

A Clockwork Mutant

Once upon a time there was a superstar clergyman in Montana. He actually managed to convince a local school board to allow him to make a multi-media presentation on Intelligent Design which turned out to be all the rage. According to a local journalist the vicar "questioned the process of natural selection at the molecular level," as well as "amino acids organizing into proteins with significant biological consequences, without the presence of a designer."¹ Why are non-scientists allowed to advise school boards on the teaching of science?

Creationism is a kind of insurrection against the widespread veneration of DNA both as the force behind species inception and as the dynamic blueprint from which humans are engineered. Adherents aren't so much against science itself but the broad idea that Darwinist evolutionary theory "explains it all". The trendy churchman wouldn't dream of denying the body's vibrant, harmonic, and elegant components rely on the correct assembly of amino acids on the basis of linear sequences of nucleic acids. He just thinks such a delicate and artistic contrivance requires the hand of God and that biologists shouldn't use the reality of DNA to try to disprove God's existence.

This debate between atheists and Christians is somewhat older than the discovery of DNA, but isn't it ironic the two sides share a virtually identical philosophical groundwork?² They both heavily rely upon the concept of *mechanism* to explain their views. Charles Darwin himself did not subscribe to a mechanistic view of living things. Because modern evolutionary biologists have actually changed parts of Darwin's theory, they are now referred to as neo-Darwinists. With the yawning holes in neo-Darwinism creationism appears attractive as an alternative mechanistic approach resulting in the appearance of God in the science classroom.

In the middle ages the development of the mechanical clock inspired scientists to look into the cosmos and apply mechanical principles to it also. Gradually God himself was given credit for creating a cosmic mechanism just as humans had created this zenith of mechanical achievement, the timepiece. And we humans were part of God's masterpiece, machines created out of sand and water. William Paley's famous 1802 *watchmaker analogy* was eventually contradicted by Darwin's theory of *natural selection* raising the question of how today neo-Darwinists have managed to return to the machine.

Their backwards looking theory is even out of step with the rest of science which left behind Newtonian physics with the arrival of thermodynamics, relativity, and quantum mechanics. In the 1930s the neo-Darwinists, breaking with Darwin, became enthralled by the idea of a clockwork mutant just as everyone else was moving away from the idea of simple machines, what with the inability of scientists to define the constituents of the atom, its divisibility and unprecedented intensity of energy, the uncertainty principle, and the discovery of non-contact forces.

Neo-Darwinists are quite proud of having managed to remove God, the mechanic, from the universe while retaining His *random mutation* contraption. If random mutation of

DNA, in conjunction with natural selection, is indeed the apparatus that determines who we are then organisms themselves have no control over how they exist or how their species progress. How can serious scientists assert that the species of our planet derive solely from random errors occurring in the replication of DNA? A particular parrot known as the Hyacinth macaw breaks open a nut that for a human would require a sledgehammer. Is this purposeful design of the macaw's muscles and beak really an accident brought about by odd mutations? Wouldn't it have taken millions of coding errors to arise before the right ones came and at last the parrot could have supper? Then there is the case of the camel knee. It is somewhat startling to neo-Darwinists that calluses appear on camel's knees during embryo development.³ How can dogmatic scientists explain why a random mutation occurred in exactly the right place, since camels must kneel in the sand rather frequently? The occurrence of the ideal mutation at just the right time and place is so incredible that the odds against it are beyond imagining. It is no surprise that Christians take a leap of faith and use the Almighty to explain the marvel.

Even if it turns out that organisms do have some as yet unproven ability to create and control one's own features, this does not remove the importance of natural selection which does not necessarily have to exist within the context of random mutation. Although powerful in its position in Charles Darwin's theory, natural selection does not create traits. It merely reinforces them. This is one of the most poorly understood aspects of evolutionary theory. If there is no change in the first place then nobody can select that change, not even Mother Nature herself. Neo-Darwinists point to various processes such as genetic drift, sexual recombination, symbiosis, and epigenetics to explain certain aspects of the development of an organism, but none of these are capable of introducing completely new characteristics, which is necessary before natural selection can even take place, not to mention the creation of new species.

Then there are the scientists who argue over the issue of instinct. Take language for instance. Is the natural ability to command language to a greater or lesser degree than one's neighbor inherited? Is this inheritance triggered by random mutations in the brain? Going back to the beginnings of speech in humans, one must be reminded that speech is a two-way street. There would have to have been *two* simultaneous random mutations that occurred: one to enable speech and one to understand it. Given the miraculous nature of even one useful random mutation happening at the right time, now we're expected to swallow the proposition that two took place at the same time. Wouldn't it be more plausible to suggest that humans are somehow able to pass on learned skills to their children before their birth? And there are not just skills to consider, but also behavioral patterns. Is it really likely that there are genes for courage, taboo, conformity, reason, and art? Isn't it more likely that the experiences of one's progenitors are somehow passed on to embryos?

