UC Berkeley
Working Papers

Title

It's Not Easy Being Green: The Nature of American Environmentalism

Permalink

https://escholarship.org/uc/item/2gg2f4dr

Author

Sides, John

Publication Date

2000-12-31

IT'S NOT EASY BEING GREEN: THE NATURE OF AMERICAN ENVIRONMENTALISM

John M. Sides
University of California, Berkeley

April 1999

WP 99-12

IT'S NOT EASY BEING GREEN: THE NATURE OF AMERICAN ENVIRONMENTALISM

John M. Sides
University of California, Berkeley

April 1999

Abstract

This paper investigates three kinds of variation in Americans' attitudes towards the environment. First, I find that American environmentalism wanes when juxtaposed with societal and personal economic concerns. Thus, environmentalism does not constitute, as some scholars claim, a cultural norm. Second, I estimate models of both the central tendency and variance of environmental attitudes using heteroskedastic ordered probit models. The results of the variance function in particular illustrate how measures of uncertainty and ambivalence produce variation in environmental attitudes. Finally, I investigate whether uncertainty and ambivalence mitigate the stability of environmentalism over time. These results suggest no such effect.

Today it seems everyone is green, or at least claims to be.
– Russell Dalton (1994: xii)

Introduction

Who could make environmentalists out of Helen Chenoweth, Don Young, and Newt

Gingrich? A pollster, of course. In this case, it was noted GOP advisor Frank Luntz. In

November of 1997, he sent a scolding memo to House Republicans, saying "We have

articulated environmental issues so badly for so long that virtually no one trusts us."

Subsequently, these three Republicans, among others, signed onto a resolution urging action to

reduce greenhouse gases (Chait 1997). Luntz's advice, and Republicans' actions, illustrate what

is nearly conventional wisdom in American politics: the vast majority of Americans are,

essentially, environmentalists, and thus electoral consequences await politicians who cannot turn

the requisite shade of green.

This conventional wisdom is not lacking in empirical support. The first surveys of

environmental attitudes in the early 1970s document a reasonable degree of greenness among

Americans. Since then, environmentalism has grown even more. Dunlap and Scarce (1991)

provide a broad range of trend data. For example, in a 1984 Roper Poll, 44% of respondents said

that "environmental pollution" was a "very serious threat." In 1989, just five years later, that

figure had increased to 62%. Another example: whereas in 1974, only 25% of Roper

respondents said that environmental regulation had not gone far enough, 54% gave that response

in 1990. In 1981, a *New York Times*/CBS poll asked respondents whether they agreed that,

"Protecting the environment is so important that requirements and standards cannot be too high,

and continuing environmental improvements must be made regardless of cost." Forty-five

percent agreed. By 1990, that figure had increased to 74%. Finally, in an even "harder"

question, the Gallup Poll asked respondents if they would be willing to pay higher prices so that

business and industry could control pollution. In 1970, 63% were willing, compared to 79% in 1990. Jones and Dunlap (1992) find that support for environmental spending rose in the 1970s, dipped in the 1980s, and then increased again in the 1990s. Dunlap and Scarce (1991: 652), noting this trend, assert that "the persistence and recent renewal of environmental concern might be termed a 'second miracle' of public opinion."

Miracle or not, two things stand out about these statistics. First, even the baseline figures, those from ten or twenty or thirty years ago, are sizable. Americans' environmentalism is nothing new. Second, the over-time trends reflect considerable growth in concern about environmental problems, in desire for environmental protection, and in willingness to pay for that protection. These facts have led some scholars, such as Kempton et al. (1995), to declare that there is a "cultural consensus" on environmentalism, such that the mass public and environmental activists have quite similar views. Likewise, Derkson and Gartrell (1993) find that environmentalism has become a "cultural constant or norm." Paelhke (1988) goes so far as to claim that environmentalism can transcend traditional ideological boundaries, such as the liberal-conservative dimension. Taken together, these arguments explain why the standard set of demographic and political variables explains so little of the variation in environmental attitudes (Jones and Dunlap 1992): there is simply little variation to explain.

The purpose of this paper is to investigate the true extent of this environmental consensus. There is already some evidence against this hypothesis. Ellis and Thompson (1997), surveying both the mass public and environmental activists, find significant differences in environmental attitudes between the two groups. I will argue that there are also significant differences within the mass public, that widespread agreement with environmental priorities and policies is not a universal norm. This paper takes advantage of a relatively unexplored "module"

of questions on the 1994 General Social Survey (GSS) to examine respondents' attitudes toward a host of environmental issues.[1] If there are indeed varying shades of green, then models predicting environmental attitudes should have empirical bite.

What does variation mean? Three possible definitions come to mind. First, variance might be a lack of "constraint" within or across issues areas, as described by Converse (1964). A lack of constraint across issue areas means that respondents have no consistent liberal or conservative ideology that constrains their issue positions. A lack of constraint within an issue area may mean that respondents do not consistently support a particular position. For example, the literature on racial attitudes (e.g., Kinder and Sanders 1996) has identified a "principle-policy paradox": while respondents favor racial equality, they tend to oppose policies intended to bring about equality, such as affirmative action.

A second kind of variation is evident within responses to a single survey question. Responses have both a central tendency and a variance; the latter is conceived as the amount of heteroskedasticity present (Alvarez and Brehm 1995, 1997, 1998). Heteroskedastic discrete choice models, composed of both a choice and variance function, determine the factors that drive both the central tendency and variance. Variation in environmentalism might therefore arise because of inconstant cross-sectional variance. Alvarez and Brehm argue that heteroskedasticity can result from several psychological processes, most prominently *uncertainty*, a lack of information about an issue, and *ambivalence*, conflicting core values underlying an issue.

Over time, uncertain or ambivalent respondents should give different answers to the same survey questions (Alvarez and Brehm 1995: 1077). However, the link between between-subjects variation (heteroskedasticity) and within-subjects variation (temporal instability) is as yet untested. Thus, attention to a third kind of variation, response variation over time, is necessary.

---

[1] Future versions of this paper will also look at a comparable battery on the 1995 NES Pilot Study.

The instability of attitudes is a venerable finding in political behavior, though its extent is not uncontroversial (Converse 1964 and Achen 1975 provide initial salvos). Instability is most easily revealed through panel studies, and thus the 1994 GSS, a single cross-section, gives us no purchase on this issue. However, I will analyze the 1992-94-96 National Election Studies panel to get a first cut at the instability of environmentalism.

Evidence of any of these types of variation in environmental attitudes would weaken the consensus argument. In this paper I examine all three types. First, I examine several questions in the 1994 GSS to determine the true extent of the environmentalist consensus. While responses to some questions, such as those dealing with perceived environmental risk and spending on the environment, illustrate this consensus, other questions, especially those which juxtapose environmental concerns with societal and personal costs, show a profound dissensus. Public greenness comes in a variety of shades. In the second part of the paper, I draw upon this variation to analyze the factors that predict both the central tendency and the variance of environmentalism. In doing so, I conduct a more extensive test of the motivations of environmentalism than is usually found in the literature. The model of variance determines whether processes like uncertainty and ambivalence are present. Finally, I test to see whether uncertainty and ambivalence lead to instability over time.

An Environmentalist Consensus?

Quick perusal of several questions on the 1994 GSS demonstrates what Frank Luntz believes: the mass public is quite concerned about the environment. For example, when asked whether a series of environmental hazards – car pollution, pesticides, water pollution, etc. – were dangerous to the environment, respondents clearly perceive an environmental risk: between 85%

and 95% say that these hazards are "somewhat," "very," or "extremely dangerous." Moreover, the majority of respondents support action: 62% declare that we are spending "too little" on the environment.

