



Atlantic Legal Foundation

R E P O R T

SEPTEMBER 2000

Norman Augustine Receives ALF's Annual Award

The Atlantic Legal Foundation presented its Annual Award to Norman R. Augustine at ALF's thirteenth Award Dinner on Thursday, June 22, 2000 at the Union League Club in New York City. ALF has given the Award every year since 1988 to an individual who exemplifies the ideals and principles of public service and private enterprise. Mr. Augustine, Chairman of the Executive Committee of Lockheed Martin Corporation, has been a leader in the defense and aerospace industries for more than forty years.

Hayward D. Fisk, Esq., Vice President, General Counsel and Secretary of Computer Sciences Corporation and Chairman of the Board of ALF presented the Award. His introduction of

Mr. Augustine, reprinted below, described Mr. Augustine as a "veritable Renaissance man."

Mr. Augustine opened his remarks, which are reproduced beginning at page 9, by noting: "How fortunate we are to have an organization like the Atlantic Legal Foundation that is willing to tackle difficult issues that are important to society and its future and does so in such a balanced, constructive manner."

Past ALF honorees have included, among other distinguished recipients, the Honorable Donald Rumsfeld, New York City Mayor Rudolph Giuliani, Malcolm S. Forbes Jr., Ambassador Carla Anderson Hills, and Walter B. Wriston.

ALF's Position on State Intervention in Foreign Affairs is Adopted

In June, 2000, the United States Supreme Court decided *Crosby v. The National Foreign Trade Council*, invalidating a Massachusetts law that barred state agencies from doing business with any firm that had commercial dealings with entities in Myanmar (formerly known as Burma). The Court affirmed the First Circuit Court of Appeals' decision on all major issues: federal pre-emption, the plenary foreign affairs power and the foreign commerce power of the Federal Government.

Partnering with the Washington law firm Wilmer, Cutler & Pickering, ALF

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ALF Chairman Fisk presenting Annual Award to Dr. Norman Augustine.

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Foundation to File Complaint in Reverse Discrimination in Public Contracting Case in New Jersey

Atlantic Legal Foundation will soon file a complaint in the United States District Court for the District of New Jersey challenging the New Jersey Department of Transportation's "Disadvantaged Business" preference regulations. The Foundation represents a non-minority surveying and aerial photography firm which effectively has been barred from bidding on or receiving subcontracts on major infrastructure project contracts let by the New Jersey Department of Transportation, resulting from affirmative action "goals" imposed by that government agency for utilization of "disadvantaged" business enterprises. ALF's client, GEOD Corp., is a male, non-minority owned firm whose business is heavily concentrated in work as a subcontractor or consultant on large scale public construction projects, such as highways, rail lines, subway lines, airports, and harbor facilities. Because of existing affirmative action

programs, a substantial portion of those contracts have been awarded to minority-owned (and therefore presumptively "disadvantaged") firms; in many cases, GEOD is not even permitted to bid, because the aerial surveying and photography work has been "carved out" by prime contractors as identifiable specialty work which "minority" firms have the capacity to perform.

In early 1999, in response to the Supreme Court's decision in *Adarand v. Peña*, which held that federal affirmative action programs must be based on clear evidence of prior discrimination, and "narrowly tailored" to remedy that past discrimination, the U.S. Department of Transportation issued regulations that "devolved" the responsibility for setting affirmative action "goals" from US DOT to various state and regional agencies, with a deadline of September 1, 1999 for the state agencies to submit "disadvantaged business enter-

prise" ("DBE") programs to regional US DOT offices for approval. Approximately 90 per cent of NJDOT's highway construction is funded by federal money.

ALF believes that the New Jersey program is vulnerable: the data used is obsolete, incomplete, inaccurate and has serious gaps, and the analysis is flawed and results in utilization "goals" which are often higher than the prior US DOT and state DOT goals. In May 2000, Governor Whitman issued an executive order establishing a commission to do another "disparity study;" the executive order comes very close to explicitly admitting that a prior study, done 10 years ago, is no longer reliable.

GEOD alleges that NJDOT's Disadvantaged Business Enterprise Program violates GEOD's rights to equal protection under both the United States and New Jersey Constitutions.

Foundation Files *Amicus* Brief in Ninth Circuit in Case Involving Principles of Medical Causation of Cancer from Exposure to Radiation

In September, 2000, the Foundation filed a *amicus* brief in the United States Court of Appeals for the Ninth Circuit, in *Kennedy v. Southern California Edison Company and Combustion Engineering, Inc.*, in support of the defendants-appellants' petition for rehearing *en banc* of a decision by a three-judge panel, which held that the trial court erred in failing to instruct the jury that it could find for the plaintiffs if they found that the likelihood of plaintiffs' decedent contracting cancer from exposure to radiation from a nuclear generating station (operated by the utility and supplied with nuclear fuel by Combustion Engineering) was a low as "one in one hundred thousand." The jury found for the defendants.

