In *Micromotives and Macrobhavior*, Thomas Schelling observes that hockey players, left to their own devices, almost never wear helmets, even though almost all of them would vote for helmet rules in secret ballots. Not wearing a helmet increases the odds of winning, perhaps by making it slightly easier to see and hear, or perhaps by intimidating opposing players (on the view that it is not safe to challenge someone who is crazy enough to play without a helmet). At the same time, not wearing a helmet increases the odds of getting hurt. If players value the higher odds of winning more than they value the extra safety, it is rational not to wear helmets. The irony, Schelling observes, is that when all discard their helmets, the competitive balance is the same as if all had worn them.

The helmet problem is an example of what we may call a *positional externality*. The decision to wear a helmet has important effects not only for the person who wears it, but also for the frame of reference in which he and others operate. In such situations, the payoffs to individuals depend in part on their positions within this frame of reference. With hockey players, what counts is not their playing ability in any absolute sense, but how they perform relative to their opponents. Where positional externalities (or indeed, externalities of any other sort) are present, Schelling has taught us, individually rational behavior often adds up to a result that none would have chosen.

Positional externalities frequently take the form of the familiar prisoner's dilemma. Consider two hockey teams—say, the Bruins and Rangers—each of which can choose to wear helmets or not. The four possible combinations of choices and the assumed rankings of each for the two teams are shown in table 2.1. The key assumption implicit in these rankings is that members of each team value an increase in their odds of winning more than they value the safety increment pro-
Table 2.1
The helmet decision as prisoner's dilemma

<table>
<thead>
<tr>
<th>Wear helmets</th>
<th>Don't wear helmets</th>
</tr>
</thead>
<tbody>
<tr>
<td>第二 best for each</td>
<td>Best for Bruins, Worst for Rangers</td>
</tr>
<tr>
<td>Best for Rangers</td>
<td>Third best for each</td>
</tr>
</tbody>
</table>

vided by helmets. Given these rankings, the dominant strategy for each team is to go without helmets. Yet this combination of choices is worse for both teams than the alternative in which each team wears helmets. And hence the attraction of a helmet rule.

As Schelling demonstrated in *Micromotives*, positional externalities cast a broad net. They affect how we choose seats in auditoriums, how we sort ourselves by race and sex, how we choose mates, even how we might choose genes for our children. In this essay, I augment Schelling's list. My additions are organized into two parts. First I discuss actions that alter some important frame of reference affecting other people or organizations, which I call "positional externalities between agents." Then I examine actions that alter a frame of reference important for the actor himself in the future ("positional externalities within agents"). Positional externalities of both types seem to play some part in explaining a variety of behavior, norms, laws, and institutions. To forestall unnecessary quarrels, I emphasize at the outset that positional externalities need not be the only, or even the most important, explanation for these phenomena.

Positional Externalities between Agents

Twenty-Four-Hour Grocery Stores

Ithaca, a town of 30,000 people in central New York, has seven large supermarkets. Five of them are open twenty-four hours a day. On the rare occasions when I have patronized one of these stores in the middle of the night, I have been almost the only shopper. The convenience of an all-night shopping option could be maintained at lower cost if all but one of these stores were to close during the late-night hours. But the stores, acting individually, apparently do not find it profitable to take such a course.

A simple positional externality helps explain the divergence between private and collective interests. Most people do the bulk of their shopping at a single store. Grocery shopping, after all, is largely a matter of habit, and going to a store with even a slightly unfamiliar layout can upset the normal routine. In choosing which store to patronize, people look for the most convenient package of price, variety, location, hours, and other service features. In communities where most people have cars, physical location is less important than other features. Of course, if nonlocational elements of the service package are essentially the same, the consumer will shop at the store closest to home. But if one store offers a better value along some other service dimension, consumers will freely switch to it. For example, if all stores are equally attractive except for their hours of business, many people will choose the one with the longest hours. Having convenient hours may not be the most important service feature, but even small advantages often tip the balance in close decisions.

