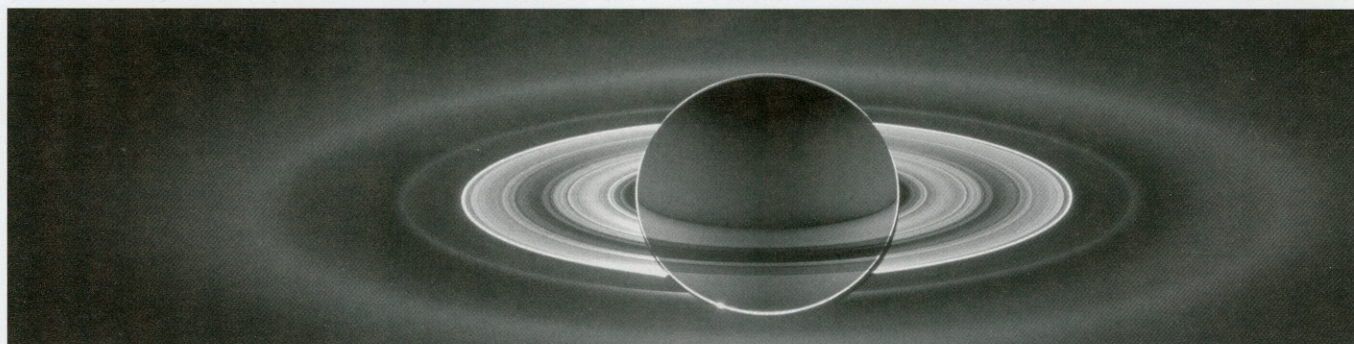


Scientific Subjectivity: *Bias, Evolution, and*

Astrophysics | BY ERIC SCOTT (posted 9 September 2008 in the Collegiate Blog)



My father and I had an intriguing discussion this evening. It began with a discussion of black holes, Hawking, astrophysics, and so forth. We had talked about this several months ago, when he expressed skepticism of cutting-edge “theoretical physics” by saying “they end up manipulating the observations to fit the mathematical model we have.” It’s backward from the classical scientific approach of observation first.

A few weeks before, I had written the following: “My new Bible is physics. You want absolute truth, secrets about our universe that are mysterious and transcendent and affect our daily lives? That, my friend, is physics” (Feb. 25, 2008).

Irony. So, of course, I intuitively recoiled at his blanket criticism of modern trends in science. Luckily, he did not single out general relativity or microwave background radiation—two models I have a semblance of comprehension for—and stuck with the more presumptuous and complex predictions of black holes and string theory. Still, I didn’t know quite how to handle his direct accusation of the misdirected and biased nature of the scientific community-at-large. I was quite skeptical, and feeling a bit defensive.

Then he returned to his own domain. “The bulk of my

experience with science is on the biological side,” he said. That is where our discussion ended in March. This time, however, he continued. Back in his area of expertise, his arguments suddenly became more fully featured, cogent, and arguable less reactionary. “There are eight hundred thousand known species of insects in the world,” he said. “That’s more species than there are in the animal kingdom and the plant kingdom combined.” He paused for effect. “We only know the life story of one-tenth of 1 percent of them.”

He proceeded to express frustration with the emphasis of current research being placed on reclassifying insects’ evolutionary relationships by patterns in their mitochondrial DNA: another example of seeking to fit data to a meta-narrative that is taken for granted, no longer questioned. Too little focus on the present.

“We’re so interested in the history, and yet we haven’t a clue what’s going on in the world around us,” my father said. “It happened to me again last week: A researcher commented on a photo of an introduced species of moth I’d put up on *Bug Guide* that was far away from where it’s supposed to live. He’d published a paper on it the week before on his three years of research—three years in which he could only acquire fifty specimens.”

“You know why?” he asked. “Because nobody cares about the menial task of documenting and recording. It’s

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no longer novel, and interest has worn off. Science moved on before the task was done. There are no systems in place in our country today to detect changes or migrations in the distribution of insects—despite all the worry about global warming.”