Or should biologists take a leap of faith in the manner of Christians? Maybe biologists should bring faith and miracles into the science laboratory. After all, there are many biologists who *do* believe in God. Why not just remove the atheists and have done with it? The only difference between the two factions is that instead of a supernatural being grafting legs onto fish a DNA fart makes the new species.

If one is forced to choose between the omnipotent watchmaker and the confused scientist who would you want to be in charge of your genes? That omnipotent guy looks to be a little smarter, huh? As long as animals and plants are seen as pieces of equipment to be reverse-engineered with no clear understanding of their genesis people will be tempted to turn to God for enlightenment rather than a theory containing astronomically implausible accidents. God also comforts us by making us feel like our lives, filled with obstacles and triumphs, are stretching and achieving in the glow of His understanding and appreciation. Life is a lonely endeavor and knowing that an omniscient being walks with us through our struggles is quite reassuring. Neo-Darwinists are mistaken when they borrow this kind of wishful thinking and try to *square the circle* what with William Paley's watchmaker mechanism having to be crammed into our bodies. Reasonable people, aghast at the sight of such an ugly debate, turn away, pretending the unholy squabble isn't happening.

Maybe former Prime Minister Tony Blair was right. Maybe there's a *third way*.

One may remember that there was once an amateur naturalist in the nineteenth century whose observations, long-term resolute research, and vigilant reasoning resulted in one of the most profound books ever written. Published in 1859 and entitled *On The Origin of Species*, its author was that rather controversial figure, Charles Darwin.

One of the more interesting of Darwin's contemporaries, Thomas Henry Huxley, was an autodidact anatomist who called himself "Darwin's bulldog" because of his public debates in support of evolution in the context of the descent of species, but in fact disagreed with him in a few critical respects.⁴ One of these disagreements was over the way in which organisms pass on their traits. Huxley clearly supported a mechanistic approach but Darwin resisted.⁵ Individual will shapes our actions, both in the moment and in evolution.⁶ Darwin went on to conclude that delicately balanced arrays of cells, tissues and organs cannot properly function without a "coordinating power" that brings "the parts into harmony with each other."⁷

Another famous supporter of Darwin is yet another, this time modern, publicly renowned scientist who actually persists in disagreeing with him. Richard Dawkins, famous for his books *The Selfish Gene* and *The God Delusion*, wrote in an article that Darwin's idea is "nonrandom survival of randomly varying hereditary instructions for building embryos."⁸ Dawkins is mistaken because the idea to which he refers was actually promulgated by Austrian theorist August Weismann who suggested that natural selection depends on random variations in "germ plasm."⁹ In point of fact Darwin stated the opposite when he said, "Evolution occurs through the natural selection of numerous, slight, favorable variations; aided in an important manner by the inherited effects of the use and disuse of parts; and in an unimportant manner... by variations which seem to us in our ignorance to arise spontaneously."¹⁰

Darwinism is often associated with the concept of competition and it is indeed this predicament, along with an organism's bout with limited resources, which is the genuine

mother of invention. Darwin's paradigm has reason on its side; plants and animals adjust to difficult situations and impart what they've learned and the tools they've devised to their offspring. The successful lessons and tools become a part of a species and sometimes even result in a new species.

This notion is known as the *inheritance of acquired traits* and is sometimes called "Lamarckian" after one of the first evolutionary biologists, Jean-Baptiste Lamarck. Today he's bashed by scientists for having been a Creationist.¹¹ Darwin agreed with the inheritance of acquired traits but disagreed that God was involved.¹² Darwin never needed anything beyond nature to explain evolution, and also managed to avoid deterministic and mechanistic explanations. He trusted in the natural ability of plants and animals to determine their own form, albeit subject to natural selection. *On the Origin of Species* contains the declaration, "I think there can be no doubt that use in our domestic animals has strengthened and enlarged certain parts, and disuse diminished them; and that such modifications are inherited."¹³ Ostriches began kicking predators instead of flying away from them and so lost the ability to fly.¹⁴ Chickens don't live in mortal fear of cats and dogs because their ancestors learned not to dread them.¹⁵ Young sheepdogs that as of yet haven't been trained know instinctively not to run directly at a flock of sheep.¹⁶ One might cite instinct, breeding, and natural selection as the reasons, but one must always keep in mind that instinct, breeding, and natural selection do not create traits in the first place. Darwin could not countenance the idea of these *initial* changes coming about through an enigmatic and random procedure within one's body. He said, "Everyone knows that hard work thickens the epidermis on the hands; and when we hear that with infants, long before birth, the epidermis is thicker on the palms and the soles of the feet than on any other part of the body... we are naturally inclined to attribute this to the inherited effects of long-continued use or pressure."^{17 18}

