

AUTOMATICALLY GREEN: BEHAVIORAL ECONOMICS AND ENVIRONMENTAL PROTECTION

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Careful attention to choice architecture promises to open up new possibilities for environmental protection — possibilities that may be more effective than the standard tools of economic incentives, mandates, and bans. How, for example, do consumers choose between environmentally friendly products or services and alternatives that are potentially damaging to the environment but less expensive? The answer may well depend on the default rule. Indeed, green default rules may be a more effective tool for altering outcomes than large economic incentives. The underlying reasons include the powers of suggestion, inertia, and loss aversion. If well-chosen, green defaults are likely to have large effects in reducing the economic and environmental harms associated with various products and activities. Such defaults may or may not be more expensive to consumers. In deciding whether to establish green defaults, choice architects should consider consumer welfare and a wide range of other costs and benefits. Sometimes that assessment will argue strongly in favor of green defaults, particularly when both economic and environmental considerations point in their direction. But when choice architects lack relevant information, when interest group maneuvering is a potential problem, and when externalities are not likely to be significant, active choosing, perhaps accompanied by various influences (including provision of relevant information), will usually be preferable to a green default.

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I. BEYOND INCENTIVES

With respect to environmental protection, material incentives matter, but material incentives are not all that matters. Choice architecture, understood as the social background against which decisions are made, is important as well, even if does not affect the decisionmaker’s material incentives. In particular, social outcomes are greatly affected by default rules, which establish what happens if people do nothing at all.

In some domains, outcomes are automatically green; in other domains, they are not. The quality of both air and water is greatly affected by the nature of prevailing default rules, even if people can costlessly change those rules. Our central argument here is that default rules, and seemingly modest alterations to such rules, can have an exceedingly large impact on environmental quality — potentially larger than that of significant economic incentives or serious efforts toward moral suasion or environmental education.

To see the point, suppose that in a relevant community, there are two sources of energy, denominated “green” and “gray.” Suppose that, consistent with its name, “green” is better than “gray” on environmental grounds. Those who use green energy emit lower levels of greenhouse gases and conventional pollutants such as particulate matter and sulfur dioxide. Suppose that those who use gray energy save money. Which will consumers choose?

The answer will depend on the magnitude of the relevant differences. Suppose that green energy is far better than gray on environmental grounds and that gray energy costs only very slightly less. If so, consumers will be more likely to choose green energy than they would be if green energy was only slightly better on environmental grounds and cost far more. Individual preferences certainly matter; we would expect to see a great deal of heterogeneity across people, nations, and cultures. Some people do not care much about the environment, and monetary figures will drive their choices. For other people, environmental protection is an important value, and such people may be willing to pay a lot to make the environmentally preferred choice. On standard assumptions, people’s decisions will depend on the relationship between economic incentives and underlying preferences.

The standard assumptions are not exactly wrong, but as behavioral economists have shown, those assumptions disregard important variables that do not involve strictly economic incentives.¹ Some kind of choice architecture lies behind people’s decisions, and that architecture is likely to have significant effects

¹ For a valuable collection, see *THE BEHAVIORAL FOUNDATIONS OF POLICY* (Eldar Shafir, ed., 2013).

on what people choose.² One question involves prevailing *social norms*.³ What choices are other people making, and why? If choosers know that most other choosers are selecting green energy, they will be more likely to choose green energy themselves.⁴ By contrast, if environmentalists lament the fact that few people are choosing green energy, they may aggravate the problem by drawing attention to, and thus reinforcing, a social norm that they hope to change.⁵ And if there is a widespread belief that reasonable and good people select environmentally preferable products, that norm will exert pressure in favor of green energy.⁶ Social norms may well lead behavior in a green or gray direction even in the face of significant economic incentives.⁷

Another question involves *expressive considerations*. Some consumers select green energy not because of a careful calculation that the environmental benefits justify the private costs, but because of a desire to express certain values or to act in accordance with their idealized self-conceptions.⁸ For example, many of those who purchase environmentally preferred vehicles seem to be responding largely to expressive considerations. They want to “make a statement,” perhaps because of their perception of their own identities or their preferred self-understanding.⁹ Expressive considerations can, of course, point in

² See generally RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* (2008).

³ See Hunt Allcott, *Social Norms and Energy Conservation*, 95 J. PUB. ECON. 1082, 1093 (2011); Hunt Allcott & Todd Rogers, *The Short-Run and Long-Run Effects of Behavioral Interventions* 28 (Nat'l Bureau of Econ. Research, Working Paper No. 18492, 2012), available at <http://perma.law.harvard.edu/0GWx1PeUNiU>.

⁴ See Allcott, *supra* note 3, at 1093.

⁵ See Robert B. Cialdini et al., *Managing Social Norms for Persuasive Impact*, 1 SOC. INFLUENCE 3, 10–12 (2006). Note in particular the finding that drawing public attention to the existence or pervasiveness of undesirable behavior can actually increase such behavior:

It is worthy of note that our most ineffective persuasive message simulated the sort of negatively worded, descriptive norm message that . . . is regularly sent by public health and community service officials regarding a wide variety of social problems. Our results indicate that appeals of this type should be avoided by communicators in their persuasive undertakings. Unfortunately, this is not always the case. . . . For instance, after we reported the outcomes of the present study [showing the ineffectiveness of park signs containing negatively worded, descriptive normative messages] to park administrators, they decided not to change the relevant aspects of their signage. . . . We were disappointed — but, truth be told, not surprised — that park officials weighted visitors' subjective responses more than our empirical evidence in their signage decision.

Id.

⁶ See *id.* at 12.

⁷ It is possible, of course, that an emphasis on social norms will trigger adverse reactions and resistance, perhaps especially from younger people. See the discussion of “deviant subcultures” in Robert A. Kagan & Jerome H. Skolnick, *Banning Smoking: Compliance without Enforcement*, in *SMOKING POLICY: LAW, POLITICS, AND CULTURE* 69, 78 (Robert L. Rabin & Stephen D. Sugarman eds., 1993).

⁸ On individual motivations to consume, see Lucia A. Reisch, *Consumption*, in *ENVIRONMENTAL THOUGHT* 217 (Edward A. Page & John Proops eds., 2003).

⁹ See generally Vlaslas Griskevicius et al., *Going Green To Be Seen? Status, Reputation, and Conspicuous Conservation*, 98 J. PERSONALITY & SOC. PSYCHOL. 392 (2010). For a more general discussion of this phenomenon, see GEORGE A. AKERLOF & RACHEL E. KRANTON, *IDENTITY ECONOMICS* (2010).

different directions in accordance with prevailing norms. In some communities, purchase of green energy (and green products in general) is strongly favored on expressive grounds; in other communities, it is not favored or is even disfavored.¹⁰

While expressive considerations, as we understand them here, involve people's self-understandings, they may also involve *signaling* to other people.¹¹ Consumers may wish to signal their values and preferences to others, and that desire may influence their choices, as in cases of *conspicuous conservation*.¹² Socially visible actions, such as driving electric sports cars, are naturally more useful for status signaling than switching to green electricity, installing a high-efficiency heat pump in the basement, or opting for car sharing. "Buying green" is often done for status reasons, while "behaving green" is usually less visible and status-laden.¹³ Expressive considerations may also interact with law and policy. In particular, the law may affect the nature and even the sign of the signal.

People may also make a *rapid, automatic judgment* in favor of or against green energy, and that automatic judgment may cause them to choose differently than they would if they carefully considered the matter.¹⁴ Often the rapid judgment is a product of an affective reaction to an activity or a product (such as nuclear power, coal-fired power plants, or genetically modified food), captured in the idea of an "affect heuristic," which can influence both evaluations and behavior.¹⁵ Denominating a product a green choice may be sufficient to create a kind of brand that sparks a "warm glow" for brand aficionados.¹⁶ That form of green branding and the associated emotional benefits may well have a large effect on intuitive judgments. In fact, the power of green branding is such

¹⁰ On the diversity of social meanings and their changes over time, see generally Lawrence Lessig, *The Regulation of Social Meaning*, 62 U. CHI. L. REV. 943 (1995). On energy in particular, with striking findings that are implicitly about social meaning, see Dora L. Costa & Matthew E. Kahn, *Energy Conservation "Nudges" and Environmentalist Ideology: Evidence from a Randomized Residential Electricity Field Experiment* 15–19 (Nat'l Bureau of Econ. Research, Working Paper No. 15939, 2010), available at <http://perma.law.harvard.edu/0dyuJG9uPma> (showing disparate reactions, across ideological lines, to information about social norms with respect to energy usage).

¹¹ See Griskevicius et al., *supra* note 9, at 393–94; Steven E. Sexton & Alison L. Sexton, *Conspicuous Conservation: The Prius Effect and Willingness to Pay for Environmental Bona Fides* 22 (June 30, 2011) (unpublished manuscript), available at <http://perma.law.harvard.edu/0QoDHjmCU4s>.

¹² See Sexton & Sexton, *supra* note 11, at 22.

¹³ Martha A. Starr, *The Social Economics of Ethical Consumption: Theoretical Considerations and Empirical Evidence*, 38 J. SOCIO-ECON. 916, 919–20 (2009).

¹⁴ See generally DANIEL KAHNEMAN, *THINKING, FAST AND SLOW* 20–22 (2011) (comparing two modes of thinking: System 1, which is responsible for automatic, intuitive judgments, and System 2, which is responsible for deliberate, non-intuitive judgments).

¹⁵ See Thorsten Pachur et al., *How Do People Judge Risks: Availability Heuristic, Affect Heuristic, or Both?*, 18 J. EXPERIMENTAL PSYCHOL. APPLIED 314, 315–16 (2012).

¹⁶ See Patrick Hartmann & Vanessa Apaolaza Ibáñez, *Green Value Added*, 24 MKTG. INTELLIGENCE & PLANNING 673, 676 (2006) (noting that some empirical research "has found that people accept mark-ups on the price of green energy brands because they want to feel better about themselves, and are not primarily interested in the objective environmental impact of their decision").

that candy bars with green labels are significantly more likely to be chosen than those with red labels, especially by health-conscious purchasers, even when the two types of candy bars have the same caloric content.¹⁷ Of course, social norms are likely to play a large part in producing such judgments.