However, perhaps this support for the environment means nothing in and of itself. After all, some argue, improving the environment is not a positive-sum game. There will inevitably be tradeoffs, particularly economic ones. Nevertheless, several bits of data, cited at the outset, show that environmentalism does not wane even when respondents are confronted explicitly with costs. In addition, O'Connor and Bord (1998) find that, despite uncertainty about the threat of global warming, more than 50% of respondents in their survey support measures that will cost them money, such as new government programs and an increase in auto prices to make cars more fuel- efficient.[2] However, evidence to the contrary also exists: Inglehart (1995) finds that 54% of Americans interviewed as part of the World Values Survey agree that, "The government has to reduce environmental pollution, but it should not cost me any money."

One question on the GSS that directly juxtaposes the environment and economic concerns asks respondents whether they agree or disagree with the following: "We worry too much about the future of the environment, and not enough about prices and jobs today." There is an evident lack of consensus on this issue: 42% of respondents agree, and thus seem to believe that the environment wrongly displaces important economic concerns. A nearly equal number, 44%, disagrees, thus demonstrating continuing support for environmental protection. Attitudes toward potential tradeoffs between the environment and the economy are quite diverse.

Supporting the environment against "prices and jobs" is certainly harder than simply saying that you like clean air and water. However, an even harder test is whether you would make *personal* economic sacrifices for a cleaner environment. The GSS includes three questions

that ask respondents whether they are willing to make such tradeoffs. The questions are worded

like this: "How willing would you be to (pay much higher prices, pay much higher taxes, accept

cuts in your standard or living) in order to protect the environment?" The distribution of

responses to these questions is presented in Table 1.

[Table 1 about here]

This table presents the strongest evidence yet that cultural consensus on the environment

is far from sturdy. To be sure, assenting to the proposed sacrifices is not easy, especially since

the questions specify "much" higher prices and "much" higher taxes. Nevertheless, substantial

numbers are either unwilling to make or unsure whether they would make these sacrifices. The

least popular proposal is paying higher prices, the only sacrifice that more people refuse than

accept.[3] By contrast, roughly equal pluralities of respondents are willing to pay higher taxes

(44%) and to accept a cut in their standard of living (45%). Still, that leaves more than half

undecided or unwilling.[4] The alleged cultural consensus around environmentalism breaks down

when people are asked to put their money where their mouth is.

Modeling the Mean of Environmental Attitudes

These initial findings indicate that green attitudes, such as perceptions of environmental

risk and support for environmental spending, are widespread. However, public greenness is

---

[2] The only unpopular policy was a sixty-cent gasoline tax, supported by only 18% of the sample.
[3] The GSS question generates less willingness than both the Gallup Poll question about higher prices cited above, and a similar question on the 1991 World Values survey (64% willing). If we go by the GSS result, fewer people are willing to pay higher prices in the United States than in most European nations. The average willingness among Europeans from several countries in the 1980s was about 60% (Dalton 1994).
[4] These three measures are relatively strongly correlated, ranging from .59 for prices and standard of living, to .72 for taxes and standard of living (p<.01 in both cases).

decidedly spotty when environmental protection is juxtaposed with concerns about prices and

jobs and personal economic sacrifice. These results suggest that past difficulty in constructing

models of environmental attitudes, as discussed by Jones and Dunlap (1992), does not always

derive from a lack of variation in the dependent variable. In the multivariate analysis that

follows, I rely on the three measures of contemplated sacrifice discussed above. These variables

also have substantive importance, with implications for environmental policy and how policy

proposals are framed.

Specifying a Choice Function

The next task is to develop a model of environmentalism. A first group of variables

includes standard sociodemographic and political attributes. One is *education*, which I measure

in its "chronic" and "domain-specific" manifestations.[5] Chronic education is simply the number

of years of schooling (see Appendix A for a description of all variables). Domain-specific

education pertains directly to environmental issues. We might expect that knowledge about

environmental issues affects environmentalism apart from education *per se*. The GSS includes

two short true-false quizzes, one on science generally and one on the environment. Both the

domain-specific measures, *science information* and *environmental education*, are coded as the

number of questions a respondent answered correctly. All three measures of education should

have a positive effect on environmentalism.

Several other variables generate straightforward expectations. *Age* is expected to depress

environmentalism (Jones and Dunlap 1992), since environmentalism has been most strongly

inculcated among younger generations. A dichotomous variable, *have children*, is included

because Kempton et al. (1995) find that the vast majority of their interviewees discuss

environmentalism in terms of their duty to their children and to future generations. Presumably, then, parents should be more environmentally conscious than non-parents. *Liberalism*, coded as a standard seven-point scale, should positively affect environmentalism, as should *party identification*, a seven-point scale with Democrats given higher values. Given that the dependent variables are framed in terms of economic sacrifices, *income* should also have a positive impact, since more wealthy people should be able to afford higher prices, taxes, and so forth.

Expectations about two other variables, *race* and *gender*, are mixed. Mohai and Bryant (1998) note the conventional wisdom that blacks are less environmentalist, but also cite the growing environmental justice movement, which focuses on "environmental racism" and could conceivably heighten blacks' environmental concerns. Their empirical findings show a complicated race effect.[6] Thus, I have no *a priori* theoretical expectations. Research on the relationship between gender and environment has found that women generally are more concerned about environmental risks and more often maintain a green "lifestyle" of recycling and so forth, but are not any more politically active on environmental issues than men (Blocker and Eckberg 1997; see Davidson and Freudenberg 1996 for a literature review). Bord and O'Connor (1997) find that women appear more supportive of the environment because they perceive environmental hazards as more dangerous. Once risk perceptions are controlled, there is no gender effect. Though I also control for perceived risk, I test the admittedly weak hypothesis that women are more willing to sacrifice for environmental protection.

As noted before, modeling environmental attitudes with these kinds of variables has generated less-than-striking results. Jones and Dunlap (1992) find that a large set of demographic and political variables explains only 10% of the variance in environmental

---

[5] For other research on chronic and domain-specific information, see McGraw and Pinney (1990).
[6] For example, race is negatively associated with global environmental concerns but positively associated with

attitudes.[7] However, other researchers have produced more salutary results by examining a wider array of potential explanatory variables. One is *postmaterialism* (Olsen, Lodwick, and Dunlap 1992; Dalton 1994; Inglehart 1977, 1990, 1997). The postmaterialism thesis is well-known. In short, Inglehart argues that, as industrialized societies grow more wealthy, citizens are less concerned with material needs such as security and economic well-being. They instead turn to "postmaterial" concerns like freedom, self-actualization, and social solidarity. Inglehart believes that "New Left" movements like those advocating environmental protection, women's rights, and gay rights are manifestations of postmaterial values. Indeed, Dalton (1994: xiii) refers to environmentalism as "the archetypical example of postmaterialist politics," a claim supported by some empirical evidence (Inglehart 1995).

Nevertheless, studies of postmaterial values in the United States have found that they have little individual-level impact on environmentalism (Grendstad and Selle 1997), and on political attitudes in the United States generally (Layman and Carmines 1997). The GSS measures postmaterialism by asking respondents to select their top two priorities from the four options: "maintain order in the nation, give people more say in government decisions, fight rising prices, and protect freedom of speech." The first and third are considered "materialist" priorities, and the other two "postmaterialist" priorities. Responses are combined into a three-point index, ranging from 0, if a respondent mentioned no postmaterialist priorities, to 2, if a respondent selected both postmaterialist options.[8] If the postmaterialist thesis is correct, this index should have a positive impact on environmentalism.

---

neighborhood environmental concerns.

[7] Jones and Dunlap include: age, education, income, gender, race, residence at age sixteen, current residence, occupational prestige, industrial sector, ideology, and party identification.

[8] For critiques of this measurement scheme see Flanagan (1982, 1987).