Darwin saw evolution as a process in which species create themselves while living and adapting to physical forces. Referring to sea mammals Darwin suggests, "A strictly terrestrial animal, by occasionally hunting for food in shallow water, then in streams or lakes, might at last be converted into an animal so thoroughly aquatic as to brave the open ocean."¹⁹ Another case would be a flatfish, which includes the species of flounder, sole, plaice, and halibut, and look rather odd because both their eyes are on the same side of their heads. Citing the variability of a child's bone structure and proposing that one could adapt it to novel habits, flatfish shunted their eye sockets through successive generations. Darwin further expounds, "The tendency to distortion would no doubt be increased through the principle of inheritance."²⁰

Darwin further states that without the inheritance of acquired traits his theory is doomed. "For if each part [of the body] is liable to individual variations at all ages, and the variations tend to be inherited at a corresponding or earlier age — propositions which cannot be disputed — then the instincts and structure of the young could be slowly modified as surely as those of the adult; and both cases must stand or fall together with the whole theory of natural selection."²¹

In a way Charles Darwin is being punished for failing to do the one thing that he can not be blamed for failing to do, which is to explain how DNA works, since it hadn't been discovered yet. He described a process he called "pangenesis" which was discredited after his death. In the 1890s August Weismann proposed neo-Darwinism by insisting that an animal adjusting one's behavior could not change its genes.²² He mistakenly assumed that genes are the only method of inheritance and that an animal is not capable of adjusting them in accordance with its adaptations, enshrining a belief in a mechanistic system that dominates the world of evolutionary biology to this day. Neo-Darwinism became firmly entrenched in the 1930s when scientists fused the new science of genetics with natural selection.

Although Weismann's picture appeared quite convincing he didn't actually find any evidence for it! It was more like a leap of faith one associates with the religiously inclined. According to biologist and historian of science, Stephen Jay Gould, the only reason Weismann confined attribute transmission to genes was because he couldn't think of anything else. "We accept it, not because we are able to demonstrate the process in detail... but simply because we must, because it is the only possible explanation that we can conceive."²³

It is here that Richard Dawkins chimes in with his well known axiom that just because Creationists can't see human existence without divine intervention doesn't mean there aren't other possibilities.²⁴ The lesson here is that just because Dawkins and his fellow neo-Darwinists can't see how organic characteristics can be transferred without genes doesn't mean there aren't other possibilities.

The watchmaker has a companion known as *reductionism*. It is the method with which one can describe a machine and it's regularly applied to DNA to explain all data transfers between organisms. One "reduces" the machine to its main parts, one of which can then be reduced to its constituent parts, and so on, until one finally arrives at the nuts and bolts. Cell biologist Stephen Rothman, who has forty years experience, relates an anecdote of the vesicle theory of protein transport, describing a ridiculous circumstance wherein scientists, while devising a reductionistic model, created a behemoth hypothesis with fifteen to thirty mechanisms for moving a protein a few microns. Experiments to prove the hypothesis all failed. Yet scientists continue to stand by it regardless of contradictory evidence because it's the only way the protein can move within a mechanistic theory.²⁵ Again, the mechanistic approach is the dogma and downfall of the modern evolutionary biologist.

Aren't there any scientists who have developed hypotheses disregarding the reductionist paradigm? A start would be to discard the concept of contact mechanics, which demands that a cause must be both temporally and spatially contiguous to its effect. Even Darwin, in *On the Origin of Species*, criticizes Gottfried Leibniz for suggesting that Isaac Newton had introduced "occult qualities and miracles into philosophy" with the theory of gravity which appears to make it possible for matter to be effective without touching the thing it affects.²⁶ As we know today electromagnetism, gravity, and the weak and strong nuclear forces are all non-contact forces. Today's biologists are rather reminiscent of 19th cen-

ture physicists who stubbornly supported the notorious non-existent medium of æther that supposedly carried light.

The best analysis so far was supplied by accomplished physicist Walter Elsasser who was the first scientist to successfully explain the Earth's EM field. Elsasser pointed out that there was no law of science that precluded a non-contact force for traits and adaptation data transfers between parent and child.²⁷ Instead of mindlessly following the sheep of evolutionary biologists into the gene/æther trap Elsasser saw the simple concept of memory as being more credible. He remembered the statement of a physicist, James Croll, who in 1867 said, "No principle will ever be generally received that stands in opposition to the old adage, 'A thing cannot act where it is not,' any more than it would were it to stand in opposition to that other adage, 'A thing can not act before it is or when it is not.'"²⁸ Knowing that matter actually does act "where it is not," Elsasser theorized that it could also act "when it is not."

