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A Behavioral Critique of Command-and-Control Environmental Regulation

Molly Walker Wilson*

*Virginia School of Law

A BEHAVIORAL CRITIQUE OF COMMAND-AND-CONTROL ENVIRONMENTAL REGULATION

Molly J. Walker Wilson[*]

I. INTRODUCTION

The goals of environmental regulation were first spelled out in the National Environmental Policy Act ("NEPA"), inaugurated by President Richard Nixon on January 1, 1970. This initial piece of environmental legislation described "the continuing policy of the Federal Government . . . to use all practicable means and measures . . .to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans."[1] Since the inception of the NEPA more than two decades ago, more specific environmental goals have been set and legislated, giving rise to the command-and-control system of environmental regulation that exists today. Following the NEPA, Congress instituted the Clean Air Act ("CAA"), the Clean Water Act ("CWA"), the Resource Conservation and Recovery Act ("RCRA"), and the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"). Despite literally thousands of pages of regulation, critics have questioned the effectiveness and efficiency of the provisions specified under these acts.[2]

Much of the criticism stems from the failure of the environmental regulatory system to attain many of the goals specified at the outset. For instance, in 1994, nine years after water quality standards were set under the CWA, 40% of evaluated waters were not in

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* J.D., University of Virginia School of Law. Ph.D. Psychology, University of Virginia School of Arts and Sciences.

1. 42 U.S.C. § 4331(a) (2005).

2. *See generally* Michael P. Vandenbergh, *The Social Meaning of Environmental Command-and-control,* 20 VA. ENVTL. L.J. 191, 193 (2001). *See also* Sidney Shapiro, *Keeping the Baby and Throwing Out the Bathwater: Justice Breyer's Critique of Regulation,* 8 ADMIN. L.J. AM. U. 721, 727 (1995); William F. Pedersen, *Why the Clean Air Act Works Badly*, 129 U. PA. L. REV. 1059, 1059 (1981).

compliance.[3] The CAA has suffered similar delays and setbacks, resulting in more than 60 million people living in areas that had not attained pollutant levels low enough to meet the state standards as late as 1999.[4]

A New York assistant attorney general wrote: "decades of experience have illustrated that traditional 'command and control' enforcement/punishment mechanisms have been unable to fully achieve the lofty goals of the major environmental statutes."[5] Critics of the current system of environmental regulation have advanced a number of theories for why the system has failed to meet expectations. Behavioral theory, however, has been noticeably absent in efforts to explain failures in the system. Specifically, those advocating environmental law reform have ignored the influence of cognitive biases on the behavior of those targeted by environmental regulation.

This paper will argue that the structure of the current command-and-control system of environmental regulation maximizes the conflict between regulators and industry, resulting in polarization and devaluation of legitimate solutions by wary industry leaders. It will further assert that these biases affect the behavior of potential polluters in real and substantial ways, and that they are therefore significant obstacles to the goals of the system. Finally, it will explain why creating a market system is *not* the answer, and it will provide several suggestions to improve the design of the system, citing Project XL as a promising new initiative.

Part II of this Article will discuss how heuristics and biases impact human behavior and decision-making, focusing in particular on how an understanding of these mental shortcuts can lead to improved regulatory schemes designed to gain compliance from affected actors. Part III expands on Part II by explaining the problems with the "rational polluter" model in light of what we know about heuristics and biases and will use polarization and devaluation to explain some of the current problems with resistance on the part of

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3. *See generally* U.S. EPA, Nat'l Water Quality Inventory: 1994 Rep to Congress ES-13 (1995).

4. *See* U.S. EPA, Latest Findings on Nat'l Air Quality: 1999 Status and Trends 2 (Aug. 2000) .

5. Dean S. Sommer, *Cooperative Approaches: Public Pollution/Public Resolution*, NAT'L ENVTL. ENFORCEMENT J. 33 (Aug. 1995).

industry in complying with the regulations of the Environmental Protection Agency ("EPA"). Part IV will explain why, in light of the status quo bias and the endowment effect, a cap and trade system is *not* the answer.

Finally, Part V will hold up the innovative Project XL as a potential flexible solution in which industry and the EPA work together to lower emissions and find creative ways to minimize the output of pollutants at facilities. The Conclusion calls for an increase in the amount of attention paid to human heuristics and biases in the development of regulatory schemes. Only in accounting for these powerful factors that drive human behavior will we begin to achieve success in gaining a high level of compliance.

II. THE EFFECTS OF HEURISTICS AND BIASES IN REGULATORY SCHEMES

Traditional law and economics is based upon the premise that legal rules are best viewed through an economic lens. This position involves the notion that human beings strive to achieve an optimal state, working with a stable set of preferences and accumulating the optimal amount of information in a variety of different situations.[6] The economic view thereby relies upon the "rational actor" model of human behavior, which holds that human beings act in logical ways to maximize their expected utility.[7]

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6. For a detailed explanation of a law and economics approach, see GARY. S. BECKER, THE ECONOMIC APPROACH TO HUMAN BEHAVIOR 14 (Chicago 1976).

7. According to David Spence, "the civil enforcement provisions of the major pollution control statutes follow the rational polluter model of enforcement by assuming that prospective violators of environmental laws make compliance decisions using an expected value calculation, as follows:

E(NC) = [S-pF]

where E(NC) = the expected value of noncompliance,

S = the economic benefit (or savings) associated with noncompliance, such as the money saved by taking fewer

This approach to the study of law has been challenged by social scientists who argue that human beings do not act in a manner that is consistent with traditional economic principles.[8] According to psychologists, when human beings are faced with decisions or complex situations they do *not* act like perfect logical machines, processing information flawlessly based upon a stable set of predetermined preferences. Time and time again, empirical evidence has demonstrated the inherent flaws in an economic approach to behavior.[9] Ultimately, the question facing scholars of behavioral

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steps to minimize pollution, failing to monitor, or failing to report as required by law,

pF = the expected costs of noncompliance, since

p = the probability that a violation will be detected, and

F = the expected penalty (or fine) imposed if detected.

If the expected value of noncompliance is negative, we expect the rational polluter to comply with the law; if it is positive, we expect the rational polluter to violate the law." David Spence, *The Shadow of the Rational Polluter: Rethinking the Role of Rational Actor Models in Environmental Law*, 89 CALIF. L. REV. 917, 920 (2001).

8. *See* BEHAVIORAL LAW & ECONOMICS (Cass R. Sunstein ed., 2000).

9. *See* Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases, in* JUDGMENT UNDER UNCERTAINTY 3, 11 (Daniel Kahneman et al., eds., 1982 [*hereinafter* Tversky & Kahneman]; *see also* Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk,* 47 ECONOMETRICA 263 (1979) [*hereinafter* Kahneman & Tversky]; BEHAVIORAL LAW & ECONOMICS, *supra* note 8; Neil D. Weinstein, *Unrealistic Optimist About Future Life Events,* 39. J. PERSONALITY & SOC. PSYCHOL. 806 (1980); Baruch Frischhoff, *Hindsight ≠ Foresight: The Effect of Outcome Knowledge on Judgment Under Uncertainty,* 1 J. EXPER. PSYCHOL. HUM. PERCEPTION & PERFORMANCE 288 (1975); Daniel Kahneman et al., *Experimental Tests of the Endowment Effect and the Coase Theorem,* 98 J. POL. ECON. 1325, 1327 (1990).

law and economics is "[h]ow do 'real people' differ from *homo economicus*?"[10]

The answer to this question originally came from Herbert Simon, who advanced the notion of bounded rationality, and Amos Tversky and Daniel Kahneman, who formulated prospect theory. Bounded rationality reflects the notion that there are inherent limitations to a human beings' ability to reason logically.[11] Notably, people have limited ability to reason and have seriously flawed memory.[12] As a result, particularly when access to information is limited or a situation is uncertain, we take mental shortcuts. Prospect theory incorporates information about how these shortcuts affect behavior and decision-making in predictable ways.[13]

As a result of the groundbreaking work of Tversky, Kahneman and others,[14] the current understanding of human information processing and decision-making is informed by a model of human judgment and choice that emphasizes efficiency. Behavioral theorists now emphasize the role that heuristics, or shortcuts, play in how individuals determine a course of action.[15] For the most part, these heuristics are automatic and unconscious. They are helpful in that they limit the amount of information processing required. These shortcuts, however, can lead to systematic errors or unhelpful biases. Errors and biases are particularly likely to occur when the situation being evaluated is not well suited to the use of the heuristic, or alternatively, when there is over-reliance on a heuristic.[16]

A good heuristic for purposes of illustration is the optimism bias. The optimism bias is best described as inflated self-confidence. Research has demonstrated that people are much more likely to think that good things will happen to them than conventional wisdom (and

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10. *See* Christine Jolls, et al., *A Behavioral Approach to Law, in* BEHAVIORAL LAW & ECONOMICS, *supra* note 9.

