Law and Norms in Collective Action: Maximizing Social Influence to Minimize Carbon Emissions

*Jed S. Ela**

ABSTRACT

Legal scholars have long argued that informal social norms can solve collective action problems, as long as these problems occur in close-knit groups. This "group knittedness hypothesis" may suggest that social norms, by themselves, will not be able to solve the world's largest collective action problem: anthropogenic climate change. Yet recent scholarship has taken the group knittedness hypothesis too far, suggesting that any attempt to manage social influences in large, loose-knit groups is likely to be relatively ineffective.

In fact, social norms *can* shape individual behavior even in loose-knit groups, and climate policies that ignore norms may miss important opportunities to reduce carbon emissions. To predict how social norms might aid specific policy interventions, this Comment proposes looking at the visibility of specific behaviors rather than the knittedness of groups. According to two leading theories of the origin of social norms, norms govern the behaviors that people use to compete for social status or economic benefits. Because behaviors must be visible to become vehicles for competition, policymakers may be able to leverage norms by tailoring interventions to the visibility of carbon-emitting behaviors. For highly visible behaviors, where social influences are likely to be strong, policymakers should focus on creating a normative consensus in favor of changing behavior in order to align social influences with the desired policy. In contrast, for lower-visibility behaviors, policymakers must first focus on raising visibility, since visibility is necessary for social enforcement to begin. Finally, for inherently low-visibility behaviors,

* Emil Joseph Stache Public Interest Scholar, J.D. class of 2011, UCLA School of Law.

policymakers must design interventions to work entirely without social enforcement—or simply direct interventions toward other, more visible behaviors.

I.
INTRODUCTION

Law-and-norms theorists have long acknowledged the power of social influences to determine individual behavior, and some have championed efforts to manage social norms[1] in situations where enforcement difficulties, transaction costs or political realities render other regulatory techniques—such as laws or economic incentives—ineffective or politically unpalatable.[2] Such situations include many important environmental harms caused

1. While the legal literature of social influences on individual behavior (the "norms literature") often refers generically to such influences as "social norms," the term "social norm" is troublingly ambiguous. Therefore, in this Comment I have made an effort to refer to *social influences* on behavior as such, rather than to "norms." This is not always possible, due to the dominance of the term "norm" in prior literature. For my rationale in distinguishing "social influences" from "social norms," *see infra* text accompanying notes 45–46.

2. *See, e.g.*, Richard H. McAdams, *The Origin, Development, and Regulation of Norms*, 96 MICH. L. REV. 338, 391–392 (1997) (noting that "Those who study law should study norms" and pointing to the role of norms in restricting smoking and promoting racial equality); Lawrence Lessig, *The New Chicago School*, 27 J. LEGAL STUD. 661, 667–70 (1998) (listing arguments for social norms as optimal means of regulating smoking, seat belt use, discrimination against the disabled, drugs and abortion); Dan M. Kahan, *Social Influence, Social Meaning, and Deterrence*, 83 VA. L. REV. 349, 337–73 (1997) (arguing that changing social norms through "broken windows" policing may eliminate crime more efficiently than traditional enforcement and deterrence).

by individuals,[3] leading scholars to suggest that social influences have important roles in inducing people to recycle,[4] abstain from littering,[5] and clean up after their dogs.[6]

At the same time, law-and-norms theorists have also argued that the ability of social norms to solve collective action problems depends upon relatively immutable characteristics of the social groups in which such problems occur.[7] Although scholars disagree about exactly which characteristics are required for social norms to solve collective action problems, a number of leading candidates—including face-to-face contact, long-term or repeated interactions, and reciprocal power between members—

3. Michael P. Vandenbergh, *From Smokestack to SUV: The Individual as Regulated Entity in the New Era of Environmental Law*, 57 VAND. L. REV. 515, 554–56 (2004) [hereinafter Vandenbergh, *From Smokestack to SUV*] (describing political backlash against command-and-control regulation of personal motor vehicle use); Michael P. Vandenbergh, *Order Without Social Norms: How Personal Norm Activation Can Protect The Environment*, 99 NW. U. L. REV. 1101, 1103 (2005) [hereinafter Vandenbergh, *Order Without Social Norms*] (describing unpopularity of environmental taxes and backlash against smog restrictions targeting outdoor cooking, with critics complaining "use a barbecue, go to jail.").

4. *See* Cass R. Sunstein, *Social Norms and Social Roles*, 96 COLUM. L. REV. 903, 906-07 (1996) (using recycling as an example of a behavior best explained by norms); McAdams, *supra* note 2, at 369–72 (exploring the theoretical origins of a pro-recycling norm).

5. *See* Robert C. Ellickson, *Law and Economics Discovers Social Norms*, 27 J. LEGAL STUD. 537, 540 (1998); McAdams, *supra* note 2, at 364–65; Richard H. McAdams, *An Attitudinal Theory of Expressive Law*, 79 OR. L. REV. 339, 368–69 (2000) [hereinafter McAdams, *Attitudinal Theory*]; Cass R. Sunstein, *On the Expressive Function of Law*, 144 U. PA. L. REV. 2021, 2032 (1996); Sunstein, *supra* note 4, at 905.

6. *See* Robert D. Cooter, *Decentralized Law for a Complex Economy: The Structural Approach to Adjudicating the New Law Merchant*, 144 U. PA. L. REV. 1643, 1675 (1996); McAdams, *Attitudinal Theory*, *supra* note 5, at 368–69; Sunstein, *supra* note 4, at 918.

7. In collective action problems, members of a group must decide between cooperative and noncooperative actions. Returns from cooperative actions are higher, but are allocated to all members proportionally, regardless of whether they themselves cooperate. Meanwhile, each member keeps for himself the (lower) returns from non-cooperative action. Thus, the best strategy for any individual is to free-ride on the cooperative efforts of others, resulting in little cooperation and suboptimal aggregate returns. Overcoming such problems is a classic rationale for coercive action by government. *See* MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS (1971); Garrett Hardin, *The Tragedy of the Commons*, 162 SCI. 1243 (1968). Many important contemporary environmental problems, such as recycling (that is, avoiding depletion of landfill space), consumption of nonrenewable resources, releases of toxic pollution, and of course anthropogenic climate change, can thus be viewed as global-scale collective action problems. *See, e.g.*, William Nordhaus, *Reflections on the Economics of Climate Change*, J. OF ECON. PERSP., Fall 1993, 11, 18 (calling climate change the "granddaddy of public goods problems.").

have often been rolled into one composite characteristic, "knittedness."[8] While knittedness and size are theoretically independent, in practice, the largest groups are unlikely to be close-knit.[9] Thus, when it comes to social norms solving collective action problems, it seems that size matters: smaller groups are better, while the largest ones may be hopeless.[10]

These two trends in law-and-norms theory—optimism that social norms can manage important social problems caused by individual behavior, yet pessimism that social norms can solve the largest collective action problems—have come to a head in recent scholarship on the regulation of individual environmental behavior.[11] To date, this literature has come down firmly on the side of social-norms pessimism. Counseling caution (at best) over social-norms interventions, authors such as Ann Carlson and Michael Vandenbergh have argued that infrastructure projects, economic incentives, and campaigns aimed at changing personal beliefs are better suited than social norms management for regulating individual behavior in large collective action problems.[12]

---

8. *See* ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES 177-78 (1991) ("A group is *close-knit* when informal power is broadly distributed among group members and the information pertinent to informal control circulates easily among them . . . [T]he residents of a small, remote island are an example of an extremely close-knit group."); Lior Jacob Strahilevitz, *Social Norms from Close-Knit Groups to Loose-Knit Groups*, 70 U. CHI. L. REV. 359, 359 (2003) ("Typically, close-knit groups are made up of repeat players who can identify one another.").

9. ELLICKSON, *supra* note 8, at 182 (noting that "smallness is . . . highly correlated with close-knittedness.").

10. *See* ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 183-84 (1990) (distinguishing smaller-scale collective action problems, which may be solved by informal means, from larger-scale problems "in which no one communicates, everyone acts independently, no attention is paid to the effects of one's actions, and the costs of trying to change the structure of the situation are high.").

11. Arguably, nearly all behavior affects the environment in some way. By "individual environmental behavior," I am referring to specific, regulated (or potentially regulated) behaviors with direct, well-known impacts on the environment—what some authors refer to as "individual environmentally-significant behavior." *See, e.g.*, Vandenbergh, *From Smokestack to SUV*, *supra* note 3, at 521.

12. *See* Ann E. Carlson, *Recycling Norms*, 89 CAL. L. REV. 1231 (2001) (arguing that "norm creation or management is by itself not likely to be terribly effective" in large-scale collective action problems and that in the case of recycling, bottle bills and more convenient curbside pick-up are more effective); Vandenbergh, *Order Without Social Norms*, *supra* note 3, at 1106 (arguing that personal norms activation may be used to drive environmental behavior changes where social norms are ineffective); Michael P. Vandenbergh & Anne C. Steinemann, *The Carbon-Neutral Individual*, 82 N.Y.U. L. Rev. 1673, 1703–22 (2007) (same, with specific reference to

This Comment argues that regulators of individual behavior cannot afford to ignore social influences simply because a large-scale, loose-knit collective action problem exists. Behavior may be socially enforced even between only two or three individuals.[13] And because large collective action problems can always be broken down into[14]—or analyzed in terms of[15]—smaller groups, social influences shape individual choices regardless of the overall size or knittedness of a collective action problem, and regardless of whether such local influences result in groupwide norms. It follows that, other things being equal, interventions that maximize social influences are likely to change behavior most efficiently.[16] Social enforcement of behavior cannot, by itself, solve an extraordinarily complex problem like climate change. But it should not be ignored, because even the incremental effects of social influence may be strong enough to determine the success or failure of other interventions.

Getting such programs right matters, especially in the environmental arena, because of the huge combined impacts of individual choices. In the United States, individuals directly control an estimated 30-40 percent of all carbon dioxide emissions[17]—a total equal to 8 percent of global emissions and greater than the emissions of Africa, Central America and South America combined.[18] To avoid the worst effects of climate change—such as

individual contributions to climate change); Michael P. Vandenbergh, Jack Barkenbus & John Gilligan, *Individual Carbon Emissions: The Low-Hanging Fruit*, 55 UCLA L. REV. 1701 (recommending use of consumer subsidies, industry mandates, and legal prohibitions—but no interventions directed specifically at social norms—to reduce individuals' contributions to climate change).

13. McAdams, *supra* note 2, at 355–75 (locating origins of social norms in interactions between individuals); ERIC POSNER, LAW AND SOCIAL NORMS 1–48 (2000) (same); *see infra* text accompanying notes 89–101.

14. *See* Ann E. Carlson, *Social Norms and Individual Environmental Behavior*, 35 ENVTL. L. REP. 10,763, 10,764 (2005).

15. *See* Strahilevitz, *supra* note 8, at 360–67 (describing "intermediate-knit groups" as made up of overlapping smaller close-knit groups).

16. Empirical evidence confirms that informal social enforcement can aid public interventions to improve individual environmental behavior, even in large collective action problems. *See* Carlson, *supra* note 12, at 1288–90 (summarizing studies showing effectiveness of personal letters and face-to-face feedback at increasing recycling rates).

17. Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1703.

18. Vandenbergh & Steinemann, *supra* note 12, at 1677. Individuals in the U.S. are also responsible for huge quantities of other pollutants. *See* Vandenbergh, *Smokestack to SUV*, *supra* note 3, at 545–570 (noting that in the United States, individuals release 30.6 percent of low-level ozone precursors, 14 percent of mercury and 76–98 percent of air toxics from mobile sources).

increased disease, heat deaths, severe weather, and crop failures, and an intolerable risk of large, abrupt sea-level rise—leading policymakers and scientists currently believe that greenhouse gas emissions need to be cut by 60-80 percent by the year 2050.[19] In the United States, policymakers have also begun to converge on a short-term goal of returning to 1990 emissions levels by 2020.[20] For the United States as a whole, reducing carbon dioxide emissions from 2005 levels (approximately 6045 million metric tons per year) to 1990 levels (5017.5 million tons per year)[21] over the twelve years from 2008–20 implies a yearly reduction of 85.6 million tons per year, or a five-year reduction of 428 million tons per year. Given the portion of total emissions controlled by individuals, a series of moderate, low-cost changes in individual transportation and residential energy use could contribute much of the required near-term carbon dioxide emissions reductions.[22] And, in the longer term, these initial behavioral changes could lead to corresponding changes in people's attitudes, helping build support for more difficult or costlier measures—including everything from individual investments in energy efficiency, to denser

19. *See, e.g.*, Nicholas Stern, STERN REVIEW: THE ECONOMICS OF CLIMATE CHANGE, Executive Summary vii, *available at* http://www.hm-treasury.gov.uk/d/CLOSED_SHORT_executive_summary.pdf (last visited Nov. 18, 2008); U.S. CLIMATE ACTION PARTNERSHIP, A CALL FOR ACTION: CONSENSUS PRINCIPLES AND RECOMMENDATIONS FROM THE U.S. CLIMATE ACTION PARTNERSHIP: A BUSINESS AND NGO PARTNERSHIP 7 (2007), *available at* http://us-cap.org/USCAPCallForAction.pdf (last visited Nov. 18, 2008).

20. *See, e.g.*, Global Warming Solutions Act of 2006 (A.B. 32), CAL. HEALTH & SAFETY CODE § 38550 (West 2007); Jeff Mason, *Obama Vows Climate Action Despite Financial Crisis,* REUTERS, Nov. 18, 2008, *available at* http://www.reuters.com/article/politicsNews/idUSTRE4AH79220081118 (quoting President-Elect Obama as pledging to "establish strong annual targets that set us on a course to reduce emissions to their 1990 levels by 2020, and reduce them an additional 80 percent by 2050."). Former Vice President Al Gore has called for even more abrupt changes, including a complete elimination of carbon emissions from electricity generation within ten years. David Stout, *Gore Calls for Carbon-Free Electric Power,* N.Y. TIMES, July 18, 2008.

21. U.S. ENERGY INFO. ADMIN., EMISSIONS OF GREENHOUSE GASES REP., *available at* http://www.eia.doe.gov/oiaf/1605/ggrpt/carbon.html (last visited Nov. 20, 2008).

