

Is there 'bad design'?

A common evolutionary argument in overview

by **Jonathan Sarfati**

This is the first in a series of articles on this topic. They are all adapted from the most comprehensive creationist book on the topic of design in nature.

We have often pointed to the amazing designs in creation. However, we should be aware of one counterargument. Evolutionists, both before and after Darwin, have claimed that nature is full of evidence of bad design. They claim that there are obvious imperfections that show our evolutionary past, such as 'junk DNA', vestigial organs, and eye imperfections. They go on to argue that this alleged poor design is something no designer would produce, so evolution *must* have done it. However, there are problems with this approach.



Two-model approach

An assertion about what a designer would do is actually a pseudo-theological argument. It is not a scientific argument that mutations and natural selection could produce these structures.

Some earlier creationists advocated teaching a 'two-model approach', i.e. giving both sides of the argument. With only two viable theories, evidence against evolution counted as evidence for creation. This form of argument is known as a *disjunctive syllogism* and requires there to be only two possibilities.

Many evolutionists complained that this approach was therefore not justified, as there might be more than just two possible options. That is, they accuse its proponents of committing a *false dilemma* fallacy. In reality, in the widest sense, there are only two possibilities: things were made, or they weren't!

Actually, if evolutionists use the above argument that bad design proves evolution, they are tacitly *supporting* the two-model approach, but in reverse. That is, they use an argument against creation as an argument for evolution. Theirs is not an argument *for* evolution *per se*, but merely *against* a designer.

Yet evolutionists often rail against creationists for using an identical form of argument, i.e. using arguments against evolution to support creation!

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Pseudo-theological argument

An assertion about what a designer would or should do is actually a *pseudo-theological* argument. It is *not* a scientific argument that mutations and natural selection could produce these structures.

Similarly, a claim that a designer might have designed something badly *at best* proves that the designer is less than perfect, *not* that there is no designer. Now I don't *believe* that the designer is imperfect, and neither do any of my colleagues. But it still demonstrates a hole in the critics' logic.

And a complaint about all the nasty things in nature can at best prove that the designer is 'mean', not that there is none. Again, neither I nor my colleagues believe that the real Designer is mean, but instead is perfectly good. But it still demonstrates that the evolutionary argument is weak at disproving design. We could also ask whether 'good' or 'mean' can even be deduced from the evolutionary belief that we are rearranged pond scum, or must be hijacked from the biblical worldview they attack.

Further, this argument also undermines theistic evolution, the claim that 'god' used evolution. I.e. some theistic evolutionists claim that a perfectly good god would not have created such a feature directly, so must have 'evolved' it. But whether this proposed god designed the structure directly, or via evolution,

this god is still ultimately responsible for the flaws. It is small wonder that hardened atheists such as Dawkins are most unimpressed by churchian evolution appeasers.¹

Optimized tradeoffs and combinations

A *single* feature may not appear optimal when considering one variable, but it is optimal when *tradeoffs* are taken into consideration. E.g. a thicker shell, considered *only* for its protective properties, works better against predators and environmental damage. But a too-thick shell wastes manufacturing resources, and it could weigh down the creature, so overall the creature is worse off. Thus the optimal shell design is the best tradeoff between resource consumption and weight vs. protection.

Also, life is highly integrated. Thus the tradeoffs extend to how one feature can optimally work in combination with others. E.g. bones have amazing optimization of lightness and strength. But in particular, bird bones have greater emphasis on lightness because most of them fly. Also, birds must have some hollow bones that integrate with their unique respiratory system.

Indeed, as one engineering textbook on machine-component design points out, "Most engineering designs involve a multitude of considerations, and it is a challenge to the engineer to recognize them all in the proper proportion."²

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Deterioration since the Fall

Under the biblical framework of both Creation and Fall ([Genesis 1–3](#)), a particular biological system that appears poorly designed may not have been *originally* designed that way. Rather, today we observe a perfect *concept* of design, but it has gone *downhill* since the Fall. Thus, many organs that are claimed to be vestiges of evolution would really prove 'devolution', not evolution. However, the particles-to-people evolution model needs to find examples of *nascent* organs, i.e. those which are *increasing* in complexity.

Essential for developing organism

Multicellular life forms begin from a single cell, and there is a continuous development into the adult form. Yet for the adult even to exist, the younger stages must be viable. Thus, there will likely be features in the adult that are genuine vestigial organs, but they are vestiges of *ontogeny* (embryonic development), not *phylogeny* (evolutionary history). I.e. the adult couldn't exist if the embryo didn't have the features that are no longer operational in the adult. For example, an adult mammal has vestiges of the circulatory system that connected with its mother's placenta in the womb, and of the shunt that re-routed blood to the lungs at birth.

Similarly, the design must work from, and is constrained by, the materials available.

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Useful even if not essential

An organ may not be necessary, but it may still be useful to have. Such organs can be removed, but this doesn't prove they are functionless. Many designed systems have back-up features that make the whole system less likely to break down. This redundancy would explain the two kidneys and two lungs we have, although we can get by on one of each. Indeed, explaining such redundancy is a problem for evolution. Let us assume it could somehow arise by Darwinian processes. The selective advantage (increased fitness) for an individual having the freshly evolved redundancy would be very small under normal circumstances. Therefore, it could not be favoured by natural selection. It would be lost by genetic drift—change of gene frequency from random sampling.

