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The Argument in Brief

I have four adult sons, none of them a smoker. I once told a friend that if they'd grown up when I did, at least two of them would have taken up the habit.

My son Chris, who was present during this conversation, immediately asked, "Which two?" "David (my oldest), almost certainly," I said, "and probably also Hayden (my youngest)." I added that Jason would have been unlikely to smoke no matter when he'd been born.

Chris feigned offense. He'd been a musician in New York City for almost a decade, where, in his circle, smoking was almost as fashionable as when I was young. He thought that he, too, might have become a smoker if he'd grown up when I did.

When I started smoking at age fourteen in 1959, many of my friends had already been smoking for several years. My parents didn't want me to smoke, but as they were smokers themselves, their objections rang hollow. In those days, more than 60 percent of American men were smokers, and almost as many women. Smoking was just something that most people did.

Yet even then, most people who smoked didn't seem happy about it. Today, roughly 90 percent of smokers say they regret having started, and about 80 percent express a desire to quit.[1] Almost half

of all smokers try to quit each year, but fewer than 5 percent succeed.[2] Several of my own attempts to quit failed. So I count myself fortunate to have abandoned the habit before leaving for college.

The reason I succeeded in raising nonsmoking children and my parents did not is that today's environment is different from the earlier one. By far the strongest predictor of whether someone will smoke is the percentage of her closest friends who smoke. If that number rises from twenty to thirty, for example, the probability that she will smoke rises by about 25 percent.[3] Whereas most of my teenage friends were smokers, relatively few of my sons' friends were. In 2017, only 18.6 percent of American men were smokers, only 14.3 percent of women.[4]

Today's environment is different mostly because of the taxes, prohibitions, and other regulatory measures we have taken to discourage smoking. In the 1950s, a pack of Camels could be had for as little as twenty-five cents in some parts of the country (about $2.15 in today's dollars). But in many areas today, taxes have pushed that price north of $10, and in New York City a pack of cigarettes cannot be sold legally for less than $13. In the intervening years, we have also banned smoking in restaurants, bars, and public buildings. Some jurisdictions have prohibited smoking even in outdoor public spaces. We have spent billions of dollars on media campaigns to discourage smoking.

Given the long-standing American hostility to social engineering, each of these steps faced heavy pushback. When called on to justify them, regulators offered their time-honored response: restricting individual freedom is often the only way to prevent undue harm to innocent bystanders.

By a wide margin, the example of harm to others most often cited by regulators has been that secondhand smoke causes injuries that bystanders cannot easily avoid. This explanation resembles the rationale for requiring catalytic converters on cars: we need them to prevent pollution that would otherwise cause undue harm to others.

Even strict libertarians concede the legitimacy of this rationale in principle. As John Stuart Mill, perhaps the Western world's most

eloquent champion of individual freedom, memorably wrote in *On Liberty*, "the only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others. His own good, either physical or moral, is not sufficient warrant. . . . Over himself, over his own body and mind, the individual is sovereign."[5] That a desire to parry libertarian objections influenced regulators to invoke secondhand smoke in defense of antismoking measures is also consistent with their insistence that their aim is not to protect smokers from harming themselves. And health hazards from exposure to secondhand smoke have in fact been conclusively documented.[6]

But are those hazards sufficient to justify extreme measures to discourage smoking? Unless you worked in a crowded bar with no ventilation, the damage caused by secondhand smoke was extremely small compared to that from being a smoker. For example, more than 85 percent of American deaths from lung cancer are attributable to smoking, but only a fraction of the remainder has been linked to passive smoke exposure. In terms of their actual impact, then, smoking regulations do vastly more to protect smokers from themselves than to protect innocent bystanders from secondhand smoke.

A second rationale for regulating smoking was stated in the lawsuits brought against tobacco companies by forty-six state attorneys general and others in the 1990s. Damage claims in these suits were based on the assertion that smoking imposed a burden on Medicaid, which is paid for by taxes on smokers and nonsmokers alike. These lawsuits resulted in the Master Settlement Agreement of 1998, judgments from which had the effect of raising the price of cigarettes by about twenty-five cents a pack.[7] But considerable controversy remains about whether smokers do in fact burden taxpayers. As the economist Kip Viscusi has argued, for example, smokers tend to die early, around age sixty-five on average, thereby saving both federal and state agencies a great deal of money.[8]

The narrow focus on secondhand smoke and fiscal effects greatly understates the harm that smokers impose on others. By far the greatest injury caused by someone's decision to become a smoker is the harm caused by making others more likely to smoke as well.

