11-2005

ELR
NEWS & ANALYSIS

35 ELR 10763

Social Norms and Individual Environmental Behavior

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Editors' Summary: In this Article, Prof. Ann Carlson argues that although appealing to environmental values as a means to instill behavioral change will, in most instances, work less well than reliance on other regulatory tools, voluntary behavioral change may nevertheless be necessary either to achieve marginal environmentally friendly behavior or because no good regulatory alternative exists. She therefore evaluates those circumstances in which there may be no alternative but to rely on voluntary behavioral change and suggests ways to increase such change. Professor Carlson finds that social norms may work well for convenient, one-shot behavior requiring no real sacrifice on the part of the individual. Conversely, a social norm is less likely to succeed in inducing behavior change if the requisite behavior is onerous or cumbersome, if the behavior requires sustained behavioral change, or if the individual gains something from engaging in the environmentally harmful behavior.

I. Introduction

I applaud the recent focus on the contribution individuals—as opposed to more discreet pollution sources like corporations and municipal utilities—make to environmental harm.[1] I agree that in some instances this focus should cause us to reevaluate our regulatory apparatus. But I should state my position in this Article at the outset: I'm a pessimist about encouraging—through the strengthening of social norms—widespread voluntary behavioral change to resolve environmental problems to which individuals contribute in large numbers. My operating assumption in this Article is that appealing to environmental values as a means to instill behavioral change will, in most instances, work less well than reliance on other regulatory tools. Thus, if an alternative regulatory action exists to achieve a particular regulatory gain—statutory miles per gallon fleet rules to reduce carbon dioxide (CO_2) emissions as opposed to voluntary campaigns to get consumers to buy fuel-efficient cars; emissions controls on automobiles rather than appeals to drive less—my assumption is that the mandate is a more effective means to achieve the environmental aim than reliance on voluntary behavioral change.

Nevertheless, there will be instances in which other regulatory mechanisms—taxes, production bans, criminal sanctions—are either politically infeasible or pose enforcement challenges too large to be efficacious. Moreover in some instances we may need individual environmentally cooperative behavior to help achieve environmental compliance on the margins as a supplement to more traditional regulatory mechanisms. This Article, therefore, evaluates the circumstances in which we may have no alternative but to rely on voluntary behavioral change to resolve environmental problems and suggests ways to increase such change while underscoring notable limitations to this approach.

In discussing the use of social norms to control individual environmentally destructive behavior, I focus on two categories of environmental problems: "large-number, small-payoff" environmental problems and "small-number, large-payoff" environmental problems. These categories are based on two variables: the size of the population of the group whose behavior must change to diminish the environmental problem, and the intensity of the economic or other interest a group member is likely to have in resolving the problem.[2]

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1. *See* Michael P. Vandenbergh, *From Smokestack to SUV: The Individual as Regulated Entity in the New Era of Environmental Law*, 57 Vand. L. Rev. 515 (2004) [hereinafter Vandenbergh, *From Smokestack to SUV*].

2. *See* Ann E. Carlson, *Classifying Social Norms*, *in* The Jurisdynamics of Environmental Protection: Change and the Pragmatic Voice in Environmental Law 407 (Jim Chen ed. 2003) (describing additional categories of nonenvironmental behavior subject to social norms); *cf.* Lior J. Strahilevitz, *Social Norms From Close-Knit Groups to Loose-Knit Groups*, 70 U. Chi. L. Rev. 359 (2003) (characterizing groups by the extent of interaction among group members as "close," "intermediate," and "loose"); Michael P. Vandenbergh, *Order Without Social Norms: How Personal Norm Activation Can Protect the Environment*, 99 Nw. U. L. Rev. 1101, 1105 n.21 (2005) (relabeling large-number, small-payoff problems as "negative-payoff, loose-knit" problems) [hereinafter Vandenbergh, *Order Without Social Norms*].

I focus on group size and economic interest for two reasons. First, empirical evidence strongly suggests that social norms are more likely to work effectively to resolve an environmental problem among smaller groups with a large economic (or other) incentive to engage in environmentally cooperative behavior. Second, the most promising avenues for encouraging voluntary behavior among large groups with diffuse interests in environmental change may involve attempting to mimic the conditions that arise in small-number, large-payoff groups for which social norms work most effectively. Put a different way, if we can make a large group seem smaller by dividing it into subgroups (e.g., neighborhoods, workplaces) we may increase the viability of social norms strengthening as an environmental regulatory tool.