11. *See* Herbert A. Simon, *A Behavioral Model of Rational Choice*, 69 Q.J. ECON. 99 (1955).

12. *Id.*

13. *See* Kahneman & Tversky, *supra* note 9.

14. *See id.*

15. *See* Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases,* 185 SCIENCE 1124, 1124 (1974).

16. *Id.*

statistics) would suggest.[17] For instance, when asked, college students are six times more likely to think that they will have above average job satisfaction than below average.[18] They are also six times more likely to think that they will own their own homes than that they will rent and more than nine times more likely to think they will never get divorced than believe that their future marriage will fail.[19]

Normally, an optimistic outlook is useful.[20] Empirically, optimism and happiness are positively correlated. In addition to happiness, optimism also tends to accompany success and health.[21] Depressed individuals tend to have a far more realistic (and pessimistic) outlook on life than individuals who are not depressed.[22] Over-optimism, however, can also have serious negative repercussions. One example is the situation in which corporate executives mislead stockholders by withholding information about the true financial status of the company. Donald Langevoort attributes this situation to the optimism bias, arguing that an entire corporate culture of positivity can spring up, obscuring the harsh reality of a company in trouble.[23]

For more than a decade, cognitive scientists have been urging lawyers and policy makers to account for cognitive patterns in legal

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17. *See generally* Weinstein, *supra* note 9.

18. Neil D. Weinstein, *Unrealistic Optimism Biases about Personal Risk, Duress, and Cognition,* 69 U. COLO. L. REV. 71, 149 (1998).

19. *Id.*

20. *See* W. N. Dember & J. Brooks, *A New Instrument for Measuring Optimism and Pessimism: Test-Retest Reliability and Relations with Happiness and Religious Commitment*, 27 BULL. OF THE PSYCHONOMIC SOC'Y 365 (1989). *See also* M.E. P. SELIGMAN, LEARNED OPTIMISM (Knopf 1990).

21. *Id.*

22. *See* Shelley E. Taylor & Jonathan D. Brown, *Illusion and Well-being: A Social Psychological Perspective on Mental Health,* 103 PSYCHOL. BULL. 193 (1988).

23. *See* Donald C. Langevoort, *Organized Illusions: A Behavioral Theory of Why Corporations Mislead Stock Market Investors (and Cause Other Social Harms), in* BEHAVIORAL LAW & ECONOMICS, *supra* note 8, at 144, 146-147.

practice and theory.[24] The reason is clear; law is a field that focuses on controlling human behavior by forcing individuals to internalize externalities. In order to design efficient and effective laws, policy makers would be helped by an understanding of how legislation is likely to influence human behavior.

In some areas of law, cognitive psychology has been influential. Jon Hanson and Douglas Kysar have received acclaim for their theory of how human behavior is influenced by certain business practices. Hanson and Lysar argue that the pattern of errors and biases typical of human reasoning provide fertile ground for market manipulation.[25] The authors justify their "pessimistic, even condescending, view of consumers" by citing Campbell's Soup's practice of stacking cans out of alphabetical order on store shelves, a practice that increases sales by six percent.[26] Besides product liability law, the behavioral approach has been employed in the area of juror decision-making,[27] negotiating and mediation,[28] tax,[29] and a handful of other specialties.[30] In spite of the recent growing trend of cognitive psychology in law, however, discussion of environmental law has almost entirely ignored the effects of such biases.

In addition to the recent infusion of the behavioral approach into normative approaches to lawmaking, there is some evidence that the

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24. *See* Ward Edwards & Detlof von Winterfeldt, *Symposium: Legal Implications of Human Error; Cognitive Imperfections: Consumer Law Preferences*, 59 S. CAL. L. REV. 225 (1986).

25. *See* Jon D. Hanson & Douglas A. Kysar, *Taking Behaviorism Seriously: The Problem of Market Manipulation,* 74 N.Y.U. L. REV. 630, 634 (1999).

26. *Id.* at 747.

27. *See* Dale Griffin & Amos Tversky, *The Weighing of Evidence and the Determinants of Confidence*, 24 COGNITIVE PSYCHOL. 411, 426-29 (1992). *See also* Nancy Pennington & Reid Hastie, *Evidence Evaluation in Complex Decision Making*, 51 J. PERSONALITY & SOC. PSYCHOL. 242, 251 (1986).

28. *See* Linda Babcock, et al., *Biased Judgments of Fairness in Bargaining*, 85 AM. ECON. REV. 1337 (1995).

29. *See* BEHAVIORAL LAW & ECONOMICS, *supra* note 8, at 398.

30. *See* Neil D. Weinstein, *Optimistic Biases About Personal Risks*, 246 SCIENCE 1232, 1232 (1989). *See also* Ziva Kunda, *The Case for Motivated Reasoning*, 108 PSYCHOL. BULL. 480, 480 (1990).

evolution of certain laws may actually illustrate the incorporation of behavioral theories. Tax is one area in which an implicit understanding of cognitive mechanisms seems to have shaped the evolution of laws. Edward McCaffrey argues that cognitive biases account for much of how the tax scheme evolved, through input and opposition, into the modern-day tax code.[31] Heuristics, he posits, are therefore responsible for much of the structure of the current tax system in the United States. He breaks the evolution into two processes; one in which tax laws that did not accommodate cognitive biases were phased out, and the other in which tax authorities actively exploited the cognitive tendencies of the populace.[32] The result is a system that hides some taxes, and minimizes others. Although critics of the system might point out that McCaffrey's analysis suggests that the tax code is exploitative, there is no debating that employing psychological principles results in less discord, fewer objections, and arguably, more compliance. The idea is that if the government has to enforce a necessary evil, it makes sense to cushion the blow.

Like tax law, environmental law may be particularly well suited for input from cognitive theory. First, the nature of environmental law, the complexity and the sheer number of regulations, lends itself to processing shortcuts. Second, this area of law may be particularly conducive to exploiting cognitive tendencies because, like tax law, environmental laws impose costs on individuals and corporations. These costs can either be obvious, and psychologically painful, or they can be camouflaged, making the bitter pill a little easier to swallow.

By the same token, if cognitive biases are *not* taken into account in the design of environmental laws, legislatures and agencies may be frustrating the very goals they set out to achieve. This scenario appears to describe the current situation. Because environmental law is a twentieth century phenomenon, it has not had the time to evolve in the same way tax law has. The result is a structure that fails to capitalize on what we know about human cognitive heuristics. A structure that does not account for cognitive biases will inevitably contain miscalculations about human behavior and therefore must, by definition, be flawed. As Rachlinski and Farina put it, "[t]he model of government based on cognitive psychology proposes that

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31. *See* BEHAVIORAL LAW & ECONOMICS, *supra* note 8, at 399.
32. *Id.*

bad public policy occurs when decision-making structures and protocols fail to counteract human cognitive limitations."[33]

III. APPLYING PSYCHOLOGICAL AND BEHAVIORAL FINDINGS TO ENVIRONMENTAL LAW

A. The Rational Polluter Model

The environmental regulation and enforcement scheme was designed with the rational polluter model in mind. The "rational polluter" is based upon the generic "rational actor" model followed by economists. This model assumes that the corporate polluter[34] is an actor who consistently behaves in a manner that best serves his own interests. Fundamental to the model is the notion that the polluter understands what is at stake and clearly and accurately evaluates courses of action, choosing only those that maximize his gains. Enforcement provisions have been designed with this model in mind, building a regulatory scheme on the assumption that the polluter's compliance decisions will follow from the calculation:

E(NC) = [S-pF] where
E(NC) is the expected value of compliance
S is the economic benefit associated with noncompliance
p is the probability that a violation will be detected, and
F is the expected penalty resulting from detection.[35]

This model does not include assumptions of irrationality or cognitive mistakes. It presumes that if the government sets up

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33. Jeffrey J. Rachlinski & Cynthia Farina, *Cognitive Psychology and Optimal Government Design*, 87 CORNELL L. REV. 549, 580 (2002).

34. For the purposes of this paper, the target of environmental regulation will be referred to as "the corporate actor" or the "corporate polluter" or simply "industry." Obviously there are many other sources of pollution that are significant and worthy of discussion, such as small business, agriculture, and independent sources. For the sake of simplicity, this discussion will refer only to corporate polluters. This is not to suggest that the same principles do not apply to other types of polluters.

35. *See* Spence, *supra* note 7, at 920.

stringent penalties and maintains adequate enforcement, it will be successful in gaining compliance. Because the structure of environmental rules and penalties is designed on this model, if this model is not an accurate representation of the true decision process of the polluter, then the system may not be effective in accomplishing the specified goals.

