Overstatements and Imperfect Machines, How is the Intelligent Design Movement Affecting Our Society?

In his book, *Darwin's Black Box, The Biochemical Challenge to Evolution*, Michael J. Behe suggested a mousetrap as an example of an irreducibly complex (IC) system. When this example was refuted by John McDonald, professor of biology at Georgia Tech, Behe and other Intelligent Design (ID) advocates transferred their support to another example: the bacterial flagellum. There are however, issues with the portrayal of the flagellum used in ID arguments, and how the depictions of flagella are approximated so that they resemble ideal miniature machines. This paper will seek to discuss, among other things, the reasons why ID supporters do not utilize more realistic representations that show the nature of flagella accurately, and not as 'perfect' machines. Could it be that ID advocates are more interested in gaining support for their belief than focusing on the truth? How plausible is it that such arguments will affect and persuade the general public?

Behe defines an irreducibly complex system as "a single system composing of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease functioning."[1] The original example used to illustrate irreducible complexity was the common house-hold mousetrap. However, Professor John McDonald suggested how, starting with just a piece of a hook-shaped wire acting as a primitive mouse-catching contrivance, the well-known mousetrap could be gradually built up in a manner conforming to Darwinian fashion.[2]

[1] pg. 39

[2] There are many reproductions of this argument, and many are very well explained. A version with animated diagrams that I have found most convincing can be easily viewed online at http://udel.edu/~mcdonald/mousetrap.html

Since the mousetrap was cast out from its role as the ‘poster-child’ for irreducible complexity, the bacterial flagellum has become the standard example among ID supporters, of an irreducibly complex organelle. The flagellum is a tail-like protrusion from some prokaryotic and eukaryotic cells. It plays a key part in the movement of the cell. However, ID activists have taken to publishing, and calling on for evidence, images of flagella portrayed with perfect symmetry and tightly fitting components. Real flagella have non-uniform shapes with many abnormalities when compared to these examples of perfect geometric symmetry. Also, individual flagella vary from cell to cell. Some of these images are artist's interpretations or computer-generated images of imaginary machine-like objects. These depictions, and those comprised of composite images, tend to gloss over the many deviations from symmetry displayed by the flagellum; this gives the flagellum a machine-like appearance.

These images are used specifically because they remind the viewer of man-made machinery. ID advocates argue that because these images look like machines, they must be designed. It should be noted that though scientists use the term ‘machine’ to describe certain biological structures, this does not imply that they are inherently the same as man-made machinery. It may be that ID advocates have taken advantage of this misinterpretation of language to give their models scientific ‘backing’. If ID supporters can manipulate such scientists’ statements, the case that flagella really are biological machines appears more plausible to the casual reader.

It is hard to avoid drawing parallels between this line of argument and William Paley’s Technological Argument, wherein he states that upon finding a watch in the desert, one would assume it had a designer and that it did not appear or evolve of its own accord. If one can show that the watch and the flagellum are alike in their ‘machine-like’ qualities, it is not a large jump to saying that if the watch was designed, so was the flagellum.

However, none of the images used by ID activists truthfully represent the structure of flagella. An illustration of a mechanized device labeled as a flagellum can be seen on the first printed page of the 10th edition of Behe's book. This allows portrayal of many features of flagella, but cannot accurately show the structure of the organelle. There are in fact, much better images generally available; these have been found through processes such as cryogenic electron microscopy and sophisticated X-ray techniques. So why are these images not used? ID advocates benefit from comparing flagella analogously to man-made machines, because if the more accurate images were used, the comparison with clearly designed machined would lose its strength due to the obvious variations in the structure of the flagella.

Even though these flaws in the ID argument are evident from only a cursory examination, there is no reason to believe they will be recognized by everyone. Recent studies have shown that people can believe some rather incredible things, even without charismatic backing of the idea. Dr. Jon Miller, Northwestern University Medical School in Chicago, studies American knowledge and opinions on scientific topics. The results of his data have not varied significantly over the past five years; and for example, show that one in five adult Americans thinks the Sun revolves around the Earth. If such beliefs are still held, even hundreds of years after their disproval, what does this say about the suggestibility of people who have little prior training or even opinion on issues such as flagella and ID?

ID advocates ascribe the 'credit' for the universe to a designer; however, most ID supporters such as Behe generally refuse to name the designer. This functions in a way that allows ID to be compatible with most people's religious views. ID campaigners appear to be trying very hard to alienate as few people as possible, if one is willing to allow for a creator who initiated evolution, ID can be manipulated to be consistent with most religious viewpoints. This allows ID to gain

support from many people with varied religious backgrounds. ID also appears attractive to people who are 'fence-sitting' in the debate over religion versus evolution. However, ID has also been unforthcoming in describing the methods or timing of the implementation of design into life on Earth. Also, they have yet to even allude to the demonstration of any scientific predictability, and cannot give a straight answer as to how their theory could be tested or disproved. Overall, ID attacks a few details about molecular-evolution, shrouding itself in scientific vocabulary and concepts, while doing nothing to provide actual evidence for its conclusion. "There is no doubt that the pathways described by Behe are dauntingly complex and their evolution will be hard to unravel,"[3] however, Behe has offered no concrete alternate solution. Invariably therefore, many scientists consider ID to be a variety of "thinly disguised creationism"[4] angling for a more receptive audience.

Intelligent Design's new example of irreducible complexity, the bacterial flagellum, may be just as flawed as the previous example, the common mousetrap. Issues with the portrayal of the flagellum used in ID arguments are justified and well backed up with alternative methods. There is evidence to suggest that ID supporters do not utilize more realistic representations of flagella in order to make their argument appear more perceptibly correct. ID advocates appear more interested in gaining support for their belief than aiming to uncover the truth about molecular evolution and the corresponding arguments about a creator.

[3] Jerry Coyne, University of Chicago, review of Darwin's Black Box in the British Journal 'Nature'.
[4] Marshall Berman, *Intelligent Design: The New Creationism Threatens all of Science and Society*.