

# Creation Matters

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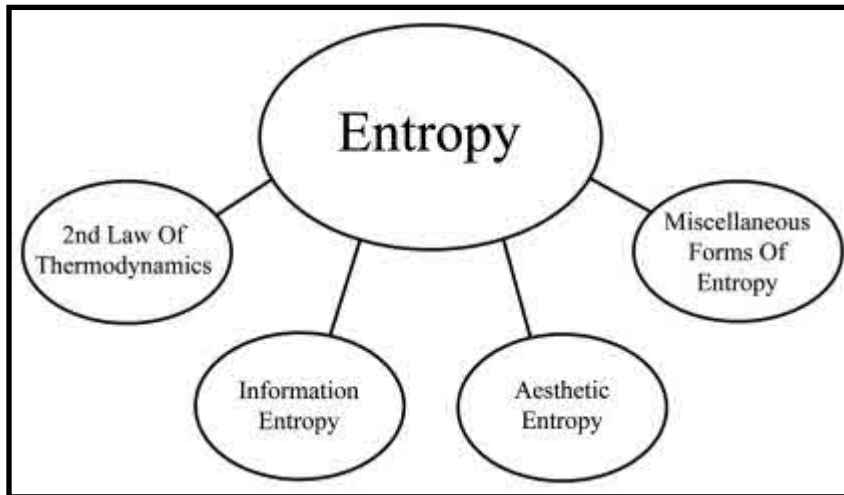
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## How Evolutionists Misunderstand Entropy

by Timothy R. Stout

It has always amazed me how unconcerned evolutionists seem to be about entropy and the problems it poses both for a natural origin of life and for macroevolution. The argument from entropy is one of the most powerful arguments against the spontaneous formation of life from a random association of non-living chemicals.

Entropy, as understood from a philosophical, non-mathematical perspective, is simply the principle that random changes to an organized system of any kind tend to destroy its order. Furthermore, the more organized a system is, the harder or more unlikely it is for a random change to increase its order. This principle is extremely broad. It applies to



*Entropy is a general phenomenon which expresses itself in a variety of domains. However, the expression of entropy in any one domain is limited to that domain. Entropy cannot be transferred or converted from one domain to another.*

any form of organized system.

### Thermodynamic entropy

Entropy was initially discovered in the study of heat engines. In a heat engine, the amount of useful energy produced by the engine

will always be less than the energy initially present in the fuel consumed by the engine. This observation led to the second law of thermodynamics, which in turn introduced the principle of entropy (Reif, 1965, pp. 195, 304). A scientist named Ludwig Boltzmann made a statistical analysis of the behavior of molecules in a large mass of gas. He showed how a collection of these molecules represents a higher level of organization when they are at a high temperature than when they are at a low temperature. The natural

tendency is for heat energy to flow from a hot source to a cold source. The mathematical description of this tendency was called entropy. Boltzmann was able to derive this mathematical description from a statistical analysis of the behavior of gas molecules under varying conditions (Reif, 1965, p. 162).

### Information entropy

During the late 1940's Claude E. Shannon was a scientist working for Bell Labs. He had the responsibility to determine the maximum data rate at which digital information could be sent reliably across telephone lines. Noise would corrupt the data and he was concerned about the impact of noise on the reliability of data transmission. In performing statistical analyses on the corruption of digital information, he ended up with certain formulas that were very similar to Boltzmann's. In particular, the mathematical description of one of the traits Shannon derived corresponded to the mathematical

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## 2008 CSI/FACT Dinosaur Dig

by T.P. Beh

Wrapping up on July 27, it was another successful and highly enjoyable dinosaur dig. The 22 people, who came from all over the country to participate in one of the Creation Studies Institute's (CSI) weeklong, "hands-on" creation adventures, found a great variety of fossils.

And, while not the greatest number of pre-historic remnants unearthed by CSI groups over the years, it may well have been the

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## Evolutionists and Entropy

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description of entropy in thermodynamic systems. So, Shannon also called this trait entropy (Anonymous, 2005). More technically, though, it is information entropy and not thermodynamic entropy.

### Aesthetic entropy

Works of art are organized. Music, painting, and dance are typical representatives of works of art. Unlike science, there is much subjectivity in what constitutes the rules of art. Nonetheless, art still has very specific rules and an artist can spend a lifetime studying them and mastering them. Now, according to entropy, a random change tends to destroy existing order. Thus, a random blast on a trumpet during the performance of a Mozart symphony will invariably be out of place and detract from the performance. It is extremely difficult for a random event to increase the order of an extremely organized work of art, such as a Mozart symphony. This is because of aesthetic entropy. Likewise, aesthetic entropy makes it difficult for random events to improve on the quality of any work of art.

### Miscellaneous examples of entropy

The above three examples are not unique. According to the general principle of entropy, any form of organization subject to random changes is subject to the effect of entropy. That is, the random changes will tend to destroy its order. Thus, something as simple as arranging the furniture in a

house so that it is practical to use and pleasing to look at is subject to entropy. If a woman hires some teen-aged boys to move her furniture from an old house into a new house and if the boys randomly place the furniture in its new location, it is very unlikely that they will place it in a manner that would please the woman. This is yet another form of entropy. Perhaps we could call this *interior-decorating entropy*.

In truth, the number of situations in which entropy applies is limited only by a person's creativity and imagination. Anything which can be organized is capable of being disorganized by random changes.

### A vital observation

There is an observation which should be evident from the above discussion, but which is frequently overlooked. There is no mechanism to transfer entropy back and forth between unrelated forms or domains of its expression. The rules of entropy applying to heat engines do not apply to Mozart symphonies. The rules of entropy applying to coded information being transferred across a telephone line do not apply to interior decorating. This is important to understand, because evolutionists try to get around the difficulties entropy presents to evolutionary theory by treating entropy as an independent entity, one which can be transferred between its different manifestations.

