Culture Clash: Law and Science in America

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CULTURE CLASH: 
LAW AND SCIENCE IN AMERICA
Steven Goldberg
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Reviewed by
Glenn Harlan Reynolds*

BETWEEN PILATE AND GALILEO

In recent years, there has been a great deal of attention given to the idea that “junk science” has distorted the legal process.¹ It thus seems only fair that someone should begin worrying about the effect that law (perhaps even “junk law”) might have on science. Although Steven Goldberg’s Culture Clash: Law and Science in America² could hardly be called a response to Peter Huber’s Galileo’s Revenge,³ it represents a similar inquiry from a vastly different starting point into the respective roles of law and science in America. Reading it, I was reminded (in no small part by Goldberg’s repeated references) of Stephen Carter’s Culture of Disbelief.⁴

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2. Steven Goldberg, Culture Clash: Law and Science in America (1994).
3. See Huber, supra note 1.
Why is it that the past couple of years have seen three major books aimed at the three pillars of American society—law, science, and religion—each arguing that “its” pillar has been weakened by interference from the others?

I will discuss Goldberg’s book, comment on his analysis of the uneasy relationship between law, religion, and science, and suggest why these three pillars of our society seem so at odds. I will offer some suggestions for improving matters, although I do not believe that anything close to a cure is likely. I begin with a discussion of Goldberg’s main points.

I. THE WORLD ACCORDING TO GOLDBERG

If American society rests on the three pillars of law, science, and religion, then according to Goldberg they are pillars of distinctly unequal size. In Goldberg’s analysis, science and law occupy distinctly favored positions in our constitutional and societal scheme, while religion is a distant third place. Where basic research is concerned, science is favored over law—it enjoys a “privileged legal status.”

Science is not above the law, but scientific decisions receive such enormous deference from the courts as to amount to “judicial abdication.” To make this point, Goldberg compellingly contrasts the searching review often accorded Social Security disability cases (which are often very complex and technical) with that accorded disappointed applicants for scientific research grants. While no lawyer familiar with the field would characterize Social Security disability law as “applicant-friendly,” disappointed applicants for disability benefits receive a number of opportunities for appeal, and courts are entirely willing to review the technical judgment of the Social Security Administration in appropriate cases.

By contrast, as Goldberg demonstrates, courts are very reluctant to subject the process of awarding scientific research grants to much review at all. The result, he says, is that “from a litigator’s point of view, basic science operates in something of a vacuum. . . . The scientific community itself dominates a system marked by substantial support and freedom for scientists, whereas the legal community finds itself with little power.”

One may quibble with this view. Even limited to basic research, it seems overstated. As a lawyer who frequently deals with scientists, both on and off campus, I see few working scientists who regard their position as

5. GOLDBERG, supra note 2, at 62.
6. Id. at 63.
7. Id. At 63-68.
8. Courts have been very reluctant to pierce the veil of confidentiality behind which “peer review” operates, though that confidentiality has at least the potential for facilitating conflicts of interest and theft of ideas. See Constance Holden, Court Protects Peer Anonymity, 266 SCIENCE 366 (1994).
9. GOLDBERG, supra note 2, at 67.
quite so privileged. Indeed, many feel rather beset by law and lawyers. They are at pains to make this clear once they learn my profession. My experience on my University’s Institutional Animal Care and Use Committee (IACUC) underscores this point. The committee was charged by law with overseeing and approving all experimentation involving animals. Even handing out snakes to freshman biology students and telling them “this is a snake” required continual oversight and a never-ending succession of forms. Although I hope (and believe) that our committee occasionally did some good, our main role was to require scientists to fill out more forms, or keep additional records, to protect the University’s legal posterior. Not surprisingly, the scientists generally resented the additional work and the oversight by a body that included not only other scientists, but also members of the community and even (horrors!) a lawyer. While the scientists received grants through a peer-reviewed system largely insulated from judicial review, their ability to perform the experiments funded by those grants was substantially constrained by legal norms.

While such regulation is hardly an example of extraordinary deference, it is true that those who are hostile to scientific experimentation usually have to attack it indirectly, through claims that it is unsafe or unethical, rather than through direct attacks on scientific merit. In particular, as Goldberg convincingly argues, those who have attacked particular pieces of scientific research on the ground that they are “wrong” or “immoral” have failed miserably, largely because the entire American constitutional and legal system was designed to be hostile to such efforts.

