CONFESSIONS OF AN OKLAHOMA EVOLUTIONIST: THE GOOD, THE BAD, AND THE UGLY

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Please see http://www.stanleyrice.com for links to many things such as:
The Darwin YouTube channel: http://www.youtube.com/StanEvolve
Stan's evolution blog: http://honest-ab.blogspot.com
And updated information about upcoming events such as Evolution Road Trips

I frequently fill in for Dr. Rice in his classes and presentations. Students are surprised: I am not the monster they expected. They are also surprised that my only earned degree was in theology.

In my day, the conflict between science and religion was quite different from modern America, especially places such as Oklahoma and Louisiana. A young Earth and Noah's Flood were not major topics. My principal opponents, Sir Richard Owen and St. George Mivart, proposed theistic versions of evolution rather than an abandonment of the whole evolutionary outline of Earth history. In England, my most vocal public critics were clergymen such as Soapy Sam Wilberforce, and my most vocal public defenders were agnostics such as Thomas Henry Huxley. But in America, my main defender was Asa Gray, the Harvard botanist, who was a conventional Christian, and my main detractor was Louis Agassiz, who was a Unitarian.

I optimistically expected evidence and reason to ultimately triumph. Eventually most people would see the evidence and accept it. [Thomas Jefferson expected it in the realm of religion. In an 1822 letter to Benjamin Waterhouse he wrote, "I rejoice that in this blessed country of free inquiry and belief, which has surrendered its conscience to neither kings or priests, the genuine doctrine of only one God is reviving, and I trust that there is not a young man now living in the United States who will not die a Unitarian." Jefferson also looked forward to a time when there would be no slavery, although he found that getting out of the slavery business was more complicated than he thought it would be. More recently, Robert Reich expressed optimism that the progressive viewpoint, which includes a respect for science, will ultimately prevail in America; he called his book "Reason."]

Well, it didn't turn out that way, at least in America. An appeal to gut-level religious feelings will triumph over reason and evidence any day, from the street corner to the halls of Congress. Let me give you a few Oklahoma examples.

Creationism is extremely common in Oklahoma (and Louisiana). You can find it in fundamentalist churches, such as a Baptist church in Durant (home of Southeastern Oklahoma State University), and in creationist museums such as the one about ten miles east of Durant.

Furthermore, Oklahoma leads the nation in the number of creationist bills that have been introduced to the state house and senate over the last decade, although none of them have been passed. We leave the distinction of having the most famous creationist state laws to Louisiana. It may seem odd that the Oklahoma legislature does not pass

creationist laws, especially since "standing up for God" is a cheap and easy way to gain popularity. I believe an important reason for this is the efforts of an important organization, Oklahomans for Excellence in Science Education, founded by Dr. Vic Hutchison, a retired zoologist from the University of Oklahoma. Stanley Rice is president-elect of that organization and follows in the footsteps of numerous great leaders. Whenever a creationist bill gets into a legislative committee, OESE members email letters to all committee members, urging them to not pass the bill to the full house or senate. Reasons include the fact that creationist laws and school board policies have fared very poorly in the courts, and that passing creationist laws is a waste of the legislature's time and the taxpayers' money. The bills usually proclaim the right of students to believe whatever they want. Of course, they already have this right, they are not forced to actually believe evolution, so one of our main arguments is that there is no problem to be solved.

We can all think of numerous examples of how religion can disrupt the public understanding of science and the ability to reason from evidence. A botanical example is that creationists still like to use the "sudden appearances in the fossil record" argument. Botanist George Howe at the Bible Institute of Los Angeles (now Biola University) addressed a small crowd in a big auditorium at the University of California, Santa Barbara in 1976. A young, impressionable creationist student named Stan Rice was in the audience. Howe's main point was that angiosperms suddenly appeared, without recognizable ancestors, during the Cretaceous period. There are at least two problems with this creationist argument. First, the resemblance between Bennettitalean reproductive structures and flowers was not close enough to convince Dr. Howe. Second, creationists don't believe the fossil record represents the passage of time at all, whether of sudden appearances or gradual ones. The sediments were all piled up during a single flood, in their view.

This is a good example of how the human brain, especially but not only when it is high on religion, can see exactly what it expects to see. Take an Oklahoma example. There are Cretaceous limestone deposits in southeastern Oklahoma that are crammed full of fossils. The fossils take up more volume than the matrix. To a fundamentalist, this is visible evidence of the Flood of Noah. But someone whose mind is free to ask questions will begin to notice that the fossil record has an orderliness to it. Many fossil deposits in southeastern Oklahoma consist almost exclusively of one species, *Texigryphaea navia*, a mollusk. Other Oklahoma fossil deposits, from the Pennsylvanian and Ordovician periods, have a lot of crinoids in them. Stan led the first annual Oklahoma Evolution Road Trip this summer, in which ten participants saw a lot of these fossils.