### The perspective of the evolutionist

A living cell capable of sustaining independent life represents an extremely complex

system. Evolutionists claim that this organization is the result of cumulative progress made through mindless, undirected, random changes to an existing structure. However, such behavior would appear to contradict what we understand about entropy. Random changes, such as mutations to the DNA of a cell, should destroy order, not increase it. So, how do evolutionists explain the apparent contradiction?

Robert Shapiro is a chemistry professor at New York University. He summarized the traditional position of the evolutionist as follows:

At first glance, living things appear to be in a horrid state of improbability, greatly in violation of the Second Law of Thermodynamics....Can this state of affairs be reconciled with the second law? The answer is yes, rather easily. Living things do not exist as a closed system, isolated from their environment....We say that life receives a supply of free (meaning available) energy from the sun, and uses this energy to maintain and increase its state of organization....There is a vital message in this story. Improbabilities that are hopeless in terms of random events, such as the formation of only L-form amino acids from simple chemicals, can readily be achieved if a suitable energy supply is available....The question is *how* does the sun's energy sustain evolution?....Matter driven by energy in an open system can go on to higher and higher levels of organization....Ilya Prigogine...has stated that a prebiological system may evolve through a whole succession of transitions leading to a hierarchy

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of more and more complex and organized states. (Shapiro, 1986, pp. 209–211)

This summary has a fundamental flaw. Shapiro talks about the organization of living systems as appearing to violate the second law of thermodynamics. This is not true. The second law of thermodynamics governs all of the standard chemical operations taking place in a living cell. A cell operates very consistently within standard chemical equilibrium principles. There is no violation of any thermodynamic principles within a living cell in any manner or at any time.

However, a cell *is* extremely organized. The best representation of the organization of a cell, though, is not in the separation of left-handed and right-handed amino acids. Rather, the best representation is in the information contained in the genetic code of the cell, along with all of the components needed to use and duplicate the information. The degree of organization represented by the information stored in the simplest living cell is effectively beyond human comprehension. Hence, according to the principle of information entropy, it should be effectively impossible to generate this information by chance. For instance, no informed person in his right mind would expect that random noise on a telephone line could be used to generate the information contained in the DNA of even the simplest bacterium. This would particularly be the case if the information needed to be generated in a single step — which, as we shall see, it does.

So, how do evolutionists account for bacterial DNA? How do they get around the problem of information entropy? It is simple. They treat entropy as an independent entity which can be transferred between its different forms. Thus, a decrease in entropy associated with a fuel source is equated to the organization present in an information-driven system such as a cell. In other words, thermodynamic entropy is assumed to be convertible into information entropy.

However, we have already shown that this is false. Entropy related to heat engines has nothing to do with entropy related to a Mozart symphony or to an information sequence.

Thus, Shapiro's entire train of thought is based on a fallacy. His appeal to self-organization, as proposed by Prigogine, is

a smoke screen. We saw in a previous issue of *Creation Matters* that Prigoginian self-organization is a localized phenomenon, one which is limited in degree and duration. In real life Prigoginian self-organization is not capable of the endless series of steps required in the supposed evolution of a random combination of chemicals into a living cell (Stout, 2008).

There is a tendency by both creationists and evolutionists to treat entropy as a manifestation of the second law of thermodynamics. Thus, Shapiro talked about the organization of a cell violating the second law of thermodynamics. This is backwards. Entropy is not a manifestation of the second law of thermodynamics. Instead, the second law of thermodynamics is the manifestation of entropy within a domain related to physical systems such as heat engines and chemical reactions. Entropy is much broader than the second law of thermodynamics. Thus, a spontaneous appearance through random

**Entropy is not a manifestation of the second law of thermodynamics ...**  
**Entropy is much broader than the second law of thermodynamics.**

processes of the extreme organization within a cell would violate the principle of entropy, not the second law of thermodynamics.

Since evolutionists depend on a blurred distinction between the various forms or domains of entropy in order to sidestep problems related to entropy, it is important that creationists not copy this example. So, we should talk about entropy, or even better, information entropy, as the major problem facing evolutionists. We should only refer to the second law of thermodynamics in the context of thermodynamic processes. It is important that we do not speak of the second law of thermodynamics as a synonym for entropy in its various manifestations.

**Two pounds of information, please?**

Because of its importance, it is worthwhile to expand on the distinctions between thermodynamic entropy and information entropy.

Information is not a physical phenomenon. It has no mass and it has no energy. This contrasts with physical objects, which do. However, even though information is

immaterial, its reality is certain. It can be measured and its effects quantified. "Many scientists therefore justly regard information as the third entity, alongside energy and matter." (Gitt, 2005, p.49) Since information is not a physical phenomenon, it is not subject to physical laws. It cannot be heated. Neither can it be accelerated or weighed.

This is important: since information is not a physical property and, since it is not subject to physical laws, then information entropy is a distinct phenomenon separate from thermodynamic entropy. The two are *not* equivalent and *they do not convert back and forth*. It is this truth that invalidates evolutionists' traditional understanding of entropy.

A cell may be viewed as an information-driven machine. It is built and operated according to plans contained in the information stored in its DNA. To function, a cell not only requires the presence of an incomprehensibly large body of information stored in its DNA, it also must be able to extract and use this information. Among the components needed for a cell to do this are a ribosome, over twenty kinds of synthetases, twenty kinds of transfer RNA, and ATP molecules for a controlled energy source as well as many others.