ALF's brief, on behalf of several Nobel Prize winners in Medicine, Physics and Chemistry, the vice-chair of the Department of Radiation Oncol-

ogy at the University of California at San Francisco, the former Dean of the School of Public Health at the University of California at Berkeley, and numerous other prominent scientists, including physicians specializing in cancer, epidemiologists, and physicists with expertise in nuclear physics and radiation exposure, argues that the plaintiffs' decedent's exposure was purely hypothetical because there was no evidence that there was any radiation in her home, no evidence as to the amount of exposure, and no evidence as to the radiation dose she received. We also argue that even assuming the "worst case" scenario hypothesized by plaintiffs' experts, the dose received from the hypothetical particle of nuclear fuel that might have been carried into decedent's home was far less than the "background radiation" we all receive, far below any levels deemed safe

by the Nuclear Regulatory Commission and professional scientific bodies, and far too small to have been causally linked to any illness.

Our brief also argues that the three-judge panel's decision is inconsistent with the Supreme Court's decision in *Daubert v. Merrell Dow Pharmaceuticals* and the Ninth Circuit's decision in that case on remand, because the methodology used by plaintiffs' experts was not reliable and their conclusions were speculative.

ALF Website

We are now posting our briefs and other major documents on ALF's website. Please visit us at www.atlanticlegal.org.

Slattery Elected President and Director Smith Elected Senior Vice President and Counsel

At its Board of Directors' meeting on June 23, 2000, William H. Slattery was elected President and a Director of ALF and Briscoe R. Smith was elected as Senior Vice President and Counsel.

William H. Slattery

Mr. Slattery has compiled a distinguished record in private practice and as a senior officer and the general counsel of a \$50 billion financial institution.

Following graduation from Stanford University in 1965, with distinction and Honors in Economics, he received his J.D. degree from Yale Law School. His six year stint with Simpson Thacher & Bartlett in New York City was interrupted by active duty in Vietnam and Okinawa as a Captain in the United States Army. He subsequently served as Vice President and Counsel of Irving Trust Company and, from 1982 to 2000, was employed by Republic National Bank of New York where he served as Senior Vice President and

General Counsel. He has been active in several professional groups, including the New York Bankers Association, the Financial Services Roundtable, the New York Clearing House and the Association of the Bar of the City of New York.

In announcing Slattery's election, ALF Chairman Hayward D. Fisk said, "Bill Slattery is perfectly suited to lead the Foundation and to ensure that its message and accomplishments are effectively communicated. He was the obvious choice in a field of many well-qualified applicants for the post."

Briscoe R. Smith

Long-time ALF Advisory Council member, Briscoe R. Smith, has assumed the position of Senior Vice President and Counsel of ALF. He will team with ALF's Senior Vice President and General Counsel, Martin S. Kaufman, in handling first-chair trial and appellate work as well as *amicus curiae* filings.

After clerking in the United States

Court of Appeals for the Second Circuit, Smith joined Milbank, Tweed, Hadley & McCloy and became a general partner of that firm in 1972. He served as General Counsel of United States Trust Company of New York and was counsel to the New York litigation firm of Davis Weber & Edwards, P.C. from 1990 to 1999. Smith has specialized in the preparation and trial of complex commercial matters. He has published a number of articles dealing with various aspects of litigation, has lectured on trial preparation for commercial cases and served on a number of arbitration and mediation panels.

A graduate of Williams College, Smith received his law degree from the University of Virginia where he was elected to the Order of the Coif and was Executive Editor of the *Virginia Law Review*.

William B. Lytton Elected to Board



William B. Lytton, elected to ALF Board of Directors.

William B. Lytton, Senior Vice President and General Counsel of International Paper Company, was elected to the ALF Board of Directors on June 23, 2000. In his present position as the senior legal officer of International Paper, Lytton supervises the legal staff and corporate secretary's office and has

overall responsibility for all legal matters affecting the corporation.

Mr. Lytton came to International Paper in 1996 from Lockheed Martin Corp., where he was Vice President and Associate General Counsel for the electronics sector. Before the combination of Lockheed and Martin Marietta, he served as Vice President and Associate General Counsel for business operations and international at Martin Marietta. Before Martin Marietta acquired General Electric Aerospace in 1993, Lytton had served as vice president and general counsel of GE Aerospace.

Lytton served on the staff of U.S. Senator Charles H. Percy from 1972 to 1975. He was an Assistant U.S. Attorney in the Northern District of Illinois from 1975 to 1978 and from 1978 to 1983 he was an Assistant U.S. Attorney in the Eastern District of Pennsylvania, serving as Chief of the Criminal Division and later as First Assistant U.S. Attorney. In 1983, he joined the Philadelphia law firm of Kohn, Savett, Klein and Graf, where as a trial lawyer he handled a variety of criminal and civil matters. While at that firm, he served as Staff Di-

rector and Chief Counsel in 1985 for the Philadelphia Special Investigation (MOVE) Commission.

In 1987, he left his law firm for a six-month assignment as Deputy Special Counselor to President Reagan. In that position, he coordinated the White House response to the congressional inquiries and Independent Counsel's investigation of the Iran-Contra matter. Upon his return to his law firm, he continued as a consultant to the President throughout the Reagan Administration. He also served as Special Counsel to President George Bush on issues relating to the Iran-Contra matter. He remained at his law firm until he joined GE Aerospace in 1989.

