

Irreducibly Flawed: The Argument Against Behe

In *Darwin's Black Box* Michael Behe lays out a series of arguments against Darwinian evolution and for Intelligent Design. Central to Behe's arguments is the concept of irreducible complexity, which states that many biological systems are too complex to have evolved through chance mutations. Irreducible complexity has become perhaps the most prominent argument in support of Intelligent Design. However, irreducible complexity is not a valid scientific argument. Behe designates a system irreducibly complex if he is incapable of presenting a simpler form of the system. Because of this, irreducible complexity is neither provable nor falsifiable, making it scientifically invalid. Many of the examples Behe uses are incomplete, ignoring evidence that contradicts his claim. The Kitzmiller vs. Dover School Area District Trial and Matt Young and Taner Edis' *Why Intelligent Design Fails: A Scientific Critique of the New Creationism* highlight the problems with the examples that Behe uses in *Darwin's Black Box*.

An irreducibly complex system is “a single system composed of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of parts causes the system to effectively cease functioning.”¹ In general, it said that a system is irreducibly complex if it has three or more parts that are crucial to its operation. If one of these parts is taken away, an irreducibly complex system will not function. In order to demonstrate the concept of irreducible complexity, Behe uses the now famous mousetrap analogy. In this analogy, Behe tells us to consider a mousetrap

¹ Behe, *Darwin's Black Box*. pg 39.

with five parts: the hammer, the spring, the holding bar, the catch, and the platform. Behe states that if the mousetrap is missing any one of those parts, the function that it serves, to immobilize a mouse, cannot be completed.² However, this assumption is not correct. It is possible to take away one or more of these parts and still have an effective mechanism. If we remove, say, the platform of the mousetrap, attaching the four other parts to the floor of the room would still enable us to have a functional mousetrap. It would not be as mobile or as effective a mousetrap, but it would still be functional. In the Dover trial, another way the mousetrap is not irreducible was brought up. If we removed two parts of the mousetrap but left the base plate, the spring, and the hammer the mousetrap is no longer good at catching mice. However, it could still be useful as a tie clip.³ Because it still has a function, even if not the function is not the originally intended one, after removing different pieces, the mousetrap is not irreducibly complex.

We have just proven that Behe's illustrative example of irreducible complexity, the mousetrap, is not in fact irreducibly complex. This bodes poorly for Behe's argument; however, it does not mean that irreducible complexity cannot exist in the natural world. William Paley, the godfather of Intelligent Design, introduced the oldest example of irreducible complexity in the natural world. Paley created the watchmaker analogy, the first argument for Intelligent Design. According to Paley, the eye is so complex and well crafted that the only way it could come into existence is if an intelligent designer contrived it. The eye is made up of many different parts, and nearly all of them have a discernible purpose. It is craftily put together in order to combat the different problems of the sight. Man-made telescopes even borrow mechanics from the eye, "combining lenses

² Behe, *Darwin's Black Box*. pg 41.

³ <http://www.pbs.org/wgbh/nova/evolution/intelligent-design-trial.html>

composed of different substances, i.e. of substances which possessed different refracting powers”⁴ in order to eliminate different colors tinging the object being viewed. The eye is also protected from harm in various ways. The design of the face includes eye sockets, eyebrows, and eyelids, all of which keep the dirt and debris of the outside world out of the eye while simultaneously keeping it moist and clear. The way everything is put together is so complex that it must have been designed.

This argument is no longer used because it is invalid on several different levels. The eye is not an irreducibly complex system. A flawed eye is still useful, as any near or far-sighted person can attest to. Even the most primitive eye, a simple light sensor, has value. It can alert an organism of an upcoming predator. In addition to this, in 1994 biologists Dan Nilsson and Susanne Pelger proved how the eye can evolve within a few hundred thousand years from a simple light sensor to what it is today.⁵ The irreducible complexity of the eye is a God-of-the-gaps style argument that was put to rest with the birth of theory of the evolution. Aware that this example fails, Behe does not include it in his book. Instead, he includes a similar example to show irreducible complexity, that of the bacterial flagellum.

The bacterial flagellum is a tale-like projection that is used by certain bacteria to swim. It rotates, propelled by a motor that it is attached to. Behe states that since the bacterial flagellum is “necessarily composed of at least three parts – a paddle, a rotor, and

⁴ Paley, W. (1802). *Natural Theology: Or, Evidences of the Existence and Attributes of the Deity, Collected from the Appearances of Nature*, p10.

⁵Young, Edis, *Why Intelligent Design Fails: A Scientific Critique of the New Creationism*, p24.

a motor – it is irreducibly complex.”⁶ However, Behe also says that the flagellum requires “about forty” proteins to function. In order for the flagellum to be irreducibly complex, a minimal amount of required parts must be known. “About forty” is not a minimal number. There exist different working flagellums, on different types of bacteria, with 44 proteins and 27 proteins.⁷ If the flagellum were truly irreducibly complex, wouldn’t it require only three essential proteins – one for a paddle, one for a motor, and one for a rotor? It seems that Behe is saying that you cannot reduce the “about forty”-protein machine of the bacterial flagellum, but the minimal amount of proteins is only three. This does not seem to make sense.

For the sake of argument, let us assume that minimal amount of proteins necessary for the flagellum to work is the “about forty” number. Even if this were the case, the flagellum would still not be an irreducibly complex system. A structure found in *Yersinia pestis*, the bacterium that causes the Bubonic plague, closely resembles the flagellum. The structure is essentially a syringe, used to inject its target with the Bubonic plague. This structure is made up of a subset of proteins found in the bacterial flagellum. Unlike the flagellum, it does not rotate, and cannot be used for swimming or moving across a surface. However, it does function perfectly as an apparatus for transmitting disease.⁸ Because it still serves a purpose, even though the purpose is not the same as the one in the more complex system, the flagellum is not irreducibly complex. Claiming that the bacterial flagellum is irreducibly complex is a God-of-the-gaps argument – except

⁶ Behe, *Darwin's Black Box*. pg 72.

⁷ Young, Edis, *Why Intelligent Design Fails: A Scientific Critique of the New Creationism*, p51.

⁸ <http://www.pbs.org/wgbh/nova/evolution/intelligent-design-trial.html>

that the gaps have already been filled in with science.

Behe claims that the ‘discovery’ of design in biochemistry “must be ranked as one of the greatest achievements in the history of science.”⁹ This is a remarkable claim.

Behe’s only evidence for it, however, is his flawed notions of irreducible complexity in natural system and the lack of scientific papers published on biochemical system.

Regarding the development of the immune system, Behe says “the scientific literature has no answers to the question of the origin of the immune system.”¹⁰ This, however, is not a valid statement. The scientific community has published volumes upon volumes of books and articles regarding the origin of the immune. The fact that Behe himself has not read all of them does not provide proof that science has no answers. And even if science indeed has no correct answer, who is to say that one day we will not find one? This again is a God-of-the-gaps style argument, one which Behe uses throughout his entire book. It, like irreducible complexity, is not science.

⁹ Behe, *Darwin’s Black Box*. pg 233.

¹⁰ Behe, *Darwin’s Black Box*. pg 138.