22. Vandenbergh et al.'s "Low-Hanging Fruits" proposal targeting seven specific changes in consumer behavior could, according to the authors, produce emissions reductions of 150 million tons per year of CO_2 within five years. Vandenbergh et al., *supra* note 12, at 1706. By my estimate, a 150 million tons-per-year reduction represents over one-third of the five-year linear target (428 million tons) needed to cut emissions to 1990 levels by 2020. *See supra* text accompanying notes 21-22.

urban settlement patterns, to economy-wide carbon tax or cap-and-trade proposals.[23]

Because so many different individual behaviors contribute to carbon dioxide emissions,[24] a logical approach to creating short-term aggregate reductions is a single national program targeting a number of separate, easily changed behaviors.[25] The ability to accurately predict social influences is especially important in designing such a multiple-behavior proposal, because predictions may affect both the optimal combination of behaviors to target and the design of interventions for each behavior. Thus, before such a proposal can be implemented, regulators need a finer-grained framework for evaluating social influences than is offered by existing literature on social norms and collective action.

This Comment proposes one such framework: behavioral visibility. Social influences, by definition, require knowledge of other people's behavior. All else being equal, the most visible behaviors will therefore be those most affected by social influences.[26] Applied consistently to both the selection of behaviors and design of interventions, this simple principle can greatly improve the effectiveness of a program targeting multiple emissions behaviors. Specifically, social influences are already likely to be strong for high-visibility behaviors (such as switching to a higher-mileage vehicle). For such behaviors, interventions should concentrate on ensuring that social forces aid rather than impede behavior change, by creating and publicizing a normative consensus in favor of changing behavior. In contrast, for lower-visibility behaviors (like saving electricity at home), policymakers must focus first on raising visibility—either directly, or by targeting the same or similar behaviors in more visible contexts—since visibility is necessary before social influences can occur. Finally, for inherently low-visibility behaviors (such as replacing vehicle air filters), policymakers must design interventions that work entirely without social influences—or simply direct interventions

23. *See* Vandenbergh & Steinemann, *supra* note 12, at 1624–27; Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1709.

24. *See* Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1718–19 (listing forty-nine discretionary actions of individuals which contribute to greenhouse gas emissions).

25. *Id.* at 1721–23. The authors of this proposal suggest that individual and household sector CO_2 emissions could be cut 7 percent in five years through a portfolio of changes to seven individual emissions behaviors. *Id.* at 1720.

26. This insight about the importance of visibility is implied by two of the most influential legal theories of social norms. *See infra* text accompanying notes 89–101.

instead toward other, more visible behaviors, if changes there could achieve similar goals (e.g., reductions in carbon emissions) while benefiting from stronger social influences on behavior.

The remainder of this Comment proceeds in three Parts. In Part II, I review legal theories of social norms, including both the optimistic view that active norms management can be a low-cost tool for driving rapid social change, and the more ambivalent group knittedness hypothesis. I then discuss the pervasive pessimism of recent literature on individual environmental behavior, and its implications for resulting policy proposals. In Part III, I return to theories of the origins of social norms—and the intertwined roles of norms and institutions in real-world collective action problems—in order to demonstrate that social influence, while no panacea, remains crucial to the regulation of individual environmental behavior. I then outline a framework, based on behavioral visibility, for analyzing social influence in the design of a program to change carbon emissions behaviors. In Part IV, I give concrete examples applying the framework to specific behaviors and interventions.

II.
LEGAL THEORIES OF NORMS

Over the last two decades, law-and-norms theorists—drawing on research in economics, sociology and social psychology—have advanced two influential groups of models, describing how informal social influences help shape individual decisions and large-scale patterns of behavior. The first group—cascade models—describes how changes in just a few people's behavior can, under the right conditions, spark feedback loops leading to rapid changes in behavior and opinions across larger groups.[27] These models have led a number of writers to propose that active "norm management" could allow government to address stubborn social problems without coercive (and expensive) law enforcement or economic measures.[28]

27. Norms models of cascades are rooted in Thomas Schelling's concept of systems "tipping" between equilibria. *See* McAdams, *supra* note 2 at 368 (citing Schelling); THOMAS SCHELLING, MICROMOTIVES AND MACROBEHAVIOR 91–110 (1978).

28. *See, e.g.*, McAdams, *supra* note 2 at 400–05 (describing use of laws to spark cascades toward less smoking and more recycling); Sunstein, *supra* note 5, at 2032–36 (same, for cascades reducing drug dealing, teenage pregnancy, and use of firearms). *See also* Sunstein, *supra* note 4, at 929–930 (describing fall of communism in Eastern Europe as a cascade sparked by political dissidents); Kahan, *supra* note 2, at 368–70 (describing successful "broken windows" police strategy as an example of

The second group of models—collective action models—also inspired widespread optimism among some legal theorists, but for different reasons. These models describe how groups of rational, self-interested individuals can induce in each other, through mutual, informal social enforcement, the cooperative behavior necessary to overcome "tragedy of the commons"-style social dilemmas.[29] To law-and-economics scholars, the models prompted excitement over the growing explanatory power of rational-choice theory. And to libertarian theorists, they suggested that collective action problems—traditionally viewed as a rationale for coercive government action—could be solved without such intervention.[30]

At the same time, as shown below, collective action models suggested that social norms alone could not solve the very largest collective action problems, which require the coordination of millions of people. This finding—together with research showing norms to be less effective than other interventions in solving the large-scale collective action problem of recycling—has led some scholars of individual environmental behavior to largely dismiss the use of social norms management for driving environmental behavior change.[31]

In the remainder of Part II, I introduce some basic features of legal scholars' models of social norms (Part II.A) and describe the important features of the cascade and collective action models (Part II.B). I then summarize recent legal scholarship of indi-

---

government action changing norms). For an overview of cascade theories, *see generally* Robert C. Ellickson, *The Market for Social Norms*, 3 AM. L. & ECON. REV. 1, 26–42 (2001) (describing cascades initiated by "exogenous change" as well as distinctions between "informational cascades" and "reputational cascades"). For the seminal article on optimism among legal scholars about government management of social norms, *see* Lessig, *The New Chicago School*, *supra* note 2.

29. *See infra* text accompanying notes 61–78.

30. Ellickson, *supra* note 28, at 3–4. The libertarian flavor of enthusiasm for social norms echoes longstanding private-law arguments for deference to industry custom. Cooter, *supra* note 6, at 1654–57.

31. *See* Vandenbergh, *Order Without Social Norms*, *supra* note 3, at 1105–06 (discussing reasons for pessimism toward social norms); Carlson, *supra* note 12 at 1231-32 (discussing the relative ineffectiveness of norms interventions in campaigns to encourage recycling). Importantly, Carlson's review of recycling studies did not show social-norms management to be *absolutely* ineffective at stimulating increased recycling; in fact, the results showed that social-norms interventions could be quite powerful, especially compared to interventions targeting only personal norms. Instead, Carlson's study showed that norms-based campaigns underperformed other, unrelated initiatives which offered either large increases in convenience (curbside pickup of recyclables) or powerful economic incentives ("bottle bills," or mandated collection and return of container deposits by retailers).

vidual environmental behavior, including its pessimistic reading of the collective action model and the policy prescriptions this reading has produced (Part II.C).

A. *Definitions: Varieties of "Norms"*

On an intuitive level, social norms are things we do because of social pressures. Law-and-norms scholars have developed a range of formal, often mathematical descriptions of how social pressures affect individual choices.[32] These models serve generally to extend and enrich rational-choice accounts of human behavior, which depict life as a series of individual decisions between limited sets of options. In such accounts, the "rational actor" calculates the expected costs and benefits of each available option, then acts to obtain the greatest net benefit. Social norms theories help rational-choice proponents counter the critique that real people often appear to act "irrationally,"[33] by arguing that once social pressures are accounted for, the true benefits of apparently "irrational" behavior may be larger.[34] For instance, paying for reusable bags at the supermarket instead of using free disposable bags might appear irrational. But if reusable bags help the shopper avoid social sanctions or raise his social status, they may in fact be rational. Before turning to norms theories, it will be helpful to review some definitions relevant to the law-and-norms literature.

1. Social Norms Versus Personal Norms

Legal writers, as well as social psychologists, have recognized two types of norms: social norms and personal norms. Personal

32. *See, e.g.*, Ellickson, *supra* note 28; Dan Kahan, *Gentle Nudges vs. Hard Shoves: Solving the Sticky Norms Problem*, 67 U. CHI. L. REV. 607 (2000).

33. For a fascinating critique of rational-choice approaches to risk assessment, *see* Paul Slovic, *Trust, Emotion, Sex, Politics, and Science: Surveying the Risk-Assessment Battlefield*, 19 RISK ANALYSIS 689 (1999). For a broader example of the critique, *see* ELIZABETH ANDERSON, VALUE IN ETHICS AND IN ECONOMICS (1993).

34. Sunstein, *supra* note 4, at 909 ("Many important and well-known anomalies in human behavior are best explained by reference to social norms . . . when people deviate from economic predictions—when they appear not to maximize their 'expected utility'—it is often because of norms . . . . The costs and benefits of action, from the standpoint of individual agents, include the consequences of acting inconsistently with social norms."); *see also* David Charny, *Illusions of a Spontaneous Order: "Norms" in Contractual Relationships*, 144 U. PA. L. REV. 1841, 1842–45 (1996). For one example of a model representing norm-based utility calculations algebraically, *see* Kahan, *supra* note 2, at 360–66 (incorporating the variable "SI," for social influence, alongside traditional punishment costs in a model of criminal deterrence).

norms refer to internal moral inclinations to "do the right thing," enforced by emotions like guilt.[35] Social norms refer to social pressures exerted between individuals.[36] Both social norms and personal norms represent psychic (and, in some theories, economic) costs or benefits, which rational actors weigh against other costs and benefits when making decisions.[37]

Social norms and personal norms influence each other through the complementary processes of social enforcement and internalization. When people hold strong personal norms, they often attempt to enforce corresponding behavior in others. Conversely, socially enforced behavior may be internalized into new personal norms.[38] For instance, one might attempt to enforce one's personal anti-smoking norm on a smoker, using statements such as "God forbids us to harm ourselves for pleasure's sake" and "You risk orphaning your child." The smoker, in turn, might initially quit because of the social pressure, but later become convinced that smoking is indeed morally wrong.[39] Studies show that such social influence from highly valued or closely related individuals is in fact an important factor in the creation and alteration of personal environmental attitudes.[40]

---

35. *See* Shalom H. Schwartz, *Normative Influences on Altruism*, *in* ADVANCES IN EXPERIMENTAL SOCIAL PSYCHOLOGY 221, 231 (L. Berkowitz ed., 1977) (noting that violations of personal norms result in "guilt, self-deprecation, loss of self-esteem, or other negative self-evaluations").

36. *See, e.g.*, Ellickson, *supra* note 28, at 3. (defining a social norm as a "rule governing an individual's behavior that third parties other than state agents diffusely enforce by means of social sanctions."). Norms scholars do not uniformly agree on the boundary between social norms and personal norms. For instance, Robert Cooter believes that social norms must themselves be internalized, *viz.*, "a social norm or custom exists in a community when enough people internalize it to make it effective." Cooter, *supra* note 6, at 1665. This makes Cooter's conception of "social norms" closer to what other authors would call personal norms.

37. *See, e.g.*, Kahan, *supra* note 33, at 611–14 (modeling internal moral inclination and social influence using separate variables "P_i" and "G_i").

38. Cooter, *supra* note 6, at 1665. Cooter's concept of "internalized norms" maps closely to the social psychologists' concept of "personal norms," and the process he describes as "internalization" is also well supported in the social psychology literature. *See, e.g.*, Paul C. Stern, *Toward a Coherent Theory of Environmentally Significant Behavior*, 56 J. SOC. ISSUES 407, 412 (2000) (defining personal environmental norms as a "sense of obligation to take proenvironmental actions" and giving factors in their formation).

39. Cooter, *supra* note 6, at 1665.

40. *See* Joseph R. Hopper & Joyce M. Nielsen, *Recycling as Altruistic Behavior: Normative and Behavioral Strategies to Expand Participation in a Community Recycling Program*, 23 ENV'T & BEHAV. 195, 200, 215–217 (1991) (reporting that a recycling awareness program encouraging social pressure between neighbors greatly increased participants' experienced levels of guilt for failing to recycle); *see also*

2. Positive Norms Versus Normative Norms

The word "norm" has both a normative and a positive sense. In its normative sense, "norm" denotes that behavior is desirable, even obligatory. In its positive sense, "norm" denotes that behavior is factually prevalent.[41] Although the normative and positive senses of "norm" are distinguished in technical usage, they are often conjoined in everyday life, because of the fact—apparently deep-rooted in human psychology—that people usually consider common behaviors to be normatively correct.[42] As Robert Ellickson has noted, "ordinary behavior is rarely regarded as antisocial."[43] Similarly, people have been described as "extremeness averse," meaning that they prefer to behave as others behave and to believe as others believe.[44]

3. Social Norms Versus Social Influences

As a positive description—that is, as a label for behaviors which are factually common—the term "social norm" is troublesome. First, in practice, distinguishing positive "social norms"

Stern, *supra* note 38, at 417 (counting "interpersonal influences" among variables contributing to formation of personal norms).

41. The distinction between norms as obligations, versus as patterns of actual behavior, parallels a debate in legal literature between two major theories of norm origins. In his "esteem theory," Richard McAdams regards norms as subjectively felt obligations, which arise (McAdams suggests) as individuals compete for the esteem of others. In contrast, Eric Posner, in his "signaling theory," seeks to explain norms as externally observed patterns of economic behavior, without reference to subjective mental states. *See infra* text accompanying notes 89–101.

42. *See* ELLICKSON, *supra* note 8, at 125–26.

43. *Id.* at 126.

