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University of Chicago Law Review

Winter, 1995

62 U. Chi. L. Rev. 1

LENGTH: 55336 words

ARTICLE: Reinventing the Regulatory State

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LEXISNEXIS SUMMARY:

... Nor does anything in *Humphrey's Executor*--the case establishing the validity of the independent agency form--speak to the particular issue of the degree of presidential authority over the independents. ... The Clinton Order offers a different approach to the role of CBA in the regulatory process. ... What we say about CBA will bear on CRA as well. ... On that view, CBA must still be followed in order to enable us to make more consistent regulatory policy, to set our priorities more effectively, to discipline analysis, and to constrain what would otherwise be ill-informed decisions or pure political power struggles over the direction of policy. ... Instead, we believe that CBA should continue to be a part of the regulatory process, but a part whose relation to the whole is understood in a particular way. ... Officials should also attend to the content of what is to be disclosed and the form it is to take. ... We do not urge a general abandonment of analytic approaches to regulatory policy, nor do we deny the importance of CBA or comparative risk assessment, especially in a period in which regulation is far too costly a means of achieving its own goals. ...

TEXT:

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Introduction

A. The Past

Probably the most important development in administrative law in the 1980s came not from federal courts, nor

even from Congress, but from Presidents Ronald Reagan and George Bush. In two executive orders, President Reagan asserted vigorous centralized control over the regulatory process. The first such order, Executive Order 12291, laid out a set of substantive principles, most notably cost-benefit analysis, and said that these principles would be binding on executive agencies to the extent permitted by law. n1 This Order also contained an important procedural provision. It required all major regulations to be accompanied by a "regulatory impact analysis," which would be submitted for review and approval to the Office of Information and Regulatory Affairs ("OIRA"), an institution within the Office of Management and Budget ("OMB"). n2 The order amounted to an effort to promote centralized OMB control of the regulatory process, to be conducted in accordance with presidential policies favoring deregulation and close attention to cost.

President Reagan's second relevant executive order, Executive Order 12498, went a step further. It required each agency to submit an "annual regulatory plan," consisting of proposed actions for the next year, that was to be included in a publicly available annual document, the Regulatory Program of the United States. n3 Under this order, all agencies were required to submit their proposals to OIRA for review and approval. n4 New initiatives not included in the annual plan were permitted only under a narrow set of circumstances. n5 The Order placed OIRA in the center of regulatory planning.

The Reagan initiatives were defended with several theoretical and empirical arguments. National bureaucracies are numerous, even chaotic, and regulations that are nominally independent of one another may produce considerable inconsistency in practice. Some degree of presidential review of the regulatory process is probably necessary to promote political accountability and to centralize and coordinate the regulatory process. These [*4] are important goals, particularly in light of the need for sensible priority setting in a nation that devotes extraordinary resources to some minor problems and low levels of funding to some major problems. n6

In addition, the cost of regulation--perhaps as high as \$ 400 billion annually, n7 with up to \$ 124 billion spent on environmental regulation alone n8 --is too high for the benefits received. n9 We could obtain the same level of benefits far more cheaply. Perhaps centralized presidential control could diminish some of the characteristic pathologies of modern regulation--myopia, interestgroup pressure, draconian responses to sensationalist anecdotes, poor priority setting, and simple confusion. In theory, OMB control promised to bring about not only greater political accountability, but also more in the way of technocratic competence, thus returning to the original New Deal goal of combining democratic and technocratic virtues. n10 Many people thought that the new system of OMB oversight was admirably well suited to overcoming the difficulties in the regulatory process. n11

Despite these points, the Reagan orders were extremely controversial. The criticisms fell into four basic categories:

1. Some people said that the orders involved an unlawful and counterproductive transfer of authority from regulatory agencies to OMB. This transfer of authority, it was said, disregarded the comparative expertise of the agencies and violated the law, which gave the President no power to bring about any such transfer. n12 The transfer was especially controversial in light of the perception that OMB would be unduly biased against regulation. n13 [*5]

2. Some people complained that the process of regulatory oversight was too secretive. In their view, the lack of public visibility disguised a new system in which well-organized private groups--particularly regulated industries--were allowed to dictate national policy. n14 Especially during the period of Vice President Quayle's Council on Competitiveness, some feared that regulatory policy was being made by a "shadow government" operating at the behest of private factions and accountable, in practice, to no one with an adequate claim to public legitimacy. n15

3. Some people complained that the reviewing process dwarfed OMB's limited resources and resulted in excessive delay. The few officials at OIRA lacked the time and capacities to engage in truly expert assessment of regulation and its complex costs and benefits. Because OMB was unable effectively to assess the wide range of regulations submitted to it, its principal function was to slow things down. The result was to deprive the public of desirable or necessary

regulations and, on occasion, to violate the law. n16

4. Some people complained about the substantive principles reflected in the Reagan orders. In their view, cost-benefit analysis was too partisan a standard to capture the full array of considerations properly invoked by regulatory agencies. In practice and perhaps in principle, critics urged, the idea of cost-benefit analysis was a device not for producing the right kind and amount of regulation, but for diminishing the role of regulation even when it was beneficial. This substantive agenda, it was said, violated

[*6] the President's duty under the Take Care Clause and also was unjustified in light of the need for regulation in many areas of modern life. n17

B. The Present

In light of the extraordinary importance of OMB oversight to so much of American government, many observers were extremely curious to see how President Clinton would reform the Reagan initiatives. The process of reform was surprisingly slow. Whereas President Reagan had issued the first of the two executive orders within one week of assuming office, President Clinton did not respond for many months. On September 30, 1993, however, President Clinton issued his long-awaited repeal and replacement of Executive Orders 12291 and 12498. n18

President Clinton's Order, Executive Order 12866, is a dramatic and in many ways quite surprising step. First and in some ways foremost, it maintains the basic process inaugurated by President Reagan, including the essential procedural provision of Executive Order 12291: the requirement that major regulations be submitted to OMB for general review and oversight. n19 It also includes the essential procedural provision of Executive Order 12498: the requirement that agencies submit an annual regulatory plan, compiled in conjunction with OMB. n20

At least equally important, Executive Order 12866 also maintains much of the substantive focus of the Reagan orders, including the emphasis on cost-benefit analysis as the basic foundation of decision. n21 President Clinton thus rejected the view that an assessment of costs and benefits is an unhelpful or unduly sectarian conception of the basis of regulation.

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At the same time, the Clinton Order marks a number of important substantive and procedural shifts. Executive Order 12866 includes a set of innovations specifically designed to overcome the problems faced in the Reagan and Bush administrations. In particular, it addresses unnecessary conflicts between agencies and OMB, and the appearance (or perhaps the reality) of factional influence over the review process. n22 It also places the Vice President squarely in charge of the regulatory process. n23 It reduces the number of rules that OMB will review, perhaps by as much as one-half. It seeks to overcome the "ossification" of rule making, in part by encouraging negotiated rule making. n24

The Order also includes a new, complex, and somewhat unruly set of substantive principles to govern agency decisions. Some of these principles are an outgrowth of the commitment to "reinventing government" in the service of more flexible management. n25 Some of them qualify the commitment to cost-benefit analysis, though in ambiguous ways. Some of them point in the direction of comparative risk assessment. n26 Apart from their merits as policy reforms, some of these innovations are of uncertain legality.

C. The Plan

This Article evaluates Executive Order 12866 as part of President Clinton's program for "reinventing government." We do this in an effort to help point the way toward procedural and substantive reforms that might increase coordination and rationality in federal regulation, and in this way diminish currently excessive costs, while at the same time promoting the democratic character of regulatory processes through methods that will take advantage of appropriately informed public judgments about risk.

To introduce some of our themes in advance: The modern regulatory state delivers insufficient benefits at

unnecessarily high costs. A range of imaginable improvements could decrease [*8] the costs of regulation and thus reduce prices, increase employment, and promote international competitiveness. Through such steps, reduced costs could also reduce poverty and thus risks to life and health. n27 Through similar steps, reforms could reallocate regulatory resources to places where they will do the most good. In this way, regulatory programs could deliver greater protection of safety and health and, in the process, save many lives.

The modern regulatory state should also be more democratic. Currently, regulation is far too inaccessible to public control. Instead, it is enshrouded in technocratic complexities not subject to public debate, affected by misleading, sensationalist anecdotes, or, even worse, subject to the influence of well-organized private groups with personal stakes in the outcome. A range of improvements could make the democratic process work better. The key task for those interested in regulatory performance is to find ways of simultaneously promoting economic and democratic goals. n28

We offer a range of proposals designed to accomplish this task. A special goal is to incorporate public judgments about risk so long as they are appropriately informed and reasonable, even when those judgments diverge from expert understandings. We spend considerable space on this complex subject, contending that public judgments often reflect a distinctive kind of rationality, one that rejects some conventional forms of cost-benefit balancing. Executive Order 12866 might well be administered in a way that takes advantage of this insight. In short, we offer the following recommendations:

1. OIRA should see, as one of its principal missions, the goal of rationalizing regulatory policy by ensuring good priority setting, comparison of risks in terms of seriousness, and careful attention to the most important problems. To this end, it should issue guidelines and recommendations for the best use of limited [*9] public and private resources, together with information about the concrete, actual consequences of current efforts and about ways of improving them. n29 The ultimate goal should be neither to stop nor to spur regulation, but instead to make sure that regulation works well.

2. There should be early coordination between OIRA and other federal officials, based on shared goals and on a clear understanding of jurisdictional lines. OIRA should not operate as a last-minute obstacle to agency proposals.

3. OIRA should allow a form of "national performance review" in which it demonstrates in concrete terms how, and at what cost, regulation under its supervision has promoted particular social goals. To this end, OIRA should publicize its short-term and long-term goals for regulation in relatively concrete terms and show whether and how the government has made progress in meeting those goals. It should do this as part of a general effort to encourage public trust and public understanding of regulatory outcomes and choices. It should also attempt to promote, to the extent feasible, citizen participation in the process of setting regulatory priorities.

4. Regulations should be evaluated not only in terms of aggregate costs and benefits, but also in terms that reflect democratic judgments about qualitative differences among qualitatively different risks. By qualitative differences, we mean to include an understanding of whether a risk is voluntarily incurred, especially dreaded, equitably distributed, potentially irreversible or catastrophic, faced by future generations, or incurred by discrete groups within the population. To incorporate an understanding of these factors, OIRA and relevant agencies might experiment with three approaches: (a) develop formulas that assign numbers to, and thus incorporate, qualitative differences; (b) offer a two-stage analytic process, the first based on conventional cost-benefit balancing, the second introducing qualitative differences in order to produce a final judgment; and (c) use different forms of citizen participation so as to build into the regulatory process an understanding of informed public judgment- [*10] about how different risks should be treated. We offer comments on all three proposals below. n30

5. The government should shift from command-and-control regulation to more experimentation with information disclosure as a remedy for risk and with economic incentives. Informational remedies should be based on a careful understanding of how people process information and develop trust, a key ingredient of successful risk communication. If methods of information processing are not kept in view, informational remedies can be futile or even

counterproductive. Moreover, the use of incentives should be limited to certain specific circumstances that we identify.

6. The President or the Vice President must take a serious interest in improving health and safety regulation. Without a firm signal from the highest levels of government, OIRA is unlikely to be able to accomplish much of its mission, and the potential advantages of centralized control will be lost.

This Article is organized into five parts. Part I describes the history of presidential oversight of the regulatory process, showing that such oversight has been a steady development in the twentieth century and that it can now be said to be permanent, or at least as permanent as any procedural innovation not required by the Constitution itself. Part II deals with institutional issues, in particular with those procedures designed to bring about greater openness and visibility. This self-conscious effort at democratization is one of the most distinctive features of Executive Order 12866. Part II also discusses the fact that the Order contains an apparent presidential (and vice-presidential) veto on agency regulations--a bold step that goes well beyond anything that Presidents Reagan or Bush endorsed, at least publicly. It concludes with a discussion of the Order's partial and unprecedented inclusion of the independent regulatory commissions.

Parts III, IV, and V are the heart of the Article. Part III turns to substance and, in particular, to the question of regulatory ends. It focuses on cost-benefit analysis, comparative risk assessment, and the problem of regulatory rationality in general. There is good reason for enthusiasm about some basic goals and possibilities of these technologies--to increase sensible priority setting, to limit the unnecessarily high costs of regulation, and to make sure that government controls actually improve people's lives. But it is important to ensure a form of these analytic techniques that is attuned to some of the complexities of social valuation of different risks in different contexts of social life.

Part IV offers a number of suggestions on this score. It tries to make sense of the evident ambivalence in Executive Order 12866 toward cost-benefit analysis. We suggest that there are conceptions of rationality that resist the effort to align diverse social goods along a single metric, and that cost-benefit analysis disregards what we call the expressive dimension of regulation. Part IV also urges possible modifications to conventional cost-benefit analysis, designed specifically to make a place for adequately informed and rational public judgments about risks.

Part V discusses the question of regulatory means. Its principal topic is the conspicuous effort in Executive Order 12866 to go beyond command-and-control regulation in the interest of providing less costly means for achieving regulatory goals. Here we emphasize an unmistakable trend in federal regulation: information disclosure as a remedy for risk. We also deal with the replacement of command-and-control approaches with economic incentives. We discuss the ways in which new strategies should take account of ordinary understandings of risk and also attempt to build public trust. Through this discussion of means, as through the earlier discussion of ends, we suggest reforms that will simultaneously promote economic and democratic goals.

I. Background: A New and Probably Permanent Feature of American Government

Almost since the birth of the modern administrative agency, American presidents have struggled to assert more centralized control over the regulatory state. Indeed, a recent study asserts that "the history of the presidency in the twentieth century has been the history of presidents' attempts to gain control of the sprawling federal bureaucracy."³¹ Typically, these attempts have generated sharp congressional resistance.

The first step in this direction can probably be traced to President Theodore Roosevelt's creation, in 1903, of a commission designed to study the scientific work done by government agencies in order to recommend more efficient coordination. The results presaged those of similar reform efforts to follow. The commission recommended that the thirty scientific agencies be consolidated into one, in order to minimize duplication and inefficiency. Roosevelt forwarded this recommendation to Congress, which declined to act on it.³²

Roosevelt then created a second commission, the Keep Commission, to study a broader array of administrative

reforms. In some ways a precursor of Vice President Gore's recent National Performance Review, the Keep Commission found that many civil servants were underemployed and resistant to new technologies, such as typewriters and adding machines. It also concluded that the system of supply acquisition was hopelessly chaotic. n33 The Keep Commission forwarded eleven formal reform proposals to Congress. When it did so, the century's first major battle between Congress and the White House over control of administration was joined. Congress not only declined to act on any of the proposals, but also expressed outrage at the Executive's effort to seize "an authority previously the exclusive and unchallenged domain of Congress." n34 In addition, Congress prohibited the use of government funds for such commissions in the future and even refused to appropriate funds to publish the Keep Commission's report. n35

At Congress's invitation, President Taft attempted to centralize and coordinate the budgetary process. Although Congress rejected Taft's particular proposals, by 1921 Congress granted the President effective oversight control of agency fiscal requests by enacting the Budget and Accounting Act. n36 This was an extraordinary development, in many ways a precursor of current efforts to centralize the regulatory process. For the first time, the President would be given statutory authority to submit an annual budget to Congress. Wilson's wartime presidency aggressively set into motion the vision of a more managerial presidency. n37

In the period after the war, the ideas of consolidation and efficiency-motivated reorganization swept the business communi- [*13] ty. Congress eventually followed suit in 1932 with the Government Reorganization Act, n38 which granted the President unilateral authority, subject to legislative veto, n39 to reorganize the administrative branch. Franklin Roosevelt's Brownlow Commission revived Wilson's famous distinction between policy and administration; n40 the Commission saw "policy" as the joint domain of the President and Congress, whereas "administration," it asserted, must be under the direct and exclusive command of the President. Despite an initial congressional outcry, most of the Committee's proposals were enacted. n41 A key reform, with lasting consequences, was the creation of the Executive Office of the President. n42

In 1949, the Hoover Commission produced yet another effort to create a more coordinated and managerial presidency. It issued 277 specific proposals for reorganizing and consolidating agencies. More than half of these were adopted via statute or executive order, with the purpose of creating a "clear line of command from the top to the bottom, and a return line of responsibility and accountability from the bottom to the top." n43

The most direct precursor to the current structure of executive oversight of regulation was the Nixon Administration's system of "Quality of Life" reviews. Nixon's response to the expanding administrative bureaucracy was to create a "counter-bureaucracy" in the White House. He doubled the executive office staff, created the modern OMB, and established the Domestic Council (chaired by a top aide, John Ehrlichman). The Council met with representatives of different departments having jurisdiction over a problem and tried to develop coordinated policy positions for presidential approval. n44 In the "Quality of Life" review process, agencies were required to submit significant rules to OMB in advance of publication in the Federal Register. OMB's principal duty was to circulate the agency draft to other agencies for review and comment. Although the process was intended to apply [*14] to all agencies, only EPA and OSHA were actually subject to the reviewing process. OMB's goal was rarely substantive; it served instead a coordinating function. n45

President Ford continued the interagency review process and added to it a process designed to control the effects of regulation on inflation. Most important, the Council on Wage and Price Stability ("CWPS") reviewed regulations to assess these effects. In addition, OMB promulgated a circular to agencies arguing that the inflationary impact of a proposed rule could best be assessed through a quantitative cost-benefit comparison. n46 The Council's role was principally technical, consultative, and advisory. It was understood that the relevant agency might well persist in the face of CWPS disagreement. Despite often antagonistic relationships between the agencies and CWPS, many observers believed that CWPS enhanced both public participation and the agencies' analytical capabilities. n47 Congress ultimately enacted a statute allowing CWPS to participate in rule making and to explore adverse effects on inflation. n48

President Carter built on the Ford precedent through a successor to CWPS, the Regulatory Analysis Review Group ("RARG"). RARG consisted of representatives from major agencies, OMB, CWPS, and the Council of Economic Advisors. The purpose of this fifteen-agency group was to conduct interagency review of cost-effectiveness analyses, which were required of "significant" rules from relevant agencies. Notably, the Executive Order establishing the RARG review process did not require cost-benefit analysis. n49 In fact RARG reviewed relatively few rules, though the President did resolve a few highly controversial issues.

All of these efforts were designed to increase interagency dialogue, coordination, and analytical precision, as well as to reduce regulatory costs. But a decisive step came within a week of President Reagan's inauguration, with the formal creation of a mechanism for OMB review of major regulations. The most important of the new innovations, contained in Executive Order 12291, were (1) a set of substantive principles for all agencies to follow, "to the extent permitted by law," including a commitment

[*15] to cost-benefit analysis; (2) a requirement that a Regulatory Impact Analysis, including a cost-benefit analysis, accompany all "major" rules; and (3) a formal mechanism for OMB oversight, with a general understanding that OMB had some (undefined) substantive control. President Reagan considered subjecting the independent agencies to the new Order, but ultimately declined to do so, partly because of concerns about legal authority, but mostly because of fears of an adverse congressional reaction. n50 The independent agencies were asked voluntarily to comply with Executive Order 12291, but not one of them formally acknowledged their willingness to do so.

Executive Order 12291 proved extremely controversial. Nonetheless, President Reagan expanded on the basic idea four years later with Executive Order 12498. As noted above, that Order established a requirement that agencies submit "annual regulatory plans" to OMB for review. n51 The result is an annual publication, the Regulatory Program of the United States, which contains a discussion of all proposed actions that might be either costly or controversial. Executive Order 12498 served to increase the authority of agency heads over their staffs by exposing proposals to top-level review at an early stage. But it also increased the authority of OMB by allowing OMB supervision over basic plans and by making it hard for agencies to proceed without OMB preclearance.

The Bush Administration continued the Reagan procedures. Its principal innovation was the Council on Competitiveness, chaired by the Vice President. The Council engaged in occasional review of agency rules, operating as a kind of supervisor of OMB itself. It also set out a number of principles and proposals for regulatory reform. n52

President Clinton's Executive Order 12866 is the latest step in this process; we will investigate it shortly. Our current point is more general. From the recent evidence, it seems clear that presidential oversight of the regulatory process, though relatively new, has become a permanent part of the institutional design of American government. This new institutional arrangement has occurred for reasons parallel to the development of a centralized [*16] budget in the 1920s. Any president is likely to seek assurance that an unwieldy federal bureaucracy conforms its actions to his or her basic principles. Any president is likely to be concerned about excessive public and private costs. And any president is likely to want to be able to coordinate agency activity so as to ensure consistency and coherence and to guard against the imposition of conflicting duties on people who must comply with the law. The result of these forces is that a centralizing and rationalizing body, housed within OMB and devoted to regulation, has emerged as an enduring, major, but insufficiently appreciated part of the national government.

II. Regulatory Institutions

Executive Order 12866 makes three major institutional changes from the Reagan-Bush procedures. It imposes new disclosure requirements. It attempts to sort out the allocation of authority among agencies, the White House, and OIRA. Finally, it includes the independent agencies within some aspects of presidential oversight.

A. In General

As we have said, there are strong reasons for creating and maintaining an executive office entrusted with the job of

coordinating modern regulation, promoting sensible priority setting, and ensuring conformity with the President's basic mission. n53 In view of the wide array of regulatory programs administered by modern government, the absence of such an office would probably guarantee duplication, parochial perspectives, and inefficiency. A number of separate agencies and programs deal with environmental and other risks, and it is therefore important to share information, to reduce inconsistency, and to devote scarce resources to places where they will do the most good.

The past process of OIRA review has been imperfectly equipped to carry out these tasks. Too often OIRA has become involved at very late stages, operating as a kind of last-minute barrier to action at a point when cooperation and trust are nearly impossible. n54 Too often relations between OIRA and the agencies have been adversarial, with considerable distrust and even a

[*17] degree of "guerilla warfare." n55 What is needed instead is a definition of shared goals and objectives, accompanied by good and continuous working relations, clear jurisdictional authority, and mutual investment in the basic goals of improving regulatory performance according to agreed-upon criteria.

Executive Order 12866 is designed in part to achieve these goals, though some of the evidence for this conclusion lies outside the four corners of the document. The Order establishes the agencies as the principal decision makers, and in this way it insists, more than its predecessors, on agency autonomy. n56 In general, the process appears to involve a government-wide system of priority setting, rather than one concentrated in OMB. Thus the Order contemplates an annual agency policy meeting to set priorities and coordinate activities. n57 The Order also requires each agency head to designate a Regulatory Policy Officer, who is to be involved "at each stage of the regulatory process." n58

Following this provision, the Clinton Administration has created a set of Regulatory Policy Officers within each agency. n59 These officers are specifically charged with improving the regulatory process by ensuring conformity with Executive Order 12866. The officers work with a new Regulatory Working Group created by the Order, chaired by the OIRA Administrator, and attended by specially appointed White House Regulatory Policy Advisors. n60 The purpose of this system is to promote early interaction and cooperation by coordinating agency and OIRA behavior, and also to ensure exchange of information among agencies, with a particular eye toward sensible treatment of problems that cut across agencies. n61 In a similar attempt to limit conflicts and to reduce unnecessary layers of bureaucratic oversight, Executive Order 12866 also attempts to reduce the number of rules to be reviewed by OIRA, cutting the number in half from previous years. n62 The Order seeks to promote democratization as well by [*18] requiring the OIRA Administrator to meet with members of the public and to convene conferences to this end. n63

It is impossible to tell at this stage whether these institutional innovations will accomplish a great deal. Much of the evidence will come from the regulations that eventually emerge. If cooperation is an end in itself, it is a limited one, and the success of the new process will be measured principally by substance--what emerges from it. Two early reasons for concern are the apparent absence of clear OIRA focus on regulatory consequences, and the apparent failure to develop a close sense of regulatory priorities through general publicity about the nature of various risks and the costs of eliminating them. n64 It would be highly desirable for OIRA to attempt to place problems in broad risk categories and to attempt to regulate risks that are of the highest priority. n65 For democratic reasons, it would also be desirable for OIRA to make information about risk categories broadly available to the public and to be responsive to the weight that the public places on various risks. The EPA undertook an early effort to this effect and updated it in 1990. n66 The 1990 study identified a number of "relatively high-risk problems," including habitat alteration and destruction, species extinction and loss of biological diversity, ozone depletion, and global climate change. It also found a number of "relatively medium-risk problems," including pesticides, surface water toxins, acid deposition, and airborne toxins. And it identified a number of "relatively low-risk" problems, including oil spills, radionuclides, groundwater pollution, and thermal pollution. n67 A 1994 report of the National Academy of Sciences basically approved the EPA's ranking and approach. n68 This might serve as a model for the federal government as a whole.

Finally, and perhaps most importantly, it would be desirable for the executive branch to identify its long-term risk-reduction goals, at least in broad terms, and to report on its progress to- [*19] ward reaching those goals.

Executive Order 12866 contains no mechanism of this kind.

In general, however, there is reason for optimism both in the maintenance of the OIRA reviewing process and in the steps to limit antagonism between the agencies and OIRA and to promote attention to shared regulatory goals. We now turn to some institutional details.

B. Disclosure Requirements

The Reagan orders contained no provisions governing disclosure or regulation of communications between private parties and OIRA, or within the executive branch itself. The absence of formal procedures was itself a cause of considerable controversy. n69 Many people alleged that private communications had occurred and that OIRA was basing its decisions on pressure from business groups with self-interested stakes in the outcome. n70

1. Policy and law.

As a matter of policy, the rules governing disclosure of communications with OIRA are quite important. Informal communications between the executive branch and affected citizens may be "the lifeblood of the administrative process," n71 in the sense that they may well be crucial to the development of sound regula- [*20] tory policy. n72 There is much that government does not know--about the facts, about the intensity of possible public reactions, about the consequences, and about possibly creative alternatives. Informal and consultative processes with outsiders may be critical. They can help ensure the development of sensible reforms before people become firmly committed to one or another view. If government cannot speak informally with outsiders, regulatory policy may be created in a vacuum and hence in ignorance. A flat ban on ex parte communications would therefore be troubling. The problem with disclosure requirements is that they may deter beneficial processes of informal information gathering.

On the other hand, selectivity is hard to avoid in government communications with outsiders, and there is at least the appearance of partisanship and factionalism whenever one group, and not others, has access to public officials. The reality of factionalism may exist if a powerful executive branch entity is listening closely to the views of one group of interests. The result may be a form of government by private groups, the defining evil in the great *Schechter Poultry* case. n73 In any case, a failure to disclose ex parte communications may breed harmful and unnecessary suspicion.

A major difficulty in resolving the policy issue is that we need to know the extent, if any, of deterrence of information gathering created by a disclosure requirement in this setting. If the deterrent effect is small, the case for disclosure of substantive communications is compelling. As we discuss below, there is no real evidence, moreover, that disclosure requirements do deter desirable communications, and some evidence to the contrary.

The legal issue--whether disclosure requirements are imposed by statute--is complex. The Administrative Procedure Act ("APA") contains no restrictions on ex parte communications [*21] during notice-and-comment rule making, and it does not require disclosure of such communications. n74 Congress deliberately chose to restrict such communications in formal proceedings, without adding restrictions in notice-and-comment rule making. n75 The absence of explicit restrictions in informal proceedings, such as notice-and-comment rule making, counts strongly against judicial imposition of any additional procedural requirements, including disclosure of ex parte communications. n76

Nonetheless, disclosure of some private contacts may be required by the APA as it has come to be understood. In a series of cases, the Supreme Court has said that courts should review agency action on the basis of the record that was actually before the agency. n77 The idea of "record review" means that agencies must compile some kind of record even in informal proceedings. That idea has survived the notion that courts may not add to the procedural requirements of the APA. n78

With respect to disclosure requirements, the question then arises: What if substantive communications that were an important factor in the agency's deliberations are not made available to reviewing courts? Perhaps the full record before

the agency, including undisclosed substantive communications, must be before a court in order for it to undertake review. An early case so suggested. n79 On this view, there cannot be one record before the court and another before the agency. At least those undisclosed communications that had a real effect on the outcome must be made part of the record for judicial review.

This argument, however, is rather adventurous. It is not clear that a court needs to have all the informational inputs that were before the agency in order to review the agency's decision. Perhaps a court needs only to ensure that the agency decision is defensible on the basis of the record actually before the court. n80

[*22] If the agency's decision is sustainable on the basis of what the agency provides to the court, its legal obligations may well be satisfied. This seems the most plausible understanding of the APA, though the conclusion is not clear, and though, for reasons to be stated shortly, we believe that the APA requires less disclosure than it should as a matter of sound policy.

2. Innovations.

In Executive Order 12866 itself, President Clinton took the surprising step of outlining specific procedures governing the process of OIRA review. Many of these provisions involve disclosure, though some of them are directed to associated fears about the power of private groups over the process.

1. Firm deadlines--generally ninety days--are placed on the reviewing process, n81 thus cabining OIRA activity, including discussions with others, within a specified time frame. This provision is a self-conscious response to the problem of delay and rulemaking "ossification," sometimes thought to involve near elimination of regulations through OIRA inaction. n82

2. OIRA must provide written explanations of any rule that it returns for further review. n83

3. Only the OIRA Administrator may receive oral communications from people who are outside the executive branch. n84

4. When OIRA personnel are speaking with people outside the executive branch, an agency representative must be invited, and written communications from outsiders must be forwarded to the agency. n85

5. OIRA must include a publicly available log with a record of all written communications that have been forwarded, and with full disclosure of all substantive oral communications with people outside the executive branch. n86

6. After publication of the regulatory action, OIRA must disclose all written communications between OIRA and the agen- [*23] cy. In this way, internal executive branch communications are opened up for public scrutiny. n87

On balance, these disclosure requirements are a healthy idea. In order to safeguard the appearance and the reality of independence from private interests, it is important for people to know what sorts of private contacts have occurred. As we have noted, the principal objection to disclosure requirements is that they will impose a "chilling effect" on desirable communications. But there is no evidence of any such effect. Indeed, the Clean Air Act imposes relatively onerous disclosure requirements on the Environmental Protection Agency, n88 with apparently no adverse consequences for EPA rule making. Moreover, there is no reason to believe that there are high costs to keeping track of what has been done. n89

Thus far, we have discussed communications between the agency and private citizens. Internal executive branch communications involve a separate issue. Even if some communications with outsiders must be disclosed, no one believes that current law requires disclosure of all intra-executive branch communications. Indeed, Article II of the Constitution may forbid Congress to require disclosure of at least some such communications, and in any case Congress has made no decision to do so. n90 Disclosure of internal executive contacts is somewhat more troublesome. As the

cases involving executive privilege acknowledge, it is important to ensure a degree of open give-and-take within the executive branch. n91 If the President were required to disclose all of his discussions with, for example, the Secretary of State, free internal communication would be impossible, and the President would be far less able to perform his constitutional duties. Something of the same may well be true of informal communications between OIRA and the agencies (though it is not clear that executive privilege applies to communications not involving the President himself). n92 The case for disclosing intra-executive branch discussions is also weakened by the fact that the spectre of factionalism is less plainly involved.

On the other hand, the Order does not require disclosure of purely oral remarks between OIRA and others within the executive branch. It is limited to written communications. In view of the extreme concerns expressed about OIRA performance in the Reagan and Bush Administrations, we think that the new approach is probably sensible as a compromise step, one that allows disclosure while also promoting a degree of free internal communication.

C. Allocation of Authority: A White House Veto?

Under the Reagan orders, there was no explicit provision for resolving internal executive branch conflicts. The official government position was that agency heads would be entrusted with making ultimate decisions. n93 Many people alleged, however, that in practice OMB was permitted to displace the agency heads, who in effect took orders from OMB officials. n94 At the very least, a spirit of adversariness and hostility prevailed between OIRA and the agencies. n95

The legal issues are unsettled, in part because theory and practice diverge in this area. In addition, these conflicts have yet to be adjudicated. What we might call the conventional view relies on the following three points: (a) neither the President nor the agency head may violate the law, and to that extent both must follow the substantive statutory standard, whatever their policy views may be; (b) apart from the special case of independent agencies (taken up below), the President is always permitted to discharge people whose decisions displease him; n96 and (c) [*25] the President has no authority to make the decision himself, at least if Congress has conferred the relevant authority on an agency head. n97

On this view, an agency head who rejects the President's policies knows that he is risking his job. For this reason, and because of the general understanding that the President is in charge of the executive branch, agency heads will generally follow the President on matters of importance. Most likely, they will acquiesce in the President's preference, even when that preference runs contrary to their own. In practice, then, the distinction between presidential influence and command might be thin indeed.

