Why the 'poor design' argument against intelligent design is unsound

Jerry Bergman

The examples of life-forms that appear to be both poorly designed and poorly adapted to their environments can be explained by the reality that balance in the natural world must exist in order for life to exist. Darwin's postulated evolution by natural selection is shown to eventually cause the extinction of all life. Therefore, life must have built-in limits to insure that natural balance is maintained and that one animal does not become too successful numerically. The example of cancer is used to speculate on the eventual result of presumed natural selection; namely, death of all life. 'Poor design' features are a result of design limitations necessitated by the need for a balanced ecology, or emanate from God's Curse upon the world, and the introduction of death due to the Fall, resulting in deterioration of the original created order.

Are some organisms poorly designed?

In studying the natural world, one becomes aware of many examples of animals and plants that appear to be both poorly designed and poorly adapted to their environments. Furthermore, many animals are able to survive only in a very narrow set of conditions, and require a rigid ecological niche. Small changes in environmental conditions can often be lethal to many animals, and may even result in extinction of an animal type. Many organisms are extremely fastidious in their nutritional requirements and, if these organisms were designed, the design seems poor. If a slight change in their food requirement occurs, they are not able to survive. Thus the question arises, 'Does evolution offer a better explanation than creationism for what appears to be these "poor design" features in nature?'

Consider the microbial world in regard to nutrient requirements. Some bacteria can survive adequately on only a few types of nutrients, and others, such as the *spiroplasmas,* are so fastidious that they require some 80 ingredients to survive.[1] Some bacteria require a diet containing all 20 amino acids, yet other bacteria require only a few or no amino acids in their diet. Humans, in comparison, need only 10 amino acids. No pattern of primitive, simpler, less evolved to more evolved can be discerned. One bacteria type, which produces large, reddish-coloured colonies, earned *The Guinness Book of World Records'* 'world's toughest bacterium' honour.[2] Named *Deinococcus radiodurans,* it was discovered in 1956 in a can of spoiled meat at the Corvallis, Oregon, Agricultural Experiment Station. The bacterium had withstood the radiation used to sterilize the food, and has since been tested to 'tolerate one thousand times the radiation level that a person can' (and can even live in the intense radiation of a nuclear reactor)! *Radiodurans* like certain other bacteria has 'the remarkable ability to realign its radiation-shattered pieces of genetic material and, using enzymes to bring in new nucleotides and stitch together the pieces, repair the damage'.[2] A question that must be asked is, 'If this organism has evolved this critically important ability—which gives it a major survival advantage—why is this mechanism not more common?' This mechanism could virtually eliminate cancer and other genetic diseases among humans and animals. Why would it have been lost in the alleged macroevolutionary process?

At the macroscopic level, a good example of an extremely fastidious animal is the koala, which subsists on a diet of only eucalyptus leaves. When eucalyptus leaves are in short supply, many koalas will die, even if other types of food are in abundant supply. Some koala species are even more specialized in that they consume only certain species of gum leaves.[3] One of the best-known examples of an animal that is often claimed to be 'poorly designed' for survival is the dodo bird. Its lifestyle and anatomy made it almost certain that it would become extinct, if it encountered any aggressive, large, predatory animal. The dodo (and all other non-flying birds) lays its eggs on the flat ground, instead of in a safer location. Laying eggs on the open ground exposes them to hundreds of ground-dwelling animals, and as a result the eggs are often consumed. The ground egg-laying trait is an important reason why some birds are today threatened with extinction. If they produced a large number of eggs, survival would be less of a problem, but many ground-laying birds lay only a few eggs, or even one egg.

Yet another well-known example is the giant panda. These animals are so inept at reproducing that only about a thousand pandas are left in the world in spite of a 30-year, multi-million dollar campaign to encourage their breeding success by leading animal experts. The reasons why they are threatened with extinction include the fact that, although they can survive on a bambooless diet 'for a while at least', they normally subsist only on a single species of bamboo.[4,5] Their reproduction methods are also so inept that, even under ideal conditions, they rarely reproduce very successfully, and under most conditions they don't reproduce at all.[6] One would expect that millions of years of evolution would have honed their reproductive system to the point that they could effectively reproduce at least in their natural environment. Any minor improvement, no matter how small, would be selected for, and only a few changes would have made them

much more fit. The same could be said of the koala and the dodo. Although the giant panda has survived until modern times, their numbers were never large, even during the most favourable time of their existence, and loss of their habit may yet result in their extinction.