When someone becomes a smoker, every friend of that person will have one more smoker in his or her peer group. Every member of every one of those groups will then become more likely to smoke. Those who take up the habit will then make each member of their own peer groups more likely to smoke, and so on. And in addition to causing still others to become more likely to smoke, every one of those new smokers will inflict the real, albeit smaller, harms associated with secondhand smoke.

In short, when a regulation discourages someone from smoking, the harm to others that would have been caused by that person's secondhand smoke or by pressure on government health-care budgets is only a minuscule percentage of the total harm actually prevented.

Today's environment is different from the one I grew up in mostly because of the taxes and other regulatory measures we have adopted to discourage smoking. Yet more than 15 percent of American adults still smoke, and in some groups—low-income adults, for example—the share is considerably higher. Should regulators enact even stricter measures against smoking? On the strength of the harm caused by budgetary effects and secondhand smoke alone, that would be a hard sell. But the balance of costs and benefits looks different if we include a full accounting of the harm caused by behavioral contagion.

Many opponents of regulation are quick to argue, however, that behavioral contagion is not a proper justification for government intervention. It is one thing, they say, to protect someone whose asthma is aggravated by secondhand smoke, but quite another to penalize people merely because their behavior makes others more likely to smoke. People have agency, they insist, and it is the individual's responsibility, not the state's, to decide whether to smoke.

These observations have obvious rhetorical force. People faced with the decision of whether to smoke do indeed have greater agency than those who are damaged by secondhand smoke. And all else equal, the regulators' burden of proof clearly should be heavier in the first case than in the second.

Yet smoking that results from behavioral contagion also harms many people who have no practical means to avoid injury. Consider,

for example, parents who have already taken every reasonable step to discourage their children from smoking. Given what we now know about the health consequences of smoking, could anyone second-guess their pursuit of this goal? Yet it is a statistical certainty that more of them will fail to achieve it in environments with higher proportions of smokers. These parents, like the victims of second-hand smoke, have no way to escape the anguish they suffer from failure to achieve their goal. Although that harm may be hard to quantify, it is surely considerable. And parents aren't the only ones who suffer. Every smoker who dies prematurely also injures a host of friends and other relatives.

Consider, too, that stricter measures to discourage smoking appear to make even smokers themselves happier. In a 2005 study, the economists Jonathan Gruber and Sendhil Mullainathan found that people with a higher propensity to smoke were significantly happier in places with higher cigarette taxes.[9] That finding seems less strange when we recall that most smokers wish they'd never started, and that stricter regulations make their efforts to quit more likely to succeed.

When legitimate aspirations are in conflict, people's freedom to do as they please will be limited no matter which way we turn. The claim that behavioral contagion constitutes a legitimate rationale for regulatory intervention against smoking is thus difficult to dismiss with slogans about individual rights and agency. Clearer thinking about behavioral contagion requires careful analysis of the trade-offs between competing types of freedom, which in turn requires difficult conversations about free will and other thorny philosophical issues.

Are these conversations worth having? This question becomes easier to answer once we examine the central role that behavioral contagion plays not just in the choice of whether to smoke, but also in a host of other important life decisions.

The environments we inhabit shape our behavior in powerful ways, sometimes for the better, but often for the worse. Behaviors that promote good health, which include eating prudently and getting regular exercise, are often difficult to muster. The benefits from these behaviors, after all, come not right away but only after substantial delay, and humans share with most other animals a

tendency toward myopia. We place far too much emphasis on immediate rewards and penalties, far too little on those that occur with significant delay. For most people, healthful behavior is easier to achieve in communities where such behavior is widely practiced. In contrast, a recent study found that members of military families who are posted to places with high obesity rates were more likely than others to become obese themselves.[10]

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As social psychologists like to say, "It's the situation, not the person." What they mean is that when we try to explain what others do, we often place undue emphasis on internal factors, such as traits of character or personality, and too little emphasis on external or situational factors. Psychologists call this the *fundamental attribution error*.

