Warning! Experts May Be Hazardous To Your Health

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“Given the chance, law will appropriate, consume, and corrupt any cultural or intellectual resource -- including reason itself.”

Introduction

Legal scholarship is going “inter-disciplinary.” Among the highest valued add-ons are the natural sciences. Why? Perhaps because the proliferation of law journals has run out of new niches to fill without finding a law review slot for every law student. Perhaps because law professors want law to seem relevant to students fixated on planetary problems such as global warming and waning biological diversity. Perhaps being “scientific” can make law seem more than a game used to justify political control, the liberal state’s replacement for religion as the opium of the masses. Perhaps science can give objectivity -- so that administrative agencies are forced to work for the public good instead of following some presidential order to help special interests. Perhaps professors have run out of new ways to discuss the counter-majoritarian difficulty but still need to keep publishing to get that annual summer research stipend.

Why am I bothering you with this opening? This question is humorous and, therefore, serious. Judges, law professors, and to some extent practicing attorneys, tend to take themselves too seriously. Humor is a sense of proportion, a recognition that one and one’s profession are not at the center of the universe. The world, after all, is supported by a column of turtles and when

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2 Compare Schlog, supra note 1, at 12 (Law “is the language through which the [American liberal] state organizes itself, effectuates its actions, and legitimizes itself and its actions to its subjects.”), with V. I. Lenin, Novaya Zhizu, No. 28 (Dec. 3, 1905), in 10 LENIN COLLECTED WORKS 83-87 (Progress Publishers, 1965) (“Religion is opium for the people. Religion is a sort of spiritual booze, in which the slaves of capital drown their human image, their demand for a life more worthy or less worthy of man.”), available at <http://www.marxists.org/archive/lenin/works/1905/dec/03.htm> (visited Oct. 1, 2007).

3 Many stories include a claim that the world is supported by a column of turtles, in which “it is turtles all the way down.” For a discussion of some variations, see <http://members.tripod.com/TheoLarch/turtle.html> (visited Nov. 4, 2007).
G-d created man she was only joking\(^4\) -- or was that the platypus?  I want you to recognize the absurd side of calling for work linking law and the natural sciences because I want you to recognize the absurdity of thinking that adding science to law will solve society’s (or law’s) problems.  The belief that more knowledge is the answer to disagreement is extraordinarily naive.\(^5\)

In short, this article is intended to rain on everyone’s parade -- but not too hard.  Any argument can be extended into an absurdity, but the reductio ad absurdum does not negate the usefulness of the un-stretched claim.

My message is simple, reason runs out.  Reason always runs out.\(^6\) Or to be colloquial: “Warning!  Experts may be hazardous to your health.”

Yes, I agree that human beings (lawyers or otherwise) should use all tools available, all knowledge available.  Forgetting science, or sociology, or economics, or music, or that children like to play, or that American politicians need money to run campaigns is simply silly.\(^7\)

But while being interdisciplinary can be fun (and provide more topics for those never-ending law review articles), it has its own dangers.  To academics, the danger of interdisciplinary

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\(^5\) “The information model treats all factual assertions as bits of data, and all disagreements as resolvable on the basis of more information.  The problem with this model is that it often does not work to add more information . . . Disagreements persist without being significantly altered by the ‘information’ because the viewpoints that enable the facts to be given divergent interpretations also persist.”  Stephen P. Turner, \textit{Liberal Democracy 3.0}, at 48 (Sage Publications pbk. 2003).

\(^6\) \textit{Accord} Schlog, \textit{supra} note 2, at 15 (“When reason runs out, everyone simply pretends that it doesn’t.”).

\(^7\) “The rejection of any source of evidence is always treason to that ultimate rationalism which urges forward science and philosophy alike.”  Alfred North Whitehead, \textit{The Function of Reason} 61 (Beacon Press pbk. 1958 print of 1929 ed.). “The point is not that social scientific research contributes nothing useful to law and policy debates.  The point is that we should be wary of the hope that social scientific data -- or anything else -- will serve as a deus ex machina that can resolve difficult issues for us.”  William B. Turner, \textit{“A Bulwark Against Anarchy”: Affirmative Action, Emory Law School, and Southern Self-help} 73-74 (2007), \textit{Emory University School of Law Public Law & Legal Theory Research Paper Series} No. 07-16, \textit{available at} <http://ssrn.com/abstract=1009616>.
work is doing poor work. Historians object to law office history; scientists should be expected to object if interdisciplinary work results in shoddy law office science.

However, I see law as a practical subject; I think law professors should keep in mind the probable outcomes of following their theories. Therefore, my focus in this article is on several types of danger to the public. Here, I need to distinguish use of scientific facts and use of scientific language.

As for the usefulness to law of scientific metaphors, I admit to a problem with any type of metaphors (or analogies or verbal categorization) being used instead of nuanced analysis of disparate situations. Consider, for example, the on-going problems caused by classifying the internet as a type of “space,” or labeling U.S. post-9/11 policy as a “war on terror.” Consider also that none of us ever agreed to allowing disparate power to voters in less populous states, yet discussion of the Constitution as a social contract blinks many of us to this irrefutable fact.

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8 For example, one outcome of Judge Posner’s desire “to bring measurement to bear on legal issues” was an excursion into bibliometrics, counting citations to an author’s works. See, e.g., Virgil L. P. Blake, Citation Studies - The Missing Background, 12 Cardozo L. Rev. 1961, 1961 (1991) (book review of Richard A. Posner, CARDozo A STUDY IN REPUTATION (1990)). Posner, however, wrote as if he had just created the method; he failed to consider some sixty years of scholarship by experts in information science. See Blake, supra, at 1961.


10 But see Schlog, supra note 2, at 132-33 (laughing at law professors writing articles as if arguing for clients in real law suits).

11 This statement, of course, instantiates another absurdity -- thinking that law professors’ speeches and articles have any impact on the world outside tenure committees. See id. at 134.

12 See, e.g., Thomas C. Folsom, Defining Cyberspace (Finding Real Virtue in the Place of Virtual Reality), 9 TULANE J. TECH. & INTELL. PROP. 75, 110 at n.90 (“Thinking of cyberspace as it actually is yields far richer images than seeing it only dimly through simile or metaphor including that of physical space.”). The trope of “visibility” may be undercutting the movement to protect personal privacy on the internet. See Julie E. Cohen, Privacy, Visibility, Transparency, and Exposure, 75 U. CHI. L. REV. 181, 181 (2008) (outlining her argument for this conclusion).


14 See, e.g., Malla Pollack, Dampening the Illegitimacy of the United States Government, 42 IDAHO L. REV. 123, 135-39 (discussing power of describing the Constitution as a ‘contract’).
The power of word choice to change human reactions is neither doubted nor infinite. This article, however, is not focused on the power of word choice.

Instead, this article raises several of the problems related to using scientific knowledge (as opposed to scientific language) in legal discussion and decision-making. I plan to discuss five inter-related points. First, and most central, science is about means, not ends. Second, expertise is often applied beyond its relevant field. Third, non-experts have difficulty judging competing experts. Fourth, experts’ predictions are often wrongs. Finally, I suggest that the current situation inside the United States is a horrible example of over-valuing expertise, specifically economic theory.

Like most solutions, mine is simple to state, but not to implement: prioritize people. I will start with the solution (Part I) and then work through the various dangers (Part II), and the horrible (Part III).

I. The Solution

When in doubt, choose the path that signals the decision-maker’s valuing of individuals. (This formulation cheerfully elides an enormous difficulty -- deciding when sufficient doubt exits to invoke my suggested default rule.) In law and economics jargon, I am proposing a minimax solution, i.e. one which minimizes the maximum cost of erroneous decisions.

This solution has both normative and pragmatic support. My normative claim is that the aim of society should be to help people live better lives. To a western liberal humanist this sentence is an axiom. The opposite may not be said aloud on pain of banishment from civilized society anymore than a United States judge may publicly admit the total lack of legal (as opposed to moral) reasoning in Brown v. Board. Many religions and ethical systems agree.

However, this non-controversial bromide is only non-controversial because of its high

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16 If you disagree, I admit that I know of no argument that would convince you. Congruently, I know of no argument capable of changing my mind. Axioms are axiomatic.

17 Brown v. Bd. of Educ. of Topeka, Kansas, 347 U.S. 483 (1954) (declaring racially “separate but equal” public schools to violate the Equal Protection Clause); see also Michael McConnell, Originalism and the Desegregation Decisions, 81 VA. L. REV. 947, 952 (1995) (“Such is the moral authority of Brown that if any particular theory does not produce the conclusion that Brown was correctly decided, the theory is seriously discredited.”).


