

## ESSAY

# What Has Science Come to?

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**Abstract**—Some criticisms of the fundamental processes in modern science are made. They are illustrated by references to examples over a range of different fields.

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## Introduction

Fifty years ago, one could hardly avoid falling into a heated argument on whether science and religion were compatible. Today, that is a dead subject. As a scientist, I just assumed people had come to realize that science is what works and religion was based on myths and guesses. But now an astonishing realization has begun to dawn on me—religion has prevailed! Science has become religion!

Let me quickly add that this is not the view of the influential establishments of science and religion. The two, as Stephen Jay Gould (1999) proclaims in his new book *Rocks of Ages*, represent “a respectful noninterference—accompanied by intense dialogue between two distinct subjects.” Another recent book about religion, however, gives the game away in its title: *Seduced by Science* (Goldberg, 1999).

The point this latter book misses, however, is that although religion may have borrowed some of the jargon of science, science, more importantly, has adopted the methods of religion. This is the worst of both worlds. Rather than going on at length about how both approaches to enlightenment are correct, it would be more useful to explore why both are so incorrect!

Of course, there is a questioning, exploring side to both science and religion, which in the beginning was vital to humanity, but what most people accept today as fundamental scientific knowledge is barely distinguishable from what organized religion became some centuries ago. The fatal part of the latter was dogma unsupported by replicable experiment. The most damaging aspect of science today is widely promulgated theories that are contradicted by observation and experiment. In both cases, a story is mandated by authority and then defended by educational, economic, and sociopolitical agencies.

### Some Examples of False Premises

Of course science claims to be based on facts and that contending theories must rise and fall as new evidence emerges, but the changes tend to be extravagantly hyped variations based on the same unquestioned basic assumptions. Let us examine for a moment the current all-encompassing science of cosmology, i.e., the physics of the universe. The big bang theory proclaims that the whole universe created itself instantly out of nothing. I believe there are many observations by now that disprove this, but even supposing for a moment it were true, would it be essentially different from the religious belief that God created the universe at some time in the past? Does calling the event “faster than light inflation” explain any more than calling it a miracle? In fact, scientists seem to have borrowed heavily from the religious concept of “immaculate conception.” The Vatican has supported the big bang theory since they alertly sense a place for a “creator.” And when Stephen Hawking solves the riddle of “How did the laws of physics by which the universe was formed exist before it was formed?” by saying, “They existed in imaginary time,” he might just as well have said, “Any information content in that statement is purely imaginary—I don’t know any more than the church does!”

### Creationism and Science Education?

One of the crusades of academic science is against religious creationism. Periodically there arises a messianic need to save the general public from the ignorant belief that humans were created in their present form some short time ago, say, 8,000 years or so. They should blush with shame. Their big bang cosmology, aside from a small quibble about timescales, is the most blatant form of creationism. The claim is that not just humans but *the whole universe* was created instantaneously out of nothing.

Many scientists are outraged that the Kansas Board of Education has banned the big bang theory, but they overlook the point that it was brought on by their own efforts to ban religious creationism; as in most religious wars, they tried to ban the heretic beliefs. As for Darwinian evolution, they did not see that it was not a valid theory until it confronted openly the opposing claims.

The essence of true education has been mutilated by all three participants in this sorry spectacle. Academic science fails for trying to ban religious creationism, religious creationism for trying to ban evolution theory, and big bang creationism and the board of education for trying to ban discussion of the whole subject. Only if evidence and arguments on all sides are discussed can students make up their own mind what is the most likely truth—probably something quite different from that of any of the current partisans.

### More Sacred Oxymorons

Another example of a basic premise that is self contradictory is “dark matter.” Because extragalactic astronomy interprets all redshifts as velocities, it

has to invent huge quantities of invisible matter to explain all the supposed motions that are observed. Never mind that some scientists have shown the postulated dark matter cannot account for rotations, the only redshifts that are certainly velocity. Never mind that the remaining large redshifts have been argued to be nonvelocity, and never mind that the supposed dark matter has never been detected. Nevertheless, enormous research projects are funded on the assumption that more than 90% of the universe is unobservable. This violates the basic definition of science, namely that it deals with the relation of real observations to each other. Most citizens stopped describing angels some centuries ago.