Lytton is a graduate of Georgetown University and the American University School of Law. He is Treasurer and a member of the Board of Directors of the American Corporate Counsel Association. In 1998, he received the Excellence in Corporate Practice Award.

President's Report



ALF President William Slattery delivering inaugural message.

The Foundation's mission is compelling. ALF fulfills a critical function in fostering the principles that have made this nation the most productive, open and optimistic in history. But just as a parent needs to curb the enthusiasm of an energetic child, the Atlantic Legal Foundation is here to protect the traditional values that have given this country the individual freedom and prosperity it enjoys - values that are often ignored or intentionally abused by government excesses or plain blundering. ALF can tackle cases and causes that would otherwise go untested or unrepresented - either because of the high cost of competent counsel or because corporations have such broad constituencies that they must be cautious. ALF has fewer constraints.

Its advocacy of authentic science and the admissibility of competent expert testimony cuts across the entire spectrum of civil litigation.

ALF does its work primarily in the courts - not a very popular venue these days. But winning a case does more than protect the rights of an ALF client; the case can establish a precedent whose influence can be just as far-reaching as legislation or administrative rule making or the most insightful monograph. Evidence of this is the increasing number of cases ALF is being asked to take on by organizations which find that court

action is the only effective way to right a wrong or to ensure that government serves the role for which it was intended.

We have our challenges: we rely entirely on the support of corporations, foundations and individuals, and the expense of operating a public interest law firm continues to mount. Our adversaries are more often than not funded by taxpayer dollars.

While the challenges are daunting, our strengths are equal to them. Our team is strong - indeed, I am told it has never been stronger. We have the enthusiastic support and leadership of our Board and Council; our roster of leading business executives, distinguished lawyers in private practice and renowned scientists is unparalleled. They are committed to the Foundation's mission. After a short month, I can readily appreciate the enormous contributions of my predecessors, Douglas Foster and Edwin Lewis, and especially those of Martin Kaufman, our General Counsel. Dan Fisk's leadership and enthusiasm for the Foundation's mission is an enormous asset. Rosemary Heckard-Webber's organizational talents are invaluable. I am thoroughly delighted that Sandy Smith, whom I have known and respected for many years, has joined our team.

The Foundation has a proud record which I will work hard to continue.

ALF's Position...

continued from page 1

submitted an *amicus* brief on behalf of former President Gerald Ford and approximately thirty former senior executive branch foreign affairs officials, including former Secretaries of State, Defense, Treasury, Commerce, former Attorneys General as well as U.S. Trade representatives, National Security Advisors and White House Chiefs of Staff.

ALF's brief focused on the plenary foreign affairs power of the federal government, and argued that not only did the United States Constitution and Supreme Court precedent assign exclusive jurisdiction over foreign affairs to the federal government, but that, speaking from their vast experience in making and implementing foreign policy, ALF's *amici* believe that as a practical matter it would be inefficient and dangerous to permit the 50 states and thousands of local governments to engage in making foreign policy decisions.

Tributes to Gov. Malcolm Wilson and William E. Simon

The ALF Board of Directors noted with deep regret the recent passing of two of the Foundation's most distinguished friends: former New York State Governor Malcolm Wilson and former Treasury Secretary William E. Simon.

Malcolm Wilson joined the Board in 1986 at the invitation of then-President Douglas Foster and was an active member of the Board until his health failed.

William E. Simon, the first recipient, in 1988, of the ALF Annual Award, was President of the John M. Olin Foundation, for many years a generous supporter of ALF. Following his widely praised government service, Bill Simon became a leading financier and consultant and was elected president of the Olympic Committee. He was active in a large number of philanthropic efforts and, in 1996, he was awarded The Hyacinth Cormier Award for outstanding Catholic leadership. Bill Simon's public service included a term as Secretary of the Treasury. He was the first federal energy "Czar" as director of the Federal Energy Office, a predecessor of the Department of Energy.

ALF Publishes Volume 2 of *Atlantic Legal Foundation Science in the Courtroom Review*

The Foundation has just published the second volume of the *Atlantic Legal Foundation Science in the Courtroom Review*.

The first article in the new issue is "Weisgram v. Marley Co.: Strengthened Powers and Duties in Gatekeeping Under *Daubert*," by Paul S. Miller, Bert Rein and Bruce L. McDonald. The article deals with an important recent decision by the United States Supreme Court explicating the impact of *Daubert v. Merrell Dow Pharmaceuticals* and its progeny on the trial of cases in which expert testimony is a critical element of proof and the impact of the federal trial court's, or a Circuit Court of Appeals', dismissal of a case because of a ruling excluding expert testimony on *Daubert* grounds. Paul S. Miller is Executive Vice President and General Counsel of Pfizer Inc.; Bert W. Rein and Bruce L. McDonald are partners in the Washington, D.C. law firm Wiley, Rein & Fielding.

The second article, "Junk Science in the States - The Battle Lines" is a survey of the acceptance and application

of *Daubert* and its progeny in state courts, and provides an invaluable primer for practitioners. The author, Henry P. Sorett, is a member of Brickley, Sears & Sorett, P.A. He litigates product liability and insurance claims throughout the country, and has extensive personal experience in the use of expert testimony in many state and federal trial and appellate courts.

