

THE INERTIA OF AFFLUENCE

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ABSTRACT: Behavior is highly resistant to change in situations with large and frequent reinforcers but weak contingencies relating reinforcers to behavior. This empirical result may help us to understand why patterns of behavior are so difficult to change in the affluent society of the USA, despite the likelihood that their continuation will destroy the environment on which we depend. The argument is illustrated by fossil fuel consumption, especially by driving cars for personal transportation, where many costs are deferred or hidden but reinforcers are immediate and are experienced in a situation of general affluence. The behavioral momentum metaphor accounts for the resistance to change of driving, and of social policies that subsidize driving. Using wind power as an example, the metaphor suggests why local action on behalf of the future may be successful and how support for future-oriented projects may be gained.

Key Words: behavioral momentum, fossil fuel consumption, energy subsidies, alternative energy, local action

In an address to the Association for Behavior Analysis in 1983 (reprinted in Ishaq, 1991), B. F. Skinner posed the question of “Why we are not acting to save the world” [see Guest Editorial, this issue]. In celebration of the 100th anniversary of his birth, this article expands upon his urgent question. My title is taken from McKibben’s (1989) article “The end of nature,” and my arguments are based on laboratory research on the persistence of behavior and the metaphor of behavioral momentum.

Skinner’s address began by pointing out some of the ways in which *homo sapiens* was acting to make its own future more perilous, such as developing nuclear weapons that could destroy all life, exhausting critical resources, and overpopulating the planet. He then described two ways of knowing: “by acquaintance” and “by description.” The former involves experience in the form of interaction with the world and its contingencies, whereas the latter relies on verbal behavior in the form of advice, warnings, or predictions. As Skinner said: “Obviously we cannot know the future by acquaintance ... and have very little reason to act because we know it by description. The more remote the predicted consequences, the less likely we are to follow advice. ... We are also not likely to take the kind of advice called a warning. When the predicted consequences are aversive, we must prevent or escape from them ... perhaps by ignoring, forgetting, or otherwise finding ways to escape that do not require solving the problem” (Ishaq, 1991, p. 22).

Skinner noted that actions of the sort required to alleviate the threat of future catastrophe, such as giving up current practices of consuming and reproducing, were likely to be aversive because they required sacrificing present reinforcers. Moreover, he

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suggested that the present conditions of reinforcement were maintained by the short-term interests of the dominant institutions of our time: “If the futures of governments, religions and capitalistic systems were congruent with the future of the species, our problem would be solved ... Unfortunately, money and goods are immediate reinforcers that are used to induce people to work on behalf of capital, despite overconsumption of irreplaceable resources, [and] weapons are made and used to guarantee the future of governments or religions, not species” (Skinner, in Ishaq, 1991, p. 23).²

I want to extend these points by suggesting that, in addition, action on behalf of the future is impeded by rich schedules of reinforcement with weak contingencies that operate in the present.

An Experimental Model

As an experimentalist, I am most comfortable explaining things by analogy to arrangements in the pigeon lab. Consider an experiment that arranges a multiple schedule with two components (e.g., Nevin, Tota, Torquato, & Shull, 1990). In both components, a pigeon’s key pecks produce food reinforcers according to a variable-interval (VI) 1-min schedule; that is, the first peck to occur after an unpredictable interval averaging 1 minute is immediately reinforced. In addition, in one component, food reinforcers are given independently of responding every 15 seconds—a so-called variable-time (VT) 15-s schedule. This component exemplifies a rich schedule with weak contingencies. The procedure is diagrammed in Figure 1.

First, on contingencies. One way to represent the response-reinforcer contingency is called the Molar Feedback Function (MFF), which shows how the obtained rate of reinforcement depends on the rate of responding—the reverse of the usual way of representing the relation between behavior and its consequences. As shown in Figure 2, obtained reinforcement on a VI schedule increases with response rate according to an increasing, negatively accelerated function, but in the VI+VT component, it starts from a high level where response rate is zero. As a result, the relative incremental improvement in reinforcement, for a given increase in response rate, is smaller in the VI+VT component than in the VI component. Not surprisingly, after several hours of training, response rate is lower in the VI+VT component because the response-reinforcer contingency is weaker.

Second, on the effects of the sheer richness of the schedule—the rate or magnitude of reinforcers in a component. In my example, there are five times more reinforcers per unit time in the VI+VT component than in the VI-only component. It turns out that when some disruptor is applied equally with respect to both components—for example, abruptly reducing deprivation or introducing alternative reinforcers—response rate is more resistant to change, relative to its baseline, in the VI+VT component. Both results—

² In an important book, Diamond (2005) discusses these and other reasons why societies may fail to prevent their own collapse, with fascinating historical and current examples that are amenable to a behavioral analysis.