Our principal topic here is the role of *default rules*. Defaults are settings that apply, or outcomes that stick, when individuals do not take active steps to change them.¹⁸ Default rules establish what happens if people do nothing at all. In the example with which we began, people are asked to make an active choice between green and gray energy. But it is easy to imagine a different approach, one in which choice architects set a default rule in one direction or another, while allowing people to depart from it. In short, social outcomes might be automatically green.

Apart from creating a default rule, choice architects may or may not seek to influence people's choices. In fact, there is a continuum of possible approaches, whose poles are active choosing (with neutral presentation) and firm mandates (with no permission to opt out and with criminal or civil sanctions for doing so), and whose multiple intermediate points include the following:

- active choosing accompanied by self-conscious framing or related influences (meant to encourage either green or gray),
- a default rule (either green or gray) with a costless opt-out, and
- a default rule (either green or gray) with a costly opt-out.

Our goal is to explore the uses of green default rules. As we shall show, green defaults may well have major effects on environmental outcomes — in some contexts comparable to the effects of mandates and bans, and potentially far larger than the effects of information, education, moral exhortation, and even significant economic incentives.¹⁹ If the goal is to protect the environment, and to save money in the process, default rules are an important tool in the regulatory repertoire, and they may be able to achieve a great deal more than other tools, including those that would cost taxpayers or the private sector a great deal of money. Especially in a period in which the standard tools — mandates, bans, and economic incentives — sometimes face serious economic and political obstacles, default rules deserve careful attention.

¹⁷ See Jonathon P. Schuldt, *Does Green Mean Healthy? Nutrition Label Color Affects Perceptions of Healthfulness*, 28 HEALTH COMM. 814, 818–19 (2013), available at <http://perma.law.harvard.edu/0TdZQj6CXFG>.

¹⁸ Eric Johnson & Daniel Goldstein, *Decisions By Default*, in THE BEHAVIORAL FOUNDATIONS OF POLICY, *supra* note 1, at 417; Christina L. Brown & Aradhna Krishna, *The Skeptical Shopper: A Metacognitive Account for the Effects of Default Options on Choice*, 31 J. CONSUMER RES. 529, 529 (2004).

¹⁹ On default rules in general, see Raj Chetty et al., *Active vs. Passive Decisions and Crowd Out in Retirement Savings Accounts: Evidence from Denmark* 42–44 (Nat'l Bureau of Econ. Research, Working Paper No. 18565, 2012), available at <http://perma.law.harvard.edu/0GS3JRmBiTu> (concluding that automatic contributions are more effective at increasing retirement savings rates than price subsidies); Scott D. Halpern et al., *Default Options in Advance Directives Influence How Patients Set Goals For End-Of-Life Care*, 32 HEALTH AFFAIRS 408, 412–13 (2013) (concluding that patients may not hold firm individualized preferences regarding end-of-life care). For many examples in the context of green defaults, see Part II below.

One of the primary advantages of green defaults is that they can have beneficial effects while maintaining freedom of choice and hence respect for heterogeneity. Suppose, for example, that a relevant population contains a number of people who are facing serious economic difficulty. If so, and if green energy is more expensive than the alternative, it may well be important to allow consumers to opt out (at least if energy subsidies are unavailable). But a series of complications arises by virtue of the fact that default rules are typically selected because they benefit choosers, not third parties; in the environmental context, externalities are frequently involved. This point suggests that the choice of default rules should turn on an assessment not only of consumer welfare, but also of a set of other costs and benefits. If, for example, a green default would impose modest costs on consumers, but produce significant social benefits from emissions reductions, it would (by hypothesis) be justified on cost-benefit grounds.

Default rules with beneficial or adverse environmental consequences are already pervasive, and they might be green, gray, or somewhere in between. When existing defaults are relatively gray, it is not because nature so decreed, but because of emphatically human choices, and these might be otherwise. If public and private institutions seek to make progress on environmental problems — whatever their magnitude — they might well be able to do so by becoming far more self-conscious about selection of the appropriate defaults. It is important to emphasize that default rules of multiple kinds are already in place, alongside other forms of choice architecture, and they have large effects on outcomes, both economic and environmental, even if they have not been subject to careful scrutiny. Indeed, choice architecture may result from invisible hand mechanisms, rather than from deliberate design; the existence of choice architecture does not imply the existence of a choice architect.²⁰

The remainder of this Article is organized as follows. In Part II, we offer an illustrative survey of green defaults, designed to establish their generality, their potential, and their impact. Drawing on an extended literature, Part III explores why default rules matter, with an emphasis on the power of suggestion, the role of inertia, and loss aversion. Part IV examines non-sticky defaults, showing that in some cases, people will reject green defaults. Part V, the heart of the Article, explores whether choice architects should select a green default (and which one to choose, if any), first on the assumption that consumers' interests are the only issue at stake, and second by introducing externalities. Part VI examines active choosing and various ways of influencing free choices without the use of default rules. Part VII offers a general framework for choice architects to consider in selecting among the various options; the framework is designed to fit environmental questions, but it has potentially broad applicability. Part VIII concludes.

²⁰ See generally Edna Ullmann-Margalit, *Invisible-Hand Explanations*, 39 *SYNTHESE* 263, 263–64 (1978) (describing invisible-hand mechanisms, which give rise to phenomena that “look[] to be the product of someone’s intentional design,” but are not).

II. GREEN DEFAULTS: AN ILLUSTRATIVE SURVEY

In many parts of the world, daily life is increasingly accompanied by the equivalent of green defaults, replacing grayer ones. Consider motion detectors that turn out the lights when people do not appear to be in the room, appliance and computer settings that turn equipment off when it is not in use, or default temperature settings in office spaces designed to reduce heating and cooling expenses. Moreover, both policy and technology are making green defaults of this kind increasingly available.²¹

For purposes of illustration, we focus here on four domains in which choice architects may or may not select such defaults. As we shall see, there are numerous contexts in which defaults may have effects comparable to, or greater than, those of significant economic incentives.

A. Paper

Human beings use a great deal of paper, and paper requires use of a large number of trees.²² Suppose that a private or public institution wants both to save money and to protect the environment by reducing its use of paper. Among other things, it could educate people about the potential value of use reductions (“just the facts”); attempt moral suasion by appealing to economic and environmental values; impose a fee for the use of paper; or impose ceilings on the total amount of paper used by relevant individuals or groups (with an inventive approach being a kind of cap-and-trade system).

But consider a much simpler intervention: Alter the institution’s default printer setting from “print on a single page” to “print on front and back.” A few years ago, Rutgers University adopted such a double-sided printing default. In the first four years of the new default, the result was to reduce paper consumption by well over 55 million sheets, which amounted to a 44% reduction, the equivalent of 4,650 trees.²³ A natural field experiment at a large Swedish university also found a substantial reduction, with a significant and immediate effect in the form of a 15% drop in paper consumption, and with that effect staying stable over time.²⁴

It is evident that if private and public institutions decided in favor of a simple change of the default, that change would have a large impact on paper usage. Many people use far more paper than they need only because of the

²¹ For the available palette of default policies, see generally Eric J. Johnson et al., *Beyond Nudges: Tools of a Choice Architecture*, 23 MKTG. LETTERS 487 (2012).

²² To illustrate, total generation of paper and paperboard in municipal solid waste has grown from thirty million tons in 1960 to seventy million tons in 2011 and paper comprised roughly 28% of the total municipal solid waste in 2011. EPA, MUNICIPAL SOLID WASTE IN THE UNITED STATES: 2011 FACTS AND FIGURES 36 (2011), available at <http://perma.law.harvard.edu/0NPexDB4f8x>.

²³ See *Print Management Information*, RUTGERS.EDU, <http://perma.law.harvard.edu/03BNSKSY4oZ>.

²⁴ See Johan Egebark & Mathias Ekström, *Can Indifference Make the World Greener?* (IFN, Working Paper No. 975, 2013), available at <http://perma.law.harvard.edu/05S7PEkzZak>.

“single page” default (along with the effects of inertia). For many such institutions, a change could produce significant savings at negligible costs in terms of convenience and altered reading habits. At least in the face of weak preferences, the default has a large effect, even when switching costs are negligible.²⁵ Notably, large effects can be found even though efforts to use moral suasion to encourage people to select double-sided printing have essentially no impact.²⁶ Also notably, the effect of the double-sided default has been found to be larger than that of environmental education, which had essentially no effect, and even that of a 10% tax on paper products, which produced a mere 2% reduction.²⁷

B. Green Energy

We began with a choice between utility suppliers. It is far too simple, of course, to suggest that the available possibilities fall in two dichotomous categories of “green” and “gray.” Some energy sources are responsible for more pollution than others, and there is a continuum of effects, rather than a sharp dividing line between green and gray. Sometimes, consumers have multiple options, and the environmental and economic consequences of diverse sources of energy require careful investigation; disputes about those consequences are easy to find.²⁸ Recall that the very label “green” can affect consumers, even for candy bars, whether or not the underlying good or service is healthy or protective of the environment.²⁹ In addition, consumers may well lack information that would enable them to distinguish between various energy sources in terms of the environmental effects. For present purposes, it is sufficient to stipulate that from the environmental point of view, some sources are preferable to others, and that consumers might want to consider environmental factors when choosing energy, especially if they can save money at the same time.

Many jurisdictions do offer some kind of choice. In some nations (including the United States), people are generally defaulted into a particular source of energy, with the option to opt out. Typically, the default is relatively gray (perhaps because some of the greener options continue to be expensive). To use green energy, people have to seek out relevant information and choose it affirmatively.³⁰ The deterrent effects of that requirement are large, even in circumstances in which many people would give serious consideration to green options if presented with the choice unaccompanied by a default. What would be the effects of switching to a green default? The question has been examined

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.* at 20.

²⁸ The literature is voluminous. For diverse views, see GODFREY BOYLE, *RENEWABLE ENERGY: POWER FOR A SUSTAINABLE FUTURE* (2012); ENERGY SYSTEMS AND SUSTAINABILITY (Bob Everett et al. eds., 2012); ROGER E. MEINERS ET AL., *THE FALSE PROMISE OF GREEN ENERGY* (2011); OZZIE ZEHNER, *GREEN ILLUSIONS* (2012).

²⁹ See Schuldt, *supra* note 17.