Atlantic Legal Foundation Science in the Courtroom Review is devoted to bringing readers learned commentary of lawyers, scientists and scholars on issues concerning the interface of law and science, an area that is rapidly evolving, and, as Justice Stephen Breyer noted: "As society becomes more dependent for its well-being upon scientifically complex technology, we find that this technology increasingly underlies legal issues of importance to all of us." Stephen G. Breyer, *The Interdependence of Science and Law*, Science 280:537 (April 24, 1998).

Clients' Comments Putnam County Home Owners Tai and Adele Aguirre:

"When the largest city in the U.S. sued us we felt alone and completely vulnerable. Your support and expertise made it possible for us to win, and overcome injustice, and to offer hope for other property owners. You are truly dedicated to the principles of individual rights and the Constitution, and are willing to take on the 'big guys' to protect small businesses and individuals."

Dr. Patricia Buffler, Dean of the School of Public Health at the University of California (Berkeley):

"Thank God for the Atlantic Legal Foundation: it helps us to stand up and be counted."

ALF Files *Amicus* Brief in "Junk Science" Case Involving Multiple Chemical Sensitivity Syndrome

On August 17, 2000, the Supreme Judicial Court of Massachusetts handed down its decision in *Theresa Canavan's Case*, holding that under the Massachusetts rules of evidence, a trial court must hold a "Lanigan" hearing to determine the admissibility of a treating physician's testimony as to the causation of the patient's condition. *Commonwealth v. Lanigan* is the state analog to the United States Supreme Court decision in *Daubert v. Merrell Dow Pharmaceuticals*. The court also held that the U. S. Supreme Court's decision in *Kumho Tire v. Carmichael* applied to the treating physician's "personal observations" of his patient's condition, and that the doctor's methodology in making those observations should have been scrutinized by the trial court (in this case an administrative law judge) using *Daubert* criteria for reliability.

The plaintiff was a surgical nurse at Brigham and Women's Hospital in Boston, and claimed to have developed "Multiple Chemical Sensitivity Syndrome" as a result of exposure to various chemicals in the operating room. The issue before the Supreme Judicial Court of Massachusetts was whether her treating physician should have been allowed to testify as to the causation of her condition.

ALF's *amicus* brief on behalf of 13 prominent scientists, including the co-discoverer of DNA, James Watson, a Nobel Laureate in Medicine, a Nobel Laureate in Chemistry, several prominent epidemiologists, the director of the M.I.T. program in environmental science, and the editor-in-chief of the *New England Journal of Medicine* argued that MCS is not a recognized disease, and that the treating physician's tests and experience were insufficient

bases for a finding of causation, and did not satisfy the *Daubert-Joiner-Kumho* tests of reliability.



ALF Director Steve Harmelin introducing Alan Reed speaking on behalf of the National Constitution Center.



Alan Reed, a key figure in the development of the National Constitution Center, addressing ALF's Annual Award Dinner guests.



ALF's senior litigator, Martin S. Kaufman.



ALF Chairman Fisk welcoming more than 100 guests at the Annual Award Dinner at New York's Union League Club.



ALF Director George Frazza, right, and ALF Director Ernest Hueter, far right, visit with Norman Augustine and his daughter René.



ALF Director Chuck Work, right, talks with guest Hamilton Osborne and ALF Chairman Dan Fisk.

Introduction of Hayward D. Fisk and Remarks of Dr. Norman R. Augustine

Raising the Bar

June 22, 2000

The relationship of law and technology is of critical importance to our economy and to our judicial system. However, the mix between the two is often more uncomfortable than not. Norman Augustine's remarks, on his receiving the Atlantic Legal Foundation's Annual Award in June, 2000, called attention to the serious challenge which our judicial system faces.

Chairman Fisk: During the short time in which I have to introduce our esteemed guest tonight, I can scarcely do justice to his remarkable background, which is published more completely in your program for the evening. Norm Augustine is a man who must never sleep. I am truly astounded that he has been able to fill at least three lifetimes worth of achievements and accomplishments into one. Yet, he continues to amaze us all. Interestingly, some people swear to have seen through his shirt a red "S" emblazoned on his chest.

Norman R. Augustine was born in Colorado and attended Princeton University, where he graduated magna cum laude with a BSE and an MSB in Aeronautical Engineering. He holds numerous honorary doctorate degrees, from the Universities of Maryland, Duke, Arizona and Georgetown among others.

In 1958, he joined the Douglas Aircraft Company as Program Manager and Chief Engineer. Beginning in 1965, he served in the Pentagon, working in the Office of the Secretary of Defense. He joined the LTV Missiles and Space Company in 1970 and served as Vice President. He then served as Assistant Secretary of the Army in 1973 and as Under Secretary in 1975. He joined Martin Marietta Corporation in 1977, serving as Chairman and CEO from 1987 to 1995. He then began service as President of Lockheed Martin Corporation upon its formation in 1995, and became Chief Executive Officer in 1996. He later served as Vice President and Chairman.