44. Sunstein, *Social Norms and Social Roles, supra* note 4, at 933 (citing Amos Tversky & Itamar Simonson, *Context-Dependent Preferences*, 39 MGMT. SCI. 1179, 1183 (1993)). An illustration of "extremeness aversion" in the environmental context, cited by Vandenbergh & Steinemann, demonstrates it so vividly that it is worth quoting at length:

> "Media reports and commentators often frame environmental behavior changes as dichotomous choices between all or nothing. In the 'all' category are major lifestyle changes that require massive sacrifice by the individual. Not surprisingly, individuals who engage in these major lifestyle changes are characterized as eccentric and out of the mainstream. For example, a recent New York Times article pointed out that actor Ed Begley, Jr., the lead in a new television reality series, makes fences out of used milk jugs. In the 'nothing' category are those who are unwilling to make the major lifestyle changes. These individuals are characterized as being in the mainstream, a little guilty perhaps, but understandably unwilling to adopt a radical lifestyle change. Begley's new television series portrays his wife as the mainstream character who would probably prefer a little less composting, a bigger car, and a house with a little more square footage."

Vandenbergh & Steinemann, *supra* note 12, at 1704 (citing Ginia Bellafante, *With Ed, All's Green on the Domestic Front,* N.Y. TIMES, Jan. 5, 2007, at E1).

from positive "personal norms" requires answering whether social influences or personal morals are the greater determinant of the observed behavior. Even in a single individual, this may be difficult to determine empirically.[45] And for larger patterns of behavior, the problem is compounded because the same behavior—for instance, refraining from littering—may be socially influenced in some individuals, while representing a personal norm in others.

Second, the term "social norm" is ambiguous because the positive sense of "norm"—denoting that a behavior is common—raises the inevitable question *within which group is the behavior common?* Thus, legal writers have distinguished *society-wide norms* from *norms of a particular subgroup.*[46] While useful for theorizing norms phenomena in the abstract, the concept of *subgroup* is difficult to apply in the real world, as I will argue in Part II.

Because of these ambiguities in the term "social norm," I will focus much of my discussion below on "social influences" rather than "social norms." This Comment argues that, other things being equal, government programs promoting environmental (or other) behavior change stand the greatest chance of success when they *maximize opportunities for social influence.* This is true regardless of whether personal norms or social influences dominate any particular decision, and regardless of whether enough behavior is changed to constitute a "norm" in any given subgroup.

B. *Reasons for Optimism? Cascade and Collective Action Models*

Law-and-norms scholars have focused much of their discussion around two groups of models: cascade models (which explain rapid social changes) and collective action models (which explain cooperative behavior). The two sets of models are analytically distinct, and scholars have offered different reasons for viewing them with optimism. Although sometimes obscured in the litera-

45. Social psychologists measure personal norms through surveys. Yet, as with all survey research, what is truly being observed is the respondent's external behavior, which may potentially be socially influenced (most notoriously, by the presence of the researcher, or simply the respondent's awareness that her answers will be reported).

46. *See, e.g.*, Richard McAdams, *Signaling Discount Rates: Law, Norms and Economic Methodology*, 110 YALE L. J. 625, 637–38 (2001); Richard Posner, *Social Norms and the Law: An Economic Approach*, 86 AM. ECON. REV. 365, 366 (1997); Sunstein, *supra* note 4, at 918, 926.

ture, the distinction is important, because the two sets of models offer different lessons for the regulation of individual environmental behavior.[47]

1. Cascade Models: Social Change on the Cheap

a. Dynamic Effects of Norms Models

Cascade models of rapid behavior change have given some norms writers hope for highly effective, low-cost social engineering projects. In general, cascade models demonstrate how, because social influences and the prevalence of behaviors are interrelated,[48] changing the behavior of a relatively small number of people can cascade into much broader effects. For example,

47. The analytical separateness of cascade models (offering hope for highly leveraged regulatory actions) and collective action models (suggesting that efficient norms arise by themselves) has sometimes been obscured by the fact that many of the same writers discuss both, side-by-side. In particular, the two concepts have been blurred by suggestions for activist government based on collective action theory—namely, that government should intervene to remedy so-called "social imperfections" or "community failures," which may prevent the (otherwise theoretically inevitable) emergence of efficient norms, just as "market failures" prevent the (also theoretically inevitable) emergence of efficient markets. *See, e.g.*, ELLICKSON, *supra* note 8, at 182 (discussing government action to remedy "social imperfections"); Cooter, *supra* note 6, at 1684–96 (same, using the phrase "community failures"). Although this analogy is based on the idea of self-arising efficient norms—itself grounded in the theory of collective action—norms scholars have often, confusingly, discussed it alongside proposals for cascade-sparking interventions aimed at social ills which are not collective action problems. *See, e.g.*, *id.* at 1657–58 (analogizing emergence of social norms to emergence of cooperative behavior in Prisoners' Dilemma game); *id.* at 1661 (discussing use of law to change smoking norms). Smoking is a social ill and a failure of individual rationality, but not a collective action problem. *See also* Sunstein, *On the Expressive Function of Law*, *supra* note 5, at 2029–33 (discussing function of norms in solving collective action problems); *id.* at 2022 (discussing role of norms in non-collective-action situations including smoking, sexual harassment, promoting condom use, and ending racial segregation).

The farthest any legal scholar has gone in bridging the gap between collective action theory and broader conceptions of social norms change is Lawrence Lessig's point that the process of creating and changing norms can *itself* present a collective action problem: "[social norms] get constructed themselves only by solving collective action problems. And when constructed, they get changed only by solving collective action problems." Lawrence Lessig, *The Regulation of Social Meaning*, 62 U. CHI. L. REV. 943, 997 (1995). Lessig's point, however, means that historical instances of large-scale, norms-driven changes in non-collective-action primary behaviors—like reduced smoking and increased condom use—are in fact also examples of large, loose-knit groups using norms to overcome (second-order) collective action problems. As such, they are powerful counterexamples to arguments that norms must be relatively ineffective in solving collective action problems in large-number, loose-knit situations. *See infra* text accompanying notes 79–87.

48. *See supra* text accompanying notes 41–44 (discussing "extremeness averseness" and normative versus positive norms).

Richard McAdams describes a hypothetical population in which 80 percent disapprove of wearing fur, while the other 20 percent wear fur with a clear conscience. For the 20 percent of fur-wearers, the costs of bearing the disapproval of the majority are outweighed by the intrinsic benefits of wearing fur plus the approval (if any) of members of their own minority. But if an additional 1 percent converts from fur-wearing to fur-disapproving, then a slightly larger amount of disapproval is focused on an even smaller minority. If the increased social costs cause other marginal fur-wearers to convert to the majority, then the cycle may continue.[49]

Norms theorists have backed up such theoretical cascade models with historical examples. In a typical account of the rapid decline in smoking in the United States during the 1980s and 1990s, Robert Cooter suggests that newly created no-smoking zones empowered nonsmokers to complain about smoking, where before they would have remained silent. As smokers either quit or became segregated into ever-smaller enclaves, they—rather than aggrieved and fussy nonsmokers—came to be seen as deviants, increasing the social costs even further.[50] But smoking has hardly been the only example. Cass Sunstein has described the fall of communist regimes in Eastern Europe as large-scale cascades, in which regular citizens were encouraged to

49. McAdams, *supra* note 2, at 366–68. Cooter and others refer to such situations as "corner equilibria," because when the social cost of a behavior is graphed against its prevalence, the feedback effect drives behavior toward the corners of the graph. If few people do something, its social cost will be high, reinforcing its rarity; while if many people do something, its social cost will be low (or may be a benefit), reinforcing its prevalence. Robert Cooter, *Expressive Law and Economics*, 27 J. LEGAL STUD. 585, 592 (1998); *see also* Kahan, *supra* note 32, at 616–17. In his theory of norms as discount-rate signals, Eric Posner refers to the same phenomenon as a "pooling equilibrium." *See* POSNER, *supra* note 13 at 19–20; *see also infra* text accompanying notes 96–101 (discussing Posner's signaling theory).

Cooter makes the important point, in this connection, that predicting whether the initial changes will *actually* precipitate a cascade requires knowing the payoff curves of nonmarginal actors. The difficulty of acquiring such information is a primary reason for the difficulty of predicting cascades. Cooter, *supra* at 596; *see infra* text accompanying note 61.

50. Cooter, *supra* note 6, at 1675. Skeptics of this account might point out that increased public awareness of tobacco-related health risks has also contributed to the decline in smoking. The spread of such information, however, can be seen to have played a cascade-sparking role very similar to Cooter's view of no-smoking areas: Proof of the harmful effects of secondhand smoking, in particular, may have given nonsmokers a new way to portray smokers, rather than themselves, as the antisocial ones. *See* Joseph R. Gusfield, *The Social Symbolism of Smoking and Health*, *in* SMOKING POLICY: LAW, POLITICS, & CULTURE 49 (Robert L. Rabin & Stephen D. Sugarman eds., 1993).

join in protest after public opinion surprisingly failed to condemn initial dissidents.[51] Timur Kuran has described highly stylized and violent expressions of ethnicity emerging as a result of "balkanization" cascades in the former Yugoslavia.[52] Similarly, Dan Kahan describes how the present regime of drug prohibition developed in a slow-motion cascade from a mild taxation law in 1914.[53] And Arti Rai describes cascades in patenting behavior among molecular biologists, prompted by changes in patent law.[54]

b. *Sparking Cascades Through Interventions*

To fans of activist government, the dynamics of cascade models and examples of real-world cascades have provoked optimism that relatively cheap or unintrusive government actions could create large-scale changes in behavior.[55] If so, the next question might be what types of government intervention[56] could provide

51. Sunstein, *supra* note 4, at 929–930.

52. Timur Kuran, *Ethnic Norms and Their Transformation Through Reputational Cascades*, 27 J. LEGAL STUD. 623, 635 (1998).

53. Kahan, *supra* note 32, at 631–33.

54. Arti K. Rai, *Regulating Scientific Research: Intellectual Property Rights and the Norms of Science*, 94 NW. U. L. REV. 77, 109–110 (1999).

55. Lessig, *supra* note 2, at 673–74. To critics objecting that government norms management smacks of totalitarianism, its proponents have sometimes replied that the same constitutional protections which secure individual rights against other government actions should be able to protect them from norms management overreach as well. Ellickson, *supra* note 28, at 38 ("market for social norms"). Others have made the separate argument that since government actions *inevitably* influence social norms, they may as well do so consciously. *See* Lawrence Lessig, *supra* note 47, at 957 (explaining that governments often seek to influence "social meanings to advance state ends"); Richard H. Pildes, *The Unintended Cultural Consequences of Public Policy: A Comment on the Symposium*, 89 MICH. L. REV. 936, 938-39 (1991) (arguing that designers of public policy should be cognizant of their effects on culture).

56. In addition to government interventions, environmental campaigners often point out that *individual* actions can influence the behavior of other individuals. For instance, recycling campaigns often urge individuals to "lead by example." *See, e.g.*, National Recycling Coalition, Recycling Pledge, http://www.nrc-recycle.org/takethepledge.aspx (last visited Apr. 4, 2009) (asking signers to pledge to "lead by example in my neighborhood by recycling"); Waste & Resources Action Programme, Start Recycling at School, http://www.recyclenow.com/what_can_i_do_today/start_recycling_at.html (last visited Apr. 4, 2009) (advising that teachers "recycle as much as possible [to] encourage pupils to get involved."). Certainly, one individual's choices can affect the choices of those around her, and individual choices can in some situations combine to produce large-scale cascade effects, as in the "tipping point" changes in neighborhood racial composition popularized by Thomas Schelling. SCHELLING, *supra* note 27, at 91–92. However, the extent to which individuals can influence others varies widely, depending not only on the social context and meaning of the particular behavior, but on individual characteristics of the would-be

the "spark." Lawrence Lessig, in a classic essay, describes four types of constraints on behavior—law, markets, norms and architecture[57]—each of which influences decisions directly, while also modulating the effects of the other constraints. Thus, interventions in any one of four "modalities" may alter the effect of norms on behavioral choices. And, sure enough, other legal writers have spoken of the potential of each of these types of interventions to spark cascades. For instance, raising the price of behavior—a market intervention—could cause an initial shift in prevalence, potentially leading to a cascade.[58] Similarly, interventions to change personal norms—e.g., through mass-media campaigns—could provoke socially enforced behavior cascades, even if they initially change the beliefs or behavior of a relatively small number of people. Unenforced "expressive" laws,[59] as in the smoking example above, can alter the psychic cost of exerting social influence, leading to rapid changes in behavior. And finally, although less discussed, "architectural" changes also have the potential to affect norms. For instance, making recycling easier may improve recycling rates not only by lowering the direct cost of proper disposal, but also by increasing the effects of guilt

---

influencer. *See, e.g.*, MALCOLM GLADWELL, THE TIPPING POINT 33–89 (discussing the roles of "connectors," "mavens" and "salesmen" in causing "social epidemics"); Ellickson, *supra* note 28, at 10–17 (discussing characteristics of "norm entrepreneurs" and "opinion leaders," two types of "change agents"); POSNER, *supra* note 13 at 29–32 (discussing characteristics and role of "norm entrepreneurs").

Thus, while individual actions *can* influence others, the extent of the influence may be difficult to predict. In any case, whether one (individually) desires or expects one's actions to influence others is a decision which can be made individually. By contrast, the proper role of *government* in managing social norms is a decision which must be made collectively—ideally, in a democratic process informed by realistic assessments of the potential effectiveness of government norms management, which is the purpose of this Comment.

57. Lessig, *supra* note 2, at 662–67. By "architecture," Lessig refers to "the world as I find it, understanding that as I find it, much of this world has been made"—that is, to all man-made physical and bureaucratic limitations, not just the built environment. *Id.* at 663.

58. In his fur-wearers example, McAdams suggests that a change in the price of fur might cause an initial, cascade-sparking reduction in fur-wearing. McAdams, *supra* note 2, at 366–68; *see supra* text accompanying note 49. In the real world, heavier taxation of cigarettes starting in the late 1980s and 1990s may have had a similar effect.

59. Models accounting for "expressive law" effects—in which unenforced or apparently toothless laws cause behavior changes out of proportion to the expected cost of formal sanctions—comprise an entire subgenre of law-and-norms literature. *See, e.g.*, Cooter, *supra* note 49; Yuval Feldman & Janice Nadler, *The Law and Norms of File Sharing*, 43 SAN DIEGO L. REV. 577 (2006); McAdams, *Attitudinal Theory, supra* note 5; Richard H. McAdams, *A Focal Point Theory of Expressive Law*, 86 VA. L. REV. 1649 (2000); Sunstein, *supra* note 5.

and social pressure (because failing to recycle may be disapproved more strongly when proper disposal takes little effort).[60]

2. Collective Action Models: Preserving the Commons

Although many types of government interventions can potentially spark cascades, even norms-management optimists acknowledge that not every societal problem can be tipped out of existence with a small effort. To be effective, norms management requires predicting the strength of social influences, the extent of their effects on behavior, and the likelihood of precipitating a cascade.[61] Law-and-norms scholars are thus naturally drawn to a second class of models, which, at least theoretically, offers predictions about when social norms will spontaneously arise to solve collective action problems.