The problem facing the evolutionist is exacerbated by the complexity of a decoder. Even if one ignores the difficulties of forming everything but a ribosome, the task is still overwhelming. The structure of a comparatively simple bacterial ribosome requires the precise assembly of over 4,500 nucleotides and 800 amino acids (Voet, 2006, p. 977, calculated).

By contrast, even the avowed evolutionist Richard Dawkins acknowledged the impossibility of sequencing something as simple as a single, 146 amino acid chain from a hemoglobin molecule in a single step. The complete molecule consists of 4 chains (Dawkins, 1996, p. 45). He wrote his famous book, *The Blind Watchmaker*, in order to demonstrate that odds which are insurmountable under single-step selection become trivial under a series of steps called "cumulative selection."

Cumulative selection is simply a series of steps between generations where a distinct, positive selection advantage is offered for each step. "If evolutionary processes had to rely on single-step selection, it would never have got anywhere." (Dawkins, 1996, pp. 45–49) However, *cumulative selection*

is of no value for items of irreducible complexity. Thus, the initial appearance of a cell's stored information and all of the components required to use that information is an all or nothing proposition that must occur as a single step. Cumulative selection is particularly worthless when the initial step is effectively infinite in size.

Generating sufficient information to form a single chain of a hemoglobin molecule is trivial compared to the difficulty of generating the information to form a ribosome. The information required to form a complete information decoder is even yet more complex. Therefore, when Dawkins acknowledged the effective impossibility of sequencing a 146-amino acid chain of a hemoglobin molecule in a single step, he indirectly also acknowledged the greater impossibility of sequencing a functioning information decoder in a single step. This in turn indicates the impossibility of purely natural causes generating an information-based form of life such as we see on our planet. It shows the emptiness of Prigogine's and Shapiro's scenarios discussed earlier.

Evolutionary theory faces a double-edged sword concerning information. Information is worthless without a decoder to read and use it. However, a decoder cannot

be built unless the information to build it and a means to read the information already exist. The initial appearance of information, an information decoder, and a proper energy source to run the decoder must occur simultaneously in fully developed form.

Sometimes evolutionists propose that early living systems used a simpler genetic code compared to what we see today (Ikehara, 2002), one which would code for fewer amino acids. They are forced into this position because the code we see in use by all living organisms today is incredibly complex. Notice, though, that even with a simpler code there would still need to be a ribosome, provision for enough different kinds of amino acids to make up the protein sheets and coils used to build enzymes, various kinds of transfer RNA, a source of ATP molecules, and a huge body of stored information. Missing a single component would be fatal. Hence, all the parts would need to have made their first appearance simultaneously and in a single step. Dawkins admitted that evolutionary processes could never have gotten anywhere using single-step selection. Thus, evolutionary processes cannot explain the existence of an information-driven living organism.

Entropy is still a formidable barrier facing the evolutionist. Entropy makes it

extremely difficult, effectively impossible, for natural processes to produce the organization observed in living systems. There is only one way around these difficulties, "In the beginning God created the heavens and the earth." [Genesis 1:1]

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- Mr. Stout has a B.S. in physics from UCLA, has 30 years of experience in industry as a design engineer, and holds three U.S. patents in desalination technology. He is president of Creation Truth Outreach, Inc. ([www.creationtruthoutreach.org/](http://www.creationtruthoutreach.org/)).

## Dinosaur Dig

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most significant for creation science.

It was CSI's fourth public dinosaur dig held in conjunction with the Foundation for Advancing Creation Truth FACT, and its largest group of diggers to date. Unlike last year when daytime temperatures seldom dipped below 100 degrees, the group of Christians that descended on Glendive, Montana for the special outing found temperatures mostly in the comfortable 80's and the state greener than it's been in years. Torrential rains over the drought-stricken area in June had turned much of the badlands into lush, grassy meadows with wildflowers blooming everywhere.

Along with Otis Kline, FACT's president, and Vance Nelson, director of Creation Truth Ministries in Canada, it was once again my pleasure to help supervise the excavation work. Early on, one of the men discovered a fossil tooth that looked like a large, black .45 bullet slug with striations radiating from the top. About 1/2-inch in length, it closely resembled a much smaller one we found a day or two later, belonging

to a fairly small Cretaceous fish, the Parabula, that was more like 3/16 inches long. Further investigation indicates the large tooth probably belonged to an extinct species of alligator, like *Brachychampsa*.

Other fresh water fossils found included many turtle shell pieces, a *Champsosaurus* (narrow-nosed crocodile) vertebra, a large crocodile vertebra and scute, three garfish scales, and a clam. Among the plant fossils excavated were two pinecones from the Dawn Redwood (probably *Metasequoia dakotensis*, which now grows in China), three figs (*Guarea ceratops*), and some unidentified seed and tree material. Among the dinosaur fossils found were a Triceratops toe bone and frill, (unidentified) vertebrae, rib sections, other bone fragments, and tendons.

While past groups have found more and larger bones, none has discovered such a wide variety of fossils before. According to Vance Nelson:

The 2008 CSI dinosaur excavation in Glendive, Montana yielded fantastic evidence for a recent creation and Noah's flood. Creatures that live in water were found buried together

with land plants and animals, indicative of a massive flood deposit. With the exception of dinosaurs, the other plants and animals discovered are still around today, faithfully reproducing 'after their own kind,' with little or no variation over supposedly 65-67 million years. Furthermore, the fact that land organisms like redwoods, figs and dinosaurs were mixed with water creatures like crocodiles, alligators, fish, turtles, and clams, suggests the material was washed together from widely differing environments, not the result of a local river flood. In short, not one fossil from the '08 CSI dig helps the theory of evolution, but all provide powerful support for biblical creation and the Flood!

Below are listed the website addresses for the creation ministries mentioned in this article.