Behaviorists have had to compete with economists for attention in the legal arena. Psychology, which attempts to account for as many factors as possible in order to arrive at a model that has predictive validity, has received far less attention from legal scholars than has economics.[36] As Donald Langevoort has noted, "both psychology and sociology have suffered from the inability to generate a unified behavioral model rivaling the simplicity, elegance, and testability of the economist's utility-maximizing rational actor."[37] Although economic theory has a certain gracefulness, a theory is only as good as its practical application. Cass Sunstein has remarked, "[i]f human beings use identifiable heuristics, and if they make systematic errors, we might better understand why law is as it is, and we might better generate strategies for ensuring that the law actually promotes social goals."[38]

B. The Adversarial Nature of Environmental Law

Because the current system does not capitalize upon the information psychologists have about cognitive biases, the scheme created by current environmental laws, far from securing perfect compliance, actually makes cooperation on the part of big-business polluters less likely. Two psychological phenomena are relevant to this argument. The first is *polarization*, the tendency of like-minded individuals to become more extreme in their views as a result of discussing these views.[39] The second is called *devaluation*, and occurs when one party undervalues a plan proposed by another

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36. Donald C. Langevoort, *Behavioral Theories of Judgment and Decision Making in Legal Scholarship: A Literature Review*, 51 VAND. L. REV. 1499, 1500 (1998).

37. *Id.*

38. Cass R. Sunstein, *Hazardous Heuristics, in* BEHAVIORAL LAW & ECONOMICS , *supra* note 8, at 752.

39. *See* ELLIOT ARONSON ET AL., SOCIAL PSYCHOLOGY 355-357 (2d ed. 1983).

party, simply because the two parties are on opposite sides of a figurative (or literal) bargaining table.[40] Together, these biases have the effect of undermining any potential for goodwill on the part of potential polluters toward environmental objectives. Since the government cannot continuously monitor every facility, creating a situation that encourages cooperation is critical. Ironically, the very rationale behind the current system—the desire to discourage efforts to manipulate environmental laws—leads to a policy scheme that results in just the opposite.

C. Group Polarization

Many decisions in our society are made through a process involving group deliberation. One of the most well known examples of this is the jury system, but there are many others, such as lobbying groups, legislative bodies, school boards, as well as groups within religious organizations, the judiciary, and corporate America. The popular notion is that group decision-making leads to better outcomes. Empirically, however, this assumption appears to be incorrect in some cases. If a "better" outcome is defined as one that is more reasoned and deliberate, representing a compromise of different views, and resulting in a relatively moderate outcome, then research on group deliberation calls into question the common practice of using groups in decision-making. Research findings have suggested that groups tend to be more extreme in their views following group discussion.[41] When members of the group think similarly at the outset, this polarization is especially likely to occur.[42]

It appears that members of a group tend to show a preference for expressing views that confirm one another's beliefs. This tendency is explained by a social comparison theory, which suggests that

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40. *See generally* Lee Ross, *Reactive Devaluation in Negotiation and Conflict Resolution*, *in* BARRIERS TO CONFLICT RESOLUTION (K. Arrow et al., eds., 1995).

41. *See* Cass R. Sunstein, The Law of Group Polarization (Dec. 7, 1999) (unpublished manuscript, on file with the University of Chicago Law and Economics Working Papers). *See also* D.G. Myers & G.D. Bishop, *The Enhancement of Dominant Attitudes in Group Discussion*, 20 J. PERSONALITY AND SOC. PSYCHOL. 286 (1976).

42. *Id.*

people want to be viewed favorably by others, and will therefore publicly (and privately) adjust their views toward the group consensus.[43] A related explanation is that when individuals meet to deliberate, their views are confirmed by similarly-minded group members. Hearing information that confirms previously held views leads individuals in the group to hold those views even more strongly than they did prior to the discussion.[44]

1. The Effects of Group Polarization on Environmental Regulation

Some have argued that failures to obey EPA mandates are the result of the current system being too complicated to offer businesses a realistic opportunity to comply.[45] Another explanation for noncompliance, however, is related to the group polarization phenomenon. The current command-and-control method of regulation may have the effect of polarizing groups, exaggerating extreme positions on either side of the issue. This polarization is a result of the type of controls and enforcement mechanisms that comprise the system.

The problem started with the initial philosophy behind environmental control. In an effort to curb the phenomenon referred to as the "tragedy of the commons,"[46] an elaborate system was developed establishing maximum ambient air pollution and water pollution levels and imposing controls to regulate output of pollutants accordingly. The CAA requires the EPA to establish maximum concentrations of pollution, above which adverse health effects may occur.[47] The CWA likewise requires the EPA to

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43. *See* JOHN TURNER ET AL., REDISCOVERING THE SOCIAL GROUP 142 (1987).

44. *See id.*

45. *See, e.g.,* Spence, *supra* note 7, at 919.

46. The tragedy of the commons is the situation in which a common resource (such as air, water, or land) is exhausted due to overuse. The root of the problem of the tragedy of the commons is the failure of the parties using the common resource to internalize costs associated with its use. *See* Garrett Hardin, *The Tragedy of the Commons,* 168 SCIENCE 1243 (1968).

47. 42 U.S.C. § 7409 (1988 & Supp. V 1993).

establish effluent limits to prevent significant deterioration and improvement of water quality.[48] Performance standards, such as those just described, are the most common way of managing and regulating pollutants. Most of the limitations set by the EPA are technology based, but do not specify technology. Overall, the current command-and-control system emphasizes a ceiling for pollutants, uniformity in how regulations are applied, and little flexibility from facility to facility.

Justifications for a command-and-control system of regulation tend to focus on ease of administration.[49] It is often difficult or impossible to determine the source of pollutants. The large number of regulatory targets makes monitoring difficult.[50] Requiring that point sources be regulated in accordance with a national standard of water quality, for example, allows the government to avoid the difficulties involved with proving the source of harm. In addition, requiring one standard regardless of geographic location avoids the problem of the "race to the bottom" that could arise if states lowered pollution standards in order to attract industry to the area.[51]

In order to enforce the limits the system puts on output of toxins for each type and source, there are severe penalties, typically $25,000 per violation per day.[52] In addition to civil penalties, there are also criminal penalties for violations. Criminal sanctions include fines ranging from $25,000 to over a million dollars, and jail time ranging from one to fifteen years.[53] The effort to investigate and pursue environmental criminal prosecutions, which are handled by

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48. 33 U.S.C. § 1311(b) (1988).

49. *See* Thomas McGarity, *Media-Quality, Technology, and Cost-Benefit Balancing Strategies for Health and Environmental Regulation*, 46 L. & CONTEMP. PROBS. 159, 203-11 (1983).

50. *See* ROBERT V. PERCIVAL, ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE AND POLICY 985 (3d ed. 2000).

51. *See* PETER S. MENELL & RICHARD B. STEWART, ENVIRONMENTAL LAW AND POLICY 143 (1994).

52. Resource Conservation and Recovery Act, 33 U.S.C. § 1319(d) (Supp. 2000); 42 U.S.C. § 6928(g) (Supp. 2000); Clean Air Act, 42 U.S.C. § 7413(b) (Supp. 2000).

53. 33 U.S.C. § 1319(c)(3)(A) (Supp. 2000).

the Department of Justice, has increased dramatically since the inception of the Pollution Prosecution Act in 1990.[54]

Fear on the part of the legislature and the public that well-funded corporations might band together and "capture" the policy-making process led legislators to include citizen suits and public disclosure provisions as part of the scheme.[55] Private enforcement actions supplement agency enforcement, which is under-utilized because of budget considerations.[56] Paying for enforcement becomes a concern when Congress passes legislation but does not appropriate sufficient funds to regulate and enforce these statutes. [57] Citizen suits fill the gap agencies leave.[58] Citizen enforcement is a feature in all the major federal environmental statutes.[59] Because part of the system of enforcement relies upon citizen suits, environmental groups have

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54. *See* PERCIVAL ET AL., *supra* note 50, at 1010 (stating that the Pollution Prosecution Act of 1990 quadrupled the number of federal agents who investigate environmental crimes).

55. Spence, *supra* note 7, at 927. *See also* ALFRED MARCUS, THE PROMISE AND PERFORMANCE OF ENVIRONMENTAL REGULATION (1982).

