

# FEAR, AND THE PRINCIPLE OF INCONSISTENCY

## EDITORIAL

— by Dwight E. Neuenschwander

In this issue we are privileged to reprint John Rigden's recent Millikan Award speech, "The Mystique of Physics: Reluminate the Enlightenment." [1] In view of the unrelenting attempts by religious fundamentalists to insert non-science agendas into public school science classes, Dr. Rigden argues that the scientific community should respond in a *positive* way. Merely attacking the arguments of the proponents of "Intelligent Design" or other forms of "Creation Science" accomplishes nothing. Religious fundamentalists have already rejected the assumptions and values of science. We and they will continue to talk past each other until a more positive approach is followed.

The persons to whom Dr. Rigden refers could have included my grandmother. Grandma was one of the most ardent of all the religious fundamentalists who ever lived. When she stayed with us, and I was kept home from school with the flu, about mid-morning she would come into my room, Bible in hand, and spend 45 minutes reading Scripture to the captive. After that she embarked on a loud and lengthy prayer that went around the world, and surely reached Heaven by sheer force of lungs. For Grandma, the proposition that God created the world according to a literal reading of the Genesis creation story was not negotiable. She was stern with herself, too. Short sleeves, coffee, and watching television were mortal sins. [2] As for biological evolution, I think she really believed it was a diabolical plot cooked up by godless heathen scientists to lead innocent lambs astray. For her, all the answers—not only about values and morality, but also the origin of stars and species—were found in The Book.

As I grew older, I began putting the world view of my grandma and others like her into a larger perspective. In a lifetime of being around fundamentalists in my community and extended family, I have gathered a lot of empirical observations. Based on that experience, I would like to propose a Theory of Fundamentalism. Its applications may have something to contribute towards "Reluminating the Enlightenment."

As a young physics major, I looked upon fundamentalists with bewilderment and impatience. The fundamentalist sycophants who sell the books and videos in church seminars keep Creationism churning as a cash cow, and I still have little patience for *them*. But the insurance salesmen and waitresses and grandmas in the pews who buy those books and videos are people of sincere religious conviction who deserve patience.

Typically, they are not trained in science or theology or philosophy. What science they do know they probably learned from textbook recitations. So to them, the Sacred Book and the Science Book are merely competing authorities. No personal experience of their own has offered them a vision of science as evidence-based reasoning, or how one can learn *about* nature by putting questions directly *to* nature. Genuinely concerned about their children, they mean well, but are locked into a rigid system. In fundamentalist culture, the pressures to *conform* are enormous. But these folk are worth reaching. It helps that process mightily if they know an authentic scientist personally, and mutual trust has been earned through respectful conversations.

## A THEORY OF FUNDAMENTALISM

The Theory of Fundamentalism proposed here rests on empirical observations from the spectrum of human behavior. Observation shows that on practically any controversial topic, most of the shouting comes from the extremes. [3] The extremes provide an operational definition of the Fundamentalist. Examples of the genus range from the Taliban of Afghanistan to the Institute for Creation Research in San Diego, CA. Their literal interpretations of religious or political ideology are enforced with unbending legalism. They claim a monopoly on truth, which always appears to them in the sharp contrast between black and white. Let me present some sample data. I might be a Fundamentalist if:

- \* In a Sunday School class discussion on the first chapter of Genesis, with loud confidence I assert that scientific estimates of the age of the earth are suspect because radioactive dating cannot be trusted; then the following Thursday I submit to a Positron Emission Tomography scan at the medical clinic.
- \* I admonish my children to tell the whole truth. Meanwhile, I also teach them that, "Evolution cannot be true because life on Earth is ordered, which violates the second law of thermodynamics," defending my understanding of Truth with a false statement.
- \* Despite my stated support for the Bill of Rights, I cheerfully support a preemptive war launched in the name of spread-

(continued on next page)

ing democracy, while demanding that my fellow citizens suspend all judgment and criticism. [4]

\* Although I profess the joy of “trusting in a merciful God,” I am afraid this same God will condemn me for acknowledging honest doubts. Thus is my relationship with the Author of the Universe based on dishonesty. And although I assert this relationship exists on the higher plane of a “spiritual life,” for me its significance has somehow come to depend on the half-life of uranium and the molecular biology of genetic inheritance....