Creation Studies Institute  
[www.creationstudies.org](http://www.creationstudies.org)

Foundation Advancing Creation Truth  
[www.creationtruth.org](http://www.creationtruth.org)

Creation Truth Ministries  
[www.creationtruthministries.org](http://www.creationtruthministries.org)



## Math Matters

by  
Don DeYoung, Ph.D.



### How did Leibniz Use Mathematics in Evangelism?

**G**ottfried Wilhelm Leibniz (1646-1716) was one of the great mathematicians of all time. A Lutheran by faith, Leibniz sought to integrate his mathematical genius with theology. He studied binary numbers, seeing zero as representing nothing and the number one as representing the unity of God. His interpretation was that God had created everything from nothing, as expressed by the Latin term *ex nihilo* creation.

Leibniz accepted the literal, supernatural creation week as described in Genesis 1–2 and wrote,

For [the symbol] 0 can represent the void which preceded the creation...At the beginning of



the first day [the number] 1 existed, that is to say, God...Finally at the beginning of the seventh day everything already existed. This is why the last [day] is most perfect and the Sabbath...Thus 7 is written [in binary] as 111 without 0...It is even more remarkable that its

character has some relation to the trinity.<sup>1</sup>

During the era of Leibniz there was great interest in missions outreach, especially to China. Leibniz was drawn to early Chinese mathematical writings that included a form of binary arithmetic. He thought that by showing the Chinese people the binary-theology connections in their own literature, this would lead to a great revival. The Chinese remained respectful but largely unmoved by the efforts of Leibniz.

#### Reference

1. Swetz, F.J. 2003. Leibniz, the Yijing, and the Religious Conversion of the Chinese. *Mathematics Magazine*, 76(4), pp. 276-291. The actual quote is from pp. 285-286.

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[http://commons.wikimedia.org/wiki/Image:Gottfried\\_Leibniz\\_statue.jpg](http://commons.wikimedia.org/wiki/Image:Gottfried_Leibniz_statue.jpg)

### ...without excuse! by Timothy R. Stout

## The Testimony of Beauty

**I** have just finished listening to a DVD performance of Beethoven's 9<sup>th</sup> Symphony, played by Herbert Von Karajan conducting the Berlin Philharmonic Orchestra. The emotion and beauty of the third movement of the symphony literally gave me goose bumps. The rich, lyric melody played by the violins, with various counter melodies played by other instruments, is overwhelming in its beauty.

However, what interests me is how all of this relates to evolution. It is obvious how things like running faster or longer could have a theoretical survival value. But, the appreciation of beauty? I have never heard an evolu-

tionist satisfactorily explain how aesthetic appreciation can compete against more significant issues in a battle for survival.

It makes much more sense to believe that beauty has its origins in God's nature:

One thing I have desired of the LORD, ... that I may ... behold the beauty of the LORD, and to inquire in His temple. (Psalm 27:4)

Thus, Scripture teaches us that God has beauty and that we have the innate ability to behold or respond to this

beauty. When God created man in His image (Genesis 1:26-27), He included within man's attributes the capacity to appreciate beauty. Praise God for His goodness to us in allowing us to appreciate His beauty and the beauty He places in His creation!

Man's appreciation of beauty makes no sense from an evolutionary standpoint. It makes perfect sense from a Biblical standpoint. This should provide a clear testimony to the evolutionist that there is a living Creator God and that a person is without excuse who will not behold His beauty and respond by giving Him glory.



# Speaking of Science

Commentaries on recent news from science

Editor's note: All S.O.S. (Speaking of Science) items in this issue are kindly provided by David Coppedge. Opinions expressed herein are his own. Additional commentaries and reviews of news items by David, complete with hyperlinks to cited references, can be seen at: [www.creationsafaris.com/crevnews.htm](http://www.creationsafaris.com/crevnews.htm). Unless otherwise noted, emphasis is added in all quotes.

## Dark Energy May Be an Optical Illusion

Cosmologists can get rid of the burden of their worst imponderable substance, dark energy, if they are willing to jettison the Copernican Principle. *ScienceDaily* reported thinking by a team of Oxford physicists who make the apparent acceleration of the universe an artifact of our viewing position.<sup>1</sup> When distant galaxies are viewed without the assumption that earth occupies no privileged position, dark energy becomes unnecessary.

How radical is this suggestion? It replaces one outrageous belief with one even more so: "Although dark energy may seem a bit **contrived** to some, the Oxford theorists are proposing an **even more outrageous alternative**," the article said. "They point out that **it's possible that we simply live in a very special place in the universe** — specifically, we're in a huge void where the density of matter is particularly low. **The suggestion flies in the face of the Copernican Principle**, which is one of the most useful and widely held tenets in physics." This suggestion may "shock many scientists." The Oxford team hopes to test the idea.

It's always error-prone to try to rescue a theory with ad hoc appeals to imponderable substances. The Oxford team may be off the wall, but their off-the-wallness is only a matter of degree from the consensus theory of dark energy. This article also points out that astronomers don't know as much as they claim they do. The uniform distribution of matter and the Copernican Principle are shown to be assumptions — not observations.

1. American Physical Society. 2008. Dark energy: Is it merely an illusion? *ScienceDaily* (29 September). [www.sciencedaily.com/releases/2008/09/080926184749.htm](http://www.sciencedaily.com/releases/2008/09/080926184749.htm)

## Fastest Squirt Gun in the Fungi

A paper on *PLoS One* described the highest-speed flights in all nature: the spore discharge mechanisms in certain fungi.<sup>1</sup> A dozen scientists in Ohio worked to capture the action on ultra-high-speed cameras. It took 250,000 frames per second to reveal how fast the projectiles accelerate. The answer: from 20,000 to 180,000 g (where g = the acceleration of gravity). One species launches its projectiles at almost 2 million meters per second squared — winning the title of "fastest recorded flights in nature."