Dr. Augustine currently is Chairman of the Executive Committee at Lockheed Martin, having retired as an active employee in 1997. He is also on the Board of Directors of Phillips Petroleum, Black & Decker and Procter & Gamble. Dr. Augustine also serves as Chairman and Principal Officer of the American Red Cross. He has been on advisory boards to the White House, U.S. Senate, NASA, and NATO among others. Dr. Augustine is also a Trustee of the Johns Hopkins University and MIT and previ-

ously served as a Trustee of Princeton University. He has been presented the National Medal of Technology by the President of the United States and has five times been awarded the Department of Defense's highest civilian decoration, the Distinguished Service Medal. He has lectured at the Smithsonian Institution and numerous universities including Princeton, Harvard, Yale, MIT, CalTech, Duke and Stanford.

Interestingly, in pursuing his hobbies, he has dog-sledded in the Arctic; boated the Amazon; hot-aired ballooned in Africa; photographed whales in the Inside Passage, polar bears in the Northwest Territory and lions in Africa. He has stood on both the North and South Poles of the Earth, which I hasten to add, because some of you may have been wondering: "What planet?" Dr. Augustine is co-author of *The Defense Revolution* and *Shakespeare In Charge*, which ALF Director, Steve Harmelin, has favorably reviewed incidentally. He is also the author of *Augustine's Laws* (printed in four languages) and *Augustine's Travels*. He is married to Meg Engman and they are the parents of two children. Their daughter, René, is an attorney

serving as Counsel to the Senate Judiciary Committee. We are delighted to have both Meg and René in attendance as well.

And so, with apologies for an introduction that does not, and could not, do justice to the man and his accomplishments, it is a rare and distinct privilege and indeed, an honor, to introduce Dr. Norman R. Augustine, a veritable Renaissance man.

Dr. Augustine: Thank you, Dan...Honored guests ...Friends and colleagues.

I would like to begin by saying how fortunate we are to have an organization like the Atlantic Legal Foundation that is willing to tackle difficult issues that are important to society and its future and does so in such a balanced, constructive manner. And I am honored by this award — and particularly honored to be in your company this evening.

Dan's generous introduction reminds me, however, of the time a friend of mine, David Roderick, then CEO of U.S. Steel Corporation, was introduced to an audience as one of America's greatest business persons. As proof, the moderator said simply that David had made a million dollars in California oil. It was evident as David approached the podium that he was somewhat embar-

rassed, and he began his remarks by pointing out that although the introduction was "essentially" correct, it had not been California, it was Pennsylvania...it wasn't oil, it was coal...it wasn't a million dollars, it was ten thousand...and it was not he, it was his brother. And he didn't make it, he lost it!

So in the interest of similar disclosure, I must confess that, as an engineer, I approached this gathering of distinguished lawyers with a certain degree of trepidation. What wisdom could I possibly

“...the American legal system, like American society, faces the challenge of better adapting to the ubiquitous effects of the technological revolution that is sweeping our globe today.”

impart on such an occasion? I discussed this concern with my most trusted confidant and closest advisor, my wife of 38 years, who is here this evening. She listened with her usual patience and then cheerfully suggested, *“Well, whatever you do, don't try to sound witty or intellectual or charming. Just be yourself.”*

So with your indulgence, that's what I intend to do. I will not expound at great length on

any of my legal theories —although I do have a few! But rather I will offer you the perspective of an engineer; albeit an engineer whose career went astray many years ago, and he ultimately descended into management.

I hasten to point out, however, that my daughter, René, who is also here this evening, is an attorney...and a very fine one at that! Over the years she has helped me to attain a certain facility with legal parlance, such that I've been able to enjoy casually dropping expressions I have memorized into conversations with corporate lawyers and then watching their eye-brows rise and their respect instantly increase! Lines like:

- “Why don't we make a Rule 408 offer in that case?”
- Or, “Let's seek an 11B ruling.”
- Or, “Looks like *res ipsa loquitur* to me.”

All this emboldens me to offer the following proposition for your consideration: Namely, that the American legal system, like American society, faces the challenge of better adapting to the ubiquitous effects of the technological revolution that is sweeping our globe today. The title I have therefore chosen for my remarks is “Raising the Bar.” You may select your own interpretation.

Increasingly, technology is driving our economy and to a considerable extent, our way of life. It influences health care, food, energy, transportation, communications, entertainment, education, our physical infrastructure, even national security. In fact, many of the issues that the Atlantic Legal Foundation is tackling today are related directly or indirectly to these technological changes.

But there is a problem...in fact, there is not one, but two, problems. First, America's scientists and technologists have chosen, by and large, not to enter the public policy arena, but rather to remain aloof in their laboratories and become critics - too often asserting that if it can be done, it must be worth doing.

- For example, is there anyone in the audience old enough to remember when every children's shoe store had a machine to blast our feet with x-rays while we wiggled our toes to see if the shoe fit? Thankfully, that's one innovation that didn't last.
- And then there was the news from London just this month, about the new pedestrian bridge across the Thames. The engineers and architects were visibly proud because of its truly unique design. The only problem was that it had to be closed three days after opening because the

unique design swayed so much it made the pedestrians seasick.