56. S. Rep. No. 103-257, at 79 (1994) ("Citizens enforce against violations that otherwise might not be addressed due to the resource limitations of State and Federal authorities...."); Bruce J. Terris, *Private Watchdogs: Internal Auditing and External Enforcement - Three Perspectives,* 17 ENVTL. L. REP. 10254, 10255 (1987); *see also* H.R. Rep. No. 93-1185, at 47 (1974) ("The possibility of a citizen suit provides a strong additional incentive to suppliers to maintain compliance with the standards.") (statement of Rep. Staggers).

57. *See* JOSEPH L. SAX, DEFENDING THE ENVIRONMENT: A STRATEGY FOR CITIZEN ACTION 62 (1970). *See also* William M. Landes & Richard A. Posner, *The Private Enforcement of Law*, 4 J. LEGAL STUD. 1, 38 (1975) (explaining that agencies also can use their monopoly of enforcement to nullify a particular statute by declining to enforce the statute, regulation, or permit).

58. S. Rep. No. 103-331, at 3 (1994) ("Private citizens, acting as 'private attorneys general' can provide a powerful and effective supplement to the enforcement capabilities of these agencies.").

59. *See, e.g.,* Clean Water Act, 33 U.S.C. § 1365 (1995) (citizen suit provision); Clean Air Act, 42 U.S.C. § 7604 (1995).

shouldered much of the watchdog responsibility.[60] The system of imposing strict, across-the-board regulations on companies and soliciting help from citizen groups in policing these companies has had the effect of publicizing an image of industry actors as "amoral profit-seekers, whose profit-maximizing behavior can and must be shaped through incentives."[61] In fact, some argue that because of the burden placed on these citizen groups, the current command-and-control system has conveyed a social meaning: "citizens" are distinct from "polluters," and while "polluters" are the problem, "citizens" are part of the solution.[62]

The system of citizen enforcement has had the effect of stigmatizing industries that are involved in processes that result in a particularly heavy output of pollutants.[63] Considering the effects of heavy industry on the living conditions in surrounding areas, it is easy to be sympathetic to local concerns. One commentator has noted:

> Fighting to keep one's neighborhood free from excessive environmental hazards that result from waste incinerators is certainly an uphill battle. Through a combination of administrative complaints, civil rights lawsuits, and grassroots organizing, however, a low-income community can effectively force these corporations out.[64]

While requiring companies to answer to the public may be a good strategy for gaining compliance in some respects, the psychological fallout could be problematic. Corporate decision-makers are less likely to try to work with environmental groups to reach agreements if they harbor resentment toward these groups. This situation is exacerbated by the effect of the uniformity of the rules, which leave

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60. *See* Spence, *supra* note 7, at 928.

61. *Id.* at 929.

62. *See* Vandenbergh, *supra* note 2, at 192-193. It certainly can be argued that there is truth in some of the stereotypes of corporate polluters. However, encouraging a culture that provokes industry by vilifying it is unlikely to be the most productive way in which to gain compliance.

63. *See* Spence, *supra* note 7.

64. *See* Gregory H. Meyers, *Developing a Cohesive Front Against Environmental "Injustice"*, 8 U. BALT. J. ENVTL. L. 27, 27 (2000).

facilities with little flexibility in how they manage outputs. With few other options left to them, those in control of corporations work hard to exert political pressure on legislative bodies. Environmental groups, in turn, justifiably concerned about corporate "capture," lobby hard against reform that might make it easier for polluters to find loopholes in the system. In the end, the current regulation system leaves an enormous chasm between environmental and citizen groups on the one hand, and corporate polluters on the other.

In perpetuating a system that leads naturally to a sharp division between environmental and corporate interests, drafters of the environmental legislation have created the perfect situation for industry to form a collective. Corporate entities circle the wagons not only for psychological comfort, but also for strategic reasons. It is in the best interest of each side of the issue to team up with others who share their interests in an effort to garner enough power to exert influence over the system. Hence, corporate interests commonly band together, strategizing, and sharing resources toward the common goal of effecting environmental policy in ways that are beneficial for industry.[65] As like-minded individuals communicate around the issue of environmental regulation, they become more extreme in their views.[66] Hence, the group polarization bias predicts that communication amongst one another will grow opposition to environmental rules and regulations. When owners and managers of regulated companies meet to discuss their common interests, they are likely to commiserate about the cost of complying with regulations, agreeing and bolstering one another's opinions until resentment and disagreement with the EPA's rules has reached a fevered pitch.

Hostility on the part of corporate actors is a problem for several reasons. First, the chance that any given violation will be detected is low—particularly when facility managers are antagonistic toward regulators. Making a determination as to whether a particular plant's emissions are in compliance requires gaining admission to the plant, which generally requires notifying the plant operators. [67] If plant operators are given notice of an inspection, it obviously affords them

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65. *See* Earl Latham, *The Group Basis of Politics: Notes for a Theory*, 46 AM. POL. SCI. REV. 376, 381 (1952).

66. *See* BEHAVIORAL LAW & ECONOMICS, *supra* note 8, at 286.

67. *See* PERCIVAL ET AL., *supra* note 50, at 986; *see also* Marshall v. Barlow's, Inc., 436 U.S. 307 (1978) (requiring the EPA to obtain a warrant before inspecting a business without the owner's consent).

the opportunity to hide any violations.[68] Furthermore, measuring emissions is problematic. As one commentator points out, "[e]ven when the source is trying to comply with the permit terms it will have fluctuating discharges . . . the stream being measured is not constant, and measurements at one time can be applied only to broader compliance questions through statistical inference."[69] Furthermore, when a violation is detected, the cost of prosecuting offenders is usually prohibitively high. Judicial enforcement is so costly that only the most egregious offenses are pursued in court. As a former assistant attorney general has noted, "[t]he simple truth is that we cannot bring . . .even a significant number of these actions to court." [70] The low detection rate and high cost of prosecuting mean that without some substantial level of cooperation on the part of potential polluters, a significant number of violations go unchecked.

The EPA's practice of requiring facilities to self-monitor, critical because of the EPA's limited resources, is perhaps the most obvious area where cooperation is necessary.[71] Under the CWA, managers of plants that discharge pollutants into the water are required to file discharge monitoring reports ("DMRs"), which are available to the public.[72] The original CAA required prosecutors to show that a given source has discharged more pollutants than the applicable state implementation plan ("SIP"), which was very difficult to prove. In 1990, amendments were added to the CAA to require self-monitoring. Specifically, utilities subject to Title IV of the CAA must install continuous emissions monitoring systems.[73] Although the EPA is able to oversee self-monitoring, there is still room for a discrepancy between what should be reported, and what is reported.[74] A party, which does not take an extreme position against regulation, is more likely to voluntarily report a violation.

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68. *Id.*

69. *See* C. RUSSELL ET AL., ENFORCING POLLUTION CONTROL LAWS 10 (1986).

70. *See* Carol E. Dinkins, *Shall We Fight or Will We Finish: Environmental Dispute Resolution in a Litigious Society,* 14 ENVTL. L. REP. 10398 (1984).

71. *See* PERCIVAL ET AL., *supra* note 50, at 987.

72. 33 U.S.C. § 1368(a)(A).

73. 42 U.S.C. § 7651(k)(a).

74. *Id.*

Likewise, the owner or operator of a plant who is vehemently anti-regulation is more likely to resist regulation efforts across the board. In addition to failing to report, there are numerous other ways in which a facility can resist regulation efforts. One area where such resistance might have negative consequences is with respect to prevention of significant deterioration ("PSD") permits. Normally, when plant operators modify a facility, a PSD permit is required. A provision in the CAA, however, specifies that regular maintenance of existing sources does not require a PSD permit. Interestingly, very few PSD permits are requested. The reason for this may be that modifications and new sources are often added to existing facilities under the guise of regular maintenance. This type of evasive tactic may be perpetuated in large part because sharp polarization between environmentalists and the public on the one hand and potential polluters on the other has stymied any spirit of cooperation that might have been fostered among plant owners and operators. One commentator has described the problem this way:

> If . . . the response to noncompliance is inflexible, sanction-oriented enforcement, regulated entities will become resentful and hostile. They will feel as though they have been treated unfairly and that their efforts to comply have gone unrecognized and unrewarded by regulators. The result will be resistance: Corporations will be less forthcoming with information, more apt to exploit regulatory loopholes, more likely to contest agency conclusions, and more likely to expend resources litigating citations. In short, they will become less cooperative. [75]

2. The Availability Heuristic: Its Effect on Polarization

Although it is easy to focus on industry as the critical locus of control, the reaction of the public is an important factor because as public opinion turns against industry, industry is increasingly likely to react with hostility and resentment. A common corollary of a

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75. Clifford Rechtschaffen, *Deterrence vs. Cooperation and the Evolving Theory of Environmental Enforcement*, 71 S. CAL. L. REV. 1181, 1204 (1998) (It should be noted that while Rechtschaffen describes this argument in his paper, he disagrees with this line of reasoning and is in favor of a strict deterrence approach.).