Within the category of large-number, small-payoff environmental problems—the category in which the majority of our most pressing environmental problems reside—three additional variables can also help predict whether a social norm to induce environmentally helpful behavior will succeed. Most importantly, a social norm is less likely to succeed in inducing behavioral change if the requisite behavior is onerous or cumbersome or if the behavior requires sustained behavioral change. Additionally, social norms are likely to work less well if an individual gains something from engaging in the environmentally harmful behavior—driving or using air conditioning are obvious examples.

Conversely, social norms may work reasonably well for convenient, one-shot behavior that involves no real sacrifice other than mild inconvenience. Behavior that requires sustained behavioral change that is convenient and behavior that is onerous but one-shot probably fall somewhere in the middle of the likely-to-succeed spectrum. One additional point is worth making here: if we can decrease the inconvenience of an environmentally desirable behavior, e.g., placing trash cans in public places to avoid littering, we can increase the likelihood that the behavioral change will stick.

This categorization should help us assess the likelihood that social norms activation will work to reduce the contributions individuals make to the environmental problems Prof. Michael Vandenbergh has identified in his work.[3] Professor Vandenbergh persuasively shows that individuals contribute to major environmental problems in alarming amounts through, for example, emitting air toxins and ozone precursors from automobile emissions, using pesticides that contribute to urban runoff, and contributing a large percentage of dioxin releases through backyard burning.[4] All three problems constitute large-number, small-payoff problems, though arguably the individual payoff (in reduced direct exposure to toxic chemicals) to those who stop backyard burning and home pesticide use may make these problems somewhat easier to address through strengthening social norms. The two variables I identify within the large-number, small-payoff category, the inconvenience and duration of the required behavioral change, should also help us analyze whether the appropriate mechanism for reducing individual contributions to environmental problems is social norms strengthening or some other regulatory means.[5]

Unfortunately, the most significant individual contributions to environmental harms are, under this analysis, the least amenable to voluntary behavioral change. Far and away the most environmentally damaging behavior in which individuals engage is driving. Personal automobile usage creates a large percentage of emissions of ozone precursors, acetaldehyde, benzene, and formaldehyde,[6] not to mention the traffic problems that plague many U.S. metropolitan areas. Yet campaigns to reduce personal automobile usage face a tremendous uphill battle: driving less or using alternative forms of transportation is highly inconvenient and requires sustained behavioral change. Moreover, the collective action problems of large-number, small-payoff problems are easily illustrated here: one person's effort to drive less makes little difference in the scheme of things so it's easy to reason that eliminating any individual car trip will make no environmental difference. Alternative regulatory means—ever tighter emissions controls on automobile manufacturers; the expansion of bus transportation; transportation pricing policies[7]—are all likely to produce greater reductions in individual pollution contributions than efforts to strengthen (or establish in the first instance) a social norm in favor of driving less.

Other environmental problems Professor Vandenbergh identifies may lend themselves better to social norms strengthening. For example, individuals contribute to stormwater pollution in many ways, including by dumping materials directly and indirectly into storm drains that run unfiltered to large bodies of water. Such behaviors may be particularly susceptible to norms campaigns: education and norms strengthening efforts aimed at those who dump oil into gutters or those who litter cigarette butts that wind up in storm drains may work effectively as long as convenient disposal alternatives are available.

The remaining portion of this Article describes the two categories of environmental problems (small-number, large-payoff and large-number, small-payoff) in more detail. It then uses energy conservation as an example of a large-number, small-payoff problem to illustrate how social norms might work or fail to work to encourage conservationist behavior. The Article also looks at small-number, large-payoff success stories to suggest ways in which social

3. *See* Vandenbergh, *From Smokestack to SUV*, *supra* note 1, at 546-84; *see also* Vandenbergh, *Order Without Social Norms*, *supra* note 2.