The difference between collective action models and cascade models can be seen most clearly in their intellectual roots. Whereas cascade models show how small disturbances can lead to widespread changes in behavior, collective action models explain the ability of self-interested individuals to overcome collective action problems, including the sharing of common-pool resources[62] and the creation of public goods.[63] In these situations, the interests of group members as individuals conflict with the best interests of the group as a whole. Traditional rational-

60. *See* Carlson, *supra* note 12, at 1279–80.

61. *See* Cooter, *supra* note 49, at 596 (noting that "effective use of expressive law demands a lot of information").

62. The prototypical common-pool resource is described by Garrett Hardin in his 1968 article *The Tragedy of the Commons*. A self-replenishing resource (the "commons") is sustainable if used at an aggregate rate up to and including its rate of natural replenishment; but if the rate of exploitation exceeds that of replenishment, the resource will provide diminishing aggregate returns. Thus, the optimal strategy for the overall community of resource users is to harvest the resource at a rate below or equal to the rate of replenishment. Individual community members, however, may prefer to harvest for themselves at a rate higher than their share of the sustainable aggregate rate. In this case, unless a means can be found to regulate overharvesting by individual users, the replenishment rate will be exceeded, the depleted resource may fail to renew, and the individually optimal strategies of the unorganized community will end up creating losses for everyone. *See* Hardin, *supra* note 7.

63. The classic work on common goods is Mancur Olson's 1971 THE LOGIC OF COLLECTIVE ACTION. Because public goods are non-excludable—that is, once produced, they benefit all members of a group—members' individual interests may be to free-ride on the efforts of other members. Thus, public goods will be under-produced unless some means can be found to coordinate or compel their production. *See* OLSON, *supra* note 7, at 9–16. For another description of various collective action problems, *see* RUSSELL HARDIN, COLLECTIVE ACTION 8–9, 16–22 (1982).

choice accounts predict free-riding in such circumstances, and the resulting failure to maximize group welfare has long been seen as a rationale for government coercion.[64] Yet in the real world, many groups develop cooperative norms, allowing them to overcome collective action problems without intervention.[65] Collective action models seek to explain this cooperation in rational-choice terms, shedding light on the conditions needed for cooperative norms to emerge.

a. Game Theory and Behavioral Experiments

In rational-choice accounts of cooperation, one tool—the iterated prisoners' dilemma game—has been especially productive. In a prisoners' dilemma, two players, who cannot communicate, must choose between cooperating and defecting. If both cooperate, both earn a reward, but if one defects, he gains even more, while his opponent is heavily penalized. If both defect, both may earn nothing, but they also lose nothing.[66] Since neither knows if the other will cooperate, each player's best strategy is to defect in order to avoid the penalty for being the only cooperator—at least, as long as the game is played only once. When play is repeated, both artificial-intelligence and human tournaments have demonstrated that players—even without communicating—can use simple, algorithmic strategies to coordinate cooperation and

64. This is the Hobbesian conception of government as Leviathan. Ellickson, *supra* note 28, at 4. The classic example is the need to levy taxes to provide for common defense; *see* OLSON, *supra* note 7, at 118. In the environmental arena, Carol Rose provides an especially lucid account of government's role in solving common-pool resource problems, including the variety of strategies adopted by contemporary environmental law for dealing with them. Carol M. Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 1991 DUKE L.J. 1.

65. Among the clearest examples are social protest movements and combat. In both situations, free-riding can be disastrous, yet it is prevented largely through informal means. Richard McAdams, *Cooperation and Conflict: The Economics of Group Status Production and Race Discrimination,* 108 HARV. L. REV. 1003, 1018-19 [hereinafter McAdams, *Cooperation and Conflict*]. Cooperation can also be found in less dramatic situations. *See* OSTROM, *supra* note 10, at 180 (reviewing studies of hundreds of common-pool resource problems and finding that many are able to arrive at relatively informal cooperative solutions).

66. The formal specification of a prisoners' dilemma game is more complicated. Specifically, A>B>C>D and 2B>A+D, where A is the gain from defecting while the other cooperates, B is the gain if both cooperate, C is the gain if both defect, and D is the "sucker" payoff for cooperating while the other defects. *See* ELLICKSON, *supra* note 8 at 159–162.

improve total returns.[67] More complex, evolutionary computer models—where successful strategies multiply, while unsuccessful ones die out—have shown how cooperative strategies can eventually become dominant.[68]

Many law-and-norms scholars analogize the emergence of cooperative strategies in prisoners' dilemma games to the emergence of real-world cooperative norms. To increase the realism of the analogy, some have tweaked the prisoners' dilemma to reflect a particular real-world setting. For instance, Robert Cooter imagines a game in which a "principal" (investor) and "agent" (manager) move sequentially. First, the principal decides whether or not to invest in a common venture; then, the agent decides whether to manage the investment or steal it. If both cooperate, both win; but the agent can win more in a single round by stealing. Thus, if the game is played once, the agent's dominant strategy is to steal—and knowing this, the principal will not invest, so both lose. But, as a variation of the prisoners' dilemma game, cooperative strategies will develop when the game is played repeatedly—just as (Cooter suggests) real employees develop norms against stealing from their employers.[69]

b. Empirical Studies: The Group Knittedness Hypothesis

In iterated prisoners' dilemma models, however, cooperative norms will arise only when two conditions are satisfied: players must have reliable information about each other's behavior and they must have opportunities to punish non-cooperators.[70] Nota-

67. If the game is played indefinitely between the same two players, one such winning strategy is "tit-for-tat"—in which a player begins by cooperating, then continually plays the strategy played by his partner in the last round—thus punishing a partner who defects in one round, by defecting in the next round. ROBERT AXELROD, THE EVOLUTION OF COOPERATION 3–24 (1984).

68. If evolutionary forces favor players who consistently earn the highest returns, the result is a high prevalence of cooperative strategies. Rudolf Schuessler, *Exit Threats and Cooperation under Anonymity*, 33 J. CONFLICT RESOL. 728, 733–40 (1989). Evolutionary models increase realism by giving players the option of "exit" from a relationship (rather than simply retaliation) in order to punish a defector.

69. Cooter, *supra* note 6, at 1657–60. Cooter depicts the psychological cost of violating an internalized norm as a literal alteration to the player's payoff matrix in the prisoner's dilemma game, which, once enacted, directs the player to follow the norm—that is, the cooperative strategy. *Id.* at 1662-63. *See also* EDNA ULLMANN-MARGALIT, THE EMERGENCE OF NORMS (1977); ELLICKSON, *supra* note 8, at 156–66 (analogizing ranchers' norms about tending cattle and maintaining fences to dominant strategies in a stylized "specialized labor" game).

70. ELLICKSON, *supra* note 8, at 164–65, 178.

bly, such conditions are *not* true of global-scale problems such as climate change.

In his groundbreaking book *Order Without Law*, Robert Ellickson incorporated these twin requirements into a composite characteristic called "knittedness." Specifically, Ellickson defined knittedness to exist "when informal power is broadly distributed among group members and the information pertinent to informal control circulates easily among them."[71] In *Order Without Law*, Ellickson documented the conflict resolution strategies of a close-knit group of Oregon cattle ranchers, demonstrating that they resolved many internal conflicts through welfare-maximizing informal norms rather than formal law.[72] Combining this ethnographic data with game theory, Ellickson formulated the hypothesis that "members of a close-knit group develop and maintain norms whose content serves to maximize the aggregate welfare that members obtain in their workaday affairs with one another."[73]

Consistent with Ellickson's hypothesis, other ethnographic research has documented cooperative norms among close-knit groups as diverse as lobster fishermen,[74] diamond merchants[75] and molecular biologists.[76] Elinor Ostrom and her colleagues, reviewing studies of thousands of common-pool resource problems, found that the groups most likely to find robust, sustainable cooperative solutions share characteristics like mutual monitoring, frequent communication, and graduated sanctions for violators.[77] Studies in laboratory settings lend further support to Ellickson's hypothesis, with subjects cooperating more often when they know interactions will be repeated and when they can communicate face-to-face.[78]

---

71. *Id.* at 177–78.

72. *Id.* at 1-4.

73. *Id.* at 167. Although the ranchers Ellickson studied were not engaged in a classic collective action problem, such as a common-pool resource or common goods problem, they used social norms in order to avoid and resolve conflicts without provoking expensive legal fights or destructive grudge matches—a situation which Ellickson analogized to a variation of the prisoners' dilemma game. *Id.* at 162–64.

74. *See* JAMES ACHESON, THE LOBSTER GANGS OF MAINE (1988).

75. *See* Lisa Bernstein, *Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry,* 21 J. LEGAL STUD. 115 (1992).

76. *See* Rai, *supra* note 54.

77. *See* OSTROM, *supra* note 10, at 180.

78. *See* Elinor Ostrom, *A Behavioral Approach to the Rational Choice Theory of Collective Action*, 92 AM. POL. SCI. REV. 1, 6 (1998) (summarizing laboratory studies).

C. *Persistent Pessimism: Individual Environmental Behavior*

More recently, some environmental scholars have interpreted the group knittedness hypothesis as implying that norms are likely to be of limited use in solving environmental collective action problems such as climate change, which require coordinating behavior at a national or global scale. As Ellickson himself realized, in practice, "knittedness" is strongly correlated with small group size.[79] Other scholars have agreed that, in practice, larger groups are least likely to be close-knit, and thus least likely to be able to solve collective action problems using only informal norms.[80]

The inverse correlation between group size and knittedness has been instrumental in creating what Michael Vandenbergh, a leading scholar of individual environmental behavior, has called the "profoundly pessimistic conclusion . . . at the core of recent environmental scholarship" regarding large-scale collective action problems.[81] For example, Ann Carlson's influential study of recycling programs found improved convenience and economic incentives far more successful than norms management in promoting recycling. She concluded that "norm creation or management is by itself not likely to be terribly effective" in resolving large-scale environmental problems, at least where "the desired behavioral change is relatively inconvenient or requires significant effort."[82] Vandenbergh has agreed that social norms may have little effect on behavior in large-scale collective action problems, where people act either "in isolation or in a setting

79. ELLICKSON, *supra* note 8, at 182 ("[A] small population in practice tends to increase quality of gossip, reciprocal power, and ease of enforcement; smallness is therefore indeed highly correlated with close-knittedness.").

80. *See, e.g.*, OSTROM, *supra* note 10, at 183-84 (concluding that social norms are likely to have less force in situations where "no one communicates, everyone acts independently, no attention is paid to the effects of one's actions, and the costs of trying to change the structure of the situation are high."). This view comports with Mancur Olson's foundational work on collective action problems, which classified groups as small, intermediate, and large—with the smaller groups most able, and the largest groups least able, to produce an adequate supply of public goods. Through a mathematical analysis, Olson related public goods production to group size. In the smallest groups, members are able not only to monitor each other's production to detect cheating, but also to bargain at relatively low cost about who will produce such goods. As group size increases, the ability to monitor goes down while the cost of bargaining goes up. Therefore, the largest groups are likely to produce suboptimal quantities (if any) of public goods. *See* OLSON, *supra* note 7, at 1–35.

81. Vandenbergh, *Order Without Social Norms*, *supra* note 3, at 1105.

82. Carlson, *supra* note 12, at 1231–32.

with insufficient iterative relationships or information exchange to enable social norm sanctioning to occur."[83]

While Carlson's pessimism about social norms leads her to advocate economic or infrastructural incentives for behavior change—or simply regulation of industrial, rather than individual, sources[84]—Vandenbergh's doubts lead him to insist on the potential of *personal* norm change in situations where he presumes social influences will be ineffective. Relying on the work of social psychologist Paul Stern, Vandenbergh has argued that simply publicizing information about individuals' carbon dioxide emissions—or other environmental toxins—can create specific new personal norms of environmental behavior, by tying them to widespread, existing norms of personal responsibility.[85] Most recently, Vandenbergh and two colleagues have again advocated personal norms interventions (as well as some economic and infrastructure measures), calling for reductions in individual and household sector carbon dioxide emissions through changes in a number of specific emissions behaviors.[86] Other scholars of individual environmental regulation have largely followed Vandenbergh and Carlson in recommending legislation based on economic, infrastructure and personal-norms interventions rather than attempts to manage social norms.[87]

Yet while there is no doubt that convenience, economic incentives, and personal norms can outweigh social influences in many cases, this does not mean that social influences have no effects in large-scale environmental collective action problems. Such a

83. Vandenbergh, *Order Without Social Norms*, *supra* note 3, at 1105.

84. *See* Carlson, *Social Norms and Individual Environmental Behavior*, *supra* note 14, at 10,768–69.

85. *See* Vandenbergh & Steinemann, *supra* note 12, at 1712-16; Vandenbergh, *Order Without Social Norms, supra* note 3, at 1114–16. Vandenbergh's proposals for personal norm change are an example of the "implementing" concept often discussed in the norms literature. Specifically, Vandenbergh suggests that releasing information about average individuals' carbon emissions—and the harms they cause—would allow the "emerging norm of carbon neutrality" to *implement* the broader norm of "personal responsibility not to harm others." Notably, the strategy of reframing a behavior as harmful—and specifically as harmful to *others*—may have been highly successful before, in the case of reducing cigarette smoking. *See* Gusfield, *supra* note 50.

86. *See* Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1718–22.

87. *See, e.g.*, John C. Dernbach, *Harnessing Individual Behavior to Address Climate Change: Options for Congress*, 26 VA. ENVTL. L.J. 107, 144–60 (recommending that EPA compile and publish information on total per-capita GHG emissions, emissions from household energy use, options for consumers to reduce their carbon footprints, and effects of climate change; and advocating tax credits for purchases of energy-efficient equipment).

conclusion is not only a mistake, but a mistake with consequences, if it leads policymakers to pass up easily available opportunities to improve behavior change through attention to social influences.