Other examples of where natural selection should have worked—but hasn't

Crocodiles normally catch their prey by going to the water's edge, and then grabbing and drowning their victim. Certain types of deer-like mammals regularly drink by the water's edge, ignoring the local crocodiles that usually can easily pull a deer into the water, and then kill it by drowning before consuming it. After the millions of years claimed by evolutionists, it would seem that animals coming to water holes to drink where crocodiles feed would be able to sense the crocodile's presence better. Those animals that are even *slightly* more aware of the crocodile's presence would be more likely to live and pass this trait on to their offspring. Eventually, the whole population would likewise be more effective in avoiding crocodiles. Neo-Darwinism also would predict that, as a deer evolved to be more sensitive to crocodile noise, sight and smell, the crocodile would evolve to be much more discrete than it is now. Yet this has not happened. The deer are remarkably oblivious to the crocodiles, and the crocodiles need only to swim to where the deer are and attack. As long as there are deer, the crocodiles will have plenty of easy meals.

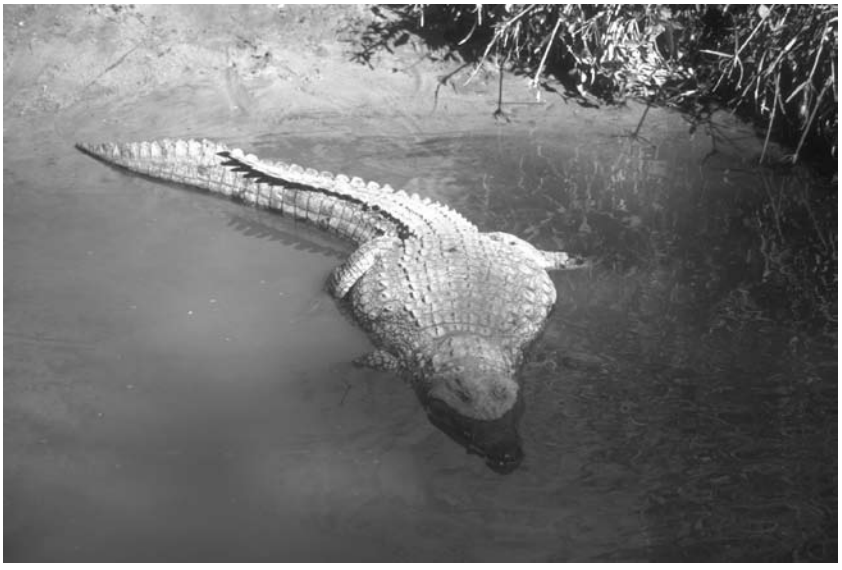
A recent example of what appears to be poor adaptation, that would be strongly selected against, is the male bean weevil's copulatory organ. It is a spine-covered structure that lacerates the female's copulatory organ. For obvious reasons, females typically fight potential mates by kicking with their hind legs.[7] As a result of the damage, females that never mate have a much longer lifespan—about a month—whereas those that mate once live an average of only ten days, and the twice-mated females live a mere nine days. Selection would cause the female to develop a more robust copulatory organ.

Any small mutation or genetic variant that reduces the stiffness or size of the spines would hypothetically be selected for as the female would be less likely to reject this mate. It would seem that millions of years of evolution would have eliminated this major impediment to reproduction. Sooner or later, a mutation or other genetic change would have occured that caused the male spines to be less rigid, or would have caused their loss all together. This modified weevil would have increased its chances of mating significantly, and consequently this male would be more likely to have more offspring than a bean weevil with the wild-type, rigid, spine-covered copulatory organ.