4. Vandenbergh, *From Smokestack to SUV*, *supra* note 1.

5. Even then, however, other regulatory mechanisms may work more effectively than social norms strengthening in reducing the environmentally harmful behavior. For example, as is analyzed much more extensively in Ann E. Carlson, *Recycling Norms*, 89 Cal. L. Rev. 1231 (2001), making recycling highly convenient is a much more effective way to increase recycling than social norms strengthening.

6. Vandenbergh, *From Smokestack to SUV*, *supra* note 1, at 569. Of course, not all automobiles pollute in identical ways. The older the vehicle, the more likely the car or truck is a heavy polluter. California air officials estimate, for example, that about one-half of all mobile source emissions in the state come from only 10% of vehicles. *See* Miguel Bustillo, *Smog Cops to Look for Emissions of Guilty*, L.A. Times, Aug. 14, 2005, at A1. This figure will rise to 75% by 2010. *Id.* For a description of innovative efforts to reduce the number of dirty cars in southern California, including the use of remote sensors to detect high emissions vehicles, see *id.*

7. See Randall Crane & Paul Ong, *Traffic*, *in* 2004 Southern California Environmental Report Card 5 (2004), *available at* http://www.ioe.ucla.edu/reportcard.htm (last visited Sept. 14, 2005), for analysis of the most effective means to reduce Los Angeles traffic.

norms might be used more effectively, again using individual energy conservation as an example.

II. Collective Action, Social Norms, and the Environment

A. Tragedy of the Commons

Though the problem of the tragedy of the commons, created as a result of a misalignment between group and individual interests, is well known, it is nevertheless worth emphasizing here. Commons resources—resources not privately owned to which virtually anyone has access—face problems of pollution, overharvesting, and ruin because individual users of a commons resource lack the incentive to conserve it.[8] Individual conservationist behavior is discouraged because if one individual conserves, another may easily come along and overharvest the resource, making the conservationist behavior irrelevant and the individual conservationist feel duped. Many regulatory mechanisms may work to resolve the tragedy of the commons, but the hope of social norms theorists is that by creating or strengthening a social norm in favor of the conservationist behavior many users will conserve voluntarily.

In Garret Hardin's original formulation of the problem, commons goods included both true public goods like air, where no one can be excluded from their use and their consumption is nonrivalrous (that is, if A consumes some of the good, no less of it remains for B and C),[9] and commons property like national parks and grazing land, where access to the resource is theoretically unlimited but presumably could be and often is controlled. More recent formulations sometimes still speak of commons problems in general terms,[10] but distinguishing among types of commons problems is important to the analysis here[11] because users of commons resources where territory is limited and access can be controlled sometimes develop independent norms to manage the resources successfully. Thus, it is useful to think about commons problems on a spectrum, with major environmental problems at one end of the continuum and contained resources with a relatively small number of users at the other. This Article refers to problems at the "major environmental problems" end of the spectrum (air pollution, stormwater pollution of a large urban body of water such as a bay) as "large-number, small-payoff problems," while those at the opposite end (a fishery with a limited number of commercial anglers, a body of water used by small farms) are "small-number, large-payoff" problems.

Commons problems also raise what might be called "second-order problems of collective action."[12] Not only do resource users (or polluters) face incentives to abuse the resource, they also face a collective action problem in organizing one another to attempt to resolve the problem. Again, problems of free riding and incentives to organize abound.[13] Though the incentives to abuse commons resources are similar regardless of whether the commons is a major one approaching a public good like air, or a small one such as a small fishery with controlled access, solutions to the commons problems may differ depending on several factors. First, the larger the group, the more difficult it may be to encourage behavioral change; a corollary of this point is that if access to a commons resource is limited to a finite number of people, the chances of independent management of the commons increases. Second, the smaller the payoff to any one individual from solving the problem, the more difficult behavioral change may be. For small-number, large-payoff commons problems, solutions are much more likely to arise internally within the group through the development of independent norms governing issues such as access and use. Even when such norms do not arise, externally imposed management efforts can look to success stories to help replicate the conditions leading to the development of independent norms. By contrast, large-number, small-payoff problems more frequently require externally imposed solutions and are more difficult to resolve through social norms management.

