

Evolution Sunday-15 February 2009
Sermon by Larry T. Spencer

To paraphrase Sarah Palin (and Ronald Regan), “there you go again Larry, bringing science into the sanctuary!” Yup, I’m back. PCUCC is again part of the national effort started by Michael Zimmerman at Butler University to foster the discussion of science, particularly evolution, and religion in the churches of America. This weekend and week, hundreds of churches across the United States will have preachers, teachers, and plain folk speaking from the pulpit, all saying that it is good and proper for science and religion to be sharing the limelight.

Of note, this year and this month, we are celebrating a quadrifecta of sorts. First off, Abraham Lincoln was born on the 12th of February. By sheer coincidence, on a small island far across the sea, Charles Darwin was also born on the same day and year. Thirdly, the state of Oregon gained statehood on the 14th of February 1859 and lastly, Darwin’s missive, *On the Origin of Species*, was published on the 24th of November 1859. So two hundred years for Oregon, Lincoln and Darwin and 150 years for the *Origin*. Interestingly enough, Oregon’s capital is Salem and Lincoln practiced law in Salem, Illinois. I won’t spend any more time on Lincoln and Oregon, only a bit more time on the *Origin*, but a lot more time on Darwin and evolution.

Why the title “The Observant Mr. Darwin”? Look around you! What do you see here and through the windows? Most would say people, men, women, children; pews; trees; and organ pipes. Darwin would not only see those things, but would see the details, the colors, the textures, and the shapes. The details would lead him to asking questions, the questions would lead to hypotheses and the hypotheses lead to a change in worldview. Whereas prior to Darwin, we saw all the creatures of the world as special creations, after Darwin, we saw all the creatures of the world as members of one huge related family; all those present today as descendents of those present in the past. Darwin called his idea natural selection and this idea was used to explain the evolution of life forms. Many put this transformation at the same level as Newton’s gravity, Einstein’s relativity and Planck’s quantum mechanics. All have had a dramatic impact on our religious worldview. All have caused us to move from unfettered belief in dogma to thoughtful reasoning and a diversity of opinion.

In case you are planning on taking a nap during the remainder of the talk, here are my take home points:

1. Evolution by means of natural selection explains not only how the creatures of God’s earth changed through time to arrive where they are today, but also explains how we were transformed from some sort of southern ape person roaming and sharing the plains of Africa with thousands of co-equal species to becoming the dominant species of the globe almost to the point of destroying the other species of the earth.
2. Evolution by means of natural selection explains our unique patterns of behavior and provides us with an understanding of how we might control, but not necessarily defeat the variety of diseases we suffer from as a species.

3. Evolution by means of natural selection explains why not all regions of our globe share equal numbers of species, but also supports why retaining that diversity is important for our survival as a species.

Now, some thoughts on Darwin and the *Origin of Species*. Most authors can hardly wait to publish. John Updike, who recently died at age 76, was published early in his 20s. He wrote more than 60 books, hundreds of essays and thousands of poems. It took Darwin 50 years to get up his gumption to publish his ideas on evolution and if Alfred Wallace hadn't sent him his essay on natural selection in 1858, he might have postponed this task even longer. In fact, a recent book by David Quamen, was titled *The Reluctant Mr. Darwin*. Quamen describes at great length the genesis of Darwin's reluctance.

It wasn't that Darwin hadn't been thinking and recording his thoughts on the process. Seminal to his formulation of ideas on natural selection was the trip he took on the *HMS Beagle* from 1831-36. In that trip he observed the intricate diversity of the Brazilian coastal rainforest, the similarity of the fossil sloth to modern sloth in Argentina, the tortoises of the Galapagos that varied from island to island and the bright fish of the Pacific coral reefs. In 1841 he began to keep notebooks on the "transmutation of species", his original term for the evolution of species. Because he married into wealth, his wife was Emma Wedgwood of the pottery family, and because he received a significant inheritance from his father, a well-to-do physician who had made good investments and because he was equally successful with his own investments, Darwin and Emma lived a life of leisure in a small community now on the outskirts of London. There they raised their ten children (three of which died in childhood) and Darwin spent his hours in correspondence and research. From a reading his notebooks and letters to his correspondents, we know that Darwin was on to natural selection early on. Why therefore, didn't he put his proposal into the scientific literature sooner than 1859?

I'm not a Darwin scholar, but I have my opinions on this matter. First, Darwin was very observant as to how his actions and behaviors might affect others. Probably most importantly he was concerned for how the publication of his ideas might affect his wife. Although Darwin and Darwin's family were very liberal and so too many of the Wedgwood's, Emma herself held very conservative religious beliefs. Although neither of them were social butterflies, we can assume that if Darwin had published his ideas earlier, Emma would have fretted even longer over Charles' reception before God on the day of judgment and would have worried about how her friends would receive her.

A second reason deals with proof. Some of us jump to conclusions with very few facts. Then there are others, such as Thomas from the Gospels, who need to stick their fingers in the nail holes to assure themselves of the validity of an event. Darwin was of the latter school. I can imagine Darwin saying to himself "Just one more fact and I can nail this baby down!" and then finding that fact, realizes that he had opened a black hole to other topics. You know, it's just like doing an open ended Google search.

Apparently, once having published the *Origin*, the barrier was broken and in the next 23 years Darwin published at least nine books on a variety of topics varying from

earthworms, to orchids and to humans. In addition, the *Origin* also received almost a bi-yearly updating and in the last edition the title changed from *On the Origin of Species* to simply *The Origin of Species*.