The error was on vivid display in experiments conducted in the 1950s by the psychologist Solomon Asch.[11] His aim was to discover the extent to which certain environmental cues might influence people to ignore the clear evidence of their own senses. In one experiment, a subject and seven of Asch's confederates were asked which of the three lines in the box on the right side of figure 1.1 is the same length as the line in the box on the left. As even a brief glance confirms, line 2 is the only possible correct answer. Yet when Asch instructed his seven confederates to say line 3 had the same length, the subject agreed with them 37 percent of the time. When others were asked the same question in the absence of the experimenter's confederates, the error rate was less than 1 percent.

Virtually all people who read about the Asch experiments feel confident that their own judgments could not have been manipulated in this way. Yet as Asch demonstrated, a substantial number of them are almost certainly wrong about that. What people say and do often depends surprisingly heavily on social circumstance.

A decade later, the psychologist Stanley Milgram conducted a series of experiments that further dramatized the power of social context.[12] The laboratory setting was one in which the experimenter

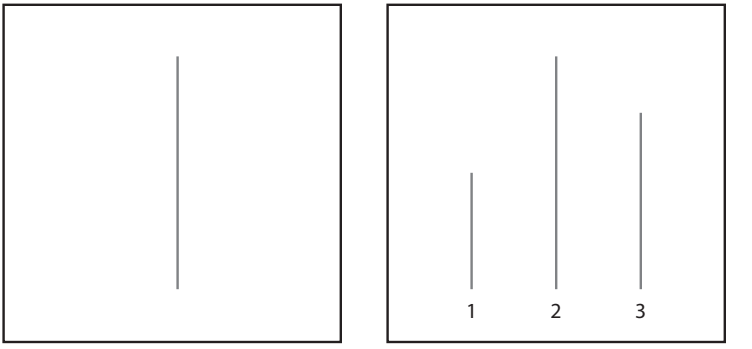

FIG. 1.1. The Asch experiment. Adapted from Solomon E. Asch, "Opinions and Social Pressure," *Scientific American* 193, no. 5 (November 1955): 31–35.

enlisted a subject to help administer a learning exercise. Three people were involved in each trial. The experimenter (Milgram himself, labeled E in figure 1.2), the "teacher" (who was in fact the subject of the experiment, labeled T in the diagram), and the "learner" (who was described as another subject but was actually Milgram's confederate, labeled L in the diagram). The experimenter posed a question to the learner, and when the learner responded correctly, the experimenter asked another question. But when the learner responded incorrectly, the experimenter instructed the teacher to press a button on a machine that would administer an electric shock to the learner. (Unbeknownst to subjects, no shocks were actually delivered.)

The teacher was told that with each additional incorrect answer given by the learner, the machine would increase the intensity of the shock delivered. And as subjects continued to administer successive shocks, learners began to cry out as if in agony. Yet 65 percent of subjects continued to administer the shocks up to the highest level, which they were told was 450 volts.

Most people who read about these experiments say confidently that they themselves would have discontinued administering the shocks much earlier than Milgram's subjects had. Yet there is no reason to believe that those subjects were any less empathic or morally responsible than others.

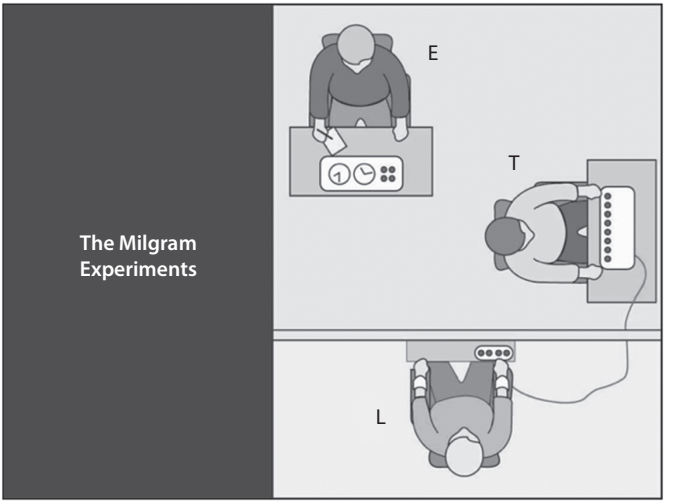

FIG. 1.2. Adapted from Stanley Milgram, "Behavioral Study of Obedience," *Journal of Abnormal and Social Psychology* 67, no. 4 (1963): 371–378.

The more likely explanation is that many who read about this experiment fall victim to the fundamental attribution error. We greatly underestimate how the details of social context—in this case, being instructed to act in a specific way by an established authority figure—would have influenced our own behavior. (Many of Milgram's subjects were in fact visibly upset by the learner's apparent suffering, and it is almost certain that this experiment would not be approved by today's human subjects committees.)

