains the burden of Darwinists to tell us what is possible from their beloved theory. How has Darwin's theory been tested against any well formulated bench mark? How has this evaluation been done from first principles as Behe has done?

Regarding an evolution that brought us complex structures, Behe notes that what is being built requires a coherence; there is needed both a bottom-up construction and a top-down coherence. And Darwin's theory does not allow for a top-down coherence. Behe (page 113) writes, "even if there is some gradual route to a distant pinnacle [an evolutionary endpoint], it is not `biologically reasonable' to expect random mutation and natural selection to navigate a maze to get there." Fitness landscapes are sometimes used to explain the effectiveness of hill-climbing algorithms, like natural selection. If a landscape is nominated that is smooth with a gradual ascent to an optimum fitness, then a teleological goal has been smuggled in with the landscape thereby providing a pretense that natural selection has enhanced navigation potential. However, Behe (page 114) writes, "in a rugged evolutionary landscape, it is much more likely that a species will climb a tiny hill and get stuck there, unable to become less fit, yet forever isolated from the surrounding peaks."

In chapter 9, Behe treats biological development and the complex gene action that comes with development. Behe (page 172) remarks, "I should be clear that the arguments of this chapter will necessarily be more tentative and speculative than for previous chapters, which dealt with molecules and the cell." Nevertheless, I found chapter 9 to be particularly devastating to the Darwinian hypothesis. The issue is with the Hox systems that have been discovered in higher organism. As Behe (page 181-182) notes: "Every Hox gene seen in the fruit fly has a very similar counterpart in humans! ... The human counterpart to the fruit fly gene that controls the growth of insect head parts directs construction of regions near mammals' head (the genes of all mammals are similar to those of humans). The tail end of humans is built under the direction of the mammalian counterpart of the master fly regulatory gene that directs the arrangement of the insect's hindquarters. Even more strange, as with the fly, the genes in mammals were still lined up with body segments." So it seems that many of our genes, including regulatory switches, have been co-opted from our distant ancestors (as remote as insects). And now we find genes for body parts coming in modules. With such a system, a bottom-up construction is beyond belief, i.e., if there is also no top-down coherence as Darwinists believe. Now evolution is presumed to take major leaps, and gone is the gradualism originally predicted by Darwin's theory. Behe (page 188) notes: "Basic features of life were totally unpredicted by Darwin's theory. In fact, reasoning straightforwardly in terms of Darwin's theory led badly astray even the most eminent evolutionary biologists, who reached conclusions completely opposite to biological reality."

In chapter 10, Behe looks beyond biology and discovers the fine-tuning arguments in physics and cosmology. Behe does not confuse necessity with sufficiency, as other have. What is sufficient for life is beyond what is necessary, and sufficiency implies design at the edge of evolution. In Behe's (page 210) words: "The consilience of fine-tuning in physics and chemistry reinforces our confidence in design. It's reasonable to conclude not only that the universe is designed, but that the design extends well beyond general laws, at least down into particularities of the physics and chemistry of certain molecules."

Design is hard to ignore, even if argument is unavoidable in the heated controversy that will follow Behe and others in the intelligent design movement. Nevertheless, design must be related to how we see the world. It must be related to how we discover meaning in the world and in our words, and this search is necessarily emotional (even angry at times). If we could not feel our own vitality, then there would be no design to feel. Thank God the design is there to feel!

References

Michael J. Behe, 2007, *The Edge of Evolution: The Search for the Limits of Darwinism.* Free Press.