Another example is the need for dietary vitamin C, a critically important compound required for many body functions, not the least of which is this antioxidant's ability to help neutralize free radicals. Guinea pigs, anthropoid apes and humans are the only known species that cannot synthesize vitamin C.[8,9] Because it is often difficult to obtain enough in the diet, the ability to synthesize vitamin C would confer a major survival advantage. Many so-called primitive organisms have this ability, but many higher animals lack it. Evolutionists claim that it was lost during the evolution into higher life-forms. They point to evidence for a pseudogene (an inactive or damaged gene) involved in vitamin C production found in one sample (so far none has been found in any other primates).[8,9] Yet, if this is the case, the activation of the gene would be highly favoured. An animal that had the ability to manufacture vitamin C would allow them to survive in a far wider set of circumstances. Lack of vitamin C is recognized today as a major cause of a wide variety of diseases.[10,11] No longer would a vegetarian diet high in vitamin C be required, but an animal could do very well on a much poorer-quality diet.

Another example is the human species, *Homo sapiens*, supposedly the most highly evolved animal on Earth. Considering body weight, humans are about 10 times more vulnerable to most toxins than are many experimental animals.[12] The difference is due partly to more effective biotransformation systems that detoxify poisons in many so-called lower animals, and is an important reason why humans need to rigidly control their environment in order to survive.

Many animals also possess behaviour traits that are often lethal—a well-known example is that dogs, and many other animals, commonly consume animal excrement. The reason why this behaviour can be lethal is that around 40%



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of the dry weight of most mammal excretory matter is bacteria, many types of which are pathogenic.[12] As dumping untreated sewer water in drinking water can be disastrous, so, too, are the ways of many animals. Some Darwinists claim that coprophagy (eating excrement) can be advantageous as a means of erasing the markings of a competitor for territorial reasons. Yet coprophagy rarely erases the scent, and most dogs do not limit their coprophagy to any one territory. Some studies indicate that coprophagy results from chronic stress[13] and otherwise is normally uncommon.[14] One study found it in about 9% of dogs, many of which were in a stressful situation.[15] In the wild (where dogs face much stress), coprophagy is evidently very common, but regardless of how common it is, coprophagy is still very harmful health-wise, and is not a functional response to stress. Surely, natural selection would have eliminated this trait after millions of years (or would never have selected for it). In spite of this, dogs have survived very well in the wild and in captivity. Nonetheless, their coprophagy behaviour causes significantly higher rates of morbidity and mortality, as any dog lover knows.

Evolution or Creation?

These and other examples of poor fitness, either of biochemistry or behaviour, have been used by evolutionists as evidence that life was not created. They reason: 'Why would a creator create animals that were so obviously marginally, or poorly, adapted and could survive only in a very narrow ecological niche or environment?' Darwin claimed that these examples were evidences of poor design that mitigated against an intelligent-design worldview. Conversely, since evolution is alleged to be an undesigned, undirected, and unplanned process, Darwinists reason that if evolution were true, it would not be unexpected to find many examples of poor design in nature.[16] The problem with this reasoning is:

> 'To find fault with biological design because it misses an idealized optimum, as Stephen Jay Gould regularly does [did], is therefore gratuitous. Not knowing the objectives of the designer, Gould is in no position to say whether the designer has come up with a faulty compromise among those objectives.'[17]

These examples of less than optimal design argue against the efficacy of mutation/natural selection paradigm, but creationists also have lacked a good explanation for these observations, except to point out that *intelligent* design is not necessarily *optimal* design, and that flaws in the creation are expected as a result of the biblical Fall.[17]

Evolution concludes that the reason poor design exists everywhere is because what evolves is a result of chance, time, and the constraints of natural law. If an adaptation works well enough to survive, the animal will not become extinct. But, in fact, evolution has major problems explaining what is commonly observed: millions of years of evolution should not have produced the many poorly adapted animals. If an animal cannot successfully compete or survive, the trait will not be passed on to its offspring. Natural selection should therefore consistently select for the variations that can compete and function better. In the words of Timms and Read:

