Tensions between the world of science and the world of law may arise because of their differing viewpoints and philosophies. Disagreements may center around such questions as what constitutes proof, around human behavior, and around the use of the insanity defense in criminal cases. The just deserts model is examined and is criticized as being harsh and possibly unrealistic in today's society.

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by Christopher Columbus Langdell and James Barr Ames of Harvard in the late 1800s, contained only cases, that is, decisions by courts. These were seen as the raw material—the strata, the fossils—of the law. From them the student was to deduce the principles governing the development of the law, as a geologist deduces the principles governing changes in the earth.

A great deal is to be said for this style of thought, besides the fact that it is fun. Among other things, law developed by reasoning from precedent may be accepted as legitimate in the sense of being based on principles thought to transcend the judge’s own, merely personal, opinions. But no one today would follow Langdell in describing legal reasoning as scientific, or the law as a science. The achievements of science have become too dramatic to permit such a conceit: we see each other across oceans; we have walked on the moon. Whatever else may be its achievements, legal reasoning can point to nothing comparable.

But if law is not a science, and the judge not a scientist, nevertheless the judge may not escape the world of science. For as science pervades our life, it pervades our law. The judge must therefore seek a harmonious relationship between science and the law.

It would seem that achieving such a relationship should not be difficult. A trial, after all, is an attempt to recreate the past, to find out what really happened. Did the yellow Cadillac go through the red light and hit the little Toyota? In matters of proof, at least, law like science is concerned with learning the truth. Law and science should therefore be allies, and the judge should feel no tension between the world of legal proof and the world of science. And indeed, often that is the case. Two very common illustrations are fingerprints and blood samples. With the scientific development of such evidence, judges and juries have been enabled to give confident answers to such questions as, Was the defendant in the room? Did the defendant father this child?

But great difficulty or lack of harmony remains. What is a judge to do when, to prove a disputed fact, a novel scientific proposition is offered; when, in other words, the judge is assured by a lawyer that the witness can explain something that no one has been able to explain before? For example, the lawyer offers to call as a witness a toxicologist who will testify that as a result of certain tests he has devised and performed upon tissue from the body of the deceased, he has demonstrated the presence of a poison, the presence of which, however, prior to his tests medical scientists believed could not be demonstrated.

For many years the law’s solution to this difficulty was to reject the evidence, on the reasoning that the judge, as a nonscientist, was incapable of assessing its worth. Scientific opinion would be accepted only if the principles on which the opinion depended were generally accepted in the scientific community. In the preceding example, the toxicologist’s opinion would not be admissible unless it first was proved that toxicologists generally accepted his procedures and reasoning as sound. In some jurisdictions this is still the law, but in others the law has changed. Under the Federal Rules
of Evidence, for example, proof of general acceptance in the scientific community is no longer required; it is enough if the judge is persuaded that the expert’s opinion, albeit novel, “will assist the [jury] to understand the evidence or to determine a fact in issue.”

This change is easily understood as a response to the scientific and technological explosion of recent years: given all the new knowledge we have, surely, it is said, the law should take advantage of it. And yet, the change has set up a tension between the world of science and the world of legal proof that did not exist before. For how is the judge, ignorant of science, to decide whether the expert’s novel reasoning is soundly based in principle? Granted, the jury in its search for truth should have the help of science. But how to be sure that what is offered as help really is help?

Perhaps the most common example of this tension is the polygraph, or “lie detector.” Proponents of the polygraph have repeatedly pressed the courts to admit evidence that a witness failed a polygraph test as evidence that the witness’s testimony should not be believed, or to admit evidence that the witness passed the test as evidence that he should be believed. So far, in general, the courts have refused, unpersuaded that the test is scientifically sound. Another example is the spectrograph or “voiceprint.” Should a judge admit evidence of a spectrograph as evidence that certain words were spoken by the defendant? On this the courts have wavered, some admitting the evidence, others excluding it.

Many other examples might be given: gas chromatography, neutron activation analysis. Indeed the papers in this series illustrate the point, for they refer to work at the frontiers of knowledge. The extent to which the conclusions reached in that work would be admissible in a court of law is therefore a matter of uncertainty.

Disharmony Regarding Human Behavior

The tension between the world of science and the world of legal proof is in no sense fundamental. For, in seeking to resolve the tension, the judge does not proceed from premises inconsistent with science. On the contrary, the judge’s concern is only that the proffered proof be consistent with science; evidence of the result of a polygraph test is excluded because scientists are not themselves satisfied with the reliability of the test. Thus the law does not proceed contrary to science but only at a different pace: the question is not whether to admit scientific proof, but only how soon and by what procedure it should be decided that proof said to be scientific really is scientific. When it comes to the world of philosophy, matters are far different. There the tension between science and the law is fundamental.