Argument from ignorance

Some accusations of poor design reflect ignorance. They are basically the evolutionist's version of what atheistic evolutionist Richard Dawkins calls 'the argument from personal incredulity'. (He criticizes creationists who say, 'I can't see how it could have evolved, so it can't have evolved'. But in this case, it's evolutionists saying, 'I can't see why it was designed that way, so it must have evolved').

In many cases, when more information comes to hand, the 'poor design' turns out to be optimal. It's notable that a genuine expert on design, Stuart Burgess, Professor of Engineering Design at Bristol University, UK ('professor' is the highest academic rank in the British system), is not impressed by the likes of Dawkins arguing against bad design:

Some accusations of poor design reflect ignorance—the evolutionist's version of 'the argument from personal incredulity' ('I can't see why it was designed that way, so it must be badly designed'). In many cases, when more information comes to hand, the 'poor design' turns out to be optimal.

In his books, Dawkins presents himself as an expert in design as he seeks to argue that creation has no designer. However, Dawkins is clearly not qualified in the science of design whether in engineering or nature.

I am sometimes asked to assess academic cases for promotion to full professor of engineering design in institutions around the world. For a Chair in design, I would expect a successful applicant to have typically over 100 publications related to the science of design in addition to actual experience of designing products that have been successful in the marketplace.

But in the case of Dawkins, he has no publications in design and he has never designed anything himself. Dawkins has never designed so much as a door handle—and if he did, I wouldn't trust it!³

It is impossible to prove that an organ is useless and thus a 'vestige' of evolution. The function may simply be unknown, and its use may be discovered in future. There are more than 100 formerly alleged useless vestigial organs in humans that we now know are essential.

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Case studies in biology

In the next few issues, we will address some specific examples. In this introductory 'big picture' article, we will apply these principles to a very common evolutionary example of bad design or evolutionary vestige.

The human appendix

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Researchers at the Department of Surgery, Duke University Medical Center, discovered an important role for the appendix.

The vermiform ('worm-shaped') appendix is a thin pouch at the junction of the small and large intestines. For decades, this was called 'vestigial' and often amputated even when healthy.

The human appendix contains lymphatic tissue and helps control bacteria entering the intestines. It functions in a similar way to the tonsils at the upper end of the alimentary canal, which are known to fight throat infections. Tonsils also were once thought to be useless organs.^{4,5}

Researchers at the Department of Surgery, Duke University Medical Center, discovered an important role for the appendix. They proposed "that the human appendix is well suited as a 'safe house' for commensal ['good'] bacteria..."⁶ This allows the large intestine (*colon*) to be repopulated after flushing out a pathogen.⁷ The good bacteria inside our colon are the main component of the *microbiome*. Without the microbiome, we would not be able to digest certain foods as well. The bacteria also produce vitamins B and K. And they provide biofilm, a protective layer against harmful bacteria. In fact, we have slightly more bacterial cells than human cells, and about 10 viruses for every bacterium.⁸

The researchers argued that this was especially important in the dirty conditions of most of human history, and not so important in modern hygienic society. This would explain at least two observations:⁹

1. People in hygienic societies can manage OK after the appendix is removed because it's no longer as important.
2. Appendicitis is much rarer in less developed countries. This could be because the appendix is more active. Or else, according to Duke surgery professor Bill Parker, appendicitis "may be another case of an overly hygienic society triggering an overreaction by the body's immune system."¹⁰ There is also evidence, brought to the attention of the Western world by British missionary surgeon Denis Burkitt (1911–1993), that societies with a high dietary fibre consumption, such as in subsistence rural economies, have a much lower incidence of appendicitis.

Without the 'safe house' to help repopulate the colon with 'good' bacteria, 'bad' bacteria such as Clostridium difficile can multiply. This germ can cause a serious—possibly fatal—infection. A study showed that people who had their appendix removed are four times more likely to develop a C. difficile infection

More recent work shows that over-eagerness to remove a healthy appendix can be problematic. Without the 'safe house' to help repopulate the colon with 'good' bacteria, 'bad' bacteria such as *Clostridium difficile* can multiply.¹¹ This germ can cause a serious—possibly fatal—infection. A study showed that people who had their appendix removed are four times more likely to develop a *C. difficile* infection.¹² Another study showed that people are more likely to develop various gastro-intestinal cancers after an appendicectomy.¹³

Another problem with the 'vestigial' argument is that there is no evidence that man's alleged primate ancestors had a more developed structure from which the appendix could devolve. But the appendix exists in so many different creatures that evolutionists are now claiming that the appendix evolved 32 times!

However, even given evolutionary assumptions, it was lost less than seven times, which is further evidence that it's useful. The results of a 2013 secular study "refute some of Darwin's hypotheses" about how and why the appendix supposedly evolved.¹⁴

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