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The paradox of modernity is that the more people depend on one another owing to an ever-widening circle of obligations, the fewer are the agreed-upon guidelines for organizing moral rules that can account for those obligations.” Alan Wolfe, *Whose Keeper? Social Science and Moral Obligation* 5 (University of California Press, 1989), available at <http://ark.cdlib.org/ark:/13030/ft9k4009qs/>.

The standard liberal response is to rely on legitimation through process. But even John Hart Ely, the paradigmatic voice for process as goal, admits the need to take some choices off the table to prevent the currently dominant from capturing the process. One attempted solution is to make government both representative and constitutional, for example, to add the Bill of Rights and the Reconstruction Amendments to the 1789 United States Constitution. This move, however, merely exports disagreement into constitutional interpretation.

As an empirical matter, I have yet to see an account of exactly what should be taken off the table (or how to enforce these limits) which converts unbelievers. Therefore, the normative support is useless for solving disagreements. The pragmatic support is less theoretically satisfying, but has more traction.

Entities that use people as mere means often want their people-tools to feel appreciated. Appreciated people actively cooperate -- lowering oversight and enforcement costs. The worst

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Cf. Richard Rorty, *Philosophy and the Mirror of Nature* 311 (Princeton Univ. Press paperback 1980) (“The trouble with Platonic notions is not that they are “wrong” but that there is not a great deal to be said about them -- specifically, there is no way to “naturalize” them or otherwise connect them to the rest of inquiry, or culture, or life.”).

Empirical studies of workers consistently support the value of paying attention to your employees (or at least making them think you pay attention to them). See, e.g., Dereck C. Jones & Takao Kato, *The Impact of Teams on Output, Quality and Downtime: An Empirical Analysis Using Individual Panel Data*, Institute for the Study of Labor Discussion Paper (2007), available at <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1001207>. The Jones & Kato study employed a data set which provided individual data for each employee in a factory. An employee who was invited by management to join a team had a small, but statistically significant increase in personal productivity (number of items produced), a large decrease in personal production of items that failed quality standards (27%), and a small, but statistically significant increase in personal productivity (number of items produced), a large decrease in personal production of items that failed quality standards (27%), and a small, but statistically significant increase in

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downtime (time not spent on production work). The downtime effect significantly lessened over
time, especially for more educated employees. The employees invited onto teams also reported
an increase in job satisfaction and positive feelings about management. See id. at 15-16, 29, 32.

23 “[A] prudential approach to poverty will surely include giving the propertyless enough
food from the table to prevent their falling into rage or despair.” Stephen Holmes and Cass R.
Sunstein, THE COST OF RIGHTS: WHY LIBERTY DEPENDS ON TAXES 190 (W. W. Norton & Co.
1999). “The last 35 years saw wide swings in the Philippines’ economic growth. Growth was
highest during the period 1973-82 under the military regime of the Marcos administration,
averaging 5.5 percent per year . . .. This was not sustained, however, as dissatisfaction among
Filipinos with military rule mounted, which eventually led to a political uprising in the following

(During “a time of Warre . . . there is no place for Industry; because the fruit thereof is
uncertain.”)

25 “Property” here is a place-holder. You may insert your own favorite non-humanist
goal.

26 Cf. Robert Cooter, THE STRATEGIC CONSTITUTION 11-12, 60 (Princeton Univ. Press
2000) (recommending democracy because of same “minimax” effect). The “actuarial turn” in
criminology, i.e. profiling to obtain more efficient allocation of police resources, is an interesting
example. As Bernard Harcourt explains, the practice requires unavailable information, is
counter-productive under certain possible values for this unavailable information, and when
practiced in the current state of incomplete information sends morally unacceptable signals to the
public. See Bernard A. Harcourt, A READER’S COMPANION TO AGAINST PREDICTION, FORTHCOMING 33
Now, let us turn to the problems with using science in legal and political decision-making.

II. The Problems

A. Science Provides Means, Not Ends

“Scientists can tell us what is and what was and perhaps even what will be, but not what it all means.”

Alfred North Whitehead contrasts two types of “reason,” one exemplified by Plato, the other by Ulysses. Science is Ulysses’ reason. It “is one of the items of operation implicated in the welter of the process.” Science is the form of reason which “seek[s] an immediate method of action” toward a goal. In contrast, the reason Plato allegedly shared with the gods “seek[s] a complete understanding”; it “surveys, judges, and understands.” This Reason constitutes that “factor in experience which directs and criticizes the urge toward the attainment of an end realized in imagination but not in fact.”

The function of the godlike reason is “to promote the art of life,” not merely the “survival of the fittest.” Rocks survive longer than men; “life itself is comparatively deficient in survival value. The art of persistence is to be dead.”

Whitehead recognizes that the functional power of modern science stems partly from its refusal to consider final causes. However, he emphasizes that any completely empirical human should recognize that science cannot fully explain even the physical world. The physical world humans inhabit decays; entropy only runs down. From whence came the upward push to start this physical, always decaying world? Whitehead’s response is to deify the Platonic-face of Reason: “Reason is the special embodiment in [humans] of the disciplined counter-agency which saves the world” from its slide toward the “vacuity” of total entropy. This could be a scientist-


28 See Whitehead, supra note 7, at 10.

29 Id. at 9.

30 Id. at 8.

31 Id. at 11, 9, 8.

32 Id. at 4 (emphasis deleted).

33 See id. at 15-16.

34 See id. at 24, 34, 89.

35 See id. at 34.
centric version of Pierre Teilhard De Chardin’s Hegalian theology
-- G-d as a becoming manifested within humans.

Many other modern myths agree on the non-ultimacy of science. Mary Shelly gave us Dr. Frankenstein’s monster as the symbol of science unlimited by consideration of ends. Late twentieth-century cinema has the man-made monsters of Jurassic Park. Before disaster strikes in the form of escaped genetically-engineered dinosaurs, Ian Malcolm, visiting Jurassic Park, castigates entrepreneur John Hammond because EnGenn’s scientists were so interested in what they could do, that they forgot to consider whether they should do it. In the midst of the disaster, the beautiful Doctor Satler quashes Hammond’s plans for a future, more stable park by insisting that his error is more basic than his choice of control mechanisms; his error is believing that humans can control nature. In Isaac Asimov’s more optimistic mythology, long after the end of all human civilizations, the sole-surviving robot (whose positronic brain includes all knowledge ever gathered by the society of its human builders) says, “Let there be light.”

The problem of defining the proper end plagues even the simplistic call to improve human lives. Does this mean only counting the total pie, Kaldor-Hicks optimality? Does distribution count? If so, over what geographic area and compared to what chronological baseline? What counts as a human life? A fetus? An adult who has been in a vegetative state for ten years? The potential fourth generation of imbeciles? Since intelligence, health-linked genes, and a non-aggressive predisposition are not earned, does “meritocracy” make sense? If you know without doubt that this life is a mere vestibule to an eternal after-life, why is it not your duty to force everyone around you to abide by the dictates of the deity whose existence and wishes have been revealed to you so clearly? How far should we rehabilitate so-called paternalism in the light of persistent error patterns caused by humans’ bounded rationality?

In sum, at best, science can counsel means to reach already chosen ends.

41 Accord, e.g., Michael S. Mcpherson & Morton Owen Schapiro, Moral Reasoning and Higher-Education Policy, CHRONICLE OF HIGHER EDUCATION (REVIEW) (Sept. 7, 2007) (“[I]n reality, every interesting problem of policy or practice depends on principles as well as facts.”),

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B. Experts Act Outside Their Areas of Expertise

Experts can only be trusted inside their areas of expertise, but experts do not stay inside these boundaries. “Some of the major disasters of mankind have been provoked by the narrowness of men with a good methodology.”

The primary problem is not scientists (or other experts) wanting control (though this has happened), but political leaders pushing inappropriate decision making onto scientists. Politicians have several strong, recurrent motives to move the decision: the valuable appearance that the decision is neutral, the valuable appearance that the decision is unimpeachably correct, and so forth.