When one sees a persistent pattern, through inductive logic one proposes a Principle that provides a foundation for organized understanding. If I may, I will propose such a Principle about fundamentalism: the Principle of Inconsistency. The Principle of Inconsistency says that it is impossible to be a fundamentalist and remain faithful to one’s own precepts. Sooner or later, fundamentalists contradict their own ideology. Narrow inflexibility places one, inevitably, on a collision course with reality.

Any axiomatic Principle should suggest deeper insights. For example, we recall that the Principle of the Equivalence of Gravitational and Inertial Mass suggests that gravitation may be conceptualized as the curvature of spacetime. For, if that were so, then the Principle of Equivalence would be *explained*. What similar insight informs our study of fundamentalism through the Principle of Inconsistency?

As I reflect over the life of Grandma and other fundamentalists I have known, it becomes clear that Fundamentalism, at bottom, is driven by *fear*. If as a fundamentalist I deviate from the True Path—even to privately acknowledge an honest doubt—then God may smite me. I can swell with pride at “refusing to compromise” on any point of doctrine or practice, but deep down I’m afraid of stepping out of line. One friend who is a Christian fundamentalist told me over lunch one day, with some despair, “If I allow that ‘day’ in Genesis does not have to mean 24 hours, then the next thing you know I’ll be denying the Ten Commandments and the divinity of Jesus—so where do I draw the line?” It’s a slippery slope and the fundamentalist doesn’t want to go there, no way.[5]

In light of this fear, Fundamentalist behavior now becomes comprehensible. In the struggle to save your skin (or your soul), *fear* proves to be far more powerful in the short term than evidence or logical consistency. When I am driven by fear, *holding fast* to the True Doctrine or the Party Line becomes more important than being *right*. I therefore get the most defensive about issues on which I feel the least secure. The greater the insecurity, the louder the shouting. Because of the Principle of Inconsistency, it follows that we should expect brittle certainty to be shouted from the police state of Fundamentalism. Thoughtful uncertainty does not need to shout.

The applications of a Principle should predict observable

phenomena that can be tested in the real world. What applications might flow from the Principle of Inconsistency?

## APPLICATIONS

The postulate that fundamentalists are driven by fear may suggest practical strategies as we seek personal opportunities to “Relumine the Enlightenment.”

\* We can clarify the motives of science. The Platonic world of the Fundamentalist is as real to him, perhaps even more real—and certainly more *important*—than the physical world. Therefore, fundamentalists often assume sinister motives about *why* scientists “leave God out” of doing science. We can help them realize that science, by definition, seeks to understand the universe in terms of processes that operate *exclusively within nature*. Even if divine personalities and phenomena exist, to invoke them means we are not doing *science*. Science can therefore say nothing about such personalities or phenomena, other than to provide boundary conditions that are necessary for reconciling belief to knowledge.

\* We can offer third alternatives to binary questions. We often hear, “Which is true, Evolution or Genesis?” That is not the question. Rather, the question is, “In what sense is Evolution true, and in what (different) sense might Genesis be true?” In the original Hebrew, Genesis 1 forms a dramatic poem of cosmic proportions. The mythos of a people, captured in the timeless language of their epic poetry, forms the root from which grew their culture and philosophy of life. A people’s mythology therefore expresses profound truths about their identity and values, whether or not the characters and events described in the mythos are historically and literally “true.” [6]

\* Niels Bohr once observed that truth comes in two varieties: Simple Truth, and Deep Truth. [7] The opposite of a Simple Truth is false; but the opposite of a Deep Truth is *also* true. Deep Truths produce creative tensions that lead to new insights. Questions about the meaning and purpose of life are not *science* questions, but they are *profound* questions all the same. We can, therefore, show respect for these questions, which are the *real* concerns of our fundamentalist neighbors. Such questions are far too interesting to admit black-or-white answers. How ironic it would be to unconsciously trivialize them by squeezing them into false dichotomies!