³⁰ For one example, see *Frequently Asked Questions*, MASS ENERGY CONSUMERS ALLIANCE, <http://perma.law.harvard.edu/0wkGmTsXtXJ>.

through two natural experiments that involve actual behavior, and through a series of laboratory experiments.³¹

1. Actual Behavior

In Germany, many people say that they would use green energy if presented with a choice, but very few consumers actually opt for green; in almost all German communities, the green usage rate was, for a long period, under 1%³² (though it has significantly increased in recent years). Even when the green usage rate was generally close to zero throughout Germany, two communities showed green usage rates well above 90%.³³ The reason is simple: They used green defaults.

The first such community is Schönau in the Black Forest, consisting of about 2,500 people and (notably) dominated by conservatives, with a weak Green Party (receiving only about 5% of recent ballots).³⁴ In the aftermath of the Chernobyl disaster in the 1980s, a citizen referendum established an environmentally friendly energy supply, in which the Schönau Power Company became the incumbent utility and many of the Schönau citizens became owners of the utility cooperative. That company promotes solar energy and places a great deal of reliance on renewables. Customers are allowed to opt out and to use other energy sources, but they have to find relevant information in order to identify alternatives. Almost no one opts out; across a number of years, the opt-out rate was only slightly above 0%.³⁵

The second natural experiment involves Energiedienst GmbH, which supplies energy to an area in southern Germany.³⁶ In 1999, the company established three separate tariffs, understood as consumer options with corresponding prices.³⁷ The default was green, and it turned out to be slightly cheaper than the previous tariff.³⁸ The second option was less green than the default but cheaper by approximately 8%; the third was more green than the default but more expensive by approximately 23%.³⁹ If customers did not respond to a letter offering the various options, they would remain with the default. About 94% of customers so remained, with only 4.3% switching to the

³¹ See generally Daniel Pichert & Konstantinos V. Katsikopoulos, *Green Defaults: Information Presentation and Pro-environmental Behaviour*, 28 J. ENVTL. PSYCHOL. 63 (2008), on which we draw throughout this section. A more recent experimental study in Germany is reported in Josef Kaenzig et al., *Whatever the Customer Wants, the Customer Gets? Exploring the Gap Between Consumer Preferences and Default Electricity Products in Germany*, 53 ENERGY POL'Y 311 (2013).

³² See Pichert & Katsikopoulos, *supra* note 31, at 64 (citation omitted).

³³ *Id.* at 66.

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.*

³⁹ *Id.*

cheaper tariff, and the rest switching either to the greener alternative or to a different supplier.⁴⁰

These results testify to the extraordinary power of defaults. Recall that elsewhere in Germany, the use of green energy was, at the time of the study, less than 1%, even though consumers said that they would be willing to pay a premium for it.⁴¹ But outside of the two areas just described, people were required to select green energy affirmatively, and overwhelmingly, they did not. It is fair to speculate that at least within a significant range of prices, the default rule determines the kind of energy that people use.

2. Experiments

Experimental results should be taken with many grains of salt, because they may not predict actual behavior,⁴² but they can be informative, and they also find a large effect from green defaults.⁴³ In one laboratory study, people were presented with a choice between two suppliers.⁴⁴ The first, called EcoEnergy, was described in this way: “EcoEnergy sells clean energy, generated from renewable electricity sources. Contribute to climate protection and environmental protection!”⁴⁵ The second, called Acon, was described in this way: “We offer low-priced electricity tariffs — you cannot beat our prices. Save money with Acon!”⁴⁶ The default turned out to matter a great deal. When EcoEnergy was the default, 68% of participants stuck with it, but when it was the alternative, only 41% of people chose it.⁴⁷ Interestingly, about the same percentage of people (67%) chose EcoEnergy in active choice as when EcoEnergy was the default.⁴⁸ This finding suggests that in the study, a large number of choosers were favorably disposed to green energy; their failure to select it, when Acon was the default, attests to the real power of the default setting, and hence suggests the potential uses of active choosing.

A similar experiment found a significant disparity between willingness to pay and willingness to accept regarding economic valuations of green and gray energy.⁴⁹ Asked how much they would be willing to pay to switch to green

⁴⁰ *Id.*

⁴¹ *Id.* at 64.

⁴² See George Loewenstein et al., *Disclosure: Psychology Changes Everything*, ANN. REV. ECON. (forthcoming 2014) (unpublished manuscript at 12), available at <http://perma.law.harvard.edu/07CfT5P3qzh?type=pdf> (“Such studies are likely to overstate behavioral reactions to the disclosure, in part because it is easier to say that one will take some kind of protective action than actually to take it, and in part because the disclosures in such studies tend to be much more salient than they typically are in real world settings. The problem is compounded when subjects are given multiple decisions to make differing only (or mainly) on disclosures, because the variation of disclosures against an otherwise constant background will artificially increase their salience.”).

⁴³ Pichert & Katsikopoulos, *supra* note 31, at 67–68.

⁴⁴ *Id.* at 67–69.

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ *Id.* at 68–69.

⁴⁸ *Id.*

⁴⁹ *Id.* at 70.

energy, people gave a mean value of 6.59 euros.⁵⁰ Asked how much they would be willing to accept to switch from green energy, they gave a median value of 13 euros.⁵¹ Interestingly, this difference precisely tracks the standard difference between willingness to pay and willingness to accept; the latter is usually double the former.⁵² As we have suggested, a laboratory experiment of this kind may not precisely measure actual behavior, but broadly similar effects are observed in the real world as well.⁵³

A recent study based on 2009 household data found a remarkable gap between customer preferences and the products being offered as the average electricity mix in Germany.⁵⁴ With regard to five alternative electricity production mixes offered, the then-current default ranked second to last in terms of consumer preferences — which were strongly in favor of renewable energy products.⁵⁵ The finding attests to the real possibility that existing defaults may persist even if they do not reflect the preferences of the consumers whose choices are effectively determined by them.⁵⁶

C. Energy Efficiency

Many consumers use products that are significantly less energy-efficient than available alternatives. For public policy, a central question is whether and when they will switch to products that are more efficient and less expensive (at least in the long-run). And in some cases, energy-efficient products are currently dominant, and the question is whether consumers will switch to less energy-efficient products that are less expensive (at least in the short-run). If their major concern is money, and if the short-run is what is most important to them, switching might well seem to be a good idea.⁵⁷ Independent of the expense of the switch itself, does the default matter?

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² See Daniel Kahneman, Jack L. Knetsch, & Richard H. Thaler, *Experimental Tests of the Endowment Effect and the Coase Theorem*, in *QUASI RATIONAL ECONOMICS* 167–68 (Richard H. Thaler ed., 1991).

⁵³ See Roland G. Fryer et al., *Enhancing the Efficacy of Teacher Incentives through Loss Aversion 2* (Nat'l Bureau of Econ. Research, Working Paper No. 18237, 2012), available at <http://perma.law.harvard.edu/OrT5cjZhGJ3>.

⁵⁴ See Kaenzig et al., *supra* note 31, at 318–19.

⁵⁵ Note, however, that two years after the Fukushima disaster and the initiation of the German “Energiewende” (meaning energy transition, designed to shift to environmentally superior energy sources), most energy providers offer attractive “green energy” mixes and have greatly changed their supply policy. See Lucia Reisch, *Verhaltensbasierte Elemente einer Energienachfragepolitik*, in *GRENZEN DER KONSUMENTENSOUVERÄNITÄT* 139 (Jahrbuch Normative und institutionelle Grundfragen der Ökonomik, Vol. 12, 2013).

⁵⁶ See *infra* notes 82–91 and accompanying text (discussing inertia).

⁵⁷ There is a great deal of work on the Energy Paradox, which occurs when consumers, focused narrowly on the short term, do not purchase energy-efficient products that are in their economic interest. For a valuable overview showing the complexity of the underlying issues and the amount that remains to be learned, see Hunt Allcott & Michael Greenstone, *Is There an Energy Efficiency Gap?*, 26 *J. ECON. PERSP.* 3 (2012). For an important discussion of externalities and internalities, see Hunt Allcott et al., *Energy Policy with Externalities and Internalities* (Nat'l Bureau of Econ.

A series of experiments attempted to answer this question.⁵⁸ People were asked to choose between two kinds of light bulbs. One was the efficient but costly Compact Fluorescent Light Bulb (“CFLB”); the other was the inefficient but inexpensive Incandescent Light Bulb (“ILB”). The choice between the two greatly matters. If every home in the United States changed merely one ILB to a CFLB, the result would be to save over \$600 million in annual energy costs, to eliminate greenhouse gas emissions equal to those of more than 800,000 cars, and to save energy that would light over three million homes annually.⁵⁹

In the relevant studies, subjects were told that they were undergoing a significant amount of remodeling of their home and that the contractor had outfitted the light fixtures with either the ILB or the CFLB.⁶⁰ Subjects were asked whether they wanted to switch, at no cost, to the alternative. They were also given a great deal of information about the costs and benefits of the two options. For example, the CFLB would cost \$11 in electricity per 10,000 hours, whereas the ILB would cost \$49 per 10,000 hours. The CFLB would cost \$3 per bulb whereas the ILB would cost \$0.50 per bulb.⁶¹

The central finding is that the default greatly mattered. When energy-inefficient ILBs were the default, they were chosen nearly 44% of the time.⁶² When the CFLB was the default, the ILB was chosen only 20.2% of the time.⁶³ The disparity is especially noteworthy in view of the fact that in the relevant experiments, people were not in the standard real-world situation of having to overcome inertia and to make a change. They were asked, more simply, whether they would do so, and in this sense they were forced to choose.⁶⁴ If they had the option of postponing the decision and simply sticking with the status quo, the disparity would undoubtedly be larger.

D. Smart Grids

Smart grid technology is of considerable interest in many nations,⁶⁵ and in Germany in particular, it is a prerequisite for the radical expansion of the share of renewable energy that is needed to realize the German “Energiewende” (a transition in the uses of energy). The advantage of smart grids, and their defining characteristic, is that they allow consumers to see their electricity use in real time, and also allow pricing to reflect the magnitude of usage during different

Research, Working Paper No. 17977, 2012), available at <http://perma.law.harvard.edu/0RFg9MTq964?type=pdf>.

⁵⁸ See generally Isaac Dinner et al., *Partitioning Default Effects: Why People Choose Not to Choose*, 17 J. EXPERIMENTAL PSYCHOL.: APPLIED 332 (2011).

⁵⁹ See *id.* at 332 (citation omitted).

⁶⁰ *Id.* at 341.

⁶¹ *Id.*

⁶² *Id.* at 335.

⁶³ *Id.*

⁶⁴ *Id.* at 334.