I am not backing the reductio ad absurdum version that what is possible does not influence what is desired. Cf. Elisabeth Beck-Gernsheim, Health and Responsibility: From Social Change to Technological Change and Vice Versa, in THE RISK SOCIETY AND BEYOND: CRITICAL ISSUES IN SOCIAL THEORY 122, 123 (eds. Barbara Adam, Ulrich Beck, Joost van Loon (Sage Publications paperback 2000) (hereinafter “BEYOND”) (arguing that gene technology was readily accepted because society prized health, however, gene technology is likely to “bring about a radical redefinition of the concepts of health and responsibility.”). But cf. id. at 133 (forecasting that society will ask, “[w]hat kind of health . . . do we want?”) (emphasis in original).


Whitehead, supra note 7, at 12.

Some atomic scientists argued that their expertise made them the most competent guardians of weapons policy. Non-scientists, however, classified this as a power-grab across disciplinary boundaries. See, e.g., M. J. Nye, A Physicist in the Corridors of Power: P. M. S. Blackett's Opposition to Atomic Weapons Following the War, 1 PHYSICS IN PERSPECTIVE 1422 (1999) (discussing “Fear, War, and the Bomb,” which was published in 1948, the same year its author won the Nobel Prize in physics).

“Science is a politically appealing justification because it promises objective, rational decisions. It is supposed to be free of emotion. That characteristic may look especially important to those championing protection of environmental features that lack obvious utilitarian value.” Holly Doremus, Science Plays Defense: Natural Resource Management in the Bush
the ability to inhibit the effectiveness of opponents’ input, the desire to duck responsibility for negative outcomes, and -- hopefully at least in part -- because the politician wants a good outcome and recognizes that this decision requires a strong measure of expert evaluation (that is evaluation which requires expertise) which the politician recognizes she lacks.

To a large extent, this “ask an expert” move is the ultimate invocation of the fallacy of the transplanted category. One example which should be familiar to a law school audience is Justice Blackmun’s majority opinion in Roe v. Wade, the case announcing that women have a constitutional right to terminate unwanted pregnancies. Justice Blackmun’s rhetorical stance is that of a non-expert who cannot escape making a decision when faced by the refusal or inability of experts to do their jobs by reaching an expert consensus: “When those trained in the respective disciplines of medicine, philosophy, and theology are unable to arrive at any consensus [about when human life begins], the judiciary, at this point in the development of man’s knowledge, is not in a position to speculate as to the answer.” The “human life” within the expertise claimed by doctors of respectively medicine, philosophy, and theology are far from identical. Furthermore, none of these lives is necessarily identical with the “person” protected by the Fifth and Fourteenth Amendments to the United States Constitution. Conflating any two of these lives is a political move.

Outside their area of mastery, experts are very dangerous. First, experts routinely refuse to consider anything that does not fit their chosen paradigm - Whitehead so describes both the Christian clergy and the modern western scientist. Psychologists refer to this narrow-

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46 All can be decided by privileged stake-holders within the confines of the expert bureaucracy before any warning of the issue becomes public. See, e.g., Bent Flyvbjerg, RATIONALITY AND POWER: DEMOCRACY IN PRACTICE 49 (trans. Steven Sampson; Univ. of Chicago paperback 1991) (Only “[a]fter the division of the traffic plan into stages, and after a year and a half of intensive design work, the Aalborg Project is presented to the general public for public debate and political discussion.”).

47 “[S]cientizing regulatory decisions can insulate decision makers from the political consequences of their judgments.” Doremus, supra note 45, at 255.

48 See Walter W. Cook, THE LOGICAL AND LEGAL BASES OF THE CONFLICT OF LAWS 154-93 (1942) (discussing this common error in reasoning); Moffatt Hancock, Fallacy of the Transplanted Category, 37 CAN. B. REV. 535, 547 (1959) (“When a legal category ... is imported into a different context where a different legal result (involving different policies) is in issue, the transplanted category may well suggest a result which frustrates the relevant policies which should control the determination of the new issue.”)


50 See Whitehead, supra note 7, at 17.
mindedness as developing “domain-adapted thinking.” As A. V. Dicey famously wrote, the
“blindness of experts is no accident. A man’s minute knowledge and interest in a certain class of
facts, is, owing to the limitations of the human intellect, often balanced by ignorance” in all
others. Perhaps this is the reflection of one common aspect of expertise -- the ability to
recognize patterns and use these patterns as guides to relevance. Second, experts ignore danger
signals because they believe in their own expertise. Third, others are convinced by the aura of
expertise. Furthermore, empirical studies report that asking an expert to explain the basis of her
conclusion is rarely helpful: experts commonly refuse to admit use of disfavored factors and
often lack awareness of their decision processes. Even worse, the activity of creating an
explanation to support a prior decision commonly induces further biases.


A. V. Dicey, LECTURES ON THE RELATION BETWEEN LAW AND PUBLIC OPINION IN
ENGLAND DURING THE NINETEENTH CENTURY lxxvii (2d ed. 1914), available at
also, e.g., P. Ayton, On the Competence and Incompetence of Experts, in EXPERTISE AND
DECISION SUPPORT 77, 77 (eds. F. Bolger & G. Wright, 1992) (reporting that decision errors by experts are
“systemic and serious”); James B. Conant, ON UNDERSTANDING SCIENCE 22 (Mentor paperback
5th printing 1956) (“[T]hose who contend that the habits of thought and the point of view of the
scientist as a scientist can be transferred with advantage to other human activities have hard work
documenting their proposition.”).

See Shanteau, supra note 42, at 16.

Research emphatically supports the claim that most experts overestimate their own
ability to predict. See, e.g., C. M. Allwood & P.A. Granhag, Feelings of Confidence and the
Realism of Confidence in Everyday Life, in JUDGMENT AND DECISION MAKING: NEO-
BRUNSWIKIAN AND PROCESS-TRACING APPROACHES 123-46 (eds. P. Juslin & H. Montgomery,
1999); Ayton, supra note 52, at 93; F. Bolger & G. Wright, Reliability and Validity in Expert
see id. at 52-53 (weather forecasters and bridge players seem more aware of their own limits).

Experience as an expert and convincing others of your expertise are co-depandan.
Unless you can convince others of your expertise, you will not be allowed to work in situations
where you can demonstrate your expertise. See Shanteau, supra note 39, at 16. Perhaps because
projecting confidence is vital, experts often resist accepting or admitting their errors and
uncertainties. See, e.g., Ayton, supra note 52, at 90-91.

See Ayton, supra note 52, at 90, 99, 100. For example, realtors refused to admit that
their valuations were influenced by knowing a property’s listed price. See id. at 99. Auditors,
however, seemed relatively immune from the explanation-induced bias. See id. at 100. Are
judges?

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Annoyingly, the outside boundaries of specific areas of expertise are not marked by flares. Non-experts often miss them. Experts in overlapping areas fight for jurisdiction. Experts within a specific field may claim to see them. However, since both the boundaries and content of an area of expertise change over time, non-experts cannot confidently defer to the experts on these matters. For example, the American Medical Association has lobbied state governments to block the practice of medicine by many groups -- among others charlatans, chiropractors, and acupuncturists -- but current public opinion now refuses to accept the last two groups as mere subsets of the first.57

Over-reaching experts almost routinely bring failure to their projects -- often without admitting the causal tie. Anthropologists marvel at the inability of the experts of international "development" projects to understand that the introduction of western legal systems is not a necessary condition for economic growth; this supposed cognitive failure persists despite repeated counter examples, including numerous instances where the introduction of western law led to the economic and social deterioration of rural populations -- at least according to the anthropologists.58 Empirical work demonstrates a recent increase in economic experts heading developing countries, but not a related increase in these countries’ economic status; perhaps economics is not identical to leadership skills?59 The Supreme Court approved the notorious World War II internment of ethnic Japanese, even United States citizens, in deference to military experts, ignoring the dissent’s warning that generals have no expertise on the inherent characteristics of human subgroups.60 The experts of the Army Corp of Engineers built the flood-control system which failed so drastically during Hurricane Katrina; they computed construction cost-benefits without adjusting for their known lack of knowledge about tropical storms.61 The expert planners of the United States military and the Department of Defense

57 See Joseph A. Barrette, The Alternative Medical Practice Act: Does it Adequately Protect the Right of Physicians to Use Complementary and Alternative Medicine?, 77 St. John's L. Rev. 75, 85 (2003) ("[F]or one hundred and fifty years . . . [c]onventional medicine practitioners, mostly through the American Medical Association, have attempted to discredit the practices of midwives, homeopaths, chiropractors, acupuncturists, and naturopaths," labeling them all "charlatans.") (footnotes omitted).