- Or consider the case of the Washington DC Metro subway system some years ago, where the new cars flexed and the doors jammed shut whenever they were filled with passengers. The Chief Engineer explained the problem to the media, saying, *"We'd have great cars if it weren't for the passengers."*

If these examples illustrate the hazards which may result from self-absorbed innovation, one could also cite countless other examples to il-

know the law. They must also be attuned to at least the underlying precepts of science and technology that are transforming our lives and our communities.

Now, I am not suggesting that the bar exam should be replaced with a quiz on rocket science—though as a rocket scientist myself, I really don't think that's a bad idea! Rather I take the perspective of British novelist C. P. Snow, who enjoyed asking acquaintances if they could describe the Second Law of Thermodynamics. When they failed, as they almost invariably did, he would point out that his question was

"It is no longer enough for legal practitioners, particularly those upon whom we depend to make public policy, to know the law. They must also be attuned to at least the underlying precepts of science and technology that are transforming our lives and our communities."

lustrate how those who make public policy often are not adequately versed in the technical issues they are seeking to manage. And therein lie dangers of a different sort.

In a word, bad science leads to bad policy, bad law, and bad regulation...and vice versa. It is no longer enough for legal practitioners, particularly those upon whom we depend to make public policy, to

the technological equivalent of asking, *"Have you ever read any Shakespeare?"*

Indications of scientific misconception abound. Take the individual who, according to a newspaper report, objected to the nearby location of a proposed biomedical research laboratory, exclaiming, *"They're trying to bring DNA into my neighborhood!"*

A similar misunderstanding was described by the CEO of the German telephone company, Deutsche Telekom. He tells about the time he gave his 84-year-old mother a cellular phone, and she started using it to call her friends all around Europe. She used it daily, speaking 30 or 40 minutes with each of her friends. Finally, her son told her she needed to be careful not to run up too large a bill. She reassured him saying, *"Oh, don't worry about that. They haven't even come to hook it up yet!"*

Then there is the incident that was described by Cort Perkins, who was one of my professors when I was a student at Princeton. Cort, who later served as President of the National Academy of Engineering, is an avid sailor. One day as he berthed his small boat, his neighbor's yacht pulled alongside in the adjoining slip.

Now, the neighbor's rather large boat had a fiberglass hull...nylon lines...dacron sails...a high-strength aluminum mast adorned with a surveillance radar and several communications antennas...as well as GPS, loran, a ship-to-shore radio-telephone, and a depth-finder. The owner was wearing photochromatic sunglasses, a digital watch, clothing made of polyester fibers, and topsiders with neoprene soles so they wouldn't slip on the wet epoxy deck, and he was carrying his portable CD player and cellular phone in his hands.

The neighbor, always intrigued by Cort's role in the "rocket science" business, greeted him by saying, *"Cort, it's too bad you technologists don't do anything for us ordinary folk."*

Comments like that have led me to support the notion that the undergraduate curriculum in all colleges should include a course on *"Physics for Poets"*—because the fact is that, whether you are a banker, a lawyer, a candlestick maker—or a sailor—you can't avoid the impact of technology.

And in the sense of fairness, I have also proposed during various graduation speeches that engineering degrees should have an expiration date printed right on them—a proposal that, I might add, has not placed me in great demand as a commencement speaker at engineering schools.

A related problem concerns the pace of technological change today and its impact on human beings and institutions—including the judicial system. There is no immunity from these unrelenting pressures. It is as if the world were stuck on fast-forward—again, largely driven by technology.

Some of you may have seen the recent column by George Will which made the point that after the invention of agriculture *"it took 4,000 years to supplant hunting and gather-*

ing as mankind's main source of food, 5,000 years for cities to emerge, 6,000 years for writing to develop, 7,000 for the invention of mathematics. After harnesses were devised to hitch oxen to plows, it took 4,000 years to adapt harnesses to the long necks of horses."

Contrast those developments, which took millennia, with the pace of change in my own field of aerospace, a technology that went from Kitty Hawk to the moon in 66 years—less than a single life span today. As an illustration, I often point to the huge orange fuel tank that serves as the backbone of the Space Shuttle. It is built by Lockheed Martin at our plant near New Orleans, and I've calculated that if this tank were laid on its side, the Wright brothers' famous flight - the flight that launched aviation—could have taken place entirely inside of it.

Another example involves Dr. Robert Goddard and his acclaimed rocket that was launched just 74 years ago from a New England cabbage patch. It achieved an altitude roughly half that reached by the Apollo Moon rocket a mere 43 years later...and that was while the Apollo was still sitting on the launch pad.

Or consider a different field of technology entirely, computer engineering. Ironically, much of the progress that we've seen in electronics in recent years is based on a new use for sand— the same sand

that our ancestors trod on for a million years or so.

Today, factories crank out transistors at the rate of well over 20,000 a day for each man, woman, and child on this planet. If that number seems incredible, it's nothing compared to the impact of those devices on society. Recently in England, for example, they began implanting semiconductor integrated circuits in dogs to keep track of them. I suppose that a frightening extrapolation of such developments should cause us to ask, "*Do you know where your transistors are tonight?*"

When I studied engineering in college, not all that many years ago, our principal calculating device consisted of three wooden sticks and two pieces of glass—a slide rule. And it was a true anachronism. It could neither add nor subtract, could calculate only 3 digits at best, and couldn't keep track of where the decimal point went. By today's standards, it's useless...except, of course, when the electric power fails and we old-timers can then show those dot-com whippersnappers a thing or two!