I do not have the requisite perspective to know if this is all a straw man. I know my father is a creationist, which is heavily related to his distaste for the emphasis biology texts place on the Darwinian metanarrative. After listening for a while, however, my hesitation subsided and I began to see value in what he was saying. Of course, movements in the scientific community are trend based, self-propelling, and so forth. Yes, science is all about free thought and objectivity, but that doesn't mean things are obvious. The data can be very opaque at times.

“Science is like a religion,” he said, “when a new religion begins.... There was a time when science was new, energetic, and everything was a novel exploration, as it is with everything until....” he paused to collect his thoughts.

“Until it becomes dogmatic?” I offered, drawing analogies in my mind to Christian history. He hesitated at the “d” word, but responded affirmatively. “That’s a good way of putting it.”

Later, I followed this up with the observation that, naturally, “it has to be a cultural thing. Of course, you’re influenced by what you are taught—it’s impossible to hold all the data in your mind at once. The flaws in the metanarrative are not obvious, especially when it comes to the big ideas like the big bang or evolution.”

“The limitations on the human mind put a damper on things,” Dad added.

So, in summary, am I convinced that astrophysics or biology research has a fundamental misalignment in its value system or objectivity of agenda? Not hardly. But I did come to some sort of ineffable epiphany before our conversation moved to the discussion of neural networks, telomeres, French summer school, and my new girlfriend. I may think twice next time I impose a metanarrative explanation upon a reality I do not fully understand.

Yet this puts us at odds with the likes of David Sloan Wilson, who writes disappointedly in his popular book, *Evolution for Everyone* (2007): “Rejection of evolution extends to...the constant refrain that evolution is ‘just a theory.’ To make matters worse, most people who do accept evolutionary theory don’t use it to understand the world around them (2).”

My father’s complaint is precisely the opposite: that

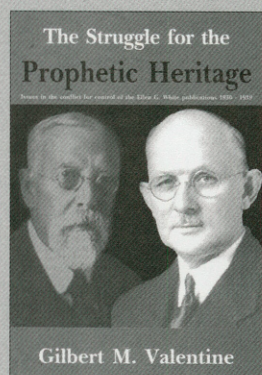
evolution is too accepted and permeates too deeply into scientific perspective. Wilson advocates it as a metanarrative; Dad fears it is already too dogmatic. I see value in both positions. I am perturbed enough as it is when we don’t prove a theorem in math class—if we did not examine evidence in physics before we were told to believe in relativity, I would complain to the chair (Okay...I would at least be miffed). If biology texts always presuppose evolution, rather than build up to it, then I can sympathize with his discomfort, even for my lack of doubt.

But one cannot dismiss Wilson out of hand. He makes a few very powerful statements: “Our hidden agendas need not be conscious. It’s not as if we see the world clearly and then willfully distort it to serve our purposes. The world we see clearly has already been distorted by unconscious mental processes” (13).

“Even the most talented and open-minded scientists in these fields are handicapped by events that took place before they were born and became the basis of their disciplinary training,” he writes. “A theory is merely a way of organizing ideas that seem to make sense of the world” (15, 16).

One’s perception of an idea—of what is true, good,

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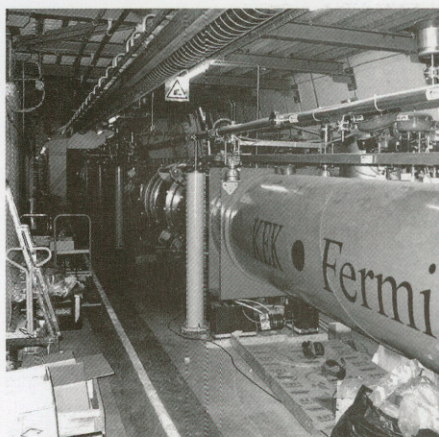
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Valentine is also author of
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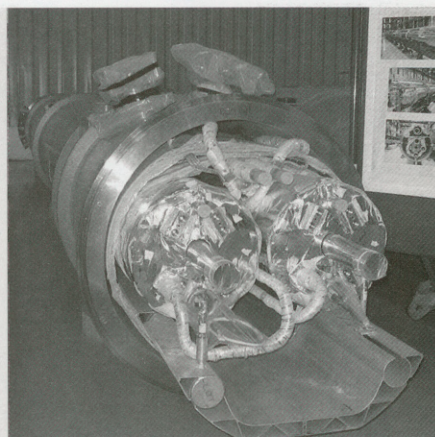
To whom did the gift of prophecy really belong? This new book explores the complex and conflicted relationship between the White Estate and church leadership. It explains how it came to be agreed that the “gift” belonged to the whole church. But it took time to resolve the power struggle within the top ranks of Adventist church leadership over the issue. Eventually the White Estate was relocated from California to the General Conference but it was a long and bumpy road from West to East.