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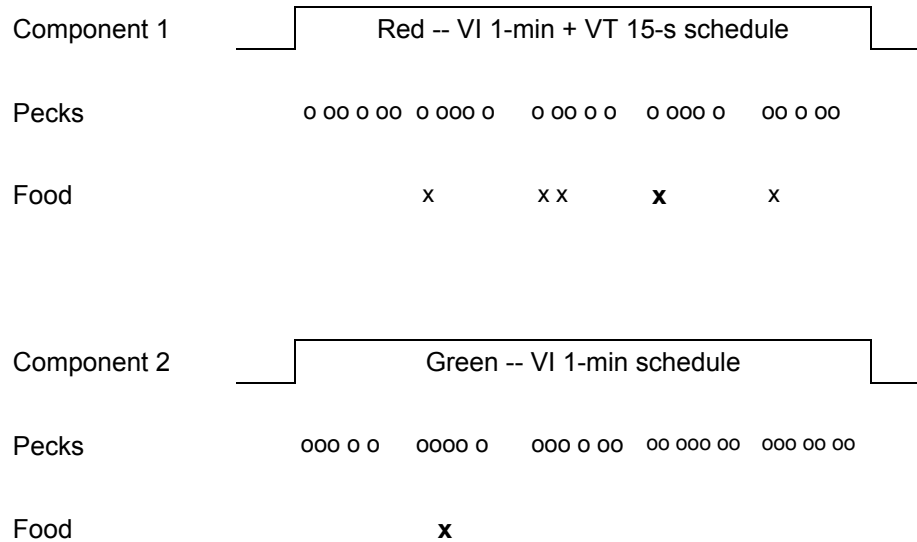


Figure 1. Diagrammatic representation of a two-component multiple schedule of the sort arranged by Nevin et al. (1990). In Component 1, signaled by red light, a pigeon's key pecks are reinforced according to a VI 1-min schedule and additional reinforcers are provided independently of responding by a VT 15-s schedule. In Component 2, only the VI 1-min schedule operates. VI reinforcers are indicated by X and VT reinforcers by x.

lower response rate and greater resistance to disruption in the VI+VT component—have been replicated about a dozen times, with humans and rats as well as pigeons and with added VT reinforcers that are qualitatively different from the VI reinforcers for the target response (e.g., Grimes & Shull, 2001; for review see Nevin & Grace, 2000). The standard results are exemplified by the hypothetical data in Figure 3.

The basic equation for resistance to change of the rate of repeated free-operant behavior is derived metaphorically from Newton's second law (Nevin, Mandell, & Atak, 1983):

$$\Delta B = -f/m, \quad (1)$$

where ΔB , the change in response rate, is directly related to the magnitude of a disruptor f , which is analogous to an external force, and inversely related to behavioral mass m , which is analogous to inertial mass in Newtonian mechanics. To get a feel for the Newtonian metaphor and its relevance to behavior, consider a pair of identical pickup trucks, one of which is empty and the other loaded with concrete blocks. If both are traveling at the same speed, and both drivers apply the same force to their brakes, the loaded truck will travel farther before coming to rest. The trucks correspond to the two component schedules, VI and VI+VT, in Figure 1. The speed of each truck, before