III.
SOCIAL INFLUENCE AND BEHAVIORAL VISIBILITY

Against the pessimism of these scholars of individual environmental behavior, influential theories of social norms suggest that social influences arise anytime two or more people compete for status—even within large-scale collective action problems. These theories hold that social influences arise whenever a behavior is visible and a consensus—even a local consensus—exists that the behavior is desirable.

Meanwhile, the group knittedness hypothesis is more limited than the scholars of individual environmental behavior imply. The hypothesis, and the empirical studies which back it, suggests only that *close-knit* groups *will* develop cooperative norms; it says nothing about loose-knit groups. Ellickson recognized as much, calling his hypothesis "agnostic" about the emergence of cooperative norms in non-close-knit groups.[88] In fact, the hypothesis is not only agnostic, but also *indeterminate* with regard to large, loose-knit groups. It does not account for the complex institutions, mixed law and norms effects, and indistinct and overlapping subgroups that all typify large populations in the real world.

As such, the group knittedness hypothesis and the collective action perspective in general are not the most useful directions from which to approach the design of practical policies for large-scale behavior change. Rather, the indeterminacy of the group knittedness hypothesis demonstrates the need for another approach to predicting the effects of social influences in large collective action problems. The approach I outline below builds on leading theories of norm origin to propose that *the strength of social influences should vary according to the visibility of behavior*—so that interventions which maximize visibility should, other things being equal, also maximize the effect of social influences.

In the remainder of Part III, I first review the two leading theories of norm origins, concluding that behavioral visibility and consensus are the most important requirements for social influ-

88. ELLICKSON, *supra* note 8, at 177.

ences to develop. I then review the group knittedness hypothesis, showing why it cannot properly be read to discount the effect of social influences based simply on large group size. Finally, I outline an approach to maximizing social influences in real-world behavior change programs, based on maximizing the visibility of targeted behaviors.

A. *The Ubiquity of Social Influences*

1. Theoretical Origins of Social Norms

Richard McAdams' "esteem theory" and Eric Posner's "signaling theory" both suggest that social influences are ubiquitous within smaller subunits of all groups. Both theories suggest that social enforcement remains an important determinant of behavior, even when it does not result in groupwide norms strong enough to solve a collective action problem on their own.

a. The Esteem Theory

According to McAdams' "esteem theory," social norms arise from people's inherent psychological preference for *esteem*.[89] Because esteem is in relation to others, McAdams suggests that esteem-based norms—that is, behaviors adopted to demonstrate that one is *more esteem-worthy* than someone else—arise between as few as three people.[90] According to this conception, esteem norms tend to be cooperative, because the behaviors most likely to earn the esteem of others are those that benefit them—either individually or by benefiting a group of which they are members.[91]

Although founded in simple interactions, esteem norms can nevertheless become quite strong. As people compete with each other to earn esteem—or to avoid disesteem—they may need to

89. McAdams, *supra* note 2, at 355. McAdams acknowledges that earning the esteem of others may have economic benefits, though he believes—based in part on experimental studies showing that behavior may be influenced by the example of complete strangers—that people value esteem for its inherent psychological utility. *Id.* at 355-56.

90. *Id.* at 355–75. Although McAdams uses an example involving three people, individuals also judge others relative to *themselves,* making the dyad, rather than the triad, the basic unit of esteem competition.

91. *Id.* at 359. Of course, if a norm tends to externalize costs outside a group, it may not be "cooperative" at all from a broader perspective. *See, e.g.*, ELLICKSON, *supra* note 8, at 191–206 (discussing emergence of cooperative norms maximizing welfare for local or national whaling fleets, while externalizing costs onto other fleets).

incur material costs. Esteem norms can thus, like other norms theories, explain much "irrational" behavior.[92] For esteem-based norms to arise at all, however, McAdams notes that several preconditions must be met. First, in order for a behavior to become an esteem norm, a *consensus* must exist within some group (which again, may be as small as two or three people) that the behavior is desirable—that is, a worthy basis on which to grant or withhold esteem.[93] Second, a behavior must be *visible*: There must be an inherent risk that others will detect the behavior (or its absence) and use it as grounds on which to grant or withhold esteem. And third, the first two conditions must be *public knowledge,* because if someone is unaware that a consensus exists or that her behavior is detectable, "she could act contrary to the consensus without, to her knowledge, risking any disapproval."[94]

McAdams' requirement of visibility, together with his conception of withheld esteem as a form of punishment, parallel the two most important components of "knittedness"—reputational information plus the ability to punish noncooperators.[95] But the esteem theory differs from Ellickson's collective action perspective in two important respects. First, it suggests that a key precondition for social influence—*visibility*—may be as much a characteristic of behaviors, as of the groups in which they occur. Second, it demonstrates that any behavior about which people share a normative consensus can potentially become a norm—regardless of the characteristics (or existence) of a collective action problem.

b. The Signaling Theory

McAdams' requirements of visibility and consensus form the foundation of my framework for the practical design of behavior-change programs. But McAdams' theory is not unique in suggesting that social influences may be more widespread than the collective action perspective would suggest.

---

92. As an example, McAdams proposes that esteem norms may induce people to recycle, a behavior which McAdams assumes would be costly to the individuals were it not for the esteem benefits. *See* McAdams, *supra* note 2, at 369–72.

93. *Id.* at 358-60.

94. *Id.* at 361–62.

95. *See* ELLICKSON, *supra* note 8, at 178–80 (listing "Future Power to Administer Sanctions" and "Information about the Past and Present" as primary factors of knittedness).

In his "signaling theory," Eric Posner describes norms as patterned behaviors that people use to signal to others that they are "good types" with whom to collaborate—in business, marriage and other institutions of all kinds.[96] Because such collaborative projects often involve delayed gratification, "good types," Posner argues, are those who have relatively low discount rates and value future benefits enough to see a venture through to fruition. Conversely, the "bad types" would cheat or bail out, appropriating early gains.[97] To signal their low discount rates, Posner argues, "good types" do things that appear to be costly, and thus "irrational"—until one accounts for the deferred benefits they can gain by signaling.[98] As in McAdams' theory, competition (in this case, for cooperative partners) leads to stylized patterns of one-upmanship (or at least, keeping up with the Joneses), resulting in regularities in behavior. Norms, Posner argues, are simply these stable patterns of signaling behavior.[99]

Posner's theory is provocative in that it explains norms purely in terms of economic incentives: Though costly in the short term, most norms are beneficial when their signaling benefits are accounted for. To other norms theorists, this is an excessively reductionist approach, as it explains "norms" only in the positive sense, not the normative or psychological sense.[100] From my perspective, Posner's theory has two important lessons. First, like McAdams', it demonstrates that social influences begin at the level of dyads or very small groups. Second, also like McAdams', it focuses on aspects of *behavior*—specifically, visibility—rather than aspects of *groups*, as determinative of norm formation.[101]

2. Norms and Structure in Large-Scale Collective Action Problems

Thus, according to both leading theories of norm origins, social influences can begin wherever behavior is visible—among dyads

96. POSNER, *supra* note 13, at 18.

97. *Id.*

98. *Id.* at 19–21.

99. *Id.*

100. McAdams has incorporated this criticism into his excellent, if rather partisan, review of Posner's book. *See* McAdams, *supra* note 46.

101. In order to emphasize how his theory accounts for "irrational" behavior, Posner concentrates the bulk of his analysis on his claims that behaviors, in order to become social norms, must be *costly* and *arbitrary*. More important to us, however, is that like McAdams, he also realizes that only *visible* behaviors can become norms: "social norms are always about *observed* behavior." POSNER, *supra* note 13, at 24 (emphasis in original); McAdams, *supra* note 46.

or triads—without regard to a larger collective action problem. This suggests one reason why collective action theories are not just "agnostic" but also indeterminate with regard to large, loose-knit groups: Such theories model large groups as though they were homogenous, when in fact even moderately sized groups quickly develop subgroups and internal structures. In a very large, homogenous group, it is easy to see how one person's behavior may be "invisible" to most others. Subgroups and structures, however, mean that same behavior may remain visible to many.

Even in mid-sized groups, subgroups and structures multiply quickly. Imagine the complexity of an average adult softball league. Cliques form within teams, leaders and captains coordinate players, and the local league may have ties to other leagues in the region. At the scale of national or global systems, such subgroups, and the ties and overlaps between them, multiply exponentially. Each individual is a member of dozens or hundreds of different groups, including family, clique, hobby club, blog readership, civic organization, political party, town, neighborhood, nation and business firm—and often several of each type. Thus while the highest-level group in a collective action problem—world citizenship—may on the whole appear to be "loose-knit," myriad subgroups nevertheless provide opportunities for social influences.[102]

Moreover, many of these subgroups are not just groups, but *institutions*. If properly designed, institutions substitute for visibility between individuals by aggregating information about members' behavior and sharing it with members of other groups. The work of Elinor Ostrom illustrates the degree to which informal solutions to collective action problems—even in midsized groups of a few thousand members—depend on institutional structures. In her review of common-pool resources, successful solutions were based not on homogenous enforcement by flat conglomerations of individuals, but on quasi-formalized agreements, monitoring regimes and nested institutions.[103]

---

102. Lior Strahilevitz describes such a condition as characterized by "intermediate-knit groups" in which "strangers will be interacting with other strangers, but they will do so while surrounded by non-strangers." Strahilevitz, *supra* note 8, at 365; *see also* Richard McAdams, *Cooperation and Conflict*, *supra* note 65, at 1047 (noting that social norms can develop in situations where multiple groups overlap with some members in common).

103. OSTROM, *supra* note 10, at 178–180 (summarizing factors in successful resolution of common-pool resource problems).

Adding to the challenge of predicting norms in large, complex groups is the difficulty of drawing a firm line between formal (legal) and informal (social) influences on behavior. For instance, suppose that a voluntary, block-level initiative creates informal social enforcement of recycling,[104] and then voluntarily shares information about its success rates with city government. Meanwhile, the city must, by law, share its recycling data with a state agency in order to avoid financial sanctions aimed at lesser-recycling cities. Finally, state employees publicize the best- and worst-performing cities in a news release, again contributing to informal norms. In this situation, are social influences, or laws, encouraging recycling?[105] Clearly the answer is both—social influences, laws and institutions are working together to solve a problem. Media organizations, in particular, can be crucial in communicating social expectations and reputational information, with mass media serving to communicate and align consensus between disparate subgroups, while new media enable not only top-down but lateral and bottom-up communication as well.[106]

Thus, where social influences *do* contribute to solving collective action problems, they do not so much arise "spontaneously" as they are generated by members of groups and institutions through deliberation, analysis and trial-and-error.[107] The question "whether norms will work" to solve a collective action problem is therefore, in all groups but the very smallest, a question about whether the group can design for itself the structures necessary to compensate for heterogeneity and distance between its members. When made democratically, the very decision that government should study or attempt to manage social influences represents an attempt by a majority of the population to develop the necessary institutions. The attempt will not automatically be successful, as success depends not only on the design of specific institutions but also on the soundness of the underlying theoretical framework. The remainder of this Comment argues that the

104. Carlson indicates that such efforts have been successful. Carlson, *supra* note 12, at 1288 (noting improved recycling rates in experimental programs using "block leader[s]" and "face-to-face 'group feedback' regarding the weekly recycling rate of 200 contiguous households").

105. *See id.* at 1239 ("Some disagreement exists over whether laws themselves constitute norms, or whether the rules of tightly organized trade associations and other formal organizations constitute norms, or at least whether such rules ought to be considered analytically similar to more spontaneously developed norms governing less formal communities.").

106. Ellickson, *supra* note 28, at 23; Carlson, *supra* note 12, at 1246.

107. *See* OSTROM, *supra* note 10, at 207–14.

visibility of behaviors and its effect on social influences should be key factors in a framework for designing and analyzing public behavior-change programs, and specifically programs to reduce individual carbon emissions.

B. *Using Behavioral Visibility to Maximize Social Influence*

To sum up the argument so far: Both the esteem and signaling theories of norm origins suggest that social influences are ubiquitous, but the group knittedness hypothesis is indeterminate as to whether social influences can contribute to solving large-group (loose-knit) collective action problems. Thus, if policymakers hope to be able to manage social influences to address such problems, they will require a predictive framework more fine-grained than the group knittedness hypothesis.

The remainder of this Comment demonstrates one such framework, based on the concept of behavioral visibility. But what, exactly, *is* visibility in a social situation? Obviously, one element is literal, "direct" visibility: Does a behavior happen where others can see it? Yet even if people *can* see something, whether they *will* see it—and whether they will pay attention—is another matter. Conversation, too, can be a form of visibility, as people can learn about behavior not only by witnessing it, but by being told of it by the actor or a third party. Thus, "direct" visibility, attention, and "indirect" (reported) visibility are all elements of what I am calling "visibility."

Although this definition of visibility—like the concept of knittedness—is necessarily vague,[108] its elements can be found in each of the empirical studies cited in this Comment. For instance, the socially influenced behaviors that Robert Ellickson studied in Shasta County—installing fences returning stray cattle, and the like—were all highly visible. Indeed, Ellickson's study was organized around specific, high-profile incidents, which by definition were visible enough to be remembered and recounted years later by all the parties involved.[109] Because the incidents tended to be disputes, each was directly witnessed by at least two parties. And because the incidents were unusual and represented inconveniences (or worse), parties often gossiped about

108. *See* ELLICKSON, *supra* note 8, at 178 (justifying vague definition of "close-knit" as unavoidable because "social environments are too rich to be described in terms of a few quantifiable variables.").

109. *See id.* at 16–101.

them, making them indirectly visible to the broader community.[110]

Similarly, in other empirical studies which uncovered strong social norms effects, the behavior studied has tended to be highly visible. Patenting a biological discovery, like trading in diamonds, is a high-stakes, inherently social transactional behavior.[111] In Carlson's review of recycling initiatives, higher visibility correlated with stronger social influences.[112] In Ostrom's review of common-pool resources, informal enforcement developed best where participants made each others' behavior highly visible by consciously devoting their attention to it, even if it might originally have been less noticed.[113] Finally, where laboratory experiments have found cooperative behavior to be socially enforced, the behavior in question has always been highly visible, because experimental designs have made it the major or even exclusive focus of participants' attention.[114] These empirical studies, then, comport with both the esteem or signaling theories in suggesting that social influences have the strongest effects where behaviors are most visible.