Reviewers say:

- “Valentine is an excellent author and this is a good book” —George Knight
- “I found Valentine’s presentation stimulating and probing as he explored the complex relationship between the White Estate and denominational leaders.” —Michael Campbell
- “Valentine is not only a superb historian, he is also a loved pastor and a wise teacher. This is a narrative of commendable empathy told with a clear understanding of the problem, the related issues and the outcomes.” —Arthur Patrick



Large Hadron Collider quadrupole magnets for directing proton beams to interact. These superconducting quadrupole electromagnets were made in Fermilab. Photo: gamsiz



A quadrupole magnet for the Large Hadron Collider (LHC) of the European Organization for Nuclear Research, known as CERN. Photo: Julian Herzog

useful, or fashionable—is inextricably linked to one's experiences, which in turn consists largely of others' opinions. If a friend says programming in Lisp is cool, I will tend to agree with him—my independent opinion immediately eclipsed by their apparent confidence and the urge to conform.

If I'm told a teacher is poor, or a student annoying, or that smoking is disgusting, I will tend to agree. My internal objectivity is highly subjective to my social reality.

The same principles extend to academia. It takes a lot of study to gain anything resembling expertise in a given field. If I am told, as a student, that neural networks are all the rage, that nanotechnology is where the money is, or that bioinformatics has great potential, I believe it.

Just like if I'm told that a certain historical philosophy gave rise to another or was evident in contemporary art, I must be inclined to believe it at least mostly, because I haven't the experience or the resources to verify it from primary sources.

As such, the world being too vast for objectivity, most of our knowledge and picture of reality—our metanarrative—comes from secondary sources. An insoluble paradox?

Comments

HOW IS ONE TO DISCOVER the nature of the world, except by proposing "metanarratives" and seeing which fits the data the best? Is it really a problem that physics is using relativity and quantum mechanics without much questioning (other than where they do conflict), when these ideas actually describe what is happening?

Is plate tectonics a problem, or a solution to many problems? Well, it's both, but I think that we find its primary value in its great ability to solve problems. The fact that it, like evolution, can raise new problems is

part and parcel of a genuinely explanatory theory.

Why is it that I hear about the "dangers" of meta-narrative from creationists only with respect to ideas with which creationists take issue, and not where plate tectonics is the metanarrative? Granted, they have plates moving around at highway speeds, never bothering to explain insuperable problems like where all of the heat of the magma went, but they still accept the basics of (though not much of the evidence for) plate tectonics.

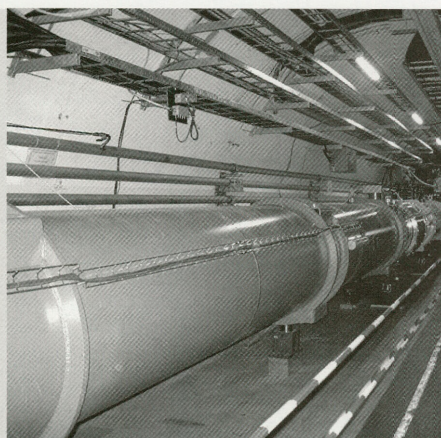
Are scientists "fitting the data to Newton's metanarrative," or are they simply using a proven general conception (in the classical realm) to do science? I really do not doubt it is the latter.

The fact is that it makes no sense to hash over well-demonstrated concepts time and again. Science would never progress if it didn't learn and then incorporate certain ideas into the written knowledge of science. Call it dogma, even, if you wish, for it is not fully unlike dogma, even though it is not sacrosanct (MOND questions aspects of Newtonian gravity that have continued to be accepted in the QM/relativity age).