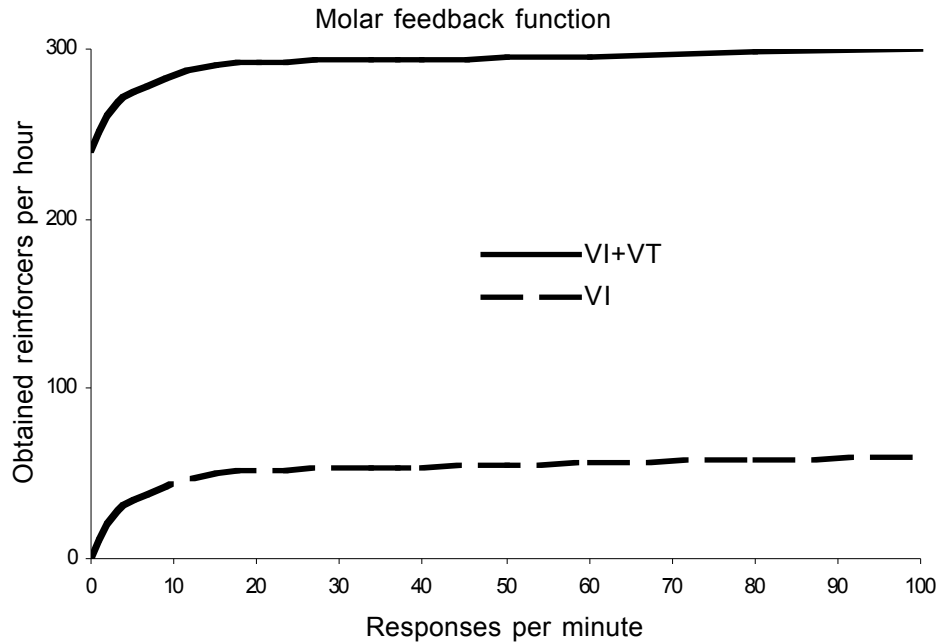


Figure 2. The molar feedback function relating reinforcers obtained per hour to responses per minute in the VI+VT and VI-only components diagrammed in Figure 1.

braking, corresponds to the rate of responding established by the schedules, and the concrete blocks in one truck correspond to added reinforcers in one component. The braking force reduces the trucks' speed in the same way that reduced deprivation (or some other disruptor) reduces responding in the components of the multiple schedule (Figure 3), and the relatively greater persistence of the loaded truck's forward motion before stopping is directly related to its added cargo.

Scores of studies have shown that m in Equation 1 is directly related to the frequency, amount, and immediacy of reinforcement correlated with a stimulus situation—importantly, regardless of whether all reinforcers are contingent on the behavior in question. The force term f may be identified with any of a wide variety of disruptors such as punishing the response, presenting stimuli that signal impending aversive stimuli, increasing response cost, and discontinuing reinforcement (extinction), all of which yield comparable results (for review see Nevin & Grace, 2000).

An Example: Weak Contingencies for Driving

Now let's apply these notions to an instance of everyday individual behavior that threatens the future of the species—driving a private car to get to work, visit friends, go

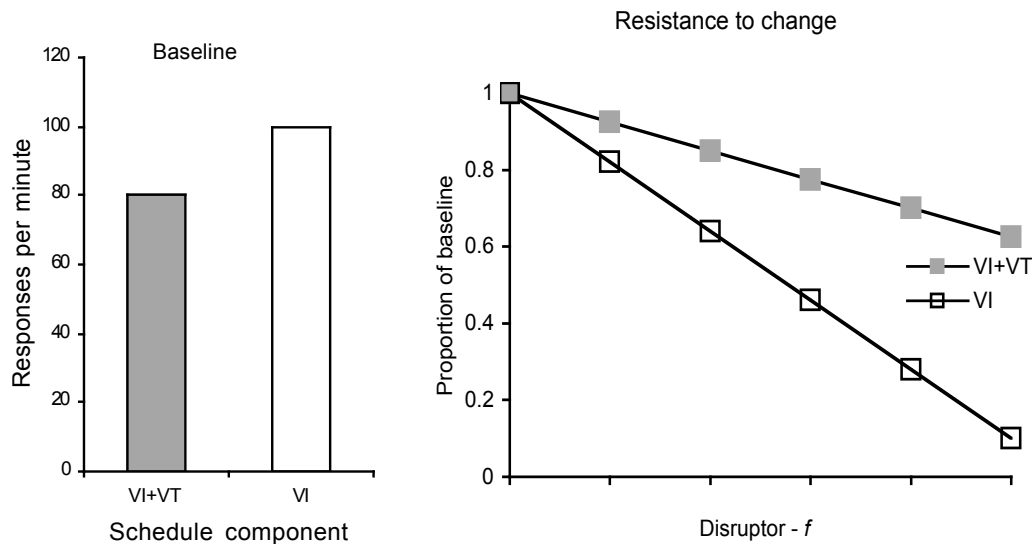


Figure 3. Typical results of experiments using the procedure diagrammed in Figure 1 (e.g., Nevin et al., 1990). The left panel shows baseline response rates in the VI+VT and VI-only components after training to stability. The right panel shows that response rates decrease relative to baseline when increasing values of a disruptor are presented, with a smaller relative decrease in the VI+VT component.

on holiday, or just pick up a quart of milk. The immediate reinforcers for driving include comfort, convenience, independence, and perhaps the sheer delight of handling a well-built machine. I drive a car, enjoy these reinforcers, and therefore am part of the problem.³

Driving also entails costs such as paying for gasoline. Obviously, the more miles I drive per year, the more I pay. Figure 4 illustrates the MFF relating fuel costs to miles driven, assuming 30 miles per gallon. But even if I did not own a car and never drove an inch, I would still pay at tax time, every April 15: An average of \$2000 per taxpayer supports an array of direct and indirect subsidies for driving cars (Brown, 2003, p. 78). Because this tax-based support for driving is not contingent on driving, the overall contingency between driving and its costs is weak in the same way that the contingency between key pecking and food is weak in the example of Figure 2.