Though the tragedy of the commons is often described by using overconsumption of a resource as an example, Hardin also recognized what he called "the tragedy of the commons as a cesspool."[14] The idea here is that commons problems arise not only when a resource is overharvested but also when a resource is polluted. The economic incentives in favor of polluting are strong, particularly given that any harm caused to the commons resource, e.g., air or water, will be dispersed among many (or externalized). Moreover, the incentive to engage in conservationist behavior is small: any efforts to conserve can simply be offset by others' pollution.

B. Small-Number, Large-Payoff Commons Problems

Since the publication of Hardin's famous formulation, a number of social scientists have challenged his theoretical assumption that commons resources will inevitably fail. Empirical field work demonstrates that in a number of instances, commons users solve the tragedy by creating their own set of institutional norms to regulate commons usage. The existence of these social norms is extremely important on several fronts. First, independent resolution of the tragedy of the commons undermines strongly held (and diametrically opposed) views that the solution to the tragedy is either to privatize property rights or to impose external government management of the commons.[15] Second, the trag-

8. *See* Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968).

9. *See* Thomas S. Ulen, *Rational Choice and the Economic Analysis of Law*, 19 LAW & SOC. INQUIRY 487, 492-93 (1994).

10. *See, e.g.*, Elinor Ostrom, *A Behavioral Approach to the Rational Choice Theory of Collective Action*, 92 AM. POL. SCI. REV. 1, 1 (1998) ("Social dilemmas are called by many names, including the public-good or collective-good problem [and] the tragedy of the commons.").

11. James Acheson, among others, makes such a distinction. *See* JAMES M. ACHESON, THE LOBSTER GANGS OF MAINE (1988).

12. *See* ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 182 (1990) (discussing the creation of institutions to resolve tragedies of the commons as a "second-order dilemma"); *cf.* Richard McAdams, *The Origin, Development, and Regulation of Norms*, 96 MICH. L. REV. 338, 352 (1997) (describing the problem of norm enforcement as a "second-order collective action problem").

13. These second-order collective action issues can arise in small-number, large-payoff situations as well, though they are more easily overcome within small, homogenous groups. *See* RUSSELL HARDIN, COLLECTIVE ACTION 39-40 (1982).

14. *See* Hardin, *supra* note 8, at 1245.

15. Several scholars have emphasized this point. *See* Bonnie J. McKay & James Acheson, *Human Ecology of the Commons*, *in* THE QUESTION OF THE COMMONS 34 (Bonnie J. McKay & James Acheson eds., 1987) (describing the policy prescriptions of privatization and

edy of the commons is not an inevitable outcome of commonly held property. Third, the success some resource users have in managing commons resources may provide important institutional lessons to policymakers seeking solutions to manage commons resources that may otherwise face tragedy without external intervention. Put a different way, perhaps the social norms and institutions some resource users develop can be replicated in the management of other commons resources. The third point holds the most promise for enthusiasts of social norms as a regulatory tool.

Scholars who have studied successful management of commons resources—those that achieve a balance between consumption of the resource and its replenishment—have suggested that the development of means to manage these resources typically occurs when several conditions are present. But before describing those conditions, it is worth considering the types of resources at stake and an example of the successful development of norms that have achieved resource balance.

Scholars in anthropology, political science, economics, and environmental studies have documented successful commons management of fisheries, grazing land, and water resources in areas around the world, including the Amazon, Botswana, subarctic Canada, Japan, Philippines, and Switzerland.[16] The experience of lobstermen in Maine provides an interesting illustration of independent management of a commons resource.

James Acheson has devoted much of his career to studying the lobstermen of Maine.[17] Although the state of Maine imposes some legal limits on lobster fishing (including size), Acheson reports that "anyone who has a license can go lobster fishing anywhere."[18] Yet "in reality, far more is required."[19] Acheson has documented how the harvesting of lucrative lobster off the coast of Maine is subject to an elaborate structure of territoriality, enforced by "harbor gangs" through sanctions for territorial encroachment. The sanctions escalate with repeat violations, starting with the opening of traps for an initial violation followed by the destruction of lobster traps for further violations and even escalating to the destruction of lobster boats. Virtually all of this "regulatory activity is almost entirely hidden from law enforcement personnel."[20] Acheson reports that even among those subject to the most severe sanctions for norms violations, conflict remains very quiet.[21]