In their introduction, they discussed the variety of ways that fungi disperse their spores. Their language sounds downright military:

Mechanisms include a **catapult** energized by surface tension that **launches** mushroom spores, the **explosive** eversion of a pressurized membrane in the **artillery** fungus, and the discharge of **squirt guns** pressurized by osmosis.



Well, maybe squirt guns are for kids' playground battles, but army engineers might learn a few things from these lowly fungi. That's why the authors said the study of spore-discharge mechanisms has implications for biomimetics (the imitation of nature). Who else would want to imitate this?

The four species of fungi studied live on cow manure. They need to launch their spores out far enough onto the grass so that cows will eat them and spread them around. Each species has variations on the mechanism, but basically, the spores are ejected in a mass (either in a fluid or solid), within a sporangium, or capsule. The sporangium usually separates during flight. This trick, reminiscent of a spacecraft ejecting its cover after achieving orbit, allows the spores to minimize viscous drag on the ascent, then disperse on descent and landing.

How are such superlative accelerations achieved? The answer lies not only in the structure of the catapults, but in the viscosity of the specific sugars and ions in the spore capsules. The liquids allow the build-up of 4.4 atmospheres of turgor pressure. As the "**pressurized squirt gun**" undergoes a "**controlled and rapid rupture**," almost none of the energy is lost to friction. The "**supremely fast movements**" represent a "a series of **remarkable feats of natural engineering**," they said.

Engineers might be curious how these feats were designed. Their answer was, simply, they "have evolved." The authors stated this twice: "A variety of spore discharge processes **have evolved** among the fungi," and, "Squirt gun mechanisms are responsible for launching spores at the highest speeds and are most common in the Ascomycota, including lichenized species, but **have also evolved** among the Zygomycota."

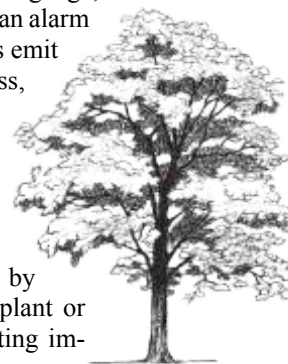
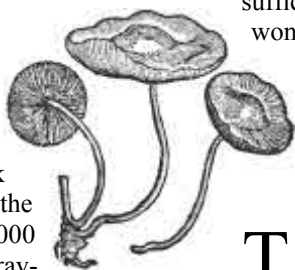
It evolved because it evolved — this is the theory of evolution in a nutshell. This is sufficient to explain the origin of any feat of natural engineering. It evolved. Darwin sure simplified biology, didn't he? Scientists used to have to produce explanations the hard way, with logic and evidence. Now, a simple two-word answer suffices for everything in the world that used to inspire awe, wonder, curiosity and motivation.

1. Yafetto, L., et al. 2008. The fastest flights in nature: High-speed spore discharge mechanisms among fungi. *PLoS ONE* 3(9): e3237. doi:10.1371/journal.pone.0003237.

## Trees Communicate with Aspirin

Trees talk to each other in a chemical language, but till now, no one realized they sound an alarm with aspirin. *ScienceDaily* reported that trees emit a vaporous form of aspirin, when under stress, that talks on the ecological network. This was an unexpected finding.

Scientists at the National Center for Atmospheric Research theorized that the methyl salicylate vapor, one of hundreds of volatile organic compounds (VOC) emitted by plants, is a distress signal. It may put the plant or tree into a kind of high-alert mode, stimulating im-



mune responses, and it may also signal neighboring plants to be on guard against a climactic or invasive threat.

Scientists knew that methyl salicylate was produced by plants, but did not realize till now that plants emit significant quantities of it into the atmosphere, and use it for signaling. The team detected the aspirin when studying VOCs in a California walnut grove. “These findings show tangible proof that **plant-to-plant communication** occurs on the ecosystem level,” a co-author of the study said. “It appears that plants have the **ability to communicate through the atmosphere.**”

If farmers can learn to read the chemical signals in vapors emitted by plants, they may gain a new way to quickly gauge the health of their crops before damage becomes visible.

The article did not mention evolution. Here is another amazing fact, right under biologists’ noses, that was unknown till now. If an observable, measurable phenomenon in the present can escape detection for so long, how can biologists speak so glibly about factors in mythical worlds millions of years ago? How could a communication network among brainless plants evolve? This was discovered by good old-fashioned field work. Taxpayers donated funds for the research. Darwin donated nothing.

1. National Center for Atmospheric Research/University Corporation for Atmospheric Research. 2008. Plants in forest emit aspirin chemical to deal with stress; Discovery may help agriculture. *ScienceDaily* (25 September). [www.sciencedaily.com/releases/2008/09/080918111316.htm](http://www.sciencedaily.com/releases/2008/09/080918111316.htm)

## Short-Term Flings at Saturn’s Rings

**T**he Saturn system is assumed to be 4.5 billion years old, like the rest of the solar system. What mean the delicate dances of ring particles that have been observed by Cassini lately? One would think moons and particles orbiting a planet had pretty much settled into a stable old age by now, but no: some things change on a daily basis, and Cassini’s cameras are catching the action. The question is, how long can this go on? Is the dance marathon at Saturn setting new records?

A Cassini press release shows gouges in the narrow F-ring that scientists say are evidence of a collision.<sup>1</sup> And just a couple of days earlier, another Cassini press release published pictures of delicate ring arcs among two of Saturn’s small moons, Anthe and Methone.<sup>2</sup> “This is further evidence that most of the planet’s small, inner moons orbit within partial or complete rings,” the article says. Are they exceptions to a rule of stability and senescence? No again; “The **intricate relationships** between these ring arcs and the moons are just one of **many such mechanisms** that exist in the Saturn system.”