³ Technically, the term “reinforcer” refers to an event that can be shown to increase the probability of a response that produces it. Once we leave the laboratory, such demonstrations may be difficult to arrange, but the term is appropriate here because we could probably demonstrate that if the consequences of driving were withheld, driving would be less likely to occur. Consider a thought experiment in which some mad road engineer arranged that the road from my house was an endless spiral with no exits, so that I could never get to any destination. I would abandon my car and walk.

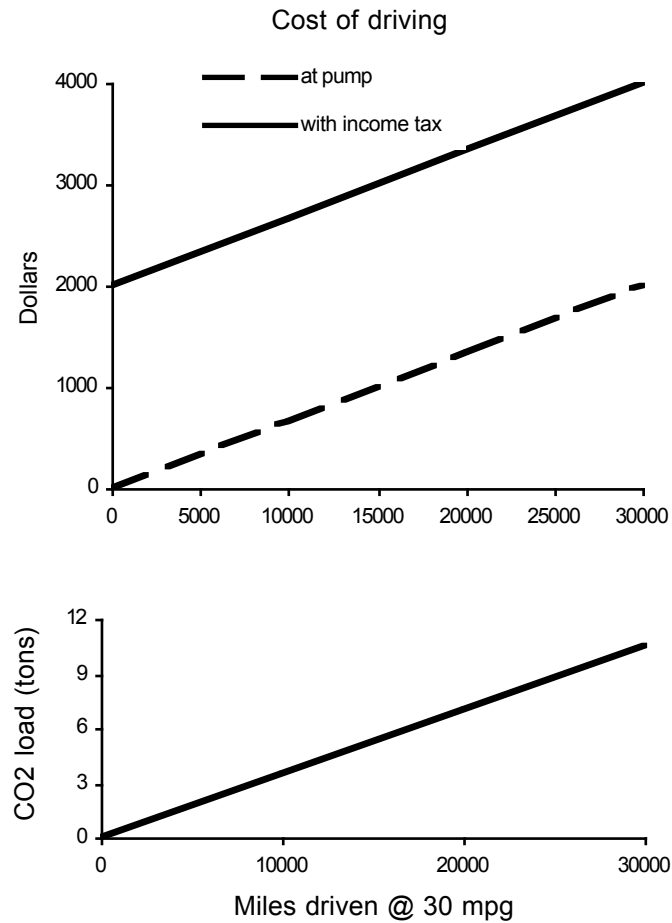


Figure 4. The upper panel shows expenditures on gasoline as a function of miles driven, assuming 30 miles per gallon and \$2.00 per gallon (dashed line), and the total cost including income-tax-based support for subsidies (solid line). The lower panel shows the tonnage of CO₂ discharged into the atmosphere as a function of miles driven, again assuming 30 miles per gallon.

And then of course there's an environmental cost. In addition to various pollutants, a passenger car puts about 700 lb of CO₂ into the atmosphere for every 1000 miles at 30 miles per gallon, and CO₂ contributes to global warming. Over the past 160,000 years, there has been a strong correlation between changes in concentration of CO₂ in the atmosphere and changes in global temperature (e.g., Schneider, 1997), and it is almost certain that the rapid rise in global temperature since 1960 results from increasing amounts of CO₂ deposited in the atmosphere during the rapid energy-dependent development of affluent consumer societies in many western nations, and some in Asia, following the end of World War II.

Anyone who reads newspapers or watches TV knows (by description, of course) that continued increases in global temperatures will be accompanied by rising sea levels, more severe storms, heat waves and droughts, spread of insect-borne diseases—pick your favorite disaster and warming makes it worse. Scientists disagree on the projected magnitude of the change and on the proportion attributable to human activities, but there is solid agreement on the general character of the problem.

Back to the costs of driving a car. Economists estimate that if we paid at the pump for the expected long-term costs of global warming such as the need to build dikes around low-lying areas, as well as the array of subsidies to the oil industry (more on this below), the price per gallon would be over \$7.00; the International Center for Technology Assessment (2004), allowing for a variety of long-term environmental, health, and social costs, suggests that it could run between \$5.60 and \$15.14. But of course these environmental costs are far off in the future, and the contingency between driving now and paying for environmental damage later—with costs paid by drivers and non-drivers alike—is hopelessly weak.