But consider the most fundamental precept that underlies modern science: gravity. Let us ask a few simple-minded questions about this force: It is supposed to be a force that attracts one body to another, but how does the sun pull on the earth and vice versa? Are there invisible elastic bands pulling them together? Does the exchange of electromagnetic particles cause a force pulling them together rather than giving them an impulse apart, as one might expect?

Obviously, gravity acts much faster than the speed of light; otherwise, the earth would be orbiting around a point where the sun was 8 minutes ago. But in the simplified pantheon of scientific saints, Einstein said that information cannot be communicated faster than the speed of light. So he resorted to having masses “curve space.” Bodies ran on invisible, prefixed tracks in space, but how can you curve *nothing*?

Over 100 years ago, a physicist named Le Sage pointed out that a universal sea of faster-than-light particles (or wave particles, for generality), by pushing on all bodies, would produce essentially the same equations as that of “attractive” Newtonian gravity. Gone are the complexities of multidimensional space-time that renders general Relativity comprehensible to only a chosen few.

Did someone mention observational tests? Over the last third of a century, it has turned out that extragalactic objects are not necessarily rushing away from each other in an expanding universe. The observations indicate that new galaxies are being continually created. If they are created from low-mass particles and evolve into normal-mass galaxies, then their early redshifts are not indicative of high-recession velocity but instead indicate that matter composed of low-mass, young particles emits weak, redshifted photons (Arp, 1999).

In 1977 the Indian astrophysicist, Jayant Narlikar, showed there was a more general solution to the field equations of general relativity. This yields intrinsic redshifts directly as a function of the age of the object—in agreement with empirical observations. Mathematically, it is a transform of the usual special solution that describes our small sample of space and time. But physically, in cosmological realms, it is nonexpanding, continually creating, and indefinitely large—totally opposite the current big bang paradigm.

The solution is very simple and requires no space geometry (Riemannian) terms. Those very complicated terms are no longer needed to fit the observa-

tions. General relativity turns out to be a local theory. The simpler underlying theory is driven by communication of all parts of the universe with all other parts (per the conclusions of Ernst Mach, another 19th-century physicist and philosopher). There are no “singularities” where physics “breaks down,” as plagues the present theory. The fundamental property of matter is its age (how much of the universe it has communicated with). That determines the rate at which its clocks run (another way of saying what its redshift is). Space is obviously filled with wave particles (ether, if you will), but it is not sensible to give them coherent geometric properties.

### **Certainty in Science**

The alternative interpretations I have sketched above may seem outrageous to anyone schooled in currently accepted physics. Moreover, because my major criticism of today’s science is that it is impossibly authoritarian, I cannot claim that these new ways of understanding the observations are, with any certainty, correct. The major reason for my advancing them is to demonstrate that there are possible ways of simply and rigorously connecting the data that are enormously different from the currently obligatory theory.

The usual establishment excuse that “there is no other possible way of explaining the observations” simply cannot be used to prop up a theory that has been devastated by the empirical evidence. The only thing we can be certain of is that the old theory has been disproved. New working hypotheses such as those I have outlined above can be tried, modified, and perhaps, inevitably, discarded completely. Theory is only an attempt to simplify the connection between currently known facts. The prime responsibility of science is to keep in mind that there is never certainty and the most important obligation is to keep testing the fundamental assumptions.

### **Suppression of Evidence**

The most harmful aspect of what science has become is the deliberate attempt to hide evidence that contradicts the current paradigm. Most scientists give ritual obeisance to the dictum that “one can never prove a theory, only disprove it.” In a quite human fashion, however, they act in an exactly opposite manner—judging that “if an observation disagrees with what we know to be correct, then it must be wrong.”