⁶⁵ See, e.g., PETER FOX-PENNER, SMART POWER: CLIMATE CHANGE, THE SMART GRID, AND THE FUTURE OF ELECTRIC UTILITIES (2012).

parts of the day.⁶⁶ Smart grid technology has the potential to provide a better balance of the supply and demand of electricity and make the grid more flexible, efficient, and reliable.

In particular, both the public and private sectors have increasingly seen smart meters as useful tools to develop better energy use patterns through the provision of immediate feedback.⁶⁷ The explicit binding goal of the European Union's "Third European Energy Liberalization Package" is that by 2020, smart meter systems will be installed in 80% of households.⁶⁸ But there are obstacles to achievement of this goal, including data privacy concerns and perceived risks of reduced home comfort (part of the electricity consumption is controlled remotely by the energy provider).⁶⁹ As a result, many consumers are reluctant to accept this new technology in their homes, and the 80% target currently seems to be a distant prospect.⁷⁰

If the goal is to get close to the target, what might be done? A recent experimental study based on a nationwide panel in Denmark shows that the implied default greatly affects consumer behavior.⁷¹ Specifically, the acceptance rate to install a smart meter is significantly higher if offered as an "opt-out" frame ("No, I would not like to have a smart meter with remote control installed in my home") than as an opt-in frame.⁷² The study confirms that the framing of the question, and the implied default, have a substantial impact on the share of a population that accepts smart grid installation. With this finding in mind, the authors urge "that campaigners therefore should choose a framing only after careful consideration."⁷³

⁶⁶ A valuable discussion can be found in Ben Gilbert et al., *Dynamic Salience With Intermittent Billing: Evidence from Smart Electricity Meters* (Nat'l Bureau of Econ. Research, Working Paper No. 19510, 2013), available at <http://perma.law.harvard.edu/0aZMrdrmkLc>.

⁶⁷ See *id.* at 4–7.

⁶⁸ Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC (Text with EEA relevance), OFFICIAL J. EUR. UNION, L 211/56 (2009), available at <http://perma.law.harvard.edu/0VqrouftKUg>.

⁶⁹ Data privacy concerns may arise if, for example, consumers do not want others to know about their energy use.

⁷⁰ See STEPHAN RENNER ET AL., EUROPEAN SMART METERING LANDSCAPE REPORT 91 (2011), available at <http://perma.law.harvard.edu/0C3Xc36oUhd>.

⁷¹ See Dinner et al., *supra* note 58, at 335.

⁷² Folke Ölander & John Thøgersen, *Informing or Nudging: Which Way to a More Effective Environmental Policy?*, in *MARKETING, FOOD AND THE CONSUMER* 141 (Joachim Scholderer & Karen Brunsø eds., 2013).

⁷³ *Id.* at 151.

III. WHY DEFAULT RULES MATTER⁷⁴

Why do default rules have such a large effect on outcomes?⁷⁵ There appear to be three principal contributing factors; each of them has distinctive characteristics in the context of green defaults.⁷⁶

A. *Suggestion and Endorsement*

The first factor involves an *implicit suggestion or endorsement* on the part of those who have devised the default rule.⁷⁷ Suppose that choice architects, whether private or public, have explicitly chosen a green default. If so, choosers may believe that they have been given an implicit recommendation (perhaps from a private institution, perhaps from public officials), and that they should not reject it unless they have reliable private information that would justify a change.

If the default choice is double-sided printing or green energy, it is tempting to think that experts, or sensible people, believe that this is the right course of action, perhaps because it is preferable on economic grounds, perhaps because it is environmentally superior and may, in the view of some or many choosers, have some kind of moral foundation. If a double-sided default has been selected for printing, people might believe that it would not usually be a good idea to reject it, because single-sided printing wastes paper. Those who are deciding whether to opt out might trust the choice architects enough to follow their lead.

Many people appear to think that the default was chosen by someone sensible and for a good reason. Especially if consumers or users lack experience or expertise, if the product is highly complex and rarely purchased (and this is frequently true in the environmental context), or if both, consumers might simply defer to what has been chosen for them.⁷⁸ This explanation suggests that

⁷⁴ This section has an overlap with the more general discussion in Cass R. Sunstein, *Deciding By Default*, 162 U. PA. L. REV. 1 (2013).

⁷⁵ See, e.g., William G. Gale, J. Mark Iwry & Spencer Walters, *Retirement Savings for Middle- and Lower-Income Households: The Pension Protection Act of 2006 and the Unfinished Agenda*, in AUTOMATIC: CHANGING THE WAY AMERICA SAVES 11, 13–14 (William G. Gale et al. eds., 2009); Dinner et al., *supra* note 58, at 335; Gabriel D. Carroll et al., *Optimal Defaults and Active Decisions*, 124 Q. J. ECON. 1639, 1641–43 (2009).

⁷⁶ See, e.g., Johnson & Goldstein, *supra* note 18, at 417; Jeffrey R. Brown et al., *The Downside of Defaults*, NAT'L BUREAU OF ECON. RESEARCH (2011), available at <http://perma.law.harvard.edu/0rKz98faWC/>.

⁷⁷ Brigitte C. Madrian & Dennis F. Shea, *The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior*, 116 Q. J. ECON. 1149, 1182 (2001); see also Craig R.M. McKenzie, Michael J. Liersch & Stacey R. Finkelstein, *Recommendations Implicit in Policy Defaults*, 17 PSYCHOL. SCI. 414, 418–19 (2006).

⁷⁸ People might also have experienced for themselves the positive outcomes of controversial regulatory decisions that they might not have endorsed *ex ante*, if given the choice. An example would be the smoking bans for bars and restaurants imposed in the U.S. and in Europe in the 2000s. Although enacted in the face of industry opposition, polls suggest these bans enjoy widespread support. Citing this and similar examples, Elke Weber concludes that “policy makers may sometimes be well advised to shape and lead public opinion rather than follow it.” Elke U. Weber,

default rules are less likely to have an effect when people consider themselves to be experienced or expert, and indeed there are findings to this effect among environmental economists, who reject selected defaults.⁷⁹ This explanation further suggests that choosers will be far more likely to opt out if they do not trust the choice architect. And indeed, there is evidence for this proposition as well.⁸⁰

If choice architects select a green default for reasons that are perceived as self-serving, elitist, preachy, or foolish, we would expect to see an increase in the rate of opt-out. It is reasonable to think that green defaults will be more likely to stick if choosers trust those who have selected them, or at least perceive no reason to distrust them. This prediction is supported by the finding that Republican households that do not donate to environmental causes, and that do not pay for renewable energy, actually *increase* their energy use in response to a nudge in the form of information about how their energy use compares to that of their peers.⁸¹

B. Inertia

The second explanation involves inertia and procrastination (sometimes described as “effort” or an “effort tax”).⁸² To depart from the default rule to either green or gray, people must make an active choice. They have to focus on the relevant question, which is how they should trade off environmental, economic, and perhaps other goods. Especially, but not only, if the question is difficult or technical and if the tradeoff is complex or morally charged, it may be tempting to defer the decision or not to make it at all. In view of the power of inertia and the tendency to procrastinate, people may simply continue with the status quo.⁸³

A striking example can be found in Germany. While increasing energy prices are headline news in German media, and are causing considerable concern to consumers, most households remain in the basic tariff of the energy provider. This is so even though the basic tariff is usually more expensive than one fitting the household’s actual use patterns, and it may also be more expensive than green energy.⁸⁴ Only 22% of German households have switched their

Doing the Right Thing Willingly: Using the Insights of Behavioral Decision Research for Better Environmental Decisions, in THE BEHAVIORAL FOUNDATIONS OF PUBLIC POLICY, *supra* note 1, at 380, 393.

⁷⁹ See Asa Löfgren et al., *Are Experienced People Affected by a Pre-Set Default Option — Results from a Field Experiment*, 63 J. ENVTL. ECON. & MGMT. 66, 69 (2012).

⁸⁰ See David Tannenbaum & Peter H. Ditto, *Information Asymmetries in Default Options* 11–17 (2012) (unpublished manuscript), available at <http://perma.law.harvard.edu/02CkWtkhQjK>.

⁸¹ See Costa & Kahn, *supra* note 10, at 17.

⁸² See Johnson & Goldstein, *supra* note 18, at 420–21.

⁸³ On choice avoidance, see Sheena Sethi-Iyengar, Wei Jiang & Gur Huberman, *How Much Choice is Too Much? Contributions to 401(k) Retirement Plans*, in PENSION DESIGN AND STRUCTURE: NEW LESSONS FROM BEHAVIORAL FINANCE (Olivia S. Mitchell & Stephen P. Utkus eds., 2005).

⁸⁴ For regular product tests and price comparisons of energy providers’ offers conducted by a German consumer organization, see STIFTUNG WARENTEST, <http://www.test.de> (last visited Dec. 4, 2013). See, e.g., *Stiftung Warentest empfiehlt Versorgerwechsel*, STIFTUNG WARENTEST (November 20, 2012), available at <http://perma.law.harvard.edu/0UY2vcejFHH>.

tariff or provider in the past two years — strong evidence of the power of inertia.⁸⁵ Recall as well that in Germany, citizens appear to be defaulted into a form of energy use that the vast majority of Germans reject.⁸⁶

In many cases involving environmental values, the decision whether to select green energy involves some thinking, some risk, and a potentially complex (and morally charged) assessment of economic and environmental considerations. The choice of an electricity provider is not exactly intuitive; it may well be cognitively demanding and thus represent a nontrivial “effort tax.”⁸⁷ The default rule might stick simply because people do not want to engage in that thinking, take that risk, or make that tradeoff. Studies of brain activity find that when decisions are complex and difficult, people are more likely to stick with the default.⁸⁸ Even if people in some sense want to investigate the issue and possibly make a change, they might decide that they will do so tomorrow — and tomorrow never comes.