Consider Dr. Elliott’s presentation (this issue, p. 131) of contributions by neurobiological research to our understanding of human behavior. The premise of this study is that there is no dualism or separation of a material brain and a nonmaterial mind; rather, the mental transactions of the brain have a physiological basis. We are machines—extraordinarily complex and delicate machines, by no means completely understood, but machines nevertheless—thinking,
feeling, reacting to the world about us according to our individual, idiosyncratic, physiological makeup. Did the defendant fly into a sudden rage and beat his wife? The explanation of his behavior lies in a weakness in his neurophysiological inhibitions. This is not to suggest that we are to look only to neurology. As Dr. Mednick shows (this issue, p. 101), also consider genetics; and as Dr. Elliott makes plain, many other disciplines, psychology and sociology among them, will be pertinent. The defendant, however, remains a machine, and the search goes on for the secret of his personal mechanics.

The law's view of human behavior is different. It assumes that we are free; that our behavior is not to be regarded as the outcome of reciprocal interactions between brain, hormones, and environment. The defendant who beat his wife should have controlled his rage; it was wrong—bad—of him not to, and he must be punished.

These two views of the human condition seem to me incompatible. But beyond their compatibility, each also seems deeply problematic.

The neurobiological view of the human condition is at once liberating and terrifying. It is liberating not only because of the contributions it has already made to our understanding but because of the hope it extends to us. If we can identify the cause of the defendant's sudden rage, and if we can discover a way to eliminate that cause, we can perhaps greatly improve the human condition. Calmed and stabilized by, for example, regular medication or surgical intervention, the defendant may be able to lead a responsible, constructive life, supporting and loving his wife instead of beating her. And this individual example encourages us to think on a large scale: if one violent person can be helped, we may be able to help entire communities and so achieve a stable, peaceful society.

But behind or beneath this tranquil scene lurks terror. The very strength of our yearning for peace may delude us into believing that we know more than we do and thereby encourage us to great cruelty. We may think we know the cause of the defendant's behavior when we do not. Our medical intervention into his condition may therefore be unwarranted. Besides, once we take the view of humans as machines, some machines will be seen as inferior to others and therefore to be neglected, or even eliminated. We need only reflect on the Nazi doctors who killed in the name of healing to know the reality of such a prospect.

The law's view of the human condition is no less problematic than that of biology. By insisting upon free will the law ennobles us. It confers upon us a dignity that no machine can have and that commands respect. It institutionalizes the religious insight that in each of us there is "something of God." At the same time, this magnificent perspective stultifies the law. And every judge has felt the pain consequent upon that stultification.

Consider any criminal case: sale of drugs, burglary, purse-snatching, or the most violent crimes—rape and murder. Put yourself on the bench and read the presentence report. Not always, but almost always, the defendants standing
before you awaiting sentence will not be free individuals; they will be social cripples: illiterate, ignorant, poor, undisci- plined, resentful, and otherwise disabled in conforming their conduct to the norms that the law imposes upon them.

When Is Insanity a Proper Defense?

And so, we have entered the world of the prison. This past spring a case from the darkest corridor of that world, death row, was decided by the United States Supreme Court. I should like to state the Court's decision, for it illustrates in an especially poignant, if not tragic, way the tension between the world of science and the world of the prison.

In 1974, in Florida, Alvin Bernard Ford was convicted of murder and sentenced to death. There was no suggestion that he was mentally incompetent at the time of his offense, at trial, or at sentencing. In early 1982, however, his behavior gradually changed. His letters to various people revealed a pervasive delusion that he had become the target of a complex conspiracy by the Ku Klux Klan and others to force him to commit suicide. He became convinced that the conspirators had taken members of his family hostage. His hostage delusion expanded until he was reporting that 135 of his friends and family were being held hostage in the prison. By what he described as "day 287" of the "hostage crisis," the hostages included "senators, Senator Kennedy, and many other leaders." In 1983, in a letter to the Florida Attorney General, he assumed authority to end the hostage crisis, and claimed that he had fired various prison officials.

He began referring to himself as "Pope John Paul, III," and reported having appointed nine justices to the Florida Supreme Court.

Ford's lawyer arranged to have him examined by a psychiatrist and when Ford refused to see this doctor further, on the ground that the doctor had joined the conspiracy against him, his lawyer arranged for a second psychiatrist. The first psychiatrist concluded that Ford suffered from "a severe, uncontrollable, mental disease which closely resembles 'Paranoid Schizophrenia with Suicide Potential.'" When the second psychiatrist asked Ford if he would be executed, Ford replied, "I can't be executed because of the landmark case. I won. Ford v State will prevent executions all over." The psychiatrist concluded that Ford had no understanding of why he was to be executed and believed that in fact he would not be executed because he owned the prisons and could control the Governor through mind waves. In the psychiatrist's opinion, there was "no reasonable possibility that . . . Ford was dissembling, malingering or otherwise putting on a performance. . . ."

There were two issues before the Supreme Court. The first was whether the cruel and unusual punishment clause of the Eighth Amendment precluded Ford's execution; the second was a procedural issue.

Taking the procedural issue first: Before signing Ford's death warrant, the Governor had appointed three psychiatrists to examine Ford, and each had found Ford competent. However, Ford's lawyer was not permitted either to question or impeach the psychiatrists or to
present evidence on Ford’s behalf. All of the Justices, saving only Justice Rehnquist and Chief Justice Burger, agreed that this was unfair and that the case therefore had to be remanded for further hearing.