The most successful extralegal enforcement of territory occurs in territories that are strictly monitored and enforced, where entry into the gangs of lobstermen allowed to fish in these areas is also restricted. The result of strict territorial enforcement and access to harbor gang membership in these territories is that the areas are healthier ecologically and provide higher economic returns to the lobstermen who fish in them than are areas subject to less-stringent access, monitoring, and enforcement.[22]

Acheson's lobstermen share a number of characteristics with other successful managers of commons property. Elinor Ostrom has developed perhaps the most detailed assessment of the qualities present in the success stories she and others have studied. Ostrom argues that one is most likely to find independently developed norms and institutions to manage commons resources if the following qualities are present: relatively small size (Ostrom has studied what she terms "common pool resources" with up to 15,000 users), heavy dependence on the resource for economic livelihood, clear territorial boundaries, restricted membership among those allowed access to the resource, limitation on access to outsiders, opportunities for monitoring of norms violations, graduated sanctions for violations, an arena for making decisions, a localized physical setting, and repeat opportunities for communication.[23] She has also described the circumstances under which a "tragedy of a commons resource is most likely to develop: where the users have high discount rates (or, to put it differently, a very short-term view); a lack of mutual trust; and little or no capacity to communicate, monitor resource abuse, or enter into binding agreements."[24] In other words, large-scale commons problems are most likely to face abuse consistent with Hardin's theory.

The research about successful independent commons resources provides important information for attempts to regulate individual contributions to environmental problems. Not only does it suggest that commons resources at times need no outside intervention, but the empirical findings also provide lessons for policymakers about whether they might succeed in replicating the conditions necessary for the development of localized institutions that can help reduce commons abuse. As with small-number, large-payoff problems, can policymakers provide, for example, increased opportunities for communication and monitoring? In contrast with small-number, large-payoff problems, can access to a commons resource be restricted by limiting, say, fishing licenses? And successful commons resource management might be transported to large-number, small-payoff problems. For example, can policymakers devise ways of making large commons resources seem like smaller ones by consciously promoting communication, monitoring, and even territoriality?

C. Large-Number, Small-Payoff Collective Action Problems

If the story about small-number, large-payoff commons problems is one of occasional success, social norms may make a difference in resolving large-number, small-payoff collective action problems only on the margins and typically in concert with other regulatory tools. As with small-num-

government intervention as capable of "weaken[ing] or demolish[ing] existing institutions"); Ostrom, *supra* note 12, at 8-11 (describing the two positions as "Leviathan as the only way" and "Privatization as the only way.").

16. See the collection of essays in The Question of the Commons, *supra* note 15; *see also* Ostrom, *supra* note 12, at 58-87.

17. *See* James Acheson, *The Lobster Fiefs: Economic and Biological Effects of Territoriality in the Maine Lobster Industry*, 3 Human Ecology 182 (1975); James Acheson, *The Lobster Fiefs Revisited: Economic and Ecological Effects of Territoriality in the Maine Lobster Industry, in* The Question of the Commons, *supra* note 15, at 37 [hereinafter Acheson, *The Lobster Fiefs Revisited*].

18. Acheson, *The Lobster Fiefs Revisited*, *supra* note 17, at 40.

19. *Id.*

20. *Id*. at 41.

21. *Id.*

22. *Id.* at 40-58.

23. Ostrom, *supra* note 12, at 180-89. Bonnie McKay and Acheson suggest that territoriality and the ability to limit access to a commons resource are extremely important in lessening the likelihood of commons abuse. *See* McKay & Acheson, *supra* note 15, at 11.

24. Ostrom, *supra* note 12, at 183.

ber, large-payoff commons problems, the characteristics of a particular large-number, small-payoff collective action problem are especially important in evaluating the likely effectiveness of social norms management as a regulatory tool. Two of the central characteristics of this category—size and lack of individual payoff—make it less likely that social norms will resolve an environmental problem.