Another variable to consider is *religion* (Guth et al. 1995; Greeley 1993; Eckberg and Blocker 1996). The standard thesis on the relationship between religion and environmental concern comes from White (1962), who argues that the creation story in Genesis 1 and 2 grants humans "mastery" over nature, and that this hierarchical relationship inhibits environmentalism among religious people.[9] There is some empirical support for White's thesis. Guth et al. (1995) find that biblical literalism tends to depress environmentalism. Eckberg and Blocker (1996) argue that "sectarianism" (a factor score derived from several religiosity measures) tends to depress environmental action, but has no impact on most environmental attitudes. They find that other variables, like church attendance, have little if any impact.

Part of the reason for these weak results may be that White's thesis is over-simplified. Environmental attitudes among religious people are quite diverse, and many Christians are in fact green (Fowler 1995). They see themselves not as masters, but as stewards of the earth: "We ought to do a better job of caring for the environment because 'the Earth is the Lord's, and everything in it'" (Snyder 1995: 15). Kempton et al. (1995: 89) report a comment from "Pervis," a coal miner and Methodist: "The Bible tells us that we have a right to use natural resources, but we have responsibilities too."

To capture religiosity, I rely on two measures. The first is a dummy variable recording whether people self-identified as "fundamentalist," as opposed to "moderate" or "liberal." Kellstedt et al. (1997) refer to this as "religious movement identification," and it should serve as a proxy for conservative religion. I also measure the intensity of religious commitment with

---

[9] Lea (1994) provides an intellectual historical account of how humanism, the Reformation, and the Lockean conception of property rights helped produce an instrumentalist view toward the environment within Christianity.

respondents' self-reported church attendance.[10] If the White thesis is correct, both variables should depress environmentalism.

Another potential correlate of environmentalism is *perceptions of risk*. As described in the previous section, perceptions of environmental risk, meaning views of the danger inherent in certain environmental hazards, are quite high. Environmentalism might simply be a reaction to these perceptions. O'Connor and Bord (1998) argue that empirical tests of risk perceptions are fairly rare (for examples see Steel and Soden 1989; Baldassare and Katz 1992). To test the hypothesis that perceived risk drives environmentalism, I combined six questions which ask respondents how dangerous certain environmental hazards are.[11] The resulting index should have a positive impact on the three measures of contemplated sacrifice.

Some political behavior research demonstrates how another factor, core *values*, can shape attitudes (McClosky and Zaller 1984; Feldman and Zaller 1992). In a largely qualitative study of environmental attitudes, Kempton et al. (1995: 3) find a number of values associated with environmentalism, and conclude:

> We find that American perspectives on global environment change are based on fundamental moral and religious views on the relationship between nature and humanity, other species' rights, humanity's right to change or manage nature, and our society's responsibility to future generations. American values are thus enmeshed in a core set of cultural beliefs and values.

Their conclusions are similar in some respects to Dunlap and Van Liere's (1978), who identify a "new environmental paradigm" that consists of similarly enmeshed beliefs, including a belief in the fragility of nature, natural limits to growth, environmental protection, and a steady-state economy.

---

[10] I also examined a variable capturing respondent's view of scripture. It exhibited no significant relationship to any of the dependent variables in the models reported below. More than a third of respondents are missing on this and several other religion questions, which makes their inclusion rather costly.

[11] Those hazards are: car pollution, nuclear power, industrial air pollution, pesticides, water pollution, and the greenhouse effect. The questions I examine ask about danger to "the environment" in particular. Another set,

The GSS includes several questions that tap environment values, in particular different conceptions of nature. Conceptions of nature are important because they imply a greater or lesser need to care for the environment. If nature is resilient, then it can withstand human abuse on its own. But if nature is fragile, we must tread lightly. To measure environmental values, I rely on one question, which I call "Resiliency of Nature," that asks respondents whether they agree or disagree that, "Almost everything we do in modern life harms the environment."[12] To the extent that respondents disagree (high values), they appear to consider nature quite resilient. Thus, they should support environmentalism less. Resiliency of nature should therefore have a negative impact on contemplated sacrifice for environmental protection.

The work of Douglas and Wildavsky (1982) represents some of the most original thinking on the roots of environmentalism (see also Wildavsky 1991). In their view, environmentalism is an expression of a broader, underlying "*cultural orientation*." Douglas (1997: 128) defines cultural orientation as "a point of view, with its own framing assumptions and readily available solutions for standardized problems." Douglas and Wildavsky identify four such cultural orientations: hierarchalism, fatalism, egalitarianism, and individualism. The latter two, in particular, are most important in predicting environmentalism (Grendstad and Selle 1997; Ellis and Thompson 1997). The cultural theory works something like this: if I am an egalitarian, I want to revolutionize social relations to make them more equal. Environmentalism furthers that ideal, since it generally entails reining in individual firms or entrepreneurs, which, left to their own devices, would sacrifice nature for profit. The egalitarian's environmental worldview will include other, corollary beliefs, such that nature is fragile, which buttress her essential

highly correlated with these questions, ask about danger to "me and my family."

[12] I also examined responses to questions about the sacredness of nature and whether it is inherently peaceful or violent. However, none exhibit any significant relationship with the three trade-off questions. For parsimony, I focus on the question noted above, which did exhibit a significant bivariate relationship.

position. By contrast, an individualist will favor economic freedom for the entrepreneur, and

believe that nature is resilient to buttress this position.[13]

Unfortunately, the GSS does not offer any "pure" measures of egalitarianism or

individualism. Instead, both sentiments are put in the context of what the government should or

should not do. One set of questions asks about government's responsibility to help various

disadvantaged populations, including the poor, the sick, and blacks. All of the questions are

similar to this one:

> I'd like to talk with you about issues some people tell us are important. Some
> people think that the government in Washington should do everything possible
> to improve the standard of living of all poor Americans. Other people think it is
> not the government's responsibility, and that each person should take care of
> himself.

Two other questions ask respondents for their views on government redistribution of income:

> Some people think that the government in Washington ought to reduce the
> income differences between the rich and the poor, perhaps by raising the taxes
> of wealthy families or by giving income assistance to the poor. Others think that
> the government should not concern itself with reducing this income difference
> between the rich and the poor. (version #1)

> It is the responsibility of the government to reduce the differences in income
> between people with high incomes and those with low incomes. (version #2)

Another question seems to get at individualism:

> Some people think that the government in Washington is trying to do too many
> things that should be left to individuals and private businesses. Others disagree
> and think that the government should do even more to solve our country's
> problems. Still others have opinions somewhere in between.

Though these indicators are imperfect, they are all we have. However, individually they have

only a sporadic significant relationship to any of the three trade-off questions. In an effort to

develop a measure with more leverage, I average responses on these questions into one

---

[13] The concept of a cultural orientation seems, at least to me, quite close to the concept of a value, i.e., general,
enduring organizing principles that underlie attitudes and beliefs. It is not clear to me what additional leverage a
recourse to "culture" buys us in discussing concepts like egalitarianism and individualism.

egalitarianism index.[14] In doing so, I abandon the Ellis and Thompson (1997) conceptualization of egalitarianism and individualism as separate dimensions in favor of a single dimension. If this "cultural" theory is correct, environmentalism should increase with higher levels of egalitarianism.

All of these theories are valid contenders, as I will demonstrate below, and thus measures of their key concepts should be included in models of environmental attitudes. However, no article I have encountered systematically tests these various theories.[15] Often, authors concentrate on their favorite variables, controlling only for standard things like age, party identification, and education. For example, Eckberg and Blocker (1996) examine various indicators of religiosity, controlling only for education, social class, age, gender, race, and ideology. At other times, scholars offer up a new theory as an alternative to another, yet include no variables from this disfavored theory in their models to see which theory is empirically supported. For example, Ellis and Thompson (1997) emphasize cultural orientations as an alternative to perceptions of risk, yet include no measures of risk perception in their analysis. The net result is that we do not yet understand the power of these variables in more fully specified models.

