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# Biomimicry

## It s Implications in the Debate Over Intelligent Design

By Warren Krug

In 1958 a researcher with the United States Air Force by the name of Jack Steele coined a new word—*bionics*, which means the process of drawing inspiration from nature for manmade designs.**1** Now also known by several other names including *biomimicry* and *biomimetics*, this concept has led to many inventions that have benefited mankind. The implications of bionics or biomimicry are important in the debate over intelligent design.

Here are just some biomimicry examples:

***Velcro***--In 1948 Swiss engineer George de Mestral had gone on a hunting trip with his dog. Upon returning, he took a close look at the burrs (seeds) of burdock (left) that were sticking to his clothes and his dog's fur. Under a microscope, de Mestral noted the hundreds of hooks on the burrs that caught on anything with a loop, such as clothing or animal fur. This inspired him to invent manmade materials that would stick together based on the same pattern of hooks (right, top) and loops (right, bottom). He named his invention Velcro, a registered trademark in most countries. **2**

***Gecko tape***--A gecko (picture, left) is a small to average-sized lizard belonging to the family *Gekkonidae*. Many species of gecko are known for their specialized toe pads that allow them to climb smooth and vertical surfaces and even walk on ceilings with ease. Without the use of surface tension or liquids of any kind, the gecko footpads (right) achieve adhesive forces by means of structures called setae. There are about 14,000 setae in each square millimeter of a gecko's toe pads which accomplish their work by means of the principles of electrostaticism, the science of what seems to be stationary electric charges. Scientists are now working on a special tape that achieves adhesion in a similar way. And a robot gecko invented at Stanford University and called "stickybot" can turn this adhesive property on and off at will. **3**

***Bullet train***--The Japanese have invented a train that can travel over 200 miles an hour, the fastest train in the world. They call it the Shinkansen bullet train (left). There was one problem with the train that had to be overcome. Every time a bullet train would exit a tunnel, it would produce a very loud bang because of the change in air pressure. The train's engineers noticed that a kingfisher (right), a small, brightly-colored bird, can dive into the water with little splashing.

This inspired them to redesign the bullet train so that its front end looks like a kingfisher's beak. The result is not only a quieter train but a train that could go even faster and use less energy. **4**

***Eastgate Centre Harare, Zimbabwe***--This modern office building in the South African city was designed so that it could be heated and cooled efficiently. In examining African termite mounds, its architects were intrigued by the ability of the mounds to self-cool. As their primary food source, the termites farm a fungus inside the gigantic mounds (left) that must be kept at a temperature of exactly 87 degrees F despite outside temperatures that can range from 35 degrees F to 104 degrees F. To do this, the termites constantly open and close a series of heating and cooling vents throughout the mound over the course of the day. Convection currents help keep the temperature stable. The Eastgate Centre (above) has a ventilation system that operates in a similar way and does not need conventional air-conditioning or heating. **5**

***Better Solar Power***-- Progress in the use of solar power has been held back by the lack of a low-cost, effective way of storing it when the sun is not shining. Two MIT chemists have helped solve this problem by studying common plants. During photosynethesis, plants change solar energy into a chemical form. A key aspect of this conversion involves splitting water into oxygen and hydrogen. The hydrogen is then converted into sugars the plants store as fuel. The chemists developed a similar procedure to store solar power, using cobalt to split the water molecules. The hydrogen is stored as a gas and later turned into electricity in a fuel cell. **6**

***Fan Blades***-- Engineers have long thought that smooth surfaces were the best design for propeller blades. Studies of whales though are changing this way of thinking. A whale flipper has a bumpy edge. Studies have shown that these bumps help reduce drag, increase lift and fluid flow efficiency, and decrease the risk of stalling. Dr. Frank Fish of West Chester University has picked up on this feature, designing experimental fan blades with bumpy, irregular features. "This design has been shown to be more efficient and also quieter, but defies traditional engineering theories," he says. **7**

***Body armor***-- Engineers are looking to an African fish called *Polypterus senegalus* (left) for ideas on creating better body armor. They have measured the properties of a single fish scale and its four layer materials which includes bones and dentine. The chemical properties of each material, the shapes and thicknesses of the layers, and the junctions between layers help achieve the remarkable strength of the fish's “armor.” The lessons learned from this fish have great potential for eventually leading to improved structural materials for soldiers and military armor applications. **8**

***Smart Clothing***-- Julian Vincent wanted a nonliving system for a new type of clothing fabric which would respond to changes in moisture by changing shape. He got his inspiration by studying pinecones (right). Pinecones and some other plants respond to higher humidity by opening their scales to disperse their seeds. The “smart” fabric does the same thing, opening up when the wearer is warm and sweating and shutting tight when cold. **9**

***Other examples***: Cat's eye reflectors from the study of cats eyes; self-cleaning paints and roof tile from the study of lotus leaves; a modular carpet system copied from designs seen in the randomness of colors and patterns of forest floors; new ideas for cooling fans, impellers, and aerators inspired by mollusk shells; “morphing aircraft wings” that change shape according to speed and duration of flight from the study of bird wings; and the harvesting of water from fog similar to how a beetle does it. There are many more examples, the best 100 of which are included in *Nature's 100 Best* as compiled by the Biomimicry Institute.

The implications of biomimicry for the debate over Intelligent Design are obvious. How do evolutionists who believe everything is the product of blind chance explain why there is so much apparent intelligent design in nature, so intelligent that modern day researchers and engineers using their own intelligence copy the designs into modern products? The simple answer: time. This is why Darwinists need so much time, millions and billions of years. Given enough time, the improbable becomes probable. So time is an evolutionist god. It can do anything.

The fact of the matter is that the amount of time available even in a world 4.5 billion years old is far, far from being enough. Computer studies by Dr. William Dembski have shown that the creation of even a simple body protein from amino-acid components is next to impossible, even in a universe billions of years old. We would hope and pray that those secular scientists would come to their senses who for some reason feel they must hold onto a godless theory that is fast becoming even more and more untenable. Then they might be led by the Holy Spirit and the Word of God to eventually accept their Savior and the real hope of a future heavenly world which the Creator God is now designing for all of us. *LSI*

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