To a designer of a practical behavior-change program, the importance of visibility to social influence has two implications. First, other things being equal, scarce resources should be directed toward the most visible behaviors first, since stronger social influences may make them more promising candidates for change. Second, other things being equal, interventions should be designed so as to raise the visibility of less-visible behaviors. In Part IV, I elaborate this simple framework through a series of specific examples.

110. In fact, Ellickson regarded "negative gossip" as the main form of social enforcement. *Id.* at 170.

111. *See* Rai, *supra* note 54; Bernstein, *supra* note 75.

112. *See* Carlson, *supra* note 12, at 1280 (noting higher rates of recycling in apartment buildings with less than ten units than in larger complexes, perhaps because "in smaller complexes apartment residents may have less anonymity"); *id.* at 1288–89 (noting that experimental programs to increase recycling worked best where they focused attention on specific actions through intensive face-to-face contact and individualized feedback, rather than relying on more general measures like brochures).

113. OSTROM, *supra* note 10, at 178–80.

114. Ostrom, *supra* note 78, at 6 (summarizing laboratory studies).

IV.
APPLICATIONS

In this Part, I show how the behavioral visibility framework just discussed can inform the design of a multiple-behavior program for mitigating individual and household sector carbon dioxide emissions. Selecting the most promising behaviors to target—and the right interventions with which to target them—are key factors in designing such a program. Limited resources are available to address a wide variety of emissions behaviors, so policymakers must seek those behaviors and interventions that will result in the greatest per-dollar emissions reductions. Particularly in this context, and because social influences are likely to be strongest for the most visible behaviors, I argue that policymakers should target higher-visibility behaviors before lower-visibility behaviors and that when targeting lower-visibility behaviors, visibility-raising interventions should get priority over interventions that do not alter visibility.

Part IV.A demonstrates how for relatively high-visibility behaviors, like speeding and motor-vehicle idling, creating and publicizing a normative consensus—through media campaigns, expressive laws, or other interventions—may be enough to unleash positive social enforcement of the desired behavior change. These higher-visibility behaviors, therefore, make particularly promising targets for behavior change programs—although factors such as high cost or inconvenience may still outweigh the effect of high visibility.

Part IV.B turns to the more difficult problem of maximizing social influence in lower-visibility behaviors, using the example of saving electricity in the home. Although their lower direct visibility makes residential behaviors initially less susceptible to social influences, visibility may still be increased indirectly—either by stimulating increased discussion of these behaviors where they occur or by targeting interventions to promote similar behaviors in more public locations.

Finally, Part IV.C touches on two inherently low-visibility behaviors—maintaining tire pressure and air filters in personal automobiles—to show that interventions targeting such behaviors must be designed to work largely without social influences. In cases where this is impractical, it may be wiser to aim interventions instead at more visible behaviors, where public mitigation dollars have a better chance to be multiplied by positive social influences.

As a source of examples throughout the following sections, I refer to Michael Vandenbergh et al.'s (2008) paper "Individual Carbon Emissions: The Low Hanging Fruit," in which the authors propose eliminating 7 percent of individual and household sector greenhouse gas emissions over five years through $1.5 billion worth of interventions targeted at seven different consumer behaviors.[115] The "Low Hanging Fruit" proposal is an ideal testing ground for the behavioral visibility framework, because its aggregate reduction goal and fixed budget highlight the need to predict social influences not just at the stage of designing interventions, but also at the earlier stage of choosing target behaviors.[116]

A. *Higher-Visibility Behaviors: Using Consensus to Stimulate Positive Social Influence*

High-visibility behaviors, for which social influences are already likely to be strong, offer the policymaker the chance to create and leverage positive social influences simply by creating a normative consensus for behavior change. When people around an actor believe something is right or wrong, they may influence the actor's behavior in various ways. For instance, speeding causes excess carbon dioxide emissions and is highly visible. The typical act of speeding is witnessed by hundreds or even thousands of other highway users. Their opinions (or imagined opinions) are likely to have at least some bearing upon the driver's decisions, even though he may never meet them.[117]

---

115. *See* Vandenbergh, Barkenbus & Gilligan, *supra* note 12. In fact, at least two of the reductions targeted by Vandenbergh et al.—reducing "standby power" electricity use, and conserving energy used for household heating and cooling by changing temperature settings—are not individual "behaviors" at all, but rather groups of related behaviors, for which the "behavior visibility" framework may hold separate and conflicting lessons. *See infra* text accompanying notes 141–156 (section on residential energy efficiency behaviors).

116. Vandenbergh et al., well aware of the need to direct behavioral mitigation resources most effectively, do propose specific criteria for "low-hanging fruit" behaviors: the ability to offer sizeable reductions, at low personal and social cost, while avoiding personal barriers to behavior change such as ingrained habits and inappropriately high discount rates. *See* Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1710–17.

117. Experimental evidence has confirmed that social influences—even from complete strangers—can be determinative of similarly visible, public behaviors. *See* Robert B. Cialdini, Raymond R. Reno & Carl A. Kallgren, *A Focus Theory of Normative Conduct: Recycling the Concept of Norms to Reduce Littering in Public Places*, 58 J. PERSONALITY & SOC. PSYCHOL. 1015 (1990) (finding that test subjects tended to litter, or refrain from littering, based on behavior of others around them); Brian Mullen, Carolyn Copper & James E. Driskell, *Jaywalking as a Function of*

Meanwhile, passengers—if they are present, and especially if they are the drivers' close friends or family members—will likely exert even stronger social influences due to their greater social (not to mention physical) proximity. Finally, even when not present, friends and family members may influence a driver's decisions if he knows of their opinions, or expects them to learn of his speeding through conversations outside the car.

Speeding is therefore a behavior that, because of its high visibility, is probably at least partly determined by social influence.[118] Thus, if the government campaign were able to convince large numbers of people that speeding is wrong, social influences would likely affect the behavior of additional, initially unconvinced people. This is especially true in light of the high visibility of the behavior.

Unfortunately, however, in the case of speeding, other powerful incentives exist which are likely to counteract the effect of social influences. In addition to force of habit and busy schedules, financial incentives to spend less time in transit may appear to align in favor of speeding, even in the face of knowledge that speeding is dangerous and wastes fuel.[119] And as Ann Carlson's survey of recycling initiatives suggests,[120] even modest economic incentives may be relatively strong compared to social influences, making the prospects for leveraging social influences in the case of speeding somewhat more doubtful.

The problem of countervailing financial incentives is even greater in the case of many other high-visibility environmental

---

Model Behavior, 16 PERSONALITY & SOC. PSYCHOL. BULL. 320–27 (1990) (finding subjects' decisions to jaywalk to be correlated with behavior of models).

118. In many cases, the decision to speed or not to speed is also physically influenced by the behavior of other drivers on the road: on congested roads, speeding enables more speeding, while not speeding may impede others from doing so. Although this is an important network effect which should enter into a decision whether to include speeding in a multiple-behavior mitigation program, I do not consider it a "social influence" per se but rather a physical constraint, albeit one that is socially determined.

119. Of course, people's hunches about their financial best interests are often wrong, and may be especially so with regard to the higher expected costs of accidents when speeding. People generally underestimate their probability of being in road accidents, and even experts frequently undervalue low-probability, high-consequence risks of all kinds, from terrorist attacks to earthquakes to melting ice caps. *See, e.g.*, Daniel Farber, *Probabilities Behaving Badly: Complexity Theory and Environmental Uncertainty*, 27 ENVIRONS ENVTL. L. & POL'Y J. 145, 146–149 (2003).

120. Carlson, *supra* note 12 at 1293–95 (noting success of bottle bills as perhaps "the single most effective way to encourage recycling," even with redemption rates as low as 2.5 cents per bottle).

behaviors. For instance, installing rooftop solar panels, buying a new hybrid car or giving up driving and riding a bicycle are all extremely high-visibility behaviors, but they are also costly (in money or time), to the point where many people simply cannot afford them. With regard to these high-cost, high-visibility behaviors, Vandenbergh et al. are probably correct that at least an initial public program to target individual carbon emissions should exclude behaviors with such high upfront costs,[121] especially as there are plenty of other emissions behaviors to target which offer net cost savings with no initial investment.

Vandenbergh et al.'s proposal does include one low-cost behavior change which is also highly visible: reducing discretionary motor vehicle idling. The authors estimate that reducing excess idling (i.e., running the car to "warm it up" or when waiting to pick up passengers) could eliminate millions of tons of carbon dioxide emissions per year.[122] Although those not yet attuned to vehicle idling may regard it as less visible than rooftop solar panels or hybrid cars, idling is, at least in principle, a highly visible behavior. Drivers are especially prone to idle in busy waiting areas, where anyone within a few yards can, if paying attention, notice by sound, sight or even smell.[123] Passengers, even the relatively unattuned, generally notice when cars are switched off, as this may disrupt music, climate control and power windows. Passengers also tend to be socially close to drivers, amplifying their influence. Thus, the decision to idle or not to idle, like that to speed or not to speed, is likely to be socially influenced, at least to some extent.

Because idling is already relatively visible but is not yet widely regarded as a problem, the visibility framework suggests that top priority in reducing idling should be to create and publicize an anti-idling consensus. If this can be done, the behavior's visibility and resulting social influences should begin to assist, rather than retard, the desired behavior changes. As it happens, Vandenbergh et al. already propose a number of interventions which would assist in creating an anti-idling consensus. But because their focus is on personal norms change rather than social

121. Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1716.

122. *Id.* at 1723–25.

123. Recall that even complete strangers, with whom a subject has no reason to expect future interaction, can exert social influences which determine behavior. *See* Cialdini et al., *supra* note 117 (finding that test subjects tended to litter, or refrain from littering, based on behavior of others around them); Mullen et al., *supra* note 117 (finding subjects' decisions to jaywalk to be correlated with behavior of models).

influences,[124] the authors overlook some important opportunities while including other measures that may be counterproductive from a social influence perspective. The following sections thus touch briefly on each of their proposed interventions, exploring how the behavioral visibility perspective can inform and perhaps improve upon them.

1. Public Information Campaigns

To reduce idling, Vandenbergh et al. propose a public information campaign to dispel "the common set of false beliefs that cars need to warm up for significant time before being driven [and] that shutting off the engine briefly and then restarting it consumes more fuel and produces more pollution than allowing the engine to idle."[125] While the authors focus on a campaign's potential to advertise personal cost savings,[126] the perspective of social influences suggests a possibly more powerful message: Unnecessary idling harms *others,* by harming both the environment and national security.[127]

Even if focused mostly on cost savings, however, an anti-idling public information campaign can create social enforcement in two other ways. First, it can reduce the potential for extremeness sanctions against early adopters and advocates of anti-idling behavior, by creating an impression that actions that might otherwise be disapproved as excessively penny-pinching or environmentally extremist are common and commonsensical.[128] And second, it can increase the potential for social influences by nondrivers who will *themselves* benefit from cost savings (e.g., drivers' employers or family members).

In each of these cases, the public information campaign, as far as social influence is concerned, functions by feeding example arguments to would-be individual norms entrepreneurs. To the extent that different arguments will work better on different people, then, the main lesson of the social influence perspective is that a public information campaign against idling should incorporate a number of different arguments rather than focusing exclusively on the personal economic cost of idling.

---

124. *See* Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1723–30.

125. *Id.* at 25.

126. *Id.*

127. On the value of framing actions as harmful to others, *see supra* text accompanying notes 50 and 85.

128. On extremeness sanctions, *see supra* text accompanying notes 42–44.

2. Anti-Idling Laws

As with public information campaigns, while Vandenberg et al. are aware of the potential of anti-idling laws "in signaling normative expectations,"[129] greater attention to social influences suggests ways in which such laws can be fine-tuned for maximum effectiveness. From the social influence perspective, anti-idling laws, like public information campaigns, can help eliminate extremeness sanctions by allowing early adopters (and advocates, including "backseat drivers") to portray themselves not as extremists but as mere law-abiding citizens.[130] Similarly, to the extent that anti-idling laws more *directly* reduce idling—by causing drivers to fear a ticket or by engaging their personal norms of law-abidance—then the direct reductions in idling will also contribute to others' perceptions, increasing the chances for an anti-idling cascade.[131]

The perspective of social influences, however, suggests two approaches for improving the adoption and effectiveness of anti-idling laws: first, enacting anti-idling laws at the most local level possible, and second, targeting laws at specific, high-idling zones rather than jurisdiction-wide. First, as Richard McAdams has pointed out, local laws may be better respected by citizens than state or national ones, both because locals can be more involved in their legislative process, and because enacting majorities are likely to be stronger in smaller populations.[132] Second, creating "no-idling zones" in busy, visible areas like airports, transit stops and schools would target the largest concentrations of idling-related emissions, while maximizing opportunities for social influence—and, like passing laws that are as local as possible, might improve compliance and chances for adoption, by reducing the laws' intrusiveness to drivers in other areas.[133] Meanwhile, once

129. Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1725.

130. This effect (where banning a behavior which is socially harmful but nevertheless socially enforced in some circles, encourages dissenters by giving them the excuse of following the law) is known in norms literature as *ambiguation*. A popular example involves white business owners from the South who stood to gain financially from integrating their businesses, yet were prevented from doing so by pressure from other whites. These business owners supported the Civil Rights Act of 1964, realizing they would benefit from its ambiguation effect. Lessig, *supra* note 47, at 965–67.

131. *See supra* text accompanying notes 48–60 (section on cascades).

132. McAdams, *Attitudinal Theory*, *supra* note 5, at 373-74.

133. Existing anti-idling laws were generally enacted to address not greenhouse gas emissions but hazardous levels of noise and air toxics, particularly from diesel exhaust. As such, these laws often exempt small and personal vehicles. *See gener-*

people develop awareness of idling and the habit of turning off the car—and reminding others to do so—they will likely carry their new habits with them, even to areas where idling is not yet prohibited.