The tradition of “peer review” of articles published in professional journals has degenerated into almost total censorship. Originally, a reviewer could help an author improve his article by pointing out errors in calculation, references, clarity, etc., but scientists, in their fervid attachment to their own theories, have now mostly used their selection as a referee to reject publication of any result that would be unfavorable to their own personal commitment. The intensity of the feelings involved can be judged by the frequent recourse to personal invective in the reports to the editor (which the editors, joining in the

spirit, pass on to the authors). The only comparable interaction I have heard of is the passionate wars between different religious doctrines of past centuries.

The press, of course, only reports news from established academic centers that have a strong financial and prestige interest in glorifying the status quo. The result is that real investigative science is mostly now an underground activity. Independent, often self-supported researchers are publishing in privately supported, small-circulation journals. It is difficult to say whether “big science,” like the medieval church, will slowly erode in influence over many generations, or whether there will be a sudden rebellion with scandal and corruption being reported by investigative journalists.

### **The Humanities Fail to Counterattack**

One characteristic of an institution that has long gone unchallenged is arrogance. The physical sciences manifest this quality particularly toward the social sciences or the humanities, scathingly referred to as the “soft sciences.” A few years ago, the now famous “Sokal hoax” (Sokal, 1996; Sokal & Bricmont, 1998) was initiated. An article intended to be nonsense was cast in pseudosocial-science jargon and accepted in a humanities journal. After the hoax was exposed, it was heralded as proof of the unrigorous character of the social sciences.

It is undeniable that there is a pervasive use in all of academia of complex, specialized terms, which when examined do not yield much significance. It should be challenged wherever possible. For example, Serge Lang, a mathematician and member, has in the past challenged puffery by social scientist members of the National Academy of Sciences, but conversely the nonphysical sciences should not pass by the opportunity to criticize a much greater breach of rigor in the “hard sciences.” After all, to get the whole universe totally wrong in the face of clear evidence for over 75 years merits monumental embarrassment and should induce a modicum of humility. It is not enough for deconstructionists to complain that our culture is dominated by dead white men. The important point is that the dominators (at least the ones generally revered in the hard sciences) got it completely demonstrably wrong.

Consider at this moment, e.g., the pinnacle of modern physics: *String Theory*. From an article in the *Los Angeles Times* of November 16, 1999, we can select a few dazzling quotes.

Famous physicists from the Institute of Advanced Study in Princeton: “Space and time may be doomed” and “time can be extinguished like a blown-out flame.”

From Columbia University: “Strings are shards of space and time.”

From the Institute for Theoretical Physics: “Where are we? When are we?”

And finally: “Today’s physicists are in possession of what may well be the Holy Grail of modern science.”

If I stand back a little from this, it sounds like a religious frenzy—like speaking in tongues. Where is the hard rebuttal from the postmodernists, and

perhaps most important of all, the analytical criticism and discussion from the generalists? Is it not time to move on from partisan authority to open-minded, sensible curiosity?

### Medical Science and Biology

At first sight, the biological sciences would seem to be immune to plunging off the track with invalid paradigms. After all, the experiments are easily repeatable and either they work or they do not work. But the cutting edge of research passes through academia. Some very bad mistakes occur. For example, the problem of how AIDS arose in humans.

In the 1950s, polio vaccines were grown in kidney-cell cultures from monkeys. They were administered to massive numbers of people in central Africa around 1955. Some years later AIDS, caused by viruses present in certain types of monkeys, began to decimate African peoples and soon spread around the world.

It has taken over 44 years for science to discuss the probable cause of AIDS, as due to using cross-species cellular material as a substrate for live viral vaccines. The evidence began to be clear 10 years ago (Cribb, 1996; Curtis, 1992; Hooper, 1990, 1999) but was not discussed in the preeminent interdisciplinary science journals such as *Science* and *Nature*. Toward the end, there were derogatory references to some “scientifically implausible” theories and once the monkey viruses were inescapably identified, detailed scenarios of the African people eating “bush meat” (monkeys) as an explanation for the (sudden) epidemic (Hahn et al., 2000).