\* As a scientist, I must be careful to not slip into the Principle of Inconsistency myself. Scientific fundamentalism, unfortunately, often emerges as a source of shouting from the extreme that lies opposite the religious fundamentalists. Both extremes exhibit a similar underlying arrogance: The Principle of Inconsistency emerges when religious fundamentalists tell God what to do, *and* when science fundamentalists extrapolate

(continued on next page)

their expertise about the natural world into pronouncements on concepts that lie outside the domain of the sciences.

The inferences of the Principle of Inconsistency can be put to experimental tests. A state of perpetual fear cannot be maintained with stability. Some fundamentalists are uneasy with their fundamentalism. They have been born into it, or backed into it by family and culture and people-pleasing. Realizing how completely they trust science when they go to the doctor or step aboard an airplane, they sense the corrosive effect of the Principle of Inconsistency even though they have not articulated it. I have some evidence for this claim of unease. In a general education “science and society” class that I regularly teach, in every term, after discussing these issues with the class, I see *relief* in a large number of student faces and essays.

If fundamentalism is driven by fear, then our integrity as physicists seems to demand that we share our vision of science *especially* with those who feel threatened by it. When physical evidence and organized knowledge [8] about nature are coupled to tolerance and courtesy and respect for persons, we physicists can show *all* our fellow citizens (and maybe even our dear, pious grandmas) that they have nothing to fear from the science that grew out of the Enlightenment.

[1] Dr. Rigden presented “The Mystique of Physics: Relumine the Enlightenment” as the 2005 Millikan Award Lecture, at the American Association of Physics Teachers Summer Meeting, August 9, 2005, in Salt Lake City, UT; first published in the *American Journal of Physics* 73 (12), December 2005, pp. 1094-1098. Reprinted with the permission of Dr. Rigden, AAPT, *AJP*, and the American Institute of Physics.

[2] I recall the time my grandfather was recovering from a heart attack, confined to bed and staring at the four walls of his bedroom at home. He told my father that he would like to have a television to watch. My dad brought him a TV and Grandma went ballistic. Dad told

Grandma, “Mama, if Daddy wants to go to Hell for watching TV, that’s his business.” The TV stayed, but whenever visitors would come to the house Grandma quickly covered it with a sheet.

[3] The “extremes” are usefully classified as “Position A” and “Position Z” by Michael Dickerson in “Letter to a Creationist: Seeking the Middle Ground,” *The Science Teacher*, Sept. 1990, p. 49.  
[4] I am thinking—as I am sure you anticipated—of the U.S. invasion of the Philippines in 1899, and criticisms of that action voiced on the eve of the invasion by the formation of the American Anti-Imperialist League in 1898; see <http://www.loc.gov/rr/hispanic/1898/league.html>.  
[5] Garrison Keillor well expressed the slippery slope fear in matters of fundamentalist lifestyles: “First it’s television, then it’s worldly books, and the next thing you know, God’s people are sitting around drinking whisky sours in dim smoky bars with waitresses in skimpy outfits and their bosoms displayed like grapefruit.” *Lake Wobegone Days*, Penguin Books, 1986, p. 138. I don’t know how Grandpa could have been so unaware of the danger. He took his religion seriously—in fact, he was a pastor—but he was no fundamentalist. Indeed, he was keenly interested in astronomy. Perhaps the fact that as a young man he made his own telescope inoculated him against fundamentalism.

[6] How interesting it is that the Hebrews, who gave us Genesis, never took it literally themselves. “Humble in the face of a spiritual reality whose essence we cannot ‘know,’ we speak in metaphor.” Preface to *Gates of Prayer, New Union Prayer Book*, Central Conference of American Rabbis (1999).

[7] Niels Bohr, “Discussion with Einstein on epistemological problems in atomic physics,” in *Albert Einstein, Philosopher-Scientist*, P.A. Schlipp, Ed. (Library of Living Philosophers, 1949), Vol. 7, p. 240.

[8] Religious fundamentalists almost always interpret the term “theory” as “hypothesis” or “speculation.” We need to be more proactive in describing what “theory” means in such contexts as “the General Theory of Relativity” or “atomic theory.” I suggest that (when a brief moniker is required) the term “theory” be translated as “organized knowledge,” a network of concepts created by the human mind, but continually tested and improved based on comparing its inferences against reality.