Specifying a Variance Function

To determine the variance function, I focus on two psychological processes that could drive heteroskedasticity in the GSS sample. The first is *uncertainty*, which derives from a lack of information about environmental issues. The second is *ambivalence*, which implies

---

[14] The correlations between this index and the three tradeoff questions are uniformly positive and statistically significant, though still small in magnitude (the correlation coefficients range from .06 to .09).
[15] The GSS questions that I explore here are virtually untapped. Blocker and Eckberg (1997) and Eckberg and Blocker (1996) use them to explore, respectively, gender and religion, but these are the only examples I could find.

conflicting core values. Uncertainty can be resolved with more information, but added information only exacerbates ambivalence (Alvarez and Brehn 1997: 346). Why would either of these processes affect environmental attitudes? First, given that environmental issues are often quite technical, it may be difficult for people to understand these issues fully. Uncertainty seems likely – e.g., is carbon dioxide responsible for the greenhouse effect, or the hole in the ozone layer? Empirical evidence confirms this (O'Bord and Connor 1998, Gomez-Granell and Cervera-March 1993). In the GSS, respondents were only slightly more successful on the science and environmental quizzes than if they had simply guessed on each question (data not shown).

To measure uncertainty, I rely on the same measures discussed earlier: education, science knowledge, and environmental knowledge. While it seems intuitive that the domain-specific measures will more strongly affect response variance, past research has found chronic measures, such as standard indicators of political information, more powerful (Alvarez and Brehm 1997; Zaller 1992). Nevertheless, I expect that all three indicators will have a negative impact on the variance. As respondents become more informed, the variance in their response should decrease.

Ambivalence should affect response variance because environmental issues directly tap conflicting values. In particular, there is often disagreement over the relative priority of environmental and economic concerns – spotted owls versus timber jobs, as it were. This may be one reason why environmental support decreases once people are forced to confront potential economic costs. Furthermore, if, *pace* Douglas and Wildavsky (1992), values like individualism and egalitarianism underlie environmentalism, then respondents who are conflicted on these two values should exhibit greater variance in their willingness to sacrifice for the environment.

To capture value conflict, I construct a measure which is simply the difference in respondents' egalitarianism, measured with the index described above, and individualism, measured (imperfectly) with responses to following statement: "Private enterprise is the best way to solve American's economic problems." Strong egalitarians should disagree with this statement, and weak egalitarians agree. This measure generates a range of response from 0 (no value conflict) to 4, with a mean in this sample of close to 1. Thus, though value conflict appears less-than-common, it should exhibit a positive relationship with response variance.[16]

Estimation

Because the dependent variables in this analysis have five ordered categories, I estimate these models in LIMDEP using a heteroskedastic version of ordered probit, where the variance is modeled multiplicatively:

$$\text{var}(\varepsilon_i) = \exp(\gamma' Z_i) \qquad [1]$$

This produces a set of coefficients for the choice function and for the variance function (see Alvarez and Brehm 1998 for further elaboration of this model). To test for the presence of heteroskedasticity, the model is estimated with ordered probit (the restricted model) and then allowing for heteroskedasticity (the unrestricted model). A likelihood-ratio test is then conducted on the difference in the two log-likelihoods:

$$\text{LR} = 2 \times (L_u - L_r) \qquad [2]$$

This follows a chi-squared distribution with degrees of freedom equal to the number of parameters in the variance function. If this difference is significant at conventional levels, then we can reject the null hypothesis of homoskedasticity.

---

[16] I also experimented with two other conflict measures, the first tapping the relationship between economic growth and the environment, and the second conflict between postmaterialism and egalitarianism. Neither produced

Results

Table 2 presents the results of three heteroskedastic ordered probit models, one for each

of the dependent variables. Looking first the estimated coefficients in the choice function, we

see that several hypotheses are confirmed. First, education is generally statistically significant

and positive: ceteris paribus, more education tends to produce greater willingness to sacrifice for

environmental protection. Parental status ("Have Children") and income are not consistently

significant, but are generally in the expected direction. (In one case, the coefficient for income

has a negative sign, but it is insignificant.) Parents are less willing to make these sacrifices,

while rich people are more willing to do so. We also observe a mild positive effect for

liberalism, which casts doubt on Paelhke's (1988) thesis that environmentalism somehow

transcends the traditional liberal-conservative dimension. However, it is striking that party

identification plays no role, even though Democrats and Republicans are generally associated

with quite different environmental positions (despite the best efforts of Helen Chenoweth).

Evidence for a gender gap also proves lacking, as gender is not significant in any of the three

models.

One result counter to theoretical expectations is age. Controlling for all other variables, it

is associated with an *increase* in willingness to sacrifice for environmental protection, contrary to

many past findings (e.g., Jones and Dunlap 1992). Even though environmentalism is a

phenomenon of the last thirty years, it appears that older generations are not less green. If

anything, they may be slightly more.[17] One wild speculation is that as people age they feel more

---

significant results in any of the models that follow.

[17] At the bivariate level, age is significantly correlated only with willingness to pay higher taxes. All correlations
have negative signs, however.

responsible to future generations and thus want to protect youngsters from environmental

degradation. Thus they become a tad more green.

Finally, perhaps the most striking finding from these sociodemographic variables is the

large and consistently significant effect for race. Even when controlling for variables like party

identification and income, which tend to differentiate whites and blacks, blacks are less willing

to make economic sacrifices for the environment. One possible explanation for this falls out of

Mohai and Bryant (1998). They find a positive effect for race when survey questions focus on

environmental problems in the surrounding neighborhood. The dependent variables examined

here are notably different. First, they require not an awareness of environmental degradation, but

a willingness to pay for clean air, water, and so forth. It may be that blacks perceive that such

economic sacrifices are not necessary or that they will accomplish little. Second, the dependent

variables do not locate where this "environmental protection" will take place. If blacks' concern

for environmental hazards is most salient in their neighborhood – and certainly this sentiment is

justified – black environmentalism may not emerge unless the survey instrument mentions local

context explicitly.

By and large, these results suggest why standard models of environmentalism explain so

little variance (Jones and Dunlap 1992): a great deal of weak and or insignificant coefficients

emerge. However, by extending the analysis and including other independent variables, we gain

significant purchase on why people are green. In these models, the most notable finding is the

power of perceived risk. It has a strong and statistically significant positive effect on all three

measures of contemplated sacrifice. Respondents' willingness to pay higher prices, for example,

increases to the extent that they consider environmental hazards dangerous. This is entirely

intuitive: why would anyone volunteer to pay taxes for environmental protection when they do not fear pollution, nuclear power, global warming, and so forth?

Another finding consistent with expectations is the positive effect of knowledge about science and the environment. Even after controlling for education, a "chronic" measure of informedness, "domain-specific" measures retain explanatory power. Interestingly, science knowledge has a more consistent effect, even though environmental knowledge has direct relevance. The results also suggest that environmentalism has little to do with religiosity. Both the fundamentalist dummy variable and the measure of church attendance are insignificant in every model, although the former is at least in the expected direction.