It should not require prominent expertise to face the fact that various species carry viruses to which they are immune, but which can be deadly to other species. Is it permissible to simply say, as Hooper quotes one investigator of that time, “We were acting in full innocence, not understanding what sort of Pandora’s box we were opening?” Is it permissible to give another human being a substance and say, “Here take this, scientific knowledge has established that it will protect you from debilitating and anguishing disease?” In the course of events, something more seems now to be called for.

### Physics in Action

One might think that theoretical physics, that realm of what people think reality is, cannot do much practical harm. Wrong. Beyond the invention of race-threatening bombs, there is the trying out on human beings of naive experiments and ill-thought-out products, which if given a moment of common sense reflection, would have revealed the possibility of truly horrible personal consequences. *The Plutonium Files* by Eileen Welsome (1999) is the latest in a now long list of accounts of how radioactive substances were tested by the government, the military, and scientists on unsuspecting subjects. Welsome’s personal accounts of the victims make the incidents poignantly real.

Of course, everyone who builds a device to improve the lot of mankind knows it may be used by some to do great damage. But it seems to me that the guardians of fundamental knowledge, the universities and research institutes, could set a much better example of responsible testing of their theories and public announcements. Most graduates of top-ranked research departments have unfortunately been treated to an ongoing spectacle of prominent personalities publicizing their own theories while ignoring or suppressing obvious observational disproofs. Getting the answer that will do the investigator the most good is not necessarily the answer that will do the society the most good. There are well-known departments that are almost completely preoccupied with personal issues of tenure and competition but where the real issue is whether there is any professional competence.

### **Psycho-Science**

Sometimes it is better to just sleep through a whole era of scientific advance. In November 1999, I encountered a news note that brain researchers were having second thoughts. It seems that for decades, they had been measuring electrical activity in various regions of the brain and had come to the conclusion that the Freudian psychoanalysis was wrong. There was no activity in parts that should have supplied stimuli while dreaming!

But now, they had measured again, and in different parts, and announced that they were not so sure of their original conclusion. Imagine, more than a century of comparison and study of carefully recorded subconscious and conscious human states had been overturned by needle twitches. Then psychoanalysis had been reinstated (maybe)—and I had been blissfully unaware of the whole drama.

### **The Way It Began and How It Could Be**

The great irony is that both science and religion started as legitimate inquiries into the nature of existence. The earliest impulse of beings must have been to observe. Religion noted the inside feelings and dreams. But probably some of the feelings were misunderstood fears, disguised images, and illusions, which then became institutionalized by charismatic personalities. Science, on the other hand, tried to record events objectively. But perhaps similar subconscious assumptions crept in and influenced all subsequent interpretations. Again, as science organized, authority figures became associated with the “laws” they were credited with discovering.

Organized religion succeeded in killing a great number of people down through the ages on issues that were labeled “belief and heresy” but were probably more fundamentally concerned with personal profit and power. Science has arisen some centuries later in less bloody societies but has killed and delayed many new ideas and discoveries and has made many mistakes, for perhaps basically the same reasons.

What do we do now? Perhaps community-based organizations such as the Unitarian or Quaker churches, which are almost absent theoretical dogma but instead concentrate on useful service to a society of real people, is the most desirable direction. Perhaps it is necessary to discover morality empirically. Of course, today, for science in particular, electronic communication makes possible communities of individuals from all corners of the world. The most direct evolution toward an enlightened science is for these groups to just go about supporting each other in doing science free of disproved, official assumptions.

Of course, an informed public is crucial. Already, however, that public is learning that the most dreaded words one can hear in modern life are “There is no credible scientific evidence that the substance in question is harmful to human beings.” One just cringes and thinks, “How long before the data is released and the other shoe drops?” Individual survival based on free communication and individual decision making seems the slow but surer method for achieving both spiritual and scientific enlightenment.

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