Nonetheless, it may be important to acknowledge that, as a technical matter, the decision rests with the agency head. Such an understanding might bolster agency heads in their conflicts with the White House and with OIRA. Moreover, there is a substantial difference between the power to fire and the power to make the ultimate decision in particular cases. A discharge is highly visible and comes with significant political costs; an agency head can be fired only rarely (though the threat of discharge or of some other, lesser sanction can be exercised more frequently). It therefore seems plausible to conclude, as the conventional view does, that while the President may discharge, he may not otherwise force decisions, at least if Congress has allocated decisional authority to a particular agency.

Even if the conventional view is right in theory, enforcing it is difficult in practice. Suppose, for example, that the Administrator of EPA has reached a considered judgment in favor of course of action A. Suppose that the Vice President prefers course of action B and that it is generally clear that the President agrees with the Vice President. If the EPA Administrator yields, has the law been violated? Not necessarily. As long as the Administrator is acting in an area of discretionary policy-making judgment, she might consider herself a team player and agree, on principle, to follow presidential judgments. If the relevant statute does not [*26] require EPA to take a particular course of action, it is far from clear that this arrangement would violate the law. The boundary between presidential influence and command is surely difficult to police--judicially or otherwise.

At least in public terms, Presidents Reagan and Bush did not challenge the conventional view. They did not suggest that the President could displace the ultimate agency decision. But it is unclear that what we have called the conventional view ever adequately described the actual practice of executive branch policy-making. As a practical matter, some mechanism, informal or otherwise, must exist for resolving intrabranched conflicts. There is some evidence that the White House has often stepped into the breach in these circumstances, particularly when the conflicts involve unusually significant policy issues. n98 At times this White House role has been consultative, but at other times it appears to have involved the direct resolution of the relevant conflicts. n99 There have long been other informal mechanisms for resolving interagency conflicts. n100 Little public documentation of the course of White House involvement is available from which to draw firm conclusions about the actual White House role.

From the vantage point of theory, Executive Order 12866 appears more aggressive than past executive orders. First, the Order explicitly creates a formal White House review process to resolve interagency conflicts or conflicts between agencies and OMB. n101 Second, the Order specifies that, to the extent permitted by law, the President or the Vice President, acting in consultation with the agency head, shall resolve the conflict. n102 This provision effectively authorizes the White House to suggest, or possibly even to dictate, policy outcomes in cases of executive branch conflict. n103 If this provision means that the agency head can be [*27] overridden by the White House, it might seem a striking assertion of authority. Indeed, many Democrats had vigorously complained that Presidents Reagan and Bush had displaced authority vested by law in the relevant agency head. It would be ironic if President Clinton successfully asserted the very authority that had been so controversial in the hands of his predecessors.

Precisely how bold an innovation this provision is, however, depends on two considerations. The first is whether it merely codifies in a more formal way--with more procedural protections and greater public accountability--the kind of White House oversight of the executive branch that has long existed in fact. Appearances notwithstanding, there is good reason to believe that Executive Order 12866 is significant mostly for the constraints it imposes on presidential oversight, rather than for its apparent expansion of the presidential role. The various procedural innovations discussed above n104 are designed to enhance public confidence and participation in administrative government precisely by publicly defining and constraining the White House role.

A second, and related, consideration is how the phrase "to the extent permitted by law" will be interpreted by the various executive branch actors. The more the relevant statutes are understood to require that agency expertise be brought to bear on specific issues, the less scope the Order will effectively give to White House influence. As long as a statute's text, history, structure, and purposes do not give the agency the power of decision, however, the seemingly aggressive new provisions in the Clinton Executive Order do not appear to contemplate an unlawful White House oversight role. Indeed, if the statute does give the agency the power of decision, the "to the extent permitted by law" proviso means that the President cannot override that power. In any case, Congress retains ultimate substantive control; it can enact whatever substantive standards it likes, and the President cannot violate those standards. n105 [*28]

Moreover, it will be difficult, for reasons noted above, for these issues to be litigated. The presidential review process is likely to be invoked only for singularly important regulatory initiatives, and even then, only when executive branch conflicts cannot be worked out cooperatively. Indeed, in the first eight months since the Order took effect, the process had yet to be employed. n106 When the process is invoked, the heads of executive agencies are unlikely to say that presidential command has overridden agency judgment, rather than that presidential input has made for a more informed agency decision.

D. Incorporating the Independent Agencies

President Reagan declined to include the independent agencies within the requirements of his two executive orders. In part, this appears to have been a political judgment. The Democratic Congress, skeptical of the executive orders in general, might well have been outraged by an assertion of presidential authority over the independent agencies,

which Congress often considers "its own." But the judgment was based partly on law as well. The extension of the executive orders to the independent agencies would have raised difficult constitutional and statutory questions. Under President Reagan, the Department of Justice concluded that the President had the legal authority to extend the orders, but no one disputes the novelty and complexity of the question. n107

On the other hand, strong policy reasons favor including the independents within some degree of presidential authority. Often a substantial overlap exists between the work of independent and executive agencies. Consider the antitrust responsibilities of the FTC and the Department of Justice, or the labor policy of the NLRB and the Secretary of Labor, or the labelling policies of the FDA and the Department of Agriculture. It is important to coordinate these activities so as to ensure a degree of coherence and consistency. Also, and equally important, much of the independent agencies' work lies squarely within any administration's highest priorities. The FCC, for example, controls communications policy, an issue of central importance to Vice President Gore. Some of the most important work in the area of health and

[*29] safety is conducted by independent agencies, including the FDA and the Nuclear Regulatory Commission ("NRC"). If the independents are placed outside of the President's domain, much of national policy may escape the Administration's grasp except to the extent that other, indirect mechanisms of control act as a surrogate. n108

President Clinton has moved to incorporate the independent agencies within the system of presidential oversight, at least in a modest way. The unified regulatory agenda, including all proposed regulations, will require the participation of the independents. n109 More important, the annual regulatory plan must include submissions from the independent agencies, and here the Vice President has an opportunity to advise and consult. n110 This is only a modest step, for there is no clear evidence that the agency's discretion may be overturned or even influenced by the President. But it is still bold and dramatic, simply because it is unprecedented. President Clinton might have gone further than Presidents Reagan and Bush both because of less-intense political fear--a Democratic Congress is less likely to object to such a step from a Democratic President--and also because of an especially strong commitment to centralized presidential oversight of the large policy judgments made by independent agencies.

The legal question--whether the President has any legal authority to supervise the independents, and which particular means of supervision might be constitutional--has not been answered. n111 The Supreme Court has not yet defined "inefficiency, neglect of duty, or malfeasance in office," n112 the ordinary standards for presidential removal of members of the independent commissions. Nor does anything in *Humphrey's Executor*--the case establishing the validity of the independent agency form--speak to the particular issue of the degree of presidential authority over the independents. n113 We know that independent

[*30] agencies can exist, but we do not know precisely how independent Congress has made them or could choose to make them. If the statutory words allow some scope for presidential removal and hence supervisory power, the degree of independent administration of the laws can be solved simply as a matter of statutory construction; the constitutional issue need not be reached because a degree of presidential power exists as a statutory matter.

It might be possible to interpret the relevant statutes as allowing a degree of removal and supervisory power to remain in the President. Purely as a textual matter, the words "good cause" or "inefficiency, neglect of duty, or malfeasance in office" seem to grant the President something in the way of supervisory and removal power. Perhaps they allow him, for example, to discharge, as inefficient or neglectful of duty, those commissioners who have frequently or on important occasions acted in incompetent ways. Perhaps too they allow him to discharge officials whom he finds incompetent because of their consistently foolish policy choices. n114 If this is a correct interpretation of the removal provisions, certainly a degree of procedural supervision would be acceptable.

This result might seem counterintuitive in light of the frequent understanding that independent agencies are entirely immune from presidential policy-making. n115 But some language in *Bowsher v Synar* might support this conclusion. n116 In *Bowsher*, the Court held that Congress could not delegate power to administer the Gramm-Rudman statute to the Comptroller General, because--and this is the key point--the Comptroller was unduly subject to congressional control. In the Court's view, those who execute the law must not be subject to the

policy-making authori- [*31] ty of Congress except insofar as legislative instructions are embodied in substantive law. n117 The relevant statute allowed Congress to discharge the Comptroller for "abuse of office," "neglect of duty," or "malfeasance." n118 The Court said that these "very broad" terms meant that Congress had "in effect retained control over the execution of the Act" n119 In the Court's view, "these terms are very broad and, as interpreted by Congress, could sustain removal of a Comptroller General for any number of actual or perceived transgressions of the legislative will." n120

Read in a certain way, this language in *Bowsher* might be thought to have significant implications for the legitimacy of presidential supervision over the independent agencies. On a strong reading, *Bowsher* could be taken to hold that traditional removal constraints still leave the President with considerable legally permissible latitude to remove--and hence supervise--independent agency heads. On a weaker reading, *Bowsher* is not applicable to the presidential setting at all, and even if it is, it merely recognizes that, however legally constrained removal authority might be, as a practical matter even supposedly independent officials can still be subject de facto to considerable pressure and oversight. The opinion is unclear on whether the *Bowsher* Court was concerned that the Comptroller General was insufficiently independent of Congress as a matter of law or of fact.

The question is important because the words governing congressional power over the Comptroller General are substantially the same as the words governing presidential power over independent agencies. If those words have the same meaning in these admittedly different contexts, and if one endorses the strong reading of *Bowsher*, the President turns out to have considerable power over the commissioners. On this reading, the President would have broad removal power over the independent agencies, with correlative powers of supervision and guidance. As a matter of statutory interpretation, the "independent" agencies would be subject to a significant degree of legally legitimate presidential oversight. n121
[*32]

Perhaps it would be wrong to say that the Court would or should embrace this strong view of *Bowsher* as a matter of constitutional compulsion. But even if it would not, *Bowsher* might still be grounds for courts to invoke a clear-statement principle, one that allows the President a degree of supervisory power over the commissions. For those troubled by the independent agency form as a matter of policy or constitutional law, such an approach would minimize the risks of this form and promote coordination and accountability in government. Such an approach would recognize that many independent agencies perform policy-making functions identical in nature to those of the executive agencies, and that the performance of such functions by truly independent agents raises sufficiently serious structural questions to require clear congressional authorization. n122

On the weaker reading of *Bowsher*, which tends to find support in subsequent cases, n123 the Court did not call into question the traditional understanding that independent agencies are highly insulated, as a statutory matter, from presidential oversight. *Bowsher* recognized that some influence and pressure might exist as a practical matter, but the Court did not legitimate this influence by acknowledging any legal basis for such de facto oversight, certainly if exercised by the President over the independents.

For present purposes, we need not attempt to resolve these underlying complexities. On either reading of *Bowsher*, it is reasonable to conclude that the modest and partial inclusion of the independent agencies within Executive Order 12866 is entirely lawful. The Clinton Order does not bind the independents to presidential directives. In some situations, guidance and consultation might actually become policy dictation, in which case dif- [*33] ferent legal issues would be raised. On its face, however, the Order is acceptable. If the President may discharge commissioners for "neglect of duty" or "inefficiency in office," surely he is entitled to ask for a statement of annual plans, and at least to offer his suggestions on whether those plans are sensible.

III. Regulatory Ends, Regulatory Substance: Preliminary Notes

A. In General

It is now time to discuss substantive issues. The Reagan orders, of course, were founded on distinctive ideas about regulatory failure. Executive Order 12866 takes a new position on that problem.

We begin our analysis of this substantive shift with a general suggestion. Many conflicts over regulatory policy are best understood in light of three paradoxes. First, public perceptions of risk over time do not necessarily track, and in fact at times may run counter to, actual changes in the risks people face. Second, expert and lay judgments about risk frequently diverge. And third, public distrust of bureaucracies leads toward demands for both centralization and democratization of the regulatory process.

The first paradox can be understood in the following way. During the last twenty years, regulatory initiatives and technological changes have significantly reduced the average level of environmental, occupational, and other risks, at least as a general rule. n124 Consider the following data:

[*34]

[SEE TABLE IN ORIGINAL]

Along most dimensions, moreover, there seems to be no problem with the stock of available resources. n126

At the same time, however, public concerns about risk have risen significantly. n127 The public seems to appreciate neither the reductions that have been made nor the full factual picture about risk levels. These considerations point to a serious conflict between public perceptions of risk on the one hand and trends and facts on the other. A 1978 study makes the point especially vivid. The authors gave respondents information about the fatality rate for one risk--in the first sample for motor vehicles, in the other for electrocution. The authors then asked for risk estimates for a series of other risks. The following table shows the ratio of the respondents' risk perceptions to the actual risks: \$ SE

[*35]

[SEE TABLE IN ORIGINAL] [*36]

Second, and relatedly, there is a sharp conflict between expert and lay judgments about risks. n129 Though this conflict is still widely ignored, and its foundations are not precisely understood, it should be treated as a central question confronting regulatory policy, for it bears directly on many issues of law and policy. n130 Experts' level of technical knowledge with regard to risk has increased dramatically, in part because of the maturation of the disciplines of risk assessment and risk management. Yet public willingness to permit policy to be made on the basis of this knowledge has declined dramatically. The most noteworthy example in the last decade was the impasse over long-term nuclear waste disposal. While scientists viewed the technical problem as "trivial," n131 public opposition made site selection and preparation almost impossible. As one participant put it, "It is embarrassingly easy to solve the technical problems, yet impossible to solve the political ones." n132 Consider a comparison between EPA and public understandings of environmental risk: \$ SE

[*37]

[SEE TABLE IN ORIGINAL]

Some of these disparities reflect differences in purely factual assessments; others reflect differences in valuation. It may well be, for example, that the public concern over microwave oven radiation is based on a simple misperception of facts. There is a "fact" about the level of radiation that microwave ovens emit (though public assessments may also reflect judgments about the value of microwave ovens, the possibility of individual control, and so forth). On the other hand, evaluations of ozone layer destruction are not based only on facts--there may well be no "fact" that experts can identify--but also on assessments about how to proceed in circumstances of uncertainty in which future generations are at risk. Consider more generally the following chart, showing disparities between public and expert perceptions of risk:

[*38]

[SEE TABLE IN ORIGINAL] [*39]

[SEE TABLE IN ORIGINAL]

The third paradox stems from the fact that public frustration with the bureaucracies designed to deal with these issues pushes in two quite different directions for reform. On the one hand, the sense of inconsistent, duplicative, and cumulatively burdensome regulation leads to demands for more centralized national control, especially at the presidential level. On the other hand, the sense that remote federal bureaucracies make policy without regard to the concerns or values of the people affected suggests the need for more participatory, decentralized decision-making structures. There can be a sharp conflict between these two understandings--producing a paradox involving the desire for centralization, coordination, and hierarchical control on the one hand, and the need for participation and democratic deliberation on the other.

Executive Order 12866 attempts to address all three paradoxes. It tries, for example, to enhance the values of both centralization and participation, and to do so simultaneously. Thus the Order increases public disclosure of communications between outsiders and the executive branch, and promises to maintain open channels of communications. n135 At the same time that the new Order increases the centralization of the regulatory process, it also seeks to expand participation in new, more centralized forums. n136 Thus the Administration seems to favor not only negotiated rule making, an increasingly popular if controversial means of building private judgments into rule making from the start, but also public meetings, policy discussion groups, and focus groups as means to obtain public input at early stages. There is also interest in appointing an ombudsman (already in use in the FDA, the Internal Revenue Service, and the Comptrol- [*40] ler of the Currency), in forming toll-free hotlines, and in using computers, electronic bulletin boards, and e-mail as means to facilitate public discussion. n137

We will return to the first two paradoxes below. For the present, we evaluate the Order's efforts to address the paradox between centralization and democratic participation. To do so, we begin by considering recent discoveries about the relationship between government institutions and the public in the risk-regulation process.

B. Public Trust and Effective Regulation

The extent of public trust in various regulatory authorities is a critical, but widely neglected, element in risk regulation. To say that trust plays an important role may seem obvious or banal. But an understanding of the mechanisms of creating trust is central to more effective regulatory policy.

Trust is important to the regulatory process in at least three ways. First, levels of trust shape public knowledge about risk. Second, levels of trust influence the ability of regulators to communicate effectively about risk. Finally, public trust is critical to public acceptance of regulatory proposals for dealing with risk.

Public perceptions of risk are filtered through judgments about the trustworthiness of the authorities charged with responsibility for managing those risks, and about the benefits of activities that produce risk. As one observer puts it, "acceptance of any risk is more dependent on public confidence in risk management than on the quantitative estimates of risk" n138 Thus, riskperception research shows that people view medical technologies using radiation and chemicals (x-rays and prescription drugs) far more favorably than industrial technologies involving similar radiation and chemicals (nuclear power, pesticides, and industrial chemicals). n139 Even if the risks are similar when measured in expected value terms, the former are viewed as high benefit, low risk, and clearly acceptable, while the latter are viewed as low benefit, high risk, and unacceptable. The difference appears traceable, in part, to the high degree of trust in physicians, who [*41] manage the former, as compared to government and industry officials, who manage the latter.

Similarly, risk-communication studies have shown that the "same risk" is perceived differently in different communities or at different times. These differences have been attributed to the public's confidence in the social and political institutions involved. When community residents trust local public and corporate officials, the residents are more willing to accept official information about hazards. Where this trust is lacking, communities turn to outside

sources of information about risk and remain highly skeptical of official sources. n140 Studies of community willingness to accept hazardous waste sites establish that the process of consent to siting, and the extent of community control over management, are important to gaining acceptance. n141 On a broader basis, a comparative study of environmental policy in Britain and the United States concludes that heightened concern in the United States about environmental risks stems from greater distrust in major social and political institutions, particularly large corporations and government. n142

Public officials must understand the dynamics of trust creation and destruction in order to develop more effective regulatory policy. n143 Trust is difficult to build and easy to destroy. In the public mind, negative events are more salient than positive ones: the former carry considerably more weight. In addition, sources of trust-destroying news are viewed as more credible than sources of trust-building news. They also receive more media attention. Finally, distrust, once started, tends to perpetuate itself, partly, perhaps, because of risk aversion with respect to catastrophic events. As one example of these processes of risk aversion, studies have shown that people report that they generally have little confidence in animal studies as predictors of the human health effects of chemicals. Yet when told that a specific chemical has been found carcinogenic in animals, people express [*42] "considerable confidence" in the relevance of this study for human health. n144

The problem of trust is exacerbated by conflicts between expert and lay systems for evaluating risk. This is perhaps the central difficulty in contemporary risk regulation, with pervasive consequences for the design of regulatory policy. To build the trust necessary to find acceptable regulatory solutions, agencies should recognize the conflict between expert and lay assessments, pay attention to lay evaluations of risk, and seek to communicate risk information effectively. For reasons explored below, we believe that policymakers should view lay and expert reasoning as two distinct styles of rational risk assessment, neither of which has a monopoly on rationality. Governmental efforts to base policies on expert risk assessments are likely to be viewed as "democratic elitism." n145 Such efforts could undermine themselves by destroying the trust necessary to make programs work.

The dynamics of trust suggest several points about the regulatory process, only some of which are addressed by Executive Order 12866. First, government should do more to advertise in good faith its own successes in improving water quality, workplace safety, and the like. This matter is not discussed in the Clinton Order. It is a conspicuous gap, for public skepticism about risk regulation is likely to be fueled if people are unaware that numerous programs have succeeded. A special public goal of the Clinton Administration in general has been to provide "national performance review," so as to encourage government to deliver on its promises, to create good incentives for public employees, and to allow citizens to monitor governmental performance. n146 Ironically, Executive Order 12866 fails to provide a mechanism for ensuring review of OIRA's performance under the Order itself. We suggest that such a mechanism be created. n147 It is important for the government to provide a record of the actual effects of its initiatives--to establish goals and to report on progress in meeting those goals.

Second, the creation of trust is inhibited by the American tendency to resolve policy conflicts in adversarial settings, particularly litigation, in which individual experts further accentuate [*43] their conflicts with each other. These contests tend to destroy trust in experts as a whole. By encouraging alternative structures, such as negotiated rule making, the Clinton approach might well have the effect (whether intended or not) of creating decision-making structures that build trust. n148

Third, any perception that presidential oversight is corrupted through the illegitimate influence of interest groups--even in isolated instances--will have pervasive adverse effects on public trust in oversight institutions. The Clinton Order makes an effort to respond to the last two of these points, and perhaps we can expect that in its implementation it will respond to the first point as well.

IV. Regulatory Ends: Costs, Benefits, Comparative Risks, and Rationality

One of the most hotly disputed issues in law and policy involves the use of analytical decision-theory techniques for

guiding regulatory choices. The most familiar issue involves the role of cost-benefit analysis ("CBA"). Less familiar, but increasingly important, is the emerging role of comparative risk assessment ("CRA"). While CBA advocates explore whether a particular policy is justified, CRA has a more confined role. The goal of CRA is to ensure better priority setting by ranking risks in terms of their seriousness. CRA is concerned with ensuring that the most serious risks are addressed first, rather than with the more controversial determination of whether the benefits of any particular regulation exceed its costs.

During the 1980s, public disputes focused primarily on CBA. In the most dramatic victory for CBA, the Reagan Administration's two executive orders called, "to the extent permitted by law," for the application of CBA to all regulatory decisions. n149 The Clinton Order offers a different approach to the role of CBA in the regulatory process.

To some extent, Executive Order 12866 continues the commitment, certainly in appearance, to CBA. Thus, the Order requires agencies to "assess all costs and benefits," to choose from among alternative regulatory approaches those that "maximize

[*44] net benefits," and to "propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs." n150 At the same time, the Clinton Order offers an expansive and eclectic list of the kinds of benefits that must be taken into account. These include "potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity." n151 The concern for distributive impacts may be related, in part, to recently emerging controversies over the race-related impacts of environmental policy; a subsequent Executive Order deals with that concern directly. n152 The Order also emphasizes that "qualitative measures of costs and benefits that are difficult to quantify" remain "essential to consider." n153

The text of Executive Order 12866 suggests ambivalence and caution toward CBA. On the one hand, the basic commitment to a form of CBA is maintained. This is an especially important development, for it ratifies an aspect of the Reagan orders that had been particularly controversial. On the other hand, the list of factors that must be included in this analysis is broadened significantly, with open-ended and potentially ambiguous variables. It is reasonable to wonder whether a form of CBA can remain coherent if it does not use a single metric or if it emphasizes qualitative differences. Indeed, the actual use of CBA by OMB during the 1980s justifies at least some concern whether CBA even in its purportedly purest form, as undertaken by actual government agents, is likely to avoid a high degree of discretionary judgment about relevant values. One detailed study notably concludes that there were "literally hundreds of cases of OMB

[*45] intervention into agency rulemakings to urge less stringent regulations, and at most a handful of cases of OMB urging the agencies to regulate more stringently." n154 Perhaps OMB was responding reasonably to consistent agency overreaching and hence to consistent failure to justify regulation in light of its costs. More plausibly, however, CBA at times became a political tool for pursuit of an antiregulatory agenda based on something other than actual numbers.

We seek to make a broader point in this Part. Public ambivalence toward CBA, and the ambivalence reflected in Executive Order 12866, are rooted in deeper forces having to do with fundamental questions about the nature of "rational" choice among competing policies.

What we say about CBA will bear on CRA as well. Unlike CBA, comparative risk assessment does not require that risk-reducing policies be justified by showing that their "benefits" exceed their "costs." Instead, CRA stems from recognition of the fact that government can address only some of the risks that people face. Thus, the Vice President's "Reinventing Government" report recommends explicitly that the federal government "rank the seriousness of environmental, health or safety risks and develop anticipatory approaches to regulatory problems." n155 Congress has shown interest in the same idea. n156

Executive Order 12866 is less clear, but it points in the same direction. The Order requires that "each agency shall consider, to the extent reasonable, the degree and nature of the risks posed by various substances within its jurisdiction." n157 It also requires each agency's Regulatory Plan to include a statement with each proposed action, explaining how the action will reduce risks "as well as how the magnitude of the risk addressed by the action relates to other risks

within the jurisdiction of the agency." n158 The Order does not, however, expressly require comparative risk assessment. The reasons for its failure to take this step are con- [*46] nected, we believe, to the Order's ambivalence toward cost-benefit analysis. n159

A. Competing Conceptions of Rationality and Value

1. Common critiques.

During the 1980s, numerous critiques of the theory of CBA emerged. A common complaint was that CBA was biased against the benefits of regulation, since these tend to be "soft variables" not easily quantified. n160 To the extent this was a criticism of the way CBA tended to operate in practice, it did not necessarily indict the theory of CBA. The response was that when CBA was improperly applied, it ought to be made more sophisticated. n161 There are by now several different techniques for attempting to assign some value to benefits such as cleaner air, safer drinking water, or less-hazardous work environments. Many of these techniques, such as contingent valuation, are more advanced than measures characteristic of first-generation CBA. To be sure, they still face considerable problems. But the undervaluation-of-softvariables critique proves both too much and too little. For in the absence of some effort to get a handle on the relative benefits and costs of policies, that critique by itself provides no guidance to making sensible policy.

A second and also common criticism was that CBA fails to address distributional issues, or that it is biased against the poor. There is force to this objection in some contexts. Actual willingness to pay in real market settings--the typical criterion for calculating costs and benefits--depends on ability to pay, and in this sense it can incorporate a kind of bias against the poor. Certainly, to the extent that regulation is designed to promote distributive goals, CBA will be unhelpful. But this need not be a decisive argument against CBA in all contexts. Regulators will inevitably have to find some means to assess the tradeoffs among employment, health, environmental quality, and cost in choosing among different regulatory standards. CBA can assist regulators [*47] with this endeavor, while any relevant distributional considerations can also be kept in mind. More specifically, it may well be possible to adjust the analysis for any distributional biases, by reassessing certain variables when they are first assigned or by undertaking a separate distributional assessment. n162 Thus, we might undertake CBA in the ordinary fashion, and then take distributional goals into account at an independent stage of inquiry. Executive Order 12866 might well be taken to suggest this approach in its references to "distributive impacts" and "equity."

A third objection to CBA was that scientific uncertainty made it impossible to say anything concrete or quantitative about the benefits of much regulation. n163 Often we do not know how potent a carcinogen is, or the magnitude of risks associated with a certain pollution problem. At best, we can extrapolate from animal data, where human analogues may be weak, and from epidemiological data, where it is hard to control for confounding variables, where subpopulations may not be typical, and where links between doses and responses may be highly uncertain. In these circumstances, the assignment of a number for "benefits" will be based on a great deal of guesswork and perhaps on tacit, unarticulated judgments of value. It will hardly be a purely scientific enterprise, n164 for a range of policy judgments will be involved as well. n165

Judgments about costs may be more tractable, but there are many problems here too. n166 Ex ante estimates will usually depend on industry projections which, as past practice has shown, are likely to be self-serving. n167 In any case, technological change makes projected costs a hazardous enterprise. Sometimes new devices will develop to provide controls at greatly reduced expense.

In light of the difficulty of projecting costs and benefits, CBA often has a spuriously objective and scientific cast. n168 And the [*48] difficulty of projection sometimes leads government to require a margin of safety, reflecting a form of risk aversion designed to allocate the burden of scientific uncertainty. But this problem is not necessarily a sufficient reason to abandon the attempt. Sometimes CBA can be undertaken because the uncertainties are relatively small. Sometimes it

is possible to project a range of estimates. When this is not possible, it might be useful to do the best we can with those variables that can be identified. Perhaps it will not be feasible to do a CBA, but government can move in that direction by identifying the range of known costs, known benefits, and factual uncertainties.

2. Expert and lay judgments.

For these reasons, we believe that the deepest objections to CBA lie elsewhere. They are best understood as another manifestation of the opposition between expert and lay approaches to evaluating risk. Experts tend to endorse a particular conception of rationality when using CBA (or CRA) to decide among policy choices; this conception of rationality is embedded within a specific set of assumptions about how risks ought to be valued. Average citizens tend to operate from within different systems of valuing risks; as a result, they invoke a radically different and much more complex and unruly conception of rationality in deciding among regulatory policies.

Surely citizens are sometimes confused. Their views may depend on incomplete or bad information, or on a misunderstanding of good information. In such cases, their judgments should not be made the basis of public policy. But sometimes citizens' judgments do not rest on demonstrable cognitive errors. Instead, different ideas about value are at work. When this occurs, neither of these conceptions of value can be endorsed over the other as a general matter; the selection depends on context and on the particular purpose for which judgments are required. Purely scientific considerations will not permit us to say which is the right way to resolve what rational policy choice ought to mean in the regulatory setting. n169 Instead, we have two or more competing understandings of rationality. n170 We cannot decide a priori [*49] or in advance of actual democratic deliberation which of these competing frameworks of values to bring to bear on particular regulatory problems.

There are complex theoretical issues in the background here. Sometimes the term "rational" is understood to refer simply to instrumental judgments having to do with the best way to achieve given ends. n171 To the extent that expert and lay judgments diverge because of different judgments about appropriate ends--not different instrumental judgments--this understanding of rationality will hardly permit us to choose between them. Sometimes the term "rational" is meant to allow assessments not just of means-ends connections, but of ends themselves. We might, for example, examine how ends have been formed, and when distorting influences appear--like A's judgment that X is true because A wants X to be true--we might find irrationality. Thus, we might find irrationality when people discount risks because they do not want those risks to be large. n172 Irrationality might also be found when ends conflict with one another.

We cannot undertake a full comparison here of the rationality of what we are calling lay and expert assessments of risk. It is doubtful that any such assessment could make sense in the abstract; any conception of rationality requires, for its defense, an understanding of the setting in which it is being used. A few words may, however, be helpful by way of background. There is no fully specified understanding of the values that underlie either expert or lay judgments. Intriguingly, no careful statement seems to exist of the criteria that underlie expert judgments. In general, experts appear to work with some version of expected utility theory, discounting harms by their probability or working from annual aggregate deaths; n173 as we will soon see, laypeople reject this approach in important ways. At least as a general rule, the expert model relies on a one-dimensional scale in which the com- [*50] mon metric is how many annual deaths or injuries are likely to occur from a given risk. n174

This difference makes it necessary to say something about expected utility theory. Notably, expected utility theory was originally understood as a positive rather than a normative theory, n175 though economists now use it both for positive and normative purposes. As a positive approach, expected utility theory is at best an incomplete success, for it meets a large number of well-documented anomalies--some reflecting irrationality (seen as such in light of common understandings of that term), some reflecting complex judgments of value that cannot easily be shown to be irrational. n176 As a positive approach, the chief virtue of expected utility theory lies in the absence of a well-specified, administrable competitor. n177 As a normative approach, however, expected utility theory has yet to find a substantial

defense in principle. n178 In any case, the relatively unrestrictive assumptions of expected utility theory certainly do not require that regulators look at the simple question: How many lives are at stake because of risk X? But experts and many others adopt an approach to regulation that emphasizes sheer numbers, an approach that looks at the single value of lives saved.

It is not simple, however, to show how that approach might be defended. If we are trying to decide which risks to regulate, why would it make sense to take only the total harm and to discount it by its probability, while ignoring all other plausibly relevant factors? n179 Voluntarily incurred risks need not be treat- [*51] ed the same as involuntarily incurred risks. Risks that involve especially gruesome deaths, such as those from AIDS-related illnesses, might be thought different from other risks. It is possible to defend, with reasons, the idea that (for example) catastrophic or irreversible risks deserve priority over noncatastrophic and reversible risks (other things being equal or nearly so), and very hard to defend the opposite idea. n180 Widespread cultural understandings of this sort not only have a democratic pedigree, they also make sense. n181 Risks are qualitatively different, and even if they all involve life, they should not be thought the same.