60 See Korematsu v. U.S., 323 U.S. 214, 236-37 (1944) (Murphy, J., dissenting).

61 See . See Robert R. M. Verchick, Risk, Fairness, and the Geography of Disaster 5-6 (Int’l L. Forum of the Hebrew Univ. of Jerusalem Law Faculty Research Paper Series No. 01-07 2007) (“In a nutshell, we didn’t adequately consider how much we didn’t know about
overlooked their ignorance of Iraqi culture, assuming that a welcoming population would greet foreign, infidel invaders. 62

Of course, one might respond that none of the above were real experts -- scientists are. Law professors want to be real experts also, so they should start acting like scientists. 63

I agree that, in Western culture, the paradigm of the proper expert is a scientist. 64 Western culture puts a high value on scientific experts because we have seen their discoveries work -- washing machines, nuclear bombs, and everything made out of plastic. However, we have also seen the backlash of technology: Chernobyl, 65 Bhopal, 66 Exxon Valdez. 67 Here I will

a Gulf hurricane threat, how sparse our climate data were, and how thin our grasp of public risk. This was not because we did not know what we did not know. Instead, we did not see it. The obvious and inherent uncertainty built into our models was not drawn prominently enough onto our maps. Where cartographers of old once emphasized the limits of their knowledge by filling blank corners with flying beasts and colorful serpents, today’s conceptual map makers sketched only calm seas.”), available at http://ssrn.com/abstract=959247 (visited April 8, 2007).

62 So the situation appears to the public; however, expert planning was done by the experts; the decision-makers decided to ignore it. See James Fallows, Blind Into Baghdad, ATLANTIC MONTHLY (Jan./Feb. 2004), available at <http://www.theatlantic.com/doc/200401/fallows>.

63 Cf. Harry Eckstein, REGARDING POLITICS: ESSAYS ON POLITICAL THEORY, STABILITY, AND CHANGE 4 (Univ. of Cal. Press, 1992) (“The overriding purpose of the revolution in political science was to make the field more scientific, in the manner of the "harder" and more successful fields of inquiry. That revolution, it seems to me, took a wrong turn from the start.”), available at <http://ark.cdlib.org/ark:/13030/ft0k40037v/>.

64 Politicians “for almost a half century [since 1945] have been able to take public support for science for granted” with minor exceptions, until the current politicization of ecological disaster as the natural child of scientific progress. Hilary Rose, Risk, Trust and Scepticism in the Age of the New Genetics, in BEYOND, supra note 41, at 63, 66.

65 See World Nuclear Assn., Chernobyl Accident (May 2007) (“The Chernobyl accident in 1986 was the result of a flawed reactor design that was operated with inadequately trained personnel and without proper regard for safety.”), available at <http://www.world-nuclear.org/info/chernobyl/inf07.html> (visited Nov. 4, 2007).

66 See Kim Fortun, ADVOCACY AFTER BHOPAL: ENVIRONMENTALISM, DISASTER, NEW GLOBAL ORDERS iv (Univ. of Chicago Press 2001) (reporting that the 1984 explosion of the Union Carbide pesticide plant in Bhopal, India is commonly considered the world’s worst industrial disaster).

go skipping down an interdisciplinary trail under the tutelage of Ulrick Beck’s explication of the risk society and Stephen P. Turner’s insightful work “Liberal Democracy 3.0.”

Experience of repeated industrial “accidents” (to use a carefully loaded word) places us in what Ulrick Beck has dubbed a “risk society”; we inhabit a world saturated with invisible, gigantic risks -- risks whose dangerousness, details, and defusing all rest in the hands of mediators beyond public control -- including government, mass media, and “Big Science.”

Most of us lack the information or expertise to evaluate these risks for ourselves; we depend on science to figure them out, government to defuse them, and mass media to inform us about our current prognosis-- but we no longer fully trust any of our guardians. These guardians are themselves unsure. The only surety is the failure of “insurance,” the standard risk-defusing failsafe mechanism of capitalism. Much of “governance” has become risk management; much of risk management has become risk displacement.

The most common risk-displacement technique is to hand the problems over to the scientists and praise the deity of knowledge - government delegates to experts (or claims that it has done so while actually using them as a cloak for regulation benefitting campaign contributors). Invoking science, however, is no longer sufficient to permanently quiet the earth shaking beneath our feet; we vainly try to forget that normality is merely an episode between recurrent catastrophes.


69 See also Ulrich Beck, DEMOCRACY WITHOUT ENEMIES 100 (Polity Press 1998) (“With their verdicts (based on economic rationality) of ‘uninsured’ or (more radically) ‘uninsurable’ (why is irrelevant), the insurers contradict the engineers, scientists and industrial executives who appeal to technical calculations of risk as they brush aside any reservations of a concerned public with gestures of innocence, and attribute (virtual) zero or vestigial risk to uninsured and uninsurable forms of production, products and technologies.”) (emphasis in original). Increases in knowledge may forever lag behind the as-yet-unknown risks they create. See Howard Caygill, Liturgies of Fear: Biotechnology and Culture, in BEYOND, supra note 41, at 155, 159 (interpreting document from the British Medical Association as prophesying that “the deficit of knowledge available for making assessments of risk (judgements of the future) is paradoxically enhanced by the very increase in knowledge.”).

70 For example, a critic of the No Child Left Behind Act charges that “[s]cientism replaced science and is used to mask the political, philosophical, and class-based nature of the implementers.” Michael W. Simpson, Ain’t Got No Politics; Ain’t Got No Philosophy; Ain’t Got No Class: Science-Based Research and Evidenced-Based Education within a “Neutral” Science-Based Bush Administration 2 (WORKING PAPER, UNIV. OF WISCONSIN AT MADISON, DEPT. OF EDUC.), available at <http://ssrn.com/abstract=1001942>.

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Such is the human world described by Ulrich Beck’s social theory. We would like to reject this negative description as mere fear-mongering subjectivism, but close interrogation of the nature of “science” confirms its relative powerlessness according to a long line of experts on expertise. On this subject, I strongly recommend Stephen P. Turner’s “Liberal Democracy 3.0.”

In Turner’s view, core science is a very limited area. “[S]cientific truths . . . are agreed to be true by all competent scientists. They are based on experiments and observations that all persons with the relevant competencies can perform. And to the extent that everyone who is competent agrees, interests are irrelevant.” However, scientific expertise works because scientific practice is limited to well-formed problems: problems with a single best solution. Science cannot generate agreement unrelated to interests, biases, or pre-dispositions in response to ill-formed problems -- those with “multiple possible solutions, each of which is ‘best’ in a different sense or dimension of quality, and none of which is best in all the relevant senses.”

Law and politics deal almost completely in ill-formed problems. What about, for example, global warming?

Global warming, like other politically important “scientific” issues is outside the core area of science. These are “issues” because they are not pure science, they are risk assessments. Attempts to choose a policy that will lower risk almost inevitably involves ill-formed problems. First, making something into a “policy issue,” something to be dealt with by government power, is a political, not a scientific, decision. Second, no one can refer back to earlier experiments involving exactly these conditions. Therefore, use of technical expertise will be casuistical -- deciding what known cases are the most similar and extrapolating. Choosing the model involves deciding (without sufficient basis) which of a host of factors are causally relevant. Furthermore, if a nation decides not to act on a possible threat until scientists have reached a consensus, thus providing really “scientific” facts from which to work, the nation will not be acting neutrally; it will be systematically classifying potential threats as low risk. This is the anti-gospel of

71 See Turner, supra note 5.

72 Id. at 53.

73 See id. Accord Robert M. Rosenzweig, THE RESEARCH UNIVERSITIES AND THEIR PATRONS 115 (Univ. of Cal. Press, 1984) (“When academic specialists are brought into the policymaking process, either full time or as consultants, they have no more of a claim to "right" answers than does anyone else, since "right" in the short run frequently depends on sound political judgment as much as on expert knowledge.”), available at <http://ark.cdlib.org/ark:/13030/ft4489n90n/>.

74 Decision makers must work without one key component of the process which creates expertise, feed back. See Shanteau, supra note 42, at 15.

75 See Turner, supra note 5, at 56-63. In the Bush administration, “[s]cience is used defensively by imposing high burdens of proof as barriers to regulation.” Doremus, supra note...
“science” according to Stephen Turner.