Affluence and the Persistence of Driving

There is another reason for continuing to drive cars for personal travel even if we are fully apprised of all the immediate and more remote costs. Because we live in an affluent society, we—the author and most readers of this article and most of the folks we know—experience a lot of good things such as uncontaminated food and water, decent medical care, schooling for our kids, a wide array of affordable consumer goods, highways to drive on, fuel oil to heat our homes, electricity for our TVs, CD players, and computers, and an astonishing array of entertainment options, simply as members of the society. Of course we pay for most of these things in various ways, at the cash register or in our credit card and tax bills, but many of them are not directly contingent on our actions (such as what kind of job we work at, how hard we work, or how much we earn). Therefore, the situation of our daily lives resembles the VI+VT component in Figure 1: A schedule that is rich in reinforcers but with weak contingencies.⁴ As a result, the target behavior of driving is likely to be highly resistant to change when a disruptor occurs—including an abrupt increase in cost—because of the high level of behavioral mass. The same would be true of any repeated activity such as working, shopping, playing, or watching TV.

It is hard to imagine a more potent disruptor than the terror attacks of September 11, 2001. Did the amount of driving change after 9/11? Although there may have been some

⁴ Again, it is not easy to demonstrate that a situational factor like access to uncontaminated water is a reinforcer in the technical sense of an event that increases the probability of a response that produces it. However, reinforcers and their effect on resistance to change can also be evaluated by preference—indeed, in the pigeon laboratory, there is striking agreement between preference and resistance to change (Grace, Bedell, & Nevin, 2002). It seems reasonable that a situation with uncontaminated water would be preferred to a situation without such water, so the term “reinforcer” is appropriate and the effect on resistance to change has a basis in research.

impact on driving by some individuals, overall the answer is No: Gasoline consumption in the USA continued to increase by 0.6 per cent per year in 2001, exactly as it had for several previous years, confirming the conjecture that driving has high inertial mass. The high mass of driving is further confirmed by its persistence in 2004 and 2005, despite substantial increases in gasoline prices. (Economists would say that gasoline consumption is highly inelastic; see Nevin, 1995, for a discussion of the relation between elasticity and behavioral momentum.)

The Persistence of Subsidies

As noted above, driving is supported by subsidies to the energy industry, which discourage conservation by keeping the price of gasoline artificially low. Table 1 presents a summary of annual oil subsidies between 1995 and 1998, taken from Koplow and Martin (1998). Note especially the figure for Oil Defense, which is the cost of maintaining American military forces in the Persian Gulf—before the present war in Iraq—to protect oil shipments and infrastructure even during a time of nominal peace. These subsidy levels have been in place for over a decade, through two changes of government, in part because of lobbying efforts and political contributions by the oil industry.

Again, the persistence, inertia, or behavioral mass of the policy of subsidizing oil consumption can be evaluated by the disruptive effects of 9/11. Surely, this horror should have led to revaluation of any policy related to fossil fuel supplies, especially from the Middle East, and encouraged shifting subsidies to renewable alternatives. But did it disrupt the policy of subsidies to the oil industry? Again, the answer is No. In May 2004, the Senate voted an additional \$9 billion in subsidies for exploitation of under-tapped resources and corporate tax relief, to be spread out over several years. And the cost of the present war in Iraq, which is at least partly about the control of its vast oil resources, should be included. At latest count, there were five reasons for the war: weapons of mass destruction, the Saddam-Al Qaeda connection, overthrow of a brutal dictator, establishment of a western-style democracy, and oil. The first two of those were questionable at best, so that leaves three. Accordingly, let's add 1/3 of the cost of the war (a procedure endorsed by several economists; e.g., Koplow, 2004). That's another \$20 billion, which is 1/3 of \$60 billion, the latest annual cost estimate I've seen in the spring of 2004. Thus, since 9/11, annual subsidies have increased by at least 25%. Evidently, the government's policy of subsidizing fossil fuel use has high inertial mass.

Because energy subsidies encourage consumption of fossil fuels, they contribute to global warming. Therefore, we, collectively, are subsidizing the destruction of our own environment. To a disinterested observer, this must appear to be a truly bizarre policy. It is also an excellent example, in Skinner's terms, of the lack of congruence between the interests of the species and those of government and capital.

TABLE 1. ANNUAL FOSSIL FUEL SUBSIDIES IN USA, 1995-1998. ADAPTED FROM D. KOPLOW & A. MARTIN (1998).