The remaining results suggest that environmentalism has a strong ideational and "cultural" basis, apart from traditional factors like liberalism. The question tapping respondents' views about the resiliency of nature is consistently significant and in the expected direction. *Ceteris paribus*, as belief in the resiliency of nature increases, willingness to sacrifice for the environment decreases. In other words, if you believe nature can withstand human depredations, why shell out for smog control? The cultural, or at least value-based, motivation of environmentalism derives from the explanatory power of egalitarianism and postmaterialism. Both variables are significant in all three models. An increase in either orientation, towards egalitarianism or towards postmaterialism, is associated with greater willingness to sacrifice for the environment. These results confirm at least initially the insights of Douglas and Wildavsky as well as those of Inglehart, even with measures of each concept that are somewhat problematic. While several scholars (Ellis and Thompson 1997; Grendstad and Per Selle 1997) portray egalitarianism and postmaterialism as competing explanations, and decide the contest in favor of the former, these results suggest that there is no such competition, and that both in fact matter.

Having summarized the results from the choice function, I turn now to the variance function. The first question is whether there is heteroskedasticity present in the data at all. In this case, the chi-squared values from the heteroskedasticity tests are all highly significant, and thus we can reject the null of homoskedasticity. The estimated coefficients from these models indicate that both uncertainty and ambivalence underlie responses to these questions.

All three measures of information are consistently in the expected direction: as informedness increases, response variance decreases. Of these measures, environmental information is the most consistently significant. While science knowledge proves the more powerful in the choice function, its coefficient is not distinguishable from zero in these models. Education, the measure of chronic information, is significant only when the dependent variable is willingness to accept a reduced standard of living. The measure of value conflict, which is intended to tap conflict between egalitarianism and individualism, emerges significant in two of the three models, though only at the p<.10 level in one case. Its effect is positive: as value conflict increases, so does response variance.

[Table 3 about here]

Despite the theoretical plausibility of the findings from both the choice and variance models, conclusions about the effect of each variable must be tempered somewhat. One problem with ordered probit models is that the marginal effects of a coefficient on the probability of choosing each response category can vary (Greene 1997: 928-929). Thus, in Table 3 I present marginal effects for each variable. For the choice function, I compute the marginal effect of each coefficient on the probability of choosing the lowest and highest categories. These results are very much in order. For example, consider the marginal effect for perceived risk. Its effect on

the lowest category is negative (-.131 when the dependent variable is "higher prices"), producing a lower probability of choosing this category, which indicates little willingness to sacrifice. This is a sensible finding, since perceived risk has a strong positive association with contemplated sacrifice. By contrast, its effect on the probability of choosing the highest category is uniformly positive. In other words, risk perception increases the probability of expressing a great deal of willingness to sacrifice for environmental protection.

For the variance function, the marginal effects are calculated differently. They represent the difference between the expected error variance when the variable is at its sample mean and the expected error variance when the variable is at its sample minimum. The magnitude of these effects suggests the power of environmental knowledge and value conflict in particular, though the power of education in the third model is notable as well.

All in all, these findings provide several insights into the nature of American environmentalism. First, the models of the choice function illustrate the explanatory power of a wide array of variables, especially race, perceived risk, domain-specific knowledge, and several value orientations, including beliefs about the resiliency of nature, egalitarianism, and postmaterialism. People become green as they learn about science and environmental problems, perceive environmental hazards as dangerous, and hold to value orientations that encourage green thinking. These more fully specified models also reveal that several variables typically conceived as in competition are in fact complementary.

Second, consistent with the findings of Alvarez and Brehm (1995, 1997, 1998), these models turn up evidence of heteroskedasticity, or inconstant variance, in responses to each of the three dependent variables. Two processes, ambivalence and uncertainty, which appear relevant

to understanding opinion on such things as abortion and racial policy, also emerge in attitudes about the environment. Uncertainty appears to derive in particular from a lack of domain-specific information about the environment. Value conflict between individualism and egalitarianism produces ambivalence.

Do Uncertainty and Ambivalence Produce Instability Over Time?

The final task is to test the inference that Alvarez and Brehm draw from their finding of between-subjects variance: the potential for within-subjects variation. In short, do ambivalent and/or uncertain people have less stable attitudes over time? Instability would be strong evidence of the effect of ambivalence and uncertainty. Uncertain people, lacking the information to come to a considered decision, should oscillate in greenness compared to well-informed people. Likewise, ambivalent people, internally conflicted by competing core values, should vacillate in greenness, at times hugging trees and at other times logging them.

To get a first cut at this issue, I turn to a different dataset, the 1992-94-96 National Election Studies Panel. With three measurements of environmentalism over a span of four years, it is possible to observe the relative stability or lack thereof in response. The dependent variable in this case is different than the measures of contemplated sacrifice used earlier. The only environmental question included in all three waves asked respondents about the appropriate level of spending for environmental protection: "Should Federal spending on improving and protecting the environment be increased, decreased, or kept about the same?" Thus, these questions deal only with spending in the abstract. They do not call upon the respondent to agree to any personal sacrifices. Thus, comparisons to the GSS results are tricky at best.

[Table 4 about here]

A frequency distribution of responses in each wave provides some initial evidence of instability. As Table 4 demonstrates, in 1992 respondents were solidly in favor of increased environmental spending (62.3%). By 1994, that support had waned to 37.8%, a drop of 25%. Response appears more or less neutral, with over half (51.9%) advocating no reduction in spending. However, in 1996 respondents evince an even paler shade of green. While roughly the same fraction still supports increased environmental spending, more than half now support a *decrease* in spending (53.5%).

This trend is fascinating in its own right and certainly deserves an explanation.[18] It may be that the Republican "revolution" of 1994 increased the visibility of conservative ideas and produced less concern for the environment. Or perhaps the public became no less concerned, but simply more stingy about allocating funds for the environment. Indeed, this trend makes Luntz seem unduly concerned: the Republicans face few consequences from a public becoming less green. However, it is possible that these data were soon themselves an anachronism. As the Republicans' star fell beginning in 1995-96, and Democrats began a counter-mobilization stressing their commitment to the "3 E's," education, entitlements, and the environment, public opinion may have shifted back again. Certainly the instability over these four years makes continued instability entirely plausible.

The next question is, does this instability vary across individuals? In particular, do apparently uncertain or ambivalent individuals exhibit unusual response variation over this four-year period? To measure uncertainty and ambivalence, I am again forced to rely on different measures than those found in the GSS. Uncertainty is measured with two indicators of chronic information, education and political information. The latter is measured as the number of correct

---

[18] It is not entirely consonant with the GSS, in which 62% of respondents in 1994 say we are spending "too little" on the environment. This difference could be due to the smaller, and perhaps more idiosyncratic, sample in the NES

answers to the standard four-question NES battery. Given that this measure may itself exhibit

some instability over time, I average respondents' scores across all three waves. Since education

is more stable I use only respondents' education in 1992.

The measure of value conflict once again targets potential tensions between

individualism and egalitarianism. This measure draws first on a six-question battery that, unlike

the GSS, produces a pure measure of egalitarianism. These six questions, to which respondents

could agree or disagree on a five-point scale, were:

1) Our society should do whatever is necessary to make sure that everyone has an equal
   opportunity to succeed.
2) We have gone too far in pushing equal rights in this country.
3) One of the big problems in this country is that we don't give everyone an equal chance.
4) It is not really that big a problem if some people have more of a chance in life than others.
5) The country would be better off if we worried less about how equal people are.
6) If people were treated more equally in this country we would have many fewer problems.

These were averaged into one index. To measure individualism, I relied on seven-point scale

capturing respondents' feelings about a governmental guarantee of jobs and a standard living:

> Some people feel that the government in Washington should see to it that every
> person has a job and a good standard of living. Others think the government
> should just let each person get ahead on his/her own. Where would you place
> yourself on this scale, or haven't you thought much about this?

The measure of value conflict was computed by averaging responses to this question and the

egalitarian index across all three waves, scaling them from 0 to 1, and then taking the absolute

value of the difference between the two.