Although one may think only of the brain, memory may have a much wider manifestation. In the world of computers RAM talks to the processor but in the world of the living memory is defined as the past manipulating the future. When one recalls a past event, the brain recreates the state it was in when the event occurred, almost more like time travel than accessing a RAM chip because the brain thinks it really is in that past situation for the moment. That means an individual may have some control over the development of one's offspring simply by the way one lives one's life.²⁹ Referring to this issue of the growing embryo, science writer Matt Ridley observes, "Something, somewhere must be imposing a pattern of increasing detail upon the egg as it grows and develops."³⁰ Elsasser would have added that the level of detail necessary is absent in DNA, further raising the question, "from where is the past exerting its influence?"

In 1981 the Journal of Theoretical Biology printed Walter Elsasser's theory which solves many problems. If a remote memory hub is responsible for embryo development then it both allows for the passing on of acquired traits and removes the requirement for a design to exist in every cell of the body. DNA still contains superficial detail that individual cells require, but the deeper characteristics that define us are copied from our ancestors and then we ourselves decide which attributes, old and new, to pass on next.^{31 32} This *organismic selection* is Elsasser's companion to Darwin's natural selection.

In the 1980s the Director of Research at the French National Centre for Scientific Research, Miroslav Hill, unintentionally tested long-range data transfers among living organisms. He and his assistants were putting tioguanine, a toxic drug, in Petri dishes and then chucking in hamster cells to test their resistance. Also they were careful to set up two profiles of cells with only one line getting the toxin. Inevitably the unexposed cells multiplied and Hill needed somewhere to put the surplus. He found a dish that did have the toxin, one that was no longer being analyzed because all the previous occupants were now dead, into which he put the surplus, leaving them to die also. After three weeks dumping surplus in the dish Hill suddenly noticed that some of the cells had somehow managed to endure the tioguanine assault. Having grabbed his attention, Hill kept adding healthy cells to the dish and determined that each time a higher proportion lived. The

hypothesis arose that the unassailable cells had produced a new gene which allowed them to manufacture a protein that was able to repair DNA damage. Eventually all formerly unexposed cells placed in the dish were able to survive the poison by receiving comprehension of how to deal with it from their brothers, suggesting a shared accumulation of memory amongst them. Hill repeated the experiment several times with the same results leading him to find that data contained in genes are supplemented by long-distance "adaptive information".³³

One of biology's biggest peculiarities, the occurrence of parallel evolution, is neo-Darwinism's Achilles' heel. It's been suggested that the staggering similarity between placental and marsupial mammals, for example, is explained by environmental semblance.³⁴ How is it that comparable flora and weather conditions could trigger almost identical squirrels', moles', jerboas', wolves', and bovines' emergence separately on different continents? Isn't it more likely that adaptive information somehow travels between similar species around the world, allowing them to synchronize?

Having been objective in arriving at his conclusion regarding adaptive information, Miroslav Hill is the exception rather than the rule. Many biologists are incapable of seeing beyond the notion of contact mechanics. On one occasion investigators found that a plant that inherited mutant DNA from its parents demonstrated the wild type characteristic associated with its grandparents. They guessed that RNA provided a redundant duplicate of the grandparents' gene and subsequently periodical *The Scientist* reported that inheritance from RNA had been proven. Eventually they apologized to their subscribers, adding that scientists had merely shown an example of inheritance not mediated by DNA.³⁵ The six hundred pound gorilla in the room was that some inheritance might occur via a non-contact force.

Embryogenesis has been studied for centuries and its biggest surprise comes from embryonic recapitulation. Scientists observed the phenomenon as early as the 1790s. During development embryos go through phases resembling successive stages in the evolution of their distant ancestors, and this is hard for neo-Darwinists to explain. An embryo may resemble a worm early in its growth, and then resembles a fish, then an amphibian, etcetera. Darwin showed that these stages relate to the embryonic stages of previous species and not to the adult versions and this in turn has been confirmed by modern biologists. He was also studying embryos when he classified mammals, birds, and reptiles as, *quote*, "the modified descendents of some ancient progenitor, which was furnished in its adult state with bronchia, a swim bladder, four fin-like limbs, and a long tail, all fitted for an aquatic life."³⁶

Recapitulation was the proof that Darwin believed best-supported evolution, and it also supported the concept of the inheritance of acquired traits. Since natural selection appears to occur only after the birth of an animal one would expect to see variations in characteristics after that, but embryos do not vary. This directly contradicts the random mutation model. According to neo-Darwinism embryos also ought to experience natural selection since mutations should happen to them. Humans have swim bladders and fins during embryogenesis, traits that would have been rubbed out by natural selection eons

ago had they been subject to useful random mutations implying a different source for instruction on embryo development than DNA. That source must be a description of an immutable past biological history. If organisms are capable of improving themselves any changes would become apparent near the end of embryogenesis. These changes would then become subject to natural selection.