Title	Amount	Description
Oil Defense	\$10.5-\$23.3 billion	To protect Persian Gulf shipments and infrastructure
Strategic Reserve	\$1.6-\$5.4 billion	Storage of fuel oil in case of disruption
Tax Breaks	\$1.3-\$2.3 billion	To offset cost of exploration and development
Support for Exports and Foreign Production	\$0.8-\$1.6 billion	Tax deferrals for multinationals, credits for foreign royalties paid
Shipping Routes	\$600-\$650 million	Maintain coastal, inland waterways for oil shipment
Industry liabilities	\$170-\$550 million	Payment for liability insurance for oil developers
Royalty losses	\$80-\$200 million	Loss of legitimate revenue due to accounting lapses
Total fossil fuel subsidies including coal, gas	\$100 billion	

Why Efforts to Save the World Have So Little Effect

Now, let's consider the problem of changing social policy from the perspective of the metaphor of behavioral momentum, expressed above in Equation 1: $\Delta B = -f/m$. The denominator on the right is behavioral mass, which I suggest for social application depends on the number of institutions and people in the relevant interest groups and the amount of money and non-monetary rewards involved. Likewise, the numerator depends on the number of people seeking change and the amount of money available for their campaign.

With respect to driving, organizations like the Union of Concerned Scientists do their best to represent the species by attempting to persuade policymakers, auto manufacturers, and the people at large to change their ways—for example, by improving fuel efficiency. However, the changes are small because the numerator of the momentum equation is small—relatively few people with relatively few dollars—whereas the denominator is huge: the car-driving population of the USA, all the dollars that go to the energy industry and auto manufacturers and their employees and lobbyists, plus all the noncontingent added rewards for individuals, capitalists, and government officials in the situation as a whole. Therefore, to accomplish substantial changes, it is necessary either to increase the numerator by mobilizing more people and dollars, or to find a way to decrease the denominator.

Koplow (personal communication, June, 2004) pointed out that when Equation 1 is applied to social policy, the terms are far more complex than in laboratory applications. For example, there is substantial variation within the institutions and groups comprising the denominator, some of which may act in environmentally beneficial ways while pursuing their own interests (for example, a firm that manufactures hybrid cars). Thus, advocacy groups may be more effective in selectively encouraging favorable variants within the denominator than in opposing a massive aggregate policy. In terms of the metaphor of Equation 1, this approach may transform a component of mass-based resistance to change (in the denominator) into an increase in the social force promoting change (in the numerator).

On Local Action

Another approach is to seek local rather than national or global change—there are fewer people and less money in the denominator. I will illustrate this approach from my experience living on the island of Martha's Vineyard, which is not the island of the rich and famous—most of them just come for holidays and sometimes do real good (and pay taxes)—but of some 15,000 year-round folks with a median family income of about \$50,000. One of those folks is the historian David McCullough, who has remarked that “If the little island of Martha's Vineyard can't solve its long-term problems, there's no hope for the world.”

The Vineyard has the usual array of problems that beset desirable places to live, including rapid real estate development and population growth, increasing auto traffic, and the resulting pollution and loss of habitat for wildlife. Efforts to conserve land are sometimes frustrated by the separate interests of the island's six fiercely independent towns. But the island is making some headway in dealing with energy-related problems.

A few years ago, a half-dozen concerned citizens simply established themselves as the island's Committee for Traffic and Transportation. Partly because of their efforts, the island's public bus system has expanded, ridership is way up, and auto traffic is at least manageable.

Over the past two years, the Vineyard Energy Project—which was initiated by one person—has used a mix of personal contacts, public presentations, and small subsidies to

persuade one school, several businesses, and a substantial number of homeowners to install photovoltaic panels that provide nearly all the electricity at each site. The project's leader is promoting energy independence for the entire island, and the idea is catching on.

My hometown, Tisbury, is currently working with a renewable energy trust to explore wind generation under community ownership for all its municipal power. The idea began when two planning board members attended a workshop on local initiatives, and was endorsed by the three selectmen in open meeting. The energy trust makes small grants and will provide a test tower for free. Assuming the test data are encouraging, the annual town meeting will debate and vote on whether to allocate some tax money for one or two wind turbines.

Note that all three of these projects were initiated by just a few individuals with limited resources—the change agents in the numerator of the momentum equation—and they were effective in changing behavior because there was no large and wealthy institution in the denominator.

The Vineyard is hardly unique in this. For example, there's a wind tower at Hull, at the entrance to Boston Harbor, that provides about 3% of the town's electricity. It is successful enough, and popular enough with townsfolk, to encourage construction of three or four more, larger and more efficient, one at a time—a local incremental approach which, if mimicked, can reduce fossil fuel consumption substantially throughout New England. Again, as a local project, it was simply promoted by citizens and town officials, without attempting to change federal policies or subsidies.