Consider in this regard the finding that a default thermostat setting has a significant effect on employees of the Organization for Economic Co-operation and Development (“OECD”).⁸⁹ During the winter, a one-degree Celsius decrease in the default caused a significant reduction in the average chosen setting, apparently because most employees did not much care about the new default, and hence did not take the time to change it. Small as it was, the cost of that effort did not justify the bother, because people were not sufficiently uncomfortable to act. This interpretation is supported by the remarkable finding that when the default setting was reduced by two degrees Celsius, the reduction in the average chosen setting was actually *smaller*, apparently because sufficient numbers of employees thought that it was too cold, and returned the setting to the one that they preferred.⁹⁰

In this case, the reason for the effect of the default setting was probably inertia, not suggestion. Perhaps the one-degree Celsius decrease was a bit colder than the preferences of some or many OECD employees, but not cold enough to justify a change. But with a two-degree Celsius decrease, the underlying preference manifested itself through restoration of the original status quo. The larger lesson, to which we will return, is that in the face of strong preferences, inertia will be overcome and the default will be less likely to stick; thus, choice architects have greater room to maneuver through small changes than through large ones. When the change is both significant and abrupt, and inconsistent with existing preferences, people are likely to reject it (and in that sense freedom of choice can be an important safeguard against welfare-reducing de-

⁸⁵ Infas Energiemarktmonitor 2012, available at <http://perma.law.harvard.edu/0AWnxhdhJrk>.

⁸⁶ See Pichert & Katsikopoulos, *supra* note 31, at 64.

⁸⁷ For a broad treatment of the effects of cognitive demands, with many implications for environmental choices, see generally SENDHIL MULLAINATHAN & ELGAR SHAFIR, SCARCITY: WHY HAVING TOO LITTLE MEANS SO MUCH (2013).

⁸⁸ Stephen M. Fleming et al., *Overcoming Status Quo Bias in the Human Brain*, 107 PROC. NAT'L ACAD. SCI. U.S. 6005, 6007 (2010), available at <http://perma.law.harvard.edu/0kGWgzJTWAz/>.

⁸⁹ See Brown et al., *supra* note 76, at 129–30.

⁹⁰ *Id.*

faults⁹¹). A modest change, not producing significant disruption, loss, or discomfort, may be greeted with some version of “yeah, whatever.”

C. Reference Point and Loss Aversion

A third and especially interesting explanation stresses the fact that the default rule establishes the *reference point* for people’s decisions. Recall in this regard the behavioral finding of loss aversion. People dislike losses far more than they like corresponding gains,⁹² and whether a loss or a gain is involved does not come from nature or from the sky. The default rule determines what counts as a loss and what counts as a gain.

To appreciate the power of loss aversion and its relationship to default rules, consider an illuminating study of teacher incentives. Many people have been interested in encouraging teachers to improve their students’ achievements. The results of providing economic incentives are decidedly mixed; many of these efforts have failed.⁹³ But the relevant study enlists loss aversion by resetting the default. The authors gave teachers money in advance and told them that if students did not show real improvements, *the teachers would have to give the money back*.⁹⁴ The result was a significant increase in math scores — indeed, an increase equivalent to a substantial improvement in teacher quality.⁹⁵ The underlying idea here is that losses from the status quo are especially unwelcome, and people will work hard to avoid those losses.⁹⁶

Return in this light to default rules and the question of energy efficiency. Suppose that as compared to the gray (energy-inefficient) choice, the green option costs \$200 more upfront but saves \$210 over a period of five years. If

⁹¹ Ryan Bubb and Richard Pildes urge that default rules are effectively mandates, because they tend to be “sticky.” Ryan Bubb & Richard Pildes, *How Behavioral Economics Trims Its Sails and Why*, 127 HARV. L. REV. (forthcoming 2014). The evidence much complicates this claim. When people dislike the default, they might well opt out. See, e.g., John Beshears et al., *The Limitations of Defaults*, at 8 (Sept. 15, 2010) (unpublished manuscript), available at <http://perma.cc/SZN9-UL9U?type=pdf>. This point suggests that freedom of choice can be an important safeguard against welfare-reducing defaults, not least in the environmental area.

⁹² See, e.g., Daniel Kahneman, Jack L. Knetsch & Richard H. Thaler, *Experimental Tests of the Endowment Effect and the Coase Theorem*, in QUASI RATIONAL ECONOMICS 167, 169 (Richard H. Thaler ed., 1994); A. Peter McGraw et al., *Comparing Gains and Losses*, 21 PSYCHOL. SCI. 1438, 1444 (2010). Vivid evidence of loss aversion can be found in David Card & Gordon B. Dahl, *Family Violence and Football: The Effect of Unexpected Emotional Cues on Violent Behavior*, 126 Q. J. ECON. 103, 105–06, 130–35 (2011) (finding an increase in domestic violence after a favored team suffers from an upset loss in football).

⁹³ See Roland G. Fryer et al., *Enhancing the Efficacy of Teacher Incentives Through Loss Aversion: A Field Experiment 2* (Nat’l Bureau of Econ. Research, Working Paper No. 18237, 2012), available at <http://perma.law.harvard.edu/0rT5cjZhGJ3>.

⁹⁴ See *id.* at 1.

⁹⁵ See *id.*

⁹⁶ For a valuable discussion of loss aversion and its importance in an area of great environmental interest, see Tatiana A. Homonoff, *Can Small Incentives Have Large Effects? The Impact of Taxes versus Bonuses on Disposable Bag Use?* (Mar. 27, 2013) (unpublished manuscript), available at <http://perma.law.harvard.edu/0vc54L915aU>. Homonoff shows that a \$0.05 tax on grocery bags in the District of Columbia had a significant effect in reducing grocery bag use, while a \$0.05 bonus for using reusable bags had essentially no effect.

the gray option is the default, people are likely to focus on the immediate loss of \$200, and they will be highly reluctant to incur that loss. Perhaps the \$210 savings will overcome their reluctance — but the immediate \$200 loss will likely loom large. If, by contrast, the green option is the default, people are more likely to focus on the eventual loss of \$210, and they will be highly reluctant to incur that loss. In the environmental context, loss aversion may have an especially significant effect, certainly in the case of green defaults: People may well feel a pang of conscience, or anticipatory regret, if they are contemplating rejection of a green default.

In this respect, the default may well interact with, and help to establish or reinforce, prevailing social norms. Recall that some people make environmentally friendly choices because they want to “make a statement.”⁹⁷ If opting out produces environmental as well as economic harm, it may entail a statement that consumers do not want to make — and this is so even if they would not have opted in.

IV. WHEN DEFAULT RULES DO NOT STICK

In some cases, people are willing to assess the default and possibly to reject it. We have noted that in the face of a two-degree Celsius decrease in the default thermostat setting during the winter, many OECD employees took action to turn up the temperature, apparently because they were cold, and genuine discomfort leads people to overcome inertia.⁹⁸ Note as well that when experienced people — environmental economists attending a conference — were presented with a default number for carbon dioxide offsets for flying, they were unaffected by that number, evidently because they believed that they knew what number would be the right one.⁹⁹ Note finally that in the study of energy-efficient light bulbs, the default rule was not especially sticky.¹⁰⁰ Even when it was the default, the energy-inefficient light bulb was rejected by about 56% of choosers.¹⁰¹ We could easily imagine populations that would likely reject the energy-efficient choice in equal or higher numbers, especially if the less efficient option cost a great deal less, and if in that population, environmental considerations did not loom large.¹⁰²

When default rules do not stick — and sometimes they do not — the reason is usually straightforward: People have clear preferences that run counter to them. If preferences are clear, people are less likely to be influenced by the endorsement in the default rule. Inertia may well be overcome. Loss

⁹⁷ See *supra* notes 11–13 and accompanying text.

⁹⁸ Brown et al., *supra* note 76, at 133.

⁹⁹ Löfgren et al., *supra* note 79, at 67–69.

¹⁰⁰ See Dinner et al., *supra* note 58, at 335–40.

¹⁰¹ *Id.* Recall, however, that the study was a laboratory experiment, not a randomized trial. If people actually had to take steps to change the default — rather than merely answering questions about whether they would do so — the switch rate would likely have been smaller.

¹⁰² See generally Costa & Kahn, *supra* note 10 (finding that Republicans actually increased their energy usage after learning about social practices involving energy efficiency).

aversion will be far less relevant, in part because the clear preference helps define the reference point from which losses are measured. In such cases, the default rule does not construct people's preferences; it violates them.

Suppose that consumers are defaulted into an energy source that costs 50% more than the alternative. Unless social norms or inertia are particularly strong, consumers will reject that default. For supportive evidence, consider both the evidence presented above and also a study in the United Kingdom, which found that most people opted out of a savings plan with an unusually high (and therefore unattractive) default contribution rate (12% of before-tax income).¹⁰³ Only about 25% of employees remained at that rate after a year, whereas about 60% of employees shifted to a lower default contribution rate.¹⁰⁴ Notably, and somewhat disturbingly, people with lower incomes were more likely to stay at the unusually high contribution rate.¹⁰⁵ Similar findings have been made elsewhere, with growing evidence that those who are less educated and less sophisticated are more likely to stick with the default.¹⁰⁶ Note as well the finding that, while school children could well be nudged (through the functional equivalent of default rules) into healthier choices, researchers were not able to counteract the children's strong preference for (unhealthy) French fries.¹⁰⁷

The clear implication is that extreme or highly unwelcome defaults are less likely to stick. It follows that green defaults that are perceived as foolish, wrong, harmful, expensive, or as the imposition of some high-minded environmentalist elite, may well be rejected by many consumers.¹⁰⁸ If people are highly skeptical about public officials, and if such officials set the default, they may reject it for that reason. A more puzzling and somewhat troubling implication, based on the lower incomes of those who stayed with the default in the savings study described above, is that default rules may be more sticky for low-income workers than for their higher-earning counterparts. One reason may be that low-income workers have a great deal to worry about,¹⁰⁹ and so are less likely to take the trouble to think through and to alter the default rule. An "effort tax" may seem especially high for, and have an especially large adverse effect on, people who are already facing a large number of decisions and costs. Supportive evidence can be found in Germany, where low socio-economic status ("SES") households tend to stay with their energy provider while higher SES households tend to switch.¹¹⁰

¹⁰³ See John Beshears et al., *supra* note 91, at 8.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.* at 10.

¹⁰⁶ See, e.g., Brown, *supra* note 76.

¹⁰⁷ See David R. Just & Brian Wansink, *Smarter Lunchrooms: Using Behavioral Economics to Improve Meal Selection*, 24 CHOICES 32, at *5 (2009), available at <http://perma.law.harvard.edu/0v6q6QJjfc6>.

¹⁰⁸ For supportive evidence, see Costa & Kahn, *supra* note 10, at 17.

¹⁰⁹ See Anuj K. Shah et al., *Some Consequences of Having Too Little*, 338 SCI. 682, 682–83 (2012), available at <http://perma.law.harvard.edu/0g1RdR5SXoz>.