surge in public outrage over corporate polluters is an increase in regulation, since the American populace can exert an enormous amount of pressure on elected officials and other policy makers.[76] Hence, as the public becomes increasingly indignant about industry's impact on the environment, two outcomes are likely. The first is that the public will increasingly disparage industry and the second is that regulation is likely to become tighter and penalties more severe.[77] If these trends increased compliance with EPA standards, it would be one thing. As this paper has attempted to demonstrate, however, such a result is likely to increase polarization and foster deliberate noncompliance on the part of industry leaders.[78]

Because of the potential backlash that might occur after an outpouring of public concern, it is important to be mindful of how availability cascades can impact the attitude of businesses that are subject to regulation. The availability heuristic states that how likely individuals are to fear a given negative event is directly related to how readily that event can be brought to mind.[79] Availability cascades can be defined as "social cascades, or simply cascades, through which expressed perceptions trigger chains of individual responses that make these perceptions appear increasingly plausible through their rising availability in public discourse."[80] Collective availability errors occur when the availability heuristic occurs repeatedly in the context of certain set of social factors.[81] Generally, availability cascades occur when a particularly salient event receives widespread media coverage. Cascades can also occur when information travels by word of mouth. Often collective availability errors occur through a combination of media and word of mouth information dissemination. The "error" is generally in the perceived danger of a particular negative consequence occurring.

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76. An example is the spawning of the Comprehensive Environmental Response and Liability Act (CERCLA), following widespread publicity and public outrage over the Love Canal. *See* Tim Kuran & Cass R. Sunstein, *Controlling Availability Cascades*, *in* BEHAVIORAL LAW & ECONOMICS, *supra* note 8, at 374, 376-78.

77. *See id.* at 376-80.

78. *See supra* notes 39-66 and accompanying text.

79. *See* Tversky & Kahneman, *supra* note 9, at 3.

80. *See* Kuran & Sunstein, *supra* note 76, at 374.

81. *Id.*

One well-known example of an availability cascade shaping public opinion about environmental hazard is the case of Love Canal. In the 1940s and 50s, a chemical company filled an empty waterway with chemical waste.[82] Several years later, after the area had been developed into a residential neighborhood and a school, the New York Department of Environmental Conservation traced contaminated fish in Lake Ontario back to the site. Widespread panic ensued. Pressure on local government led the New York State Health Commissioner to declare a public health emergency. Pregnant women and children under the age of two were removed from the area. Eventually President Carter relocated local families at a cost of several million dollars. A later study by the EPA failed to find significant contamination at the site of Love Canal. Nevertheless, in 1987, the EPA conducted a study revealing that Americans now rank hazardous waste sites as the greatest environmental risk, above acid rain, ground water pollution, and ozone depletion, among others.[83] The Love Canal incident illustrates the power of availability cascades to shape the thinking of large numbers of people.

While the Love Canal is an example of an event that was blown out of proportion, sometimes perfectly horrific events also give rise to the availability heuristic. An example is a plane crash. In the instance of a plane crash, the difficulty is not that people exaggerate the seriousness of the original event, but rather that the original event is so salient that it stays with those who hear of it for a long time. Because an event like a plane crash is easily brought to mind, people overestimate the frequency of plane crashes.[84] Like plane crashes, certain very disturbing environmental catastrophes may loom large in the minds of many, who in turn overestimate the frequency of these types of environmental calamities. Furthermore, if it is easy to think of an instance of corporate greed or irresponsibility leading to the contamination of a neighborhood or the death of wildlife,

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82. *See id.* (for an expanded account of how the events surrounding the Love Canal scare were influenced by the availability heuristic). *See also* LOIS MARIE GIBBS, LOVE CANAL: MY STORY (1982).

83. *See id.* at 9.

84. For more on this phenomenon, see Tversky & Kahneman, *supra* note 9.

individuals may assume that this type of irresponsibility is a common trait of similar corporations.

The Exxon Valdez oil spill is one of the most famous environmental disasters. On March 24, 1989 at 12:04 a.m., the Exxon Valdez oil tanker struck a reef in Alaska's Prince William Sound. A total of 11,000,000 gallons of oil was spilled.[85] Within two months the oil had been swept along a 470-mile pathway to the southwest. Initial clean-up of the spill took three years at a cost amounting to billions of dollars.[86] The effect on wildlife was enormous, with the death toll of wildlife amounting to millions.[87] In large part because of media coverage following these terrible events, millions of people were shocked by the news when it first occurred and, over time, became familiar with the details. Unlike Love Canal, there is no question that the Exxon Valdez was a tragedy. *Like* Love Canal, however, Exxon Valdez and other large-scale environmental disasters pose problems for those who work for and with large corporations on pollution control. Because Exxon Valdez has become an easily retrievable instance of a large corporation causing a massive amount of damage to the environment, it is likely to have the same impact on views about corporate polluters as a highly publicized plane crash is to have on people's perceptions about the danger of air travel.

When an event occurs that causes the public to overestimate the likelihood that corporations will cause harm to the environment, it has the effect of galvanizing environmental interests and creating increased distrust of industry among members of the public. In a situation where polarization is already driving opposing interests

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85. *See* Green Chemistry, at http://www.chemsoc.org/exemplarchem/entries/2004/bristol_vickery/famous_environmental_disasters.htm (last visited Jun 19, 2005); *see also* EXPLORENORTH, THE EXXON VALDEZ OIL SPILL DISASTER at http://www.explorenorth.com/library/weekly/ aa032499.htm (last visited Jun 19, 2005); VROM SHARED SPACES at http://www2.vrom.nl/pagina.html?id=5969 (last visited Jun 19, 2005).

86. EXPLORENORTH, THE EXXON VALDEZ OIL SPILL DISASTER at http://www.explorenorth.com/library/weekly/aa032499.htm (last visited Jun. 19, 2005.

87. *Id.*

further apart,[88] this widespread inflated suspicion can add fuel to the fire. Public outrage, particularly if it is misplaced,[89] can exacerbate antagonism between industry leaders and watchdog groups who see to it that the public is informed.[90] Hence, the availability bias may well serve to further frustrate attempts to gain compliance from big business.[91]

D. Devaluation

Because the current system pits corporate interests against environmental interests in such an overt way, there is also a risk that any negotiating between businesses and environmental interests will be affected by reactive devaluation.[92] Reactive devaluation occurs when parties on one side of a dispute or negotiation automatically undervalue proposals from an opposing party in a negotiation, simply because the source of the proposal is an adversary.[93] For instance, in one study, when participants were asked to evaluate a nuclear disarmament proposal they supported it 90 percent of the time if they were told that the author was President Reagan, but only 44 percent of the time if they were told that it was authored by a Soviet leader.[94] The normative explanation for this reaction is the presumption on the part of the evaluators of a proposal that the proposal must be relatively more beneficial to the other side. Otherwise, why would they offer it?[95] In addition, the evaluators might assume an imbalance in information that favors the

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88. *See supra* notes 39-66 and accompanying text for a more in-depth analysis of the polarization phenomenon.

89. Public outrage is only misplaced if, because of the availability heuristic, the memory of one or two irresponsible acts causes the public to wrongly (or prematurely) condemn a whole industry.

90. *See* Spence, *supra* note 7, at 928.

91. *Id.* at 929.

92. *See* Lee Ross and C. Stillinger, *Barriers to Conflict Resolution*, 8 NEG. J. 389 (1991).

93. *Id.*

94. C. Stillinger et al., The Reactive Devaluation Barrier to Conflict Resolution, (unpublished manuscript on file with Stanford University).

95. *See generally* Ross, *supra* note 40.

opposition.[96] The automatic triggering of these suspicions would naturally lead to a greater likelihood that the proposal would be rejected.

1. The Problem of Devaluation and Environmental Regulation

Although industry's role in the development of environmental laws is not equivalent to that of a party in a standard business negotiation, corporate interests do have lobbying power and influence with respect to environmental legislation.[97] It is this very power that created the fear that industry would capture the environmental regulatory process in the first place.[98] Evidence for this power is manifest in some of the concessions that have been made to corporate interests in environmental legislation. Examples include the grandfather clause in the CAA,[99] the RCRA mandate not to interfere with production or closed-loop recycling,[100] the CERCLA innocent purchaser clause,[101] and more. If industry views these concessions with suspicion or hostility, or even if industry leaders simply undervalue them, any efforts by the legislature or the EPA to compromise in order to gain goodwill and compliance from corporate actors could be undermined.