Again the question arises, "From where is the past exerting its influence?" Today scientists sidestep this question only to get bogged down in esoteric questions, like, "Was Charles Darwin wrong about natural selection?" Two philosophers, Jerry Fodor and Massimo Piattelli-Palmarini, recently published a book entitled *What Darwin Got Wrong*. They think they've demolished natural selection by pointing out that some traits in organisms get chosen by accident as part of a different selection. These traits are called *free-riders*.³⁷ The idea is similar to the process that occurs in the United States congress when congressmen deliberately add amendments to bills that have nothing to do with the main legislation in order to get a law passed that wouldn't otherwise get through. The book caused neo-Darwinists to bitterly grumble about heresy. Adam Rutherford, writing in the Guardian, complains, "The media love to give undue coverage to flimsy attacks on evolutionary science."³⁸

Natural selection is indeed a rather bizarre theory to try to tear down. The existence of free-riders doesn't cancel out the effectiveness of a theory anymore than the recalcitrant congressmen have perverted democracy.³⁹ Yet controversies in biology usually revolve around natural selection because it's taken for granted that DNA determines all we are and natural selection becomes the target of our frustration.

Perhaps memory is a better target. When we want to remember something we write it down. We've used tablets, paper, recording tape, and hard drives. These inventions and even language itself are used today by scientists as analogies with which they compare their theories. DNA not only appears to be a kind of language but it is catalogued onto hard drives, further entrenching the analogy. Many people instinctively know that there may be other forms of communication. In the 1960s there was a popular concept known as *extra sensory perception*. If such a process were to exist it would propagate as a non-contact force. ESP is difficult to prove. It is also hard for a scientist to get funding for a project that seems more appropriate to *Star Trek* than a real science laboratory.

Yet why should a scientist even want to research a topic suggested by an instinct? Perhaps scientists would do well not to ignore the lesson of the John Gummer scandal.

John Gummer was the United Kingdom's Minister of Agriculture, Fisheries and Food during the height of the Mad Cow crisis. In 1989 cows had been dropping dead for five years already. The rest of world had banned British beef and even UK McDonalds restaurants began *importing* beef so the poor British public wouldn't have to worry. Why did they do that? Why did the executives at McDonalds understand something that the British government did not? People were extremely worried that whatever was happening to the cows could happen to them. There was some superficial evidence for this, but scientists insisted that there was no direct evidence and the UK government took this as a

signal to support British beef and to try to convince the public to keep eating it. A politician's wishful thinking knows little boundaries, and in support of British beef Mr Gummer took his daughter in front of the national media and attempted to force her to eat a hamburger.⁴⁰ He failed. She wouldn't eat it.⁴¹ The entire nation watched this hideous sight and wondered how is it they understand something that scientists can't prove? Even Gummer's daughter knew something the scientists didn't.

As of October 2009 at least one hundred and sixty-five British residents have died of variant Creutzfeldt-Jakob disease as a direct consequence of the failure of British scientists to adequately analyze the situation and the UK government to act in the interests of its people.^{42 43} Yet any citizen, had one been given power, would have saved those 165 on the basis of one's instinct alone. As *Star Trek* character Captain Kirk has been known to remind Mr Spock, "Instinct is a command prerogative." So, shall we follow our instincts and escape from the fog?

Some geneticists today are excited about the field of epigenetics which recently has been exerting itself more than in its infancy in the 1970s. The past influences the present through gene expression caused by mechanisms other than changes in DNA. Some have described it as being like a light switch at the top of each gene that turns it on and off, although it's probably more appropriate to call them light dimmers rather than switches since it's more a case of intensifying or attenuating the influence of a given gene.^{44 45} It's thanks to epigenetics that a cell can become, for instance, a brain cell rather than a lung cell. There are several hundred distinct human cell types and without epigenetic switches they would all remain stem cells, since they all have the same DNA.⁴⁶

The other effect of epigenetics is the illusion of the inheritance of acquired traits. There have been several highly publicized studies, two of which, by coincidence, occurred in Sweden, that show animals that are placed in a certain environment will adjust their epigenetic switches for that environment and then pass on those switch settings to their children.^{45 47}

It has also been noted that there are many more epigenetic switches than there are genes. The human DNA genome numbers at about 25,000, but it's estimated that the epigenome, once it's mapped, will number in the millions and will require major advances in computing power in order to map it.⁴⁵

However, the big problem with epigenetics is that it seems to have a temporary effect because depending on environmental factors, changes may fade out over two or three generations.⁴⁵ It's also still a process that takes place in the context of contact mechanics. The best answer to the inheritance of acquired traits almost certainly lies in the realm of non-contact force. The upside is that scientists are constantly being forced to reconsider their tenets. Not only are acquired traits definitely being passed on, many geneticists are publicly, if quietly, acknowledging that Lamarck may have been onto something after all and researchers should have another look at his ideas.⁴⁷

As it happens someone was inspired by Lamarck to look deeper, back in the 1970s. At the time Rupert Sheldrake was the Director of Studies in biochemistry and cell biology at Cambridge University. He wondered about the nature of any non-contact force that may be involved. He decided to call the force *morphic fields* and that the generation of such fields and their stabilization would occur by their resonance with akin organisms. The more two animals resemble one another the greater the strength of a morphogenetic field and therefore the greater the resemblance of any given organ and body shape.