With these considerations in mind, some seeming anomalies in risk regulation dissolve. What appear to be "special" expenditures to control the risk of AIDS might be justified in light of the nature of death from AIDS, the distinctive fear produced by the AIDS crisis, and the nature of the groups at risk from AIDS. n182 Or a society might rationally reject the ignition interlock, preventing cars from starting unless the seatbelt is buckled, and [*52] approve of other regulations that do not interfere so pervasively with individual choice, even if they do worse from the standpoint of cost per life saved. n183 For this reason, lay understandings are not merely a competing conception of rationality, but can be richer and more rational than the expert alternatives. n184

To the extent that CBA promises a disciplined analytic tool for assisting regulatory choices, it is appealing. In light of its substantive appeal and promise of administrability, it may well be a useful approach for regulators to follow. But to the extent that it contains a contestable conception of rationality and value--one that experts favor but that is often at odds with more widely shared and also-respectable conceptions of rationality--it becomes a means of suppressing competing understandings of both reason and value, and of selecting an approach that cannot easily be shown to be superior in principle. An important task of contemporary regulatory strategies is thus to determine "how to make the decisionmaking process more democratic." n185 Attention to the divergence between expert and lay judgments reveals several more specific problems with traditional CBA that, we believe, have not been sufficiently appreciated. Much the same can be said for CRA. n186

B. Expert Perspectives on Risk, Rationality, and Policy

It is hard to challenge the view that law and policy should be assessed on the basis of inquiries into the advantages and disadvantages of different courses of action. Nor do we disagree with the proposition that comparisons should be made across regulatory programs, so as to ensure that social resources are devoted to the most serious problems. Better priority setting is an important social goal. CBA and comparative risk assessment (measuring risks against one another, without measuring risks against dollars) often appear to be the most promising means of systematizing such inquiries. [*53]

Yet this process of seeking consistency can incorporate contentious assumptions about what it would mean for policy choices to be consistent and rational. In particular, this approach requires regulators to create a single metric along which diverse regulatory policies can be compared. The tools of analytic decision theory are used to formulate such a metric. Thus, this approach uses probabilistic, quantitative techniques that treat risk in aggregate terms--as the expected number of injuries, deaths, or other adverse consequences over a given time. It emphasizes the end states that policies produce, not the processes by which harms are imposed or through which policy is made. This kind of aggregation--use of a common metric (such as dollars spent per life saved, or even total lives saved)--and emphasis on end states is required to make the kinds of comparisons across policies such techniques seek. n187

Through these techniques, information such as that in the following table is generated. To many, this information is startling and disconcerting; it suggests that federal regulation is pervasively arbitrary and chaotic:

[SEE TABLE IN ORIGINAL]

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We do not disagree with the general claim that these differences are reason to examine whether something has gone wrong. On the contrary, poor priority setting is an unmistakable fact of modern bureaucratic life, and better priority setting is a crucial task for modern government. And in view of the enormous disparities in the seeming cost-effectiveness of various programs in reducing risk, who could object to the idea that we should systematize costs and benefits and compare them in order to make more rational policy choices?

This is the foundation of the experts' case for CBA. "Soft" benefits must be properly valued, and distributional considerations must be taken into account where appropriate, but on the experts' view these are marginal refinements to the basic CBA approach. On that view, CBA must still be followed in order to enable us to make more consistent regulatory policy, to set our priorities more effectively, to discipline analysis, and to constrain what would otherwise be ill-informed decisions or pure political power struggles over the direction of policy. These concerns also favor some centralized institution that can make these kinds of comparative assessments across agencies and programs. n189

Arguments of this sort do support some form of comparative risk assessment and CBA. But the ambivalence toward CBA reflected in Executive Order 12866 is nonetheless justified, n190 and we aim to support that ambivalence here by emphasizing three less well-understood problems with CBA techniques. After discussing these problems, we briefly suggest modifications to Executive Order 12866 that might more effectively respond to these problems.

C. Lay Perspectives on Risk, Rationality, and Policy

There is a strikingly consistent finding in risk studies: Laypeople assess risk through different value frameworks from those implicitly embedded in expert approaches. Laypeople do not look only or even primarily to expected annual mortality; they

[*56] look as well at a number of factors determining the acceptability of different risks in different contexts. These factors cannot be said to generate a "hard" model of risk assessment, but they do represent an articulable framework for making judgments about risk levels.

Of course, laypeople disagree sharply among each other, just as experts do. Notably, there are national and international variations in judgments about risk. In a careful study in Canada, women systematically perceived risks as being worse than men perceived them; for every one of the thirty-three items studied, women believed that risks were equal to or higher than what men believed. n191 In the same study, perceptions of both risk and benefit were correlated with age, education, and region of residence. n192 Nearly two dozen studies have shown that women perceive nuclear power as more risky than men do. n193 In a comparative study of American and Hungarian students, the latter perceived risks as lower for eighty-four of ninety activities. n194

Notwithstanding these differences among citizens, there is a pervasive and sharp distinction between lay and expert perspectives. It is important to be clear about where this difference lies. Some of the difference does stem from simple confusion, or from heuristics that produce systematic errors. n195 But in many cases, the difference does not result from misinformation or from cognitive distortions about risk analysis.

For example, when people are asked to order well-known hazards in the expected value terms that experts use,

such as the number of deaths and injuries they cause every year, people often do quite well. n196 Yet if they are then asked to rank these hazards in terms of risk, the orderings of experts and laypeople begin to diverge dramatically. n197 The difference, then, is not only one of information or factual knowledge. n198
[*57]

These different systems of value mean that judgment about risk is frequently context dependent. Decision-analytic techniques traditionally used by experts are concerned with aggregate annual mortality or morbidity rates. However, for laypeople, the most salient contextual features include: (1) the catastrophic nature of the risk; (2) whether the risk is uncontrollable; (3) whether the risk involves irretrievable or permanent losses; (4) the social conditions under which a particular risk is generated and managed, a point that connects to issues of consent, voluntariness, and democratic control; (5) how equitably distributed the danger is or how concentrated on identifiable, innocent, or traditionally disadvantaged victims, which ties to both notions of community and moral ideals; (6) how well understood the risk process in question is, a point that bears on the psychological disturbance produced by different risks; (7) whether the risk would be faced by future generations; and (8) how familiar the risk is. n199 Different formulations for these and similar distinctions include how "dreaded" and how "observable" particular risks are. In particular, "citizens' responses to technological risks . . . are far more likely to be dictated by their perceptions of whether they can exercise personal control in the event of an accident than by the careful weighing of the worths of uncertain outcomes." n200

People systematically assign a high valuation to risks that are perceived to be involuntarily run--compare public reactions to risks from smoking to public reactions to risks from nuclear power accidents. About 150,000 people die each year from smoking-related causes, as compared with no apparent deaths from nuclear power accidents; n201 yet enormous resources are invested

[*58] in preventing the latter, and until recently almost no resources were invested in preventing the former. (It is notable that recent regulatory efforts with respect to smoking have followed and produced important changes in social norms, a point that we take up below.) Qualitative differences of this kind are not included within ordinary cost-benefit techniques to the extent that the latter concentrate only on end states.

The important point is that it can be fully rational to attend to contextual differences of this sort. Indeed, approaches that attend to such differences are, in many contexts, more rational than approaches that concentrate only on end states. n202 It is fully plausible to believe that expenditures per life saved ought to vary in accordance with (for example) the voluntariness of the risk or its catastrophic quality. Such beliefs appear widespread. Interviews with workers, for example, reveal that their valuations of workplace risks depend upon such contextual features as the overall structure of workplace relations, how much say workers have in how the risks are managed, and the nature of the particular jobs performed. n203

Consider also the fact that the quantitatively identical level of exposure to certain chemicals is viewed as more acceptable by research scientists, exposed during the course of carrying out basic research, than by laboratory assistants, who clean the hazards up after an experiment is finished. n204 To aggregate these different perspectives and assume that one common value is at stake in reducing mercury exposure is therefore wrong. For the scientist, the meaning of the risk, and the appropriate level of social resources to be spent to eliminate it, depend on the fact that it is tied up with professional work that is highly valued socially, personally rewarding, voluntarily assumed, and associated with traditions of scientific inquiry. If people do value risks differently depending on these sorts of contextual features, and if these valuations are reasonable, then democratic policy should

[*59] recognize the relevant contextual differences. Something of this kind may be reflected in the obscure use of the word "equity" in Executive Order 12866.

Attention to context, and particularly to the social conditions under which risks are produced and managed, returns us to the crucial role of public trust in effective regulatory policy. n205 Among the features that determine lay attitudes toward risk are people's judgments about the "acceptability of the social processes for making decisions about risk." n206 This point has at least three consequences for the morality and strategy of government risk regulation. First, risk policy cannot reasonably focus on end states alone. If institutions are restructured to bring about more (apparently)

consistent outcomes, but through processes that are less publicly acceptable, public institutions will be correspondingly less effective. Second, it is doubtful whether such institutions will be able, in fact, to bring about these more consistent results, at least if consistency is defined as uniform expenditures per life saved. In the absence of public support, policies recommended by decision theory are not likely to be effectively implemented. Third, in evaluating policies, we should be quite cautious about comparisons that involve only end states (as in Table 5). In moral or democratic terms, greater expenditures may be justifiably demanded for quantitatively similar risks precisely because people consider the values at stake to differ in the various contexts in which these risks are imposed. n207

All this is no reason to be complacent about the dramatic disparities shown in Table 5. Divergences in regulatory policies that are so extreme might well reflect little more than interestgroup pressures, confusion, lack of appreciation for trade-offs, or reflexive responses to sensationalist anecdotes. Moreover, we do not mean to suggest that policymakers should blindly defer to citizen assessments of risks in all circumstances. Ours is a republic, not a pure democracy, and a high premium is placed on deliberation rather than on snapshots of public opinion. n208 It therefore makes sense to ensure that citizens' judgments result from an appropriately structured deliberative process. n209 [*60]

As we have said, citizen valuations are hardly uniform; ordinary people disagree with each other, just as experts do. Sometimes citizens misunderstand the problem. Not all differences between lay and expert assessments reflect rational though complex lay judgments, or different conceptions of rationality and different frameworks of value. Knowledge about the bases for citizen evaluations of risk has increased dramatically in recent years. We now know that where these evaluations differ from expert ones, they might do so for any of a number of reasons. In some contexts, lay evaluations rest on what can properly be characterized as mistaken factual understandings, including those that result from distortions in information processing and similar cognitive errors. What we emphasize here is that in other contexts, what to experts, policymakers, and others might appear to be factual misunderstandings actually reflect different and legitimate valuations of risk.

The question of how policy should respond in situations of conflict between expert and lay assessments of risk is thus complex and not resolvable through any general rule. Nonetheless, we can offer some initial distinctions.

At one pole, lay assessments of risk sometimes rest on certain heuristics, or rules of thumb for processing information, that may make sense in the contexts in which they are adopted, but that are inappropriate bases for making public policy. n210 These heuristics include psychological devices that lead to risk assessments that policymakers should treat as factually erroneous. For example, cognitive psychologists have uncovered the central role of the "availability" heuristic in ordinary decision making. n211 "Availability" means that people's assessment of one risk depends, at times, on how readily similar events come to their minds. When this effect is at work, people will overestimate the probability that an event will occur if the occurrence of similar events comes easily to mind, but will underestimate the probability otherwise. [*61]

Whether similar events do come to mind can depend on how recently they occurred or how dramatically they were presented when they did occur. The "facts" about a certain risk do not differ when someone happens to remember a particularly salient recent event, but people's assessments of those facts can be greatly affected. Lay estimates of how high the risk is from hazardous landfills, for example, may depend on how readily people recall Love Canal or similar episodes. The gap here between objective and perceived levels of risk is not a function of different values, but of what can properly be viewed as cognitive errors based on misinformed understandings of the actual probabilities of certain events.

At the other pole are the cases we seek to emphasize: those in which experts and laypeople value differently the same "objective" risk (understood in terms, say, of aggregate lives at stake) as a result of features of the context that expert decision-theoretic or cost-benefit techniques obscure. These are the contexts in which people might demand, for example, that fewer social resources be devoted to "the same level" of risk reduction when the risks are viewed as

voluntarily assumed rather than when they are viewed as involuntarily imposed, or when the risks occur in social conditions viewed as illegitimate rather than legitimate.

Between these poles are situations in which it is unclear whether expert and lay differences stem from factual errors or alternative values. For example, experts are often troubled by the public's refusal to view risks in linear terms; laypeople sometimes express greater concern over a low-probability event with large potential tragic costs than probability theory would consider rational. This difference might reflect the well-known cognitive difficulties people manifest in dealing with low- and high-probability events. n212 Alternatively, it might reflect the view that catastrophic events entail costs considerably beyond deaths, injuries, and other material costs--such as the destruction of social stability.

For example, the "Buffalo Creek Syndrome" has been documented several times in the aftermath of major disasters. Nearly two years after the collapse of a dam that left 120 dead and 4,000 homeless, psychiatric researchers continued to find significant [*62] psychological and sociological changes; survivors were "characterized by a loss of direction and energy," other "disabling character changes," and a "loss of communality." n213 One evaluator attributed this loss of direction specifically to "the loss of traditional bonds of kinship and neighborliness." n214 The nonlinearity of lay evaluations of risk in the context of potential disasters may thus reflect a high premium on avoiding the distinctive kinds of losses associated with disasters. If so, differences between lay and expert assessments rest on genuine value differences (four times as many deaths may be much more than four times as bad) rather than on factual errors in cognitive processes of ordinary people.

The proper response to conflicts between lay and expert assessments of risk should therefore depend on an understanding of the reasons for these differences in different contexts. Where differences stem from cognitive errors, such as the availability heuristic, policymakers can properly exert leadership and not defer to lay assessments. Indeed, policymakers would do well to seek to educate the public about the factual fallacies underlying popular assessments; education on this count might be a major aspect of implementation of Executive Order 12866, in a process of producing a sense of relative risk. n215 Policymakers might also "strike when the iron is cold" n216 by postponing policy-making until some time after a triggering event has occurred--thus reducing the distorting effects of availability. Because regulatory overkill is a frequent short-term response to sensationalist triggering events, n217 it may well make sense to wait until the crisis period has ended, notwithstanding the difficulty of doing so.

The matter should be analyzed differently when the differences arise from clashes between the value frameworks of experts and laypeople. In such cases there is no reason to defer to experts; democracies should be responsive to the informed values of their citizens. n218 Policymakers and experts can seek to per- [*63] suade others that a particular perspective reflects the most appropriate set of public values, but there is no purely scientific solution to this conflict. When differences in risk assessment rest on differences in the underlying values at stake, conflicts can be legitimately resolved only through deliberative democratic decision making. n219 Experts should be full participants, but when deliberation ends, the outcome produced by the process should be respected. n220

Our final point is that often there is no way to know, a priori, whether expert and lay differences turn on facts or values (putting to one side the complex relation between the two). Yet another reason for promoting participation in regulatory processes (to the extent that it is feasible n221) is therefore that public participation is required to elicit the reasons that lay assessments of risk might differ from expert ones. This participation should take the form of informed deliberation about regulatory means and goals. Only after policymakers understand the reasons behind these differences can they know whether the reasons rest on factual errors or value conflicts; only with such information can policymakers know how best to respond to the systematic problem of conflicts between expert and lay evaluations of risk. n222

The tentativeness of Executive Order 12866 with respect to CBA might well be taken to reflect understandings, explicit or implicit, of this general sort. The right response to these understandings would be based on the simple

principle that policy involving risk should be seen as a political process to be informed by expert judgment and analysis, rather than as a technocratic process in which citizens are entitled to participate at best sporadically. More specifically, a reinvented regulatory state that appreciates this principle might seek to (1) adapt analytic models so that they better incorporate appropriately informed lay evaluations; (2) design, to the extent feasible, more effective mechanisms for citizen participation and education to enable articulation of informed perspectives; (3) emphasize contextual features of risk-exposure and process concerns as well as those of end states; and (4) focus on the importance of building public trust in risk-producing and risk-managing institutions.

D. Incommensurability and Disaggregating Costs and Benefits

Thus far, our principal suggestion has been that CBA is inadequate to the extent that it is solely concerned with end states. A generalization of this criticism is that traditional CBA is obtuse--in the sense of insufficiently fine grained--insofar as it tries to measure diverse social goods along the same metric. Suppose, for example, that we are told that the cost of a certain occupational safety regulation is \$ 1 million, and that the benefit is \$ 1.2 million. To make a sensible evaluation, we need to know a great deal more. What do these numbers mean? To which groups do they refer, with what histories and claims? Are the cost-bearing groups those that are appropriately faced with this burden, because (for example) they are imposing nonvoluntary risks on others? Or consider the decision whether to fund more AIDS research rather than research exploring the risks posed by destruction of the ozone layer. What is the relevance of the fact that AIDS often comes from voluntary activity, in which the associated risk may be known? n223 That gay men are disproportionately at risk? That AIDS strikes young people with many productive years ahead of them? That the risks posed by destruction of the ozone layer might be faced mostly by future generations and very broadly shared throughout the population? How would we know if we are devoting too much of our limited regulatory resources to AIDS or ozone layer research? n224 Or consider the problem of distributional effects of regulatory problems and solutions. Does it matter if a certain environmental hazard is concentrated in low-income or minority neighborhoods? Does it matter if the costs of disposing of hazardous waste, for example, are borne disproportionately by minority group members? A recent executive order answers such questions in the affirmative. n225

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We do not do well if we see such diverse goods as greater employment, protection of endangered species, lower prices, distributional effects, and cleaner air along a single metric, one that erases the qualitative differences among these goods. n226 At least in principle, it would be better to have a disaggregated system for assessing the qualitatively different effects of regulatory impositions. Not all benefits are fungible, nor are all costs. This is a separate problem from the more familiar difficulty of comparing costs and benefits against each other once they have been aggregated.

Through considerations of this sort, we might be able to make some progress toward reform of existing cost-benefit analyses. Through regulatory-impact analyses, people should be allowed to see the diverse effects of regulations for themselves, and to make judgments based on an understanding of the qualitative differences. If all of the relevant goods are aligned along a single metric, they become less visible, or perhaps invisible. In addition to conventional cost-benefit analysis, what is necessary is a full accounting of the various social consequences of regulation. Those consequences should be described in a way that allows a detailed view of what the costs and benefits specifically are. Once greater specificity is added, we will not be thinking in terms of simple costs and benefits at all. There is no algorithm to say what ought to be done once the more specific accounting is before us. Judgments involving controversial political and moral values will necessarily be made through ordinary administrative and democratic processes.

Disaggregating costs and benefits, identifying qualitatively different effects, and taking account of effects on diverse groups makes sense on several grounds. First, it is a way of taking into account certain features of ordinary evaluations of risk. Second, this approach enables regulators to focus on distributional issues--on issues of who gains and who loses. Third, judgments about the relevant moral context of risks can be made more intelligently once we have a more specific understanding of the interests that bear the costs and benefits.

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Public deliberation will be enhanced when analytic tools are used to generate information calibrated to the kinds of considerations that appropriately informed citizens consider relevant. It should be unnecessary to emphasize that regulatory choices typically have effects along multiple dimensions. Rather than reducing these to a single metric of "costs" or "benefits," it is better to enable decision makers to assess the different kinds of effects on different interests. To be sure, there are advantages in simplicity, and on this count conventional CBA has virtues in spite of its crudeness. But for those who want aggregate data on costs and benefits, nothing precludes arguing that the disaggregated data should be used in a simpler way. n227

E. Expressive Dimensions of Regulatory Policies

A third problem with CBA approaches is that they necessarily focus on the quantitative or material effects of policies. They cannot take into account what we will call the expressive dimensions of legal and political choices. By expressive dimensions--what might be understood as cultural consequences of choice--we mean the values that a particular policy choice, in the specific context in which it is taken, will be generally understood to endorse. Policy choices do not just bring about certain immediate material consequences; they also will be understood, at times, to be important for what they reflect about various value commitments--about which values take priority over others, or how various values are best understood. Both the material consequences and the expressive consequences of policy choices are appropriate concerns for policymakers. n228

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The expressive dimensions of policy choices can become relevant in several ways. Let us take a contentious and somewhat stylized example. Trade issues often involve difficult trade-offs between the interests of current workers and those of current and future consumers (and perhaps future workers as well). Lowering protective tariffs might displace current workers, who might or might not be able to find substitute employment, while enhancing consumer welfare by making the same goods available more cheaply. An aggregate cost-benefit analysis would require that all these effects be treated as qualitatively the same. We might reject that approach, however, on the view that the interests of various workers and various consumers are qualitatively distinct. In that case, we could not resolve this conflict simply by determining which choice maximized net benefits. Instead, we would face a political and moral choice about how to assess the interests of the workers affected as against those of the consumers benefited. Of course, we would still want to know as much as possible about the precise quantifiable effects on workers and consumers of the proposed policy. But we would ultimately have to decide how to value the various interests affected. That valuation might in turn affect remedial measures, including efforts to facilitate alternative employment for displaced workers.

These conflicts arise regularly in the trade area. Now suppose policymakers repeatedly prefer consumer interests in these

[*68] conflicts. This sequence might leave affected workers with the sense that, in every case, the political community is subordinating their interests to those of others. When officials are next faced with a similar conflict, it could well be rational to opt for a policy that valued the interests of workers (at least if they are in the same affected sectors) over those of consumers. That might be so even if, in aggregate cost-benefit terms, consumer benefits would "outweigh" the harms to adversely affected workers.

Such a choice would be important precisely because it would express the social conviction that the interests of workers are seriously valued. This is a highly stylized example, of course, and the right choice in any particular context will depend on many factors, including the precise magnitude of the relevant costs and benefits (at some point, the sacrifice in material benefits might become too great to justify the expressive or social gains). n229 The important point is that a concern for the values being expressed through policy choices--the expressive dimensions of political decisions--is itself an appropriate matter for policymakers.

Many other legal issues, such as protection of endangered species, recycling requirements, affirmative action, "hate speech" codes, and others similarly implicate concerns for the expressive dimensions of legal judgments. Often legal debates are partly about the appropriate attitude to express via legal norms, n230 and many people urge that a certain

measure is desirable because it expresses the appropriate attitude toward the interests at stake.

When evaluating a legal norm, then, we might ask whether the norm expresses an appropriate valuation of an event, person, group, or practice. n231 The point matters for two reasons. The first is, broadly speaking, based on a prediction about the facts: An inappropriate valuation via law may influence social norms and experiences, and push them in the wrong direction. If the [*69] law wrongly treats something solely as a commodity, for example, the social understanding of what that good is may be adversely affected. That is, the good might come to be treated more generally as a commodity. It is appropriate to criticize the law on this ground.

This objection is based on an empirical claim that the kinds of valuation reflected in law will affect social valuations in general. Sometimes this is right, but sometimes it is not. Society is filled, for example, with market exchange of goods (like pets, which are not valued in the same way as money) that are valued for reasons other than use. The question therefore remains whether the asserted effect on social norms actually occurs. It is fully plausible, for example, to say that although a law that permits prostitution reflects an inappropriate valuation of sexuality, the speculative effect of the law on social norms is an implausible basis for objection.

But there is a second ground for endorsing the expressive function of law, and this ground is not about social effects in the same sense. To understand this idea, it is helpful to start with the personal interest in integrity. Following the suggestive discussion by Bernard Williams, we might say that individual behavior is not concerned solely with states of affairs, and that if it were, we would have a hard time making sense of important aspects of our lives. n232 Personal integrity, commitment, and the narrative continuity of a life matter enormously as well. In Williams's example, someone might refuse to kill an innocent person at the request of a terrorist, even if the consequence of the refusal is that many more people will be killed. Our responses to this case are not adequately captured in purely consequentialist terms.

At the social and legal level, there may be an analogue. A society might identify the kind of valuation to which it is committed, and insist on that kind, even if the consequences of the insistence are obscure or unknown. A society might (for example) insist on an antidiscrimination law for expressive reasons even if it is unclear whether the law actually helps members of minority groups. A society might protect endangered species partly because it believes that the protection makes best sense of its self-understanding, by expressing an appropriate valuation of what it means for one species to eliminate another. [*70]

These expressive or symbolic dimensions of policy are central in many regulatory contexts. They are just as real and significant as other dimensions of policy. Part of what policy-making does is to define, interpret, and create collective understandings and values. Moreover, current decisions can structure the ways future problems will be characterized and can help determine what counts as a problem at all. Decisions today crystallize collective understandings in ways that shape the perceived meaning and appropriate resolution of future choices. Understandably, people often evaluate present choices with these considerations in mind.

CBA approaches cannot adequately capture all the expressive dimensions of policy choices. They are designed to address other dimensions. CBA deals with the material or quantitative dimensions, not the interpretive and expressive ones. CBA examines alternative end states; it compares, for example, how much it would cost to reach a state in which health was protected to a certain degree against a particular risk. It cannot take account of the meaning of the transition--the values the transition will be socially understood to express--from one end state to another. The meaning of the policy depends on interpretation of the background against which it is enacted. This process of interpretation must take place in ways other than through CBA.

Perhaps in theory, some types of expressive concerns could be incorporated into CBA. This is perhaps most conspicuously true when the concern is the way law shapes social attitudes and the resulting effects of social attitudes

on the allocation of resources. For example, mandatory recycling policies might be justified, in part, as a means of shifting attitudes about consumption and the environment in general; the resulting changes in social norms might change consumption patterns themselves. In theory, the predicted shifts in attitudes, and hence in actual consumption, could be quantitatively modeled. In practice, of course, incorporating the way legal policies might shape attitudes, and the effect on material goods of such attitudinal changes, is likely to be extremely difficult, not least because of the highly speculative empirical questions involved.

Other ways in which expressive concerns are relevant to policy are even more difficult to capture through CBA. Consider the fact that policies express values that maintain the integrity of important national commitments; this concern cannot be addressed through CBA unless it could somehow be based on highly refined measures that reflect (a distinctive form of) public judgment- [*71] ments about those commitments. n233 Where policies are relevant intrinsically for the importance of the values they express, CBA cannot incorporate this concern, unless measures of willingness to pay could somehow be designed to capture public judgments about intrinsic value. Sometimes what is at stake is ensuring various groups that their interests are valued in the political process, rather than consistently subordinated to other interests. The values of political legitimacy, stability, and fairness are not taken into account via CBA.

We might therefore urge the following conclusions. Ordinarily, CBA does not include expressive considerations at all. Recent innovations, designed to provide careful measure of private valuations, attempt to incorporate such considerations insofar as they are reflected in aggregate individual judgments about how much it is worth spending to prevent harms or to provide benefits. Some public-health economists assert that expressive concerns will indeed be reflected through such measures. n234 But aggregated individual judgments are unlikely to reflect public judgments in a satisfactory way, since they will rarely be reflective and reached after a process of discussion and reason giving. n235

The ambivalence of Executive Order 12866 with respect to CBA might well reflect an understanding of these expressive dimensions of regulation. The Order says that "qualitative" costs and benefits must be included: "Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider." In addition, the Order's concern for the "equity" of policy alternatives might reflect concern for the expressive dimensions of policy choices. n236 This ambivalence seems to play out by retaining the form of CBA, but by trying to fold additional considerations into it. The problem is that certain central considerations are simply incompatible with the usual form of CBA. In the next Section, we suggest certain modifica- [*72] tions to Executive Order 12866 that would be a first step toward addressing the kinds of problems that we have emphasized here.

F. Proposed Modifications

CBA should not necessarily be abandoned in light of the problems we have identified. Even if these problems were thought to be quite serious, CBA could play a useful role in policy analysis. This is true from both a theoretical and a pragmatic perspective. Even in theory, CBA could still help discipline and systematize important aspects of the policy-making process. It forces more focused and precise thinking about the potential consequences of policy. Pragmatically, there is even more to be said for retaining some role for CBA. Perhaps this way of proceeding offers a less than full description of what is really at stake; but if the alternative is a totally intuitive, ad hoc process, even the rough tools of CBA might be preferable. Moreover, a completely open-textured and undisciplined regulatory process would be an invitation to allow interest-group power and sensationalist anecdotes, rather than deliberation, to determine regulatory priorities and approaches. Taken to an extreme, this view might suggest that we ought to act "as if" CBA can take all relevant considerations into account, even though we recognize that this is wrong.

We reject this extreme view, at least until a convincing empirical case is made that it is the best we can do. Instead, we believe that CBA should continue to be a part of the regulatory process, but a part whose relation to the whole is understood in a particular way. n237

First, as suggested above, CBA should be modified to allow disclosure of and publicity for disaggregated cost and benefit data. Second, as also suggested above, policymakers should view CBA as a tool to inform thoughtful decision making, not as some uniquely objective mode of analysis that dictates what must be done.

Instead, policymakers should assess the results of CBA, but also examine the possibility that it fails to capture the relevant values at issue. There is nothing exotic about this suggestion. Few people suppose that CBA can tell us whether to devote limited research funds to AIDS, global climate change, heart disease, [*73] or breast cancer. Few people suppose that an analysis of endangered species cases, or of antidiscrimination policies, should turn exclusively on CBA. Of course no algorithm can specify a formula by which judgments should be made in different contexts. It may make sense to experiment with various approaches that are based on different contextual judgments; as we have seen, individuals' contingent valuations diverge across risks, and regulatory choices should incorporate the relevant contextual judgments so long as they are well informed. n238 Where expert and lay assessments appear at odds, lay perspectives should be identified and explored to the extent feasible. If lay assessments rest on factual misinformation, or on cognitive distortions in the way inferences are drawn from the known facts, they need not be credited. But to the extent that they reflect different valuations of risk, such as concern for how equitably distributed a risk is, or whether the processes by which the risk is imposed and managed are fair, they are the kind of citizen preferences, backed up by legitimate reasons and values, that democracies should take seriously.

To capture the benefits of CBA while recognizing its limitations, a range of possible approaches would be reasonable. First, regulators could use recent work on the contingent valuation or quality of life years (the "QUALY" approach n239) to take account of qualitative distinctions among diverse risks. n240 Most promisingly, such work would make it possible to obtain quantitative measures of qualitative distinctions, as in (for example) the fact that people seem willing to spend three times as much to prevent a cancer death as to prevent an immediate death. If such measures are to be used, it would of course be necessary to ensure that such judgments are reflective (as polls for willingness to pay may not).

Second, it may make sense to experiment with more formalized efforts to include within CBA many of the factors that we have discussed. n241 On this view, officials might make explicit the relevant value judgments and the weights assigned to them in the process of ranking. For example, irretrievable losses or [*74] involuntarily-run risks might be treated distinctively by receiving a specified weight in the assessment of relevant values. Some agencies would do well to try efforts of this kind. Much of the appeal of conventional CBA probably stems not from its formal superiority, but simply from the fact that it is both administrable and conventional. Compare in this regard the effort to replace Gross National Product with other, more finely tuned measures of social well-being. Many of those more finely tuned measures can be formalized and made operational. n242 Executive Order 12866 appears to invite an approach of this kind with its reference to a range of factors not included within conventional CBA.

To date, there appears to be only one formal effort to integrate judgments about risk into a formal analysis of policy alternatives. Two Swiss analysts have developed such an approach in order to assist in making decisions about the safety of transportation systems and ammunition storage depots. n243 The method allocates more money for risk reduction with respect to dangers that are poorly understood, hard to control, and faced involuntarily. American policymakers would do well to build on this basic idea.

A third possible approach, also making sense of some of the ambiguities in the Clinton Order, would be an explicitly twostage decision process. The first stage should consist of a costbenefit analysis, limited to the kinds of costs and benefits that can reasonably be quantified. This first stage will generate valuable information that can be used for many purposes, including threshold comparisons of policies in different risk-regulating areas. In a second stage, decision makers should explicitly address and articulate the other values, if any are relevant, that the CBA cannot take into account. These may include the equitable and distributional considerations referred to directly in Executive Order 12866, as well as the conflicts between expert and lay valuations and concerns for expressive issues we have discussed here.