To investigate stability, I first stratified the sample by its political information, education,

and degree of value conflict. In the case of political information and value conflict, both

averages, I divided the sample into quartiles. I then estimated two models for each stratum,

regressing attitudes in 1994 on those in 1992, and then attitudes in 1996 on those in 1992. Those

results are presented in Table 5.

---

panel study.

[Table 5 about here]

The measures of information should have a positive effect on stability. That is, as respondents grow more informed, the stability of their attitudes, i.e., the magnitude of the regression coefficients, should increase. The measure of political information appears to have this effect in the 1992-94 period: there is a monotonic increase in stability, from .33 to .67. However, this hypothesis is not born out in 1994-96, when, strangely, the most stable group was the *least* sophisticated politically. In the other three groups, the relationship between informedness and stability is less clear as well. A somewhat similar pattern emerges when respondents are stratified by education. In 1992-94, stability generally shifts upward with education, though the trend is not monotonic. However, in 1994-96, although the stability of the most educated group is very high, we observe no consistent relationship between education and stability in the remaining four levels.

A comparable null result emerges when we compare stability across levels of value conflict. In this case, stability should decrease as value conflict increases. The coefficients suggest no such pattern. For example, in 1994-96, the least conflicted quartile is the most stable (b=.63), but there is no clear decline among the other three groups. Thus, we have no initial evidence for the effect of either uncertainty or ambivalence on attitude stability over time.

However, one problem with this analysis is that it does not take account of measurement error. One well-known hypothesis regarding attitude stability (see, e.g., Achen 1975), is that instability may derive from "fuzzy" survey questions, not actual changes in true attitude. To separate stability from measurement unreliability, analysts typically rely on the structural equation model developed by Wiley and Wiley (1970). I estimated a series of such models, one for each stratum in Table 5. In one set of models I allowed the stability coefficients to vary

across levels of information and value conflict. In another set, I constrained those coefficients to be equal across strata. These restricted models assume, for example, that there were no differences in stability across levels of political sophistication. To test the validity of this restriction, one can conduct a likelihood-ratio test on the chi-squared statistics from the unrestricted and restricted models (Bollen 1989: 361). If this difference is insignificant, then the null hypothesis of variation across strata can be rejected.

In this case, these likelihood-ratio tests generate no significant differences (data not shown). The restricted model, which assumes no variation in stability across strata, is not significantly worse than an unrestricted model. Thus, even taking account of measurement error, it appears that uncertainty and ambivalence do not clearly affect the stability of support for environmental spending over time.

Conclusion

In this paper, I have demonstrated that while environmental consensus exists in certain areas, such as perceptions of environmental risk, it does not in others. In particular, when people are called upon to make personal sacrifices for the environment such as paying higher prices or higher taxes, they balk. They turn a paler shade of green. Taking advantage of this variation in environmentalism, I have tested various theories of the motivations behind environmentalism. With the exception of religion, all of these theories prove correct. Risk perception, environmental values, and cultural or value orientations all predict environmentalism in statistically significant ways. A notable exception to these positive relationships is the effect of race, which has a strong negative impact on contemplated sacrifice.

These models of environmental attitudes also uncover a significant amount of heteroskedasticity in responses. Both uncertainty and ambivalence play a role in driving this variation. However, when the analysis is extended beyond the GSS cross-section to environmental attitudes over time, comparable measures of information and value conflict generate no systematic differences in attitude stability.

Further research could address a number of questions. There is the striking result for race that needs better explication. The linkage between abstract value orientations, such as egalitarianism, and environmentalism is not well-understood. What is it about egalitarianism, which generally cues notions like the redistribution of income, that affects whether people will pay higher prices for environmental protection? Furthermore, while the evidence of heteroskedasticity is solid, more extensive analysis, drawing as well on environmentalism battery in the 1995 NES Pilot Study, is necessary. Furthermore, the analysis of stability in this paper is rather crude. A richer set of questions and measures would provide a more nuanced understanding of how uncertainty and ambivalence may affect attitude stability.

What does this analysis tell us about Luntz's advice to House Republicans? While it was probably true that warmer, fuzzier rhetoric would have helped Republicans at that point in time, when the revolution was in disarray after public relations setbacks like the government shutdown, we should not interpret Luntz's advice as evidence that the environment is a "third rail." This paper has found evidence of three types of variation in environmentalism – a lack of constraint across issue areas connected to environmentalism, cross-sectional variation modeled as heteroskedasticity, and significant instability over time. These results therefore suggest that framing environmental protection as costly elicits less support for green policies, that one can identify the attributes associated with both the central tendency and variance of

environmentalism, and that environmentalism itself is unstable over time, though for reasons

unclear at this point. This implies that environmental policy should remain an arena of

contestation, not consensus, in years to come.

Table 1. Willingness to Sacrifice for Environmental Protection

Personal Sacrifice	Percent of respondents in each category				N
	willing	not sure	not willing	TOTAL	
Pay much higher prices	28	25	47	100%	1318
Pay much higher taxes	44	21	34	99%	1334
Accept cuts in standard of living	45	23	32	100%	1330

Note: Willing category includes "very willing" and "fairly willing." Not willing category includes "not at all willing" and "not very willing."

Table 2. Heteroskedastic Ordered Probit Analysis of Sacrifice for Environmental Protection

	Higher Prices	Higher Taxes	Reduced Std. of Living
Choice Function			
Education	.02*	.02#	.02*
	(.01)	(.01)	(.009)
Race	-.32**	-.23*	-.28***
	(.11)	(.11)	(.08)
Age	.003#	.003*	.004*
	(.002)	(.002)	(.002)
Sex	-.04	-.01	-.01
	(.06)	(.06)	(.04)
Have Children	-.07	-.15*	-.05
	(..07)	(.07)	(.05)
Income	-.01	.03**	.02*
	(.01)	(.01)	(.009)
Liberalism	.03#	.04*	.02
	(.02)	(.02)	(.02)
Party ID	.01	.004	.01
	(.02)	(.02)	(.01)
Fundamentalist	-.06	-.06	-.02
	(.06)	(.06)	(.05)
Church Attendance	.005	-.005	.001
	(.01)	(.01)	(.008)
Science Information	.07**	.07**	.04*
	(.03)	(.03)	(.02)
Environmental Information	.03	.03#	.04*
	(.02)	(.02)	(.02)
Perceived Risk	.40***	.38***	.24***
	(.08)	(.07)	(.05)
Resiliency of Nature	-.09**	-.08**	-.04*
	(.03)	(.03)	(.02)
Egalitarianism	.07*	.10**	.05*
	(.04)	(.03)	(.02)
Postmaterialism	.14**	.11*	.07*
	(.05)	(.05)	(.03)
μ_1	.67***	.71***	.58***
	(.11)	(.11)	(.09)
μ_2	1.22***	1.18***	.96***
	(.19)	(.18)	(.15)
μ_3	2.37***	2.24***	1.77***
	(.36)	(.34)	(.29)
Constant	-1.31***	-1.67***	-1.23***
	(.36)	(.40)	(.31)
Variance Function			
Science Information	-.03	-.02	-.009
	(.03)	(.03)	(.03)
Environmental Information	-.04#	-.04*	-.05*
	(.03)	(.02)	(.02)
Education	-.007	-.004	-.03*
	(.01)	(.01)	(.01)
Free Enterprise vs.	.09*	.04	.06#
Egalitarianism	(.04)	(.04)	(.04)
Log-likelihood	-1341.87	-1412.94	-1401.97
χ^2 (df=22)	220.89***	206.17***	176.93***
Pseudo R^2	.30	.30	.29
Heterosked. test (χ^2, df=4)	177.69***	182.91***	188.68***
N	999	1013	1009