Now imagine an initial situation in which all stores close at the same hour—say, 9 P.M. If any one store extends its hours until 10 P.M., it will enlarge its market share. And it may then pay the remaining stores to match the first store's move. If the cost of extended hours is not prohibitive, the only stable equilibrium may be for each store to remain open twenty-four hours. In such situations, the public might be well served by amending the antitrust laws to permit stores to limit hours, perhaps through an agreement whereby each store serves in turn as the only all-night grocery. Alternatively, local statutes might achieve a similar purpose by limiting business hours. Such statutes are often called "blue laws" and remain on the books in many jurisdictions.

Excessive Formalism in Economics

The same forces that help produce the twenty-four-hour grocery store may also help explain the phenomenon of excessive formalism in the economics profession. Several years ago, I submitted a paper to the *American Economic Review* in which I outlined my argument verbally in the main body of the paper, then explored its technical details in an appendix. I was asked to revise the paper by eliminating the verbal
development of the argument and the discussion of its implications, and focusing instead on the appendix model. Reluctantly I complied, and the paper that was eventually published forces readers to wade through a tangle of idiosyncratic notation to follow what had originally been an easily accessible argument.

The precision of formalism has obvious advantages. Yet most economists believe that our profession would be better off if more technical material were relegated to appendices. If this belief is valid, why does formalism persist so stubbornly?

Again, positional externalities suggest a possible answer. Of the many qualities of mind a scholar might have, economists rightly prize rigorous thinking above most others. Each candidate for a job thus wants to be perceived as more rigorous than the competing candidates. While highly complex mathematical analysis is not the only way to certify oneself as a rigorous thinker, it is almost surely the most efficient way. Its inherent complexity throws up a barrier that only nimble minds can scale. By contrast, many more people can construct verbal arguments, which by their nature leave greater room for subjective debate about level of rigor.

It is thus perfectly rational for an individual job candidate to employ a level of formalism just slightly higher than that of others. But like grocery store managers deciding how long to stay open, competing candidates face compelling pressure to match any escalation in formalism. The result is a shifting frame of reference. In the current environment, many people feel compelled to use tools more formidable than necessary for the problem at hand. Collectively, we would communicate more effectively if we relegated more of our formal analysis to appendices. But it is not necessarily rational for any individual to take this step.

How might excessive formalism be mitigated? As with the hockey helmet rule, the most direct approach would be to build collective input into decisions about the level of formalism. Editors could encourage the relegation of technical details to appendices, or certain journals could pledge themselves to presenting ideas in nontechnical language. (The American Economic Association's Journal of Economic Perspectives was launched on this premise.)

If excessive formalism is a form of positional signaling, we should see less of it among scholars of established reputation, who are in effect free to choose their own level of discourse. Seminars by theorists like Gerard Debreu and Roy Radner are typically filled with intuitive examples and a minimum of algebraic manipulation. But less established scholars often feel they must fill several blackboards with algebra, lest their audience mistakenly conclude that they are unable to do so. At the local level, the sponsors of seminars have some power to alter this outcome. If the audience knew that speakers had been instructed to adopt a less formal mode, speakers could do so without fear of signaling weakness of mind.

Cycles of Fashion

People today look back with amusement to the ridiculously high tailfins of the 1957 Plymouth and the short hemlines of the late 1960s. Positional externalities suggest how people with a normal sense of esthetics could once have found those designs palatable; and indeed why those same designs may again cycle back into fashion.

For a design to appear innovative or fresh, it must differ somehow from existing designs. If existing cars lack tailfins, the addition of even a very small fin creates an eye-catching profile. And because having such a profile confers a marketing advantage, competitors are quick to add small tailfins of their own. An arms race ensues, and within a few years cars have fins so large that they would surely violate an absolute esthetic standard (assuming such a standard exists). At this point, the stage is set for designers to achieve a bold new look by offering a car without any tailfins, as in fact happened in the early 1960s. Similar dynamics appear to govern the hem length of dresses, the cut of men's suits, the width of neckties and lapels, the size of shoulder pads, and a host of other fashion details. In most cases, the evolutionary design progression seems to reach almost grotesque proportions before individual designers can profit by retreating to an earlier stage in the cycle.