Turner’s position has obvious empirical support. First, scientists repeatedly have refused to acknowledge insightful solutions posed by outliers -- Pasteur, for example, was not a medical doctor, and, therefore, the contemporaneous health professionals of France refused to take his claims seriously.76 Experts tend to give “causal” status to entities they value: bio-medicine credits wonder drugs with improvements that may be more related to social changes (such as better housing, and sewage treatment);77 economists laud capitalism for developments that may, instead, be results of Cold War competition between Super-Powers (and their client states).78 Even today’s paradigmatic advocates of change, computer scientists, push aside unusual ideas because “[t]hey’re looking for change in the mode they understand,” welcoming new chips but not more basic redesigns.79

As Turner’s explication would suggest, scientists have botched some very high stakes risk assessments. A chorus of scientific experts assured the public that nuclear power plants were safe -- until silenced by the Three Mile Island nuclear accident.80 Brian Wynne publicized nuclear physicists’ gross miscalculation of how long soil in a specific sheep-producing location would remain radio-active after a nuclear test.81 In this failure, Wynne sees scientific arrogance; Turner sees scientists working outside the “core” of science, using the closest experimental data they had, overlooking the causal importance of clay in the soil because they had no experiments dealing with that variable.82

A reader is likely to obtain the clearest insight on the limits of scientific expertise by

45, at 266.

76 See Dicey, supra note 52, at lxxvii.

77 See Peter Worsley, Knowledges: Culture, Counterculture, Subculture 204, 227-28 (1997).

78 See Beck, supra note 68, at 146.

79 See John Markoff, Nature Gave Him a Blueprint, But Not Overnight Success, New York Times (June 8, 2008) (discussing resistance to a number of inventions; quotation is from Jay Harman, an Australian naturalist and inventor).

80 See Turner, supra note 5, at 43. See also Alan Irwin, Stuart Allan, & Ian Welsh, Nuclear Risks: Three Problematics, in Beyond supra note 41, at 78-104 (discussing political and market forces framing contemporary discussion of nuclear power in a manner which lowers public recognition of both risks and other options).


82 See Turner, supra note 5, at 60.
reading Bill Durodié’s response to Wynne -- not because Durodié is insightful, but because he is obtuse, angry, and self-important -- a self-drawn caricature of the neutral expert. Durodié is not concerned with how scientists can learn from the error in prediction highlighted by Wynne. Instead Durodié is angry at the effrontery of anyone who thinks that non-experts should be consulted on expert matters: Wynne, those who decided that a supermarket magnate (while serving as UK’s Minister of Science and Innovation) should not participate in formulation of government policy regarding genetically modified foods, patients who dare question their medical doctors, and anyone who backs a commission of stake-holders and scientists. To Durodié, “[t]his approach . . . is nothing more than a recipe for institutionalized ignorance.”

Science is an unashamedly elitist activity. But it is an elite that is open to all those with the time, interest, talent and initiative to pursue and develop it. Science is not value-free, but it should strive to become so, rather than seeking to include ‘unheard voices’ into its deliberative process.

Humm. Durodié seems to have a problem seeing the domain boundaries which are clearly visible to Turner-- and to me. Yes, medical doctors know more about breast cancer than do most female patients. However, choosing a treatment option requires considering more than statistical correlations between treatments and survival per se -- it requires consideration of the patient’s goals. Furthermore, why is being an “expert” by itself conclusive proof that one will not be biased (even unconsciously) by one’s business interests? Notice that Durodié acknowledges no socio-economic barriers to elite status.

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84 Durodié, Limitations supra note 83, at 82.

85 Id. at 83.

86 “The pleas from Eastern Europe to keep open dangerous nuclear plants are not because people living near them do not know the risks, but because they also know that severe winters without heating are even more quickly lethal.” Rose, supra note 64, at 70. “Context counts.” Id. at 71.

87 “[E]xtreme competition damages the reliability of knowledge” as is “very evident from the U.S. system” of business financing for academic research. See id. at 72.

88 The anger and the resulting over-simplification are reminiscent of Justice Clarence Thomas’ fury that Yale allowed him to attend its law school before all prospective legal
Most frightening to me, Durodié renders the dead sheep and the economically devastated sheep-farmers invisible.\textsuperscript{89} Perhaps I focus on Durodié because this type of obtuseness regarding real harms to real persons is already endemic in contemporary Supreme Court opinions. Consider Justice Kennedy’s 2007 opinion in the so-called “partial birth abortion” case, Gonzales v. Carhart.\textsuperscript{90} The majority of the Court was willing to limit actual women’s actual physical safety in the name of a State’s allegedly compelling interest in protecting (and honoring) potential life; since, however, the statute at issue merely ordered doctors to abjure one particular method of performing abortions, it did not purport to save any “potential” lives.\textsuperscript{91} Similarly, in Cruzon v. Director, Missouri Dept. of Health, Chief Justice Rehnquist’s majority opinion elevated the State’s theoretical interest in human life as a disembodied category over Ms. Cruzon’s personal interest in herself.\textsuperscript{92} The unreality of the State of Missouri’s interest was telegraphed when it withdrew from the suit (thus allowing Ms. Cruzon to die) as soon as the Supreme Court ruled in the State’s favor.\textsuperscript{93} The same error bars, without evidence of purpose, equal protection attacks based on the racially disparate impacts of facially neutral statutes, because “[t]he central purpose of the Equal Protection Clause of the Fourteenth Amendment is the prevention of official employers were willing to hire African-Americans. See Isaac Arnsdorf, \textit{In New Book, Clarence Thomas Directs Ire Toward Yale Law, Yale Daily News, Oct 11, 2007, available at <http://www.yaledailynews.com/>} (visited Oct. 21, 2007) (discussing \textit{My Grandfather’s Son}, by Clarence Thomas (2007)).

\textsuperscript{89} When the British Government publicly admitted an unknown, but allegedly slight, public health risk from cattle infected with “mad cow disease,” the meat market collapsed. The government then shifted its attention to “fixing” the economic position of the meat industry, instead of focusing on health risks to the public. See Joost van Loon, \textit{Virtual Risks in an Age of Cybernetic Reproduction, in Beyond, supra} note 41, at 165, 175 (pointing out this shift).

\textsuperscript{90} 127 S. Ct. 1610 (2007).

\textsuperscript{91} See \textit{id.} at 1633 (“[T]he State, from the inception of the pregnancy, maintains its own regulatory interest in protecting the life of the fetus that may become a child.”). \textit{But see id.} at 1647 (Ginsburg, J., dissenting) (“The law saves not a single fetus from destruction, for it targets only a \textit{method} of performing abortion.”) (emphasis in original).

\textsuperscript{92} \textit{Compare Cruzon v. Director, Missouri Dept. of Health, 497 U.S. 261, 280 (1990)} (“[T]here can be no gainsaying” Missouri’s argued “interest in the protection and preservation of human life.”) \textit{with id.} at 356-57 (concluding that the State may not pursue its interest “in human life” by “appropriating Nancy Cruzon’s life as a symbol for its own purposes. Lives do not exist in abstraction from persons, and to pretend otherwise is not to honor, but to desecrate the State’s responsibility for protecting life.”) (Stevens, J., dissenting).

\textsuperscript{93} See Paul Brest, et al., \textit{Processes of Constitutional Decision Making} 1577 (5\textsuperscript{th} ed. 2006).

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conduct discriminating on the basis of race.”94 This focuses attention on the officials, making the persons affected by the statute invisible -- like the sheep and sheep-farmers in Durodié’s version of the scientific elite.

In sum, scientific experts outside narrow bounds are dangerous. Additionally, judges are overly elitist without encouraging them to model themselves on a potentially even more arrogant elite.

C. Non-experts Need To Evaluate Claims of Expertise

Would that the best expert was recognizable by a halo, or even a list of advanced degrees. Unfortunately, bias is often hidden, as are methodological errors. Worse, experts usually come in battling opposites whose disputes are “often conducted in rhetorical rather than empirical terms.”95 Underhanded actions during competition for status rewards and the growing ties of Big Science to Big Industry both undermine trust that scientific expertise is neutral and disinterested.96

As for degrees, some areas of modern expertise were “expertised” when interested groups (often foundations) helped create certifying organizations or university departments. Sociologists, credentialed public administrators, and professional foreign service officers are historically rooted in such bootstrapping.97

Bias is endemic. No matter how otherwise neutral, an expert has a personal interest in maintaining the value of her own expertise.98 Organizing experts into associations both magnifies their appearance of neutrality and compromises their ability to be neutral. The organization cannot retain its expert clout unless it appears neutral, therefore, to outflank


95 Lindsay Prior, Peter Glasner, and Ruth McNally, Genotechnology: Three Challenges to Risk Legitimation, in BEYOND, supra note 41, at 105, 111.