> 'The factors that constrain niche expansion lie at the heart of a key problem in evolutionary ecology: why are there so many different types of species? Why is there not an ultimate organism adapted to exploit all ecological niches? ... Why are there no parasite species exploiting all the members of large taxa such as mammals or birds?'[18]

Evolutionists try to answer this question by, for example, noting factors limiting a species' range (water barriers, for example). This may account for a small number of cases, but another factor may be more important. As Timms and Read note: 'We have remarkably little understanding of the relative importance of these alternatives in limiting host range in natural parasite populations.[19]

Cancer illustrates why neo-Darwinism is impossible

Let us consider cancer as an example of the basic mechanism of evolution through natural selection that illustrates why organisms need to be less than optimally designed in order for life to survive. The development of cancer requires a series of mutations which facilitate differential survival of that cell compared to other cells. If enough mutations occur to improve the survivability of a cell even slightly, then that cell will have an advantage compared to other cells. It is clear that the development of cancer is an example of classical, idealized, neo-Darwinian evolution, requiring both mutations and natural selection to occur. Furthermore, the situation is often stated in this way in the literature. For example, research has found that prostate cancer progresses from a localized condition to a widely disseminated malignancy and that each

> '… step along this progression pathway involves multiple genetic alterations that impart a survival advantage to the tumor cell over its normal counterparts and may confer resistance to therapy.'[20]

In the case of cancer cells, each mutation that allows the cancer cells to reproduce, even slightly faster than the surrounding normal cells, increases the relative number of cells that contain those mutants. Among the mutations that support the development of cancer cells are mutations in proto-oncogenes, genes that have a role in the cell that often is likened to an automobile accelerator. A mutation, such as in the *ras* gene, in essence 'jams the accelerator' in the 'on' position, facilitating uncontrolled cell division (what actually happens is that the mutation converts a proto-oncogene into an oncogene). The cell contains many systems designed to repair DNA damage, including tumor-suppressor genes (that halt the cell cycle so repair can occur) and various re-

pair systems (such as proofreading and excision repair). If these repair systems are damaged so that they no longer are functional, a mutated oncogene will not be repaired, and as a result a DNA-damaged cell is allowed to reproduce.

Cancer is essentially a survival-of-the-fittest struggle involving the mutated cell competing with the body's normal cells for food, nutrients and space. Each mutation that allows or encourages uncontrolled cell division (the jammed-accelerator example) likewise is favoured in the natural selection of cells. Similarly, mutations that contribute to the loss of the cell's ability to control reproduction, including mutations to tumor-suppressor genes, proto-oncogenes, DNA and other cell-repair genes, telomerase (an enzyme that adds base pairs to DNA that allow it to survive beyond the average number of cell divisions), and apoptosis coding genes (a complex mechanism that causes the cell to self destruct) will be favoured.

Few hypotheses in history have been so eloquently and dynamically supported empirically as has Neo-Darwinism in the case of cancer. Cancer research laboratories are literally coming up with new evidence monthly and the similarity of cancer to evolution has been noted by many researchers. Weinberg noted that the discovery that human tumor development resulted from a set of gene mutations was:

> '… enormously satisfying because it echoed a theme that had been reverberating in the halls of science for more than a century. Tumor development showed striking parallels to the evolution of species. In the mid-nineteenth century, Charles Darwin had described evolution in terms of nature's ability to select the fittest from among heterogeneous populations of organisms. After the discovery of gene mutations in the 1920s and 1930s, Darwin's theory of natural selection was refined and extended. Now scientists realized that randomly occurring mutations created genetically heterogeneous populations of organisms, and that natural selection chose among these, favoring the survival and reproduction of those organisms that happened to carry the most favorable constellations of genes.'[21]

Weinberg then argued that an analogous process exists within human tissues, specifically between individual cells:

> 'A cell that happened to sustain a mutation altering one of its growth-regulating genes might have a growth advantage over its genetically normal neighbours. It would spawn a host of descendants which would accumulate in disproportionate numbers in the tissue. Later, another mutation occurring in one of these descendants would generate a cell having even greater growth potential, allowing this cell to generate a more aggressively growing flock. These cells would be even more effective in elbowing out their neighbors, outcompeting them for the limited space and nutrients within a tissue.'[22]