IV. PROPOSALS INVOLVING MARKET-BASED SCHEMES

A. The Problem with Market-Based Schemes

Many have argued that the solution needed to fix the ailing system of environmental control is to turn the system into one that is

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96. *Id.*

97. *See generally* Robert Glicksman and Stephen Chapman, *Regulatory Reform and (Breach of) the Contract with America: Improving Environmental Policy or Destroying Environmental Protection?* 5 KAN. J.L. & PUB. POL'Y 9 (1996).

98. *See* Spence, *supra* note 7, at 927.

99. The grandfather clause allows facilities that existed prior to the Clean Air Act to avoid certain permitting requirements.

100. 45 Fed. Reg. 33, 119-20 (1980); 50 Fed. Reg. 614 (Jan. 4, 1985).

101. 42 U.S.C. § 9601(35)(A).

primarily based on the marketplace.[102] The theory behind a market system is that this type of scheme would shift cost-benefit decisions from government to businesses. A market-based approach, so the argument goes, would provide economic efficiency.[103]

An example of a market-based strategy for regulating pollutants at work is the "cap and trade" system.[104] The cap and trade system is based upon pollution allowances and rights to emit one-ton units of sulfur-dioxide emissions. These rights were distributed to utilities across the country. Each polluting source was given an emissions target. Plant operators who exceeded their pollutant limits were required to acquire allowances from other sources. Anyone could hold, buy, or sell allowances, which could be traded as any other commodity. The EPA was required to track all emission allocations and collect enough allowances from each regulated facility's account to cover their emissions from the prior year.[105]

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102. *See* C. Boyden Gray, *Obstacles to Regulatory Reform*, 1997 U. CHI. LEGAL F. 1, 1 (1997).

103. *See* Eric Mikkelson, *Earning Green for Turning Green: Executing Order 12,291 and Market-Driven Environmental Regulation,* 42 U. KAN. L. REV. 243, 246 (1993).

104. *See* Robert N. Stavins, *What Can We Learn from the Grand Policy Experiment? Lessons from SO2 Allowance Trading*, 12 J. ECON. PERSP. 69, at 79 (Summer 1998).

105. The EPA's Clean Air Market Programs is called "allowance trading" or "cap and trade" and has the following key features:

1. An emissions "cap": a limit on the total amount of pollution that can be emitted (released) from all regulated sources (e.g., power plants); the cap is set lower than historical emissions to cause reductions in emissions
2. Allowances: an allowance is an authorization to emit a fixed amount of a pollutant
3. Measurement: accurate tracking of all emissions
4. Flexibility: sources can choose how to reduce emissions, including whether to buy additional allowances from other sources that reduce emissions
5. Allowance trading: sources can buy or sell allowances on the open market
6. Compliance: at the end of each compliance period, each source must own at least as many allowances as its emissions,

Schemes like cap and trade, which rely upon market forces might alleviate some of the problems related to polarization and devaluation, however, this approach would lead to other problematic cognitive biases. The difficulty with market-based solutions is that they inevitably begin with initial allocations. In order for a trading system to be efficient, allowances must move to their highest value. Two heuristics, the endowment effect and the status quo bias, suggest that those who initially receive the allocations will overvalue them and will be less willing than they should be to trade them.

B. The Endowment Effect

Legal entitlement tends to create an endowment effect.[106] The endowment effect is "the increased value of a good to an individual when the good becomes part of the individual's endowment."[107] Simply put, possessing a right or an object causes the owner to assign it a higher value than the market would. Typically, the owner of a good or an entitlement will require more to sell it than he or she would have paid to obtain it. This effect was demonstrated in a study in which participants were given money or a mug or were given the choice between receiving money or a mug.[108] Buyers valued the mug at $2.87, Choosers at $3.12, and Sellers at $7.12.[109]

Allowance Trading Basics, *available at* http://www.epa.gov/airmarkets/trading/basics/ (last visited May 25, 2005).

In addition to the difficulties associated with a cap and trade system discussed in this paper, there are other criticisms such as that presented by Professor David Driesen, who notes that cap-and-trade strategies can stifle innovation and result in concentrated local pollution. *See* David M. Driesen, *Free Lunch Or Cheap Fix?: The Emissions Trading Idea and the Climate Change Convention,* 26 B.C. ENVTL. AFF. L. REV. 1, 71 (1998).

106. *See* Daniel Kahneman, et al., *Experimental Tests of the Endowment Effect and the Coase Theorem, in* BEHAVIORAL LAW & ECONOMICS, *supra* note 8, at 226-227.

107. *Id.* at 213. *See also* Richard Thaler, *Toward a Positive Theory of Consumer Choice*, 1 J. ECON. BEHAV. & ORG. 39 (1980) (finding a discrepancy between selling and buying prices).

108. *See* Kahneman, et al., *supra* note 106, at 221-223.

109. *Id.* (Referring to Experiment 6. Results in Experiment 7 were similar.)

In addition to valuing the mug, Sellers and Buyers were asked to attempt to negotiate with one another for the exchange of the mug. Presumably because the negotiating parties had very different ideas about the value of the mug, far fewer trades took place than expected.[110] The notion is that the endowment effect is a manifestation of *loss aversion,* the human tendency to weigh a loss more heavily than a gain.[111]

The endowment effect has profound importance because it directly contradicts the Coase Theorem, an influential economic theory about bargaining. The Coase Theorem states that, in the absence of transaction costs, initial allocation is irrelevant.[112] Accordingly, economic theory would make the prediction that supply and demand curves would mimic one another, and that, in a market environment, a good would be as likely to trade hands as it would be to stay in the same hands.[113] In the context of a cap-and-trade scheme, the endowment effect predicts that on average, the holder of an allowance will place a higher price on it than the market will bear. Ultimately, as was demonstrated in the mug experiment, this discrepancy will result in fewer emissions trades.[114]

C. The Status Quo Bias

Another human tendency that is closely related to the endowment effect is the status quo bias. The status quo bias is based upon the fundamental human desire for consistency, and states that individuals tend to focus upon a starting point, and evaluate deviations in terms of that point.[115] The result of this bias is that human beings demonstrate a reluctance to deviate from what they

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110. In Experiment 6, 12.5 trades were expected, but only 3 trades took place. *Id.* at 223.

111. *See* BEHAVIORAL LAW AND ECONOMICS, *supra* note 8, at 5.

112. *See generally* Ronald Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

113. *See* Kahneman et al., *supra* note 106, at 211.

114. *See* Kahneman & Tversky, *supra* note 9.

115. *See generally* BEHAVIORAL LAW AND ECONOMICS, *supra* note 8, at 4.

perceive to be a default status.[116] Russell Korobkin notes that the effect of the status quo bias is that "completely alienable legal entitlements will be 'sticky'—that is, tend not to be traded—even when stickiness cannot be explained by transaction costs."[117] In terms of trading allowances, the status quo bias predicts that there will be a preference for holding on to initial allocations. It further predicts that because of the tendency to focus on the starting point, trading away allowances will result in a greater perceived deficit than would be predicted by traditional economic theory. The result is that any party who holds a legal entitlement initially will (on average) demand a higher price and be more reluctant to part with the entitlement simply by virtue of possessing the right in the first place.

D. How Endowment and Status Quo Effects Cap and Trade Schemes

The endowment effect and the status quo bias mean that companies that hold pollution rights are likely to (a) overvalue them and (b) be reluctant to part with them. As a result, a market-based approach may actually lead to an over-all inefficient scheme because the allocated right will tend to stay with the initial holder longer than is optimal. The party who receives the right initially may demand a higher price for the right than the market will bear. This is not to argue that companies who operate under a cap-and-trade system will never allocate allowances to the highest bidder. Rather, it suggests that the price required to move those allowances from one company to another will be artificially inflated. In addition, because in some cases companies will be unwilling to pay inflated prices for the allowance, the maximum number of efficient trades will not occur.

A further consideration is the effect on new companies. Companies that come along after the initial allocations are made will have to negotiate with those companies that were fortunate enough to be around when the allocations were being handed out. Given the status quo bias and the endowment effect, chances are that the new companies will pay inflated prices for those polluting rights.

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116. *See* Russel Korobkin, *Behavioral Economics, Contract Formation and Contract Law, in* BEHAVIORAL LAW & ECONOMICS, *supra* note 8, at 120.

117. *Id.*

Contrary to the Coase Theorem,[118] which would predict that the initial allocation of pollution rights is irrelevant because parties will bargain around them, the endowment effect and the status quo bias suggest that if new companies have to acquire start-up allowances from preexisting companies, they will incur greater than expected costs.[119] In areas where offset requirements exist, a new facility must obtain allowance sufficient to cover its allowance needs. If preexisting companies charge a premium for allowances, new arrivals to industry could be fighting an uphill battle. The result of a scheme that creates a hostile situation for upstart companies could be a decrease in competition among some industries—an outcome that could prove problematic.