The elegance of this simple theory lies in its solving both the problems of the inheritance of acquired traits and the phenomenon of parallel evolution. It may even be the missing link underlying Carl Jung's theory of the collective unconscious. If the fields do not reduce with distance, animals on different continents would presumably be affecting one another, and possibly with effects that go beyond the physical.

Animal activity may demonstrate resonance with one's forebears and one's contemporaries of the same or similar species. Science experiments present evidence of these effects. Rats new to a test in a water maze have completed the test faster if other rats have completed the same maze previously. It has been shown that birds are more likely to realize the benefit of splitting milk bottle caps if previous birds have also discovered the tactic. Then there are those who outdo their antecedents on a specific IQ test though they're not any smarter.⁴⁸

The denial that DNA contains a blueprint of morphological development can be supported by the hypothesis that a species will establish a collective morphogenetic resonance and that an individual of that species can tune into the field as one might tune a radio. A feedback loop develops and strengthens with individuals adding their own experiences resulting in the steady addition of information over time, creating a universal database for the species.

Rupert Sheldrake's experiments are mostly in the sphere of biology. Since morphic resonance is a general principle of memory in nature, which includes nonliving things too, he realized that he should be able to find evidence for the phenomena while studying any self-organized morphic unit such as the formation of solid crystals precipitating from a solution.

The idea for this line of research came about because of a marvel arising from the man-made production of crystals. When a completely new type of crystal is created in one laboratory, the same type will spontaneously arise in a different lab. Many have heard the joke that fragments of newly created crystals travel from lab to lab on the beards of migrant chemists. Sheldrake says that once a prototype crystal is made a new morphic field makes it more likely that the same pattern will appear in crystals elsewhere.⁴⁹ Much research has now gone into this, giving greater credibility to morphic fields than ever before.

Rupert Sheldrake has become a popular figure among those of the new age movement. This makes him a rather controversial figure since scientists don't normally identify

themselves with those who subscribe to this worldview. However one must remember that Darwin is also still controversial and that, as his contemporary TH Huxley said, "It is the customary fate of new truths to begin as heresies and to end as superstitions." Not only is Sheldrake the subject of a hate campaign amongst his fellow scientists, but also some even declare his experimental results to be impossible to reproduce.^{50 51 52 53 54} These claims often turn out to be false and in any case this field of endeavor is extremely difficult to study with precision.⁵⁵

It will become apparent eventually whether the emperor is naked or clothed. If it is indeed our prerogative to use intuition then which hypothesis gets you through the night? The one that says every cell has to have a perfect description of the ever changing thing that is us, or the one that says memory is just another part of nature that living beings utilize to their benefit? Is it yet another random accident that the neo-Darwinian dogma holds supreme at exactly the same time that our own mechanistic tour de force holds the public in thrall, conforming to a Jobsian/Gatian paradise? Computers are often part of dystopian narratives. Could they be playing a similar role in this story? Harry Rubin, a professor at UC Berkeley, says the sequence of combinations in the DNA of *Aspergilla*, used in the production of penicillin, is "trans-calculational", which means it's beyond the ability of a modern computer to process.⁵⁶ This would suggest that the mold's ability to correctly assemble its own genes is beyond the ability of our computers. Is it credible that a mold cell has a greater computational ability than a modern computer? Penicillin is an elementary organic compound. It's not hard to believe that our brains have greater processing power than a computer, but each of our cells too?

In their pillaging of Fodor's & Piattelli-Palmarini's *What Darwin Got Wrong*, Ned Block & Philip Kitcher, writing in the *Boston Review*, alleged, "thanks to a proliferation of evolutionary explanations and significant new theoretical contributions, the fundamentals of evolutionary biology are reasonably well settled."³⁹ Given the title of the book they were reviewing and the growing volume of the current debate, nothing could be less true. It's clear that a great whopping detail is missing. Fodor's & Piattelli-Palmarini are philosophers, not scientists, and faced withering criticism for even entering the debate. They replied by saying, "The parochial is the enemy of the true."⁵⁷ They should be praised for their courage, if not for their attacks on natural selection. As for Charles Darwin, a detailed description of a living being could never have included details that could be reduced to mechanical parts. In the final passage of *On the Origin of Species* he wrote, "There is grandeur in this view of life, with its several powers..." including an organism's ability to grow, reproduce, and survive against all odds, none of which are reducible to any mechanical part.⁵⁸

Many of us are familiar with the rather uncomfortable circumstance of a debate with a person whose mind is not flexible. Modern evolutionary biologists at least claim to be willing to accept and even embrace mistakes because recognized errors can only lead to better science.³⁸ But how flexible is a person who stands by axioms that cannot be proven or even plausibly explained? One might even be described as superstitious. To insist that either a god or a mechanical code predetermines our fate denies our birthright of active self-creation, and does so without having correctly judged the circumstances of

life. Seventeenth century philosopher Benjamin Whichcote once quipped, "Conscience without judgment is superstition."⁵⁹

It's time to leave superstition out of the science laboratory as well as clergymen out of the science classroom. With the persistence of environmentally aware and imaginative scientists like Elsasser and Sheldrake demanding to seek the truth we will exorcise the machine and allow all of us to be the poets of our own essence.