Goldberg traces much of our Constitutional philosophy regarding science and religion to debates in the era of the framing of the Constitution. When Boston’s Reverend Thomas Prince delivered a sermon blaming the Boston earthquake of 1755 on divine retribution for Benjamin Franklin’s invention of the lightning rod, Prince was immediately attacked by Harvard professor John Winthrop and other leading intellectual lights. As Goldberg characterizes the debate:

Winthrop’s response, as well as his writings on comets a few years later, attacked clergy who fostered fear rather than understanding of natural phenomena, and emphasized the consistency of Winthrop’s own belief in God with an understanding of Newtonian mechanics. Winthrop’s attitude exemplified an important strand of Enlightenment thinking: a combination of attacks on “superstitious” clergy with support for scientific specula-

10. Indeed, it is not entirely unfair to suggest that much of the “animal rights” movement, at least that part of it directed at scientific research involving animals, has as much to do with hostility toward scientific research as it does with concern for animal welfare. For more on this topic, see Glenn Harlan Reynolds, The Uneasy Case for Animal Rights (forthcoming).
Leading American scientists joined Winthrop in condemning the "priestcraft" that controlled men's minds. The goal of these scientists was not atheism, but rather a faith illuminated by natural philosophy. Since the Framers shared these attitudes, it is not surprising that the new nation was founded on principles friendly to scientific inquiry. Indeed, the establishment of the American Republic can be viewed as Galileo's true revenge (notwithstanding Huber) against the clergy who suppressed his ideas. In such an environment, efforts at stamping out the teaching of scientific theories such as evolution were doomed to fail, as they did. Where religion collides science, the playing field is not level: [B]asic science occupies a favorable position indeed in American law and culture. The Constitution shields science from its rival—religion—and from government suppression. It lays the groundwork for generous funding, and statutes assure that the resulting funding is parceled out by the scientific community itself. Meanwhile in our pluralistic culture with traditional religious voices often weak and divided, science even plays a major role in the formation of our values. Throughout the entire process, the progressive ethos of science utterly dominates the cautious process norms of the lawyer.

At least where basic research is concerned, scientists have a rather good deal, though not quite as good as Goldberg maintains. But things change drastically once we leave the pristine intellectual uplands of basic research and enter the marshy lowlands of technology. There, "the tables are turned with a vengeance." Congress has the authority to impose conditions on its grants for scientific research, and it has the power to regulate science under a variety of environmental, safety, national security, and public policy rationales. Furthermore, Congress has delegated much of its authority to administrative agencies that are likely to be less accountable and more intrusive than Congress itself.

Nor do scientists receive deferential treatment from the courts where such regulations are involved. The result is a very different world from that in which basic research reigns supreme. As Goldberg says, "When the issues become those of accommodating the interests of competing public groups rather than determining the will of the scientific community, attorneys begin to come to the fore. . . . Lawyers have this role because, as we have seen,
they are the principle [sic] agents for the peaceful resolution of social disputes in American society, and agencies are a microcosm of that society."

Most questions involving applied technology involve value judgments. Should we accept lung disease and deaths from lung problems brought about by burning coal, instead of a risk of radiation accidents from nuclear power? The methodologies of science do not provide answers. Science is concerned with consensus and truth. With such questions, consensus is unlikely because it is hard to say what constitutes a "true" answer to a question based on values. Galileo's famous post-trial statement, "nonetheless, it still moves," stresses truth over process. Pilate's question, "what is truth?" expresses a litigator's response to such concerns. Lawyers are used to such questions, and the methodologies of the law are designed to deal with them. But judges and lawyers are not always comfortable with the uncertainties in the state of scientific information, and rapid scientific progress produces a persistent "regulatory gap." This regulatory gap, Goldberg says, creates a need for more coordination between the areas of basic research on the one hand and applied research and regulation on the other.