Many large environmental problems (and some nonenvironmental problems like blood donation and contributions to public radio) are classic examples of large-number, small-payoff collective action problems. The overconsumption of energy by residential consumers is a good example. Most energy usage requires the burning of various fossil fuels (oil, natural gas, coal), all of which are nonrenewable and all of which contribute to various environmental problems, such as greenhouse gas emissions[25] and air pollution.[26]

One can imagine the obstacles to resolving the collective action problem posed by the overconsumption of energy by residential consumers. Millions of people contribute to the problem (hence its denomination as a large-number problem), and while its resolution will provide benefits to the collective group, the benefits are diffuse, long-term, and largely not of immediate payoff to any one individual (hence a small payoff). The sacrifices required of an individual to contribute to the solution of the problem can be relatively large, at least when compared to any benefits gained by compliance: less heat in the winter and less air conditioning in the summer are not particularly attractive options for many consumers. Could a social norm in favor of reducing energy consumption make a serious dent in the problem of overconsumption? That is, in addition to taking into account the costs and benefits of consuming electricity, could a social norm emerge that grants esteem, inner satisfaction, and other forms of social approval and personal satisfaction to those who conserve energy? And could the positive benefits from complying with the norm in favor of energy conservation be sufficiently large as to overcome the benefits of energy consumption?

The scenario is plausible, and various theorists have suggested ways in which social norms might emerge.[27] A norm against energy waste could emerge spontaneously, whether because a number of people find it relatively costless to withhold esteem from those who violate the norm[28] or because engaging in energy conservation signals to others one's propensity to engage in cooperative behavior.[29] Norms might also emerge because various "norm entrepreneurs"—those interested in changing social norms—work to change a norm, perhaps through encouraging a "norm bandwagon" or a "norm cascade," where a social norm shifts rather quickly.[30] The government itself might act as a norm entrepreneur in an attempt to avoid more costly or Draconian regulatory means, such as higher energy prices for high energy usage.

How likely is an effective social norm in favor of energy conservation to emerge? Several factors seem salient in answering this question. Both features of the problem—large size and small payoff—make it less likely that strengthening social norms will resolve the problem. The opportunities for free riding on others' conservationist behaviors are large. Monitoring and communication among group members are likely to be insignificant both because the problem involves millions of people and because the economic incentive for engaging in monitoring and communication for any one individual is small. The likelihood for social punishment for transgressing a social norm at a level that would motivate significant behavioral change seems small, again because the payoff to punishers is small (it seems hard to imagine violence erupting over someone's failure to turn out the lights). Contrast these problems with, say, encroaching on another's lobster fishing territory and one can see the difficulty in relying on social norms to resolve large-number, small-payoff problems.[31]

Even among large-number, small-payoff problems, however, the nature of the behavioral change necessary to comply with a social norm varies in important ways. Most importantly, what is the nature of the behavioral change necessary to resolve the problem? At least three qualities of the necessary behavior seem relevant here: degree of effort; sustainability of effort; and countervailing personal gains from failure to comply with the norm.

With respect to effort, the higher the effort required to engage in "environmentally correct" behavior, the stronger one must believe in the social norm in favor of the behavior.[32] And the strength of belief in the social norm at issue must be even stronger if the behavior requires both high effort *and* repetition. In other words, high-effort, one-shot be-

25. *See* United Nations Intergovernmental Panel on Climate Change, Climate Change 2001: Synthesis Report 8-9 (2001), *available at* http://www.ipcc.ch/pub/reports.htm (last visited Sept. 14, 2005). Residential energy usage results in about 14% of all U.S. CO_2 emissions. Electric utilities account for about one-third of the U.S. greenhouse gas emissions. *See* Energy Information Administration, *Emissions of Greenhouse Gases in the United States, 2003 Summary*, *at* http://www.eia.doe.gov/oiaf/1605/ggrpt/carbon.html (last visited Aug. 29, 2005). Some fossil fuels are cleaner burning than others; coal is particularly dirty and emits particularly large amounts of CO_2, one of the principal greenhouse gases. For an evaluation of California's efforts to reduce greenhouse gas emissions from automobiles, see Ann E. Carlson, *Environmental Federalism, Preemption, and Greenhouse Gas Emissions*, 37 U.C. Davis L. Rev. 281 (2003) (symposium issue).