V. CONSIDERATION OF BEHAVIORAL FACTORS: SCULPTING A SOLUTION

A. A Behavioral Solution to Environmental Regulation

Because command-and-control designs and market systems are subject to inefficient or problematic outcomes due to cognitive biases, a new approach is needed.

Behavioral research reveals the advantage of cooperative approaches that seek to gain compliance as an initial matter over punitive systems that focus only on intervention after the fact. Lately, the idea of focusing on compliance has gained favor with state and federal officials. For instance, several years ago, Virginia's Secretary of Natural Resources told Congress that "the truth is that enforcement action means "failure" not success . . . Policies which focus on compliance with environmental laws are better for the natural resources than policies which focus on enforcement."[120]

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118. *See* Coase, *supra* note 112.

119. The mug experiment demonstrated the inflated valuation of a good on the part of those who hold the good and suggests that under such circumstances, the holder of the good is likely to charge a premium to part with it. *See supra* notes 106-111 and accompanying text.

120. *The Relationship Between Federal and State Governments in the Enforcement of Environmental Laws: Hearings Before the Senate Comm. on Env't and Pub. Works*, 105th Cong. 190 (1997) [*hereinafter Hearings on the Relationship Between Federal and*

Both the federal and state governments have been re-examining traditional enforcement systems, which focus on deterrence and punishing violations.[121]

Recognition of problems with the current system has led some to propose that the punitive system be replaced with one that offers incentives. It has been noted that "[a]s the limitations of policies that emphasize command-and-control regulation become more evident, environmental law is becoming increasingly receptive to approaches that use economic incentives to affect behavior."[122] As has been demonstrated, a move toward including industry representatives in the process of crafting regulation is supported by behavioral research. Revisions of the current regulatory structure should therefore involve a more cooperative model. This approach should focus on avoiding conditions that increase suspicion and hostility between corporate and environmental interests.[123]

General research on polarization has demonstrated a clear tendency of groups to become increasingly extreme under conditions such as those created by citizen suits and unilaterally imposed regulations carrying harsh penalties. More specific research on the effects of a cooperative versus a punitive regulatory system, however, has not been studied. Nevertheless, there is some limited evidence that soliciting cooperation may increase compliance. For instance, a compliance incentive program implemented with the auto repair industry in Santa Rosa, California, reported positive results. In place of traditional enforcement practices, local regulators began an intensive program of providing information and technical assistance to businesses. The regulators also awarded recognizable stickers to cooperating businesses, and attempted to raise consumer awareness about the program.[124] Prior to the implementation of the program, the compliance rate hovered near zero. After the

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State Governments] (prepared statement of Becky Norton Dunlop, Secretary of Natural Resources, Commonwealth of Virginia).

121. *See* Rechtschaffen, *supra* note 75, at 1183.

122. *See* PERCIVAL ET AL., *supra* note 50, at 1236.

123. *But see generally* Rechtschaffen, *supra* note 75, at 1183 (arguing that "we should ease the rush to dismantle traditional, deterrence-based civil enforcement").

124. *See* John W. Garn et al., *The Compliance Incentive Experience in Santa Rosa, California, in* THIRD INTERNATIONAL CONFERENCE ON ENVIRONMENTAL ENFORCEMENT 527, 529 (1994).

campaign, however, almost 75 percent of the repair shops were fully compliant after two inspections.[125]

Critics of a cooperative scheme have pointed out that some evidence points to the superiority of a strict deterrence approach. For example, one study comparing the paper industries in the United States and Canada, found that Canadian companies were significantly less likely to comply with regulations limiting effluence. This has been cited as evidence that a cooperative approach is less effective, because the approach in the United States is deterrence, whereas the regulatory system in Canada is a cooperative endeavor.[126] What this argument overlooks, however, is that the United States and Canada are separate countries with distinct corporate culture norms.

The nature of environmental regulations, their rigidity and their one-size-fits-all nature make it particularly likely that industry will feel trapped and saddled with rules that are costly and facility-inappropriate. For the good of all parties involved, any new proposal should maximize flexibility and opportunity for creative solutions. Most importantly, it should foster open communication between all parties involved in creating and carrying out pollution control. A system that stresses these goals serves two main purposes. First, a structure based upon these objectives would permit those with corporate interests the opportunity to help shape environmental regulation. Commentator Lee Ross stresses that in order to minimize the hostility and suspicion that often leads to devaluation, input should be solicited from the opposing party.[127] Open communication between corporate and environmental interests should be fostered in order to minimize the perception of imbalances in information. These elements are critical to what Ross has called a "problem solving orientation."[128]

Like all reforms, one designed with these goals in mind will have certain important considerations. First, even fierce advocates for industry generally acknowledge the necessity of a strong centralized

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125. *See id.* at 544.

126. *See* Kathryn Harrison, *Is Cooperation the Answer? Canadian Environmental Enforcement in Comparative Context*, 14 J. POL'Y ANALYSIS & MGMT. 221, 237-38 (1995); *see also* Rechtschaffen, *supra* note 75, at 1210.

127. *See* Ross, supra, note 40, at 39.

128. *Id.*

system of control to oversee cooperative solutions.[129] Among other functions, the EPA would have to balance the degree to which standards were relaxed for particular toxins in order to assure that individualized plans did not result in higher than optimal levels of any given pollutant in a geographic area. To this end, air and water quality standards would still play a central role, and state cooperation would be needed in monitoring local levels of pollutants in the air and water. Additionally, although environmental reform allowing more flexibility and input from industry should foster increased compliance, the EPA would still need to monitor effluent outputs, point sources, and toxic waste handlers in order to assure that infractions were not occurring.[130] Ideally, the end result would be custom-built plans designed in a cooperative manner by facilities' managers and the EPA. Although the EPA and ancillary agencies would initially be required to devote resources to the approval of individualized plans, ideally, the new system would ultimately lead to a decrease in the EPA's watchdog burden because there would be fewer violations under the new program.

B. A Model Solution: Project XL

In 1995, President Clinton launched a regulatory reform project entitled Project XL.[131] The project, whose name stands for excellence and leadership, was designed to provide more flexibility to companies, permitting company owners and managers to provide their own plans for pollution control.[132] In exchange for an overall decrease in the amount of pollutants released, participants of Project XL are offered the opportunity to avoid some standard requirements

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129. *See* David Spence, *Paradox Lost: Logic, Morality, and the Foundations of Environmental Law in the 21st Century,* 20 COLUM. J. ENVTL. L. 145, 167 (1995).

130. Under the new system, an "infraction" would result when a facility was not maintaining output levels included in the proposed and approved plan.

131. *See* Intel Corporation: *About Project XL, at* http://www.intel.com/intel/other/ehs/projectxl/AboutXL/AboutXLHMP.htm, (last visited May 23, 2005); U.S. EPA, *First XL Regulatory Reinvention Project Approved,* (History), at http://www.epa.gov/history/topics/reinvent/06.htm.

132. *Id.*

that may be more costly.[133] For example, each statute focusing on a particular medium (mode of pollutant) generally requires its own individual set of regulations. The requirements for separate permits, different control mechanisms, and distinct reporting and monitoring drive up the costs of doing business significantly.

One of the primary objectives of Project XL is to streamline regulation, making the system more efficient and compliance less onerous.[134] According to Gordon Moore, a participant in Project XL, "[t]he new system envisioned by Project XL is to work cooperatively and focus on the results: a cleaner environment; a faster, less costly system; and more input from the local community."[135] The primary goals of Project XL are to:

> Offer regulatory flexibility in return for better results;
> Build stronger partnerships between state and local governments, community leaders, businesses, and private citizens;
> Facilitate compliance by making regulatory information easier to understand;
> Cut red tape associated with environmental regulation; and
> Make it easier to report, obtain, and understand information about the environment.[136]

While Project XL has received some criticism,[137] it has been generally well received, and hailed as the wave of the future in environmental regulation.[138]

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133. *Id.*

134. *Id.*

135. *See* U.S. EPA, Common-Sense Strategies to Protect Public Health: A Progress Report on Reinventing Environmental Regulation 9; Intel Corporation: *About Project XL, at* http://www.intel.com/intel/other/ehs/projectxl/AboutXL/AboutXLHMP.htm, (last visited May 23, 2005).

136. *See* PERCIVAL ET AL., *supra* note 50, at 177.

137. *See, e.g.,* Rena Steinzor, *Reinventing Environmental Regulation: The Dangerous Journey from Command to Self-Control*, 22 HARV. ENVTL. L. REV. 103 (1998).