Now, how could a Flood produce these fossils? How could a flood sort out the crinoids and put them in certain mud layers that scientists would later call Pennsylvanian, and then on top of them lay down literally billions of mollusks, all of just one species? Indeed, fundamentalist students in college classes (who are generally very nice people) can look right at the evidence and choose to not believe it. And some of them are very smart. The 2012 valedictorian at Southeastern got the best grade in Stan's evolution class, but remained a creationist.

The conclusion that the foregoing seems to imply is that religion is a bad thing for the human mind. Blogs such as those by P. Z. Myers and Jerry Coyne reinforce this idea. I would like to recommend them for their science content but there isn't much; it is

mostly a spouting-off of anti-religious sentiment. For science, you might want to stick to Carl Zimmer's or Stan Rice's blogs. Atheism is not, however, the belief of all or even most scientists. I think it is important to point this out to students and to citizens, who might base their entire rejection of evolution on the belief that it is atheism. Remember that church sign? "Evolution: The science of calling God a liar." If that statement is true, we cannot possibly win, and not just in Oklahoma and Louisiana. As an ex-creationist and currently a Christian agnostic, I am not trying to defend religion here, but just to say that religion itself is not the enemy. It is religious delusion memetically parasitized by cult leaders (such as the late infamous Garner Ted Armstrong) who want to control people and their finances.

But I will go a little further, regarding delusions. A delusion is just an illusion that is demonstrably incorrect. And illusions are the way our minds work.

Leaves are not actually green. They just reflect wavelengths of photons that are absorbed by the cones in our retinas. The optic nerve sends impulses to our brains. Our brains create the illusion that leaves are green. You detect wavelengths of photons with our eyes but we see with our brains. We detect sound waves with our ears, but we hear with our brains. We detect volatile molecules with our noses but we smell with our brains. And so on. Our brains create a model of reality that is an illusion. Natural selection has made sure that, in most cases, the illusion closely matches reality.

But not always. Sometimes, illusion can pass into delusion. But delusions are not always bad, as in the example of synesthesia. [I have met three people who are synesthetic. They taste and see sounds. Not surprisingly, they are amateur or professional musicians. This kind of delusion causes no particular trouble in daily life. In fact, it enriches it. Don't you maybe, just a little bit, wish your brain worked like theirs? It is easy to see that someone with a greatly enriched mental life might convey a degree of charisma that would make them social leaders, and this is something natural and sexual selection (two of my great discoveries) would favor.]

Clearly, even if religion is a delusion, it has been favored by natural and sexual selection. This can lead to some pretty brutal things. A tribe that shared a strong religious delusion might fight harder and win more often in battles against the Stone Age version of rationalists. But this can also lead to constructive things. Tribal peoples know a lot about plants. If this were merely a hobby, they might learn a little bit about plants in their environment. But if they believe that plants contain blessings from the gods, they will investigate plants with great zeal. It is a holy quest to them to figure out how to use these plants in just the right way: for example, to get just enough atropine, hyoscyamine, and scopolamine from *Datura* for a hallucinogenic visit to the land of the gods but not enough to get killed. And this zeal made them look for patterns and test hypotheses. Their hypotheses, such as the "doctrine of signatures," were often wrong, but it was a primitive form of science.

[The doctrine of signatures is still with us. Visit a health food store and you will find *Tribulus* pills to treat erectile dysfunction, since *Tribulus* capsules have pretty big horns on them. And even creationists fall for it. One of my students forwarded a creationist email to me. I am not making this up. What do figs look like, especially pairs of figs? That's right, testicles. So figs are good for male sexual function. What do lemons look like? Go ahead, you know the answer. That's right, breasts. So citrus fruits are good

for female sexual function. And of course walnuts look like brains, so they are good brain food. I am not making this up.]

I have told you about the good and bad influence of religion on the human pursuit of understanding the world. Religion can promote altruism, or can promote cruelty. But not let me briefly mention the ugly. The natural world is full of cruel and ugly things that natural selection has either not been able to get rid of, or has even favored. There are thousands of detrimental or deadly human mutations, most of which kill embryos but some of which persist past birth to create a life of suffering. The ugliest example is Lesch-Nyhan syndrome, which causes its victims to mutilate themselves uncontrollably. And then there are the thousands of adaptations, the products of natural selection, which parasites use to turn their hosts into food banks and to make their hosts disperse them to new hosts. Examples include the worms that make ant abdomens look like berries so that birds will eat them. And let us not forget the adaptations by which many flowers entice their pollinators with the false reward of food or sex, examples that the botanists in this room must know only too well.