Weinberg concluded that the cell evolution occurring within a living body that resulted in cancer is different from Darwinian evolution only

> '… in one important respect: The continual genetic improvement of the evolving population would eventually compromise its own long-term viability by destroying the environment that nurtured it. Sooner or later, evolving cancer cell populations would kill the host organism that was vital to their own survival.'[22]

In fact, if Darwinism were true, the same result would also occur at the multicelled-organism level. It must be stressed that cancer cells are not better cells as a whole, even though they can reproduce more effectively. Cancer cells, like mutations, result in degeneration. For example, they do not show a 'gain of information, but generally show a loss' or more disorder of functions. This is another example of evolutionists perceiving advancement where only variation exists, often that causing degeneration.[23]

The ultimate effect of cancer

The ultimate effect of cancer is damaged cells that have a reproduction advantage, and as a result, multiply faster. As these cells accumulate more and more mutations, which enable them to divide faster and faster, eventually runaway cell reproduction results. Then crowding and nutrient deprivation affecting normal cells eventually produces death for the entire organism. In this case, the end outcome of mutations and natural selection is always the death of the organism. Likewise, if Darwinism were true, an evaluation of the natural world reveals that the *same eventuality also would occur with all life*: one of the animals in competition with another would eventually win out. Eventually, a 'super-animal' would evolve that could run faster than most others, survive in a wide variety of temperature conditions, and be able to ingest and digest a wide variety of foods.

This animal would out-compete most other animals, and would eventually dominate the earth, causing most other animals to become extinct. This event would happen repeatedly until, eventually, only one super-animal remained. The disruption of the ecosystem caused by the extinction of the other animals and life-forms, and the loss of biodiversity that resulted, likewise would eventually cause the super-animal itself to become extinct, just as cancer evolution would cause the death of the organism. For this reason, an animal cannot have *too great* an advantage over other animals. The competition, in other words, must often be somewhat close to equal, achieving what is known as an ecologically balanced system.

Endless improvement could lead to extinction of all life

The ubiquitous balance in the natural world is achieved by a wide variety of means that often cannot be accounted for by the theory of natural selection. Natural selection

serves more to keep the animal numbers constant than to cause the development of mechanisms that serve to significantly *increase* its population numbers. For example, if an animal species is threatened with only few predators, it tends to have a 'natural' short lifespan, few progeny, or both. If it has many predators, it tends to have a longer lifespan, many progeny, or both.

An animal that is burdened with a large number of predators will also usually possess many complex protective/survival mechanisms. For example, those animals that cannot flee from predators often possess some ingenious means of protecting themselves, such as quills for a porcupine, or fierceness in some rodents. Animals that have a high mortality in their young also tend to have more offspring. But in the case of the '*higher'* animals (such as mammals)—*most* of which have few offspring—small numbers limit natural selection, reducing the probability of development of survival-facilitating organs and structures. The fact of *omnibalance* forces in nature (unless humans drastically upset them) has been repeatedly illustrated and emphasized by many researchers.

Another example is little water bears, crustaceans less than a millimetre long that are part of Phylum Tardigrada. The over four hundred species that have been identified inhabit a diversity of niches ranging from high mountains to the ocean abyss, and from the Arctic to the Antarctic. They can survive in temperatures ranging from higher than that of boiling water to those that are as low as 0.0008 Kelvin, or close to absolute zero. These crustaceans survive environmental extremes by going into a profound dormancy state in which they are oblivious to hunger for hundreds of years, then awakening like Sleeping Beauty. They can also withstand radiation a thousand times above the lethal dose for humans. They are in many ways extremely hardy, yet are inept in other ways, such as the ability to defend themselves against predators. Hsü concluded that:

> 'If the ability to survive a crisis is the bedrock criterion of fitness, then little water bears are the fittest of us all, and that is the direction, the purpose, and the perfection to which natural selection should have tended. Luckily, it has not.'[24]