26. Utilities are major contributors of nitrous oxide, sulfur dioxide, and CO_2. *See* U.S. Environmental Protection Agency, Inventory of Greenhouse Gas Emissions and Sinks, 1990-2001, at 27 (2003), *available at* http://yosemite.epa.gov/OAR/globalwarming.Nsf/content/ResourceCenterPublicationsGHGEmissionsUSEmissionsInventory2003.html (last visited Aug. 29, 2005).

27. *See, e.g.*, McAdams, *supra* note 12; Robert C. Ellickson, *The Market for Social Norms*, 3 Am. L. & Econ. Rev. 1 (2001); Eric Posner, Law and Social Norms (2000).

28. Richard McAdams suggests that social norms may emerge in this fashion. *See* McAdams, *supra* note 12, at 358.

29. *See* Posner, *supra* note 27, at 24-25 (positing that norms arise in order to signal cooperative behavior).

30. *See* Cass R. Sunstein, *Social Norms and Social Roles*, 96 Colum. L. Rev. 903, 909 (1996) (describing norm entrepreneurs, norm bandwagons, and norm cascades); *see also* Timur Kuran & Cass R. Sunstein, *Availability Cascades and Risk Regulation*, 51 Stan. L. Rev. 683 (1999). For a theory about how some people become norm entrepreneurs, see Ellickson, *supra* note 27.

31. One interesting question is whether social norms for voluntary environmental behavior are culturally contingent. Anecdotal evidence suggests that certain conservationist norms may be stronger in some European and Asian countries than they are in the United States. More research into comparative conservationist norms and their effects on overall conservation levels would be useful in understanding the degree to which norms strengthening could become a more effective strategy than is suggested here.

32. See Carlson, *supra* note 2, at 1282-85, for a more detailed discussion of this point.

havior requires a lower commitment to a social norm than high-effort, repeat behavior. Finally, if countervailing benefits inure to norm violators, then commitment to the norm must be especially robust, e.g., the convenience of driving versus carpools.

Not only is the nature of the necessary behavior relevant, but so is the availability of solutions other than reliance on social norms management. For example, reducing the effort necessary to engage in the desired behavior is likely to have much greater impact than attempting to strengthen social norms in favor of the behavior. Indeed, evidence from recycling research suggests that if the behavior necessary to resolve a large-number, small-payoff problem can be made with very low effort, then commitment to a social norm in favor of the behavior has little relationship to participation in the activity.[33]

Anti-littering efforts and carpooling provide excellent illustrations. Anti-littering campaigns are likely to be most successful if large numbers of conveniently placed trash cans are available. Only a low-level commitment to a social norm in favor of not littering will be necessary to achieve compliance with the needed behavior. If, however, trash cans are not readily available, then norm commitment will matter more. Efforts to induce drivers to carpool more often have predictably proven to be especially impervious to norms strengthening campaigns: the effort required to engage in carpooling is high, the behavior requires repetition for effectiveness, and countervailing pressures to drive alone (convenience, desire for solitude) are high.[34]

How does a campaign to reduce energy consumption fare under this analysis? On the one hand, the effort required in reducing energy usage is relatively small—turning out the lights when leaving a room is not terribly burdensome. Yet the behavioral changes necessary for a contribution to energy reduction must be sustained over time. Moreover, more significant residential energy consumption from air conditioning and heating provides significant benefits to consumers, benefits conservation efforts force them to forego. Thus, commitment to a social norm in favor of conservation must be fairly strong in order to sustain the necessary behavioral change. If social norms managers need immediate short-term conservationist behavior (in a short-term energy crisis, for example), pleas to conserve energy might be quite effective. Reducing long-term energy consumption, however, is likely to require more imaginative efforts such as mandating energy-efficient buildings, providing rebates for the purchase of energy-efficient appliances, etc.[35] There are, of course, benefits that inure to energy consumers who sustain their conservationist behavior in the form of lower bills. At least some evidence from the recycling context suggests, however, that the savings would have to be fairly high to make a significant difference in encouraging conservationist behavior.[36]