1. Johnson, Jenny, *Intelligent design presentation draws hundreds*, Ravalli Republic, December 12, 2003
2. Armstrong, Karen (1999). *A History of God*. London: Vintage
3. Sheldrake, Rupert, *The Presence of the Past: Morphic Resonance and the Habits of Nature*, New York: Times Books, 1988, p. 140
4. Encyclopædia Britannica Online (2006), Thomas Henry Huxley, Encyclopædia Britannica Inc
5. Mayr, Ernst (1982), *The Growth of Biological Thought*, Harvard University Press
6. Gillespie, Neal, *Charles Darwin and the Problem of Creation*, Chicago: University of Chicago Press, 1979, p. 141
7. Darwin, Charles, *The Variation of Animals and Plants Under Domestication*, London: Murray, 1875, vol. 2, p. 354
8. Dawkins, Richard, *The Illusion of Design*, Natural History, Vol. 114, No. 9, November 2005, p. 36
9. Fischer, Jena (1892), *Das Keimplasma: eine Theorie der Vererbung*
10. Darwin, Charles, *On The Origin of Species*, New York: Modern Library, 1993 (1859), pp. 636-637
11. Dower, Hugh, *La Marque De Lamarck* <http://www.hughdower.com/Lamarck.htm> * Since the completion of the film it has been determined that although Lamarck did believe in God, he may not have been a **creationist** as such; apologies for the error. Nevertheless, this paragraph does help make clear the difference between Darwin's views compared to a creationist's.
12. Darwin, Charles. *Origin of Species*, editions 3 to 6, 'Historical sketch'
13. Darwin, 1993, p. 175
14. Darwin, Charles, *The Origin of Species*, 2nd Edition, Oxford: Oxford University Press, 1996 (1860) p. 111
15. Darwin, 1993, p. 326
16. Ibid, p. 324
17. Darwin, 1875, p. 356
18. Ernst Mayr commented: "Curiously few evolutionists have noted that, in addition to natural selection, Darwin admits use and disuse as an important evolutionary mechanism. In this he is perfectly clear. For instance,...on page 137 he says that the reduced size of the eyes in moles and other burrowing mammals is 'probably due to gradual reduction from disuse, but aided perhaps by natural selection'. In the case of cave animals, when speaking of the loss of eyes he says, 'I attribute their loss wholly to disuse' (p137) On page 455 he begins unequivocally, 'At whatever period of life disuse or selection reduces an organ...' The importance he gives to use or disuse is indicated by the frequency with which he invokes this agent of evolution in the *Origin*. I find references on pages 11, 43, 134, 135, 136, 137, 447, 454, 455, 472, 479, and 480." [pages xxv-xxvi of Mayr's Introduction to the 1964 Harvard University Press publication of the 1859 *Origin*.]
19. Darwin, 1993, p. 282
20. Ibid, pp. 290-292
21. Ibid, p. 331
22. Huxley, Julian, 1942. *Evolution, the modern synthesis*, p. 17
23. Quoted by Gould, Stephen Jay, *The Structure of Evolutionary Theory*, Cambridge, MA: Belknap, 2002, p. 202