Through this two-stage process, both the benefits of CBA and its limitations can be recognized. Efforts to deliberate in this way will also enable clearer understandings of just what trade-offs [*75] are involved in the choice among competing regulatory alternatives. In a reinvented regulatory state, conventional CBA should assist the democratic process, but not displace it.

A fourth possible approach would involve the creation of participatory mechanisms to enable citizens to express their judgments about different risks in different contexts. Citizen panels and discussion groups might be convened to this end. n244 In the late 1980s, an experimental effort showed that citizens can be made well equipped to evaluate problems involving risk, and that expert uncertainty need not produce lay confusion. n245 There are obvious difficulties in selecting participants and in deciding how to present information about risks. But the Clinton Administration has expressed interest in experimenting with approaches of this sort, n246 and it is hard to evaluate them until we have seen how they work in practice.

Thus far we have emphasized cost-benefit analysis, but what we have said bears on comparative risk assessment as well. It is indeed important to rank risks in terms of their seriousness, and any ranking will have a crucial technocratic dimension. But judgments about seriousness cannot be only technocratic. They also require a variety of evaluative judgments. Comparisons of risks should make those judgments explicit, identify underlying criteria, and embody not simply an assessment of magnitude of risk discounted by its probability, but also a range of now-familiar contextual features.

G. Willingness to Pay or QALYs as Solutions?

Thus far we have focused on the contrast between expert and lay conceptions of value and rationality. Some applications of CBA do rely on expert attributions of value to risk. But some defenders of CBA might share our concern about technocratic conceptions of value; in response, they would insist that the economic tools of CBA are particularly well suited to taking lay valuations into account. They would argue that turning to economics enables ordinary lay understandings of risk to be incorporated into policy-making through economic assessments of the costs and benefits--to individuals--of various policy choices. [*76]

There are two general techniques by which economists seek to make these assessments. After briefly discussing these two alternatives and their problems, we will also consider an alternative, not based on economics, that attempts to incorporate lay valuations directly into the policy-making process.

1. Revealed preferences and willingness to pay.

In its most traditional form, CBA attempts to assess the "soft" variables of regulatory benefits through measures of private willingness to pay for these benefits. n247 On this view, people reveal the values they attach to various goods through their actual behavior in market or market-like settings. If we attend to the choices people actually make, we will be able to infer from them the valuations assigned to various goods. This process will then appropriately reflect lay understandings of costs and benefits.

Thus, if citizens truly fear exposure to nuclear power, their conduct should reveal a willingness to pay a great deal to avoid such exposure, no matter what experts say about the risk. If citizens distinguish between voluntarily incurred risks and involuntarily imposed ones, the willingness-to-pay criterion will reflect the distinction. Diversely valued risks will generate diverse valuations. Properly applied, CBA need not and does not incorporate expert judgments at the expense of citizen judgments. Instead, it relies on the latter.

Some provocative approaches attempt to determine the "value of life" by assessing willingness to pay for risk reductions. n248 And to be sure, risks are traded on markets in the sense that "expenditures on seatbelts, airbags, airline safety, safety caps on medicine, preventive check-ups, suntan lotion, and a multitude of other factors represent market expenditures on risk reduction." n249 The Bush Administration explicitly urged the willingness-to-pay

criterion on the ground that "the amount that people are willing to pay for a good or service is the best measure of its [*77] value to them." n250 This approach appears to be a prevalent one in the agencies. n251

Thus the Food and Drug Administration enthusiastically embraced the willingness-to pay methodology. n252 In assessing the costs and benefits of food labelling regulations, for example, the FDA relied on studies establishing a range of between \$ 1.5 million and \$ 3 million for the value of a life saved. n253 The FDA calculated the benefits range in large part by multiplying anticipated lives saved by these amounts. In another study the FDA used a figure of \$ 3 million per life saved. n254 Other agencies, usually using willingness to pay, have placed a monetary value on lives at risk. The Federal Aviation Administration found a cost per life saved of about \$ 1 million to be acceptable; n255 it usually uses a minimum value of \$ 2.6 million. n256
[*78]

But there are several problems with willingness-to-pay approaches based on actual market transactions. First, behavior does not necessarily reveal preferences in the way this approach assumes. We cannot get a good sense of what people value simply from choices, since choices are a function of context and since they are inarticulate--poor predictors of future behavior--without an account of what lies behind them. n257 Several scholars have shown that even the weakest axioms of revealed preference theory can fail. n258 For example, it is usually assumed that if someone prefers A to B in a situation of binary choice, he should also prefer A to B if some third alternative C is introduced. But this is often wrong. Someone may prefer A to B, but B to A and C, because the choice of A over B shows no global or acontextual judgment. For example, the choice of A (a mediumsized piece of cake) over B (a large piece of cake) may reflect a desire to be moderate, a desire that can also justify the choice of B over A and C (a huge piece of cake). n259 Thus, we cannot rank order individual preferences on the basis of choices alone or without some account of what values underlie choices.

Actual market choices are, of course, heavily dependent on the distribution of income and wealth. Workers who appear willing to accept a certain "wage premium" to work in a more risky environment do not necessarily thereby proclaim how much they value their own health. Instead, they may reveal far more narrowly how much they value additional income, given the amount
[*79] they now have. n260 Ignorance of risk levels is also, of course, frequent.

Second, and relatedly, any preference arguably revealed through actual behavior is often highly specific to the particular context. Smoke alarm purchases, cap safety expenditures, and use of suntan lotion cannot plausibly be said to reflect general judgments about the value of life. Such consumption behavior is highly geared to context. In any case, a willingness to spend \$ X to eliminate a 1/10,000 risk of death does not necessarily entail a willingness to pay \$ 10X to eliminate a 1/1,000 risk of death, a willingness to pay \$ 100X to eliminate a 1/100 risk of death, or a willingness to pay \$ 1,000X to eliminate a 1/10 risk of death. n261 Or a willingness to spend \$ Y to eliminate a risk in a context when the risk is under the purchaser's control, voluntarily incurred, and limited to just one individual does not reveal how much that person would be willing to pay to avoid the same risk when it is out of her control, involuntarily inflicted, and affects many people. Although willingness to pay purports to be grounded in actual choice patterns, its use in public policy frequently requires purported valuations to be abstracted from the contexts in which they arise. This makes the approach insensitive to highly relevant contextual differences. A related problem is the sharp disparity between willingness to pay and willingness to accept. n262

Finally, willingness-to-pay measures ignore the distinction between the valuations people express in private, market transactions and those that they express in democratic arenas. n263 What people are prepared to pay as private consumers is often, and appropriately, different from what they think society (and
[*80] they, as members of society) ought to pay to avoid certain risks. Much empirical evidence confirms this point; for example, "people were, in fact, found on average to bid more for an improvement for everyone in the United States than for just themselves." n264 Judgments made in the context of democratic decision making are designed to elicit different motivations and different considerations from those made in market transactions. Through exchange of different perspectives, collective decision making, and social-regarding reasoning, democratic arenas produce different

valuations from those revealed in market arenas. n265

2. Contingent valuation as a surrogate for willingness to pay.

In response to these and other problems, public health professionals and some economists have recently developed alternatives that seek to mimic market transactions, but do not rely on them. These are called contingent valuation methods. Rather than looking at actual choices, these methods ask people hypothetical questions about how much they would be willing to pay to avoid certain harms or conditions. The most advanced methods involve lengthy interview sessions designed to provide information, give a sense of context, and allow discussion in a way that fosters deliberative results. n266

Some economists view contingent valuation not as a different form of willingness to pay, but as fundamentally inconsistent with willingness to pay. The virtue of willingness to pay--indeed, its entire point, on this view--is that it focuses on actual behavior. Because contingent valuation does not, it is unreliable. n267

[*81] Moreover, it enables people to behave strategically because they need not validate their preferences through actual choices.

Yet contingent valuation also seems to improve on some of the features of actual willingness to pay. It can be made more context specific and sensitive; there is no need to abstract and generalize from context-based choices because no actual choices are involved. Hypothetical questions about what people would be willing to pay can be designed for virtually any context. In addition, distributional problems can be minimized by asking the questions of an appropriately representative pool. Investigators can then average responses to generate an average, hypothetical willingness to pay to avoid various conditions.

Much recent work with contingent valuation techniques has sought to elicit values for different states of health. n268 The results do reflect qualitative differences among what laypeople appear to consider diverse risks. n269 In such studies, for example, people purport to be willing to pay a much greater amount to avert cancer deaths (from \$ 1.5 million to \$ 9.5 million) compared to unforeseen instant deaths (from \$ 1 million to \$ 5 million). n270 More generally, this work generates tables like the following:

[SEE TABLE IN ORIGINAL] [*82]

Similarly, these survey techniques purport to show that people value days of illness--from coughing spells, headaches, nausea, sinus congestion, and so forth--in diverse amounts. n272

Nonetheless, we think that contingent valuation methods have serious limitations as a means of incorporating lay valuations into public policy. Most significantly, it is difficult to believe that people answering hypothetical questions can assign meaningful dollar values to various possible health or other risks. The more context sensitive the method attempts to become, the more its hypothetical nature becomes problematic, bordering on the fantastic. The leading practioners of contingent valuation purport to discover that people are willing to pay \$ 90 to have a day of relief from angina if they have had it for only one day, but \$ 288 for ten days of relief if they have had angina for twenty days. n273 It is hard to take these figures seriously. (Ask yourself how much you would be willing to pay to avoid a day of angina, or two days of coughing spells, or a week of nausea.) In economic terms, people have a difficult time assigning hypothetical dollar values to bundles of commodities they virtually never confront in everyday experience.

In addition, contingent valuation methods still suffer from the private/public valuation distinction. What people would be willing to pay to eliminate certain conditions for themselves, and how they think public resources should be allocated, remain distinct questions. The latter often implicate principles beyond pain reduction, such as moral notions about responsibility, desert, fairness, and the like not at issue in the hypothetical private resource decision. Public policy should incorporate lay valuations to a greater extent than it now does, we believe; but what matters are lay valuations about public choices, not those about selfregarding, private choices. n274 Perhaps an improvement for con- [*83] tingent valuation methods would be to start asking people how much they think society ought to pay to eliminate

various risks, rather than how much they as individuals would pay. This question creates different problems insofar as it makes it hard to consider budget constraints and opportunity costs, but it has advantages as well.

3. Alternative individual valuation measures: QALYs.

Efforts to ground collective risk-regulation decisions on citizen valuations, rather than technocratic ones, need not take the form of willingness to pay or its surrogates common to economic analysis. These valuations need not be commensurated with dollars in order to be useful for public policy. For those hoping to ground policy in individual valuations but seeking to formalize the process in ways beyond what is traditionally characteristic of democratic deliberation, other alternatives exist. In the health field, much attention has focused on evaluating preferences for healthy conditions (or aversion to unhealthy ones) in terms of what are called quality-adjusted life years ("QALYs").ⁿ²⁷⁵

A QALY is a measure of health based on people's attitudes toward various conditions. It rejects the concept of monetary evaluation of health; instead, it focuses on how people value various health states. It seeks to generate a means of comparing various states of health through a single metric, so that comparisons and trade-offs can be made for public policy purposes. The measure attempts to take into account both quantitative benefits of health improvement, such as increase in life expectancy, and more qualitative improvements, such as quality-of-life benefits.

Like contingent valuation methods, the QALY approach works by asking people through interview techniques to express their strength of preference for various health states. The most advanced methods disaggregate the process by asking people to describe how they would value a health improvement along several dimensions: mobility, physical activity, social activity, and the kinds of symptom effects involved.ⁿ²⁷⁶ The answers to these questions are combined into a single scale, ranked 0.0 (for death) to 1.0 (for optimum functioning). The result is an index of utility for health states measured on an interval (or cardinal) scale. By independently determining the cost of various treatments and their likely outcomes, it is possible to suggest a cost per QALY of various public programs. Alternative programs can then be ranked in what is essentially a utility-based cost-effectiveness scale.

An important advantage of the QALY method is that it eliminates the distribution-of-income problems of other methods. The QALY approach rests on a strict egalitarian premise; the value of various states of health should be independent of the economic status of the particular people in those states. Willingness to pay and contingent valuation treat health like any other market commodity, while QALY approaches view health as a distinct good that should be distributed according to a nonmarket logic.ⁿ²⁷⁷ Costs are still relevant, of course, but they are not brought in at the individual decision level.

QALY methods help rank and prioritize health states, assuming resources for health care are not unlimited. Public bodies then decide how much in the way of social resources to devote to risk reduction. This, in fact, is essentially the method Oregon used in its efforts to reform state Medicaid. Experts and citizens generated a priority list of health conditions, through QALY-like analysis; the legislature then decided how much to fund Medicaid; and the priority list was then to be used to allocate these funds to specific treatments.

In addition, it seems to us more plausible that if answers to hypothetical questions can be at all meaningful, they are more likely to be meaningful when people are choosing states of health than when people are purporting to assign dollar values to those states. Because the former draws more directly on people's actual experiences with their health and the health of others, it is likely

[*85] to be more credible. Moreover, the divergence between the valuations people attach to various health states as individuals and as participants in collective decision making seems likely to be smaller than the divergence in willingness to pay would be. Indeed, individual rankings of QALYs seems quite close to actual democratic decision making, but in some ways a possible improvement. There is no collective deliberative process, but individual deliberative thought might be enhanced by considering each health state carefully in a setting not characterized by the compression of issues, interest-group pressures, and time constraints typical of legislative settings.

Of course, the QUALY approach still must justify itself against several skeptical objections. Whether its formalism is illusory, and whether people can make the fine-grained distinctions required in what remain hypothetical settings, remain open questions. But among public policy methods for evaluating health and risk issues that seek to incorporate individual valuations in a systematic and more formal way, the QUALY approach has much to commend it.

4. Tentative conclusions.

In identifying the crucial conflict between lay and expert conceptions of value and rationality, we have sought to assert the legitimacy of lay perspectives in many regulatory contexts. With that end in mind, we have suggested some means by which policy-making processes can do better at incorporating appropriately informed lay perspectives. It is too early in the development of these new means to argue confidently that any particular means is best.

With respect to the three specific alternatives we have just discussed, the QUALY approach seems the most promising. But these are not the only means by which lay valuations can be incorporated into administrative and legislative processes. As the ASARCO and Oregon examples below suggest, ⁿ²⁷⁸ creative policymakers committed to ensuring sufficient public participation will no doubt devise other innovative means for doing so. Moreover, although we have identified numerous potential problems with willingness-to-pay and contingent valuation approaches, these approaches, particularly contingent valuation, are still at experimental stages of development. As these and other experi- [*86] ments continue, it is possible that different methodological approaches will converge toward a range of similar values for various benefits of regulation. If so, that convergence would be useful, whatever the seeming problems in any particular approach.

More importantly, policy-making tools must be evaluated pragmatically, not theoretically. Here, as elsewhere, the best should not be made the enemy of the good. A method of policymaking should not be condemned because it suffers from certain theoretical limitations. Any limitations must be weighed against those that characterize the potential alternatives. Even a method that suffers certain limitations might generate better policy than the alternatives.

This pragmatic perspective is particularly important in the regulation of health and environmental risks. If more analytical techniques like comparative risk assessment, contingent valuation, and QUALYs are dismissed out of hand, the question is what alternatives will determine policy priorities and content. If the policy process will instead be dominated by interest-group pressure, sensationalist media stories, and political influence, these more formal tools might look less bad.

If several approaches converge on the same individual valuations of health states, for example, it might become appropriate to use those valuations as baselines. We might do so not out of a (mistaken) view that these were "the real values" of health, but out of a belief that commitment to a consensus of this sort would improve policy-making. Commitment to these values might facilitate more sensible priority setting, for example. Policymakers would have to offer special, convincing justifications for regulations that valued health benefits much differently from these consensus values. Again, that would not be because these values necessarily reflected the right valuation to put on health, but because a constraint of this sort would, on balance, improve the overall policy-making process.

H. An Expert Cadre? Justice Breyer's Proposal

We are now in a position to offer some thoughts on Justice Breyer's provocative and influential proposal for an elite core of well-trained and experienced public servants, charged with the task of rationalizing risk regulation and establishing a sensible system of regulatory priorities. ⁿ²⁷⁹ This proposal incorporates a [*87] number of ideas. First, Justice Breyer proposes that a new career path be created that would enable a select group of government employees to rotate through executive, legislative, and administrative offices that address health and environmental issues. ⁿ²⁸⁰ Second, these employees would be part of a small, centralized administrative group with an extremely broad agenda for rationalizing risk-regulation policy. Their mission would include creating regulatory priorities within as well as across agencies; comparing programs to determine how resources could best be allocated to

reduce risks; and, most generally, "building an improved, coherent risk-regulating system, adaptable for use in several different risk-related programs." n281 To realize these goals, Justice Breyer argues that this elite core would require interagency jurisdiction as well as substantial political independence and, perhaps paradoxically, substantial political power.

Several features of this proposal are promising. Viewed most modestly, the proposal builds on the current process of OIRA supervision, but would enhance that process by broadening the perspectives brought by OIRA to its coordinating role. Currently, OIRA employs economists and policy analysts; by enhancing OIRA's scientific and technological skill, these reforms might enable OIRA both to bring more scientific insight to its role and to foster greater interagency coordination of the technical aspects of risk regulation in general. Similarly, the idea of enhancing the breadth of perspectives, political and technical, among risk regulators by rotating them through several governmental institutions is appealing. Indeed, OIRA has announced plans to begin this kind of rotation program. n282

But Justice Breyer's proposal places too much stress, we believe, on the technocratic side of risk regulation, and too little on the democratic side. n283 Of course Justice Breyer recognizes the centrality of questions of value to risk regulation; he appreciates the conflict between expert and lay perspectives on value; and he acknowledges that these conflicts often have no solution that science can fix. n284 But by centralizing so many aspects of [*88] risk regulation in a small cadre of experts, this approach provides, we think, insufficient space for a deliberative process among competing perspectives about risk and its control, and too little basis for incorporating reflective public understandings about qualitative differences among diverse risks.

Justice Breyer's institutional structures are designed to rationalize and coordinate public-policy choices, which is an important social goal. But as Justice Breyer acknowledges, the relevant choices require not only rationalization, but also deliberative decisions about appropriate valuations of health, safety, economic welfare, and the like. n285 If we emphasize deliberation as well as rationalization, we may doubt whether the setting of major public priorities should be centralized in one small executive branch entity. n286 For this reason, the Carnegie Commission, in a recent influential report on the risk-regulation process, rejected proposals to centralize risk assessment in this way. n287 The proposals we offer here recognize Justice Breyer's powerful criticisms of current regulatory approaches, but are designed to produce a better mixture of technocratic and democratic virtues, a mixture that emphasizes the deliberative and democratic side of risk regulation a bit more than do Justice Breyer's proposals.

More particularly, we urge that any cadre of risk managers should be attentive not simply to numbers of lives saved, overall or per dollar spent, but also to public judgments about the contexts in which risks are incurred, and hence to the full range of factors that make risks tolerable or intolerable. Responding to the democratic objection, Justice Breyer contends that the public is primarily concerned with saving more lives rather than fewer, and that for that reason the current system does not reflect real public judgments. n288 There is truth to the contention. But it is far too simple to say that the public wants to save more lives rather than fewer. The public is willing to spend a great deal more to prevent a death from cancer than to prevent an instant death--indeed, it may well be willing to spend three times as [*89] much to do so. n289 Or consider, for example, the question whether to devote resources to the prevention of asthma in children, a growing problem, or instead to the prevention of stratospheric ozone depletion--or compare the use of taxpayer funds to protect the rainforest with the use of the same funds to clean up sites on the Superfund priorities list. n290 The public is legitimately interested not only in quantities--in how many lives are saved--but also in a range of contextual factors that determine whether risks are acceptable or not. Concern for those factors cannot simply be "deemed" irrational. n291

Justice Breyer is aware of these contextual factors. n292 But both his presentation of the risk problem and his institutional reform are less attentive to them than they might be. Risk managers should build into their decisions a careful awareness of qualitative differences among different kinds of risks and should attempt to expose their evaluative judgments to public scrutiny and review. n293 Any expert cadre ought therefore to base allocational decisions not simply on aggregate lives saved, but also on evaluative considerations that require significant public input. Our more

specific suggestions above are designed to find the right mix of expert and public perspectives on the risk-regulation process. n294

I. Further Issues about Participatory Reforms

We have spoken of enhancing public involvement in regulatory policy-making, largely in order to build trust; but this task requires considerable work. Thus far, the United States lacks much experience with participatory initiatives, and there are few developed institutional structures for providing effective participation. For these reasons, initial agency efforts in this area are likely to be fraught with difficulty.

EPA's efforts in the ASARCO case are among the most noteworthy of these initial efforts. n295 To determine the appropriate

[*90] level of trade-off between health and jobs associated with the operation of a copper smelter in Tacoma, Washington, EPA Administrator William Ruckelshaus held three public workshops in Tacoma during the summer of 1983. The record on these efforts was, at best, mixed. Some residents and editorial-page writers complained that the issue was too sophisticated for public input; Ruckelshaus initially complained that people demanded involvement until they actually got it. But there were some good results as well. EPA officials were educated about how to communicate technical information effectively and about the public's nontechnical concerns. Two years after the experience, Ruckelshaus concluded that residents had found common ground and that EPA had made "the beginnings of a tradition of public deliberation about hard issues." n296 Other experiments have produced similar judgments. n297

A particularly revealing effort has been that of the Public Agenda Foundation, a private entity that has sought to create techniques by which representative citizens are enabled to make informed judgments about regulatory policy. n298 Working in areas of considerable complexity and uncertainty, such as solid waste disposal and global warming, the Foundation created Citizen Review Panels in several cities. Each panel met for three hours. After filling out surveys designed to test their pre-deliberation views, the participants then watched fifteen-minute videos presenting balanced descriptions of the problems and advantages of alternative solutions. Participants then discussed the issues in jury-size groups of twelve, after which they were again surveyed.

Several results emerged. First, laypeople will substantially change their views on many issues involving science and technology if they are exposed to a complete and balanced discussion--one that both acknowledges relevant uncertainties and presents a framework of options. Second, on many issues, lay understandings informed through the Citizen Review Panel process came "strikingly" to parallel those of experts. Third, citizen deliberation is hampered less by lack of exposure to the relevant scientific facts than by the unavailability of frameworks within [*91] which those facts can be interpreted. Finally, on some issues where lay and expert assessments continued to differ, experts made the mistake of attributing the resistance to lack of understanding. But public opposition on these matters is grounded not in misinformation or misunderstanding; it rests instead on seeing different values at stake.

These early efforts suggest the possibility that effective deliberative structures can be found for exchanging expert and lay ideas about risk. Continuing refinements will have to be made to facilitate the kind of participation that will enhance public trust in policy outcomes. Technological developments may assist in this process. Risk assessment can be democratized, for example, by computer and software technology that now enables anyone to perform the risk analyses that only a decade ago were within the sole province of only the most sophisticated organizations. n299 The Clinton Administration has expressed interest in facilitating public involvement through new technologies. n300 If the idea seems farfetched, consider the fact that it has already been used effectively to enhance the legitimacy of one of the most charged political decisions, the redistricting process. n301 When public officials are committed to enhancing public understanding and involvement in deciding complex issues, technology can be employed to serve these goals. Similarly, experiments with citizen review panels or "policy juries" might capture the benefits of ASARCOlike ventures more effectively. Of course, any efforts at citizen involvement should not be simple "polls," but should instead foster deliberation and informed judgments.

The Department of Energy's ("DOE") continuing conflict with the public over siting a high-level nuclear waste repository is a classic example of public policy's failure to respond effectively to the paradoxes of regulation. Overwhelming political opposition, which experts have failed to understand, has stymied DOE's efforts. As one report describes, "Officials from DOE, the nuclear industry, and their technical experts are profoundly puzzled, frustrated, and disturbed by public and political opposition that many of them consider to be based on irrationality and ignorance." n302 Perceiving the problem largely in technical terms, and [*92] failing to promote trust, DOE took actions over several years in Nevada, the proposed location, that undermined its credibility. Public opposition to the waste site soared as local residents came to view DOE, the NRC, and Congress as the least trusted of all public figures. n303

DOE was fully aware of the problem. It sought to restore confidence by, in essence, rearranging its organization chart and promising to do a better job of risk management in the future. n304 But it is in the social and psychological dynamic of trust that its loss cannot be restored so easily. More promising suggestions for reforming the siting process include ensuring that state and local governments have significant control over siting operations. n305 As the need for more significant institutional reform comes to be recognized, the centrality of public trust to effective policy must also be recognized. The procedural reforms of Executive Order 12866 are a first step in that direction. n306

A final example comes from the debates over priority setting in the allocation of Medicaid funds in Oregon. n307 This was an intriguing and ambitious effort to promote deliberative exchange between both public and expert judgments. n308 The state gave the basic task to a Health Services Commission, an eleven-member panel appointed by the Governor that included doctors, social workers, consumers, and health and social program administrators (the commissioners served voluntarily, for eighteen months, each spending at least twenty hours per week). n309 The Commission then elicited extraordinary public involvement in two stages, one designed to focus on individual values, the other on commu- [*93] nity values. n310 For the latter, the Commission held forty-seven community meetings throughout the state, at which over one thousand people participated. The aim of these meetings was to encourage public deliberation over what kinds of values ought to be most important in health-care policy. For the individual valuations, the Commission conducted carefully designed telephone surveys of Oregon residents about how they would assess the quality of their own well-being under various conditions. This process was designed not to force people to pretend to assign monetary valuations to the benefits of health, but to rank order different conditions in terms of how much they interfered with quality of life. n311

Drawing on the community expressions of value, as well as internal deliberation and polling involving cumulative voting, the Commission created seventeen general categories of health care and prioritized them. n312 Thus, preventing death with full recovery ranked first, reproductive services ranked sixth, and nonfatal chronic conditions that could be treated once in a way that improved quality of life ranked eleventh. n313 These categories were the most important prioritization decisions. Within each category, pairs of conditions and treatments were defined. These pairs were then ranked in terms of their net benefits, based on the individual quality-of-life valuations and outcome-of-treatment information from fifty-four panels of health-care providers. n314

In the end, the Commission ranked 709 pairs of conditions and treatments, then presented this list to the Oregon legislature. The Commission also asserted that the first nine categories were essential to basic health care; the next four should be funded to the greatest extent possible; and the final four were valuable to individuals, but less cost-effective and less likely to produce substantial benefits. n315 The legislature responded by expanding the money for state Medicaid and funding the list through item 587; for the three groupings the Commission suggested, the legislature funded 98 percent, 82 percent, and 7 per [*94] cent, respectively. n316 Evaluating the final result requires, in part, detailed analysis of the substantive outcomes. There has been some controversy on that question. n317 But the basic mix of public participation and expert contribution that the innovative Oregon approach reflects seems to have generated considerable public support n318 and is a promising start.

Increased participation can, of course, introduce problems of its own, and these problems must be taken into account in structuring participation and in assessing its overall advantages and disadvantages in different contexts.

n319 In addition, the structural features of certain regulatory problems might make it particularly difficult to design appropriate participatory institutions for them. For example, Professors Gillette and Krier argue that many public risk sources seem to require centralized management because they involve large-scale, even global, externalities. Gillette and Krier also argue that democratic decision making has tended to rely on incremental strategies in which feedback from small steps, in a trial-and-error process, has been crucial to policy development. For risks that involve long latency periods and potentially catastrophic consequences, trial-and-error approaches--which they reasonably believe are inherent in strongly democratic decision-making institutions--might be impractical. n320 These are serious concerns that regulatory strategies in certain domains will have to take into account. For present purposes, our aim has been merely to suggest some important links between competing ways of valuing risk and the kinds of institutions best suited to make risk policy.

V. Regulatory Means and Reinvented Government: Information and Incentives

President Clinton and Vice President Gore have been committed to the goal of "reinventing government." n321 The new administration has issued many proposals for ensuring cost-effective, streamlined bureaucracy. n322 Executive Order 12866 moves in this direction by putting a number of cost-effective regulatory strategies squarely within the set of principles governing agencies. In this way, it goes well beyond Presidents Reagan and Bush, who left such matters to the Office of Management and Budget. Indeed, some of the Clinton Order basically codifies general guidelines set out by OMB in previous administrations. n323

The goal of reinventing government can be found in many places in Executive Order 12866:

1. Each agency is under an obligation to test whether the problem that a regulation is designed to overcome is itself a product of an existing regulation. n324
2. Each agency is obliged to identify alternatives to "direct" regulation, including provision of information and economic incentives. n325
3. Each agency is required to choose cost-effective methods. n326
4. Each agency is required, "to the extent feasible," to call for performance objectives, "rather than specifying the behavior or manner of compliance that regulated entities must adopt." n327
5. Each agency must avoid inconsistent, incompatible, or duplicative regulations. n328
[*96]
6. Each agency is required to draft simple and understandable regulations and thus to minimize uncertainty and litigation. n329

To understand these aspects of the Order, and to obtain the necessary background, it is desirable to explore where command-and-control regulation has failed, and to see how information and economic incentives might be better. n330

A. In General

1. Inefficiency.

The current system of public regulation is extraordinarily inefficient. The annual net cost of regulation has been estimated at between \$ 44 billion and \$ 400 billion. n331 So-called economic regulation--calling for price and entry controls in various sectors of the economy--has produced unnecessary and exorbitant costs for American consumers. Thus, some have estimated that airline deregulation yielded gains to airlines and travellers of about \$ 15 billion annually. n332 The corresponding numbers for trucking deregulation and railroad deregulation were \$ 30 billion and \$ 15 billion respectively. n333 By way of comparison, \$ 15 billion is about the amount that the federal government

spends each year on AFDC payments or highway construction. n334

Nor are inefficiencies limited to the area of economic regulation. The Food and Drug Administration has delayed the entry of beneficial foods and drugs onto the market, perhaps increasing risks to safety and health. n335 NHTSA fuel-economy standards

[*97] appear to have produced uncertain gains in light of the fact that market pressures were forcing manufacturers to produce smaller and more efficient cars and that, when those pressures abated, Congress and the agency relaxed the standards. n336 In addition, some people argue that the standards may have led to significant losses in lives as a result of producing more dangerous, lighter vehicles. n337 More generally, the United States spent no less than \$ 632 billion for pollution control between 1972 and 1985. Some studies suggest that alternative strategies could have achieved the same gains at less than one-quarter of the cost. n338

A pervasive source of regulatory inefficiency in the United States is the use of rigid, highly bureaucratized "command-and-control" regulation, which dictates, at the national level, control strategies for hundreds, thousands, or millions of companies and individuals in an exceptionally diverse nation. Command-and-control regulation is a dominant part of American government in such areas as environmental protection and occupational safety and health regulation. In the environmental context, command-and-control approaches usually take the form of regulatory requirements of the "best available technology" ("BAT"), which are almost always imposed only on new pollution sources. BAT strategies are pervasive in federal law. Indeed, they are a defining characteristic of regulation of the air, the water, and conditions in the workplace. n339

One of the many problems with BAT strategies is that they ignore the enormous differences among plants and industries and among geographical areas. Some polluters can reduce emissions much more cheaply per unit of reduction than others; command-and-control approaches ignore the differential marginal costs of pollution reduction, thereby making the process of reduction much more costly. For example, large utilities can scrub their plants more cheaply, ton for ton, than smaller plants. n340 In view of these differences, it is grossly inefficient to impose nationally uniform technological requirements. n341 Often it makes little

[*98] sense to impose the same technology on industries in diverse areas--regardless of whether they are polluted or clean, populated or empty, or expensive or cheap to clean up. n342

In general, governmental specification of the "means" of achieving desired ends is a good way of producing inefficiency. Instead of permitting industry and consumers to choose the "means"--and thus to impose a form of market discipline on that question--government often selects the means in advance. The governmentally prescribed means are often the inefficient ones, at least in many of the contexts in which those means are applied.