Whether positional externalities lead to cycles or not depends in part on whether there are natural limits on the positional arms race in question. Grocery stores cannot stay open more than twenty-four hours a day, and if continuous operation is not forbiddingly costly, there may be no tendency for individual stores to break ranks. But there are no similar limits on the length of tailfins or the width of lapels. In these cases, the positional arms race is likely to continue until it reaches a breaking point.
Cycles of Public Spiritedness

In his splendid book *Shifting Involvements*, Albert Hirschman observes that the “public mood” of the United States oscillates between private acquisitiveness and public spiritedness. The length of the cycle varies considerably but averages about two decades. In the late 1940s and 1950s, people were primarily concerned with personal material advancement, a mood that gave way to greater community orientation with the New Frontier and Great Society movements of the 1960s. Similarly, after the egoistic emphasis of the last two decades, there is now at least talk of a kinder, gentler orientation.

Positional externalities appear to play a role in these movements. Most people like to think of themselves as being socially responsible, but the criteria that define this quality are strongly dependent on local frames of reference. Thus, for example, the standards of behavior for used car salesmen are considerably more lenient than those for bishops. The role of context in personal evaluation is especially important when standards of behavior in the population change systematically. Suppose, for example, that society is currently in an egoistic mode, with relatively undemanding standards of virtuous conduct. Now if, as Hirschman suggests, people become concerned about the problems generated by their egoism—pollution, inequality, criminal activity, and so on—they may begin to behave more altruistically. The aggregate effect of this change is to raise the standard each person must meet before he or she can take satisfaction from being a virtuous person. And this, in turn, causes the level of virtuous behavior to rise still further. In the process, it becomes increasingly difficult, in absolute terms, for a person to command approval. Eventually, it pays some people to retreat, just as eventually it paid some designers to reintroduce cars without tailfins. The retreat from virtuous conduct sets in motion a downward escalation; eventually a floor is reached, and the cycle is ready to renew.

Bureaucratic Language

Positional externalities also seem to shed light on the standards of language used by federal bureaucrats. While chairman of the Civil Aeronautics Board, Alfred Kahn wrote a memorandum lampooning the bureaucratic language then typical of the board’s regulatory orders. His favorite targets were circumlocutions and pomposities like the ones in the following paragraph taken from a board order:

The holder [of a CAB certificate] may continue to serve regularly any point named herein through the airport last regularly used by the holder to serve such point prior to the effective date of the certificate. Upon compliance with such procedures relating thereto as may be prescribed by the Board, the holder may, in addition to the services hereinabove expressly prescribed, regularly serve a point named herein through any airport convenient there-to.

When Kahn’s memo found its way into the press, the responses included a marriage proposal from a *Boston Globe* columnist, a nomination for the Nobel Prize from a Singapore newspaper, and an editorial endorsement from the *Washington Post*. In the wake of this publicity, at least some board bureaucrats scurried to employ more direct language.

Suppose, for the sake of argument, that all bureaucrats adopted the clear, direct language Kahn advocated. A look at the incentives facing bureaucrats suggests that this new position would not be stable. In their choice of language, bureaucrats face a delicate balancing act. On one hand, they want to avoid the embarrassment of writing in a noticeably more muddled way than their peers. On the other hand, they are rewarded for choosing indirect forms of speech over more direct ones. After all, language that makes regulatory orders appear to have arisen from thin air helps camouflage the bureaucrat’s personal responsibility for making people do things they don’t want to do. As Kahn observed, “One is less likely to be jailed if one says ’he was hit by a stone,’ than ’I hit him with a stone.’”

The bureaucrat’s maximization rule is thus to be as unclear as possible without sounding conspicuously muddled. From a starting point at which all bureaucrats use clear, direct language, any individual could use marginally less direct language without appearing conspicuously clumsy, and doing this would be an advantage. Others would find similar marginal adjustments attractive, and soon the standard of clarity would fall a notch. This shift would enable bureaucrats to muddy their language still further without calling attention to themselves. Only when the standard of communication again fell to an absurdly low level might it pay an individual bureaucrat to break ranks and speak more plainly. The praise he would get for providing a breath of fresh air might be just enough to compen-
Cosmetic Surgery

Cosmetic surgery has produced dramatic benefits for many people. It has enabled badly disfigured accident victims to recover their original appearance and so to continue with their lives. Reconstructive surgery has also eliminated the extreme self-consciousness felt by people born with strikingly unusual or unattractive features.