¹¹⁰ Infas Energiemarktmonitor 2012, *supra* note 85.

This point suggests that a costly green default may have a regressive impact, both because low-income people have less money and because they may well be especially likely to stick with it. And indeed, there is general evidence that when people are highly informed and experienced, and hence know what they want, they are far less likely to be affected by the default rule.¹¹¹ One reason is that the effort tax is worth incurring. Another reason is that highly involved and competent “market mavens” actually enjoy searching extensively and making their choice independently of defaults. Since “*the consumer*” does not exist in the abstract, there have been calls for a more group-specific policy design that takes the relative level of consumer competence into consideration by, for example, distinguishing between trusting, vulnerable, and responsible consumers.¹¹² Such distinctions may bear on the selection of personalized default rules, taken up below.

V. GREEN OR GRAY?

We now turn to the normative questions. In areas that affect the environment, which default rule should choice architects select? What considerations should they bring to bear on that question?

A. Consumers (Without Externalities)

For purposes of simplification, begin with the case in which the only concern is the welfare of the chooser and there are no (or only modest) externalities. The preferred approach is *to select the default rule that reflects what most people would choose if they were adequately informed*.¹¹³ If we know that a particular default rule would place people in the situation that informed people would select, we have good reason to select that default rule (with the understanding that those who differ from the majority may opt out).

In the easiest cases, the answer becomes entirely clear once we specify the likely effects of the options in question. If green energy would both cost less and reduce environmental harm, it is safe to say that most informed people would choose it.¹¹⁴ It should certainly be the default. Under the specified circumstances, those who want consumers to make different choices, increasing both economic and environmental costs, will not find it easy to explain their

¹¹¹ See Löfgren et al., *supra* note 79, at 69.

¹¹² See Hans-W. Micklitz et al., *The Consumer — Trusting, Vulnerable or Responsible? Plea for a Differentiated Strategy in Consumer Policy*, Statement by the Scientific Advisory Board on Consumer and Food Policies at the Federal Ministry of Consumer Protection, Food and Agriculture (Dec. 2010), available at <http://perma.law.harvard.edu/OpLVxTYUwJF>.

¹¹³ See N. Craig Smith, Daniel G. Goldstein & Eric J. Johnson, *Smart Defaults: From Hidden Persuaders to Adaptive Helpers* 15–16 (INSEAD Bus. Sch., Working Paper No. 2009/03/ISIC, 2009), available at <http://perma.law.harvard.edu/0LDi3hftN0n>.

¹¹⁴ There are strong indications that this is the case in Germany, and demand for green energy has, in fact, risen dramatically in recent years. See generally FED. MINISTRY FOR THE ENV'T, NATURE CONSERVATION AND NUCLEAR SAFETY, DEVELOPMENT OF RENEWABLE ENERGY SOURCES IN GERMANY 2011 (2012), available at <http://perma.law.harvard.edu/0jqYfkyVCs6>.

views. Indeed, choice architects might rule some options out of bounds because they are obviously in no one's interest. In easy cases, the default is self-evident, because it is superior along every dimension that consumers care about.

Now suppose that the tradeoff is not so self-evident, but that we have good reason to believe that 80% of people, given a great deal of information, would choose green energy. This might be the case if either (1) green energy is far better on environmental grounds but only very slightly more expensive or (2) the relevant population is known to have strong environmental commitments and hence is willing to pay more for green energy. In either case, there is a strong reason to favor automatic enrollment in green energy. But if gray energy would cost significantly less than green, and if it would be only slightly worse on environmental grounds, a gray energy default would seem best (recognizing that some people will select green on expressive or other grounds).

To be sure, it might well be necessary to do a great deal of empirical work in order to identify the approach that informed people would choose; as we shall see, this is a point in favor of active choosing. The idea of "informed" choice might also raise hard conceptual questions. For reasons that behavioral economists have emphasized,¹¹⁵ people may err even if they have a great deal of information. They may, for example, display unrealistic optimism or neglect the long-term;¹¹⁶ the latter point bears especially on choices in the areas of energy and environmental protection. If informed choosers show systematic biases (perhaps because they neglect the long-term), it may not make a great deal of sense to base default rules on what appear to be informed choices. Perhaps we can conclude that people who display systematic biases are (by definition) not making informed choices, and encourage choice architects to make corrections for such biases.

On the other hand, any effort to build correction of such biases into the very idea of the informed chooser creates a serious risk, which is that the enterprise will involve identification of what the choice architect believes to be the right choice on the merits — in which case the chooser, as an agent, tends to drop out of the analytic picture. The best solution is probably to rely on what informed choosers actually do, while also allowing correction if their choices can clearly be shown to be against their interest, perhaps because of some kind of behavioral bias.

On this count, actual evidence — about what informed choosers do — is extremely important. It would be useful to assemble information about the level of opt-out under various alternatives, and to know who, exactly, is opting out.¹¹⁷ Perhaps experiments or pilot programs would provide such information.¹¹⁸ If

¹¹⁵ See Cass R. Sunstein, *The Storrs Lectures: Behavioral Economics and Paternalism*, 122 *YALE L.J.* 1826, 1842–52 (2013) [hereinafter *Storrs Lectures*] (discussing behavioral market failures).

¹¹⁶ *Id.*

¹¹⁷ See generally THALER & SUNSTEIN, *supra* note 2.

¹¹⁸ The Cabinet Office Behavioural Insights Team in the United Kingdom is actively engaged in such projects, including in the domain of energy. See CABINET OFFICE BEHAVIOURAL INSIGHTS TEAM, *BEHAVIOUR CHANGE AND ENERGY USE* (2011), available at <http://perma.law.harvard.edu/04XS2Ehoo9x>.

only 2% of people opt out where green energy is the default, and if 50% opt out where gray energy is the default, we have reason to believe that green energy is better.

Of course, it is possible that majority rule is too crude. Suppose that there are two default rules, green and gray. Suppose that 55% of informed people would be relatively indifferent between green and gray, but would slightly prefer green. Suppose too that because of their distinctive situation (perhaps they are poor), 45% of people would strongly prefer gray. It is probably best to select gray, because almost half of the population would like it very much, and the (narrow) majority only cares a little bit. The example shows that it is important to ask not only about which approach would be preferred by informed people, but also about the intensity of their preferences.

But it is important to be careful with the use of intense minority preferences, because it is not clear in which direction they cut. On the one hand, choice architects might favor the default rule that fits with such preferences, because that rule would give people who greatly care exactly what they want, without much affecting people who are by hypothesis relatively indifferent. On the other hand, those with intense preferences are more likely to reject the default, and hence they would not be much harmed by it. If choice architects know that this would be the case — that people who greatly care would opt out — it might well be best to choose a default that reflects the views of the majority, even if (or indeed because) they do not greatly care. Empirical work is especially important here to establish whether those with intense contrary preferences will, in fact, opt out.

B. Consumers and Third Parties

In the environmental context, externalities are pervasive; they may well be the principal motivation for a green default rule. Choosers may also face a collective action problem. Asked individually, they might rationally select gray energy, but they might prefer green energy if everyone else was doing so as well. In some cases, externalities or collective action problems will justify a firm mandate rather than a mere default rule; indeed, there may be a standard market failure that calls for a corrective tax or some kind of regulatory intervention. We are assuming here, however, that for one reason or another (perhaps including political constraints), mandates are off the table, and the question is the appropriate default rule. If choice architects are deciding among defaults in the presence of externalities and collective action problems, they must investigate the full set of costs and benefits, not only the welfare of choosers.¹¹⁹ They must ask: *If a default rule turned out to stick, what would be the costs and what would be the benefits?*¹²⁰

¹¹⁹ For a valuable discussion, see Johnson & Goldstein, *Decisions by Default*, *supra* note 18.

¹²⁰ Distributional issues may of course matter as well — a point to which we will return. *See infra* note 146 and accompanying text.

Consider the question whether the default rule should favor single- or double-sided printing. We would need to know something about the relevant population to know which of these would be best from the individual standpoint. In the abstract, the answer is not obvious. Perhaps choosers are generally indifferent as between single- and double-sided copies; perhaps they strongly favor one or the other. If choice architects have no idea, they might ask people to choose. But it is easy to imagine situations in which individuals are relatively indifferent and the externalities are decisive. When institutions reduce their use of paper, they save money for themselves, while at the same time reducing the environmental and other costs associated with the production of paper. The best approach would be to quantify those costs. If the relevant costs are significant, they would weigh strongly in favor of a double-sided default even if the majority of choosers would prefer single-sided. And it is true that if the externalities are especially large, a mandate begins to look more attractive and justified on economic and ethical grounds.¹²¹

Or return to the case of green energy. Even if most choosers would select gray because it is less expensive, green might be the better default if it would avoid significant externalities. No one doubts that certain energy sources produce far less than others in the way of air pollution and other harms.¹²² Other things being equal, there is strong reason to select a default rule that reduces such pollution. Suppose that we focus narrowly on greenhouse gas emissions. In recent years, a great deal of work has been done to estimate the social cost of carbon (“SCC”).¹²³ In 2010, a technical working group in the United States government settled on an SCC with a central value of about \$23 (2013 dollars);¹²⁴ in 2013, the central value was updated to about \$36 (mostly to reflect sea-level rise).¹²⁵ We could easily imagine cases in which the avoidance of greenhouse gases would produce significant gains, so that a green default would be simple to justify even if it turned out to be more expensive for users. Ideally, choice architects would monetize all of the costs associated with relevant energy uses and set a default rule accordingly. Of course, it is true that the assessment could create serious empirical challenges both in monetizing the relevant benefits and in projecting the level of opt-out.

As we have suggested, distributional issues may be pertinent and important as well. Suppose, for example, that the cost-benefit analysis argues in favor

¹²¹ On some of the foundational questions, see generally MATTHEW D. ADLER, WELL-BEING AND FAIR DISTRIBUTION: BEYOND COST-BENEFIT ANALYSIS (2011).

¹²² See Nicholas Z. Muller et al., *Environmental Accounting for Pollution in the United States Economy*, 101 AM. ECON. REV. 1649, 1650–53 (2011).