Another Cassini press release shows the G-ring arc rounding the ansa. The article describes the destructive processes at work: “Micrometeoroids **collide** with the large particles, **releasing** smaller, dust-sized particles that brighten the arc. The **plasma** in the giant planet’s magnetic field **sweeps through this arc continually, dragging out the fine particles** and creating the G ring.”

Notice how rarely the scientists ever address the age question. It seems hard to believe that interactions this delicate and dynamic could persist for billions of years. Before spacecraft got there, scientists expected things to be simple and stable and old. Things like ring arcs, thousands of ringlets, ring spokes, and ring collisions caught them by complete surprise. Why are they silent on the

question about whether such phenomena could last that long? As with biological evolution, the answers are worded as vague promissory notes: “Understanding these interactions and learning about their origins **can help us to make sense of what we are seeing** in the Cassini images.” They need help, all right, especially with sense.

1. NASA/JPL/Space Science Institute. 2008. **Evidence of collision** (16 September). <http://saturn.jpl.nasa.gov/multimedia/images/image-details.cfm?imageID=3230>
2. NASA/JPL/Space Science Institute. 2008. Cassini images ring arcs among Saturn’s moons (5 September). <http://saturn.jpl.nasa.gov/news/sig-event-details.cfm?newsID=869>
3. Jet Propulsion Laboratory / Space Science Institute. 2007. Cassini finds possible origin of one of Saturn’s rings (2 August). <http://saturn.jpl.nasa.gov/news/press-release-details.cfm?newsID=765>

## Living Better Bioelectrically

**E**lectric eels are inspiring a new generation of fuel cells. *ScienceDaily* reported that a remarkable fusion of engineering and biology may lead to tiny electronic devices that run on biology’s own energy currency, ATP.<sup>1</sup>

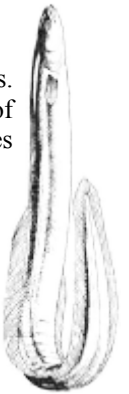
Engineers long have known that **great ideas can be lifted from Mother Nature**, but a new paper by researchers at Yale University and the National Institute of Standards and Technology (NIST) **takes it to a cellular level.**

The voltage-generating cells in an electric eel are called electrocytes. They work by pumping sodium and potassium ions in and out of the cell membrane through specially designed channels or gates. The cells are then stacked in series, to build up voltage, and in parallel, to build up current. The result? An electric eel can generate 600 volts – enough to knock a horse off its feet.<sup>2</sup> Electric eels and other forms of electric fish use their powers primarily at lower levels for navigation, communication, and even courtship.

The Yale-NIST team is using a “systems biology” approach, considering the overall context of function, to understand and build on biological technology. Of seven types of channels in the cell membrane, the specifications of each are being examined: reaction time, density in the membrane, and more. “Nerve cells, which **move information rather than energy**, can fire rapidly but with relatively little power,” the article said, whereas “Electrocytes have a slower cycle, but deliver more power for longer periods.” Tweaking the specs in engineering models allows bio-engineers to optimize voltage production for human applications.

The article not only ignored evolution completely, it seemed positively fixated on design. “Applying **modern engineering design tools** to one of **the basic units of life**, they argue that **artificial cells could be built** that not only **replicate the electrical behavior of electric eel cells** but in fact **improve on them**,” the body of the story began. David LaVan, NIST engineer, put it this way: “Do we **understand how a cell produces electricity** well enough to **design** one — and to **optimize that design**?” This is reverse engineering – which implies intelligent design. An engineer has to see and appreciate design to want to emulate it.

In this case, engineers don’t have to copy the design with their own components made from scratch. They can take parts from existing off-the-shelf technology and adapt it for human-designed applications. They can use engineered proteins to build membranes. They can tailor bacteria or mitochondria (cellular power-



houses) to produce ATP for energizing the reactions. They can modify electrocytes to produce continuous electrical current instead of pulses.

“Nerve cells ... move information rather than energy.” Did you catch that? Your body is wired for the intranet as well as for power. An interesting question comes to mind. If an extraterrestrial engineer were to land in the lab and study the eel and the biological electronics designed by humans, would it know where the evolution stops and the intelligent design begins?

Answer: yes, it would know that evolution stopped at the science door and intelligent design produced the whole show. Evolution as a concept would be the trash can for explaining mistakes and degeneration.

1. National Institute of Standards and Technology. 2008. Artificial cells: Models of eel cells suggest electrifying possibilities. *ScienceDaily* (3 October). [www.sciencedaily.com/releases/2008/10/081002172534.htm](http://www.sciencedaily.com/releases/2008/10/081002172534.htm)
2. National Geographic. n.d. *Electric Eel Profile*. <http://animals.nationalgeographic.com/animals/fish/electric-eel.html>

## Flightlessness Evolved Four Times

An article on *ScienceDaily* claims that the famous flightless birds — African ostriches, Australian cassowaries and emus, New Zealand kiwis and South American rheas — are unrelated.<sup>1</sup> There was no flightless common ancestor. They lost their ability to fly independently, scientists say, because of “parallel evolution.”

This would also mean that emus are more closely related to flying birds than they are to ostriches — even though they resemble ostriches. A conventional evolutionary idea is a casualty of this view. The article explains,

Previously, the ratites [including emus] were **used as a textbook example of vicariance**, a term that describes the geographical division of a single species, resulting in two or more very similar sub-groups that can then undergo **further evolutionary change** and eventually become very distinct from one another.