But cosmetic surgery is not confined to the conspicuously disfigured. "Normal" people are increasingly seeking surgical improvements in their appearance. In individual cases, these interventions may be just as beneficial as they are for accident victims. Buoyed by the confidence of having a straight nose or a wrinkle-free complexion, patients sometimes go on to achieve much more than they ever hoped possible.

This growing use of cosmetic surgery has an unintended side effect: it alters our standards for normal appearance. Thus, for example, a nose that once would have seemed only slightly larger than average may now seem jarringly big; the same person who once would have looked like an average fifty-five-year-old may now look nearly seventy; and someone who once would have been described as having slightly thinning hair, or an average amount of cellulite, may now feel compelled to use minoxidil, or undergo liposuction. Because such procedures shift our frame of reference, their payoffs to individuals are misleadingly large. From a social perspective, reliance on them is therefore likely to be excessive.

It is difficult to imagine legal sanctions against cosmetic surgery as a remedy for this problem. But at least some communities embrace powerful social norms against cosmetic surgery, heaping scorn and ridicule on the consumers of face lifts and tummy tucks. In individual cases, these norms may seem cruel. And yet, without them, many more people might feel compelled to bear the risk and expense of cosmetic surgery.

Human Growth Hormones and Eighth-Grade Redshirts

In many sports, especially contact sports like football and hockey, it is advantageous to be large. An adolescent athlete who wants to grow has several options. He can lift weights; he can allow the natural growth process to continue with the passage of time; and he can take anabolic steroids, human growth hormone, or some other growth-enhancing medication.

Within any given cohort of athletes, the natural growth process creates no positional externalities. Because athletes of a given age tend to grow at roughly the same rate, this process does little to alter the relative size distribution within the cohort. The only way to exploit the natural growth process for individual advantage is to shift from one cohort to a younger one. In college football, the practice of "redshirting" holds athletes out of competition for a year, thus extending their eligibility for an extra season when they will be larger and more experienced.

The advantage gained by individual players who are redshirted does not carry over to the population of athletes as a whole. The forward movement of redshirts in the size distribution is offset by backward movements of those athletes who were not held back. Assuming that being held back has costs, athletes as a group would fare better if redshirting were discouraged. Regrettably, however, there seems to be little movement in this direction. On the contrary, a growing number of parents hold their eighth-grade sons back a year in school to enhance their competitive position.

Consumption of anabolic steroids and human growth hormones creates positional externalities of a parallel sort. And because ingestion of these substances also involves costs (potentially serious long-term health effects), here too it makes sense to curtail their use.

Positional Externalities in the Income Domain

In the examples already considered, the externalities caused by individual attempts to move forward in a variety of specific hierarchies often give rise to positional arms races. Positional externalities also operate with particular force with respect to activities that change the distributions of income and consumption. In the next sections, I discuss how concern about relative position in these distributions
might lead us to regulate a variety of activities related to work and consumption.5

**Occupational Safety Regulation**

Occupational safety legislation has often been explained as a means of protecting workers from being exploited by their employers. On this view, competition in the labor market is insufficient to force employers to provide adequate safety measures. The exploitation argument has at least superficial appeal in the context of company towns in which a single employer can dictate the terms of the compensation package. But in view of the high mobility of both workers and firms, monopsony labor markets are increasingly rare; and even in labor markets that are fiercely competitive, the demand for safety regulation is intense.