It is the first issue, though, that is important to our discussion: may an insane prisoner be executed? On this issue, five of the Justices agreed that the cruel and unusual punishment clause forbade execution. Writing for the Court, Justice Marshall found that at common law an insane prisoner could not be executed; he further found that “[t]his ancestral legacy has not outlived its time,” for no state in the Union permitted the execution of the insane. He observed that different commentators gave different reasons for the common law rule. One commentator simply said that to execute an insane person offends humanity; another, that it provides no example to others and therefore contributes nothing to whatever deterrence value capital punishment serves; another, that madness is its own punishment; another, that it is “uncharitable to dispatch ‘an offender into another world, when he is not of a capacity to fit himself for it’”; and so on. But whatever the reason, it was plain that the common law did not permit execution of the insane. Moreover, all of the Justices agreed that this was so. Their only disagreement on this issue was whether the prohibition of the common law should be incorporated in the Eighth Amendment.

In stating this case, I do not mean to enter into the intricacies of Constitutional law. Nor do I mean to enter into a discussion of the law’s difficulty in deciding when insanity is a defense to an act that would otherwise be criminal. My point is a more general, and I think a more fundamental, one; it is that in some circumstances, at least, the law will abandon its premise that we are free, and will acknowledge the truth of the scientific view that we may be driven by forces beyond our control. The problem is to define the circumstances in which the law will acknowledge the scientific view.

So far, no principled definition has been achieved. We not only sense that we are free, we know we are. Nothing is gained by positing that some complex series of hormonal transactions caused me to put all caution aside and accept Dr. Elliott’s invitation to contribute a paper to this issue of the journal. But we also know that we are physiological machines. Yet we admit to that knowledge only in extreme circumstances—when confronted with the horror of executing an Alvin Bernard Ford, and in a few other situations, when our narrowly circumscribed and conceptually compromised definitions of “insane” or “incapable” are met.

I have already suggested why our admission is so grudging. But surely we should be able to take advantage of the knowledge science brings us, without falling into the terrible error of regarding people as mere machines. I believe that most, or at least many, judges would accept my description of typical offenders as social cripples, disabled in conforming their conduct to the norms that the law imposes upon them. Why is it that we don’t take advantage of our knowledge to strengthen such an indi-
A Judge's Three Worlds

individu al? We know a good deal, for example, about alcohol and drug abuse, behavior commonly associated with crime. Thanks to Marvin Wolfgang, we know a good deal about who commits, and is likely to commit, crime. Why are we so ineffective, no niggardly, in providing help for those who need help, and without it, will do great harm, to themselves as well as to others?

I am reluctant to end with such despairing questions. I should rather end by saying that law seems to be achieving a rapprochement with science. But in honesty, I see little prospect of rapprochement. For the law is obsessed with punishment, and until it frees itself of that obsession it will be unable to achieve a harmonious relationship with science.

Inherent Weakness of the Just Deserts Model

The literature on the justification and consequences of punishment is full and varied; Professor Wolfgang (this issue, p. 111) has given us a marvelous review of it. As he explains, the prevailing view is that punishment should exact of an offender his "just deserts." I find, however, that I am unable to agree with Professor Wolfgang's suggestion, as I understand him to suggest, that the just deserts model represents an advance in penal philosophy. In my view it is simply the latest model, and I expect it to be discarded, just as the deterrence model and the rehabilitation, or medical, model have been, for it no more achieves a rapprochement with science than they do.

I think this may be seen from a recent paper by Professor Ernest van den Haag in support of the death penalty, although, as Professor Wolfgang demonstrates, support of the death penalty is in fact not a necessary implication from the just deserts model. Arguing from the premise of the just deserts model, that "[r]etribution is an independent moral justification [for punishment]," Professor van den Haag says that, "[b]y committing the crime, the criminal volunteered to assume the risk of receiving a legal punishment that he could have avoided by not committing the crime." Such a statement, I submit, provides a cloak for the self-righteous, as they pass the less fortunate by. One may readily concede that the criminal is not to be excused because he is a social cripple. One may equally readily concede that we commit evil deeds for which we must be punished. But to say that the criminal volunteers to assume the risk of punishment seems to me to deny the evidence that our behavior may be the result of forces beyond our control. It is long past time to undertake a fundamental reexamination of our law, to the end that we acknowledge our weaknesses and act to make ourselves stronger and thereby more truly free.

References
1. 4 Harv Law Rev 193 (1890)
5. F.R. Evid. 702
6. See generally the report on the polygraph by the American Medical Association Council
Spaeth

on Scientific Affairs, JAMA, 256(9), 1986, concluding that before polygraph tests may be accepted as accurate, "[m]uch more serious research needs to be done"


10. See generally United States v. Brawner 471 F.2d 969 (D.C. Cir. 1972)


12. Id at 1667 (footnote omitted)

13. Id at 1668