By way of comparison, IBM recently announced plans for a supercomputer that will be 500 times more powerful than the world's fastest computers today. Nicknamed "Blue Gene," this new computer will be dedicated to genetic research. It will be capable of a quadrillion operations per sec-

ond. It will be two million times more powerful than today's desktops...a thousand times more powerful than "Deep Blue," the computer that sobered the world a few years ago by beating chess grandmaster Garry Kasparov.

To put things in perspective, Microsoft's Bill Gates reportedly charged that if General Motors "*had kept up with technology like the computer industry has, we would all be driving \$25 cars that get 1,000 miles to the gallon.*" And he might have mentioned that there would be no parking problem either because, if left to the engineers, the cars would probably measure a quarter inch on each side.

It should be noted for the record that GM responded to his criticism by pointing out that, if the auto industry had followed the computer industry, we would all be driving cars that shut down periodically for no apparent reason and then required that the engine be re-installed. The oil, water, temperature, and alternator warning lights would all be replaced by a single warning light called the "General Car Default" indicator. And the airbag system, before going off, would ask, "*Are you sure?*"

Whatever the outcome of such a debate, consider just a few of the changes we have seen in very recent years:

- A decade ago, cellular telephones were a novelty.

Today there are 90 million in use in the U.S. alone...half of them in the restaurant where I ate dinner last evening.

- In 1993, there were all of 130 web sites on the Internet. Seven years later, there are nearly 10 million.
- According to the Commerce Department, over 300 million people worldwide are now wired to the 'Net. That number reflects an 80 percent increase in the past year alone.
- In 1957, the year I graduated from college, there was one man-made object in earth orbit. Today there are 9,500...creating a monumental traffic jam in the more-popular orbits.
- And when I was a youth there was a common expression that "*you could no more do that than fly to the moon.*" You don't hear that one much anymore!

My mother, who lived to be 105, was already 10 years old when the Wright brothers first flew. She had friends who crossed the prairie in a covered wagon, and she met friends of mine who had been to the moon. Talk about Future Shock!

It's no wonder that even highly qualified observers have come up with some misguided predictions about the future of technology.

There was, for example,

IBM founder Tom Watson, who predicted *"a world market for about five computers."*

Then there was the magazine, *Popular Mechanics*, generally recognized for its forward-looking perspective, which confidently predicted in the late 1940's that one day computers would be built weighing no more than 1.5 tons. Strictly speaking, they were right, of course.

That's more than we can say for Admiral Leahy's assertion about the atomic bomb. He stated unequivocally that *"the bomb will never go off. And I speak as an expert on explosives."* That was in 1945.

But my prize for predictive folly goes to Alex Lewyt, president of the home appliance company that bore his name. In 1955, Lewyt assured us that *"nuclear powered vacuum cleaners will be a reality within 10 years."* Fortunately, that idea never reached critical mass.

We've come a long way since the days when people actually worried that excess electricity could leak out of wall sockets and electrocute everyone in a room. Even so, to many people the mention of technology conjures images of Three-Mile Island...Chernobyl ... Bhopal ... Thalidomide ... Challenger ...and the like. And most of these people are not modern Luddites.

Former Defense Secretary Bill Perry is a case in point. He

told me about the time he was flying in the jump seat of an Air Force C-17 military transport descending for a landing in Bosnia in a heavy fog during the time of the conflict there. Suddenly, a recorded voice in the cockpit broke the silence: *"Missile alert, missile alert; warning...incoming missile."* The pilot nonchalantly leaned over, switched off the speaker and grumbled knowingly that it was a false alarm—just an equipment malfunction — and then he went about the business of safely landing the airplane. On the other hand, Bill says he was most assuredly not reassured!

Two days after hearing Bill's story, I found myself late at night in a recovery room at Johns Hopkins Hospital, recuperating from lung surgery. Adorned with the usual maze of wires, tubes, hoses, and electronic monitors, I was jarred by the sound of a loud alarm suddenly going off immediately above my head. A half-dozen nurses and interns rushed toward me. The first one to arrive, without so much as glancing at me or at any of the instruments, simply flipped the "off" switch, mumbled something about false alarms...and strolled on her way.

But it is not just pilots and nurses who are becoming injured to modern technology. Tell me, how remarkable did you find your last trip to the gas station? No doubt you were

amazed at the price you had to pay, but did you marvel at the technology involved in that routine purchase? You were able to wave a small "wand" on your key chain at the gas pump to identify yourself and, while you filled your tank, the pump spoke with a satellite orbiting 24,000 miles above the earth, which in turn spoke with a computer in Chicago, which checked your credit and arranged to have a bill sent to you at your home at the end of the month, and then told the gas pump to print a personalized receipt for you.