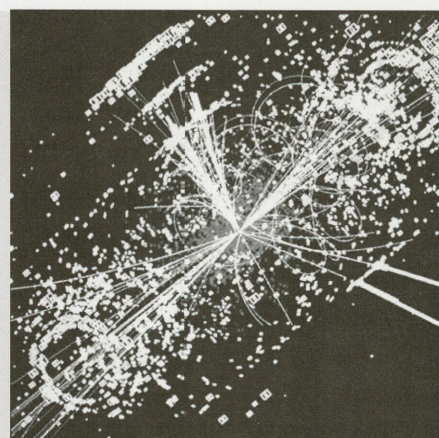
The college general biology textbooks that I have seen do, indeed, give reasons for accepting evolution. My biochemistry text and cell biology text both accepted it as a known factor in biology, which of course it is. The observation that evolutionary ideas permeate biology is due to a very important fact—this being that evolutionary effects are evident in almost all aspects of biology.

I do not think that evolution permeating biology textbooks and journals is at all unwarranted, so long as it remains the primary organizing principle in biology.

Glen Davidson, Sept. 9, 2008



Tunnel of the Large Hadron Collider (LHC) of the European Organization for Nuclear Research, with all the magnets and instruments. Photo: Julian Herzog



A simulated event at the LHC of the European Particle Physics Institute, depicting the decay of a Higgs particle following a collision of two protons in the CMS experiment.

"A THEORY IS MERELY a way of organizing ideas that seem to make sense of the world."

If all theories are based on that premise, how is the biblical creation narrative not also a theory based on its writers' attempt at making sense of their world?

What other such theories, developed long ago, are still accepted as the last word today? Have we advanced, or do we still remain in the scientific dark ages by accepting, unquestioningly, their theories of the world?

Elaine Nelson, Sept. 10, 2008

ERIC—NOT TO DO with "astrophysics"—just regular ol' particle physics: the Large Hadron Collider at CERN in Switzerland went live today. You heard about it? A couple physicists at my university are involved with that project and are pretty excited.

KM, Sept. 10, 2008

HEHE, YES, DEFINITELY AWARE of the LHC. I hung out with my friends in the Physics Department this morning and we discussed the ludicrous black hole doomsdays stuff for a while, and some freshman got detailed explanations of what it was doing. Several math professors were met in the hall with a chipper "Happy LHC day!" which confused them momentarily, much to our glee.

Glen: I agree with all you say, and although blatant creationist agendas frustrate me, too, I'd like to think that it's possible and beneficial to respect the efforts and trends in science while still remaining skeptical enough to come up with creative alternatives in one's own specialty.

Eric Scott, Sept. 10, 2008

WE ARE STILL AT THE IMPASS of "In the beginning God" or "In the beginning the Big Bang."

Every time we hear a loud noise we say either, Who did that? or What caused that? We have yet to agree.

They just completed a replication of the "big bang" over in Switzerland. It will produce another generation of Ph.D.s and little else of substance for the benefit of the hungry, tired, poor, and down trodden.

So, I'll remain with Karl Barth: "Jesus loves me this I know for the Bible tells me so."

Tom Zwemer, Sept. 10, 2008

TOM, WHY SO skeptical? Science and technology produce plenty of primary, secondary, tertiary, and other benefits for "the hungry, tired, poor, and downtrodden." Knowledge filters. It may not filter "fast," but it does filter, and it has been filtering faster and faster in the last hundred years. I do not expect that to slow.

While that continues to happen, we all have our own groundwork to do, and I don't think we can afford to push it off onto other folks—even that next generation of Ph.D.s.

I have read the 1950s and 1960s complaints about space race investments. I still read complaints about military spending. I do believe we would be further along if we didn't insist on blowing each other up, but having scientists and engineers learning more of the intricate nature that God created is a very good thing for all of us. It's not all about "me" the individual. What matters most is "we" the race, and we are born knowledge seekers.

Science is part of our nature, and it will ever be.

KM, Sept. 10, 2008 ■