Promoting Wind Power

The advantages of wind power are well known (for summary see Brown, 2003). Currently it's the cheapest of the various renewable energy generation methods, transmission losses are reduced by placing towers near consumers, and every megawatt of wind power that replaces power generated by fossil fuel reduces atmospheric CO₂ by 3500 tons per year. (A typical modern turbine generates 2-3 mW, turns slowly, rarely kills birds, and looks striking.) Wind power also reduces pollution risks from oil spills as fuel is transported through area waterways as well as atmospheric pollution from fossil-fueled power plants.

Inevitably, there are drawbacks to be considered. Wind power cannot entirely replace fossil-fueled plants because some generating capacity must be maintained on standby for windless periods. Moreover, the cost per mW of local wind-generated electricity (including initial investment) is somewhat higher than fossil-fuel-generated power from an established large utility (assuming continued subsidies and no increase in fuel costs). However, once a town has made the initial investment, local wind power can save some town money, and taxpayers should love it—an effective contingency in the near term. Bit by bit, local movements of this sort can be an effective force for change.

An interesting test of the force generated by local projects—the numerator in the Equation 1, the basic momentum equation—is already under way. A wind energy company is proposing to build a really big windfarm on Horseshoe Shoal in Nantucket

Sound, about 6-7 miles offshore. If completed, it would supply a substantial percentage of the region's power and could make a serious dent in regional pollution and CO₂ emission. A well-funded and well-organized opposition—the status quo, in the denominator—has emerged to oppose the project. (Koplow [personal communication, June, 2004] suggested that organizing to oppose a big project takes time and money, increasing the mass-like denominator of Equation 1, and there may be a threshold of opposition that is not crossed by local projects—another reason to “think small” in efforts to solve environmental problems.)

The most general opposition argument is that a private energy developer will make profit from a project on public land, without public compensation. In the absence of substantial public funding to promote renewable energy, this may be a necessary evil: Allowing an entrepreneur “to do well by doing good” may be the only option for projects of more than purely local scope.

The opposition also argues that the proposed windfarm would kill birds, displace fish, ruin the tourist economy, depress real estate values, and mess up the beautiful views of Nantucket Sound from the shorefront windows of the well-to-do. The only relevant data come from Denmark, where a comparable wind farm has had little if any deleterious effect on fish or birds, and where tourism has increased, but these data have not been persuasive to the opposition. A more concerted effort by proponents—greater force in the numerator of Equation 1—is needed as I write.

Initiating and Sustaining Broad-Based Action

The island-based projects that I have described were initiated by relatively few people with relatively little money or institutional support—and I do not know what got them going, except that they all take descriptions of the future seriously and their efforts are maintained by immediate social reinforcers. Is there a way to get more people involved, at least as supporters if not initiators, in order to promote larger-scale change?

In applied behavior analysis, behavioral momentum is often identified with the “high-p” procedure of Mace, Hock, Lalli, West, Belfiore, Pinter, and Brown (1988). Working with developmentally disabled adults in a group home, they showed that compliance with a demanding “low-p” request (e.g., “take out the trash”) was much more likely if it was preceded by a series of three easy “high-p” requests (e.g., “give me five”) where compliance was reinforced. Since 1988, the procedure has been used successfully in over 100 interventions in clinics, schools, and homes. From my perspective, the result illustrates the effect of reinforcement on the behavioral mass of a class of action called “compliance,” enhancing its persistence in the face of challenging requests (Nevin, 1996).

A closely related approach, known as the “foot-in-the-door” technique, involves obtaining agreement to a relatively small initial request and then asking for more substantial behavior change. For example, McKenzie-Mohr (2000) describes a water-conservation program in Ontario, Canada, where some homeowners received an information packet and others were asked to sign a commitment to limit lawn watering.

Most homeowners signed this commitment (analogous to complying with a high-p request), and were then visited individually by students who provided water gauges and prompts to consider whether it had rained recently, and to water only on odd or even numbered days, to reduce watering further (analogous to low-p requests). Follow-up measurement showed that watering decreased by 54% in households that made commitments and received prompts, whereas other households that received only the water-conservation information packets actually increased their water use.