If one were to use social norms strengthening as a strategy to encourage energy conservation, lessons from the successful management of small-number, large-payoff environmental problems may increase the likelihood of success. Recall the various predictors Ostrom and her colleagues have found that improve the likelihood norms will emerge to manage a commons resource successfully. Among them are relatively small group size, opportunities for communication, and monitoring of others' behavior. Residential energy conservation does rather poorly under this analysis—conservation activities are largely invisible and utility consumers are a large and heterogeneous group. But utilities possess information that could be conveyed to consumers in order to mimic—to a small degree—the small-number, large-payoff situation. Utilities could provide neighborhood breakdowns of energy usage in utility bills along with, for example, average energy usage by neighborhood and household type, e.g., three-bedroom home, 2,200 square feet, and contrast average energy usage with the bill payer's usage. This information could also be provided over time in order to show patterns of usage and encourage long-term conservation. A household might see, for example, that it uses 20% more energy than comparable households within a several block radius. The information would need to be conveyed in an accessible and noticeable fashion, in contrast to current ratepayer information that is often included on bills in small print without comparable neighborhood information. One could imagine an insert in an electric bill saying, for example: "Do you know that your household is using 20% more electricity than your neighbors who live in similar-sized homes?" and provide suggestions for reducing energy. Similarly, technological innovations may help convey information about energy usage that can help trigger environmentally compliant behavior. A thermostat may be capable of providing instantaneous information about wasteful uses, for example, that may remind consumers to conserve. Similarly, water faucets may be programmed to provide information about water usage, information that may again trigger more environmentally sensitive behavior (though again, making water usage difficult—by installing faucets that turn off automatically, low-flush toilets, and the like—may reduce usage by even greater amounts).

Although Professor Vandenbergh focuses on individuals as a pollution source in their private, nonworking capacities,[37] one can also imagine using these norms strengthening strategies among employees in the business sector by breaking employees into smaller groups by physical space and comparing energy usage (to the degree technologically possible). The point here is to think about creative ways to make larger groups smaller and to increase communication and monitoring opportunities in order to strengthen the effectiveness of norms.

It should be stressed, again, that it is doubtful such efforts can resolve our large environmental problems effectively without further regulatory efforts. In the energy context, for example, requirements that utilities purchase renewable energy and that developers build energy-efficient households are likely to produce much larger reductions in en-

33. *See id.*

34. *See* David Brownstone & Thomas F. Golob, *The Effectiveness of Ridesharing Incentives: Discrete-Choice Models of Commuting in Southern California*, 22 Regional Sci. & Urb. Econ. 5 (1992). For an interesting discussion of the effects of a program that allows solo drivers to pay for the right to use carpool lanes, see Lior J. Strahilevitz, *How Changes in Property Regimes Influence Social Norms: Commodifying California Carpool Lanes*, 75 Ind. L.J. 1231 (2000).

35. California has one of the lowest rates of per capita energy consumption in the country in part due to the aggressive implementation of such policies. *See* California Energy Commission, Staff Report, Inventory of California Greenhouse Gas Emissions and Sinks: 1990-1999, at 10 (2002).

36. *See* Carlson, *supra* note 2, at 1293 (discussing evidence that making recycling easier is more effective than charging for garbage pickup).

37. Vandenbergh, *From Smokestack to SUV*, *supra* note 1, at 539.

ergy consumption than voluntary conservation efforts over the long haul. But again, on the margins, social norms strengthening may add to other measures in an overall conservationist strategy.

III. Conclusion

The problem of individual contributions to environmental problems is a major one that deserves the recognition that "The Next Environmental Frontier: Individual and Household Behavior" symposium has given it. Our regulatory system has focused most extensively on sources that are most easily regulated. Hard work remains if we are to move closer to achieving the lofty goals of many of our federal environmental statutes, particularly the Clean Air Act and the Clean Water Act. No simple solutions exist that will reduce the contributions individuals make to environmental problems. My aim here is to examine the likelihood that one potential solution—individual voluntary behavioral change—can achieve significant pollution reductions. My conclusion is not optimistic, but voluntary behavioral change may nevertheless be necessary either to achieve marginal environmental cleanup or because no good regulatory alternative exists. If so, we need to use success stories in the small-number, large-payoff context to maximize the possibility that voluntary behavioral change can work as a regulatory strategy.