96 See Rose, supra note 64, at 72 (pointing at scandals involving highly placed academic scientists).

97 See Turner, supra note 5, at 33-38 (discussing role of the Rockefeller Foundation and others in creating these as recognized professional groups whose practitioners trained and certified each other).

98 See Turner, supra note 5, at 55; see also Ulrich Beck, Risk Society Revisited: Theory, Politics and Research Programmes, in BEYOND, supra note 41, at 211, 216 (“[S]cientific experts” have “a threefold participation” in manufacturing the uncertainties of the risk society; they gain status as “producers, analysts and profiteers from risk definitions.”).
expected claims of bias, it may publicly champaign a claim it knows to be misleading. Turner sees this phenomenon in the United State Center for Disease Control’s willingness to support “propaganda” which ignores the minute probability level of contacting HIV from heterosexual activity in the mainstream United States (where main stream means people who are not intravenous drug users). 99 Similarly, doctors in the United States routinely order mammography for female patients. Objective empirical studies, however, have shown no decrease in fatalities from breast cancer tied to early mammographies. Routine mammographies for low risk (mainly younger) women are not, therefore, cost effective. The standard of medical practice in the United States, however, is to use the test -- lest the medical profession appear to discount women’s concerns. 100

Bias is often carefully hidden. 101 Is a group named “freedom,” or “liberty” a mouth piece of some entrenched industry or a grass roots organization? 102 The Federalists who brought us the United States Constitution took that name to hide their desire for a consolidated national (as

99 See Turner, supra note 5, at 56.

100 See id. at 62. A similar issue exists with the value of a routine screening test for prostate cancer. The test has known personal and economic costs, but recent empirical research has not confirmed that it actually lengthens lives. See Rob Stein, U.S. Panel Questions Prostate Screening, WASHINGTON POST (Aug. 5, 2008), available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/04/...>.

101 The tort reform movement uses repeated claims based on slanted, but allegedly empirical, reports issued by organizations with neutral names but pro-defendant agendas. See, e.g., Elizabeth Thornburg, Judicial Hellholes, Lawsuit Climates, and Bad Social Science: Lessons from West Virginia, 110 W. VA. L. REV. 1097, 1098, 1100 (“As public relations ventures, the ATRA and ILR campaigns have been an astounding success. As well-founded, honest commentaries on judicial systems, however, they are a major failure. It's time for state courts and legislatures to seize the empirical high ground and base their lawmaking decisions on fact rather than fable”; discussing the American Tort Reform Association which was formed in the mid-1980s by the American Medical Association and the American Council of Engineering Companies, but which has acquired hundreds of additional, corporate members, and the Institute for Legal Reform, a child of the American Chamber of Commerce). See also Sam Dillon, An Initiative on Reading Is Rated Ineffective, NY TIMES (May 2, 2008) (linking disagreements over success of Bush’s “Reading First” initiative to departmental push for use of material from specific, politically-connected publishers), available at <www.nytimes.com/2008/05/02/education/02reading.html?th&amp;eme=th>

102 See Dionne Searcey, Consumer Groups Tied to Industry, WALL ST. JOURNAL (March 28, 2006) (“A number of lobbying groups that claim to represent consumer interests are backed by phone and cable companies promoting their corporate agendas, according to a report from consumer group Common Cause.”), available at <http://freepress.net/news/print.php?id=14641> (visited March 28, 2006).
opposed to a federated) government. The Anti-Federalists were the ones who wanted a federation of states. Only recently did I learn that Gunnar Myrdal’s book “An American Dilemma: The Negro Problem and Modern Democracy,” which gave cover to Brown v. Board, was orchestrated, along with the research it discussed, by the Carnegie Corporation, for the specific purpose of helping embarrass the United States out of “separate-but-equal.”

Such hidden biases are especially dangerous when the publicized results may influence the behavior they study. On Monday, July 28, 2008, Gallup issued two polls tracking the likely outcome of the November 2008 presidential election. In one, Obama led; in the other McCain led. The second poll was a joint effort with USA Today and reported on “likely” as opposed to merely “registered” voters (the basis of the first poll). If the entire result-set had been reported, the second poll would also have reported Obama with a large lead. Interestingly, the second poll received more publicity than the first. Additionally, that poll’s categorization of Obama-supporting voters as being overwhelmingly less likely to vote was not widely reported. I found it only through a progressive blog.

When government delegates decisions and assessments to scientists, the potential of well-hidden bias escalates. Just a few examples from the past few years. The Federal Communications Commission was detected burying its own empirical studies because they undercut the political decision to deregulate media ownership. Massachusetts had to take the Environmental Protection Agency to the United States Supreme Court to force it to respond to statistics on air pollution. FDA reliance on studies performed by drug companies allows these


104 See Tuner, supra note 5, at 45 n.6.


107 See Mass. v. EPA, 127 U.S. 1438, 1462 (2007) (“Under the clear terms of the Clean Air Act, EPA can avoid taking further action only if it determines that greenhouse gases do not
commercially-interested entities to manipulate collection and presentation of data to support approval. High officials in the federal executive branch have redacted reports by agency scientists to soften figures supporting claims of global warming and its possible relationship to climate change. Democratic Representative Edward J. Markey of Massachusetts, Chair of the


contribute to climate change or if it provides some reasonable explanation as to why it cannot or will not exercise its discretion to determine whether they do.”; see also Science Ignored Again, NEW YORK TIMES (Oct. 14, 2006) (editorial), available at <http://www.nytimes.com/2006/10/14/opinion/14sat1.html?> (visited Oct. 14, 2006) (claiming that, for the benefit of large power companies’ profits, EPA decided not to raise standards for soot pollution, despite recommendations by its own scientists, its Scientific Advisory Council, and the American Medical Association.); CASAC Criticizes New Review Process in Letter on Proposed Lead Air Standard, 77 LAW WEEK 2023 (July 8, 2008) (reporting that the Clean Air Advisory Committee, which is statutorily mandated, has complained repeatedly to the Environmental Protection Agency about changes in agency procedure which hamper the Committee’s attempts to provide its expert advice to the EPA in a timely fashion); Julie Eilperin & R. Jeffrey Smith, EPA Won’t Act on Emissions This Year, WASHINGTON POST (July 11, 2008) (reporting that political appointees at EPA have decided to delay rule making response to Supreme Court’s decision by asking for additional comments), available at http://www.washingtonpost.com/wp-dyn/content/article/2008/07/10...

108 See Joan Busfield, Pills, Power, People: Sociological Understandings of the Pharmaceutical Industry, 40 SOCIOLOGY 297, 300-01, 304-06 (2006). The 2006 recommendations by the Institute of Medicine demonstrate wide-spread recognition of the bias problems at the FDA. See Institute of Medicine, THE FUTURE OF DRUG SAFETY: ACTION STEPS FOR CONGRESS 4.11 (Report Brief, Sept. 2006) (recommending that drug companies be required to register and report outcome of more drug trials); id. at 4.10 (“The committee recommends FDA establish a requirement that a substantial majority of the members of each advisory committee be free of significant financial involvement with companies whose interests may be affected by the committee’s deliberations.”). See also Susan Haack, Scientific Secrecy and “Spin”: the Sad, Sleazy Saga of the Trials of Remune, 69 LAW & CONTEMP. PROBS. 47 (Summer 2006) (discussing secrecy issue regarding trials of one drug).

against the wishes of some NASA scientists and tried to restrict public comments by James E.
Hansen, a top NASA climate scientist,[who] has repeatedly said that global warming caused by
humans poses an urgent threat, a position at odds with that of the Bush administration”; publicity
about this pressure has led to NASA changing its news release policies). Additionally, [t]he
Bush administration has blocked release of a report that suggests global warming is contributing
to the frequency and strength of hurricanes, the journal Nature reported.” Randolph E. Schmid,

All advocates of administrative agencies should be required to read Bent Flyvbjerg’s
detailed story of Aalborg’s attempt to modernize its transportation system in the name of a more
livable urban environment, an attempt which resulted in additional “environmental
degradation.” Why? Because “rationality is context-dependent and the context of rationality is
power. Power blurs the dividing line between rationality and rationalization. Rationalization


110 Eilperin & Smith, supra note 107 [July 11, 2008 article], at 2.

111 Ruth McNally, Strategic Use of “Risk” in Gene Technology: The European Rabies
Eradication Programme, in BEYOND, supra note 41, at 112, 116.