The power of context to shape behavior has long been evident to astute social observers. In an 1842 speech delivered to the Springfield Washington Temperance Society in Illinois, for example, Abraham Lincoln urged his listeners to reflect on the power of social influence. The temperance movement of that day stressed character flaws as the most important explanation for problem drinking, but in the following passage, Lincoln, then thirty-three years old, argued for a more context-oriented approach:

> But it is said by some, that . . . [social] influence is not that powerful engine contended for. Let us examine this. Let me ask the man

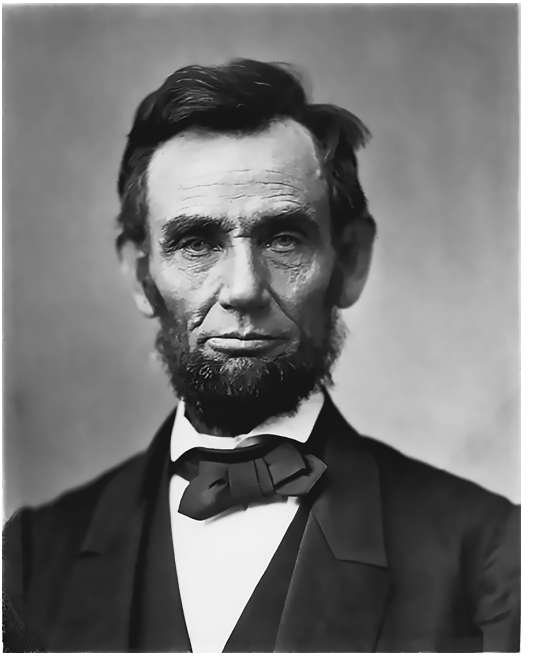

FIG 1.3. Alexander Gardner, *Abraham Lincoln*, matte collodion print, November 1863.

> who could maintain this position most stiffly, what compensation he will accept to go to church some Sunday and sit during the sermon with his wife's bonnet upon his head? Not a trifle, I'll venture. And why not? There would be nothing irreligious in it: nothing immoral, nothing uncomfortable. Then why not? Is it not because there would be something egregiously unfashionable in it? Then it is the influence of fashion; and what is the influence of fashion, but the influence that other people's actions have [on our own] actions, the strong inclination each of us feels to do as we see all our neighbors do? Nor is the influence of fashion confined to any particular thing or class of things. It is just as strong on one subject as another.[13]

The results of the Asch and Milgram experiments clearly would not have surprised Mr. Lincoln.

Context matters in part because every human decision depends heavily on evaluative judgments, which in turn depend heavily on the contexts surrounding those judgments. Context shapes our judgments about mundane physical quantities, such as distance. Suppose, for instance, that you're driving with your six-year-old to visit her grandparents and she asks, "Are we almost there yet?" You'll say no if 10 miles remain on a 12-mile journey, but you'll say yes if those same 10 miles remain on a journey of 120 miles.

Context also shapes judgments about temperature. If someone asks whether it is cold out, your answer will be different if it's sixty degrees on a sunny March afternoon in Montreal from what it will be if it's a sixty-degree November evening in Miami. I grew up in Miami, and at high school football games on such evenings, we'd wear the heaviest coats we owned.

Although the link between context and evaluation is uncontroversial among behavioral scientists, its importance goes almost completely unacknowledged in many public policy discussions. In large part, that's because traditional economic models, which supply the theoretical underpinning of most policy discussions, completely ignore how context shapes human judgments.

In a move that resembles the willingness of Solomon Asch's subjects to ignore the clear evidence of their own senses, most of my fellow economists assume that people's purchases are completely independent of what others buy. Yet context clearly influences our evaluations of economic goods and services no less than it influences our evaluations of distance and temperature. Many car buyers, for example, want to purchase an automobile with spirited performance. But the same car that would have been experienced by most drivers as having brisk acceleration in 1950 would seem sluggish to drivers today. Similarly, a house of a given size is more likely to be viewed as adequate the larger it is relative to other houses in the same local environment. And an effective interview suit is simply one that compares favorably with those worn by other applicants for the same job.

Taking account of the link between context and evaluation does much to undermine Adam Smith's celebrated theory of the Invisible

FIG. 1.4. Findlay / Alamy Stock Photo.