3. On-the-Job Training

As I explain further below, aiming interventions at business and workplace behavior may indirectly help raise the visibility of analogous residential behavior. With regard to idling, Vandenbergh et al. cite on-the-job training as a possibly useful intervention, noting that a program in Edmonton, Alberta, was able to reduce annual fuel consumption of city vehicles by 10 percent.[134] This idea could easily be expanded to private employers as well. Because attention is an element of visibility, once employees become attuned to a behavior at work, they may begin to notice—and thus be more likely to change—the same or similar behaviors where they occur elsewhere.[135] Meanwhile,

---

ally OFFICE OF TRANSP. & AIR QUALITY, U.S. ENVTL. PROT. AGENCY, COMPILATION OF STATE, COUNTY, AND LOCAL ANTI-IDLING REGULATIONS (2006) (PUB. NO. EPA 420-B-06-004) (identifying state and local anti-idling laws). Some existing laws are already targeted even more narrowly, being limited not only to large vehicles but also to certain zones such as schools, residential areas, or marine terminals. *Id.* Even so, in some cases, the laws have faced political opposition—demonstrating the potential for even greater opposition when broadening idling limits to personal vehicles. *See, e.g.*, Nancy Remsen, *Lawmakers Stick with Bus-Idling Limits*, THE BURLINGTON FREE PRESS, March 27, 2008, at 1B (describing trucking industry opposition to Vermont's ban of school-bus idling on school grounds); Herb Booth, *Measure Targets Idling by Trucks*, THE DALLAS MORNING NEWS, January 16, 2004, at 1N (describing trucking industry opposition to an anti-idling ordinance in Lancaster, Texas). Where they do apply to personal cars, some existing anti-idling laws have also been inconsistently enforced, suggesting that public tolerance (or simply ignorance) could break down rapidly in the face of adequate enforcement. *See, e.g.*, Adam Smeltz, *Cherry Hill Approves Clean-Air Resolution*, CHERRY HILL COURIER-POST, July 29, 2008 (citing municipality's adoption of three-minute idling limit because a "three-minute idling limit, technically a state law . . . in effect some 20 years . . . 'ha[d] not been publicized to the general public'"); *CA Officials Push for More Enforcement in Port Truck Idling Law*, INSIDE FUELS AND VEHICLES, Vol. 3, No. 3 (Jan. 29, 2004) (describing weak enforcement and industry opposition to stronger enforcement of idling limits at California ports).

134. Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1726.

135. Anecdotal evidence comes in the form of Eudell Hall, an employee at a Gatorade factory in Texas who described taking home the lessons of her employer's recent water-conservation initiatives, which had saved the plant 12 percent on its water bills: "I really do cut my water off when I'm running it in the face bowl or maybe I don't do the dishwasher as often." Marketplace Radio, *Pepsi Conserves Water with Gatorade,* Nov. 19, 2008, *available at* http://marketplace.publicradio.org/display/web/2008/11/19/pepsi/ (last visited Nov. 19, 2008). Given the increase in recent years in conservation initiatives by private employers, it would be interesting to

employers' mere adoption of conservation as a goal may powerfully signal to employees and others the potential for personal financial savings.[136] For a higher-visibility behavior like idling, where social influences on personal behavior may be managed more directly, employer-based initiatives represent just one more tool in the toolbox. But in the context of lower-visibility behaviors, this tool takes on much greater importance, as discussed below.

4. Technology Mandates and Incentives

Finally, in order to reduce idling, Vandenbergh et al. note that the government could eschew behavior-modification altogether and simply mandate or promote technology on all new vehicles to automatically stop and restart the engine while the vehicle is not moving.[137] The long manufacturing lead times and relatively high costs of this technology, however, imply that policies promoting behavioral idling reduction could create much greater emissions reductions in the short-term, and possibly even in the long-term.[138] Although the choice between upstream technology mandates and consumer behavior modification is a complex one, the visibility of idling does suggest it is better-suited to a behavioral solution than some other behaviors (such as maintaining tire pressure and changing vehicle air filters, discussed below), and weighs as an additional factor favoring behavior-modification over mandates. Meanwhile, promoting behavior change as a zero-cost, short-term option may help to create enough consumer demand for anti-idling technology to smooth its future adoption, whether by increasing political support for mandates or simply through market forces.[139]

---

see more systematic research on the effects of such initiatives on employees' private behavior.

136. *See infra* text accompanying notes 149–55.

137. The devices, known as integrated starter-generators (ISGs), are available today on a few production models in Europe. ISG's can result in fuel savings of 5–9 percent, and at an added cost of $300 to $650 per new vehicle, have a payback period of two to seven years. Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1728 (citing JEFF ALSON ET AL., EPA 420-R-05-012, INTERIM REPORT: NEW POWERTRAIN TECHNOLOGIES AND THEIR PROJECTED COSTS 17 Tbl.2-1 (2005)).

138. Vandenbergh et al. estimate that a $50 million behavioral anti-idling program could eliminate 6 to 9 million tons of CO_2 per year at a cost of $6 to $9 per ton, while spending the same amount on an ISG rebate program could result in reductions of only 1.2 to 2.2 million tons, over 16 years, at a cost per ton of $23 to $42. *Id.* at 1729.

139. The same "foot-in-the-door" point holds for many other areas in which policymakers have a choice between promoting low-cost behavioral measures and

B. *Lower-Visibility Behaviors: Raising Visibility to Enable Social Influence*

Compared to vehicle idling, the residential efficiency behaviors included among Vandenbergh et al.'s "Low Hanging Fruit" are generally much less visible.[140] Few people are likely to observe others' attempts to save energy at home, where even members of the same household will likely be oblivious to many decisions such as turning off power strips or unplugging cell-phone chargers. Although guests can theoretically observe some actions, such as newly installed compact fluorescent bulbs or power strips, these still may be far less visible than turning off a car while in a public waiting area, where passengers are directly affected and bystanders may notice the absence of exhaust and engine noise. Other residential changes, like small differences in temperature or upgraded thermostats, are likely to escape guests' notice completely. Moreover, because power strips, light bulbs, energy meters and thermostats are relatively inexpensive and infrequent purchases, only the most devoted environmentalists are likely to discuss them widely outside the house, limiting the indirect visibility of these behaviors.

Given their relatively low visibility, social influences on many residential energy-efficiency behaviors are likely to be quite weak unless visibility of the behaviors can be raised. This section suggests two approaches for doing so: through interventions targeted either directly at residential energy use, or at similar behaviors where they occur in more public locations.

1. Raising Visibility of Home Energy Use: Interventions Targeted Directly at the Home

Interventions to target home energy use where it occurs—in the home—may be divided into two subcategories: interventions that raise direct visibility, and those that raise indirect visibility. By "direct visibility," I mean perception by eyewitnesses. By "indirect visibility," I mean learning of behavior through conversation, either with the actor or a third party. Although some

high-(initial)-cost efficiency upgrades: think promoting weather-stripping versus new furnaces, or CFL light bulbs versus whole-house energy monitors.

140. The four residential energy-efficiency behaviors included in the proposal are: reducing "standby power" electrical use; increasing adoption of CFL light bulbs; setting thermostats two degrees lower for heating and two degrees higher for air-conditioning, and reducing thermostats on water heaters. Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1720.

interventions may affect both types of visibility, discussing them separately serves as a reminder of the conceptual difference and the fact that visibility can be raised in various ways.

a. Direct Visibility

As noted above, raising the visibility of residential behavior presents a difficult challenge. Technically, the number of times that a behavior is directly witnessed should be a product of two variables: the number of potential eyewitnesses and the likelihood of the behavior being noticed by each one. Altering the first variable—the number of potential eyewitnesses—is probably off the table in terms of promoting the visibility of literal residential behavior. But it forms the core of strategies to target analogous behavior in public places, discussed below. The second variable—the likelihood of attracting the notice of each potential witness—may be nearly as difficult to influence, at least through physical means. It is hard to imagine a campaign advocating the use of open light fixtures to show off one's compact fluorescent bulbs, or placement of one's power strips where they are most visible to guests. Such an approach might work in a very few cases: For instance, advocating placement of whole-house energy monitors near main entry doors may be justified, as it allows residents to check usage before going out, but it also allows guests to witness both usage rates and the adoption of the monitoring technology itself.[141] In most other cases, however, changing the size, frequency or location of targeted behaviors is likely to be a less promising approach to increasing social influences than is increasing indirect visibility—that is, creating new opportunities to discuss a behavior, rather than to witness it directly.

b. Indirect Visibility

Public interventions may stimulate discussion of residential energy use—and ways to reduce it—in several ways. First, people are most likely to discuss topics which are most frequently on their minds. Thus, real-time energy monitors might be a simple

141. Vandenbergh et al. advocate using a combination of subsidies and utility-based programs to increase the use of such monitors (which typically consist of a transmitter attached to the existing electric meter, and a remote usage readout inside the house), citing a review of studies showing that access to real-time measurements of electric use typically leads people to reduce their usage by 5–15 percent. Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1736–37.

example of an intervention to raise indirect visibility. By promoting daily awareness of electricity use, monitors may make their users more likely to talk about it, thus raising awareness among the users' social contacts as well.

Another way to create discussion of energy use, while simultaneously promoting a consensus for conservation, would be through electrical bills.[142] Because a personal norm of "doing one's part"—common in social dilemma situations—is often implemented by the specific norm of "not contributing to the problem more than the average person," allowing people to compare their electric use with a local average may activate powerful social incentives.[143] To the extent that many people conserve in an attempt to reduce their consumption below the average, usage rates may enter a downward cycle as people compete against lower and lower averages. Indeed, many areas, including Los Angeles, already include a local average usage on monthly energy bills. Citywide averages, however, are less than ideal because they include customers of such a wide variety of social classes and lifestyles. More useful would be to calculate and report averages for relatively localized and homogenous "billing communities"—like single blocks or apartment buildings—so that users can compete against small numbers of similar users.[144]

The social incentives created by such a localized billing community program could be multiplied further by setting competitive goals and rewards, both for entire billing communities and for individuals within them.[145] A program offering rewards (such

142. Social psychologists such as Stern have described a model of behavior change driven by such awareness using the variables *Awareness of Consequences* (AC) and *Awareness of Responsibility* (AR). In the case of individuals reducing their carbon emissions to combat climate change, awareness of the harmful consequences of emissions is represented by AC, and awareness of one's part in contributing to the problem by AR. Stern, *supra* note 38, at 413–21.

143. Vandenbergh, *Order Without Social Norms, supra* note 3, at 1161.

144. Dividing environmental collective action problems into units on the scale of buildings or blocks has been shown to create highly effective social reinforcement in other contexts. *See* Carlson, *supra* note 12, at 1287 (discussing a study showing large improvements in recycling rates using a "block leader" approach with face-to-face contact).

145. Vandenbergh et al. note a "useful synergy in combining real-time feedback with well-defined [conservation] goals and tangible rewards for meeting those goals." Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1737. Carlson has also suggested a program for electric billing similar to the one I am describing here, though without the explicit competition aspect; *see* Carlson, *supra* note 14, at 10,768. In both cases, whatever benefits *personal* goals may offer are likely to be magnified if goals are framed as *relative to others.*

as cash prizes, rate reductions, or simply public acknowledgement) to the *lowest-consuming individuals* within each block or building—as well as to the *lowest-consuming billing communities* within each state, city or neighborhood—would offer multiple additional avenues for social influence. First, publicizing prize winners at the various levels would prompt news and discussion—including discussion of the specific conservation techniques used by the winners. Second, knowledge that one's community is in competition with others could build local "team spirit," giving "norms entrepreneurs" incentives to discuss conservation efforts with their neighbors. And third, the nested community structure of such a program would allow it to leverage existing governance bodies like municipalities and neighborhood associations, which could be rewarded for designing campaigns to help their members conserve.[146]

Furthermore, a system of competitive billing communities would be surprisingly easy to implement. Electric utilities already possess the necessary usage data, so a utility could implement the program within its coverage area simply by drawing the community boundaries and installing the software needed to compute community averages and print them on bills. While not negligible, the cost of such efforts should be small compared to technology upgrades already in the pipeline.[147] Although political support for *any* increase in electric rates may not exist at the national level, localities with strong environmental constituencies could take the lead in enacting such programs, as they have with anti-idling laws. Other programs targeted at residential energy use could follow later—perhaps as the magnitude of long-term personal cost savings became clearer.

146. A recurring critique of intensive, face-to-face interventions focused on creating social influence, such as the "block leader" recycling programs reviewed by Carlson, is that such programs would be expensive to implement. *See* Vandenbergh, *Order Without Social Norms*, *supra* note 3, at 1105. My suggestion is that offering competitive financial incentives (even ones that are revenue-neutral, such as lower per-unit rates for conservation "winners") could be combined with information provision to catalyze social enforcement similar to the "block leader" recycling programs, at very little cost.

147. In California alone, major utilities are already committed to roughly $3.5 billion worth of investments in advanced metering infrastructure, including not only software upgrades but physical replacement of over 16 million electric meters with advanced units capable of reporting hourly use for time-of-use metering. Gene Wolf, *It's So Much More Than a Smart Meter*, TRANSMISSION & DISTRIBUTION WORLD, April 1, 2008, at D9.

2. Raising Visibility of Home Energy Use: Targeting Analogous Behavior in Public Locations

The residential electric billing program described above would raise the visibility of residential conservation behaviors—indirectly, by stimulating discussion—but would not directly create opportunities for new adopters to see or practice such behaviors in person. The program is also poorly suited to reducing emissions from nonelectric residential sources like natural gas and heating oil.[148] Interventions targeting analogous energy use behaviors, but in nonresidential contexts, can help address both of these problems. In addition, targeting conservation initiatives at businesses rather than residential users reduces the number of actors whose behavior must be changed, while taking advantage of business firms' generally lower discount rates and superior economic rationality. Meanwhile, as with the workplace anti-idling programs discussed above, employees who learn new conservation behaviors at work may well apply them at home, and businesses' mere adoption of conservation as a goal may powerfully signal to employees, and customers, the potential for personal financial savings.

a. Workplaces

The transfer of behavior learned at work to the residential context could be especially useful in reducing "standby power" electrical use, because many important conservation behaviors are essentially the same in both contexts.[149] For example, white-collar workers often have direct control over computers—devices which also offer huge opportunities for savings in the residential context.[150] Targeting standby power use in the workplace rather

148. The unavailability of real-time natural gas monitoring devices, and the lower number of residential uses for gas compared to electricity, create challenges for behavioral reductions through monitoring. Meanwhile, the geographic intermingling of homes using different heating fuels would complicate the use of local averages for gas and oil use, since all residents in an average should ideally share a single primary heating fuel. From the standpoint of reducing carbon emissions, all major types of residential energy use—electricity, gas, oil and other heating fuels—would ideally be converted into emissions equivalents based on the carbon intensity of local fuel sources, allowing consumers to directly compare the environmental effects of their choices of fuels. Such a program, however, presents steep burdens of consumer education and data integration between utilities, making it more aspirational than realistic in the near future.