As a response to this gap, the scientific community, Goldberg says, has created "science counselors" who serve as bridges between the scientific and the nonscientific communities. These scientists import social considerations earlier into the process, by infusing basic research with a concern for consequences and applications. This may sound good, and within limits Goldberg thinks that it is, but he is not entirely happy. Although the counselors' purpose is to reduce conflict between research and regulation, Goldberg fears that they may unintentionally pollute the pristine world of basic science. Like a St. Laurence Seaway of the intellect, they may lead to the infestation of the pure waters of research with the mental lampreys and zebra mussels of unscientific lawyerly thinking. Goldberg fears a future in which science counselors enjoy too much influence:

In such a world, the ethic of socially acceptable progress would permeate all research. In other words, basic research would no longer represent one of two cultures—law and science—vying for dominance in our society. No longer would science embody a belief in the progressive growth of knowledge that stands in sharp contrast to the law's process-oriented belief in the peaceful resolution of social disputes. The science counselor would represent one culture in which progress and process have merged into an ethic of social progress.

There are gains in this scenario—the regulatory gap would be narrowed in the short run, meaning that appropriate technology would be

available more efficiently. But there are costs as well, because a complete triumph of the science counselor would not be consistent with productive science in the long run. . . . The science counselor seeks to avoid wasteful regulation by bringing science in line with reasonable social goals. In doing so, however, those who would save science, threaten it. The danger is that science will be loved to death, smothered in the embrace of social considerations.18

Goldberg concludes with an uncharacteristically lukewarm observation that some science-counselling is good, but that too much would be bad.19 Surely, there is more to be said about the issue. And, in fact, there is.

II. THE OTHER SIDE OF THE COIN

If scientists have tried to adjust to the demands of law, regulation, and politics with science counselors who inject social concerns into their processes early on, lawyers have done the same kind of thing in reverse. The interface between law and regulation on the one hand, and science and technology on the other, has inspired scientists and lawyers to become involved in bridge-building. Indeed, to our good fortune, Steve Goldberg is one of those mediators.

A science counselor must learn something about law and politics—not necessarily so much that he or she becomes a lawyer or a politician (though this happens)—but enough to understand the legal and political ramifications of scientific developments and to communicate the important aspects to other scientists. Likewise, a burgeoning law and technology movement has produced a new breed of lawyers who understand something about the world of science and technology—not enough, perhaps, to do science,20 but enough to understand the way law impacts science and technology, and vice versa. Such figures and the many journals now devoted to the field can work to close the law's own version of the "regulatory gap." Legal institutions, by nature conservative, do not always adapt well to rapid technological change. Goldberg gives a good example in a discussion of legal protection of software.21 This "teaching old law new tricks" problem22 can be mitigated

18. GOLDBERG, supra note 2, at 182-83.
19. "So, in the end, our imperfect reality can only be improved in imperfect ways. A heavier dose of social concern is coming into the scientific world, and, if that dose remains a limited part of the research endeavor, it can perform a valuable service in narrowing the regulatory gap. There are no exact standards available here, but a clear understanding of law and science in American life makes steps in the right direction more likely." Id. at 183-84.
20. There have been a few eminent lawyer-scientists—Edwin Hubble, for example—but not many.
21. GOLDBERG, supra note 2, at 99-103.
when individuals who understand scientific and technological progress anticipate its legal implications. A hallmark of the law, science, and technology movement, such advance thought has done much to ease the transition of such developments as space law, genetic engineering, and nanotechnology into mainstream legal thought.

In addition to addressing this closer-to-home version of the regulatory gap, law, science, and technology types might serve a sort of translation function. I do not mean teaching lawyers about science, to borrow a phrase from Harold Green. Rather, I mean helping non-scientists understand the impact of legal thinking and legal rules on scientists and helping scientists deal with law and regulation. Thus, while a science counselor might urge scientists to think about the social consequences of their work (and perhaps even to modify that work), the legal counterpart might stress to the legal community the adverse consequences of restrictions on research, or the damaging effect on the norms of the scientific community that may result from the importation of legal procedures and rules into scientific misconduct cases. In this process, science counselors and law, science, and technology lawyers may serve complementary functions. It is often the case that those who dwell along a border have more in common with the folks across the border than with their compatriots in the heartland.

23. Even before the first launch of a spacecraft, legal thinkers were addressing the questions raised by space travel, and the most important space law agreements, such as the 1967 Outer Space Treaty, were arrived at behind an almost Rawlsian veil of ignorance. John C. Cooper, High Altitude Flight and National Sovereignty, 4 INT'L L.Q. 4 (1951); WALTER McDOUGALL, ...THE HEAVENS AND THE EARTH: A POLITICAL HISTORY OF THE SPACE AGE 177-94 (1985) (surveying the history of early space law).