We take it all pretty much for granted, don't we? Much like the individual who complained to NASA Administrator Dan Goldin about the Space Agency's spending so much money on meteorological satellites. The critic protested: *"Why do we need meteorological satellites? We have the Weather Channel!"*

To shake people out of complacency about our brave new world of high-technology, I have devised a little quiz, a quiz which we will now take...right here in the middle of this banquet. All of us - no excused absences!

There are 10 questions, and unlike certain TV game shows, there are no lifelines in this quiz! But there are also only two possible answers, "yes" or "no." You score one point for each right answer. Are you ready? Let's play!

Question 1: Do you know how to set the clock on your VCR...or, as if employing some mysterious form of perpetual motion, does it simply blink 12:00 at you all day and all night?

Question 2: Do you know how to re-program the entry code in your home burglar alarm - or do you leave that to the burglars?

Question 3: Do you faithfully remember to turn off the power to your invisible fence before taking Rover for a walk...or does Rover hide under the bed when he sees you coming with the leash?

Question 4: When you have a mouse problem, is your first thought to call Compaq...or to call for the neighbor's tomcat?

Question 5: Can you re-set the stations on your car radio...or are you still listening to the Hard Rock your car dealer likes?

Question 6: Can you re-program the timer on the automatic sprinkler in your yard...or during a rainstorm does it simply go ahead and water the puddles?

Question 7: Can you use an ATM machine — or do you

rely on assistance from a passing teenager?

Question 8: Can you re-program the memory buttons on your home telephone...or if Aunt Minnie moves, is it easier to buy a new phone?

Question 9: Does it make sense to you that when you want to shut your PC off, you must click on "Start"?

And the *coup de grace!*

Question 10: When you are on an airliner, can you open your package of shrink-wrapped crackers without reducing them to a pile of crumbs? (Considering what they serve on flights these days, this may actually be a life-saving skill.)

If you scored 9 or more, you don't get a million dollars, but you are ready for life in the 21st century. Between 6 and 8, you do need a lifeline! Below 6, you are among the digitally challenged: you're road-kill on the information highway.

Now, I don't mean to suggest that lawyers are more challenged in this regard than anyone else, but it strikes me that the effect of technology has been especially difficult for our legal system to accommo-

date...given that that system rests so heavily upon historical precedent and time-consuming protocol. In many ways, today's legal process is simply ill-suited to serve the needs of our technologically driven dot-com world.

Thanks to the pace of change I have discussed, technological issues under prolonged litigation are frequently rendered moot by new developments— before justice can be served. In other cases, while antitrust issues are debated, companies with tens of thousands of employees are left in a state of suspended animation - not for weeks or even months but sometimes for years— with serious adverse consequences to employees, customers, stockholders, and even entire communities. If there is anything business hates it is uncertainty.

With increasing frequency, jurists schooled in courtroom procedures and the fine points of the law find themselves having to rule on the admissibility of highly technical expert testimony. Probably, the single case that has done more to streamline and improve judicial process involving science has been the *Daubert* case, which I am told has now been interpreted—wisely, albeit belatedly—to apply to the testimony of expert engineers as well as to scientific and medical testimony.

It is my impression that legal decisions, especially de-

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cisions by the United States Supreme Court, are in some instances as much dictated by the Court's interpretation of public policy as by any other single factor. And it will be interesting to see how the Court will deal with the new issues it will confront in this century as technology rolls forward. We already have an idea of what some of those issues will be: Questions concerning the very definition of intellectual property, let alone who owns it. Issues having to do with the legalities of genetic research and cloning. And a whole array of questions involving the regulation of the Internet and privacy issues.

I'm not about to go down any of these roads this evening...but I'm quite sure that many of you are headed there. And I am quite sure that you will find yourselves in the company of large segments of the world's population, which will be relying on you. That's why I said earlier that we need to better educate all Americans in at least the rudiments of technology...and that we need to better educate technologists

in the impact their work has on society.

That is, in fact, a good part of the reason why I gave up my job as a CEO to go off and become a college professor. Academia seemed to offer an extraordinary opportunity to explore some of these issues and to share experience with the young people who will in the end make many of the decisions affecting technology

“With increasing frequency, jurists schooled in courtroom procedures and the fine points of the law find themselves having to rule on the admissibility of highly technical expert testimony. Probably, the single case that has done more to streamline and improve judicial process involving science has been the Daubert case, which I am told has now been interpreted—wisely, albeit belatedly—to apply to the testimony of expert engineers as well as to scientific and medical testimony.”

and society. But I must also tell you that transitioning from the board room to the classroom is something of a cultural shock.

My first day on the Princeton faculty I was scheduled to give an introductory lecture to the freshman class. I sat on the dais flipping through my notes while the Dean made his welcoming remarks, and my thoughts were suddenly inter-

rupted by the words, “And now we will hear from Professor Augustine.” In all honesty, the first thought that went through my mind was, “Isn't that a coincidence. They have some guy here with the same name as me!”

I would conclude my remarks this evening by noting that, should we fail in our efforts to make technology more humane and at the same time

to make humans more technologically aware, we will almost certainly be confronted with a dilemma of the sort Woody Allen once described. In his words: “More than any

other time in history, [we] face a crossroads. One path leads to despair and utter hopelessness. The other, to total extinction. Let us pray we have the wisdom to choose correctly.

Thank you all very much.

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