Actually, the best example of a super-animal may be human beings. We now have the ability to cause many, if not most, animals to become extinct. Most recent extinctions were caused by humans or natural disasters (such as the Ice Age), not by other animals as a result of natural selection competition. This power so far has not been fully exercised, partially because humans know that their life depends on the existence of a balanced ecosystem. Humans also, according to some research, normally have an innate instinctual love of animals, especially baby animals–although no doubt much of this is learned through culture.[25] Thus, knowledge, culture and possibly this putative internal instinct serve as a brake to enable humans to control their drive, so as not to reach the state whereby all, or most, animals become extinct.

Why natural selection must be limited for the survival of life

Although most animals have their ecological niche, the majority, nevertheless, face some competition. This competition, though, must be controlled so that the proverbial 'balance in nature' is maintained. If it is lost, it must soon be re-established or extinction results. To survive, therefore, natural selection cannot function to significantly upset the balance among various forms of life, because so doing will eventually cause the extinction of the competition (and eventually of all life). Thus, just as many human inventions have built-in weak points that snap under pressure and prevent other points from failing; likewise built-in weakness must exist in all life in order to ensure that the balance of nature continues to exist. This built-in weakness can be interpreted as *necessary,* in order to maintain a balance in nature; i.e. natural selection at best prunes out the inferior and weaker individuals, reducing the amount of *devolution*.

In industry, many machines contain a built-in designed weak point that will fail first, preventing more damage from occurring to other parts of the unit. The best example is a fuse or circuit breaker, which are designed to fail before the internal wires overheat to the point of causing a fire or damaging the electrical components. Fuses and circuit breakers, no doubt, have prevented millions of fires, and reduced or prevented the damage of multiplied millions of electrical and electronic equipment units.

Circuit breakers, considered one of the most important inventions ever, demonstrate intelligent design. Likewise the 'circuit breakers' found in nature that prevent one life-form from causing the extinction of other life-forms also demonstrate intelligent design. This further illustrates the observation that *intelligent* design need not be *optimal* design, in terms of maximizing the survival of a particular species.[17] This important, built-in limitation in life explains the major contradiction between the reality of nature and natural selection, and the balance found to exist in almost all areas, as discovered by the study of ecology. What appears to be less than optional design in nature is necessary to insure that one form of life does not dominate and result in the demise of other forms and eventually their extinction.

Conclusion

The set of observations reviewed here has important implications for both the creation and evolution worldviews. They explain the observation that many animals—even the most intelligent animals—commonly manifest behaviours or variations that are inept from a survival standpoint. This view explains why designs, once judged as imperfections in the natural world (obviously a misnomer, as is calling a fuse or circuit breaker an imperfection), actually have a critical function. This so-called imperfection is a necessary design required in order for life to survive in abundance and variety in the long term. In spite of this built-in balance, occasion-

ally the balance is offset (often due to human intervention, and occasionally due to major natural disasters), forcing a new equilibrium to be reached.

Beneficial mutations (prompting minimal information loss) are possible (although extremely rare), and natural selection has been documented to produce a limited level of improved adaptation to the local environment. The problem that Darwinists must address is the *origin* of the variation, not the fact that certain variations cannot facilitate individual survival. Consequently, variation within the created kinds (commonly misunderstood as *microevolution*) is not a problem for creationists. Large-scale biologic change, or evolution, has never been shown to occur. If it could, such a change would be a grave threat to the ecological balance of the biosphere.

The view argued here is that, in addition to genetic mechanisms, ecological mechanisms also exist to prevent evolution. This is because, as is the case with cancer, macroevolution would eventually result in extinction of all life. These mechanisms, both genetic and ecological, include features of nature that have been dismissed by evolutionists as 'poor design'. Biblical creationists maintain that these 'poor design' features are a result of either design limitations necessitated by the need for a balanced ecology, or emanate from God's Curse upon the world, and the introduction of death due to the Fall, resulting in the deterioration of the original created order.

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