24. Just as "genetic engineering" was becoming possible, at least in a rudimentary sense, the scientists involved gathered at Asilomar to discuss the ethical and regulatory issues involved. See Paul Berg, et al., Asilomar Conference on Recombinant DNA Molecules, 188 SCIENCE 991-94 (1975).


28. The most prominent example is the Asilomar conference on "recombinant DNA" research. See supra note 24.

29. Although it is unfair to criticize an author for writing a different book than the reviewer wishes, I wish that Goldberg had talked more about the legal counterparts of science counselors. For now, however, we will simply have to hope that he (or someone else) will address this issue in the future.

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III. WHY ALL THE FUSS?

At the outset, I promised to offer some thoughts on why there has been so much more dissension lately among law, religion, and science. It is tempting (and perhaps not wholly inaccurate) simply to locate blame in the kind of post-Cold War internecine-struggle zeitgeist that characterizes the conflicts in Yugoslavia, Somalia, and various splinters of the former Soviet Union. Many alliances formed by the need to stand shoulder-to-shoulder against a feared enemy are now dissolving, and the post-World War II alliances between science, religion, and law could plausibly fall among their number. Moreover, it is possible to argue that the current falling out among science, religion, and law is in keeping with the principles of our nation. The Framers of our Constitution were deeply concerned about the concentration of power in too few hands. They created a government that was divided two ways: between the states and the federal government via federalism, and within the federal government via separation of powers. The theory was that rival power centers would police each other and keep any one or two from growing too strong.30

In the post-World War II era, for a variety of reasons, law and science reached a comfortable accommodation; religion (as Goldberg notes) was far less favored. This relationship led to (and was reinforced by) the "trivialization" of religion that Stephen Carter complains about.31 The comfortable accommodation between science and law is breaking down, and religion appears to be gaining more influence. This may be discomfiting to those (including myself) who generally side with science in the science versus religion wars, but it may be a helpful corrective. Certainly the law-science alliance has led to some abuses that went unpolic ed.32 Similarly, the efforts of Peter Huber to criticize "junk science" represent a different kind of breakdown in the mutual accommodation between law and science, with lawyers becoming more skeptical of claims based on scientific expertise. Mutual watchfulness among these three pillars of American society may be a good thing. Perhaps what appears to be a shift toward mutual hostility is the return of a more balanced approach.

I think, however, that this view is too optimistic. The key lies in Goldberg's identification of science as "virtually the last bastion of the

30. See generally Federalist No. 46 (Madison); Federalist No. 48 (Madison); Federalist No. 51 (Madison) in THE FEDERALIST PAPERS (Clinton Rossiter ed., 1991).
31. See CARTER, supra note 4.
32. Most abuses occurred in the name of Cold War national security. One example is the recently discovered secret government program that involved injections of plutonium into hospital patients to study its toxic effects. See U.S. Promises to Release Data on Plutonium Test, N.Y. TIMES, Nov. 21, 1993, at 30 col. 1.
optimistic, progressive part of the American ethos."

An optimistic belief in progress underlay the creation of the American republic. Only a people who did not see life as a zero-sum game could have created a nation that endowed its citizens with equal rights under the law.

For a variety of reasons, none of them particularly good, this belief in progress has been undermined almost everywhere else but science. By most objective measures, this nation is richer, freer and more secure than at any time in its history. Yet, one is hard pressed to find many who believe it, or who expect further improvement. Outside the field of science (and particularly among non-science academics) a belief in progress has come to be seen as naivete. Only suckers think that things are going to get better.

This view has been around for a while, but it seems to have gained favor lately. As an undergraduate, I participated in a seminar on the future of humanity. We read gloomy articles predicting resource shortages and overpopulation. One promised food riots in America by 1980. When I suggested that technology might solve many of the problems, I was told that such an approach was an unrealistic effort to avoid wrestling with the problems. It seemed to me that an assumption of technological stagnation was far more unrealistic than the assumption (freely made in the same class) that human nature could be drastically changed in the next few decades. The track record of scientific and technological progress in this century has been far better than anyone could have imagined a hundred years ago. The record of efforts to change human nature over the same period has been one of equally unimaginable disaster.