This flightless ancestor was thought to inhabit an ancient continent named Gondwana, which split into Africa, South America, Australia, and New Zealand. Its descendants evolved into their characteristic forms, the textbooks said.

The new genetic analysis (part of the NSF “Assembling the Tree of Life” Project) suggested to evolutionists that flying birds flew to the new continents after the breakup of Gondwana, and lost their flying abilities independently. That raises new questions, the article said: “For example, **why did these birds evolve into such similar organisms in such different environments?**” They did not even think to ask such a thing before now. “But nobody would have asked that question without the type of data we’ve collected, which raises the question in the first place.”

Flightlessness is a *loss* of function — a downward trend — that is easier to explain than flight, a *gain* of function. Even so, notice how evolutionary theory and geological speculation about millions of years led scientists down a primrose path to folly. It was not the data that led to the textbook evolutionary view: it was the absence of data.

One needs to ask of what value evolutionary theory was in the first place. Why does one need to even continue thinking ‘Darwinly’ after so many upsets? The remarkable similarity of

emus and ostriches (despite their genes) might lead an independent thinker to propose that they were independently created. If science is supposed to follow the evidence, why not at least consider the possibility?

1. University of Florida. 2008. Long-held assumptions of flightless bird evolution challenged by new research. *ScienceDaily* (7 September). [www.sciencedaily.com/releases/2008/09/080903172152.htm](http://www.sciencedaily.com/releases/2008/09/080903172152.htm)

## Butterfly Wings Xeroxed

If you can’t build it, copy it. Scientists have had a hard time reconstructing the photonic crystals that make butterfly wings shimmer with light, so they made, in effect, a carbon copy. *PhysOrg.com* described how scientists at Penn State made impressions of the regularly-spaced geometric shapes from a butterfly wing and transferred it to glass, leaving a “positive mold that looks the same as the butterfly wing from the top.”<sup>1</sup> Maybe instead of biomimetics this could be dubbed biomimeographics.

What do they want to do with their replicated photonic crystal? They have their eyes on semiconductor devices, infrared sensors, solar energy concentrators, and other things no one has thought of yet. What they know is that the “structural color” reflected by these crystals will be pure and intense. That’s bound to be useful or just pretty.

True science seeks to understand a natural phenomenon with observation, equations, and experiments, with an eye toward improving human life. It’s not necessary to tell a story about how the butterfly invented a technology that human intelligence can photocopy but not yet engineer.

1. Marquit, M. 2008. Butterfly wings may help scientists better understand photonic crystals. *PhysOrg.com* (4 September). [www.physorg.com/news139741656.html](http://www.physorg.com/news139741656.html)

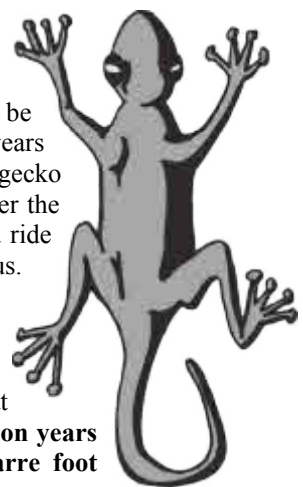
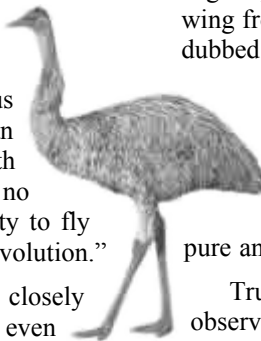
## Fully Gecko 40 Million Years Earlier?

Amber, or fossilized tree sap, usually contains remnants of insect parts. One piece, mined in the jungles of Myanmar, contained the foot of a gecko — alleged to be 100 million years old. That’s 40 million years older than the previously-claimed oldest gecko fossil.<sup>1</sup> This critter may have skittered under the feet of dinosaurs. Maybe it even hitched a ride by walking on the underside of a *Diplodocus*.

Examination of the foot pads shows the same lamellae that give modern geckos their ability to walk across ceilings. To *ScienceDaily*, this could only mean one thing: “that geckos were definitely in Asia **by 100 million years ago, and had already evolved their bizarre foot structure** at that time.”

The discoverers from Oregon State and the London Natural History Museum estimate the juvenile specimen could have grown to about a foot long as an adult, comparable to living species.

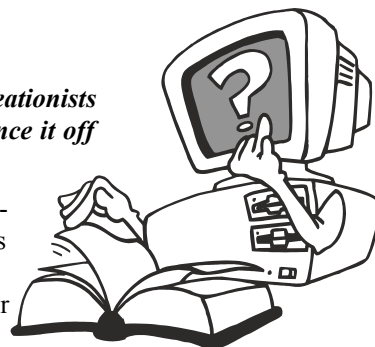
Speaking of the Spiderman abilities of the gecko, the article stated that “Research programs around the world have **tried to mimic this bizarre adhesive capability**, with limited success.”



# What Are Creationists Thinking about ...?

*As new scientific discoveries make the headlines, have you ever wondered how your fellow creationists are reacting? Have you ever thought of a “crazy” new idea about origins and wanted to bounce it off another creationist?*

Now you can keep in contact daily with creationists from all around the world. The Creation Research Society sponsors **CRSnet**, an online community of CRS members who have e-mail access to the Internet. Not only do participants discuss the latest scientific findings related to origins, but they also receive news about the CRS — its research, publications, and activities — and other creation-related news.