149. *See supra* text accompanying note 135.

150. According to one report, turning the United States' work PCs off at night could eliminate 14.4 million tons of CO_2 emissions per year—over one-sixth of one

than at home has a number of advantages. Office managers and IT departments can teach employees to use software energy efficiency settings, plug-in electricity monitors, and smart power strips more effectively than even the best-designed public information campaign. Companies can also rely on existing structures and skill sets to track energy use and monitor progress toward conservation goals. Using off-the-shelf monitoring technologies,[151] companies could even implement internal competitions between workgroups, similar to the residential billing program discussed above.[152]

Thanks to their greater economic rationality and ability to apply specialized skills and structures, and motivated by large aggregate savings, business firms can target employees' habitual energy use behaviors in ways that individuals on their own cannot. Many larger companies are already using efficiency audits to locate energy savings in office contexts, just as industrial companies have squeezed energy savings out of manufacturing

---

of the yearly reduction slices required to reduce overall U.S. carbon emissions to 1990 levels by 2020. *See supra* text accompanying notes 21-22 (estimating yearly emissions reduction goal); ALLIANCE TO SAVE ENERGY, PC ENERGY REPORT 2007, *available at* http://www.1e.com/EnergyCampaign/downloads/1E Energy Report US.pdf (estimating reductions available from work PCs). The Alliance report may overstate the reductions available from work PCs—it was cosponsored by a marketer of commercial power-management systems, and uses some arguably generous assumptions about how many PCs are left on overnight—but this only serves to underline the possibly even larger reductions available from home PCs. In 2003, over 69.9 million U.S. households were estimated to own a personal computer, and growth has continued since then, with many households now owning two, three and even more computers. JENNIFER CHEESEMAN DAY, ET AL., U.S. CENSUS BUREAU, COMPUTER AND INTERNET USE IN THE UNITED STATES: 2003 (2005), *available at* http://www.census.gov/prod/2005pubs/p23-208.pdf (PUB. P23-208). By comparison, the Alliance report uses an estimate of 104 million business computers.

151. In addition to increasingly common, inexpensive, and widely available single-outlet electrical meters, a number of vendors offer sophisticated, centralized power-monitoring systems for medium to large organizations. One such company, Measurlogic Inc., offers submeters for individual circuits as well as software for reporting the submeter readings. *See* Submetering and Cost Allocation – Take Control of Your Energy Bill, http://www.measurlogic.com/EnergyManagement/submetering.html (last visited Feb. 11, 2009). For smaller organizations, workgroups, or even homeowners, Plogg International offers wireless reporting and switching units which allow per-outlet remote control and logging through desktop PC software. *See* Plogg Wireless Energy Management, http://www.plogginternational.com/applications.html (last visited Feb. 11, 2009).

152. Like the residential billing program discussed above, the workplace initiatives imagined here represent an expansion on ideas proposed by Ann Carlson. *See* Carlson, *supra* note 14, at 10,768.

processes.[153] The rationality of firms cuts both ways, however, as companies will resist externally imposed energy-efficiency initiatives which have net costs in employee productivity. Thus, a key challenge for designers of public interventions will be providing and communicating the appropriate incentives to employers. Cash technology subsidies—such as the rebates for power monitors and smart power strips which Vandenbergh et al. propose in the household context[154]—might sweeten the pot enough for some employers. For others, the energy savings generated by such technologies might not be enough to compensate for employees' time lost in using them. Adoption of these technologies might be increased, therefore, by allocating public funds not toward direct subsidies, but instead toward developing well-researched, ready-to-use energy-savings curricula for implementation by corporate facilities and IT departments,[155] along with materials to communicate to executives any available net costs savings.

In addition to providing a supportive and social environment for teaching employees new habits and techniques, workplace conservation programs may affect residential behavior in other ways. If employees are aware of the rational and profit-driven nature of employers' decisions, then an employer's mere participation in a public efficiency initiative can demonstrate to its employees the importance of available cost savings. Meanwhile, at-work conversations about employer conservation initiatives can provide focal points for discussion of analogous residential behaviors, indirectly raising the visibility of those behaviors.

b. Public Accommodations

Consumer settings like stores, hotels, and restaurants offer many of the same advantages as workplaces in terms of showcasing new conservation behaviors. They are highly visible locations visited by large numbers of people. Their rational approach to decisionmaking offers advantages over targeting consumers directly. And like employers, their mere participation in conservation programs may effectively advertise to consumers the

153. *See, e.g.*, Andrew Martin, *In Eco-Friendly Factory, Low-Guilt Potato Chips*, N.Y. TIMES, Nov. 15, 2007, at A1.

154. *See* Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1736–37.

155. Clearly, separate curricula would have to be developed to accommodate the needs of specific businesses and workplace environments: small or large offices, small or large retailers, manufacturing plants, automotive service stations, etc.

availability of financial savings. Unlike general workplaces, however, competitive consumer businesses cannot afford to get too far ahead of consumer preferences. A restaurant which installs fluorescent lighting, or a health club which lowers its water temperature, may lose business if customers do not understand the rationale for, and benefits of, these changes. Thus, much more than in workplaces, interventions targeting public accommodations must help businesses communicate the benefits of conservation measures to their customers. For instance, a program advocating reduced levels of lighting, heating, air conditioning, or water heating might provide signs for participating businesses to place at entrances and in bathrooms, explaining and quantifying the environmental benefits of the program and listing analogous behaviors for consumers to try at home. In this way, a wide range of businesses could be induced to incorporate cost-saving conservation efforts into positive "green" brand images, just as the hotel industry has done for decades with cards urging the reuse of towels and bed linens.[156]

Thus, as with workplaces, energy-conservation behavior changes in public accommodations will be visible to larger numbers of people than are changes in the home. And as with workplaces, stimulating behavior changes in the most public, visible locations may help to overcome extremeness sanctions, while communicating consensus for change and providing focal points for discussion of analogous changes at home.

156. *See* Peter Mandel, *Go Green, One Towel at a Time*, THE WASHINGTON POST, Sept. 14, 2008, at P1. Recently, some hoteliers have adopted more aggressive conservation measures, including dual-flush toilets and "master power switches" preventing lights and appliances from being left on while a guest is outside the room. Fred A. Bernstein, *Will Americans Accept Greener Hotel Rooms?*, N.Y. TIMES, Aug. 3, 2008, at B18. Other businesses have also found ways to save money while presenting a "green" image; for instance, one U.K. video post-production house reduced carbon emissions while saving 60 percent on water costs by replacing complimentary premium bottled waters with water chilled, filtered, and even carbonated in-house. Will Strauss, *Going Green AND Boosting Your Business,* BROADCAST, Nov. 11, 2008, *available at* http://www.broadcastnow.co.uk/opinion_and_blogs/2008/11/going_green_and_boosting_your_business.html. Universities, as well, are getting into the act; for instance, the "blue and gold make green" campaign at UCLA associates the school's colors and spirit with such changes as waterless urinals and high-efficiency hand dryers. Even my local supermarket cut its light levels by more than 50 percent in early 2008, just as energy prices were peaking; disappointingly, I have yet to see any signage explaining to customers the environmental benefits of this apparent cost-cutting measure.

C. *Inherently Low-Visibility Behaviors*

Unfortunately, not all low-visibility behaviors are equally susceptible to the visibility-increasing techniques just discussed. For instance, in their "Low-Hanging Fruit" proposal, Vandenbergh et al. discuss two vehicle-related behaviors—maintaining proper tire pressure and regularly replacing air filters[157]—which may be nearly impervious to visibility raising. These activities occur in private settings, making it unlikely that others will witness them, and (even when practiced correctly) they are quite infrequent, reducing the chances that drivers will discuss them with others.[158] Daily awareness of these activities cannot easily be raised through real-time monitoring,[159] and unlike saving electricity or adjusting indoor temperature, most people have few opportunities to either practice or witness tire inflation and air-filter replacement outside of their private lives. While one can imagine ways to raise the social visibility of tire and air-filter checks—for instance, mobile maintenance kiosks could be placed in busy parking lots—such strategies may not cost-effectively generate the high rates of behavior change needed to reduce emissions significantly.[160] If other kinds of interventions, such as economic incentives, can create the needed changes without using social influences, then targeting low-visibility behaviors may still make sense. But where interventions can neither raise visibility nor be effective without it, it may be wiser to aim instead at more visible

157. Vandenbergh et al. estimate that inducing 33 percent of U.S. drivers to correctly inflate their tires once per month, and 20 million drivers to change their air filters once per year, could eliminate over 40 million tons of CO_2 emissions per year, while saving consumers millions of dollars in fuel costs. Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1748–50.

158. Although extreme underinflation can be visually noticeable (if drivers bother to look at all four tires), large amounts of fuel may have already been wasted before underinflation becomes noticeable: mileage decreases approximately 0.3 percent for every 1 PSI drop in pressure, while many tires do not look visibly underinflated even at 10 pounds below the recommended pressure. *See* U.S. Dep't of Energy, *Tips to Improve Your Gas Mileage: Keeping Your Car in Shape*, http://fueleconomy.gov/feg/maintain.shtml (last visited Feb. 11, 2009).

159. The built-in pressure monitoring systems offered on some new cars may even reduce drivers' awareness of tire pressure, inducing a false belief that motorists need not check their tires while in reality reporting only very severe underinflation. Christie Hyde, *AAA Warns Motorists New Tire Pressure Monitoring Systems Should Not Replace Monthly Tire Pressure Checks,* AMERICAN AUTOMOBILE ASSOCIATION, Oct. 30, 2007, *available at* http://www.aaanewsroom.net/Main/Default.asp?CategoryID=4&ArticleID=576.

160. Vandenbergh et al. base their emissions reduction estimates on inducing behavior change in upwards of 20 million drivers. *See supra* note 157.

behaviors, where public mitigation dollars have a better chance to be multiplied by positive social influences.

1. Designing Nonsocial Norms Interventions

To the extent that proper tire and air-filter maintenance involve relatively invisible behaviors—and that strategies for raising visibility are unavailable or impractical—interventions to change these behaviors must be designed to work with little, if any, assistance from social influences. This may be easier in some cases than in others. Vandenbergh et al.'s proposed interventions for improving air-filter replacement—a public information campaign promoting awareness of fuel savings, plus coupons for new air filters[161]—might work quite adequately, especially if such a program could be made permanent in order to stimulate annual (rather than one-time) replacements. On the other hand, their suggestions for improving tire maintenance—a similar public information campaign, plus mailing each household a free pressure gauge[162]—might be less successful, since owning a tire gauge is hardly a guarantee that one will remember to use it. Thus, unless another intervention could be found which holds more promise of improving tire maintenance even without social reinforcement, this behavior may represent less of a low-hanging fruit than it appears at first glance.

2. Substituting Higher-Visibility Behaviors

For such inherently low-visibility behaviors, the behavioral visibility framework offers little good news at the level of designing interventions. Precisely for this reason, in the context of achieving an aggregate emissions reduction target through changes in multiple behaviors, the visibility framework is equally important in terms of making an initial selection of behaviors for inclusion. For instance, while including tire maintenance, Vandenbergh et al. consider, but ultimately exclude, interventions aimed at reducing the speed of highway driving, arguing that driving habits are difficult to change.[163] Yet reduced highway speed offers much larger potential emissions reductions than correct tire inflation,[164] while also offering a richer environment for positive so-

161. Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1749.

162. *Id.* at 1747–48.

163. *Id.* at 19, 49.

164. Reducing highway speed to 60 mph offers fuel (and thus emissions) savings of 7–23 percent, versus an approximately 3 percent improvement from correct tire

cial influences.[165] Thus, a public information campaign promoting slower driving may have large multiplier effects in terms of inducing toleration (or even admiration) for efficiency-improving speed changes—perhaps large enough that, even granting higher resistance to behavior change, such a campaign could still lead to more cost-effective reductions than promoting tire inflation. Although this would require much more research to substantiate, the example does demonstrate the importance of incorporating social influence effects—and behavioral visibility—throughout the various stages of program design.

V.
CONCLUSION

While social influences alone cannot solve collective action problems at the global scale, they remain powerful determinants of individual behavior, regardless of the size or characteristics of a collective action problem. Thus, recent scholarship on individual environmental behavior has been unduly pessimistic in concluding that prediction and management of social influences cannot be fruitfully incorporated into practical behavior-change programs. Rather than concluding that social influences are inherently weak or unmanageable simply because collective action problems like anthropogenic climate change occur in large or loose-knit groups, policymakers would be better served to adopt a finer-grained framework which is sensitive to characteristics of *behaviors* rather than of *groups*. Because behaviors must be *visible* for social influences to occur, policymakers can best leverage social influences by tailoring policy to the visibility of carbon-emitting behaviors. For higher-visibility behaviors, where social influences are likely to be strong, policymakers should focus on creating a normative consensus in favor of changing behavior in order to align social influences with the desired policy. In contrast, for lower-visibility behaviors, policymakers must first focus on raising visibility—either directly, or by targeting the same or similar behaviors in more visible contexts—since visibility is nec-

inflation. U.S. Dep't of Energy, *Tips to Improve Your Gas Mileage*, http://www.fueleconomy.gov/feg/driveHabits.shtml (last visited Dec. 2, 2008) (on speed); http://www.fueleconomy.gov/feg/maintain.shtml (on tires). In addition, only approximately 1/3 of vehicles have underinflated tires (Vandenbergh, Barkenbus & Gilligan, *supra* note 12, at 1748), while 100 percent of drivers are capable in principle of reducing their highway speeds.

165. *See supra* text accompanying notes 117–20.

essary for social influence to begin. Finally, for inherently low-visibility behaviors, policymakers must design interventions to work entirely without social influence—or simply direct interventions instead toward other, more visible behaviors, if changes there could achieve similar goals (e.g., reductions in carbon emissions) while benefiting from stronger social influences on behavior.