Hand. Smith himself was actually much more circumspect about his theory than many of his most enthusiastic modern disciples, who insist that market forces can be trusted to harness narrow self-interest to create the greatest good for the greatest number.

This view of the Invisible Hand is greatly overblown. For example, consider business owners faced with the decision of what kinds of signs to erect. Is the mix they choose molded, as if by an invisible hand, to best serve the interests of the broader community? There are grounds for skepticism. Although judgments about what constitutes aesthetically pleasing urban landscapes are obviously contestable, there is broad agreement that business decisions often fail to produce them.

It would be a mistake, however, to conclude that the visual blight we see in some cities results from deficient aesthetic sensibilities, or from monopoly, or from other commonly cited market failures. In most cases, the problem is simply that a sign's ability to do its job

depends on context. To be noticed, it must stand out in some way from neighboring signs. If it sticks out farther, or is taller or brighter, than others, it succeeds. Otherwise, it fails. That simple fact explains why a visual cacophony of signs is the almost inevitable result of unfettered competition among rational business owners for the attention of passing motorists.

Of course, what some see as blight, others may see as evidence of the bracing vitality of capitalism. Disagreement about the efficacy of the Invisible Hand is all the more certain when, as here, individual interests conflict with those of broader groups. Each business owner wants a more conspicuous sign, but such signs are not necessarily best for the broader community.

Here, too, as in the case of smoking, the mere fact that a regulation limits the freedom of some people is not evidence that it is ill-considered. If case law is any indication, both business owners collectively and the broader communities they serve would often prefer that commercial signs be less costly and obtrusive than the ones we see in unregulated environments. Most cities, after all, enact zoning laws that limit the size, placement, and other features of signs, often with widespread support not just from citizens, but also from the very business owners constrained by those laws.

Are some zoning laws too heavy-handed or misguided in other ways? Undoubtedly. My point is only that when individual and collective interests are in conflict, slogans about rights and freedom provide little useful guidance. In these situations, it is often impossible to avoid harming one group without causing even greater harm to others. A well-considered position on regulations of this sort requires grappling with the relevant trade-offs between competing freedoms.

To forestall possible misunderstanding, I should emphasize that I am an enthusiastic admirer of the Invisible Hand. My assertion that it falls short of others' overblown claims for it is not to deny the importance of Adam Smith's insight. Others before Smith understood that firms develop product-design improvements and cost-saving innovations not to serve humanity, but to increase their profits by capturing market share from rivals. But what Smith saw more

clearly than others was that the story doesn't end there. Rivals are quick to copy new designs and improvements in production methods, and the resulting competition drives prices down to levels just sufficient to cover the new, lower costs of production. The ultimate beneficiaries of this process, Smith explained, are consumers, who enjoy a continuing stream of better and cheaper products. Smith's Invisible Hand is the most important single explanation for why incomes are so much higher today than they were throughout the bulk of human history. But that doesn't mean that market forces reliably harness self-interest to produce the greatest good for the greatest number.

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The argument I will defend in this book, implicit in several of the examples already discussed, is summarized in the following seven premises:

1. Context shapes our choices to a far greater extent than many people consciously realize.
2. The influence of context is sometimes positive (as when people become more likely to exercise regularly and eat sensibly if they live in communities where most of their neighbors do likewise).
3. Other times, the influence of context is negative (as when people who live amidst smokers become more likely to smoke, or when neighboring business owners erect ugly signs).
4. The contexts that shape our choices are themselves the collective result of the individual choices we make.
5. But because each individual choice has only a negligible effect on those contexts, rational, self-interested individuals typically ignore the feedback loops described in premise 4.
6. We could often achieve better outcomes by taking collective steps to encourage choices that promote beneficial contexts and discourage harmful ones.

7. To promote better environments, taxation is often more effective and less intrusive than regulation.

Among behavioral scientists, the first five of these premises are completely uncontroversial. It is only 6 and 7 that provoke disagreement.

Regarding 6, even when everyone acknowledges that behavioral contagion causes harm, as in the smoking example, it is often hard to reach consensus on collective actions that would modify the contexts that shape our actions. In part, the difficulty is that individual incentives and collective incentives often diverge so sharply. But objections to premise 6 are also rooted in the long American tradition of hostility toward regulations generally. Nor can there be any presumption that regulation always improves matters. Markets sometimes fail to deliver optimal results, but government interventions are also imperfect.