112 See id. at 114. The last reported case of a human within the original EU contacting
rabies from a fox bite occurred in 1928. Id. at 116. Interestingly, posters publicizing the
importance of pet quarantines during international travel conflate two distinct types of rabies.
See id. at 116.

113 See Flyvbjerg, supra note 46, at 9, 225 (providing detailed description and critique).
Flyvbjerg concludes:
[N]ot only is knowledge power, but, more important, power is knowledge. Power
determines what counts as knowledge, what kind of interpretation attains authority as the
dominant interpretation. Power procures the knowledge which supports its purposes,
while it ignores or suppresses that knowledge which does not serve it. Moreover, the
relations between knowledge and power are decisive if one seeks to understand the kinds
of processes affecting the dynamics of politics, administration, and planning.
Id. at 226.

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presented as rationality is . . . a principal strategy in the exercise of power.”

Even lack of bias would not be enough to render scientific experts neutral, dependable makers of policy decisions. Policy decisions require prediction; science excels only at explanation.

D. Expertise Does Not Ensure Accurate Predications

Experience and theory both deny the predictability of complex social and natural phenomena.

114 Id. at 2.


116 “Instead of hoping for a redemption via a clear and unambiguous idea . . . [human planners must] rather rely on an infinitely complex . . . process, which not only understands progress but also retreats, not only understands how to take initiatives but also how to avoid something.” Flyvbjerg, supra note 46, at 122, quoting own translation of Hans Magnus Enzensberger, Gangarten: Ein Nachtrag zut Utopie, in DIE WEILT VON MORGEN 1, 2 (1990) (some editing in Flyvbjerg). See also, e.g., Wolfe, supra note 19, at 7 (“The contemporary social sciences, despite occasional claims to the contrary, have not done especially well as predictive sciences.”).

Repeatedly, empirical study of some specific area of human behavior (such as the affect of minimum wage statutes) will spawn contradictory expert conclusions, followed by the recognition that additional factors are relevant. See, e.g., Myeong-Su Yun, Wage Differentials, Discrimination and Inequality: A Cautionary Note on the Juhn, Murphy and Pierce Decomposition Method, IZA DISCUSSION PAPER No. 2937 (2007), available at <http://ssrn.com/abstract=1004499> (demonstrating unconsidered complexity in study of wage differentials interaction with minimum wage statutes); David Neumark and William Wascher, Minimum Wages and Employment (Discussion Paper No. 2570, Institute for the Study of Labor, Bonn, Germany, Jan. 2007) (reviewing complex literature on effects of minimum wage statutes), available at <http://ssrn.com/abstract=961374>.

Similarly, classical economics became the basis for predictions and suggestions regarding government intervention when mercantilism was observed not to produce the intended results. See generally Adam Smith, THE WEALTH OF NATIONS at Book 4, Chapter 1 (1776) (explaining futility of mercantilist statues against the exportation of gold and silver). Prediction failures by classical economics led to the current behavioral economics school, which corrects for routine
Theory teaches that expectations distort observations. Scientific theories are partly constrained by their predecessors; they are path dependant. Scientists have the same cognitive limitations and heuristic biases as non-scientists. Scientific exploration is more often a process of “adjustment and pattern matching, rather than analysis and deduction. Search is selective and limited, guided by heuristics, local in its application, and biased to its outcome.”

Sometimes social scientists assume that natural sciences are more tractable. After all, “[t]he main problem of historical explanation lies in the sheer number of possibly relevant considerations.”

Natural scientists, however, recognize that their first step must be “limit[ing] their search to a computationally tractable number of alternatives.” They have the same “bounded rationality” and, therefore, the same need to use “heuristics” as other humans. They “limit [their] search by imposing assumptions about what a solution must look like.” The first systematic reason for failure is choosing the wrong structure for the problem itself. Studies of human failures of human logic. See, e.g., Russell B. Korobkin & Thomas S. Ulen, Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics, 88 CAL. L. REV. 1051, 1057-58 (2000) (explaining history of the approach). By the beginning of the twenty-first century, the predictive power of behavioral economics was being questioned. See, e.g., Joshua D. Wright, Behavioral Law and Economics, Paternalism, and Consumer Contracts: An Empirical Perspective, 2 NYU J.L. & LIBERTY 470, 472 (2007) (reporting that “empirical investigation [of] firm exploitation of consumer biases involving the credit card market, standard form contracts, and shelf space contracts . . . do not support the claims that behavioral law and economics generates greater predictive power than standard price theoretic analysis.”).


See id. at 7; see also Stephan Landsman, Nobody’s Perfect, 7 NEV. L. REV. 467, 473 (2007) (collecting studies showing heuristic errors by judges).

See Bechtel & Richardson, supra note 118, at 7.

Fritz Ringer, MAX WEBER’S METHODOLOGY 74 (Harvard Univ. Press 1997).


See Bechtel & Richardson, supra note 118, at 15.
cognition strongly support the conclusion that human understanding relies on representation of knowledge in the form of decomposable hierarchies. See id. at 28. Studies comparing experts and novices often conclude that experts excel through their learned ability to recognize patterns common in their fields. They do not do better than novices if presented with disorganized elements. One of the most common approaches in the biological sciences is a mix of analytic and synthetic strategies aimed at localizing the control mechanism of the studied aspect. As with other methods, a scientist is faced with a decision tree; at each “choice point” the investigator’s decision may err. Each choice, however, limits the scientist’s observations by “determin[ing] the course of subsequent research,” and “impoverish[ing] its empirical basis.” In addition to problems with theory, such as recognizing which variables are relevant, science is limited by the available technology; to study a variable, one needs to be able to control it and to measure output differences with sufficient accuracy.

Empirical evidence emphatically demonstrates that experts are not reliable predictors. First, consider scholarship on experts by academics specializing in “expertise.” Several empirical studies concluded that experts are not better at predicting the outcome of the World Cup in soccer than are “uninformed naive” persons using the simple recognition heuristic (i.e. since I have heard of the team, it is probably a good one). While popular belief denigrates meteorologists, their predictive accuracy is better than the quite poor record of other expert pundits, including the predictors of economic trends, stock-market prices, population changes, and

124 See id. at 28. Studies comparing experts and novices often conclude that experts excel through their learned ability to recognize patterns common in their fields. They do not do better than novices if presented with disorganized elements. See id.

125 See id. at 31.

126 See id. at 21.

127 See id. at 35-36.

128 See id. at 38.

129 See, e.g., Conant, supra note 52, at 66, 68-69, 97-99 (discussing in relation to Boyle’s experiments on the nature of gases and Lavoisier’s experiments on combustion); see also id. at 104-08 (summarizing his general conclusions about the techniques of scientific discovery).

management techniques which will solve business problems, and social-trends.\textsuperscript{131}

Second, remember newspaper stories about recent high-profile errors of prediction. Perhaps the most important is the current critique of the decision to invade Iraq to protect the United States from terrorist attacks. Expert hindsight reports that the foreign military presence in Iraq is increasing terrorism.\textsuperscript{132}

During the summer of 2007, the Arctic ice cap melted, as predicted by scientists, but the amount of melt “far exceeded what had been estimated by almost all the simulations.” Perhaps the most candid explanation offered by sea-ice experts is that the phenomenon demonstrates how much “remains unknown.”\textsuperscript{133}

How many times have you heard pundits attack the epidemic of obesity and insist that parents force their children to exercise more? However, empirical studies have shown that American children are getting approximately one hour less sleep per night than the children of thirty years ago. Other studies demonstrate that lose of sleep increases, rather than decreases, obesity.\textsuperscript{134} Similarly, new studies undercut the long-accepted platitude that thin is always better and fat is always unhealthy.\textsuperscript{135}

Starting in the 1970s, scientists’ preaching triggered a major initiative to help tropical economies by starting coastal seaweed farms. The crops have not produced the expected


economic bounty. On the contrary, the seaweed makes fishing difficult, limiting the only readily available source of protein for the human inhabitants. Furthermore, the introduced species are now recognized as intractable destroyers of the local coral reefs. Without the coral reefs, the coastlines will be much more vulnerable to damage from storms and waves.136

My last example undercuts the United States policies which are discussed in the next section: international and domestic action based on the allegedly reasoned assertion that removing trade barriers, minimizing regulation of businesses, and strengthening legal protections for all types of business property would improve life through out the world, while protecting “positive rights” would harm welfare. In July 2008, Ben S. Bernanke, Chairman of the Board of Governors of the Federal Reserve System, publicly admitted that “market discipline” had proven unable to prevent the current melt-down in the housing and finance markets. Bernanke recommended stronger regulation by the Fed, and enactment of new legislation increasing the Fed’s regulatory authority over private entities.137 He did not state that current conditions demonstrated that he (and his colleagues and their predecessors) had been wrong, wrong, wrong. Instead, he continued to speak in the voice of undoubted expertise.