Other inefficiencies in existing law stem from inadequate attention to the problem of incentives. Consider, for example, the Superfund statute, which was created to deal with the problem of abandoned toxic waste dumps. Congress's basic strategy was to impose joint and several liability on everyone with a connection with the dump in question--managers or owners of the site, generators of the waste, and transporters. n343 At first glance, the strategy seems both fair and efficient: fair, because it imposes cleanup duties on everyone; efficient, because it is likely to deter everyone from contributing to the problem of abandoned waste sites. But a predictable consequence of this strategy is to produce incentives, not to clean up, but instead to have protracted litigation on the question of who is liable to whom. If everyone is liable, it is almost as bad as if no one is. The liability of each person

[*99] is effectively "decreased" by virtue of the sheer numbers of people who are liable as well. For each person contemplating possible courses of action, liability must be understood in the context of a situation in which many other people will be liable too. If hundreds of people are subject to suit, one can be sure that there will be endless litigation on the liability question. Thus it is that on average, seven years and at least \$ 4 million in transaction costs are necessary before final cleanup even begins. n344

As we have seen, studies of the costs and benefits of regulatory programs show what appears to be a patchwork pattern, including both too much and too little regulation. n345 This brief summary should be sufficient to suggest

that, from the standpoint of efficiency, some of modern government is ill directed. Some programs are not beneficial at all. Others have unnecessary and costly side effects. We could obtain the same or higher benefits much more cheaply.

2. Democracy.

We have stressed that regulation often has democratic as well as economic goals. In practice, however, this democratic aspiration has often been defeated. People rarely have enough information to participate at all, or in a sufficiently informed way, in the processes of government. The concentration of regulation in Washington has hampered democratic deliberation both in localities and in the private sphere. The use of complex technological mechanisms, and their centrality to actual outcomes, have contributed to the power of well-organized interest groups over the regulatory process. n346

Democratic failures are well documented. n347 We have seen a number of democratic problems in the provision of information. Interestingly, the BAT approach is itself troubling from the standpoint of a well-functioning political process. That approach ensures that citizens and representatives will be focusing their attention not on what levels of reduction are appropriate, but instead on the largely incidental and nearly impenetrable question of what technologies are now available. n348 Because of its sheer complexity, this issue is not easily subject to democratic resolution. In addition, the issue that is the relevant one for democratic politics--which is the appropriate degree and nature of environmental protection--is one to which the BAT question is only incidental.

The focus on the question of "means" also tends to increase the power of well-organized private groups by allowing them to press environmental and regulatory law in the service of their own parochial ends. These ends include, for example, the promotion of ethanol, which is helpful to corn farmers though not necessarily to environmental protection; other fuels might well be preferable on environmental grounds. n349

In this respect, the BAT strategy is emblematic of a far more general problem in current regulation. Centralization at the national level diminishes opportunities for citizen participation. There are ways of increasing such opportunities, but the means are highly experimental. In its current form, national centralization tends to promote intense and unproductive struggles among well-organized factions. Education of citizens about the key issues--risk levels and risk comparisons--is at best episodic. Public attention tends to be focused on particular incidents, which are gripping and sensationalistic but often misleading.

In these circumstances, it is difficult indeed to ensure that citizens and representatives will be involved in deliberating about different strategies for achieving social goals, or for deciding what those goals are in the first place. By directing attention to means, the system also creates powerful incentives for interest groups to ensure that they are favored in the legislature or the bureaucracy. Executive Order 12866 is designed to respond to this problem insofar as it favors agency emphasis on regulatory ends rather than on means and technologies. [*101]

3. A note on distributional considerations.

We will now turn to information and economic incentives as remedies of choice. At the outset, however, it is important to emphasize that the two remedies have quite different distributional consequences. Informational remedies tend to favor the relatively well off. In the area of smoking, for example, greater disclosure of risk levels has apparently had less significant effects on the comparatively less educated poor, with smoking prevalence declining five times faster among the more educated than among the less educated. n350

By contrast, economic incentives will predictably have their most substantial effects on those who are less well off. In this way, incentives are sometimes thought to operate as a regressive tax. The point does not, however, count strongly against incentives, which can ensure that the costs of social activities are internalized. A cost-internalizing incentive system should not be regarded as a regressive tax, any more than the price system itself is a regressive tax. n351 The proper solution to high prices for important commodities, under the price system, is not to fix prices but

instead to subsidize people who cannot afford them. So too, the proper solution to high prices, under an incentive-based system, is not to remove the incentives but to subsidize people who cannot afford important social goods. The fact that economic incentives may have especially harsh effects on the poor--by, for example, raising the costs of transportation or food--argues for efforts to minimize those effects, particularly by using the proceeds from the incentives themselves so as to help people who need help. Incentives will predictably leave the wealthy with more options than the poor. But the disproportionate effects of incentives on the poor might not be so unfortunate if the consequence is to reduce relevant harms, such as risks of cancer and heart disease.

Nonetheless, the distributive effects should be taken into account. We have suggested that economic incentives might be accompanied by efforts to diminish effects on the poor. In addition, the fact that informational remedies work best for the well off suggests that informational remedies should be supplemented by other approaches, educational or otherwise. In the area of smoking, for example, some argue that consumers now know enough to make informed choices and that additional informational efforts would be unwise. n352 But many people, including the young and the less well educated, are not fully aware of the risks. The public schools are a natural place to fill the gap. Thus, in one project involving more than thirty thousand children in grades four through seven from twenty states, a drop of 33 percent in the self-reported rate of smoking among seventh graders occurred (longer-term results are not yet known). n353 Other studies show a reduction of 5-10 percent in long-term smoking rates among students exposed to health education. n354 Based on these studies, some argue that school health education could save 169,110 lives over the next sixty years, for current fourth through seventh graders. n355 The numbers are of course speculative, but the numbers suggest the value of attending to the distributional effects of informational campaigns.

B. Information

In many areas, perhaps the first and most basic problem calling for governmental response is that people lack the necessary information. With respect to social risks, the first goal ought to be to ensure genuinely informed choices, rather than to dictate outcomes from Washington. The initial line of regulatory defense might therefore be educative rather than regulatory. Thus far, the United States has tended to pursue the opposite strategy: regulate first, educate only in exceptional cases. We might reverse our priorities. Executive Order 12866 appears to urge such a shift by endorsing information provision as a remedy of choice. n356

Partly because of heuristics that produce errors, but more importantly because of a simple lack of information, many Americans are unaware of the risks that they face in day-to-day life. Problems of this sort are especially likely in light of the fact that ordinary people have a difficult time obtaining information about [*103] risk. Causation is especially complex here, and accurate inferences are difficult to draw. Often risks take many years to materialize. Individual susceptibility varies, and changing technology makes learning from the past a hazardous enterprise. n357 Disclosure by the government itself, or by others at the government's behest, can promote both efficiency and democracy; hence Executive Order 12866 focuses on the provision of information as a possible preferred remedy. n358 But for information disclosure requirements to achieve these ends, it is not enough that disclosure be formally required. Officials should also attend to the content of what is to be disclosed and the form it is to take.

We first turn to the economic and democratic justifications for a regulatory emphasis on information disclosure. We then discuss recent discoveries in the risk communication field concerning the most effective forms of risk-related information.

1. Efficiency.

When information is lacking, there may well be a conventional case of market failure under economic criteria. n359 To be sure, information--like other goods--is a scarce commodity. Perhaps the market has produced the optimal level of information. The optimal level is unlikely to be "complete information," whatever "complete" might mean. But there are several reasons why the market for information may fail.

First, information is sometimes a public good. Once it is available at all, or to anyone, it may well be available to everyone or to many people. People can thus capture the benefits of information without having to pay for its production. Once created, a report discussing the risks posed by carcinogens in the workforce may well benefit employees a great deal--but no individual employer or employee has the right incentives to pay his proportional share for the report. Each employer or employee has the incentive to "free ride" on the efforts of others. The result is that too little information will be forthcoming. This point applies to materials about shared risks in general.

Second, manufacturers may have poor incentives to provide information about hazardous products. Competition over the [*104] extent of danger may decrease total purchases of the product rather than help any particular manufacturer to obtain greater sales. This phenomenon has sometimes played a role in discouraging competition over safety among manufacturers of tobacco products. At least in principle, the phenomenon may occur frequently. n360

Information asymmetries may produce a "lemons" problem, in which dangerous products drive safe ones out of the market. n361 Imagine, for example, that producers know which products are safe, but that consumers cannot tell. Safe products may not be able to compete if they sell for no higher price than dangerous ones, if safe products are more expensive to produce, and if consumers are unable to tell the difference. In that case, the fact that sellers have information, while buyers do not, will ensure that "lemons"--here dangerous products--will dominate the market. Regulation designed to provide information is the proper remedy.

All this suggests that there may well be market failures in the provision of information. At least as a presumptive matter, government remedies are an appropriate response. These remedies might take the form of governmentally provided information, education campaigns, or disclosure requirements.

There is an incipient empirical literature on disclosure of risks. In general, the findings suggest that disclosure can be a helpful and cost-effective strategy. n362 Workers do indeed respond to new information about risks, by quitting or demanding higher salaries. Consumers often react well to disclosure about danger levels. In general, there is reason to think that government-mandated disclosure, if suitably designed, can be an effective mechanism for promoting economic efficiency. On the other hand, there are hazards in disclosure strategies, as we discuss below. [*105]

2. Democracy.

Suppose that we wanted to increase the democratic character of contemporary government by promoting citizen participation in, and control over, governmental processes. A good initial step would be for government to provide enough information so that people could make knowledgeable judgments.

Government might itself supply information, or require disclosure by private citizens and companies. Return, for example, to the matter of expenditures per life saved. n363 At the very least, the American public should be informed of the disparities among programs so that it can evaluate them. Or consider the question of risk regulation in general. On that question, people are often poorly informed. n364 For example, people often seem unaware of how the risks from new technologies compare to the level of background risk in the natural environment. They sometimes do not have a clear sense of the relationships among different risks that are confronted in everyday life. Information of this sort ought to be widely available. The fact that it is not creates a significant failure in government regulation. At least equally important, it presents a large obstacle to citizenship. Workers uninformed of risks are unable to participate usefully in the process of deciding among different possible levels of workplace safety. Local communities, seeking to decide whether to allow toxic waste sites or plants that produce sulfur dioxide, need to be in a position to make informed choices.

3. Pre-Clinton steps.

The national government has initiated a series of steps toward disclosure of risks. Mandatory messages about risks

from cigarette smoking, first set out in 1965 and modified in 1969 and 1984, are of course the most familiar example. n365 The FDA has long maintained a policy of requiring risk labels for pharmaceutical products. n366 EPA has done the same for pesticides and asbestos. n367 Congress requires warnings on products with saccha- [*106] rin. n368 There are numerous other illustrations. Indeed, the effort to provide information counts as one of the most striking, if incipient, developments in modern regulatory law. Consider three especially notable initiatives.

In 1983, the Occupational Safety and Health Administration issued a Hazard Communication Standard ("HCS"), applicable to the manufacturing sector. In 1987, the HCS was made generally applicable. n369 Under the HCS, chemical producers and importers must evaluate the hazards of the chemicals they produce or import; develop technical hazard information for materials-safety data sheets, and labels for hazardous substances; and, most importantly, transmit this information to users of the relevant substances. All employers must adopt a hazard communication program--including individual training--and inform workers of the relevant risks. n370

In 1986, Congress enacted an ambitious statute, the Emergency Planning and Community Right to Know Act ("EPCRA"). n371 Under this statute, firms and individuals must report to state and local government the quantities of potentially hazardous chemicals that have been stored or released into the environment. Users of such chemicals must report to their local fire departments about the location, types, and quantities of stored chemicals. They must also give information about potential adverse health effects. A detailed report suggests that EPCRA has had important beneficial effects, spurring innovative, cost-effective programs from the EPA and from state and local government. n372 Indeed, there is reason to believe that the public release of information about discharge of toxic chemicals has by itself spurred competition to reduce releases, quite independently of any government regulation. n373

The Food and Drug Administration has also adopted informational strategies. In its most ambitious set of proposals, n374 [*107] finalized in 1993, n375 FDA seeks (a) to compel nutritional labelling on nearly all processed foods, including information relating to cholesterol, saturated fat, calories from fat, and fiber; (b) to require compliance with government-specified serving sizes; (c) to compel companies to conform to government definitions of standardized terms, including "reduced," "fresh," "free," and "low"; and (d) to allow health claims only if they (1) are supported by scientific evidence and (2) communicate clear and complete information about such matters as fat and heart disease, fat and cancer, sodium and high blood pressure, and calcium and osteoporosis.

These initiatives are only a beginning. As Executive Order 12866 suggests, broader and more ambitious programs, coordinating the general communication of social risks, are very much in order. It has been urged that government might eventually develop a "national warnings system" containing a systematized terminology for warnings. n376 Such a system could apply to all contexts and risks, and give a uniform sense of risk levels. The existence of a uniform language would make it possible to assess risks across a wide range of social spheres.

4. More effective communication of risk information.

Requiring disclosure of risk information is not enough. Mechanisms must be devised to ensure that the information is accurate and not a product of interest-group pressures, which will predictably be brought to bear on informational effects. Even accurate information may be poorly processed; it may be ignored; it may produce "overload." n377 The form and content of the information disclosed must be such that citizens find it understandable and trustworthy. Even good-faith efforts to facilitate truly informed individual choices turn out, we now know, to fail for lack of understanding of the dynamics of effective risk communication. This problem is not specifically addressed in Executive [*108] Order 12866. In implementing the Order's emphasis on risk communication, much work needs to be done on the topic.

Systematic study of risk-communication strategies only began in the mid-1980s. n378 These studies have shown that much conventional wisdom, upon which prior regulatory strategies were based, is wrong. The reasons reveal another manifestation of the conflict between expert and lay approaches to risk evaluation. Information becomes

relevant to people through their specific background assumptions, knowledge, and systems of value. Precisely because experts and laypeople often differ, the kind of information each requires often differs as well. On efficiency grounds, risk-communication strategies should be tailored to lay needs, in order to ensure better decisions. On democratic grounds, the right kind of information should be disclosed so that participation builds on actual valuations and promotes trust in both the process and outcome.

A first problem with many government-sponsored risk communications is that they take the form of highly generalized and often inscrutable recommendations, rather than providing information that enables citizens to evaluate the recommendations. A second and more important problem is that regulators should understand that people filter and process information through their existing frameworks of belief. Effective information disclosure requires knowledge of the beliefs on which citizens are likely to draw. If these background frameworks are incomplete or error filled, new information, even if factually accurate, may well be ignored or misunderstood. More information might even make people less informed. Thus, disclosure of the information that an expert decision analyst would use--the exposure-effect relationship of a risk, the cost and efficiency of alternative remediation approaches--may not promote informed choice at all.

Risk-communication experts have developed a general approach to discovering the most effective forms of information disclosure. We first outline that approach, then describe empirical results from its application in a recent, concrete regulatory setting. n379

The appropriate approach can be broken down into three steps. First, policymakers should elicit the background beliefs that average citizens will actually bring to the relevant risk is- [*109] sue. Perhaps those background beliefs are already understood. If they are not, interviews can be helpful, but structured questionnaires might be used where the former are not feasible. The process of eliciting views should be at least somewhat open ended; investigators should not force the process into predetermined channels. The process might start with questions like "tell me about radon" and seek elaboration of the responses. Studies of different risk problems suggest that after twelve interviews or so, few new concepts emerge in the answers. n380

Second, initial material should be designed to provide the relevant information in a way that responds to those background beliefs. To the extent that the elicitation process reveals gaps and errors in these beliefs, the material should address them. In addition, rather than providing bare information, the material should provide it in a form directed to taking action. Third, the initial material should be tested empirically with potential users. Iterations of this process yield the most effective forms of information disclosure.

Applying this approach in 1987, experts were able to generate a highly effective brochure for addressing the radon problem, a brochure that was far more effective than the widely distributed EPA brochure on that topic. The elicitation process revealed that, in addition to holding many accurate beliefs about radon exposure, people also held many inaccurate beliefs: that radon contamination of surfaces is permanent (39 percent); that radon affects plants (58 percent); that it contaminates blood (38 percent); and that it causes breast cancer (29 percent). n381 Few people understood that radon decays quickly (13 percent). n382 The combination of some of these beliefs would make the radon problem seem severe and unsolvable; consider the lack of knowledge of the fact that radon decays quickly.

On the basis of this information, brochures were designed that specifically addressed the flaws and gaps in people's background beliefs. The unsuccessful EPA brochure had been prepared through traditional methods; scientific experts were asked what information was relevant and it was then packaged attractively. The initial version of EPA's "Citizen's Guide to Radon," for example, did not discuss whether radon contamination is perma- [*110] nent. When empirically tested, this EPA brochure performed significantly worse than the brochures prepared through the alternative method. When people were asked to recall simple facts, they did equally well with all the brochures. But when faced with tasks requiring inference, the new brochures "dramatically outperformed" the EPA material. n383 For example, when asked what a homeowner could do to reduce high radon levels in the house, 43 percent of EPA readers answered "don't know" and 9 percent said "there is no way to fix the problem." In contrast, 100 percent of the readers of the brochure designed

on the basis of risk communication studies, and 96 percent of the readers of another, answered "hire a contractor to fix the problem." n384

This approach stands in sharp contrast to that reflected in one of the most carefully prepared and broadly circulated manuals on risk information and its communication. This manual, produced for the Chemical Manufacturers Association, sought to provide advice to plant managers on the most effective means to make public comparisons between different kinds of risks. The chemical industry drew on literature concerning effective communication, but it did not test its manual empirically. When that was done, it turned out that the advice was flatly wrong. There was no correlation between actual public assessments of the risks and those the manual predicted. n385

Informational remedies should also respond to various heuristics and anomalies that can affect how people "hear" warnings and advice. For example, it matters a great deal whether a health effect is framed as a loss or a gain. People are far more willing to forego gains than to accept losses; they are persistently "loss averse," n386 and loss aversion affects people's reaction to information about risk. Thus, real-world experiments show that pamphlets describing the positive consequences of breast self-examinations (for example, women who undertake such examinations have a greater chance of finding a tumor at a treatable stage) are ineffective, whereas there are significant changes in behavior from pamphlets that stress the negative consequences of a refusal to undertake self-examinations (women who fail to [*111] perform such examinations have a decreased chance of finding a tumor at a treatable stage). n387 Similar results were found for efforts to inform people of the advantages of energy insulation: an emphasis on the gains from insulation produced far less change than an emphasis on the losses from noninsulation. n388

Vivid and personal information can also be more effective than statistical evidence. The same study of energy conservation showed that it was not helpful for auditors to point to the cracks around homeowners' doors and to recommend weatherstripping. But striking results followed from a simple statement to the effect that the cracks, added together, would equal a hole the size of a basketball, combined with the question: "And if you had a hole that size in your wall, wouldn't you want to patch it up? That's what weatherstripping does." n389 So, too, the "availability" heuristic, discussed above, n390 means that certain events that can be easily recalled will seem more probable than they are in fact; regulators should respond to and take advantage of this heuristic in attempting to convey accurate information.

Finally, there is evidence that people sometimes try to reduce cognitive dissonance by discounting certain risks. n391 When dissonance is at work, information about risk may be discounted, and hence information campaigns can fail. In order to convey information effectively, regulators should attempt to respond to danger posed by dissonance reduction. Efforts to convey information about the risk of AIDS, for example, appear to be adversely affected by a frequent tendency of people to assume that the risk does not apply to them. n392 In many cases, this appears to be an irrational form of denial, spurred in part by a perception that condom use detracts from sexuality. n393 It has been suggested that private and public actors concerned about the spread of AIDS should attempt to convey information not merely by stating the facts, but also by doing so in a way that is intentionally targeted at this negative (and by no means inevitable) image of condom use. n394

Effective regulatory emphasis on information disclosure should learn from these risk-communication investigations. To provide meaningful information about risk, regulators should learn what people already know and assume, as well as what they need to know. Appropriate information must then be developed, tested, and refined until empirical investigation demonstrates that the intended information is, in fact, being conveyed. n395 The next step in information- and education-based regulatory strategies is to incorporate these insights.

C. Economic Incentives

By economic incentives, we mean financial penalties imposed on harm-producing behavior, and financial rewards attached to harm-reducing behavior. Such penalties or rewards might supplement and sometimes even displace command-and-control regulation. The Clinton Order firmly and specifically endorses economic incentives; it favors

performance standards over design standards and specifies "user fees or marketable permits" as remedies of choice. Economic incentives appear to be playing a role in the regulatory policy of the Clinton Administration. n396

1. Efficiency.

The supporting work behind Executive Order 12866 recognizes that it is often inefficient for government to prescribe the means for achieving social objectives. n397 Often it would be far better, on economic grounds, for government (a) to create economic incentives to engage in socially desirable conduct, and (b) to permit the market to decide how companies respond to those incentives. It is especially inefficient for government to dictate technology. A far better approach is to impose a fee or a tax on harmful behavior, n398 and to let market forces determine the response to the increased cost. Another good approach is for government to set the total quantity of a pollutant that will be permitted, then grant or sell a fixed number of tradable allowances or permits to discharge that substance. Government should generally impose fees on those who put pollutants into the atmosphere--instead of (for example) mandating a particular substance for use in motor vehicles. Consumption of the harm-producing good will decline. Producers will shift to less harmful methods of production.

More generally, government might adopt a simple, two-step reform policy in the area of social risks and social harms. n399 First, those who impose harm should be required to pay for it--by purchasing permission to do so, perhaps through a licensing procedure. Second, those who obtain the resulting permission should be able to trade their "licenses" with other people. In the pollution context, this would mean that people who reduce their pollution below a specified level could trade their "pollution rights" for cash. In one move, such a system would create market-based disincentives to pollute and market-based incentives for pollution control. Such a system would also reward rather than punish technological innovation in pollution control, and do so with the aid of private markets. Very generally, and quite outside the environmental area, it makes sense to think about programs of this sort for regulation of harmful behavior. n400

An idea of this kind might be made part and parcel of a system of "green taxes." With such a system, government might impose taxes rather than mandates on people who impose externalities on others--users of dirty automobiles, smokers, farmers who employ undesirable pesticides, coal-fired power plants, and users of other products that contribute to destruction of the ozone layer or to the greenhouse effect. Tax levies of various sorts are used by many nations already, though they have [*114] been slow in coming to the United States. n401 These levies have had, or are projected to have, good results. Thus a higher tax on leaded gasoline in Great Britain increased the market share of unleaded gas from 4 percent to 30 percent within less than a year. n402 It is estimated that a tripling of pesticide prices would cut pesticide use in half. n403 It is also estimated that a fee of \$ 110 per ton on carbon would decrease carbon dioxide emissions by 20 percent from previous 1988 levels by 2005. n404 An added advantage of such strategies is that they generate government revenues, thus reducing public deficits. n405

Economic incentives could be applied in other areas as well. Workers' compensation plans, for example, operate to enhance workplace safety. According to a careful study, "If the safety incentives of workers' compensation were removed, fatality rates in the United States economy would increase by almost 30 percent. Over 1,200 more workers would die from job injuries every year in the absence of the safety incentives provided by workers' compensation." n406 This contrasts with a mere 2-4 percent reduction in injuries from OSHA, an amount that links up well with the fact that annual workers' compensation premiums are more than one thousand times as large as total annual OSHA penalties. n407 The tax system could be used to punish employers who provide dangerous workplaces.

2. Democracy.

It is well understood that economic incentives have advantages from the standpoint of efficiency, and thus far we have seen that a shift to incentives would probably be efficient and effective. What consequences would such a shift have for democratic government?

The answer is that it could have significant beneficial consequences. n408 The current system puts public attention in the

[*115] wrong places. Imagine, for example, that Congress and the citizenry--following the contemporary model--are focusing on whether ethanol, or some other gasoline substitute, should be required in new cars. It is perfectly predictable that in answering this question, well-organized groups with significant stakes in the outcome will bring their influence to bear. It is also predictable that producers of the competing products may seek and actually obtain regulatory benefits, and for reasons bearing little or no relationship to environmental protection.

At the same time, the underlying substantive question--whether ethanol is actually an environmentally superior product--will have to be resolved on the basis of technological complexities not easily addressed by the public or its representatives. If this is the issue on which the political process focuses, there is likely to be a series of laws that represent not publicspirited deliberation with a measure of broad accountability, but instead trade-offs among well-organized private groups, or, in Madisonian terms, government by faction. By directing attention to means, this system creates strong incentives for interest groups to ensure that they are favored in the legislature or the bureaucracy.

Compare a system of economic incentives. Here the issue is not one of means, but the amount of sulfur dioxide that will be allowed into the atmosphere--an issue to be resolved in the process of deciding how many licenses to be given out, and for how much pollution. An advantage of this shift is that it would ensure that citizens and representatives would be focusing on how much pollution reduction there should be, and at what cost. The right question would be put squarely before the electorate. No longer would it be possible to pretend that environmental protection is costless. No longer would the central issue be displaced by the largely incidental question of means.

Moreover, a system of financial penalties or rewards allows less room for interest-group maneuvering. The large question--how much environmental protection at what cost--does not permit legislators to favor a well-organized, narrow group, such as the agricultural lobby or the coal lobby. Special favors cannot be provided so readily through a system of economic incentives. The very generality of the question will work against narrow favoritism. To be sure, the ultimate question of pollution reduction may be answered in a way that reflects sustained political pressure rather than democratic deliberation. But the risks are reduced, certainly as compared with the existing system.

[*116]

There are other democratic advantages as well. Economic incentives should simultaneously promote coordination and rationality in regulation by giving government an incentive to attend closely, and for the first time, to how other risks are treated. This should bring a salutary measure of structure and sense to risk regulation in general. As an important by-product, the new system should create a powerful incentive to obtain information about the actual effects of pollution and pollution control. If members of Congress are deciding on the level of risk reduction, they will not want to do so in a vacuum, especially in light of the significant costs of large reductions. Affected groups will therefore be encouraged to engage in research about real-world consequences.

As we have seen, information about consequences frequently remains in its most preliminary stages. The new premium placed on information should be a particularly important gain. There is every reason to design a regulatory strategy that puts a premium on greater research, so that when we act, we know what we are getting, and at what price.

All these considerations suggest that economic incentives--favored so firmly on economic grounds--have as one of their principal justifications a series of democracy-reinforcing, faction-limiting characteristics. n409

3. Pre-Clinton initiatives.

The movement toward economic incentives is preliminary but real. Thus far, it has occurred mostly in the environmental area. An important series of administrative initiatives have brought about "emissions trading," especially under the Clean Air Act. n410 Under EPA's policy, a firm that reduces its emissions below legal requirements may obtain "credits" that can be used against higher emissions elsewhere. Through the "offset" policy, which is formally

codified in the Clean Air Act, n411 a company may locate in an area not in compliance with national air quality standards if and only if it can offset the new emissions by reducing existing emissions, either from its own sources or from other firms.

[*117] Through the "banking" policy, firms are permitted to store emission credits for their own future use. n412 Companies may also engage in "netting," by which a firm modifies a source, but avoids otherwise-applicable emissions limits by reducing emissions from another source within the same plant. Existing sources may also place an imaginary "bubble" over their plants, allowing increased emissions levels for some emitting devices, so long as the total emissions level meets the aggregate requirements.

We now have a good deal of evidence about the emissions trading program. For various reasons, the program's use has been quite limited. n413 A 1989 study showed forty-two federal bubbles, ninety state bubbles, two thousand federal offsets, between five thousand and twelve thousand acts of netting, and one hundred acts of banking. n414 Despite this limited activity, there is considerable evidence that this policy has been successful. Overall, the program has produced savings of between \$ 525 million and \$ 12 billion. n415 By any measure, this is a large gain. On balance, moreover, the environmental consequences have been neutral or better. Offsets must, by definition, produce environmental gains. The preliminary evidence shows favorable effects from bubbles as well. n416 There may be modest beneficial effects from banking and modest adverse effects from netting. n417 The overall environmental effect is therefore neutral or even good, cost entirely to one side. Consider the following table by way of summary: [*118]

[SEE TABLE IN ORIGINAL]

EPA has also permitted emissions trading for lead. Under this policy, a refinery that produced gasoline with lower-than-required lead levels could earn credits. These could be traded with other refineries or banked for future use. n419 Until the program's termination in 1987, when the phasedown of lead ended, emissions credits for lead were widely traded. EPA concluded that there had been cost savings of about 20 percent over alternative systems, making total savings in the hundreds of millions [*119] of dollars. n420 There have been initial administrative efforts as well with respect to water pollution and ozone depletion. n421

The most dramatic program of economic incentives can be found in the 1990 amendments to the Clean Air Act. The Act now explicitly creates an emissions trading system for the control of sulfur dioxide and nitrogen oxide emissions, major contributors to acid deposition. In these amendments, Congress has made an explicit decision about the aggregate emissions level for a pollutant. n422 The goal is to reduce sulfur dioxide emissions by ten million tons each year, with initial standards going into place in 1995 and much tighter standards coming into effect by 2000. n423 Whether the particular decision about the size of the reduction is the correct one may well be disputed. But there are large democratic benefits from ensuring that public attention is focused on that issue.

The acid deposition provisions have other beneficial features. Congress has said that polluters may obtain allowances for emissions avoided through energy conservation and renewable energy. In this way, conservation strategies are made privately profitable. n424 This provision creates an incentive to shift to conservation and renewable sources, without providing further environmental degradation.

Moreover, polluters are explicitly permitted to trade their allowances; this is a first in national legislative policy. n425 In this way, entities that are able to reduce their pollution below the specified level receive economic benefits. An especially intriguing provision allows spot and advance sales of sulfur dioxide allowances, to be purchased at \$ 1,500 per ton. n426 Through this route, polluters must--for the first time--pay a fee for their pollution.

[*120] Equally intriguing is a provision calling for auction sales of specified numbers of sulfur dioxide allowances. n427 Here the market is permitted to set the price for polluting activity. For example, in the first auction of these rights, in 1993, the average price for the right to discharge one ton of sulfur dioxide in 1995 was \$ 156; by 1994, the market price had risen to \$ 159 per ton. n428

For the most part, however, the Clean Air Act does not require polluters to pay for their "licenses." Instead, government is granting initial marketable pollution allowances to existing sources for free. This might be a short-term measure to protect reliance interests underlying existing uses, for political or more substantive reasons. As further experience with these approaches develops, perhaps Congress will take the next step of requiring dischargers to pay for their emissions by requiring polluters to purchase their allowances in the first place. Executive Order 12866 holds out promise that future legislative and administrative initiatives will pursue regulation through incentive-altering structures more fully.

4. Initial Clinton initiatives.

Executive Order 12866 is already having significant effects on the development of alternative regulatory strategies. The Clean Water Act is up for reauthorization this year, and the Clinton Administration, through EPA, has put forward a comprehensive set of proposals for revamping administration of the Act (the Clean Water Initiative, or "CWI"). These proposals include measures to deal with toxic discharges; nonpoint sources of pollution; watersheds; and the funding, monitoring, and enforcement aspects of water pollution control.

The Clinton CWI reflects the Executive Order's influence at every turn and, more generally, the prevalent techniques by which regulatory policy is now made. To begin with, the CWI is accompanied by an extensive analysis of the benefits and costs of the proposed new regulatory approaches. n429 Moreover, where commensurating benefits and costs would involve controversial value judgments, the analysis does not attempt to force a single metric on the problem and obscure important qualitative distinctions. [*121] For example, the analysis carefully documents the physical water-quality benefits to be expected without attempting to monetize these in order to "weigh" them against costs. n430 In one area where some basis for attaching dollar values to the relevant benefits plausibly exists (the value to urban households of clean water for various purposes), the analysis attempts to do so. n431 But the analysis does not hide the uncertainty behind these estimates, and it consistently makes its underlying assumptions clear. A strong emphasis is placed throughout on more flexible regulatory strategies that pursue the most cost-effective approach to producing a given level of benefits.