¹²³ See, e.g., INTERAGENCY WORKING GRP. ON SOCIAL COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12866 (2010) [hereinafter TECHNICAL SUPPORT DOCUMENT 2010], available at <http://perma.law.harvard.edu/0mBWKsKgua7>. For an illuminating critique, see William Nordhaus, Estimates of the Social Cost of Carbon: Background and Results from the RICE-2011 Model (Oct. 18, 2011) (unpublished manuscript), available at <http://perma.law.harvard.edu/0oYg7zUgJqb>.

¹²⁴ See TECHNICAL SUPPORT DOCUMENT 2010, *supra* note 123, at 39.

¹²⁵ See INTERAGENCY WORKING GRP. ON SOCIAL COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12866 (2013), available at <http://perma.cc/Z6LU-3L7C?type=pdf>.

of a green default (because of externalities), but that the selection of that default imposes net costs on consumers, including low-income people. Suppose too that low-income people are unlikely to opt out, perhaps because they are busy and occupied with other matters, perhaps because they are not confident that opting out makes the best sense. If low-income people would, in fact, be net losers, but would not opt out, the argument for a green default is weakened. If it is chosen, it may be important to explore the possibility of subsidizing low-income consumers. It may also be worth exploring the possibility of making the opt-out option both salient and clear, at least if this can be achieved without endangering the goals that led to the default rule in the first instance.

VI. ACTIVE CHOOSING, INFLUENCED CHOICE, AND PERSONALIZED DEFAULTS

As we have suggested, choice architects have a large number of options, and they might dispense with a default rule entirely. For example, they might require people to make an active choice between green and gray options. In the environmental area, as elsewhere, markets provide an array of active choices, and while the relevant architecture affects what consumers ultimately select,¹²⁶ no default rule need be involved. Consider a “menu approach” or “grocery store approach” to the question of energy efficiency and fuel economy, in which people have a wide range of options and may select what best fits their preferences and situations (perhaps with legal restrictions on the most energy-inefficient possibilities). With respect to goods that affect the environment, the menu or grocery store approach captures a great deal of the current situation. For example, there is active competition in the markets for motor vehicles and appliances, and energy efficiency is only one dimension along which producers compete. In those areas, no default rule is generally in place for private households.

A. *Neutrality and Active Choosing*

With active choosing, people are required to make an actual decision among the various options; they are not defaulted into any particular alternative. In the environmental domain, active choosing has a number of significant advantages over the opt-in model (requiring consumers to reject the default to arrive at the environmentally preferred result), and sometimes over the opt-out model as well.

¹²⁶ See, e.g., Brian Wansink & Andrew S. Hanks, *Slim By Design: Serving Healthy Foods First in Buffet Lines Improves Overall Meal Selection 2* (unpublished manuscript) (2013), available at <http://perma.law.harvard.edu/0AR1Q16FzqS?type=pdf>.

1. *Green or Gray by Choice?*

The first point is that because an actual decision is required, active choosing overcomes inertia. Suppose that people are using gray energy not because they have affirmatively decided to do so, but because gray is the default and they have not focused on the options. If inertia (and procrastination) are playing a significant role, active choosing may be far better than opt-in, because it will require consumers to incur effort costs that might otherwise lead them to focus on other matters. As a result, active choosing promotes learning and informed decisionmaking, which might be especially valuable in this context.

Active choosing is also a safeguard against uninformed or self-interested choice architects. When choice architects lack relevant information, such that the chosen rule might be harmful to some or many, there are significant advantages to active choosing. If public officials are biased or inadequately informed, and if the default rule is no better than a guess, then that rule might lead people in the wrong direction. We have seen that the choice between green and gray defaults may well create serious empirical challenges. In the face of those challenges, choice architects face a serious knowledge problem, and the best route might be to ask consumers what they would like (again, in the absence of significant externalities). And if choice architects are pursuing their own interests, there may be especially good reasons for active choosing.

There is also a strong argument against a default rule and in favor of active choosing when self-interested private groups are calling for government to select a default that would not benefit those on whom it is imposed. In the environmental context, the choice of energy sources may well invite interest-group jockeying, in which self-interested producers argue vigorously on behalf of a default rule that would benefit them. Active choosing would reduce the risks on this count, because it would not allow public officials to default consumers into any particular source.

In addition, active choosing appropriately handles heterogeneity. We have emphasized that in the environmental area, people have diverse preferences and strike different balances. As compared with either opt-in or opt-out, active choosing can have major advantages when the relevant group is heterogeneous, such that a single approach is unlikely to fit diverse tastes, values, and circumstances. We return to the issue of personalization below.¹²⁷

With respect to default rules, there are also questions of feasibility, and these may argue in favor of active choosing. It is important to see that a default rule is most feasible to implement when consumer choice already occurs, or can easily be made to occur, on some kind of *interface* (e.g., on paper or electronically). In such cases, choice architects should be able to establish a default rule by placing it on the existing interface, or by adopting an interface on which the default rule is established. But in other cases, that task may be far more challenging. Suppose, for example, that choice architects, focused on environmental protection and public health, are considering the creation of default

¹²⁷ See *infra* note 140 and accompanying text.

rules for consumer choices at appliance stores, grocery stores, and concession stands at movie theaters. In such settings, is it even possible to enlist default rules? How?

To be sure, choice architecture might be devised to make particular choices more accessible or salient, and the relevant design might well have significant effects on what people select.¹²⁸ For example, visible, safe, and attractive bicycle lanes could make it more appealing for people to use bicycles than to drive cars, and well-maintained public transportation systems can have a similar effect. “Green design,” exploiting accessibility and salience, can be seen as a close cousin of default rules, but it is not the same thing.

Quite apart from this point, sensible default rules are hard to establish for many routine decisions, simply because of the many considerations that diverse people take into account in making those decisions, and because one size cannot possibly fit all. For example, the decision whether to rent a car or take a train, bus, or airplane for travel raises far more difficulty than the decision whether to use single- or double-sided printing. Potentially relevant factors include cost, safety, near-term externalities (e.g., traffic congestion), long-term externalities (e.g., greenhouse gas pollution), speed of travel, flexibility of departure and arrival time, consumer abilities (e.g., ability to drive), and simple taste. Consumers do not usually do a systematic cost-benefit analysis in making relevant choices; they rely on rules of thumb. It might well be prohibitively costly to organize any interface to establish workable default rules that reliably balance those interests for diverse members of the relevant population. For this reason, active choosing seems inevitable. To be sure, technological innovations may eventually reduce these problems, not least through the use of personalization, taken up below.¹²⁹

2. *Active Choice Is Not a Panacea*

Notwithstanding its important advantages and the frequent appeal of the menu approach, active choosing will sometimes run into legitimate objections, especially in the environmental context. The initial objection is not obscure: In the face of significant externalities, it may seem odd to ask consumers to choose for themselves. Of course, some consumers may attend to those externalities and make their selections accordingly. Social norms, self-perception, and signaling may well incline them in that direction. But if a central goal is to reduce air pollution and emissions of greenhouse gases, active choosing may well be inadequate. An analysis of costs and benefits may show that a green default rule, or even a mandate or ban, is preferable.

An independent problem is that active choosing can impose large burdens on choosers. That burden may be costly or unwelcome. Suppose that an environmental question is unfamiliar and complicated. Suppose that consumers lack

¹²⁸ See BRIAN WANSINK, *SLIM BY DESIGN: MINDLESS EATING SOLUTIONS FOR EVERYDAY LIFE* (forthcoming 2014).

¹²⁹ See *infra* note 140 and accompanying text.

information or experience. In the context of energy choices, many consumers may welcome a default, which will relieve them of the duty of having to focus on an issue that they would like to ignore. In fact, there is a risk that active choosing may turn out to be harmful to the most disadvantaged in circumstances in which they are prone to error.¹³⁰ A well-chosen default rule, suited to the particular circumstances of the disadvantaged, may be better than active choosing in cases that involve (for example) people who lack English proficiency or formal education.

At the same time, active choosing can impose large burdens on providers. Defaults can be desirable and even important for those who provide goods or services. Without default rules, significant resources might have to be devoted to patient, tedious explanations of various options, with consumers or users who might not welcome the exercise. Those who purchase computers or tablets benefit from a series of default settings that they may not understand, certainly at the time of initial purchase.

A final point is that active choosing can increase errors. The goal of active choosing is to make people better off. But if the area is unfamiliar, highly technical, and confusing, active choosing might have the opposite effect. If consumers are required to answer a set of technical questions about energy options, and if the choice architects know what they are doing, then people will probably enjoy better outcomes with defaults. Perhaps it would be best to rely on experiments or pilot studies that elicit choices from informed people, and then to use those choices to build defaults. But if choice architects have technical expertise and are trustworthy, there is a question whether this exercise would be worthwhile.

It is true that the use of a default rule might seem paternalistic, certainly as compared with active choosing.¹³¹ But default rules preserve freedom of choice, and for that reason, constitute a very mild form of paternalism. A full discussion of paternalism and its limits would take us well beyond the present topic, but if the default rule would capture people's informed preferences, while also allowing them to go their own way, it is hard to find a basis for objection.¹³²

3. *A Very Simple Conclusion: Decision Costs and Error Costs*

The choice between default rules and active choosing turns on an assessment of the costs of decisions and the costs of errors. If choice architects have good reason to be confident about the preferred default, they should select it, at least if it is feasible to do so. If the assessment is difficult, and if their judgment

¹³⁰ SENDHIL MULLAINATHAN & ELДАР SHAFIR, *supra* note 87, at 147–157 (discussing effects of limited “bandwidth” on decisions by low-income people).

¹³¹ See RICCARDO REBONATO, *TAKING LIBERTIES: A CRITICAL EXAMINATION OF LIBERTARIAN PATERNALISM* 153–209 (2012) (objecting to the paternalism of default rules and related approaches).

¹³² See *Storrs Lectures*, *supra* note 115, at 1867–90 (defending mild forms of paternalism); CASS R. SUNSTEIN, *WHY NUDGE? THE POLITICS OF LIBERTARIAN PATERNALISM* (forthcoming 2014) [hereinafter *WHY NUDGE?*].

is highly tentative, they should rely on active choosing, as long as the externalities are not large.

B. Influenced Active Choosing

It is possible to imagine many variations on active choosing. For example, active choosing might be “enhanced,” or influenced, in the sense that one of the options might be highlighted or favored, perhaps through the use of behaviorally informed strategies.¹³³ If choice architects intend to avoid a default rule but nonetheless want to promote selection of a green option, they might list it first, or use bold or a large font, or adopt pictograms or descriptions that make it especially salient or appealing.