*Table entries are ordered probit coefficients, with standard errors in parentheses. Dependent variable is coded from 0 (not at all willing) to 4 (very willing). ***p<.001; **p<.01; *p<.05; #p<.10 (one-tailed except for Race).*

Table 3. Marginal Effects from Heteroskedastic Ordered Probit Estimates

Independent Variable	Higher Prices		Higher Taxes		Reduced Std of Living	
	low	high	low	high	low	high
Choice Function						
Education	-0.008	0.007	-0.007	0.004	-0.014	0.005
Race	0.103	-0.096	0.106	-0.054	0.249	-0.085
Age	-0.001	0.001	-0.002	0.001	-0.003	0.001
Sex	0.015	-0.014	0.006	-0.003	0.011	-0.004
Have Children	0.023	-0.022	0.068	-0.034	0.044	-0.015
Ideology	-0.011	0.011	-0.019	0.010	-0.017	0.006
Party ID	-0.004	0.004	-0.002	0.001	-0.012	0.004
Income	-0.004	0.004	-0.014	0.007	-0.015	0.005
Fundamentalist	0.019	-0.018	0.027	-0.014	0.016	-0.005
Church Attendance	-0.002	0.002	0.002	-0.001	-0.001	0.000
Science Knowledge	-0.024	0.022	-0.031	0.016	-0.036	0.012
Environmental Knowledge	-0.009	0.009	-0.013	0.007	-0.038	0.013
Perceived Risk	-0.131	0.123	-0.175	0.089	-0.214	0.073
Resilience of Nature	0.028	-0.027	0.035	-0.018	0.031	-0.011
Egalitarianism	-0.022	0.020	-0.044	0.022	-0.046	0.015
Postmaterialism	-0.047	0.044	-0.049	0.025	-0.063	0.021
Variance Function						
Science Knowledge	-0.112		-0.089		-0.027	
Environmental Knowledge	-0.218		-0.232		-0.203	
Education	-0.109		-0.068		-0.346	
Egalitarianism vs. Individualism	0.329		0.149		0.160	

The marginal effects for the choice function are represented as the effect of each coefficient on the probability of choosing the low and high category of the dependent variable. The marginal effects for the variance function are computed as the difference between expected error variance when each variable is at its sample minimum and the expected error variance when each variable is at its sample maximum.

Table 4. Support for Environmental Spending, 1992-94-96

	1992	1994	1996
Increase	63.3	37.8	37.3
Same	32.1	51.9	9.1
Decrease	4.6	10.3	53.5
TOTAL	100.0%	100.0%	100.0%
N	586	592	592

Table 5. OLS Analysis of Stability of Attitudes towards Environmental Spending

	1992-94	**1994-96**
Political Sophistication		
least sophisticated quartile	.33	.61
	.43	.48
	.46	.55
most sophisticated quartile	.67	.54
Education (1992)		
less than high school	.37	.48
high school diploma	.48	.43
some college	.42	.53
college degree	.59	.48
advanced degree	.57	.95
Egalitarianism vs. Individualism		
least conflicted quartile	.52	.63
	.45	.30
	.47	.50
most conflicted quartile	.52	.51

Table entries are unstandardized regression coefficients. All are significant at p<.05 (one-tailed).

Appendix A: List of Variables

Age	Coded as the number of years (mean=45.9).
Education	Coded as the number of years of schooling (mean=13.2).
Ideology	Coded from 1-strong conservative to 7-strong liberal (mean=3.8).
Income	Coded into categories: 1-less than $1000, 2-$1000-2999, 3-$3000-4999,…, 8-$8000-9999, 9-$10000-14999, 10-$15000-19999, 11-$20000-24999, 12-$25000 and up (mean=10.7).
Parental Status	Coded 1 if R had children and 0 otherwise (mean=.72).
Party Identification	Coded 0-strong Republican to 6-strong Democrat (mean=3.2).
Race	Coded 1 if black and 0 otherwise (mean=.13).
Sex	Coded 1 if female and 0 otherwise (mean=.55).
Fundamentalist	Coded 1 if respondent identified as "fundamentalist" and 0 otherwise, "moderate" or "liberal" (mean=.31).
Church Attendance	Coded from 0 ("never") to 8 ("more than once a week") (mean=3.7).
Science Knowledge	Coded as the number of questions R answered correctly, from 0-5. The questions were:

Science Knowledge questions:

All radioactivity is made by humans. (F)
Antibiotics kill bacteria, but not viruses. (T)
Astrology – the study of star signs – has some scientific truth. (F)
Human beings developed from earlier species of animals. (T)
All man-made chemicals can cause cancer if you eat enough of them. (F)
(mean=2.5)

Environmental Knowledge	Coded as the number of questions R answered correctly, from 0-7. The questions were:

Environmental Knowledge questions:

If someone is exposed to any amount of radioactivity, they are certain to die as a result. (F)
Some radioactive waste from nuclear power stations will stay dangerous for thousands of years. (T)
The greenhouse effect is caused by a hole in the earth's atmosphere. (F)
Every time we use coal or oil or gas, we contribute to the greenhouse effect. (T)
All pesticides and chemicals used on food crops cause cancer in humans. (F)
Human beings are the main cause of plant and animal species dying out. (T)
Cars are not really an important cause of air pollution in America. (F)
(mean=4.2)

Risk to Society	An index combining respondents' perceptions of the risk posed to "society" by car pollution, nuclear power, industrial air pollution, pesticides, water pollution, and the greenhouse effect. The index runs from 1-5 (mean=3.6). Cronbach's alpha = .82.
Resiliency of Nature	R's answer to this statement, "Almost everything we do in modern life harms the environment," coded 1-strongly agree to 5-strongly disagree (mean=2.8)
Egalitarianism	An index combining responses to six questions: the extent to which the government should help the poor, the sick, and blacks; two versions of a question asking whether the government should reduce income differences; and a question asking whether the government is too involved in society generally. Exact wordings are given on page 24. The resulting index runs from 0-low

	egalitarianism/high individualism to 6-high egalitarianism/low individualism (mean=3.25). Cronbach's alpha = .79.
Postmaterialism	Coded 0 if R mentioned no postmaterialist priorities to 2 if R mentioned two postmaterialism priorities (mean=.92)
Egalitarianism vs. Individualism	Calcuated as the difference between "Egalitarianism" and responses to a question about the efficacy of private enterprise. The variable runs from 0-low conflict to 4-high conflict (mean=.97)

NES Measures

Political Information	In any given year, it is computed as the number of political figures R could identify correctly (0-4). These numbers were then averaged across 1992, 1994, and 1996 (mean=2.3)
Education	This is respondent's self-identified 1992 education, collapsed into 5 categories: 1 (less than a HS degree), 2 (HS degree), 3 (some college), 4 (college degree), 5 (advanced degree). Mean=2.8.
Egalitarianism vs. Individualism	This is the absolute value of the difference between responses to an egalitarianism index and a question about government guarantees of jobs and a good standard of living. Both sets of responses were averaged across all three waves. The variable runs from 0-low conflict to 4-high conflict (mean=.92)

Bibliography

Achen, Christopher. 1975. "Mass Political Attitudes and the Survey Response." *American Political Science Review* 69: 1218-1227.

Alvarez, R. Michael and John Brehm. 1995. "American Ambivalence towards Abortion Policy: Development of a Heteroskedastic Probit Model of Competing Values." *American Journal of Political Science* 39: 1055-1082.

———. 1997. "Are Americans Ambivalent towards Racial Policies?" *American Journal of Political Science* 41: 345-374.

———. 1998. "Speaking in Two Voices: American Equivocation about the Internal Revenue Service." *American Journal of Political Science* 42: 418-452.

Baldassare, Mark and Cheryl Katz. 1992. "The Personal Threat of Environmental Problems as Predictor [*sic*] of Environmental Practices." *Environment and Behavior* 24: 602-16.