That may be the real reason for the "clash of cultures" that Goldberg, Carter, and Huber describe. Although science itself is partly an exercise in faith, it differs from religious faith. As Isaac Asimov put it, the chief distinguishing characteristic of the "religion" of science is that it works. In this century other institutions have frequently failed and produced an array of wars and genocides so vast that the mind recoils. Religion did not stop the Holocaust, Stalin and Mao's colossal massacres, World War II, or ethnic strife in Rwanda or Yugoslavia. Neither did law. With too few exceptions, representatives of law and religion were distinguished by their cowardice, denial, and hypocrisy in the face of these catastrophes. Nor, as professors Cottrol and Diamond remind us, has subsequent scholarship really engaged

33. GOLDBERG, supra note 2, at 180.
34. Id. at 69-72.
35. Some "postmodern" critics of science have treated it as just another religion, See generally PAUL R. GROSS & NORMAN LEVITT, HIGHER SUPERSTITION: THE ACADEMIC LEFT AND ITS QUARRELS WITH SCIENCE (1994) (surveying and criticizing "postmodern" and "social constructionist" critiques of science).
36. ISAAC ASIMOV, FOUNDATION 112 (1966) ("[I]t is the chief characteristic of the religion of science, that it works.").

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this issue. Meanwhile science, though not without sin, has continued to deliver steady increases in our knowledge of, and ability to control, the world around us.

As all professors know, the outstanding student is likely to face "levelling" behavior by his or her less-successful fellows. Likewise, much hostility to science, particularly within the academy, probably stems from the fact that science in this century has done much better than its competitors. This has been dealt with in two ways: a pathetic attempt to imitate science in nonscientific disciplines (what a colleague of mine calls "physics envy"), or an estrangement from, and even disdain for, the world of science. Both responses are inappropriate. One cannot transplant the methodology of science into literary criticism, or even law, wholesale and expect to have anything viable. But one can hardly ignore the most significant source of change in modern society and expect to have much to say either.

Lawyers and religious figures of the eighteenth century seemed quite capable of understanding the world of science and integrating it with their own, and scientists of the time seemed able to combine scientific and religious insights. If law and religion are to be checks on and critics of the world of science, then members of those fields must be able to do the same today.

In this sense, the work of Goldberg, Carter, and Huber is a hopeful sign. All are non-scientists who have combined an understanding of scientific matters with their own disciplines. It is my hope that we will see more like them in the future. I think that the law, science, and technology movement has an important role to play in fostering such work. Legal academia tends

37. Robert J. Cottrol & Raymond T. Diamond, The Fifth Auxiliary Right, 104 YALE L.J. 995 (1995). Cottrol and Diamond quote Assistant Secretary of State for Human Rights John Shattuck to the effect that "In the twentieth century the number of people killed by their own governments under authoritarian regimes is four times the number killed in all this century’s wars combined." They thus argue that

We have, in the twentieth century, seen the rise of monstrous states capable of deprivations of liberty far in excess of anything that the English Whigs who authored the Declaration of Rights of 1689—or their American successors in 1791—could have envisioned. . . . That, in the light of history of the twentieth century, those we rely on for serious constitutional and political commentary have failed to examine the issues of whether the state should have a monopoly of force and whether an armed population might still play an important role in deterring governmental excesses bespeaks a dangerous intellectual cowardice, a self-imposed limit on political and constitutional discourse that causes us largely to ignore one of the most critical questions of our time.

Id. at 1025-26.

38. Of course, there are some things that we can learn. I do not mean to discourage cross-pollination, but I do condemn cargo-cult like efforts to give non-science the appearance of science.
not to value law, science, and technology scholarship as highly as many other kinds of work that are less useful, but more chic.

I especially hope that we will see more work along these lines from Steven Goldberg. *Culture Clash* is an excellent book, one that will benefit anyone interested in the relationship between law and science in today's society. But it feels more like the first volume in a series than a completed work. I hope that Goldberg will continue to analyze these issues from other angles. In an age when most dramatic social changes are driven by science and technology, it is important that we lawyers, whom Goldberg correctly describes as the principal agents for the peaceful resolution of social disputes, think about the relationship between science, technology, and the law. Our thinking is better because of Goldberg's work.