Premise 7 is controversial simply because many people dislike being taxed. Yet a moment's reflection reveals that the only interesting questions in this domain concern not whether we should tax but rather which things we should tax and at what rates. Whether you're a small-government conservative or an expansive progressive, tax revenue is necessary to pay for valued public services.

Currently, we raise much of our tax revenue by levies on activities that not only cause no harm to others but actually improve people's lives. Most of us, for example, think it a good thing when businesses hire more workers, yet we tax business payrolls heavily, which discourages hiring. A better option would be to use taxes to discourage activities that cause harm, including those that alter the contexts that shape our choices in unfavorable ways.

Context is heavily implicated, for example, in questionable decisions about safety. When my son Chris was fourteen, he had a serious bike accident. The emergency room physician who treated him showed me the helmet he had been wearing, the left front quadrant of which had been shattered. He told me that if Chris had not been wearing it, we would be discussing funeral arrangements instead of

the precautions necessary to prevent further injury to his broken collarbone.

Despite considerable effort, I had never been able to get Chris's older brothers to wear bike helmets. None of the other kids wear them, they correctly insisted, and unless I was physically present, they would often ride without one. I'm therefore extremely grateful to the New York State legislators who, several years after my older sons had left home, enacted a law requiring helmets for bicyclists under the age of eighteen. Except for that law, Chris probably would not be alive today.

Even many libertarians agree that paternalistic laws of this sort may be justified for minors, who often lack the experience and knowledge to make responsible decisions about their own well-being. But wisdom and immunity to peer pressure do not magically ignite at eighteen. On what grounds might such laws be justifiably applied to mature adults?

During a sabbatical year I spent in France, I worked with a colleague who rode helmetless through heavy Paris traffic during her forty-five-minute daily bicycle commute to our office. When I once teasingly suggested that concerns about fashion prevented her from wearing a helmet, she took umbrage. And in fairness, she was in fact the least fashion-conscious of the researchers in our office.

A few weeks later, however, she knocked on my office door to tell me about having tried on some bicycle helmets at Galeries Lafayette over the weekend. She confessed sheepishly that, on seeing herself in the mirror, she realized instantly that she would be unwilling to be seen in public wearing one. As Abraham Lincoln understood clearly, fashion is a force that affects even those who believe themselves least susceptible to it.

Some rationalize helmet requirements by saying that they save society the expense of caring for those who are injured in cycling accidents. Yet many such accidents result in deaths that are both premature and quick, obviating large government outlays for Social Security and chronic illness treatment under Medicare. On balance, those who ride without helmets probably save the government

money (as noted earlier, the same probably holds for people who smoke).

When I owned a motorcycle, I loved to ride with the wind in my hair and was glad that I lived in a state that didn't require helmets. Yet many of the same reasons for thinking that laissez-faire might not be our best choice with smoking seem also to apply with helmets. If my young Parisian colleague had been killed or seriously injured in a cycling accident in Paris, her friends and family members would have suffered grievous injury. And beyond having urged her to wear a helmet, they could have taken no other practical steps to avoid that injury.

Whether wearing helmets seems unfashionable depends on how many other people are wearing them. When a cyclist rides without one, she contributes—albeit imperceptibly—to the impression that wearing a helmet is unfashionable. Her choice thus entails not only potential harm to herself, but also a small increment in harm to others who are influenced by it. From the perspective of society as a whole, her own personal cost-benefit analysis makes riding without a helmet seem misleadingly attractive.

This way of framing the problem suggests that the most straightforward remedy is not to mandate helmets, but rather to make riding without one less attractive. For example, we could permit someone who wants to ride with the wind in his hair to pay a modest annual fee for a medallion that, when affixed to his cycle, would entitle him to ride legally without a helmet.

People for whom riding without a helmet is really an essential part of their cycling experience might find it worthwhile to pay this fee. But those who feel less strongly—in most cases, a substantial majority—would elect not to. And once enough people were seen with helmets, wearing one would no longer seem distressingly unfashionable. An added bonus is that each dollar collected from the fee would mean one dollar less that would need to be collected from taxes on beneficial activities. It's not a perfect solution, but it's far less intrusive and more flexible than mandating helmets for everyone.