For more information, send an e-mail message to Glen Wolfrom at [contact@creationresearch.org](mailto:contact@creationresearch.org).  
*Participation is limited to CRS members in good standing.*

How did this inimitable ability arise? “It’s **not known exactly how old this group of animals is, and when they evolved their adhesive toe pads.**”

But does this fossil really provide evidence that evolution produced a gecko, with its innovative adhesive feet? Certainly not directly. The specimen was 100% gecko — and it appeared 40 million years earlier than evolutionists thought, according to their own timeline. It’s not clear, therefore, how or why this fossil is “**shedding additional light on the evolution and history of these ancient lizards** that scampered among the feet of giant dinosaurs then and still are common in tropical or sub-tropical regions all over the world.”

If you are tired of the evolutionists’ tiptoe dance around falsification with the falsetto jingle that the latest discovery is “shedding more light on evolution,” then let’s all shout in *basso profundo*, “Let there be light!” The light is shining, but it is shining everywhere *except* on evolution.

Fossil after fossil has proven older and less evolved than any honest evolutionist would have predicted. Nowhere do we find them evolving into something else. All their equipment is there from the start. At first appearance, this gecko was all gecko, just like the first bat was all bat, the first frog was all frog, the first bombardier beetle was already armed and dangerous, the first horseshoe crab was all horseshoe crab, the first platypus was all platypus, the first penguin was all penguin, the first jellyfish was all jellyfish, the first crustacean was all crustacean, and the first comb jelly was all comb jelly, and on and on and on, etc.. In each case, the evolutionary paleontologist declares that the fossil is “shedding light on evolution.”

Let’s follow the light, then. If trends keep up, every kind of animal will trace its ancestry to the Cambrian or before. They will all be seen to burst onto the scene, fully formed, without ancestors. The light shed on evolution will show it to have been essentially instantaneous. In the asymptotic limit, evolution under the lights will be seen clearly. It will come into sharp focus. It will read: CREATION.

1. Oregon State University. 2008. Oldest gecko fossil ever found, entombed in amber. *ScienceDaily* (3 September).  
[www.sciencedaily.com/releases/2008/09/080902163920.htm](http://www.sciencedaily.com/releases/2008/09/080902163920.htm)

## Plants Have Thermostats

**P**lants, being stuck in the ground, have few options when it gets hot. They may not be able to move into the shade like animals, but they know how to cope. They have a built-in thermostat that acts like a fire prevention department. *ScienceDaily* tells the story.<sup>1</sup>



Researchers at Michigan State identified a protein named bZIP28 that lives in the cell around the endoplasmic reticulum (ER), a bundle of tubes and tunnels that acts like a protein assembly, storage, and distribution center. This little protein acts something like a firehouse dog on a leash, tied to the walls of the ER. When the temperature reaches a certain point, the leash is cut, and the dog runs off into the nucleus, where he barks, so to speak, and sets off a chain reaction. According to an MSU biochemist,

The bZIP28 protein is anchored in the endoplasmic reticulum, away from its place of action ... But when the plant is stressed by heat, one end of bZIP28 is cut off and moves into the nucleus of the cell where it can turn on other genes to control the heat response.

Researchers found that cells without the firehouse dog died when the temperature rose above a certain level. Another researcher on the team remarked, “We’re finding that heat tolerance is a more complex process than was first thought.”

Science makes progress when researchers leave the shrine of Darwin and examine the details of plants and animals with design in mind. Now that we are beginning to unravel the complexities of just one subsystem of plants, the heat response, we might be able to engineer it to allow desirable plants to grow in arid climates for the good of the people. This is how science should be done.

1. Michigan State University. 2008. New gene found that helps plants beat the heat. *ScienceDaily* (14 October).  
<http://www.sciencedaily.com/releases/2008/10/081006180803.htm>

## Your Guide to the Grand Canyon: A Different Perspective

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## All by Design

by Jonathan C. O'Quinn, D.P.M., M.S.

## Embryonic imprinting

**I**n many kinds of animals, youngsters learn important cues about the world about them, sometimes prior to birth or hatching. These include such things as mother-kin recognition, auditory imprinting in birds, and recognition of safe foods.

Cuttlefish hatch without any parental care but possess yolk reserves that provide nourishment for the first several days of life. It is important for young cuttlefish to quickly learn how to find food for themselves. Although young cuttlefish innately prefer to eat shrimp, even one visual exposure to crabs in their environment after hatching can change this food preference. This imprinting maximizes the young cuttlefish's chances of survival by obviating the need for trial/error food selection.

The cuttlefish egg envelope is stained black with ink early on to make the eggs less noticeable to predators. However, by



Two cuttlefish interacting at the Georgia Aquarium.  
Photo by David Iliff.

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[http://commons.wikimedia.org/wiki/Image:Georgia\\_Aquarium\\_-\\_Cuttlefish\\_Jan\\_2006.jpg](http://commons.wikimedia.org/wiki/Image:Georgia_Aquarium_-_Cuttlefish_Jan_2006.jpg)

late embryonic development, the egg envelope becomes more transparent, at the same time that the eyes of the cuttlefish have fully developed. During this last stage of development, embryonic cuttlefish can see clearly and imprint right away upon non-shrimp prey such as crabs in the vicinity of the eggs. This facilitates post-hatching food imprint-

ing, allowing selection of safe and natural prey if few shrimp are to be found in the vicinity.

The random chance offered by evolution cannot provide a viable explanation for the remarkable and coincidental timing of the maturation of the embryonic eye structures with the transparency of the egg envelope that allows for more efficient prey selection.

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1. Darmaillacq A., R. Chichery, and L. Dickel. 2006. Food imprinting, new evidence from the cuttlefish *Sepia officinalis*. *Biol. Lett.* 2:345–347.
2. Darmaillacq A., C. Lesimple, and L. Dickel. 2008. Embryonic visual learning in the cuttlefish, *Sepia officinalis*. *Animal Behavior* 76:131–134.