Perhaps this sort of approach can be used to generate support for a specific project such as locally generated wind power. To engage an audience in supporting some local environmental cause, the usual approach is to arrange an open meeting and present a lot of information (like the packets in the example above). But the people who are likely to attend these meetings may already know a lot of the information and are rarely asked to do anything—or at least nothing immediate and concrete that might have some immediate consequence. So they leave feeling better informed, or confirmed in their previous views, and say to each other that the situation is serious and something really should be done. I suggest that they be asked to do something at once, something easy that is analogous to complying with a high-p request. For example, people could be asked to sign a petition supporting a wind power project as they leave the meeting, take it home, and to get a neighbor's signature—easy to do, and easy to reinforce with approval when the petitions are picked up by the program coordinator. Having inserted this “foot in the door,” the coordinator might ask each person who has obtained a new signature to attend a hearing on where to situate a tower for a wind turbine—and of course reinforce attendance. Next, ask those who have obtained signatures and attended the hearing to be sure to go to the town meeting where funding for the tower will be considered—no need to speak, just be there and vote. That's pretty easy to do, and conversation after the meeting provides naturally occurring social reinforcement. Now, if a person has complied with these three relatively easy requests, he or she may be ready for something more challenging—for example, approaching officials in other towns to urge their support, or even presenting data on wind power to a gathering of opponents. If the program coordinator stays in close touch, prompting new actions and providing frequent reinforcement, the individual's support for wind power may take on substantial momentum, and may even generalize to initiating other energy-related campaigns.

The foregoing is conjectural, and is intended more to suggest an approach to establishing action on behalf of the future than to prescribe specifics. Just as in any behavioral application, it is essential to be sensitive to individual repertoires and flexible in timing and implementing an intervention. The potential advantage, of course, is relatively immediate social reinforcement for participants (and for the person who initiated the program as participation grows) for actions in the present that just might help the species to refrain from destroying the environment on which its future depends.

In conclusion, I suggest that the behavioral momentum model of resistance to change and its high-p application provide a scientifically based rationale and method of action for the well-known bumper sticker “**Think globally, act locally.**”

REFERENCES

- Brown, L. R. (2003). *Plan B: Rescuing a planet under stress and a civilization in trouble*. New York: Norton.
- Diamond, J. (2005). *Collapse: How societies choose to fail or succeed*. New York: Viking.
- Grace, R. C., Bedell, M. A., & Nevin, J. A. (2002). Preference and resistance to change with constant- and variable-duration terminal links: Independence of reinforcement rate and magnitude. *Journal of the Experimental Analysis of Behavior*, 77, 233-255.
- Grimes, J. A., & Shull, R. L. (2001). Response-independent milk delivery enhances persistence of pellet-reinforced lever pressing by rats. *Journal of the Experimental Analysis of Behavior*, 76, 179-194.
- International Center for Technology Assessment (2004). *The real price of gas*. At www.icta.org.
- Ishaq, W. (Ed.) (1991). *Human behavior in today's world*. New York: Praeger.
- Koplow, D. (2004). Subsidies to energy industries. *Encyclopedia of Energy*, Vol. 5. New York: Elsevier.
- Koplow, D., & Martin, A. (1998). *Fueling global warming: Federal subsidies to oil in the United States*. Cambridge, MA: Industrial Economics Inc.
- Mace, F. C., Hock, M. L., Lalli, J. S., West, B. J., Belfiore, P., Pinter, E., & Brown, D. K. (1988). Behavioral momentum in the treatment of noncompliance. *Journal of Applied Behavior Analysis*, 21, 123-141.
- McKenzie-Mohr, D. (2000). Fostering sustainable behavior through community-based marketing. *American Psychologist*, 55, 531-537.
- McKibben, B. (1989). The end of nature. *The New Yorker*, September 11.
- Nevin, J. A. (1995). Behavioral economics and behavioral momentum. *Journal of the Experimental Analysis of Behavior*, 64, 385-395.
- Nevin, J. A. (1996). The momentum of compliance. *Journal of Applied Behavior Analysis*, 29, 535-547.
- Nevin, J. A., & Grace, R. C. (2000). Behavioral momentum and the Law of Effect. *Behavioral and Brain Sciences*, 23, 73-130.
- Nevin, J. A., Mandell, C., & Atak, J. R. (1983). The analysis of behavioral momentum. *Journal of the Experimental Analysis of Behavior*, 39, 49-59.
- Nevin, J. A., Tota, M. E., Torquato, R. D., & Shull, R. L. (1990). Alternative reinforcement increases resistance to change: Pavlovian or operant contingencies? *Journal of the Experimental Analysis of Behavior*, 53, 359-379.
- Schneider, S. H. (1997). *Laboratory earth: The planetary gamble we can't afford to lose*. New York: Basic Books.