Economists define *externality* as a cost or benefit incurred or received by third parties who have no control over its creation. Those who have taken a decent course in economics will recognize that my proposed solution to the helmet problem is exactly analogous to orthodox economic solutions for environmental externalities like air and water pollution. For those problems, the standard remedy is a tax on each unit—or, equivalently, a requirement to purchase a marketable permit for each unit—of effluent emitted. When economists first proposed this way of attacking the problem of acid rain in the 1960s, critics derided them for advocating giving rich firms a license to pollute to their hearts' content.

But that view reflects a complete misunderstanding of the economic forces that cause excessive pollution. When firms are permitted to discharge toxins into the air and water for free, they do so not because they derive pleasure from polluting, but rather because filtering out the toxins is costly. Put another way, firms in unregulated environments find polluting misleadingly attractive. Charging them for each unit they emit attacks the problem by making polluting less attractive.

Almost thirty years elapsed between economists' first calls for marketable sulfur dioxide permits and the actual implementation of their proposal under amendments to the Clean Air Act in 1990. But once the new incentives were in place, firms quickly discovered effective ways of reducing their sulfur dioxide emissions. The acid rain problem, which once dominated the news, was solved much more quickly and cheaply than it would have been under a traditional system of prescriptive regulation.

Society's interest is in achieving any given pollution-reduction target at the lowest possible cost. Pollution taxes serve that goal by concentrating abatement efforts in the hands of firms that can reduce their emissions most cheaply. That's because firms with access to the least expensive clean production processes will find it attractive to adopt them rather than to pay the higher taxes they would owe if they stuck with their current processes. Firms that have no such alternatives will continue to pollute and be taxed accordingly. In this

manner, a tax on pollution achieves the target reduction levels at the lowest possible cost.

Precisely the same logic supports fees for those who cycle without helmets and taxes on those who smoke cigarettes.

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Compelling evidence suggests that context shapes our behavior in ways more powerful than most people realize, sometimes for the better, but often for the worse. The link between context and choice is also reciprocal: context not only shapes our choices but also is the collective result of them. The effect of each individual choice, however, is too small to seem worth considering. As a result, we face a pervasive set of "context externalities," or "behavioral externalities." Behavioral externalities are analogous in every respect to traditional externalities like air and water pollution.

Many of the problems we currently attack with taxes and regulations, such as smoking, have been portrayed as traditional externalities. But as careful examination of the sources of damage from smoking makes clear, the most important harms that antismoking measures prevent are caused by a behavioral externality.

In the chapters ahead, I will describe evidence that behavioral externalities plague not just decisions about whether to smoke, to erect ugly signs, and to cycle without helmets, but also a host of other important choices. In each case, we will see, the resulting losses are large in absolute terms. But in two specific domains, they are larger than in other cases by many orders of magnitude.

The first concerns how behavioral contagion influences overall spending patterns. Although economists generally assume that people are the best judge of how to spend their incomes, it is now well understood that rational individual spending decisions are often mutually offsetting in ways analogous to military arms races. Nations build additional weapons hoping to gain an edge on rivals, but when all follow that strategy, the balance of power is unaffected. All would be better off if each spent less on weapons and more on schools and

hospitals. Yet unilateral disarmament would put a nation's political sovereignty at risk.

In similar fashion, individually rational spending decisions are often counterproductive. For example, the wealthy build larger mansions in the perfectly rational expectation that they will find the additional living space sufficiently pleasurable to merit its cost. But the standards that define "spacious" are quintessentially context-dependent. When all mansions expand, the bar shifts accordingly. Beyond some point, larger properties entail greater hassle, so the additional outlays may actually leave the rich less happy than before. As we will see, the economic waste associated with mutually offsetting spending patterns of this sort likely exceeds several trillion dollars a year in the United States alone.

But we will also see that even losses on that scale pale in comparison with those we are on track to experience from climate change. According to one authoritative estimate, global per capita income projects to be almost one-quarter lower by century's end than it would have been in the absence of warming.[14] The good news is that a clearer understanding of behavioral contagion's role in both greenhouse gas emissions and wasteful spending patterns helps identify ways to avert both sources of loss.

When the problem is that a specific context encourages behavior with negative consequences, the best solution will often be to alter the individual incentives that gave rise to that context in the first place. This approach has worked spectacularly well in the domain of smoking, despite our having offered spurious reasons for the actual policies we have adopted. Our policy responses are also bound to be more effective in other areas if they rest directly on our best understanding of the actual sources of the problems we're trying to solve.

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