Thus, rather than requiring all municipalities (as current law does) to meet the same standards for combined sewer overflows and storm water discharges, the CWI proposes different regulatory regimes for large and small cities. n432 Similarly, the CWI proposes building on the recent Clean Air Act approach by using market mechanisms, such as tradable permits, to improve water quality in the most efficient way. The basic concept here is that all sources discharging into the same body of water in a similar manner should be permitted to negotiate among themselves (through trading discharge permits) as to how to achieve a federal water-quality standard for that body. EPA estimates that about 940 bodies of water would benefit from trades between certain point sources and nonpoint sources, and 210 bodies of water would be able to benefit from trades between point sources. n433 In addition, EPA has identified numerous public treatment plants that would be able to reduce pollution more cheaply by negotiating reductions in inputs from the relevant sources. All told, EPA estimates that permitting trades of these sorts would achieve the same level of water-quality improvement at savings of between \$ 658 million to \$ 7.5 billion per year. n434 [*122]

This attention to more flexible, cost-effective regulatory strategies is evidenced in the Initiative's bottom-line summary of its cost consequences. The analysis projects that if the CWI were adopted as proposed, it would lead to additional incremental expenditures of \$ 5 to \$ 9.6 billion per year. n435 But the analysis also claims that this is vastly less--amounting to savings of \$ 29 to \$ 33.8 billion--than would be generated under the regulatory approaches required by current law. n436 The important point is not that these numbers are to be believed (although even if discounted substantially, they still suggest roughly the magnitude of expected savings from more flexible regulatory strategies). More significantly, Executive Order 12866 is already bringing about systematic analysis of major new regulatory initiatives by encouraging new means to environmental ends.

5. Qualifications.

In some areas, economic incentives are inappropriate. If government seeks to ban a substance entirely, a prohibition makes sense, rather than a high fee for marketing or use. At least if the benefits of the substance do not outweigh the danger, and if less dangerous substitutes are available, a ban is the preferred course.

In addition, where economic incentives are warranted, it is sometimes best to regulate quantity rather than price. Marketable permits that regulate the quantity discharged, rather than emission fees, may well be the better approach to market strategies for pollution reduction. Setting emission fees at the right level to achieve the desired reduction requires detailed (marginal cost and benefit) information, which is usually unavailable, with respect to an industry's demand curve for emissions. In contrast, once the acceptable total level of emissions is determined, it is much easier to determine the appropriate quantity different producers should be permitted to discharge. That is what quantity-based marketable permits or allowances do. When these permits are traded, the market will then set their price. Although emissions fees are typically the way theorists analyze incentive approaches to pollution regulation, these approaches are often more appropriately pursued through quantity-based permits or [*123] allowances. n437 Auctions are also a promising approach, with the benefit of market rather than governmental setting of initial prices for the allowances. n438

On the other hand, fees or taxes may sometimes be preferable. An advantage of taxes as a response to (say) pollution problems is that the government need not even calculate the socially optimal level of pollution, a complex question to be sure. Rather than compute the tax at a level designed to achieve a predetermined quantity (a difficult task, for reasons described above), government could simply tax polluters at a level equal to the harm done to others from the pollution generated. On a standard view, this would generally equal the lower of either the cleanup costs, or the amount of money society is willing to accept in exchange for living with the pollution. Under this approach, the polluters would internalize the social cost of polluting, and would have every incentive to pollute at the socially optimal level. Computing the social harm done from a given unit of pollution may well be easier in many contexts than computing the total socially optimal quantity. Moreover, this approach allows the market to respond to fluctuations in the socially optimal quantity, which may frequently arise from changes in technology, market substitutes, increased demand, and so forth.

The main difficulty with this approach stems from the problem of calculating the amount of the fee or tax. Cleanup costs are often incalculable, and there are problems with relying on aggregated willingness to pay, even if it is calculable. n439 Nonetheless, there are undoubtedly circumstances in which pollution taxes are better than quantity limits, because taxes are a better response to government's informational limits. Which approach is best cannot be decided in the abstract.

As we have noted, sometimes economic incentives are undesirable for what we have described as expressive reasons. Perhaps a curbside tax is a more efficient response to the problem of solid waste disposal than mandatory recycling, at least in the short term (though this could encourage people to dispose of their wastes in more covert, and environmentally harmful, ways). n440

[*124] But mandatory recycling might affect social norms with respect to consumption, waste disposal, and environmental protection, in a way that has better long-term consequences, and that in any case responds better to the public's understanding of how best to conceive of social obligations in the area of solid waste disposal. The choice between curbside taxes and mandatory recycling cannot be resolved in the abstract. But insofar as economic incentives treat a public bad as a commodity, they might be objectionable on expressive grounds. It is rarely urged, for example, that the emissions trading model makes sense in the antidiscrimination area; a "discrimination license" would be inconsistent with the general effort to delegitimize racial prejudice. n441

A final problem is that a system of economic incentives can bring about distortions that must be addressed through governmental action. In the environmental area, emissions trading programs can lead to "hot spots," which occur when trades lead sources to concentrate pollution in some local area. n442 There are important equitable issues here, connected to those treated above: the "hot spots" may have unfortunate distributional effects, burdening identifiable social groups. n443 This is less of a problem to the extent that the pollutant has no local effects and is troubling only

when mixed in a larger environment (which might be true, to a significant degree, of sulfur dioxide).ⁿ⁴⁴⁴ But where local concentration effects are a problem, controls on trades or location of sources will have to be reintroduced. Indeed, the regulatory approach to trades in nitrogen oxides already manifests such an approach. Unlike with sulfur dioxides, trades in nitrogen oxides (which cause smog) must be approved by environmental officials in the states where the extra pollutants will be admitted; in addition, such trades are supposed to be "directionally correct," in that sellers must be upwind of buyers.ⁿ⁴⁴⁵

[*125] The right solution varies from context to context, but it seems likely that appropriate structures and policies can be developed to address these concerns.ⁿ⁴⁴⁶

Conclusion

This Article has emphasized three principal points. The first involves regulatory institutions. The second involves regulatory ends. The third involves regulatory means.

We have suggested that an institution in OMB to oversee and coordinate regulatory policy is, at least potentially, highly salutary. Staffed by appropriate employees, such an entity could help coordinate solutions to similar problems that arise across different agencies. Moreover, by introducing a more comprehensive perspective on risk regulation, such a body could encourage sensible priority setting. Executive Order 12866 takes coordination a step further than the Reagan-Bush approaches. It does so, most importantly, by attempting to promote early intrabranch discussion of regulatory proposals and to ensure more continuous consultation about regulatory goals. This reform is part of a conspicuous effort to reduce agency-OIRA antagonism by encouraging cooperation at all stages of rule making. The Order also takes the important step of including the independent agencies, if only in a modest, procedurally oriented way.

Executive Order 12866 begins as well to address the conflict between centralization and participation. The Order requires disclosure of contacts with private groups. It also opens up the process of discussion between OMB and the agencies--a step that might be legally unnecessary, but is nonetheless desirable. Finally, the Order is plainly designed to take advantage of information from affected persons at early stages of agency action.ⁿ⁴⁴⁷ These measures reflect appreciation not only of the need for relevant information, but also of the central role that public trust plays in risk perception, evaluation, and remediation.

With respect to the current institutional framework, our principal suggestion is that in its implementation, Executive Order 12866 should be used to create better priority setting. This [*126] idea is only incipient in Executive Order 12866. Toward this end, OIRA (perhaps bolstered by the addition of employees trained in relevant fields in addition to economics and policy analysis) should generate recommendations about which risk priorities ought to be viewed as most pressing.ⁿ⁴⁴⁸ As we have emphasized, the judgment about which risks are most pressing, and about which problems are most severe, does not depend solely on quantity or on numbers of lives saved. It depends a great deal on the context in which risks are imposed and on such factors as whether relevant risks are catastrophic, irreversible, involuntarily imposed, faced by future generations, or inequitably distributed.

Precisely how these recommendations might be turned into policy commitments requires further thought about the best mix of democratic and technocratic influences. Certainly, OIRA's efforts are unlikely to be productive without a firm commitment to better risk management at the presidential or vice presidential level. Under the right circumstances, OIRA might be given some substantive power to define risk priorities, or perhaps Congress would act on OIRA's recommendations. For now, OIRA could at least move the reform process forward by providing information and recommendations about risk priorities. As we have said, this view of OIRA's role is, at most, incipient in Executive Order 12866, but we think such a role would contribute significantly to improving regulation.

In order to monitor OIRA activity, new mechanisms should be created to allow something in the way of official and private "performance review," through studies showing which regulations have been issued by the Administration,

with particular attention to their anticipated and actual real-world consequences. Such a step would create good incentives for OIRA and also enable the public to see what, as a matter of substance, has been done in the regulatory arena. Thus far OIRA's attention appears to have been focused mostly on procedural matters, n449 and insufficiently on the hard (and far more important) substantive issues involved in improving regulation.

On the question of regulatory ends, Executive Order 12866 is, perhaps understandably, a bit uncertain. The Order does not embody a clear conception of what it means for regulation to be rational. The Order qualifies the Reagan-Bush conception of cost-benefit analysis, but it does not reject the technique entirely.

[*127] Instead, it requires a modified form of cost-benefit analysis, one that calls on agencies to incorporate ambiguous concerns for "equity" and "distributive impacts" into CBA. There is evident doubt about the prior use of cost-benefit techniques; attenuated endorsement of the basic method; and vague modifications that leave the final outcome, in terms of actual effects on agency policy, quite unpredictable.

The best way to progress beyond this ambivalence is to recognize its causes. We have focused on three such causes: legitimate conflicts between expert and lay value systems and conceptions of rationality; the incommensurability of some benefits and costs that can only be compared qualitatively; and the relevance of expressive concerns in choosing regulatory policies. We do not urge a general abandonment of analytic approaches to regulatory policy, nor do we deny the importance of CBA or comparative risk assessment, especially in a period in which regulation is far too costly a means of achieving its own goals. We have, however, argued for qualifying conventional CBA, and for embodying in CRA an understanding of qualitative differences among risks. Perhaps the qualification could take place through formal analysis that incorporates unconventional variables. But if we attempt to incorporate all relevant concerns into policy analysis at the same time, we risk undermining the genuine benefits that more analytic approaches can provide.

Instead, we might split the process of CBA into two stages. In the first, the focus should be on a quantitative cost-benefit assessment of those dimensions that can properly be subject to this approach. To deal with incommensurability problems, the analysis should disaggregate benefits and costs so as to indicate how they are distributed over various groups and interests. In the second stage, agencies should take into account differences between expert and lay value frameworks, concerns for equity, the expressive dimensions of the choice, and other relevant values not subject to the cost-benefit approach. Perhaps mechanisms could be created to promote citizen evaluation of regulatory alternatives, though any efforts in this direction must necessarily be tentative and experimental. CRA might proceed similarly, with attention to the sorts of factors that we have emphasized here.

With respect to regulatory means, Executive Order 12866 is also a step in the right direction. A pervasive problem with national regulatory law is the use of rigid, highly bureaucratized command-and-control regulation, which dictates, at the national

[*128] level, risk control strategies for hundreds, thousands, or millions of companies in an exceptionally diverse nation. Such regulation is highly inefficient. Even more fundamentally, such strategies are deficient from the standpoint of a well-functioning democratic process. Often they ensure that citizens and representatives will be devoting their attention not to general questions of value--what levels of risk reduction and cost trade-offs are appropriate--but instead to the largely incidental and publicly inaccessible question of what technologies are now available. They focus on the question of regulatory "means," a focus that increases the power of well-organized private groups by allowing them to press the law in the service of their own parochial ends.

In this light, it is no wonder that some observers think that our current system is a kind of Madisonian nightmare, in which James Madison's vision of deliberative democracy has been transformed into a system of government as a series of interest-group deals. n450 Executive Order 12866 holds out much promise on this front. It adopts a kind of presumption against command-and-control regulation. It presages a greater shift to economic incentives, to informational remedies, and to performance rather than design standards. All of these are desirable suggestions. But we have cautioned that some of these new strategies are not likely to be effective unless they deal with the ways in which ordinary people process and conceive of risks.

The solution to this problem lies in strategies that respond to people's background assumptions and to their diverse valuations of diverse risks. Indeed, a principle of this kind--that risk evaluation should take into account informed public valuations--should be placed at the center of modern efforts to reinvent the regulatory state. We have suggested that such efforts could promote economic goals, by reducing the billions of dollars unnecessarily spent on regulation and by ensuring that resources are devoted to the many serious problems that remain inadequately addressed. Such efforts could promote democratic goals as well, by reducing interest-group power, poor priority setting unreflective of public judgments, and the role of sensationalist anecdotes in regulatory policy. A reinvented government could simultaneously increase efficiency and improve the democratic character of the regulatory state. This task has technocratic dimensions, but it is far from only technocratic. It also requires government to respond to public understandings and valuations

[*129] of risk, and to make a large place for those valuations to the extent that they reflect a distinct, and legitimate, conception of rational choice.

Legal Topics:

For related research and practice materials, see the following legal topics:

Administrative Law Agency Rulemaking Negotiated Rulemaking Administrative Law Separation of Powers Executive Controls Governments Federal Government Employees & Officials

FOOTNOTES:

n1 Exec Order No 12291 section 2, 3 CFR 128 (1981), reprinted in 5 USC section 601 note (1988).

n2 Id section 3 at 128-30.

n3 Exec Order No 12498, 3 CFR 323 (1985), reprinted in 5 USC section 601 note (1988).

n4 Id at 324.

n5 Id at 324-35.

n6 See Stephen Breyer, *Breaking the Vicious Circle: Toward Effective Risk Regulation* 19, 23-28 (Harvard, 1993). See also Carnegie Commission on Science, Technology, and Government, *Risk and the Environment: Improving Regulatory Decision Making* (1993).

n7 Thomas D. Hopkins, *The Costs of Federal Regulation*, 2 J Reg & Soc Costs 5, 25 table 2 (1992).

n8 Michael Kellogg, *After Environmentalism: Three Approaches to Managing Environmental Regulation*, Regulation 25 (No 1, 1994).

n9 See Robert W. Hahn and John A. Hird, *The Costs and Benefits of Regulation: Review and Synthesis*, 8

Yale J Reg 233, 253-54 (1990).

n10 See Cass R. Sunstein, *Constitutionalism After the New Deal*, 101 Harv L Rev 421, 440-45 (1987).

n11 See, for example, Christopher C. DeMuth and Douglas H. Ginsburg, *White House Review of Agency Rulemaking*, 99 Harv L Rev 1075, 1088 (1986).

n12 See generally Morton Rosenberg, *Presidential Control of Agency Rulemaking: An Analysis of Constitutional Issues That May Be Raised by Executive Order 12,291*, 23 Ariz L Rev 1199 (1981).

n13 For a full discussion of the advantages and disadvantages of OMB review, see Thomas O. McGarity, *Reinventing Rationality: The Role of Regulatory Analysis in the Federal Bureaucracy* 274-91 (Cambridge, 1991).

n14 See Erik D. Olson, *The Quiet Shift of Power: Office of Management & Budget Supervision of Environmental Protection Agency Rulemaking Under Executive Order 12,291*, 4 Va J Nat Resources L 1, 31-35 (1984).

n15 See *Role of the Council on Competitiveness in Regulatory Review*, Hearings before the Senate Committee on Governmental Affairs, 102d Cong, 1st Sess 2 (1991) (statement of Sen Glenn).

n16 See McGarity, *Reinventing Rationality* at 282-88 (cited in note 13). In 1986, a court concluded that OMB delayed EPA regulations that were subject to statutory deadlines for ninety-one days on average. *Environmental Defense Fund v Thomas*, 627 F Supp 566, 571 (D DC 1986). Although section 8(a)(2) of Executive Order 12291 explicitly exempted from OMB review regulations "for which consideration or reconsideration under the terms of this Order would conflict with deadlines imposed by statute or by judicial order," the court concluded that this section of the Order was "simply ignored." *Id* at 570-71.

An article from the same time period asserts that the average time for all regulatory reviews by OMB was sixteen days. DeMuth and Ginsburg, 99 Harv L Rev at 1088 (cited in note 11). For an illuminating discussion of agency-OIRA interactions, see E. Donald Elliott, *TQM-ing OMB: Or Why Regulatory Review Under Executive Order 12,291 Works Poorly and What President Clinton Should Do About It*, 57 L & Contemp Probs 167 (1994).

n17 See, for example, Robert V. Percival, *Checks Without Balance: Executive Office Oversight of the Environmental Protection Agency*, 54 L & Contemp Probs 127, 178-200 (1991).

n18 Exec Order No 12866 section 11, 3 CFR 638, 649 (1993), reprinted in 5 USC section 601 note (Supp 1993). See also Office of the Vice President, *Improving Regulatory Systems: Accompanying Report of the National Performance Review* 11 (1993). An early discussion of the new Clinton process can be found in Colloquium, *The Fifth Annual Robert C. Byrd Conference on the Administrative Process: The First Year of Clinton/Gore: Reinventing Government or Refining Reagan/Bush Initiatives?*, 8 Admin L J Am U 23 (1994).

n19 Exec Order No 12866 section 2(b), 3 CFR at 640 (cited in note 18).

n20 Id section 4(c) at 642.

n21 Id section 1(b)(5) at 639.

n22 See text accompanying notes 81-87.

n23 See Exec Order No 12866 section 2(c), 3 CFR at 640-41 (cited in note 18).

n24 Id section 6(a)(1) at 644-45. See also Memorandum of September 30, 1993, Negotiated Rulemaking, 3 CFR 776 (1993).

n25 This is the major theme of David Osborne and Ted Gaebler, *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector* (Addison-Wesley, 1991), which has obviously had an enormous influence on the Clinton administration. See Vice President Al Gore, *From Red Tape To Results: Creating a Government that Works Better and Costs Less*, Report of the National Performance Review (US GPO, 1993).

n26 See text accompanying notes 155-59.

n27 See generally Ralph Catalano, *The Health Effects of Economic Insecurity*, 81 *Am J Pub Health* 1148 (1991); Ralph L. Keeney, *Mortality Risks Induced by Economic Expenditures*, 10 *Risk Analysis* 147 (1990); Aaron Wildavsky, *Searching for Safety* 61-75 (Transaction, 1988).

n28 It is too soon for any real conclusions about the actual implementation of Executive Order 12866. We note, however, that the first major report on the Order was concerned almost exclusively with procedural issues of internal governmental management; it said nothing about whether the Order was actually making for better or worse regulation. See Office of Management and Budget, *Report on Executive Order No 12866, Regulatory Planning and Review*, 59 *Fed Reg* 24276 (1994). There appears to be a risk that OIRA will be unduly concerned with procedural issues and fail to focus on what is most important, the substance of regulation.

n29 Many proposals in Congress suggest this approach by requiring comparative risk assessment. See the Johnston Amendment, S 171 section 123, 103d Cong, 1st Sess (May 4, 1993), in 139 *Cong Rec* S5362 (May 4, 1993). See also the important discussion of "riskrisk" trade-offs in John Graham and Jonathan Wiener, *Risk vs. Risk* (Harvard, forthcoming 1995).

n30 See Part IV.F.

n31 Forrest McDonald, *The American Presidency: An Intellectual History* 329 (Kansas, 1994).

n32 Oscar Kraines, *The President Versus Congress: The Keep Commission, 1905-1909: First Comprehensive Presidential Inquiry Into Administration*, 23 *W Pol Q* 5 (1970).

n33 For a recent influential statement on modern government procurement, see Steven Kelman, *Procurement and Public Management: The Fear of Discretion and the Quality of Government Performance* (AEI, 1990).

n34 See McDonald, *The American Presidency* at 330-31 (cited in note 31).

n35 See Kraines, 23 W Pol Q at 37-45 (cited in note 32); McDonald, *The American Presidency* at 330-31 (cited in note 31); Peri E. Arnold, *Making the Managerial Presidency: Comprehensive Reorganization Planning, 1905-1980* 23-26 (Princeton, 1986).

n36 Budget and Accounting Act of 1921, Pub L No 67-13, 42 Stat 20, codified at 31 USC sections 1101 et seq (1988).

n37 Arnold, *Making the Managerial Presidency* at 26-54 (cited in note 35).

n38 Act of June 30, 1932, sections 401-08, Pub L No 72-212, 47 Stat 382, 413-15, codified at 5 USC sections 124-31 (Supp 1932).

n39 The constitutionality of the legislative veto was not litigated until *INS v Chadha*, 462 US 919, 959 (1983), when it was invalidated.

n40 See Woodrow Wilson, *Congressional Government: A Study in American Politics* (Houghton Mifflin, 1925).

n41 McDonald, *The American Presidency* at 333 (cited in note 31).

n42 Arnold, *Making the Managerial Presidency* at 114 (cite in note 35).

n43 McDonald, *The American Presidency* at 335 (cited in note 31).

n44 Richard P. Nathan, *The Plot That Failed and the Administrative Presidency* 45-49 (Wiley, 1975).

n45 See Carnegie Commission, *Risk and the Environment* at 48-49 (cited in note 6).

n46 Office of Management and Budget, Circular No A-107 (Jan 28, 1974).

n47 McGarity, *Reinventing Rationality* at 19 (cited in note 13).

n48 Act of December 23, 1969, Pub L No 91-151, 83 Stat 377, codified at 12 USC section 1904 (1976). See also Carnegie Commission, *Risk and the Environment* at 48 (cited in note 6).

n49 Exec Order No 12044, 3 CFR 152 (1978).

n50 Peter M. Shane and Harold M. Bruff, *The Law of Presidential Power* 358-60 (Carolina Academic, 1988).

n51 See text accompanying notes 3-5.

n52 See Office of Management and Budget, *Regulatory Program of the United States Government*, April 1, 1990 -March 31, 1991 5 (US GPO, 1990).

n53 See Carnegie Commission, *Risk and the Environment* (cited in note 6); Breyer, *Breaking the Vicious Circle* at 61-68 (cited in note 6).

n54 See Elliott, 57 L & Contemp Probs at 171-74 (cited in note 16).

n55 *Id.* at 171.

n56 See Exec Order No 12866 section 2(a), 3 CFR at 640 (cited in note 18).

n57 *Id.* section 4(a) at 642.

n58 *Id.* section 6(a)(2) at 645.

n59 See Report on Executive Order No 12866, 59 Fed Reg at 24290 (cited in note 28).

n60 *Id.* See Exec Order No 12866 section 4(d), 3 CFR at 643 (cited in note 18), for the Order's creation of the Regulatory Working Group.

n61 See the helpful discussions in Carnegie Commission, *Risk and the Environment* at 19-20, 71-72 (cited in note 6).

n62 See *id.*

n63 See Exec Order No 12866 section 4(e), 3 CFR at 643-44 (cited in note 18).

n64 Thus, the early Report on Executive Order No 12866, 59 Fed Reg 24276 (cited in note 28), devotes no attention to whether the regulations that have emerged are good ones, even by the Order's own criteria.

n65 See Carnegie Commission, *Risk and the Environment* at 20 (cited in note 6).

n66 See Environmental Protection Agency, Report of the Science Advisory Board: Relative Risk Reduction Strategies Commission to William K. Reilly (1990), in Zygmunt J.B. Plater, Robert H. Abrams, and William Goldfarb, Supplement for Environmental Law and Policy: Nature, Law, and Society 19-23 (West, 1990).

n67 *Id.* at 21.

n68 *Id.* at 23.

n69 See text accompanying notes 14-15.

n70 See Olson, 4 Va J Nat Resources L at 31-35 (cited in note 14); Percival, 54 L & Contemp Probs at 168-72 (cited in note 17). Early in the Reagan administration, the Department of Justice advised OMB to make public all substantive communications between OMB and private parties. See Stephen G. Breyer and Richard B. Stewart, Administrative Law and Regulatory Policy 684 (Little, Brown, 3d ed 1992), summarizing Memorandum from Larry Simms, Acting Assistant Attorney General, Office of Legal Counsel, to Director of the Office of Management and Budget (1981). An implementing memorandum from OIRA offered a complex set of guidelines. See Memorandum, Additional Procedures Concerning OIRA Reviews Under Executive Order Nos 12291 and 12498, from Wendy L. Gramm, Administrator, Office of Information and Regulatory Affairs, published in Office of Management and Budget, Regulatory Program of the United States Government, April 1, 1990 -March 31, 1991 605 (US GPO, 1990). Congress held many hearings about the absence of disclosure of communications between OIRA and private groups, or between OIRA and the agency itself. See Clean Air Act Implementation (Part 2): Hearings before the Subcommittee on Health and the Environment of the House Committee on Energy and Commerce, 102d Cong, 1st & 2d Sess (1991-92). Informal agreements were reached between the White House and Congress, without formal legislation, requiring disclosure of most substantive communications from private parties. The understandings are published in the Congressional Record. See 136 Cong Rec S17608-10 (Oct 27, 1990). They did not, however, cover the Council on Competitiveness, which became the focal point of concern. See *id.*

n71 *Home Box Office, Inc. v FCC*, 567 F2d 9, 57 (DC Cir 1977).

n72 See E. Donald Elliott, Re-Inventing Rulemaking, 41 Duke L J 1490, 1492-93 (1992):

No administrator in Washington turns to full-scale notice-and-comment rulemaking when she is genuinely interested in obtaining input from interested parties. Notice-and-comment rulemaking is to public participation as Japanese Kabuki theater is to human passions--a highly stylized process for displaying in a formal way the essence of something which in real life takes place in other venues. To secure the genuine reality, rather than a formal show, of public participation, a variety of techniques is available--from informal meetings with trade associations and other constituency groups, to roundtables, to floating "trial balloons," in speeches or leaks to the trade press, to the more formal techniques of advisory committees and negotiated rulemaking.

n73 *A.L.A. Schechter Poultry Corp. v United States*, 295 US 495, 537 (1935).

n74 See 5 USC sections 500 et seq (1988 & Supp 1993).

n75 See Government in the Sunshine Act, Pub L No 94-409, 90 Stat 1246 (1976), codified at 5 USC section 557(d) (1988 & Supp 1993).

n76 See Vermont Yankee Nuclear Power Corp. v Natural Resources Defense Council, Inc., 435 US 519, 523-25 (1978).

n77 Citizens to Preserve Overton Park, Inc. v Volpe, 401 US 402, 420 (1971); Motor Vehicle Manufacturers Ass'n, Inc. v State Farm Mutual Automobile Insurance Co., 463 US 29, 43-44 (1983).

n78 On the notion, see Vermont Yankee, 435 US at 524; on the survival, see State Farm, 463 US at 43.

n79 Home Box Office, 567 F2d at 54-55.

n80 This may be the meaning of the suggestion in Action for Children's Television v FCC: "The commission did explain the reason for its decision This explanation is contained in the record now before us, and it furnishes a basis for effective judicial review." 564 F2d 458, 472 (DC Cir 1977).

n81 Exec Order No 12866 section 6(b)(2), 3 CFR at 646-47 (cited in note 18).

n82 See Thomas O. McGarity, Some Thoughts on "Deossifying" the Rulemaking Process, 41 Duke L J 1385, 1435-36 (1992).

n83 Exec Order No 12866 section 6(b)(3), 3 CFR at 647 (cited in note 18).

n84 Id section 6(b)(4)(A) at 647.

n85 Id section 6(b)(4)(B)(i)-(ii) at 647.

n86 Id section 6(b)(4)(C) at 647-48.

n87 Id section 6(b)(4)(D) at 648.

n88 42 USC section 7607(d) (1988 & Supp 1992).

n89 The Order does not affect communications between private groups and the agencies themselves, apparently on the theory that this issue lies outside the scope of the Order, which is focused on OIRA.

n90 Sierra Club v Costle, 657 F2d 298, 406-07 (DC Cir 1981).

n91 See, for example, id; United States v Nixon, 418 US 683, 708 (1974).

n92 Nixon holds that qualified executive privilege protects the President's own communications, at least as a presumptive matter; but it does not resolve the question whether the privilege applies to internal executive branch communications not involving the President. 418 US at 707-10.

n93 See Memorandum for the Honorable David Stockman, Director, Office of Management and Budget, in Peter M. Shane and Harold M. Bruff, *The Law of Presidential Power 357* (Carolina Academic, 1988). Executive Order 12291 did say that the Presidential Task Force on Regulatory Relief, chaired by the Vice President, "shall resolve any issues raised under this Order or ensure that they are presented to the President." Exec Order No 12291 section 3(e)(1), 3 CFR at 129 (cited in note 1).

n94 See Olson, 4 Va J Nat Resources L at 42-46 (cited in note 14).

n95 See Elliott, 57 L & Contemp Probs at 177 (cited in note 16). In at least one highly visible and contentious setting, Vice President Bush resolved a conflict between OSHA and OMB; the fact that he endorsed OSHA's regulatory approach is perhaps less revealing than the fact that he believed it to be his decision whether OSHA would prevail. McGarity, *Reinventing Rationality* at 100-01 (cited in note 13). Considerable legal controversy was raised by what appeared to be de facto White House intervention to dictate policy to agencies or to resolve conflicts between agencies and OMB.

n96 On issues raised by independent regulatory commissions, see text accompanying notes 107-23.

n97 Some support for this understanding is provided both by early opinions of the Attorney General, see the discussion in Peter L. Strauss, *The Place of Agencies in Government: Separation of Powers and the Fourth Branch*, 84 Colum L Rev 573, 604-05 (1984), and by an important dictum in *Myers v United States*: "Of course there may be duties so peculiarly and specifically committed to the discretion of a particular officer as to raise a question whether the President may overrule or revise the officer's interpretation of his statutory duty in a particular instance." 272 US 52, 135 (1926).

n98 See McGarity, *Reinventing Rationality* at 100-01 (cited in note 13) (discussing Vice President Bush's resolution of a major conflict between OSHA and OMB). In private conversations, Professor Thomas Kauper, Assistant Attorney General, Department of Justice, Antitrust Division, 1972-76, and Sally Ann Payton, Chief Counsel, Urban Mass Transportation Administration, United States Department of Transportation, 1973-76, have described this White House role in interbranch conflicts involving executive agencies during their tenure in office.

n99 For example, the account in McGarity, *Reinventing Rationality* at 100-01 (cited in note 13), describes Vice President Bush as having definitively resolved the conflict between OSHA and OMB.

n100 Private conversation with Peter Strauss, General Counsel, Nuclear Regulatory Commission, 1975-76 (describing mechanisms for resolving EPA-NRC conflicts).

n101 Executive Order No 12866 section 7, 3 CFR at 648 (cited in note 18).

n102 Id.

n103 The Order states: "At the end of this review process, the President, or the Vice President acting at the request of the President, shall notify the affected agency and the Administrator of OIRA of the President's decision with respect to the matter." *Id.* The Order does not specify whether the affected agency is to take the President's decision as advisory or binding.

n104 See text accompanying notes 81-87.

n105 There is likely to be some constitutionally protected core to the executive branch under Article II that Congress cannot control; for example, if Congress sought to make the Secretary of State not removable at the will of the President, Article II would probably be violated. But short of unusual situations in which Article II precludes congressional control, Congress has considerable latitude to structure the relationships of agencies and the White House. See Lawrence Lessig and Cass R. Sunstein, *The President and the Administration*, 94 *Colum L Rev* 1, 106-18 (1994).

n106 Report on Executive Order No 12866, 59 *Fed Reg* at 24283 (cited in note 28).

n107 See Memorandum for the Honorable David Stockman at 357 (cited in note 93).

n108 These include appointment of the Chair, replacement of the retirees, and others. See Strauss, 84 *Colum L Rev* at 590-91 (cited in note 97). In fact, there is little evidence that, in the long run, the independents deviate significantly from presidential wishes. See Terry M. Moe, *Regulatory Performance and Presidential Administration*, 26 *Am J Pol Sci* 197, 221 (1982).

n109 Exec Order No 12866 section 4(b), 3 *CFR* at 642 (cited in note 18).

n110 *Id.* section 4(c), 3 *CFR* at 642-43.

n111 We draw here Lessig and Sunstein, 94 *Colum L Rev* 1 (cited in note 105), which also contains a lengthy historical discussion.