138. *See* NATIONAL ACADEMY OF PUBLIC ADMINISTRATION, RESOLVING THE PARADOX OF ENVIRONMENTAL PROTECTION: AN AGENDA FOR CONGRESS, EPA & THE STATES 75 (1997).

Initially, the EPA decided to implement 50 pilot projects under Project XL.[139] Members of EPA's Office of Policy, Economics, and Innovation, who coordinate the program, invited applications from private businesses, federal operations, and state and local governments.[140] Projects were selected based upon their potential to:

> produce superior environmental results beyond those that would have been achieved under current and reasonably anticipated future regulations or policies;
> produce benefits such as cost savings, paperwork reduction, regulatory flexibility or other types of flexibility that serve as an incentive to project sponsors and regulators;
> be supported by stakeholders;
> achieve innovation/pollution prevention;
> produce lessons or data that are transferable to other facilities;
> demonstrate feasibility;
> establish accountability through agreed upon methods of monitoring, reporting, and evaluations; and
> avoid shifting justice problems as a result of the experiment.[141]

In January of 2001, the EPA approved the 50th project proposal, and the experiment was underway. The EPA has vowed to continue to fulfill its obligations by monitoring each of the Project XL projects carefully.[142]

By avoiding situations that foster counterproductive biases, Project XL increases the chances that businesses will cooperate fully with

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139. In January of 2001, the EPA approved the 50th project and the experiment is currently underway. *See* U.S. EPA, *Project XL: What's New, available at* http://www.epa.gpv/Project XL/whatsnew.htm.

140. *See* U.S. EPA, *Project XL: What is Project XL?, available at* http://www.epa.gov/projectxl/file2.htm (last visited May 25, 2005). The implementation of most Project XL projects requires flexibility not only from federal, but also state regulations. Accordingly, in selecting projects, the EPA works with local governments to determine the suitability of the proposal. *See* U.S. EPA, *Project XL: Starting an XL Project, available at* http://www.epa.gov/projectxl/file3.htm (last visited May 25, 2005).

141. *See id.*

142. *See* Sommer, *supra* note 5.

the EPA. Because those being regulated have a hand in determining how the regulations will by carried out, hostility and polarization are less likely to occur. As a result of the cooperative effort involved with Project XL, devaluation of the other side's proposals are apt to be less frequent, and better solutions are possible. It avoids the problems of the endowment effect and status quo bias created by the initial appropriation of allowances under the cap-and-trade system. Most importantly, it achieves these goals without sacrificing any of the goals of environmental regulation.[143] Because Project XL requires companies to cut more pollution than required by law, ultimately, fewer pollutants are released under the program. In addition, since participation in the program is voluntary and gives businesses some measure of control, the chance that violations will occur decreases.

VI. CONCLUSION

While the United States has made great strides toward protecting our natural resources, we still have far to go. The EPA presides over a vast amount of complex regulatory law, and yet, the effectiveness of environmental regulations is questionable.[144] More than one third of rivers, streams, lakes, ponds, and estuaries in the United States are not clean enough for the uses the state has designated for them.[145] More than 20,000 bodies of water have been deemed polluted.[146]

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143. *But see generally,* Bradford C. Mank, *The Environmental Protection Agency's Project XL and Other Regulatory Reform Initiatives: The Need for Legislative Authorization*, 25 ECOLOGY L.Q. 1 (questioning the legality of Project XL).

144. *See* Vandenbergh, *supra* note 2, at 193; *see also* Shapiro, *supra* note 2, at 727; Pedersen, *supra* note 2, at 1059; Peter H. Lehner, *The Need for Continued and Expanded Environmental Enforcement in New York*, 5 ALB. L. ENVTL. OUTLOOK 1 (2000).

145. *See* U.S. EPA, Office of Water, The Quality of Our Nation's Water: 1998 (2000) [*hereinafter* Quality of our Nation's Water].

146. *See* U.S. EPA, Office of Water, *Proposed Regulatory Revisions to the Total Maximum Daily Load Program and Associated Proposed Regulatory Revisions to the National Pollutant Discharge Elimination System and the Water Quality Standards Program, available at* http://www.epa.gov/owowwtrl/tmdl/tmdlfs.html.

The nation's sources of drinking water are no exception, and one poll disclosed that almost one-half of the population will not drink their tap water.[147] More than half of wetlands located in the United States have been lost. Moreover, the destruction of this type of fragile ecosystem continues at an alarming rate[148] despite a commitment to "no net loss" of wetlands. As many as 64,000 people in the United States die from heart and lung diseases that are aggravated by particulate air pollution, and over 100 million Americans live in urban centers where the EPA has designated the air as unsafe to breathe.[149] Sewage and chemical runoff as well as other forms of pollution have caused authorities to close beaches more than 60,000 times since 1988.[150] It seems clear that "the current frenzy of environmental degradation is unprecedented."[151]

The failure to adequately protect precious environmental resources in the United States clearly calls for a retooling of strategy. In 1996, the former manager of the EPA's Superfund enforcement program asserted that "[i]t has become manifest that the manner in which [the EPA] imposes, implements, and enforces environmental requirements is in serious need of reform." [152] This Paper has argued that, in crafting the needed change, behavioral theory and research on heuristics and biases is a necessary part of the analysis. Specifically, consideration of how groups become polarized and the psychological effects of awarding initial allocations should play a central role in the structuring of any new system of regulation. As David Spence argued:

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147. *See* Peter Eisler et al., *Lax Oversight Raises Tap Water Risks*, USA TODAY, Oct. 21, 1998, at 15A.

148. *See* Quality of Our Nations Water, *supra* note 145, at 29-30.

149. *See* Natural Resources Defense Council, In Profile 8 (January, 2004).

150. *Id.* at 10.

151. Michael Soule, *What is Conservation Biology*, *in* ENVIRONMENTAL POLICY AND BIODIVERSITY 35, 48 (R. Edward Grumbine ed., 1994).

152. Bruce M. Diamond, *Confessions of an Environmental Enforcer,* 26 ENVTL. L. REP. 10,252, 10,252 (May 1996). Diamond contends that the EPA should shift from its traditional, deterrence-based, adversarial approach to enforcement to an approach emphasizing cooperative efforts and greater reliance on industry self-compliance. *See id.* at 10,252-56.

> defenders of more collaborative [environmental regulation] processes make a strong case that they are qualitatively and democratically superior to traditional processes: bargaining promotes deliberation, trust, and compromise by bringing adversaries deeper into the EPA's decision-making process.[153]

Although this paper has argued for a *cooperative* system of regulation, I do not, by any means, intend to be advocating increased leniency for polluters. Clearly, a deterrence component is still necessary. Some attempts have been made by Congress to dramatically reduce funding for EPA enforcement activities and limit the agency's ability to impose penalties.[154] States, which bear much of the enforcement burden, have in some cases cut funding for traditional enforcement activities, reduced the frequency of inspections, and substantially curtailed the penalties assessed for violations.[155] For example, in 1996 Virginia's General Assembly determined that the state had repeatedly failed to enforce environmental protection laws, even in the face of persistent and egregious violations. The 1996 Virginia State Assembly findings point out the danger of calling for change in the direction of cooperation. I do *not* support a lessening of current standards—far from it. Rather, I intend to make the argument that in working out a flexible plan, custom designed for each facility, a cost-effective *progressive* plan for pollution control can be implemented. I further contend that the money saved in failing to implement ineffective, unnecessary, or inefficient procedures in a given facility can be channeled towards *more* effective pollution control in another area, *increasing* the overall environmental friendliness of the facility. At the same time, this creative, cooperative approach will gain the

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153. Spence, *supra* note 7, at 959.

154. *See, e.g.,* Small Business Regulatory Enforcement Fairness Act of 1996, 104 P.L. 121, 223; 110 Stat. 857, 862.

155. *See Hearings on the Relationship Between Federal and State Governments, supra* note 121, at 220-23 (prepared statement of Todd E. Robins, Environmental Enforcement, U.S. Public Interest Research Group) (documenting reductions in inspections, penalties, enforcement actions and spending on enforcement staff in numerous states).

support of industry players who will be more likely to comply with agreed upon procedures.

A last word is required about the role of cognitive psychology in the design and implementation of laws and regulations. A growing body of research devoted to human behavior and law is casting doubts on many assumptions fundamental to traditional legal and economic theory. This is not to suggest that we discard these theories, but rather that we reevaluate them in light of our growing understanding of the behavioral tendencies of human beings, particularly with respect to heuristics and biases. It is counterproductive to cling to a model of human behavior once it is discovered that the model lacks predictive validity. If we hope to design efficient and effective laws and policy, we must strive not for parsimony, but for accuracy. Until our system takes into account what we know about cognition, we will not be successful in achieving our goals with respect to shaping human behavior.