

## **Troubles in the Biology Classroom**

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*Appeared in volume 31, number 3 issue of the BMES Bulletin*

For many centuries, the studies of science and philosophy (religion) were unified, with little distinction between explanations of events of natural life drawn from each of these sources. That changed after the age of enlightenment in the centuries following the middle ages. At that point, a divergence began when scientific advances produced explanations for physical events that did not require supernatural interventions. Engineering and technology pushed this trend even further when people developed the capability to design and build improved solutions to human needs using only information based on empirical knowledge.

The trend toward separation of science and religion has continued almost to this day, but scientists are now treating metaphysical subjects as objects for scientific study. Bering (2006) has reported on results of developmental psychology experiments in which he concludes, among other things that:

1. belief in the afterlife is innate and is not the result of cultural indoctrination.
2. those who believe that a supernatural being is constantly watching them are less likely to cheat than are those who have no such beliefs.
3. even those who claim not to believe in the afterlife (the existence of consciousness even after death) are fundamentally ambivalent about their beliefs.
4. interpretations of natural events can be seen as symbolic of signs from

unseen agents.

5. the default state of the human mind is to believe in the supernatural, and that this trait is the result of evolutionary selection.

This was followed a year later by a special issue of *Time* magazine devoted to new findings in brain research. Using such tools as fMRI, neuroscientists are discovering areas of the brain involved in different mental processes, and linking different areas to different senses, processes, and attitudes. They are even searching for the source of consciousness within the brain (Pinker, 2007).

There is no more essential characteristic of human existence than the state of being aware of one's self. This state has been referred to as the "mind," and the mind has been somehow linked with the brain but also divorced from it. If the state of consciousness is found to be tied directly to brain neural activity, it will have severe metaphysical implications. A quote from the article says it all:

"... few scientists doubt that they will locate consciousness in the activity of the brain. For many nonscientists, this is a terrifying prospect. Not only does it strangle the hope that we might survive the death of our bodies, but it also seems to undermine the notion that we are free agents responsible for our choices. . ."

In a third article, it was reported that actions and reactions are actually planned in our brains before we are conscious of them (Obhi and Haggard, 2004). The conscious choice we have, then, is whether or not to follow through with the preplanned actions. Free will, it was maintained, is actually "free won't."

These new discoveries call into question the concepts of God, soul, and free-will choices. These will be replaced by evolution, genetic programming, and environmental influences.

As a teacher of biology for engineers, this poses a real problem for me. It is my intention to teach modern science, and this includes evolution in all guises. But it is not my intention to undermine anyone's religious faith. Yet, if I'm not careful, that's exactly what could happen. The newest scientific knowledge is supporting and being supported by evolutionary explanations. Whereas science can never really answer why all this happens, it can provide answers that at least mask the most fundamental questions concerning human existence. Why are we here? Why do we love, hate, exhibit jealousy? Why are we kind to one another? Why do we feel good when we help others? Is there really a God? Evolutionary scientists, especially the evolution activists, are providing stronger and stronger answers for these questions all the time. If I do not wish to be an evolution activist in the same mold as the others, am I not abetting their cause by presenting their evidence?

Yet, I cannot, in good conscience (whatever that is), leave out essential scientific details. That would be dishonest and unscientific. So, I feel that I must present all the evidence, but hope that it won't leave students repudiating their upbringing. I have yet to be confronted by an individual who rejects evolution in favor of an unscientific explanation of creation, so my reaction to such an individual is untested. But, at the same time, I don't want to be the individual who positions evolution so that there is not room for faith in the minds of my students. I think there is room for coexistence, if the individual so desires.

The idea that humans descended from monkeys, although not exactly the way that evolution would explain it, upset many and caused them to repudiate evolutionary theory. If that idea elicited such a strong reaction, the newest neurophysiological discoveries will go much farther. Studies of the workings of human and animal brains could leave us wondering about our place in the world, and, not just where we came from, but where we are going. This prospect is daunting.

## References

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