Perhaps before going further, I need to define a few terms. When I use the term evolution, I'm talking about organic evolution and not the evolution of the solar system or the evolution of economic systems. Evolution means change through time, but with respect to organic evolution, we imply that all living things today are united by common descent from pre-existing organisms and not by unique independent creations. Within organic evolution, we talk also talk about micro- and macroevolution. Microevolution deals with the origin of species, that is, how over a period of time, one species becomes two or more. Macroevolution deals with how within the realm of organic life, there are different types of life forms; single-celled algae, sponges, mollusks, echinoderms, and vertebrates just to mention a few. By natural selection Darwin meant that just as dog or pigeon breeder can change a creature by artificial selection, nature exerts a force on all living creatures. His tenets were:

- All creatures produce more offspring than are needed for the survival of the species
- Some of the offspring possess features that provide them with advantages over their peers, other have attributes that are not advantageous.
- Since these features are inherent in the organism itself, those attributes will be passed on to their progeny
- This leads to differential survival, Changes in morphology, behavior and physiology of the creature over time lead to speciation, that is, creatures that are genetically related to each other, but unable to breed with each other, thus new species.

Darwin had a poor understanding of heredity, but today we understand the genetic underpinnings of these transformations and talk about things such as fitness and selective pressures.

Is there a direction to evolution? This is an important question, but one that I don't plan to tackle in detail. Just a few thoughts. Some would say yes to the question and indicate that God had directed evolution so as to produce us as a species. I'm not of that school, but I will say that evolution can lead to complexity, that is, in some lineages, basal creatures are fairly simple in structure and function but over time become more complex. There are lots of analogies I could give here. How about Microsoft Word. Early versions were pretty much like an electronic typewriter, now Word tells me which words I've misspelled and what grammatical errors I've made. It may even cook my eggs. I hope it knows I want them over easy.

I like to think of natural selection in terms of Adam and Eve in the garden. If they had stayed in the garden, they would have been supplied their needs forever, but they decided to be responsible for themselves. By eating the fruit proffered by the serpent, they decided to deal with the issue of good and evil themselves. Thus freewill came into

being. We can think of natural selection in the same manner. If the omnipotent God was totally responsible for the whole process, there should only be “good” species, no mosquitoes, no retroviruses, no harmful parasites, etc. With natural selection, the creatures of the world have had the freewill to evolve in thousands of different directions with the only stipulation being that only certain features are of adaptive value at any one moment in time. I just watched a NOVA program on the life and times of the Monarch Butterfly. It takes them four generations to reach the northern reach of their distribution, but only one to get back to Mexico. If the environment in Mexico disappears either through human manipulation or global climate change, this behavioral adaptation is no longer viable. Either the species changes to a different pattern or it goes extinct. With our freewill we can choose to do good and be admired by our peers, or we can be evil and reviled. We’re a bit luckier than the other creatures. We can exert control over our environments to a certain extent, but nature is for the most part uncontrollable for the other species on this planet.

Now on to natural selection and biodiversity. By biodiversity I mean numbers of different species in one particular location. Eleanor and I have snorkeled in Hawaii, Bonaire, Florida and the Great Barrier Reef. One is overwhelmed by the number of species in those environments; corals big and small set up the spatial environment, while brightly colored fish dart to and fro, some eating each other, some just happy to scrape algae off the rocks. Snorkeling in New Hampshire lakes is not only colder, but also other than an occasional sunfish, perch or sponge, there’s not many species to view. The same is true with respect to forests. Just like Darwin, it was impossible for us to count the species we saw on the Isla Grande forests off the coast of Brazil last January. Whereas, when I venture into my woodlot in New Hampshire I don’t even need my toes to count the number of species.

Why is this so? It can be related to natural selection. In ecology we talk about the concept of niche, defined as the occupation a species plays in a particular environment. We also have a rule that no two species can occupy the same niche at one moment in time. If two species have the same niche requirements, one must change its features so as to not compete with the other. This change is related to spatial heterogeneity. We can think of the New Hampshire environment, as not being very spatially heterogeneous, that is, there are not many available alternative niches. In locations such as the tropical coral reef or forest, the spatial heterogeneity is high, and organisms with only slight differences no longer compete for the same niche.

In conclusion, where does this leave us? In the biblical realm, we often confuse the terms dominion and stewardship. From the genesis story we assume that dominion over God’s creation gave us the right to control God’s creation, to use it for our own purposes disregarding the rights of the other creatures, yet, stewardship implies that we may use God’s creation, but only in a sustainable manner with the intent to leave it the same or better than what it is was when we started.

In the late 19th century, Darwin’s ideas on evolution and natural selection were transformed into social Darwinism, a construct that for many supported the destructive

economic system of the Gilded Age, the terrible policies that kept Chinese and Italians from immigrating to the US because they were “less fit”, and the eugenics movement that resulted in inappropriate sterilizations in the US and in the end the holocaust in Germany. Luckily, most of the world has rejected this interpretation. We have returned to Darwin’s original observation. All of God’s creatures are related to each other. How we treat the least of them has direct implications for our own survival. Who knows what plant may harbor a substance that cures cancer. Our human origins are explicable by Darwin’s ideas on selection, natural and sexual selection. We are not the most perfect or complex creature, but only one amongst millions of creatures. Unless we show adaptations to our world that are sustainable and suitable, we will become extinct. We are biological creatures, no more unique or special than any other creature, but at the same time selection has provided us with speech, emotions and the ability to develop and exploit abstractions related to our universe.

May God grant us the willingness to accept not only Biblical explanations of purpose in our lives, but also scientific explanations for mechanisms that explain our origins and role in this universe.