n112 See, for example, 15 *USC* section 41 (1988 & Supp 1992); 29 *USC* section 661(b) (1988 & Supp 1992).

n113 *Humphrey's Executor v United States*, 295 *US* 602, 629-32 (1935).

n114 See Geoffrey P. Miller, *The Debate Over Independent Agencies in Light of Empirical Evidence*, 1988 *Duke L J* 215, 217.

n115 This understanding is perhaps embraced, though obliquely and in dicta, in *Humphrey's Executor*, which describes the commissioners of the FTC as "independent of executive authority, except in its selection." 295 *US* at 625. For a recent application of this understanding, see *Borders v Reagan*, 518 *F Supp* 250 (D DC 1981), vacated, 732 *F2d* 181 (DC Cir 1982), invalidating President Reagan's attempt to remove a member of the District of Columbia Judicial Nomination Commission. Although the statute contained no express removal

provision, the court interpreted the statute to establish a fixed tenure in office not subject to presidential removal. This result followed from the statutory understanding that Commission members "be isolated from political considerations and political changes in order that they may exercise their decisions free from outside influences," 518 F Supp at 255; the intent of the statute "was to ensure complete independence of Commission members from any presidential direction so that the members could be single-minded in their pursuit and evaluation of merit," *id* at 260.

n116 478 US 714 (1986).

n117 *Id* at 726.

n118 *Id* at 729.

n119 *Id* at 729, 734.

n120 *Id* at 729.

n121 It would of course be plausible to suggest that because of the difference in the contexts, the same words should have different meanings. Perhaps a statute restricting congressional power over the Comptroller General should be understood to impose thinner limitations than a statute controlling presidential power over independent commissioners. Such a reading would hardly be an implausible reconstruction of legislative goals.

n122 See Peter L. Strauss and Cass R. Sunstein, *The Role of the President and OMB in Informal Rulemaking*, 38 *Admin L Rev* 181 (1986).

n123 In *Mistretta v United States*, 488 US 361, 410-12 & nn 32-35 (1989), the Court described a standard removal "for good cause only" provision as one that gave the president only "limited" power "in order to safeguard the independence" of the relevant agency. Noting that the removal constraint at issue was "precisely the kind that was at issue in *Humphrey's Executor v. United States*," the Court described such provisions as "specifically crafted to prevent the President from exercising 'coercive influence' over independent agencies." For an earlier decision to the same effect, see *Wiener v United States*, 357 US 349, 352 (1958). In discussing a good-cause removal provision, the *Wiener* Court described Congress as having created "a body that was [to be] 'entirely free from the control or coercive influence, direct or indirect,' of either the Executive or the Congress." *Id* at 35556 (citations omitted).

n124 To cite just three examples, air quality, water quality, and automobile safety have significantly improved, in part as a result of regulation. *Dori Meinert*, *Air cleaner in '92; expected to be better in '93*, *San Diego Union-Trib B3* (Nov 5, 1993) (between 1983 and 1992, the number of Americans living in counties with air quality considered unhealthy by federal standards fell from 100 million to 54 million); *Casey Bukro*, 20 years later, *Earth Day's legacy lingers*, *Chi Trib section 1* at 1, 10 (Apr 16, 1990) ("Seventy-four percent of rivers now meet water quality standards."); *Mike McKesson*, *Safety matters; poll shows buyers want it but don't quite get it*, *Chi Trib section 17* at 6 (May 29, 1994) (noting that the rate of traffic deaths per 100 million vehicles has dropped significantly each year since 1980); *Sandra Blakeslee*, *Concentrations of Lead in Blood Drop Steeply*, *NY Times A18* (July 27, 1994) (studies show that regulatory phaseout of lead additives for gasoline between

1976 and 1991 led to 78 percent decline of average level of lead in bloodstreams). See also Cass R. Sunstein, *After the Rights Revolution* 77-81 (Harvard, 1990) (cataloguing regulatory successes as well as failures); United Nations Development Programme, *Human Development Report 1994* (Oxford, 1994) (showing dramatic international increases in life expectancy, literacy, GNP per capita, and other indicators of well-being).

n126 See Jerry Taylor, *The Challenge of Sustainable Development*, Regulation 35, 37-38 (No 1, 1994).

n127 For a discussion of the distinction between popular and expert opinion, see Breyer, *Breaking the Vicious Circle* at 33-39 (cited in note 6).

n129 As we will see, this paradox is different from the first, since the first turns on factual misperceptions, whereas the second at least potentially involves a disagreement in judgments of value.

n130 See James E. Krier, *Round Table Discussion: Science, Environment, and the Law*, 21 *Ecol L Q* 343, 356 (1994) ("resolution of this conflict should logically precede all other technical environmental issues, but this matter is being largely ignored in the ongoing debate about risk").

n131 Bernard L. Cohen, *Before It's Too Late: A Scientist's Case for Nuclear Energy* 119 (Plenum, 1983).

n132 H. W. Lewis, *Technological Risk* 246 (Norton, 1990).

n135 See Exec Order No 12866 section 4(e), 3 CFR at 643-44 (cited in note 18).

n136 The main document leading to the Order emphasized the need to promote public awareness and greater participation. See Jeffrey S. Lubbers, *Better Regulations: The National Performance Review's Regulatory Reform Recommendations*, 43 *Duke L J* 1165, 1172 (1994). See also Carnegie Commission, *Risk and the Environment* at 87-90, 115-16 (cited in note 6).

n137 Lubbers, 43 *Duke L J* at 1172 (cited in note 136).

n138 Chauncey Starr, *Risk Management, Assessment, and Acceptability*, 5 *Risk Analysis* 97, 98 (1985).

n139 Paul Slovic, *Perception of Risk: Reflections on the Psychometric Paradigm*, in Sheldon Krimsky and Cominic Golding, eds, *Social Theories of Risk* 117, 127 (Praeger, 1992).

n140 June Fessendon-Raden, Janet M. Fitchen, and Jenifer S. Heath, *Providing Risk Information in Communities: Factors Influencing What is Heard and Accepted*, 12 *Sci Tech & Human Values* 94, 96 (Summer/Fall 1987).

n141 Daniel J. Fiorino, *Technical and Democratic Values in Risk Analysis*, 9 *Risk Analysis* 293, 295 (1989).

n142 David Vogel, *National Styles of Regulation: Environmental Policy in Great Britain and the United States* 253-59 (Cornell, 1986).

n143 The arguments here draw on Paul Slovic, *Perceived Risk, Trust, and Democracy*, 13 *Risk Analysis* 675, 676-77 (1993).

n144 *Id* at 678.

n145 See Peter Bachrach, *The Theory of Democratic Elitism: A Critique* 7-9 (Little, Brown, 1967).

n146 See Lubbers, 43 *Duke L J* at 1169 (cited in note 136).

n147 See also Paul R. Verkuil, *Is Efficient Government an Oxymoron?*, 43 *Duke L J* 1221, 1231-34 (1994).

n148 But see Susan Rose-Ackerman, *Consensus Versus Incentives: A Skeptical Look at Regulatory Negotiation*, 43 *Duke L J* 1206 (1994) (comparing regulatory negotiation unfavorably with economic incentives).

n149 Exec Order No 12291 section 2, 3 CFR at 128-29 (cited in note 1); Exec Order No 12498 section 1, 3 CFR at 323 (cited in note 3).

n150 Exec Order No 12866 section 1(a), (b)(5)-(6), 3 CFR at 638-39 (cited in note 18).

n151 *Id* section 1(a) at 639.

n152 See Exec Order No 12898, 59 *Fed Reg* 7629 (1994). For one of the first discussions of this problem in the legal literature, see Note, *Remedying Environmental Racism*, 90 *Mich L Rev* 394 (1991). For general discussion, see Robert W. Collin, *Environmental Equity: A Law and Planning Approach to Environmental Racism*, 11 *Va Envir L J* 495 (1992); Richard J. Lazarus, *Pursuing "Environmental Justice": The Distributional Effects of Environmental Protection*, 87 *Nw U L Rev* 787 (1993); Rae Zimmerman, *Issues of Classification in Environmental Equity: How We Manage Is How We Measure*, 21 *Fordham Urban L J* 633 (1994); Rae Zimmerman, *Social Equity and Environmental Risk*, 13 *Risk Analysis* 649 (1993). For a cautionary note on these arguments, see Vicki Been, *Locally Undesirable Land Uses in Minority Neighborhoods: Disproportionate Siting or Market Dynamics?*, 103 *Yale L J* 1383 (1994). Bills have been introduced into Congress calling for attention to these issues. See S 1161, 103d Cong, 1st Sess (June 24, 1993), in 139 *Cong Rec* S8085 (June 24, 1993); HR 2105, 103d Cong, 1st Sess (May 12, 1993), in 139 *Cong Rec* H2462 (May 12, 1993).

n153 Exec Order No 12866 section 1(a), 3 CFR at 639 (cited in note 18).

n154 McGarity, *Reinventing Rationality* at 286-87 (cited in note 13).

n155 Gore, *Report of the National Performance Review* at 168 (cited in note 25).

n156 For example, the Johnston Amendment states: "In promulgating any final regulation relating to human health and safety or the environment . . . the Secretary of Environmental Protection shall publish in the Federal Register an estimate . . . of the risk to the health and safety . . . of the public . . . and the costs associated with . . . the regulation . . ." S 171 section 123(a) (cited in note 29). See also the discussion of the Johnston Amendment in Craig Gannett, *Congress and the Reform of Risk Regulation*, 107 Harv L Rev 2095, 2101-03 (1994), reviewing Breyer, *Breaking the Vicious Circle* (cited in note 6).

n157 Exec Order No 12866 section 1(b)(4), 3 CFR at 639 (cited in note 18).

n158 Id section 4(c)(1)(D) at 642.

n159 It might still be possible to rank risks while taking account of social judgments of the sort we defend below. We mean to be raising complexities about comparative risk assessment, while still recognizing that the technique has much promise.

n160 Some had emphasized this point long before the Reagan initiatives. See, for example, Laurence H. Tribe, *Policy Science: Analysis or Ideology?*, 2 Phil & Pub Aff 66, 96-97 (1972).

n161 See David W. Pearce and R. Kerry Turner, *Economics of Natural Resources and the Environment* 141-58 (Johns Hopkins, 1990).

n162 Compare the human development index and the separate discussion of distributional effects. See United Nations Development Programme, *Human Development Report 1993* 10-20 (Oxford, 1993); United Nations Development Programme, *Human Development Report 1994* at 96-100 (cited in note 124).

n163 For a good summary, see Breyer and Stewart, *Administrative Law and Regulatory Policy* at 335-43 (cited in note 70).

n164 See K.S. Shrader-Frechette, *Risk and Rationality: Philosophical Foundations for Populist Reforms* (California, 1992).

n165 See the careful discussion in Robert A. Pollak, *Regulating Risks*, 33 J Econ Lit (forthcoming March 1995), reviewing Breyer, *Breaking the Vicious Circle* (cited in note 6).

n166 See, for example, Viscusi, *Fatal Tradeoffs* at 170-73 (cited in note 125).

n167 Id at 170-76.

n168 See the discussion of the costs and benefits of AIDS and its prevention in David Charny, *Economics of Death*, 107 Harv L Rev 2056 (1994), reviewing Tomas J. Philipson and Richard A. Posner, *Private Choices and Public Health: The AIDS Epidemic in an Economic Perspective* (Harvard, 1993).

n169 For a good collection, see Sheldon Krinsky and Cominic Golding, eds, *Social Theories of Risk* (Praeger, 1992).

n170 See Clayton P. Gillette and James E. Krier, *Risk, Courts, and Agencies*, 138 U Pa L Rev 1027, 1071 (1990).

n171 See the comparison of "the rational" and "the reasonable" in John Rawls, *Political Liberalism* 48-54 (Columbia, 1993). A recent general discussion is Robert Nozick, *The Nature of Rationality* (Princeton, 1993).

n172 See *Economics and Cognitive Dissonance*, in George A. Akerlof, *An Economic Theorist's Book of Tales: Essays that Entertain the Consequences of New Assumptions in Economic Theory* (Cambridge, 1994). See also Jon Elster, *Sour Grapes: Studies in the Subversion of Rationality* 26 (Cambridge, 1983).

n173 See Shrader-Frechette, *Risk and Rationality* (cited in note 164); Slovic, 236 *Science* at 283 (cited in note 134) ("When experts judge risk, their responses correlate highly with technical estimates of annual fatalities."); Slovic, *Perception of Risk* at 121 (cited in note 139) ("Experts appear to see riskiness as synonymous with expected annual mortality.").

n174 This emphasis on sheer quantity pervades Breyer, *Breaking the Vicious Circle* (cited in note 6), though Breyer does not exclude the possibility that other factors are relevant.

n175 Jean Hampton, *The Failure of Expected Utility Theory as a Theory of Reason*, 10 *Econ & Phil* 195 (1994).

n176 See Richard H. Thaler, *Quasi Rational Economics* 137-66 (Russell Sage, 1991), for a catalogue.

n177 A candidate is "regret theory." See Graham Loomes and Robert Sugden, *Regret Theory: An Alternative Theory of Rational Choice Under Uncertainty*, 92 *Econ J* 805 (1982).

n178 Hampton, 10 *Econ & Phil* 195 (cited in note 175).

n179 Expected value approaches, based on discounting the harm by its probability, could not easily incorporate these factors; expected utility theory has much weaker requirements and might well be able to take account of these factors. See *id* at 206-10. See also the discussion of decision theory and public judgments in Sarah Lichtenstein, et al, *When Lives Are in Your Hands: Dilemmas of the Societal Decision Maker*, in Robin M. Hogarth, ed, *Insights in Decision Making* 91 (1990) (arguing that officials should ignore some aspects of individual judgments but take account of others). It is unnecessary for present purposes to sort out the complex relations among cost-benefit analysis, expected value theory, decision theory, and expected utility theory.

n180 We are using as our criterion some general version of the search for reflective equilibrium, in which particular and general judgments come into coherence. See John Rawls, *A Theory of Justice* 20-21 (Harvard, 1971).

n181 Congress has recognized this principle in past decisions. See Confirmation Hearings for Stephen G. Breyer, to be an Associate Justice of the United States Supreme Court, Senate Committee on the Judiciary, 103d Cong, 2d Sess 6 (July 12, 1994) (Miller Reporting transcript) (statement of Sen Joseph R. Biden) ("We choose to take into account social values and norms whether or not they make good, purely economic sense."). See also Confirmation Hearings for Stephen G. Breyer, to be an Associate Justice of the United States Supreme Court, Senate Committee on the Judiciary, 103d Cong, 2d Sess 42 (July 14, 1994) (Miller Reporting transcript) (statement of Sen Joseph R. Biden):

The American people have no doubt that more people die from coal dust than from nuclear reactors, but they fear the prospect of a nuclear reactor more than they do the empirical data that would suggest that more people die from coal dust, having coal-fired burners. They also know that more lives would be saved if we took that 25 percent we spend in the intensive care units in the last few months of the elderly's lives, more children would be saved. But part of our culture is that we have concluded as a culture that we are going to, rightly or wrongly, we are going to spend the money, costing more lives, on the elderly. We made that judgment.

I think it's incredibly presumptuous and elitist for political scientists to conclude that the American people's cultural values in fact are not ones that lend themselves to a cost-benefit analysis and presume that they would change their cultural values if in fact they were aware of the cost-benefit analysis. I have no doubt the more people know that more people die of cigarettes than they do of other substances but they've concluded they'd rather have the money spent on research in other areas. We make those decisions every day, and I am delighted that as a judge, you are not going to be able to take your policy prescriptions into the Court.

n182 Compare Charny, 107 Harv L Rev 2056 (cited in note 168), with Philipson and Posner, Private Choices and Public Health (cited in note 168).

n183 See Jerry L. Mashaw and David L. Harfst, *The Struggle for Auto Safety* 133-40 (Harvard, 1990), for discussion of the ignition interlock issue.

n184 See the revealing discussion by a former risk quantifier in Harry Otway, *Public Wisdom, Expert Fallibility: Toward a Contextual Theory of Risk*, in Sheldon Krinsky and Cominic Golding, eds, *Social Theories of Risk* 215 (Praeger, 1992). Otway urges that we conceive "authentic communication between experts and citizens as an integral part of the social relations of technology and the sharing of power and responsibility." *Id* at 228.

n185 K.S. Shrader-Frechette, *Risk Analysis and Scientific Method: Methodological and Ethical Problems with Evaluating Societal Hazards* 188 (Reidel, 1985).

n186 We discuss willingness to pay and other possible solutions in Part IV.G.

n187 As we will see, there is no well-specified set of criteria used by experts in ranking risks. We are attempting to set out some of the implicit understandings.

n189 See *id* at 59-72 for a lucid discussion.

n190 See the discussion of problems with the cost-per-life-saved charts in Lisa Heinzerling, *Political Science*, 62 U Chi L Rev 449, 462-63 (1995).

n191 Slovic, *Perception of Risk* at 129 (cited in note 139).

n192 *Id.*

n193 *Id.*

n194 *Id.* at 126.

n195 See generally Daniel Kahneman and Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 *Econometrica* 263 (1979). For a clear, nontechnical catalogue, see also Massimo Piattelli-Palmarini, *Inevitable Illusions: How Mistakes of Reason Rule Our Minds* (Wiley & Sons, 1994).

n196 M. Granger Morgan, *Risk Analysis and Management*, *Scientific Am* 32, 35 (July 1993).

n197 *Id.* See also Stuart Hill, *Democratic Values and Technological Choices* 55-89 (Stanford, 1992), for an optimistic account of citizens' capacities to assess risks.

n198 See generally John Doble and Jean Johnson, *Science and the Public: A Report in Three Volumes* (Kettering, 1990), a detailed study showing that people can approach risk issues quite thoughtfully, even in the presence of expert uncertainty.

In the aftermath of the unusually public deliberative process EPA employed in the ASARCO case, see text accompanying notes 295-96, one careful study surveyed residents who had attended the public hearings. The study concluded that the extent to which people were factually informed about the risks at issue did not play a significant role in their evaluation of how much risk should be tolerated. "Having or not having the facts did not seem to make much difference in how people reacted to risks." Brian N.R. Baird, *Tolerance for Environmental Health Risks: The Influence of Knowledge, Benefits, Voluntariness, and Environmental Attitudes*, 6 *Risk Analysis* 425, 434 (1986).

n199 Some of these are discussed in Slovic, *Perception of Risk* at 120-25 (cited in note 139); Carnegie Commission, *Risk and the Environment* at 88-89 (cited in note 6); William W. Lowrance, *Of Acceptable Risk: Science and the Determination of Safety* 86-94 (Kaufmann, 1976); Breyer, *Breaking the Vicious Circle* (cited in note 6). It has even been suggested that perceptions of social control over one's environment have a bearing on health and longevity, independently of the level of relevant risks. See S. Leonard Syme, *The Social Animal and Health*, *Daedalus* 79, 84-85 (Fall 1994).

n200 See Hill, *Democratic Values and Technological Choices* at 21 (cited in note 197).

n201 See Breyer, *Breaking the Vicious Circle* at 6-7 (cited in note 6).

n202 See text accompanying notes 177-84. For some notations on the complex notion of rationality, see Rawls, *Political Liberalism* at 48-54 (cited in note 171).

n203 See generally Richard H. Pildes, *The Unintended Cultural Consequences of Public Policy: A Comment on the Symposium*, 89 *Mich L Rev* 936, 958-59 (1991).

n204 Elizabeth Anderson, *Values, Risks, and Market Norms*, 17 *Phil & Pub Aff* 54, 61 (1988). See also Amartya Sen, *Freedoms and Needs: An Argument for the Primacy of Political Rights*, *New Republic* 31, 32-33 (Jan 11, 1993) ("There are deep and fundamental and intuitively understood grounds for rejecting the view that confines itself merely to checking the parity of outcomes, the view that matches death for death, happiness for happiness, fulfillment for fulfillment, irrespective of how all this death, happiness, and fulfillment comes about.").

n205 See Part III.B.

n206 See Fiorino, 9 *Risk Analysis* at 295 (cited in note 141). See also text accompanying note 145.

n207 See Elizabeth Anderson, *Value in Ethics and Economics* 168-69 (Harvard, 1993); Sen, *New Republic* at 36 (cited in note 204).

n208 See Federalist 10 (Madison), in Clinton Rossiter, ed, *The Federalist Papers* 77 (Mentor, 1961).

n209 See Hill, *Democratic Values and Technological Choices* at 112-42 (cited in note 197), for a discussion of citizen deliberation in the context of nuclear power. On the effect of deliberation on judgments, see Norman Frohlich and Joe A. Oppenheimer, *Choosing Justice: An Experimental Approach to Ethical Theory* 95-113 (California, 1992); John M. Orbell, Alphons J.C. van de Kragt, and Robyn M. Dawes, *Explaining Discussion-Induced Cooperation*, 54 *J Personality & Soc Psych* 811 (1988).

n210 See the lucid analysis of the potential relevance to regulatory policy of prospect theory, heuristics and biases, and cognitive pathologies found in Roger G. Noll and James E. Krier, *Some Implications of Cognitive Psychology for Risk Regulation*, 19 *J Legal Stud* 747 (1990); see also Viscusi, *Fatal Tradeoffs* at 101-10 (cited in note 125). Of course, experts or government policymakers might be subject to the same cognitive distortions as lay decision makers; any difference cannot be assumed, but must be demonstrated. See James E. Krier, *Risk and Design*, 19 *J Legal Stud* 781 (1990).

n211 Noll and Krier, 19 *J Legal Stud* at 754 (cited in note 210).

n212 For discussion of these difficulties, see *id* at 754-60.

n213 Fiorino, 9 *Risk Analysis* at 295 (cited in note 141).

n214 *Id*, citing J.D. Robinson, M.D. Higgins, and P.K. Bolyard, *Assessing Environmental Impacts on Health: A Role for Behavioral Science*, 4 *Envir Impact Assessment Rev* 41 (1983).

n215 See text accompanying notes 299-301.

n216 Noll and Krier, 19 J Legal Stud at 774 (cited in note 210).

n217 William A. Niskanen, Environmental Policy: A Time For Reflection, Regulation 9, 11 (No 1, 1994).

n218 See Stephen Breyer, The Economics of Aids, NY Times Book Rev 24 (Mar 6, 1994), reviewing Philipson and Posner, Private Choices and Public Health (cited in note 168), for critique of Posner's prescriptions for AIDS research funding on democratic grounds.

n219 See Daniel Hausman and Michael McPherson, Preference, Belief, and Welfare, 84 Am Econ Rev 396, 398 (1994) (arguing that in area of risk assessment, welfare should not be understood in terms of private preferences, but instead in terms of standards that emerge from processes of "rational and open deliberation").

n220 See generally Carnegie Commission, Risk and the Environment (cited in note 6); Pildes, 89 Mich L Rev at 965 (cited in note 203).

n221 See text accompanying notes 307-18.

n222 Of course, officials cannot garner the necessary information from public opinion alone; there must be more investigation into its roots. See text accompanying notes 231, 295.

n223 A point made much of in Philipson and Posner, Private Choices and Public Health (cited in note 168).

n224 See Carnegie Commission, Risk and the Environment at 89 (cited in note 6) ("We believe that these value choices should not be made covertly by unaccountable 'experts.' ").

n225 See Exec Order No 12898, 59 Fed Reg 7629 (cited in note 152).

n226 See generally Anderson, Value in Ethics and Economics (cited in note 207); Cass R. Sunstein, Incommensurability and Valuation in Law, 92 Mich L Rev 779 (1994); Richard H. Pildes, Conceptions of Value in Legal Thought, 90 Mich L Rev 1520 (1992), reviewing Martha C. Nussbaum, Love's Knowledge (Oxford, 1990); Richard H. Pildes and Elizabeth S. Anderson, Slingshot Arrows at Democracy: Social Choice Theory, Value Pluralism, and Democratic Politics, 90 Colum L Rev 2121 (1990).

n227 Compare the annual Human Development Report of the United Nations Development Programme (published by Oxford), offering disaggregated data and a general index to allow for cross-country comparisons. See Cass R. Sunstein, Well-Being and the State, 107 Harv L Rev 1303, 1319-23 (1994).

n228 Robert Nozick makes a very similar point, though through the language of utility theory, in his recent argument that decision theory, and rational choice theory more generally, must be broadened beyond the way economists and others have understood these theories to date. See Nozick, Nature of Rationality at 26-35 (cited

in note 171). Nozick argues that we must recognize the symbolic utility of acts, as well as their more familiar causal utility. An act can be important not just for the consequences it directly brings about, but also because it stands for or symbolizes a commitment to other principles and actions. Moreover, Nozick argues, as we do, that it is often the expressive component of what an action symbolizes that is important: "the symbolic connection of an action to a situation enables the action to be expressive of some attitude, belief, value, emotion, or whatever." *Id.* at 28. To those who would deny the importance to an adequate decision theory of the expressive or symbolic dimension of action, Nozick rightly says, "A large part of the richness of our lives consists in symbolic meanings and their expression, the symbolic meanings our culture attributes to things or the ones we ourselves bestow." *Id.* at 30. Indeed, Nozick concedes that his earlier political claims in Robert Nozick, *Anarchy, State, and Utopia* (Basic Books, 1974), are inadequate precisely because they fail to recognize "the importance to us of joint and official serious symbolic statement and expression of our social ties and concern . . ." Nozick, *Nature of Rationality* at 32 (cited in note 171). As he now says: "The libertarian view looked solely at the purpose of government, not at its meaning; hence, it took an unduly narrow view of purpose, too." Robert Nozick, *The Examined Life: Philosophical Meditations* 288 (Simon & Schuster, 1989).

From these principles, Nozick argues that decision theory must recognize the possibility of conflicts or trade-offs between the symbolic and causal utilities of actions. He does not make clear whether he thinks these types of utilities are commensurable, but he suggests the contrary in asserting that "symbolic utilities must be treated as a separate component of a theory of decision and not simply incorporated within existing (causal and evidential) decision theories." Nozick, *Nature of Rationality* at 34 (cited in note 171). He identifies at least one situation with perhaps important implications for public policy where symbolic, rather than causal, routes provide the key to rational choice: because certainty itself seems to have symbolic utility for us, the difference between probabilities (or risks) of 0.9 and 1.0 may be greater than that between 0.8 and 0.9. *Id.* Much of our effort here is to incorporate recognition of the importance of expressive or symbolic concerns to rational choice and decision theory into an approach to risk regulation. We do not, however, share Nozick's view that it is sensible to think in terms of a "decision utility" aggregating symbolic utility with other utilities.

n229 Note too that the stylized discussion treats "workers" as a relatively unitary group; but workers are consumers too, and many of them might be helped, on balance, by initiatives of the sort we are discussing.

n230 For discussions of the central role that such concerns for expressive harms play in constitutional law, including in the Supreme Court's recent, controversial equal protection decision involving race-conscious election districting, *Shaw v Reno*, 113 S Ct 2816 (1993), see Richard H. Pildes and Richard G. Niemi, *Expressive Harms, "Bizarre Districts," and Voting Rights: Evaluating Election-District Appearances After Shaw v. Reno*, 92 Mich L Rev 483 (1993).

n231 We borrow in the next three paragraphs from Sunstein, 92 Mich L Rev 779 (cited in note 226).

n232 Bernard Williams, *A Critique of Utilitarianism*, in J.J.C. Smart and Bernard Williams, eds, *Utilitarianism: For and Against* 108-09 (Cambridge, 1973).

n233 The mere fact that certain values are expressed through public action does not, of course, mean that those values must be endorsed. As with any other values at stake in public policy, whether expressive values ought to be endorsed in any context depends on public debate (and constitutional principles) about the legitimacy of those values.

n234 See George Tolley, Donald Kenkel, and Robert Fabian, *Valuing Health for Policy: An Economic Approach* 345-91 (Chicago, 1994).

n235 See text accompanying notes 247-74. Contrast the discussion of aggregated private judgments as opposed to deliberative outcomes in James Fishkin, *Democracy and Deliberation* (Yale, 1992).

n236 Exec Order No 12866 section 1(a), 3 CFR at 639 (cited in note 18).

n237 Compare the discussion in Carnegie Commission, *Risk and the Environment* at 7880 (cited in note 6).

n238 See Part IV.G.

n239 See Tolley, Kenkel, and Fabian, *Valuing Health for Policy* at 118-36 (cited in note 234).

n240 See text accompanying notes 268-72.

n241 See Carnegie Commission, *Risk and the Environment* at 88-90 (cited in note 6). Compare United Nations Development Programme, *Human Development Report 1994* (cited in note 124) (doing something of this kind to compile human-development index).

n242 See the discussion in Sunstein, 107 *Harv L Rev* at 1323-27 (cited in note 227).

n243 See Slovic, *Perception of Risk* at 151 (cited in note 139), discussing H. Bohnenblust and T. Schneider, *Risk Analysis: Can It Be Improved by Formal Models?*, Paper Presented at the Annual Meeting of the Society for Risk Analysis, Knoxville, Tenn (1984). Slovic suggests that the model be adapted to consider additional factors.

n244 See Carnegie Commission, *Risk and the Environment* at 89-90 (cited in note 6).

n245 See text accompanying notes 298-99.

n246 See Lubbers, 43 *Duke L J* at 1172 (cited in note 136). Reason for caution emerges from Eric R.A.N. Smith, *The Unchanging American Voter* 219-21 (California, 1989).

n247 See Viscusi, *Fatal Tradeoffs* at 34-50 (cited in note 125).

n248 See *id* at 17-74.

n249 Food and Drug Administration, *Regulatory Impact Analysis of the Final Rules to Amend the Food Labeling Regulations*, 58 *Fed Reg* 2927, 2939 (1993).

n250 See Office of Management and Budget, Regulatory Program 1990-1991 at xx (cited in note 52). The Administrative Conference reached a similar conclusion, though more cautiously. See Recommendations of the Administrative Conference Regarding Administrative Practice and Procedure and Correction, Recommendation No 88-7, 53 Fed Reg 39585, 39586-87 (1988).

n251 See Ted R. Miller, Willingness to Pay Comes of Age: Will the System Survive?, 83 Nw U L Rev 876, 886-89 (1989).

n252 Regulatory Impact Analysis, 58 Fed Reg 2927 (cited in note 249).

n253 Id at 2939-40. These numbers were updated for inflation.

n254 Food and Drug Administration, Lead-Soldered Food Cans, 58 Fed Reg 33860, 33869 (1993).

n255 Federal Aviation Administration, Emergency Locator Transmitters, 59 Fed Reg 32050 (1994).

n256 Federal Aviation Administration, Airworthiness Standards; Emergency Exit Provisions for Normal, Utility, Acrobatic, and Commuter Category Airplanes, 59 Fed Reg 25766, 25771 (1994). But the willingness-to-pay idea has not been uniformly accepted. OSHA and the Department of Transportation have shown ambivalence about willingness to pay as a criterion, with Transportation using \$ 2.5 million as a benchmark. Coast Guard, Recreational Boating Safety Equipment Requirements, 58 Fed Reg 41602, 41607 (1993). See also NHTSA's refusal to place a value on life. National Highway Traffic Safety Administration, Federal Motor Vehicle Safety Standards; Lamps, Reflective Devices, and Associated Equipment, 58 Fed Reg 52021, 52024 (1993). On OSHA, compare Occupational Safety and Health Administration, Control of Hazardous Energy Sources (Lockout/Tagout), 58 Fed Reg 16612, 16614-16 (1994) (describing cost-benefit analysis as inconsistent with statute), with Occupational Safety and Health Administration, Safety Standards for Stairways and Ladders Used in the Construction Industry, 55 Fed Reg 47660 (1990) (examining willingness to spend as illustrative). On Transportation, compare The price of life, *Economist* 74 (Dec 4, 1993) (report that National Highway Traffic Safety Administration looks to "cost per fatal equivalent, (a weighted sum of deaths and injuries prevented)"), with Recreational Boating Safety Equipment Requirements, 58 Fed Reg at 41607, and Coast Guard, Emergency Position Indicating Radio Beacons and Visual Distress Signals for Uninspected Vessels, 59 Fed Reg 8100, 8102 (1994) (using willingness to pay). The Consumer Product Safety Commission has refused to ascribe a particular monetary value to life, though it has used \$ 2 million for purposes of analysis. Consumer Product Safety Commission, Infant Cushions and Pillows Filled with Foam, Plastic Beads or Other Granular Material, 57 Fed Reg 27912, 27915 (1992).