Bollen, Kenneth A. 1989. *Structural Equations with Latent Variables*. New York: John Wiley and Sons.

Bord, Richard J. and Robert E. O'Connor. 1997. "The Gender Gap in Environmental Attitudes: The Case of Perceived Vulnerability to Risk." *Social Science Quarterly* 78: 803-840.

Chait, Jonathan. 1997. "Stump Speech." *The New Republic*, 17 November, p.13.

Converse, Phillip. 1964. "The Nature of Belief Systems in Mass Publics." In *Ideology and Discontent*, ed. David E. Apter. New York: Free Press.

Dalton, Russell J. 1994. *The Green Rainbow: Environmental Groups in Western Europe*. New Haven: Yale University Press.

Davidson, Debra J. and William R. Freudenburg. 1996. "Gender and Environmental Risk Concerns: A Review and Analysis of Available Research." *Environment and Behavior* 28: 302-339.

Derksen, Linda and John Gartrell. 1993. "The Social Context of Recycling." *American Journal of Sociology* 58: 434-442.

Douglas, Mary. 1997. "The Depoliticization of Risk." In *Culture Matters: Essays in Honor of Aaron Wildavsky.* Richard J. Ellis and Michael Thompson, ed. Boulder, CO: Westview Press.

Douglas, Mary and Aaron Wildavsky. 1982. *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers*. Berkeley: University of California Press.

Dunlap, Riley E., George H. Gallup, Jr., and Alec M. Gallup. 1993. "Of Global Concern: Results from the Health of the Planet Survey." *Environment* 35: 7.

Dunlap, Riley E. and Kent D. Van Liere. 1987. "The 'New Environmental Paradigm.'" *Journal of Environmental Education* 9 (Summer): 10-19.

Dunlap, Riley E. and Rik Scarce. 1991. "The Polls – Poll Trends: Environmental Problems and Protection." *Public Opinion Quarterly* 55: 651-672.

Eckberg, Douglas L. and T. Jean Blocker. 1996. "Christianity, Environmentalism, and the Theoretical Problem of Fundamentalism." *Journal for the Scientific Study of Religion* 35: 343-355.

Ellis, Richard J. and Fred Thompson. 1997. "Culture and the Environment in the Pacific Northwest." *American Political Science Review* 91: 885-897.

Feldman, Stanley and John Zaller. 1992. "Political Culture of Ambivalence: Ideological Responses to the Welfare State." *American Journal of Political Science* 36: 268-307.

Flanagan, Scott. 1982. "Changing Values in Advanced Industrial Societies: Inglehart's Silent Revolution from the Perspective of Japanese Findings." *Comparative Political Studies* 14: 99-128.

———. 1987. "Value Change in Industrial Societies." *American Political Science Review* 81: 1303-1319.

Fowler, Robert Booth. 1995. *The Greening of Protestant Thought*. Chapel Hill: University of North Carolina Press.

Gomez-Granell, Carmen and Salvador Cervera-March. 1993. "Development of Conceptual Knowledge and Attitudes about Energy and the Environment." *International Journal of Science Education* 15: 553-565.

Greeley, Andrew. 1993. "Religion and Attitudes toward the Environment." *Journal for the Scientific Study of Religion* 32: 19-28.

Greene, William. 1997. *Econometric Analysis*, 3rd edition. Upper Saddle River, NJ: Prentice Hall.

Grendstad, Gunnar and Per Selle. 1997. "Cultural Theory, Postmaterialism, and Environmental Attitudes." In *Culture Matters: Essays in Honor of Aaron Wildavsky.* Richard J. Ellis and Michael Thompson, ed. Boulder, CO: Westview Press.

Guth, James L., John Green, Lyman Kellstedt, and Corwin Smidt. 1995. Faith and the Environment: Religious Beliefs and Attitudes on Environmental Policy. *American Journal of Political Science* 39: 364-382.

Jones, Robert Emmet and Riley E. Dunlap. 1992. "The Social Bases of Environmental Concern: Have They Changed Over Time?" *Rural Sociology* 57: 28-47.

Inglehart, Ronald. 1977. *The Silent Revolution: Changing Values and Political Syles Among Western Publics*. Princeton: Princeton University Press.

———. 1990. *Culture Shift in Advanced Industrial Society*. Princeton: Princeton University Press.

———. 1995. "Public Support for Environmental Protection: Objective Problems and Subjective Values in 43 Societies." *PS: Political Science and Politics* ??: 57-72.

———. 1997. *Modernization and Postmodernization: Cultural, Economic, and Political Change in 43 Societies*. Princeton: Princeton University Press.

Kellstedt, Lyman, James L. Guth, John Green, and Corwin Smidt. 1997. "Is There a Culture War?: Religion and the 1996 Election." Paper presented at the 1997 Meeting of the American Political Science Association, Washington DC.

Kempton, Willet, James S. Boster, and Jennifer A. Hartley. 1995. *Environmental Values in American Culture*. Cambridge, MA: MIT Press.

Kinder, Donald R. and Lynn M. Sanders. 1996. *Divided by Color: Racial Politics and Democratic Ideals*. Chicago: University of Chicago Press.

Layman, Geoffrey C. and Edward G. Carmines. 1997. "Cultural Conflict in American Politics: Religious Traditionalism, Postmaterialism, and U.S. Political Behavior." *Journal of Politics* 59: 751-777.

Lea, David. 1994. "Christianity and Western Attitudes towards the Natural Environment." *History of European Ideas* 18: 513-524.

McClosky, Herbert and John Zaller. 1984. *The American Ethos: Public Attitudes toward Capitalism and Democracy*. Cambridge: Harvard University Press.

McGraw, Kathleen M. and Neil Pinney. 1990. "The Effects of General and Domain-Specific Expertise on Political Memory and Judgment." *Social Cognition* 8: 9-30.

Mohai, Paul and Ben W. Twight. 1987. "Age and Environmentalism: An Elaboration of the Buttel Model Using National Survey Evidence." *Social Science Quarterly* 68: 798-815.

Mohai, Paul and Bunyan Bryant. 1998. "Is There a 'Race' Effect on Concern for Environmental Quality?" *Public Opinion Quarterly* 62: 475-505.

O'Connor, Robert E. and Richard J. Bord. 1998. "Implications of Public Opinion for Environmental Policy: Risk Perceptions, Policy Preferences, and Management Options for

Climate Change." Presented at the 1998 Annual Meeting of the American Political Science Association, Boston, MA.

Olsen, Marvin E., Dora G. Lodwick, and Riley E. Dunlap. 1992. *Viewing the World Ecologically*. Boulder, CO: Westview Press.

O'Riordan, Timothy. 1995. "Frameworks for Choice: Core Beliefs and the Environment." *Environment* 37.

Paelke, Robert C. 1989. *Environmentalism and the Future of Progressive Politics*. New Haven: Yale University Press.

Snyder, Howard A. 1995. "Why We Love the Earth." *Christianity Today* 39(6): 15.

Steel, Brent S. and Dennis L. Soden. 1989. "Acid Rain Policy in Canada and the United States: Attitudes of Citizens, Environmental Activists, and Legislators." *Social Science Journal* 26: 27-44.

White, Lynn. 1962. "The Historical Roots of Our Ecological Crisis." *Science* 155: 1203-1207.

Wildavsky, Aaron. 1991. *The Rise of Radical Egalitarianism*. Washington DC: American University Press.

Wiley, David E. and James A. Wiley. 1970. "The Estimation of Measurement Error in Panel Data." *American Sociological Review* 35: 112-117.

Zaller, John. 1992. *The Nature and Origins of Mass Opinion*. Cambridge: Cambridge University Press.