Consider a relevant study in which choice was influenced by enlisting loss aversion to discourage selection of the option disfavored by the experimenters.¹³⁴ The experimenters introduced several different messages in the following way:

*We would like you to imagine that you are interested in protecting your health. The Center for Disease Control indicates that a flu shot significantly reduces the risk of getting or passing on the flu virus. Your employer tells you about a hypothetical program that recommends you get a flu shot this Fall and possibly save \$50 off your bi-weekly or monthly health insurance contribution cost.*¹³⁵

In the *opt-in condition*, people were asked to “Place a check in the box if you will get a Flu shot this Fall.”¹³⁶ In a *neutral active choice condition*, people were asked to “Place a check in one box: I will get a flu shot this Fall or, I will not get a flu shot this Fall.”¹³⁷ With *enhanced or influenced choice*, people were asked to choose between two alternatives: “I will get a Flu Shot this Fall to reduce my risk of getting the flu and I want to save \$50 or, I will not get a Flu Shot this Fall even if it means I may increase my risk of getting the flu and I don’t want to save \$50.”¹³⁸

Compared to opt-in, the active choice condition led to a significant increase in the percentage of people who would get a flu shot — and the percentage was highest when active choice was influenced.¹³⁹

We could easily imagine analogues in the environmental context. If a green default is rejected, but if there is nonetheless good reason to promote the green option, loss aversion and framing might be enlisted to encourage people to select it. The result would almost certainly be to increase the number of

¹³³ See Punam A. Keller et al., *Enhanced Active Choice: A New Method to Motivate Behavior Change*, 21 J. CONSUMER PSYCHOL. 376, 378 (2011).

¹³⁴ *Id.* at 379.

¹³⁵ *Id.*

¹³⁶ *Id.*

¹³⁷ *Id.*

¹³⁸ *Id.*

¹³⁹ *Id.*

people who choose that option. The general point is that active choosing can be more or less neutral with respect to green and gray options. As the choice architect becomes decreasingly neutral, active choosing starts to look closer to a default rule.

C. *Green Personalization? (Gray Personalization?)*

Thus far we have been speaking as if default rules apply to all of a relevant population (“mass defaults”), but some default rules are highly personalized. Personalized defaults draw on available information about which approach is sought by, or best suits, different groups of people, and potentially each individual person, in the relevant population. In the context of travel preferences, personalized defaults are increasingly familiar. A website might know where you like to sit, which airline you prefer, and how you like to pay. A bit like a close friend, a sibling, or a partner, it defaults you into your preferred choices while allowing you to opt out.¹⁴⁰

In time, the same will be possible for a wide range of consumer products. Personalization might also be possible for choices that affect the environment. Choice architects might know, for example, that certain people like single-sided or double-sided printing, or are highly likely to be drawn to green or gray energy. The best evidence would be the people’s past choices. If consumers have made green choices in the past, we might expect that they will do so in the future, and set defaults accordingly (while of course allowing them to opt out).

Lacking that evidence, choice architects might know relevant demographic or other factors, suggesting that certain people or certain communities would or would not prefer green energy. If the goal is to reflect the likely choices of consumers, personalized default rules have significant advantages. But a potential problem remains: If there are significant externalities, the interests of choosers are not the only consideration, and the default rule should be chosen only after consideration of the full set of social effects.

VII. A FRAMEWORK FOR CHOICE ARCHITECTS

We have now identified a large number of options that choice architects might consider, and it will be useful to offer a brief sketch of a general framework, based on the discussion thus far, that might be used to select among the various options. The framework is designed for situations in which environmental factors are particularly relevant, but it might well be adapted more generally.

Choice architects might be in a position to choose among a continuum of nine stylized possibilities, marked from most green to most gray: (1) green mandate or ban; (2) green default with costly opt-out; (3) green default with

¹⁴⁰ See Johnson et al., *supra* note 21, at 491 (discussing “sensory defaults” and “predictive defaults”).

costless opt-out; (4) active choosing with pro-green presentation of some kind; (5) active choosing with neutral presentation; (6) active choosing with pro-gray presentation of some kind; (7) gray default with costless opt-out; (8) gray default with costly opt-out; (9) gray mandate or ban.¹⁴¹ As we have seen, an appealing general framework is rooted in some kind of cost-benefit analysis, focusing on decision costs and error costs (and bracketing some of the debates over that contested idea¹⁴²). Enforcement costs are, of course, part of that analysis, and choice architects should also consider the independent value of freedom of choice and the costs associated with overriding it (“autonomy costs”).¹⁴³

An implication of the discussion thus far is that without a market failure of some sort, the argument for any kind of mandate or ban is weak.¹⁴⁴ If the interests of choosers are all that is at stake, their own freedom should generally be preserved, so long as their choices are properly informed. On the choice architecture continuum, this conclusion rules out the more aggressively regulatory poles (1) and (9). The choice among the remaining options depends on an analysis of which approach is in the interest of choosers and the confidence that choice architects have about their conclusion on that count. If they have reason for real confidence that a green or gray default is best (from the standpoint of all or most informed choosers), they should choose that default (perhaps with personalization, if feasible). In such cases, the decision costs and error costs associated with active choosing may well be too high to justify that approach.

If choice architects lack such confidence, the set of reasonable options narrows to points (4) through (6) (the middle of the continuum). Active choosing with neutral presentation is appealing if choice architects do not know which approach is best, perhaps because they lack information, perhaps because the relevant population is heterogeneous. If choice architects know enough to favor one or another approach, but not enough to set a default, they might use active choosing with some kind of non-neutral presentation, meant to incline choosers in a particular direction.

Of course, the analysis must be different in the face of externalities. If the decisions of choosers would impose significant costs on others, the argument for a mandate or a ban is significantly strengthened and may ultimately be convincing (with an acknowledgement that mandates and bans come in differ-

¹⁴¹ We have noted that the ideas of “green” and “gray” are not dichotomous, and include possibilities that can themselves be arrayed along a continuum; the same is true of “costless” and “costly” opt-out.

¹⁴² See generally ADLER, *supra* note 121; see also MATTHEW D. ADLER & ERIC A. POSNER, *NEW FOUNDATIONS OF COST-BENEFIT ANALYSIS* 68–80 (2006).

¹⁴³ See WHY NUDGE?, *supra* note 132; Bjorn Bartling et al., *The Intrinsic Value of Decision Rights* 5 (Univ. of Zurich Dep’t of Econ., Working Paper No. 120, 2013), available at <http://perma.law.harvard.edu/0LRJEhP32gQ> (noting that entrepreneurs and scientists “effectively forego earnings for their self-employment,” suggesting that individuals may, in some circumstances, suffer a monetizable loss as the result of a reduction in their autonomy).

¹⁴⁴ A behavioral market failure might justify a mandate or ban, but even in the face of such a failure, freedom-preserving responses are usually best. See *Storrs Lectures*, *supra* note 115, at 1861.

ent forms, and some approaches are less costly and more choice-preserving than others¹⁴⁵). Sometimes, however, mandates or bans are not feasible as a political matter, and sometimes there is a reasonable dispute about whether they are justified. In such cases, there is a serious argument for a green default, even if it is not necessarily in the interest of choosers themselves. The strength of that argument depends on whether the externalities appear large and whether choosers would be significantly helped, or instead hurt, by a green default. A form of cost-benefit analysis is indispensable here as well. In the face of externalities, the “less green” points on the continuum lack much appeal, and the only potential argument in their favor is that the externalities are modest and that choosers would be far better off with a grayer approach.

Distributional questions must also be considered. If a mandate would have serious adverse effects on those at the bottom of the economic ladder, those effects should be taken into account.¹⁴⁶ As we have suggested, a personalized approach, exempting those who cannot easily bear the relevant costs, might well make sense. And in the face of a well-justified mandate or ban, perhaps steps could be taken to give economic help to those who need it.

VIII. CONCLUSION

Economic incentives are of course exceedingly important, but with respect to the environment, consumer choices are greatly affected by the prevailing choice architecture, including social norms, salience and accessibility, and the applicable default rule. When the automatic choice is not green, it might well take a great deal of work for people to identify and to select environmentally preferable approaches. Even when that work seems relatively easy, people may not do it (in part because of inertia and procrastination). The results may include both economic and environmental harm.

Green defaults are easiest to justify when they will simultaneously save money and protect the environment; as potential examples, consider motion detectors, automatic “off” defaults for energy use, and double-sided printing defaults. In some cases, however, green defaults will be costly to consumers. For example, smart grids and smart meters have potentially large benefits, but they may also impose economic and other costs, including those that arise from traceability and reduced data privacy. No one should favor a situation in which choice architects select defaults that cost consumers a great deal and deliver only modest environmental benefits. Some of the hardest cases arise when green defaults would cost consumers a nontrivial amount, but also appear to produce significant environmental benefits.

¹⁴⁵ See, e.g., A. DENNY ELLERMAN ET AL., *MARKETS FOR CLEAN AIR: THE U.S. ACID RAIN PROGRAM* 314–20 (2000).

¹⁴⁶ See John D. Graham, *Saving Lives Through Administrative Law and Economics*, 157 U. PA. L. REV. 395, 516–23 (2008) (discussing the importance of considering the effects of regulations on low-income people).

In such cases, choice architects have two reasonable options. The first is to call for active choosing (and take steps to inform consumers in the process). The second is to assess costs and benefits and to select the default rule on the basis of the assessment. The choice between the reasonable options depends on whether choice architects have justified confidence in their assessment of costs and benefits. If they do, and if the assessment demonstrates that the green default is unambiguously superior, they should choose it. The argument for active choosing becomes stronger as that assessment becomes more ambiguous, speculative, and tentative.

However the hardest cases are resolved, the basic point is clear. In important contexts, outcomes are harmful to the environment and also to the economy, not because consumers have actively chosen to impose those harms, but because of the relevant choice architecture. In some cases, individual consumers cannot change the architecture, and some kind of collective action, whether private or public, is necessary to supply a corrective. In other cases, the architecture is effectively a default rule, as in the cases of single-sided printing and gray energy sources. In such cases, active choosing may well have significant advantages.

At least some of the time, however, the best approach is automatically green. Well-chosen default rules, attentive to the full set of costs and benefits, are likely to emerge as a significant contributor to efforts to protect human health and the environment — a tool in the regulatory repertoire that is potentially more effective, in many cases, than either information and education or substantial economic incentives.