It is unclear whether religion is innate to the human brain, or whether it is just a bunch of memes that have parasitized innate tendencies of the brain. Stan's *Encyclopedia of Evolution* defends the first view in the 2006 edition and the second view in the 2013 edition (available only as part of a database). Take your choice. But religion is entrenched and powerful. I believe that what we as scientists and educators should do is to guide the power of religion in constructive directions.

And that is what we are already doing, even without taking religion into consideration. We need to continue getting students and other people outside to notice things. For example, they may never have looked closely enough at rocks to see the fossils. They may not have noticed how many different kinds of trees there are, or that the species of trees around a pond are different from those on the top of the hill. If they grow into adults that notice things, they may grow into adults that question things. And from there, we just need to have faith that their habit of thinking about what they see may lead them down the paths of reason.

Plants are a particularly good way to teach evolution. No, I don't just mean sawing open coal balls. You can teach evolution by getting students to just notice plant adaptations. I do this in workshops and with students all the time. Post oaks grow slowly, produce hard wood, and live for a long time in stable (though stressful) environments. Cottonwoods grow rapidly, produce cheap wood, and live for a short time in unstable riparian environments. Alders have a different way of living in riparian environments: the clump persists but each trunk lives just a short time. Black oak life history is intermediate between those of post oaks and cottonwoods. Bois-d'arcs are a particularly good example of a "ghost of evolution." You can teach evolution using plant examples, without stirring up the kind of barriers that you would encounter if you started right off with chimps and australopithecines.

Life is too short to spend it in open conflict with the bad. And there's nothing we can do about the ugly. I recommend that we cultivate the good—the spirit of wonder and curiosity—and have a good time while we are doing so.

Beauty Equals Goodness: The most handsome man just happens to be "The Good". Granted, the other two were morally worse than him, but Blondie's not much of a saint, either. Behind the Black: This was possibly the first movie to use this deliberately, and to great effect. Leone specifically shot the movie with the idea that the characters could only be aware of what the camera saw. The most noticeable moments are probably Angel Eyes managing to sneak up on the other two in the middle of a mostly flat graveyard, and when Blondie and Tuco walk into the middle of a Union encampment without noticing.Â Bootstrapped Theme: The theme is arguably one of the most well known Western themes, and is the subject of a great many shout outs in other media. While the Civil War rages between the Union and the Confederacy, three men comb the American Southwest in search of $200,000 in stolen gold. Watch trailers & learn more.Â Last day to watch on Netflix: July 31. Clint Eastwood stars in this spaghetti Western, the third in director Sergio Leone's groundbreaking Dollars Trilogy. More Details. Watch offline. There are so many reasons why The Good, the Bad and the Ugly is considered a masterpiece. TGTBATU is Leone's most experimental film. It was an incredibly interesting decision to combine the classic american western genre with an almost European Avant Garde sensibility that grows more pronounced as the film becomes more epic.Â Finally, the way that the movie combines the Western, Adventure, and War genres in a meaningful way. It can be seen as somewhat of a satire of the western genre just like the first two movies in the trilogy. The western hero was a noble protector of justice and morality and in the dollars movies, even the hero is a greedy scumbag because of the harsh world he lives in. But, TGTBATU kind of comes full circle with this theme by introducing the war element. The Good: I'll sleep better knowing my good friend is by my side to protect me. Tuco the Ugly: I'm innocent, I'm an innocent farmer. The Good: Every gun makes its own tune. Tuco the Ugly: When you have to shoot, shoot.Â Submit a Quote from 'The Good, the Bad and the Ugly'. A quote can be a single line from one character or a memorable dialog between several characters. Please make your quotes accurate. Originally Answered: In The Good The Bad and The Ugly, why did Blondie kill Angel Eyes? Would you trust a guy who murders a man enjoying a nice meal at home while his wife and kids are present? Angel Eyes also mercilessly shoots and kills one of the manâ€™s sons in the opening sequence.Â It is widely considered to be the best of the three, and sometimes even the best western of all time. Although the same actors are used in the different movies of the trilogy, they play different characters. Clint Eastwood is the â€œMan with No Nameâ€ in all of them although he does have different nicknames in each of the films. In â€œThe Good the Bad and the Ugly,â€ he is referred to as â€œBlondie.â€ You can watch them in any order since they are disconnected and there is no chronological order.