24. Dawkins, Richard, *Paranormal or Perinormal?* (lecture) Las Vegas, Nevada, Amazing 3 Conference, sponsored by the James Randi Educational Foundation, January 15, 2005
25. Rothman, Stephen, *Lessons from the Living Cell: The Limits of Reductionism*, New York: McGraw Hill, 2002, pp. 138, 176, 161, 256, 260-261
26. Darwin, 1993, pp. 637-638
27. Elsasser, Walter, *Reflections on a Theory of Organisms: Holism in Biology*, Baltimore: Johns Hopkins University Press, 1998 (1987) pp. 7, 140
28. Quoted by Stallo, J. B., *The Concepts and Theories of Modern Physics*, Cambridge, MA: Belknap, 1960 (1881) p. 86
29. Elsasser, 1998, p. 93
30. Ridley, Matt, *Genome*, New York: HarperCollins, 1999, p. 174
31. Weiss, Paul, *The Science of Life*, Mount Kisco, NY: Futura, 1973, p. 62
32. Elsasser, 1998, pp. 5, 41-44
33. Hill, Miroslav, *Adaptive state of mammalian cells and its nonseparability suggestive of a quantum system*, *Scripta Medica*, 73 (4): 211–222, October 2000, <http://med.muni.cz/biomedjournal/pdf/2000/04/211-222.pdf>
34. Schluter, D., E. A. Clifford, M. Nemethy, and J. S. McKinnon. 2004. *Parallel evolution and inheritance of quantitative traits*, *American Naturalist* 163: pp. 809–822
35. Hrastar, Laura M., *Is RNA inheritance possible?*, *The Scientist*, March 23, 2005, <http://www.the-scientist.com/news/20050323/01>
36. Darwin, 1993, p. 599
37. Fodor, Jerry; Piatelli-Palmarini, Massimo, *What Darwin Got Wrong*, Farrar, Straus and Giroux, 2010
38. Rutherford, Adam, *Beyond a 'Darwin was wrong' headline*, *The Guardian*, March 19, 2010, <http://www.guardian.co.uk/commentisfree/2010/mar/19/darwin-evolutionary-science-media-coverage>
39. Block, Ned; Kitcher, Philip, *Misunderstanding Darwin*, "Natural selection's secular critics get it wrong", *Boston Review*, March/April 2010, http://bostonreview.net/BR35.2/block_kitcher.php
40. *John Gummer: Beef eater*, *BBC News*, October 11, 2000, http://news.bbc.co.uk/2/hi/uk_news/369625.stm
41. *Waving goodbye to Parliament*, *BBC News*, May 7, 2010, http://news.bbc.co.uk/2/hi/programmes/world_news_america/8668504.stm
42. The National Creutzfeldt-Jakob Disease Surveillance Unit (NCJDSU), University of Edinburgh, October 2009, Retrieved 2000-10-14
43. *Blood test for vCJD 'could identify carriers'*, *BBC News*, February 3, 2011, <http://www.bbc.co.uk/news/health-12343896> * *It should be noted the figure now stands at 170.*
44. Bygren, Dr Lars Olov, *Where to Find Epigenetic Marks (3)*, *Time*, January 6, 2010, http://www.time.com/time/specials/packages/article/0,28804,1952062_1952061_1952057,00.html
45. Cloud, John, *Why Your DNA Isn't Your Destiny*, *Time*, January 6, 2010, <http://www.time.com/time/health/article/0,8599,1951968-4,00.html>
46. Reik, Wolf, *Stability and flexibility of epigenetic gene regulation in mammalian development*. *Nature* 447, May 24, 2007, pp. 425–432, <http://www.nature.com/nature/journal/v447/n7143/full/nature05918.html>
47. Burkeman, Oliver, *Why everything you've been told about evolution is wrong*, *The Guardian*, March 19, 2010, <http://www.guardian.co.uk/science/2010/mar/19/evolution-darwin-natural-selection-genes-wrong>
48. Sheldrake, Rupert, *The Presence of the Past: Morphic Resonance and the Habits of Nature*, New York: Times Books, 1988, pp. 174-180, 186-188
49. Sheldrake, Rupert, *A New Science of Life*, Third Edition, London: Icon Books, 2009, pp. 251-254
50. Maddox, John, *A book for burning?*, *Nature* 293: 245-246, September 24, 1981
51. Quoted by Freeman, Anthony, *The Sense of Being Glared At: What Is It Like to be a Heretic?*, *Journal of Consciousness Studies*, Vol. 12, No. 6
52. Peterson, Karen S., *Paranormal is normal, controversial scientist says*, *USA Today*, February 26, 2003
53. de Pracontal, Michel, *L'Imposture Scientifique en Dix Lecons*, "Pseudoscience in Ten Lessons," Editions La Decouverte, Paris, 2001

54. Sheldrake, Rupert; Stanislav Grof, Editor (1984). *Morphic Resonance*. seventh Conference of the International Transpersonal Association, Bombay: SUNY Press, Albany. pp. 154–156
55. Sheldrake, Rupert, *Commentary on a paper by Wiseman, Smith and Milton on the 'psychic pet' phenomenon*, Journal of the Society for Psychical Research 63: 306-311, 1999. Wiseman, Smith and Milton, *Can animals detect when their owners are returning home? An experimental test of the 'psychic pet' phenomenon*, British Journal of Psychology 89: 453-462, August 1998, <http://www.sheldrake.org/D&C/controversies/wiseman.html>
56. Rubin, Harry, introduction to *Reflections on a Theory of Organisms*, by Walter Elsasser, Baltimore: Johns Hopkins University Press, 1998, p. xiv
57. Fodor, Jerry; Piatelli-Palmarini, Massimo, “*Misunderstanding Darwin*”: *An Exchange*, Boston Review, March 17, 2010, http://bostonreview.net/BR35.2/darwin_exchange.php
58. Darwin, 1993, pp. 648-649
59. http://thinkexist.com/quotes/benjamin_whichcote/