n257 See, for example, Amartya Sen, Internal Consistency of Choice, 61 *Econometrica* 495 (1993). The argument that rational choices need not exhibit transitivity, particularly when public policy-making is involved, is developed in Pildes and Anderson, 90 *Colum L Rev* at 2175 (cited in note 226). Pildes and Anderson further argue that, because rational choices in the policy-making context need not exhibit transitivity, Arrow's Theorem is largely irrelevant to the normative analysis of democratic institutions. Empirical confirmation of all this can be found in Elliott Aronson, *The Social Animal* 124-25 (W.M. Freeman, 7th ed 1995) (discussing an experiment in which the choice between A and B was materially affected by the introduction of a new, third, unattractive choice C).

n258 See, for example, Sen, 61 *Econometrica* 495 (cited in note 257).

n259 *Id* at 498-503; Aronson, *The Social Animal* at 124-25 (cited in note 257).

n260 Evidence of problems in taking particular decisions to reflect global valuations is provided by the sharp disparity between willingness to pay and willingness to accept, see Cass R. Sunstein, *Endogenous Preferences*, *Environmental Law*, 22 *J Legal Stud* 217, 22629 (1993). It is also shown by the substantial disparities in the relevant studies. See Viscusi, *Fatal Tradeoffs* at 69 (cited in note 125) (showing "implicit" valuations ranging from \$ 100,000 to \$ 15.6 million within the labor market); *id* at 66 (showing valuations outside the labor market ranging from \$ 70,000 to \$ 4 million); *id* at 52-54 (showing valuations ranging from \$ 600,000 to \$ 16.2 million). See also the discussion of context in Hill, *Democratic Values and Technological Choices* at 69-70 (cited in note 197).

n261 See also Charny, 107 *Harv L Rev* at 2065 (cited in note 168) ("A person might accept \$ 10,000 to incur a 1% risk of being killed--does that mean that he would give up his life for \$ 1 million, or accept \$ 500,000 for a 50% chance of being killed? Of course not.").

n262 Sunstein, 22 *J Legal Stud* at 225-27 (cited in note 260).

n263 See Anderson, *Value in Ethics and Economics* at 210-12 (cited in note 207); Sunstein, 22 *J Legal Stud* at 253 (cited in note 260).

n264 Tolley, Kenkel, and Fabian, *Valuing Health for Policy* at 318 (cited in note 234). For detailed examination of the difference between individual and social perspectives on health problems, see the recent study of the external costs of smoking and drinking in Willard G. Manning, et al, *The Costs of Poor Health Habits* (Harvard, 1991); Willard G. Manning, et al, *The Taxes of Sin: Do Smokers and Drinkers Pay Their Way*, 261 *JAMA* 1604 (1989).

n265 See Anderson, *Value in Ethics and Economics* at 210-12 (cited in note 207); Sunstein, 22 *J Legal Stud* at 253 (cited in note 260). Note, however, that altruism is reflected in contingent valuation studies, see Tolley, Kenkel, and Fabian, *Valuing Health for Policy* at 318 (cited in note 234), that some valuation studies make a large effort to give people adequate information, see *id* at 278-99, and that democratic judgments can reflect distortions of their own.

n266 See Tolley, Kenkel, and Fabian, *Valuing Health for Policy* at 290-94 (cited in note 234); Symposium, *Contingent Valuation*, *J Econ Persp* 3 (Fall 1994).

n267 *Id* at 187-89; Peter A. Diamond and Jerry A. Hausman, *Contingent Valuation: Is Some Number Better than No Number?*, *J Econ Persp* 45, 49-54 (Fall 1994).

n268 *Id* at 323-44; Viscusi, *Fatal Tradeoffs* at 51-74 (cited in note 125).

n269 See discussion of "state of the art health values" in Tolley, Kenkel, and Fabian, *Valuing Health for*

Policy at 323-44 (cited in note 234).

n270 Id at 341-42.

n272 Id at 99.

n273 Id at 89. The dollar figures are mean bid values, and relief means a "mild day."

n274 An additional familiar problem with willingness-to-pay measures, whether hypothetical or actual, is the empirical difference from willingness-to-accept measures and the conceptual uncertainty about which measure--offer price or asking price--should be deemed the more reliable indicator of value. To some extent, this effect is a product of distribution-of-wealth considerations already mentioned, but it stems from other forces as well. See generally Daniel Kahneman, Jack L. Knetsch, and Richard H. Thaler, *The Endowment Effect, Loss Aversion, and Status Quo Bias*, *J Econ Persp* 193, 194 (Winter 1991). In the field of health, willingness-to-accept valuations have tended to be "appreciably larger" than willingness-to-pay ones. Tolley, Kenkel, and Fabian, *Valuing Health for Policy* at 74 (cited in note 234). Compare Charny, 107 *Harv L Rev* at 2067 (cited in note 168) (arguing that enormous disparity likely exists between what potential AIDS victims appear through behavior to be willing to pay to eliminate the risk versus what they would demand ex ante for being subjected to the risk). Advocates of contingent valuation tend to assert that willingness-to-pay valuations are "more realistic" under most circumstances without explaining what "more realistic" means or offering convincing evidence in support. Id. Some studies, however, do suggest that in repeated experiments, offer and asking prices converge a fair amount, but still not completely, as subjects gain more familiarity with the valuation task. David S. Brookshire and Don L. Coursey, *Measuring the Value of a Public Good: An Empirical Comparison of Elicitation Procedures*, 77 *Am Econ Rev* 554 (1987).

n275 The measure was first described in Richard Zechauser and Donald Shepard, *Where Now for Saving Lives?*, 40 *L & Contemp Probs* 5 (1976).

n276 An important work in the development of these multidimensional measures is Robert M. Kaplan and James W. Bush, *Health-Related Quality for Life Measurement of Evaluation Research and Policy Analysis*, 1 *Health Psych* 61 (1982). For a general survey of QALY approaches, see George W. Torrance, *Measurement of Health State Utilities for Economic Appraisal: A Review*, 5 *J Health Econ* 1 (1986). For a recent general discussion, see Tolley, Kenkel, and Fabian, *Valuing Health for Policy* at 118-36 (cited in note 234).

n277 For an argument supporting this view, see Michael Walzer, *Spheres of Justice: A Defense of Pluralism and Equality* 64-94 (Basic Books, 1983).

n278 See text accompanying notes 295-96, 307-18.

n279 Breyer, *Breaking The Vicious Circle* at 59-63 (cited in note 6).

n280 Id at 59-60.

n281 Id at 60.

n282 Lubbers, 43 Duke L J at 1178 (cited in note 136).

n283 See Heinzerling, 62 U Chi L Rev at 471-72 (cited in note 190); David A. Dana, Setting Environmental Priorities: The Promise of a Bureaucratic Solution, 74 BU L Rev 365 (1994), reviewing Breyer, Breaking the Vicious Circle (cited in note 6). See also note 174 and accompanying text.

n284 See Stephen Breyer, Regulation and its Reform 155 (Harvard, 1982).

n285 Dana, 74 BU L Rev at 381 (cited in note 283).

n286 For related points about the pitfalls of entirely technocratic approaches to risk regulation, see Donald T. Hornstein, Reclaiming Environmental Law: A Normative Critique of Comparative Risk Analysis, 92 Colum L Rev 562 (1992).

n287 Carnegie Commission, Risk and the Environment at 83 (cited in note 6) ("After careful deliberation we concluded that centralizing risk assessment in a single entity would be likely to diminish substantially the healthy diversity of views about risk that is found in our current multiagency system.").

n288 See Breyer, Breaking the Vicious Circle at 49-51 (cited in note 6).

n289 See Tolley, Kenkel, and Fabian, Valuing Health for Policy at 341 (cited in note 234).

n290 See Dana, 74 BU L Rev at 383 (cited in note 283).

n291 See text accompanying notes 201-03.

n292 See Breyer, Breaking the Vicious Circle at 33 (cited in note 6). See also Breyer, Regulation and its Reform at 155 (cited in note 284).

n293 See Carnegie Commission, Risk and the Environment at 75-82 (cited in note 6).

n294 See Part IV.F.

n295 Robert B. Reich, Public Administration and Public Deliberation: An Interpretive Essay, 94 Yale L J 1617, 1632-41 (1985).

n296 Id at 1641.

n297 See, for example, Hill, *Democratic Values and Technological Choices* at 18-24 (cited in note 197).

n298 The discussion in this and the following paragraph is based on information in Doble and Johnson, *Science and the Public* (cited in note 198). A brief summary of the results of the Public Agenda Foundation studies can be found in Carnegie Commission, *Risk and the Environment* at 92-93 (cited in note 6).

n299 Morgan, *Scientific Am* at 35 (cited in note 196).

n300 See Lubbers, 43 *Duke L J* at 1172 (cited in note 136).

n301 See Frank J. Macchiarola and Joseph G. Diaz, *The 1990 New York City Districting Commission: Renewed Opportunity for Participation in Local Government or Race-Based Gerrymandering?*, 14 *Cardozo L Rev* 1175, 1221-24 (1993).

n302 See Paul Slovic, James H. Flynn, and Mark Layman, *Perceived Risk, Trust, and the Politics of Nuclear Waste*, 254 *Science* 1603, 1603 (Dec 13, 1991).

n303 *Id* at 1604.

n304 *Id* at 1606.

n305 *Id* at 1607. See generally Gerald Jacob, *Site Unseen: The Politics of Siting a Nuclear Waste Repository* 164 (Pittsburgh, 1990) ("While vast resources have been expended on developing complex and sophisticated technologies, the equally sophisticated political processes and institutions required to develop a credible and legitimate strategy for nuclear waste management have not been developed.").

n306 See the discussion of public involvement in Carnegie Commission, *Risk and the Environment* at 79-83 (cited in note 6).

n307 See Tolley, Kenkel, and Fabian, *Valuing Health for Policy* at 353 (cited in note 234), discussing J.D. Golenski and S.R. Blum, *The Oregon Medicaid Priority Setting Project* (Bioethics Consultation Group for the Medical Resources Foundation of Oregon, 1989).

n308 We discuss the Oregon case only for its relation to that issue, and not as a component of health-care policy, a question that raises independent complexities.

n309 Jean I. Thorne, *The Oregon Plan Approach to Comprehensive and Rational Health Care*, in Martin A. Strosberg, et al, eds, *Rationing America's Medical Care: The Oregon Plan and Beyond* 24, 28-29 (Brookings Institute, 1992).

n310 Michael J. Garland, *Rationing in Public: Oregon's Priority-Setting Methodology*, in Martin A. Strosberg, et al, eds, *Rationing America's Medical Care: The Oregon Plan and Beyond* 37, 45 (Brookings

Institute, 1992).

n311 Id at 44.

n312 Id at 46-47.

n313 Id at 40.

n314 Id at 48.

n315 Id at 39.

n316 Id.

n317 See Tolley, Kenkel, and Fabian, Valuing Health for Policy at 352-57 (cited in note 234); David C. Hadorn, Setting Health Care Priorities in Oregon: Cost-effectiveness Meets the Rule of Rescue, 265 JAMA 2218 (1991).

n318 Ron L. Wyden, Why I Support the Oregon Plan, in Martin A. Strosberg, et al, eds, Rationing America's Medical Care: The Oregon Plan and Beyond 115, 118 (Brookings Institute, 1992) (describing support for plan from approximately ninety labor, consumer, senior citizen, and health groups); Thorne, The Oregon Plan Approach at 29 (cited in note 309) ("The work of the commission was an example of citizen involvement in government at its best.").

n319 See generally Richard A. Harris and Sidney M. Milkis, The Politics of Regulatory Change: A Tale of Two Agencies (Oxford, 1989) (chronicling the influence of ideas about participatory democracy in the social regulation that emerged in the 1970s and noting some of the difficulties of institutionalizing this approach).

n320 See Gillette and Krier, 138 U Pa L Rev at 1107 (cited in note 170) ("those who propose increased democratization of risk management will have to confront the fact of democracy's historic reliance on trial and error as a means of resolving uncertainty in the course of making policy"). EPA has started to take into account the different structural features of different risk problems. In its reports applying the techniques of relative risk assessment, EPA study committees have characterized the most pressing "high risk" problems precisely as those with large geographic scale, some degree of irreversible effects, and slow response time for mitigation efforts. See Environmental Protection Agency, Reducing Risk: Setting Priorities and Strategies for Environmental Protection 13-14 (1990).

n321 The term comes from the title of the influential book, Osborne and Gaebler, Reinventing Government (cited in note 25).

n322 See generally Gore, Report of the National Performance Review (cited in note 25).

n323 See, for example, Office of Management and Budget, Regulatory Program 19901991 at 3-41 (cited in note 52).

n324 Exec Order No 12866 section 1(b)(2), 3 CFR at 639 (cited in note 18).

n325 Id section 1(b)(3) at 639.

n326 Id section 1(b)(5) at 639.

n327 Id section 1(b)(8) at 639.

n328 Id section 1(b)(10) at 640.

n329 Id section 1(b)(12) at 640.

n330 In this Section, we draw on Cass R. Sunstein, *Democratizing America Through Law*, 25 *Suffolk L Rev* 949 (1991), though we have made a large number of changes in, and additions to, the presentation.

n331 Hahn and Hird, 8 *Yale J Reg* at 253 (cited in note 9), contains an estimate of \$ 44 billion; for references to other studies, and a suggestion that this is far too low, see *The Total Cost of Regulation?*, Regulation 23-25 (Summer 1991). In the late 1980s, the Office of Management and Budget estimated between \$ 50 and \$ 150 billion, see Office of Management and Budget, *Regulatory Program of the United States Government*, April 1, 1987 -March 31, 1988 xii (US GPO, 1989). For an estimate of as high as \$ 400 billion, see Hopkins, 2 *J Reg & Soc Costs* at 25 table 2 (cited in note 7).

n332 Office of Management and Budget, *Regulatory Program 1987-1988* at 6 (cited in note 331), and citations therein. The costs and benefits of airline deregulation are not entirely uncontroversial. See Laurence E. Gesell and Martin T. Farris, *Airline Deregulation: An Evaluation of Goals and Objectives*, 21 *Transp L J* 105 (1992).

n333 Office of Management and Budget, *Regulatory Program 1987-1988* at 6 (cited in note 331).

n334 *Budget of the United States Government, Fiscal Year 1992*, US Office of Management and Budget, Part 4 at 7, 10 (1991).

n335 See Henry G. Grabowski and John M. Vernon, *The Regulation of Pharmaceuticals: Balancing the Benefits and Risks* 37-43 (AEI, 1983).

n336 See Mashaw and Harfst, *The Struggle for Auto Safety* at 235 (cited in note 183).

n337 See Robert W. Crandall, et al, *Regulating the Automobile* 37, 143 (Brookings Institute, 1986).

n338 See T.H. Tietenberg, Emissions Trading: an exercise in reforming pollution policy 41-45 (Resources Future, 1985).

n339 See, for example, Clean Air Act, 42 USC section 7411(a)(1) (1988 & Supp 1992); Clean Water Act, 33 USC section 1316(a)(1) (1988 & Supp 1992).

n340 Matthew L. Wald, Risk-Shy Utilities Avoid Trading Emission Credits, NY Times D2 (Jan 25, 1993).

n341 There are other sources of inefficiency as well. BAT strategies require all new industries to adopt costly technology and allow more lenient standards to be imposed on existing plants and industries. Through this route, BAT strategies actually penalize new products, thus discouraging investment and perpetuating old, dirty technology. The result is inefficiency in investment strategies, in innovation, and even in environmental protection.

Such strategies also fail to encourage new pollution-control technology and indeed serve to discourage it by requiring its adoption for no financial gain. Under the BAT approach, a company that innovates in this area will simply have to invest more in pollution control. It will be punished rather than rewarded for the development of new control technology. BAT strategies are also expensive to enforce, imposing on EPA and OSHA a significant monitoring burden.

Additional inefficiency arises because BAT approaches are focused on the technology at the end of the pipe. This addresses symptoms rather than causes of pollution. For example, sulfur dioxide emissions (the major source of acid rain) are controlled by forcing coal-fired power plants to adopt costly "scrubbing" strategies. A much cheaper method of control is to encourage companies to switch to cleaner coal.

n342 For a discussion of the problems with the old Clean Air Act, see Bruce A. Ackerman and William T. Hassler, Clean Coal/Dirty Air: or How the Clean Air Act Became a Multibillion-Dollar Bail-Out for High-Sulfur Coal Producers and What Should Be Done About It 30-33, 145 n 19 (Yale, 1981).

n343 42 USC section 9607(a) (1988).

n344 See E. Donald Elliott, Superfund: EPA Success, National Debacle?, Nat Resources & Envir 11, 13 (Winter 1992).

n345 See, for example, Table 5.

n346 See Richard B. Stewart, Madison's Nightmare, 57 U Chi L Rev 335 (1990).

n347 Two examples are Ackerman and Hassler, Clean Coal/Dirty Air (cited in note 342), and R. Shep Melnick, Regulation and the Courts: The Case of the Clean Air Act (Brookings Institute, 1983).

n348 See Bruce A. Ackerman and Richard B. Stewart, Reforming Environmental Law: The Democratic Case for Market Incentives, 13 Colum J Envir L 171, 174 (1988).

n349 See Jonathan H. Adler, Clean Fuels, Dirty Air, in Michael S. Greve and Fred L. Smith, Jr., eds, *Environmental Politics: Public Costs, Private Rewards* 19, 28-29 (Praeger, 1992). Ends favored by parochial interests also include governmentally compelled use of coal "scrubbers," which are helpful to eastern coal though not necessarily to air quality. The use of already-clean coal might well be better. See Ackerman and Hassler, *Clean Coal/Dirty Air* at 66-68 (cited in note 342).

n350 J.P. Pierce, et al, Trends in Cigarette Smoking in the United States: Educational Differences are Increasing, 261 *JAMA* 56 (1989). Note, however, the recent finding that the percentage of white women who smoke has risen from 25 percent to 27 percent between 1987 and 1992, whereas the percentage of black women who smoke dropped from 22 percent to 6 percent in the same period. *Health Report, Time* 38 (Nov 14, 1994). Black women are of course poorer and less well educated as a group than white women.

n351 See Cass R. Sunstein, *Administrative Substance*, 1991 *Duke L J* 607, 638-39.

n352 See W. Kip Viscusi, *Smoking: Making the Risky Decision* (Oxford, 1993).

n353 Tolley, Kenkel, and Fabian, *Valuing Health for Policy* at 376-78 (cited in note 234).

n354 *Id* at 376-77.

n355 *Id* at 376-78.

n356 See Exec Order No 12866 section 1(b)(3), 3 CFR at 639 (cited in note 18).

n357 These points are well discussed in Susan Rose-Ackerman, *Progressive Law and Economics--And the New Administrative Law*, 98 *Yale L J* 341, 356 (1988).

n358 Exec Order No 12866 section 1(b)(3), 3 CFR at 639 (cited in note 18).

n359 See Peter Asch, *Consumer Safety Regulation: Putting A Price on Life and Limb* 4850 (Oxford, 1988); Rose-Ackerman, 98 *Yale L J* at 356 (cited in note 357).

n360 There are, however, many cases in which companies compete over safety, and in that sense the market often works as an effective check on dangerous products.

n361 See George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 *Q J Econ* 488 (1970).

n362 See W. Kip Viscusi, Wesley A. Magat, and Joel Huber, *Informational regulation of consumer health risks: an empirical evaluation of hazard warnings*, 17 *Rand J Econ* 351 (1986); W. Kip Viscusi and Charles J. O'Connor, *Adaptive Responses to Chemical Labeling*, 74 *Am Econ Rev* 942 (1984); W. Kip Viscusi and Wesley A. Magat, *Learning About Risk: Consumer and Worker Responses to Hazard Information* (Harvard, 1987).

n363 See John Morrall, A Review of the Record, Regulation 25, 29-34 (Nov/Dec 1986).

n364 Some of this is undoubtedly a product of heuristics of various sorts, discussed in text accompanying notes 210-11. But more information could help overcome some of the relevant biases.

n365 15 USC sections 1331 et seq (1988 & Supp 1992).

n366 21 USC sections 301 et seq (1988 & Supp 1992).

n367 15 USC sections 2601 et seq (1988 & Supp 1992).

n368 21 USC section 343 (o)-(p) (1988 & Supp 1992).

n369 29 section CFR 1910.1200(g) (1993).

n370 For general discussions of warning standards, see Viscusi, Magat, and Huber, 17 Rand J Econ 351 (cited in note 362); Viscusi and O'Connor, 74 Am Econ Rev 942 (cited in note 362).

n371 42 USC sections 9601 et seq (1988 & Supp 1992).

n372 United States General Accounting Office, Report to the Congress: Toxic Chemicals: EPA's Toxic Release Inventory is Useful but Can Be Improved 2-4 (US GPO, 1991).

n373 Id at 24-25.

n374 Food Safety and Inspection Service, Nutritional Labeling of Meat and Poultry Products, 56 Fed Reg 60, 302 (1991). The final regulatory impact analysis can be found at 58 Fed Reg 2927 (cited in note 249).

n375 58 Fed Reg 44030 (1993), codified at 21 CFR sections 101 et seq (1994).

n376 W. Kip Viscusi, Product-Risk Labeling: A Federal Responsibility 72-74 (AEI, 1993).

n377 See Breyer, Breaking the Vicious Circle at 56 (cited in note 6). A careful and detailed study is Peter Menell, *Ecoinformation* (forthcoming 1995). Menell shows a range of problems with informational strategies, including interest-group pressures on the information that is compiled, and concludes that economic incentives are preferable since they carry better information via the price signal. We think that this conclusion is too simple, in part because use of the price mechanism as a true cost-internalizing device requires government itself to compile and use information.

n378 Slovic, 13 Risk Analysis at 675 (cited in note 143).

n379 The discussion that follows is based on M. Granger Morgan, et al, *Communicating Risks to the Public*, 26 *Envir Sci Tech* 2048 (1992).

n380 *Id.* at 2052.

n381 *Id.* The permanent contamination figure is from written surveys; the other figures are based on interviews.

n382 *Id.*

n383 Morgan, *Scientific Am* at 40 (cited in note 196).

n384 Morgan, et al, 26 *Envir Sci Tech* at 2054 (cited in note 379).

n385 The study is reported in Emilie Roth, et al, *What Do We Know About Making Risk Comparisons?*, 10 *Risk Analysis* 375, 380 (1990).

n386 See, for example, Daniel Kahneman, Jack L. Knetsch, and Richard H. Thaler, *Experimental Tests of the Endowment Effect and the Coase Theorem*, 98 *J Pol Econ* 1325, 1342-46 (1990).

n387 Beth E. Meyerowitz and Shelly Chaiken, *The Effect of Message Framing on Breast Self-Examination, Attitudes, Intentions, and Behavior*, 52 *J Personality & Soc Psych* 500 (1987).

n388 Marti Hope Gonzales, Elliot Aronson, and Mark A. Costanzo, *Using Social Cognition and Persuasion to Promote Energy Conservation: A Quasi-Experiment*, 18 *J Applied Soc Psych* 1049 (1988).

n389 *Id.*

n390 See text accompanying notes 210-11.

n391 See Aronson, *The Social Animal* at 85-92, 175-245 (cited in note 257).

n392 *Id.* at 91-92.

n393 *Id.* See also Lawrence Lessig, *The Regulation of Social Meaning*, 62 *U Chi L Rev* (forthcoming Summer 1995).

n394 See Aronson, *The Social Animal* at 237-42 (cited in note 257), for a series of interesting remarks on the relation between background beliefs and regulatory problems.

n395 Compare the discussion of the confusion induced by California's Proposition 65, in W. Kip Viscusi, *Predicting the Effects of Food Cancer Warnings on Consumers*, 43 *Food Drug Cosmetic L J* 283 (1988).

n396 See Lubbers, 43 *Duke L J* at 1171 (cited in note 136). See also the discussion of the Clinton Administration's proposals for reforming the Clean Water Act in text accompanying notes 429-36.

n397 See Lubbers, 43 *Duke L J* at 1170 (cited in note 136).

n398 See Breyer, *Regulation and its Reform* at 164-71 (cited in note 284). A Coasian qualification is necessary here: Sometimes the apparent victim of the harmful conduct is in the best position to avoid the harm, and in such cases it is possible to say that the apparent victim should be charged with taking preventive or remedial measures. An example would be a case in which workers could cheaply prevent the costs of a chemical in the workplace by wearing masks or clothing that prevent the harm from occurring. Of course, there may be moral or other grounds for deciding not to place the responsibility to avoid harm on the cheapest cost avoider.

n399 Here we generalize from the helpful discussion in Ackerman and Stewart, 13 *Colum J Envir L* 171 (cited in note 348).

n400 The most controversial application would be civil rights, but some have taken the proposal seriously even there. See Jerry L. Mashaw, *Implementing Quotas*, 79 *Georgetown L J* 1769 (1991).

n401 A study by the Organization for Economic Co-operation and Development found over fifty environmental charges among fourteen of its members. See Lester R. Brown, Christopher Flavin, and Sandra Postel, *Saving the Planet: How to Shape an Environmentally Sustainable Global Economy* 143 (Norton, 1991).

n402 *Id.*

n403 *Id.* at 146.

n404 *Id.* at 148.

n405 The suggested carbon tax would generate an estimated \$ 120 billion. *Id.* at 145.

n406 W. Kip Viscusi, *Reforming Products Liability* 178 (Harvard, 1991).

n407 *Id.* at 178-79.

n408 The point is nicely treated in Ackerman and Stewart, 13 *Colum J Envir L* 171 (cited in note 348), and we draw on their discussion here.

n409 But see Heinzerling, 62 *U Chi L Rev* at 471-72 (cited in note 190), for cautionary notes.

n410 See Environmental Protection Agency, Emissions Trading Policy Statement; General Principles for Creation, Banking and Use of Emission Reduction Credits, 51 Fed Reg 43814 (1986).

n411 42 USC section 7503(c) (1988 & Supp 1992).

n412 See outline of emissions trading program in Tietenberg, Emissions Trading at 7-9 (cited in note 338).

n413 See Daniel J. Dudek and John Palmisano, Emissions Trading: Why is this Thoroughbred Hobbled?, 13 Colum J Envir L 217 (1988).

n414 Robert W. Hahn and Gordon L. Hester, Marketable Permits: Lessons for Theory and Practice, 16 Ecol L Q 361, 374 table 2 (1989).

n415 Id at 374 & table 2.

n416 Id at 375.

n417 Id at 374 table 2.

n419 See 40 CFR section 80.20 (1993).

n420 Environmental Protection Agency, Costs and Benefits of Reducing Lead in Gasoline, Final Regulatory Impact Analysis viii-31 (1985). See also Hahn and Hester, 16 Ecol L Q at 387-88 (cited in note 414).

n421 On ozone depletion, see Environmental Protection Agency, Protection of Stratospheric Ozone, 53 Fed Reg 30566 (1988); on water pollution, see Robert W. Hahn and Robert N. Stavins, Incentive-Based Environmental Regulation: A New Era from an Old Idea?, 18 Ecol L Q 1, 18-19 (1991). See also text accompanying notes 429-36.

n422 Clean Air Act Amendments of 1990 section 406, Pub L No 101-549, 104 Stat 2399, 263233, codified at 42 USC section 7651 note (Supp 1993).

n423 Clean Air Act Amendments of 1990 sections 401(b), 404-05, 104 Stat at 2585, 2592-613, codified at 42 USC sections 7651(b), 7651c, 7651d (Supp 1993).

n424 Clean Air Act Amendments of 1990 section 404(f)(2), 104 Stat at 2602-03, codified at 42 USC section 7651c(f)(2) (Supp 1993).

n425 Clean Air Act Amendments of 1990 section 403, 104 Stat at 2589, codified at 42 USC section 7651b (Supp 1993).

n426 42 USC section 7651b(b).

n427 Clean Air Act Amendments of 1990 section 416(d), 104 Stat at 2629, codified at 42 USC section 7651o(d) (Supp 1993).

n428 Utilities gobble up air-pollution credits, Chi Trib section 3 at 3 (Mar 30, 1994).

n429 President Clinton's Clean Water Initiative: Analysis of Benefits and Costs, Environmental Protection Agency 800-R-94-002 (Mar 1994).

n430 Thus, EPA projects that its proposals for nonpoint source controls will produce measurable water-quality improvements in 7.1 million lake acres and 156,200 river miles; or that these proposals have a "high or medium" likelihood of producing measurable improvement in 52 percent of impaired or threatened rivers and 63 percent of lakes. *Id* at ES-7. Similarly, the proposals for addressing combined sewer overflows are estimated to reduce the average number of overflows from fifty to eighty events per year to approximately three to four; this would reduce the number of water-quality violations for each system from one hundred to two hundred days per year to ten to twenty, and reduce by 35 to 65 percent the annual discharges of various chemicals and toxic substances. *Id* at 23-24.

n431 *Id* at ES-9 to ES-10, 48-58.

n432 *Id* at viii.

n433 *Id* at 46.

n434 *Id* at 47.

n435 *Id* at ES-1.

n436 *Id*. The document refers to the larger figure that current law would require as being based on a "stringent interpretation" of current law. *Id*.

n437 See James E. Krier, Marketable Pollution Allowances, 25 U Toledo L Rev 449, 452-53 (1994).

n438 For a discussion of recent FCC experiences, see John McMillan, Selling Spectrum Rights, J Econ Perspectives 145 (Summer 1994).

n439 See text accompanying notes 257-65.

n440 See generally Peter S. Menell, Beyond the Throwaway Society: An Incentive Approach to Regulating Municipal Solid Waste, 17 Ecol L Q 655, 687-90 (1990).

n441 But see Mashaw, 79 Georgetown L J 1769 (cited in note 400); the idea is proposed by way of satire in Derrick Bell, *And We Are Not Saved: The Elusive Quest for Racial Justice* 88-89 (Basic Books, 1987).

n442 See Krier, 25 U Toledo L Rev at 454 (cited in note 437).

n443 See Hornstein, 92 Colum L Rev at 592-98 (cited in note 286); Carol M. Rose, *Environmental Lessons*, 27 Loyola L Rev 1023, 1030 (1994).

n444 Krier, 25 U Toledo L Rev at 454 (cited in note 437).

n445 See Matthew L. Wald, *Eastern Utilities in Unusual Pact: A Smog Tradeoff*, NY Times A1, B2 (Mar 16, 1994). For more information on initial experiments with trading permits to discharge nitrogen oxide, see *Northeast Utilities Propose NOx Trade in First Test of Interstate Swap Scheme*, 24 Envir Rep (BNA) 1998 (Mar 25, 1994); *New Initiative Will Allow Companies to Trade NOx Emission Credits, EPA Says*, 24 Envir Rep (BNA) 282-83 (June 11, 1993).

n446 See Howard Latin, *Ideal Versus Real Regulatory Efficiency: Implementation of Uniform Standards and "Fine-Tuning" Regulatory Reforms*, 37 Stan L Rev 1267, 1331-32 (1985).

n447 See Exec Order No 12866 sections 1(b)(9), 4(e), 3 CFR at 640, 643-44 (cited in note 18). See also the remarks of Sally Katzen, Administrator of the Office of Information and Regulatory Affairs, in *Colloquium*, 8 Admin L J Am U at 53 (cited in note 18).

n448 See *Colloquium*, 8 Admin L J Am U at 53 (cited in note 18).

n449 See *Report on Executive Order No 12866*, 59 Fed Reg at 24290 (cited in note 28).

n450 See Stewart, 57 U Chi L Rev 335 (cited in note 346).