III. A Horrible Example: The United States, Economic Growth, and the Power of Negative Rights

For the last few decades, law and economics experts, with the strong backing of the United States government, have been pushing the so-called “Washington Consensus.” The core theory is that removing trade barriers, minimizing regulation of businesses, and strengthening legal protections for all types of business property will improve life through out the world. So-called “positive rights” -- entitlements of minimally adequate food, clothing, shelter, health services, and education for each person -- have been emphatically branded counter-productive. Let me quote a leading economist’s recent assessment of the results shown by empirical studies:

The influential idea of the last 30 years . . . that high investment in public social services and social security deters growth, and that economic growth alone will automatically lead to a reduction in poverty, has not attracted convincing supporting research evidence. There is more support for the alternative idea, that


137 See Ben. S. Bernanke, Speech at the Federal Deposit Insurance Corp.’s Forum on Mortgage Lending for Low and Moderate Households (July 8, 2008), available at http://www.federalreserve.gov/newsevents/speech/benanke...
high public social expenditure has positive effects on growth.138

The principal anti-poverty strategy for developing countries advised by the North will have to be changed. . . . The dominant Washington consensus has been to argue for a reduction in the size of the state — reducing public expenditure, extending private ownership and management and de-regulating rules about business, trade and labour conditions.139

[Western economists argued that social security, except in the form of safety nets or means-tested selective measures for the extreme poor, was neither affordable in very poor countries nor desirable. Social security, in any extensive form, many economists argued, was an albatross. As we have seen, this flies in the face of current as well as historical practice in the OECD countries — including, it must be emphasized, the United States. [Footnote omitted] But many of the policies recommended for developing countries in the last 30 years are becoming increasingly doubtful as bringing about lower rates of poverty and enhanced social, political and economic stability. Affordability seems to be


139 Townsend, supra note 138, at 37 (emphasis added). “Evidence shows that episodes of economic growth are not always associated with poverty reduction. . . . [G]rowth is a powerful vehicle to lower poverty but only when associated with decreases in inequality.” Mwangi S. Kimenyi, Economic Rights, Human Development Effort and Institutions 9 (Univ. of Conn, Dept. of Economics Working Paper No. 40; 2005). “Economic reforms in developing countries can create opportunities for poor people. But only if the conditions are in place for them to take advantage of those opportunities will absolute poverty fall rapidly. Given initial inequalities in income and non-income dimensions of welfare, economic reforms can readily by-pass the poor. The conditions for pro-poor growth are thus closely tied to reducing the disparities in access to human and physical capital, and sometimes also to differences in returns to assets, that create income inequality and probably also inhibit overall growth prospects.” Martin Ravallion, Growth, Inequality and Poverty: Looking Beyond Averages 22-23 (2002 World Bank).

The origin of the “Washington consensus” is discussed in David Craig and Doug Porter, Poverty Reduction Strategy Papers: A New Convergence, 31 WORLD DEVELOPMENT 53, 56 (2003). See also id. at 56-57 (collecting critiques of the Washington Consensus approach).
the wrong criterion in the 21st century when set against both the current developments in low-income and middle-income countries, and the history of the high-income countries.¹⁴⁰

Similar policies have been followed in the United States during the recent spate of Republican-party run administrations.¹⁴¹ The United States has the third highest national income per capita in the thirty-state OECD, $34,681, compared to the OECD average of 23,700.¹⁴² Ignoring the leading-economic indicators, consider these social indicators of the utopia this policy has created in the United States:

- The United States has the highest reported incarceration rate in the world, 737 per 100,000, even without counting those on probation or parole.¹⁴³
- In the United States, only 55% of voting age persons cast ballots, well below the OECD average of 70%.¹⁴⁴
- The United States has a higher infant mortality rate than twenty-four of the other twenty-nine OECD countries.¹⁴⁵
- The United States has a higher rate of absolute poverty than all but two of the eleven developed nations for which comparison data is available.¹⁴⁶

¹⁴⁰ Townsend, supra note 138, at 37 (emphasis in original).

¹⁴¹ See Frank Levy & Peter Temin, Inequality and Institutions in 20th Century America 5-6 (NBER WORKING PAPER 13106; 2007) (explaining tie between Washington Consensus, domestic policies, and increase in inequality within the United States; “If our interpretation is correct, no rebalancing of the labor force can restore a more equal distribution of productivity gains without government intervention and changes in private sector behavior.), available at <http://www.nber.org/papers/w13106> (pdf. on file with author).


¹⁴³ See id.

¹⁴⁴ Canada matches the United States at 55%. The only countries with a lower percentage are Poland at 53% and Switzerland at 36%. See id.

¹⁴⁵ OECD, Health Statistics 2006 (using 2003 data), available at <http://www.oecd.org/statisticsdata>. USA rate is 6.9 per 1000 live births; the higher rates are Poland (7.0), Hungary (7.3), Slovak Republic (7.9), Mexico (20.5), and Turkey (28.7).

• The United States has the highest percentage of relatively poor persons among the nineteen developed countries for which comparison data is available, 10.7% compared to an average of 4.8%.
• A higher percentage of children are poor in the United States than in any of the other eighteen developed nations for which comparison data is available; at 14.7% the rate is almost three times the 5.3% average.\textsuperscript{147}
• At 12%, the United States has the second highest poverty rate among the elderly among the eighteen developed countries for which comparison data is available.\textsuperscript{148}
• The United States is the only developed nation reporting a very high rate of poverty among both children and the elderly.\textsuperscript{149}
• Poverty in the United States is highly correlated with race; the average poverty rate from 2001 to 2003 was 10.2% for whites and 23.7% for blacks.\textsuperscript{150}
• Child poverty in the United States is highly correlated with race. Some 25% of African American children are poor throughout their childhood, 80% for at least one childhood year; the comparable figures for white children are 3% and 21% .\textsuperscript{151}
• Government programs (including tax benefits, assistance, and non-monetary transfers) raise a much smaller percentage of persons out of poverty in the United States than in any of the other seven developed countries for which comparison data is available.\textsuperscript{152}
• The United States has the highest percentage of full time jobs which are rewarded with low pay among the eleven OECD countries for which comparison data is available.\textsuperscript{153}

\textsuperscript{147} Id. at Table 2.

\textsuperscript{148} Id.

\textsuperscript{149} Id.


\textsuperscript{151} David Hulme, Karen Moore, and Andrew Shephard, \textit{Chronic Poverty: Meanings and Analytical Frameworks} (Chronic Poverty Research Center, Nov. 2001).

\textsuperscript{152} Smeeding, Rainwater, and Burtless, \textit{supra} note 146, at Table 4.

\textsuperscript{153} Id. at 18.


Even if Bernanke had not admitted the error of his theories, these facts demonstrate the poverty of merely economic reasoning aimed at the single goal of increasing the total economic pie.

**A Limited Conclusion**

Science is wonderful as far as it goes. So are economics, theology, game-theory, quick-and-dirty decision heuristics, rhetoric, basketball, and apple pie. We should embrace all of them -- but only as far as they individually go. The problem none of them should be trusted to solve

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156 See supra note 137 and accompanying text. See also e.g., Jonathan Barry Forman, *Making America Work*, 60 Okl. L Rev. 53, 72 (2007) (arguing from a socially conservative point for additional government intervention in the market to lower income inequalities within the United States; “I believe that government can, and should, intervene in the free market to encourage work and to reduce economic inequality. We simply do not have to settle for a society where the top 5% of households have dozens of times as much income as the bottom 20% and hundreds of times as much wealth.”).

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internally is its own limitations.\textsuperscript{157} In short, whenever problem-solvers go on parade, they should bring umbrellas -- and a sense of humor.

\textsuperscript{157} “A man’s gotta know his limitations,” according to Dirty Harry in several Clint Eastwood films.

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