Many contemporary economists have argued on theoretical grounds that government safety regulations reduce the worker’s welfare. The argument, which flows from Adam Smith, is that an employer will (and should) install a safety device if and only if workers are willing to bear its cost. If workers value the device at $75 per week, for example, and it costs only $50 per week to install and operate, any firm that does not install the device will lose its workers to a competing firm. Alternatively, if workers value the device at only $40 per week, then they would be made worse off (by $10 per week) if it were installed. Competitive forces, in short, should lead to the optimal level of workplace safety. And yet, as noted, the demand for safety regulation is intense, even in the most bitterly competitive labor markets.

This pattern is intelligible if we see safety regulation as a way to internalize positional externalities. Consider a simple labor market that consists of two workers, Smith and Jones, who face a choice of working in a safe factory or an unsafe factory. The only difference between the factories is that the safe one has filters that eliminate toxic dust from the air. The sole health consequence of working in the unsafe factory is that life expectancy is reduced by ten years. The weekly wage in the safe factory is $200, in the unsafe factory, $250. The $50 difference reflects the cost of installing and operating the air filters.

In the traditional theory of competitive labor markets, the choice between the two factories is straightforward. If the workers value the

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**Table 2.2**

<table>
<thead>
<tr>
<th></th>
<th>Jones’s choice</th>
<th>Smith’s choice</th>
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<tbody>
<tr>
<td>Safe factory</td>
<td>@ $200/wk</td>
<td>Second best for each</td>
</tr>
<tr>
<td>Unsafe factory</td>
<td>@ $250/wk</td>
<td>Best for Smith Worst for Jones</td>
</tr>
</tbody>
</table>

extra safety at more than $50 per week, they should, and will, choose the safe factory; otherwise, they will choose the unsafe one. But suppose that workers care not only about their safety and the absolute levels of income they have but also about how their incomes compare with others.6 If relative income matters, it is no longer legitimate to view each worker’s choice in isolation, for the attractiveness of each alternative will depend also on the particular choice taken by his neighbor. If workers’ concerns about both safety and relative position are sufficiently strong, we get a decision matrix like the one in table 2.2.

The rankings assumed in table 2.2 tell us that, positional concerns aside, the additional safety is worth more than $50 per week to each worker. To see this, note how the two jobs compare when both workers choose the same type of job. The upper left cell of table 2.2 corresponds to both workers choosing the safe factory, and this alternative is rated higher (second best for each) than the lower right cell, which corresponds to both choosing the unsafe factory (third best for each).

As with the positional externalities we saw earlier, there is no reason to expect individually rational choices to lead to a socially optimal outcome. Suppose, for example, that Jones chooses a job in the safe factory. The best outcome available to Smith will then be to work in the unsafe factory. By so doing, he gives up safety that is worth more than $50 per week to him for a reward of only $50 per week. In the process, however, he also gains a positional advantage over Jones, which (under the assumed rankings) more than compensates for the loss in safety. Alternatively, suppose that Jones had chosen the unsafe factory. Smith again does better to choose the unsafe factory. By so doing, he gets his third-best alternative, whereas
the safe factory would have led to the worst possible combination. In short, no matter what Jones does, Smith gets a better outcome by choosing the unsafe factory.

The incentives confronting Jones are exactly the same. He too does better by picking the unsafe factory, no matter what Smith does. Consequently, each person picks the unsafe factory, and this result is worse than if each had chosen the safe factory. The difficulty, as in all prisoner’s dilemmas, is that it does not pay either player, acting alone, to choose the alternative that would be better for both. In this situation, it is easy to see why Smith and Jones would favor a binding agreement to work in the safe factory.

It is also easy to see why critics who ignore positional externalities might conclude that a workplace safety regulation makes each person worse off. Before the regulation, they would argue, each person freely chose to work in the unsafe factory. From that choice it seems to follow that additional safety was worth less than $50/week to each worker. The apparent conclusion, finally, is that a safety regulation harms the workers by making them purchase safety that is worth less to them than its cost.

The flaw in this argument lies in the assumption that individual choices always reveal underlying preferences. When positional externalities matter, individual choices simply do not tell us how people feel about the aggregate results of their choices.

Is it plausible that workers would risk their lives to improve their relative economic position? Clearly most people desire to avoid illness and injury. Yet they also want their children to keep up with (or exceed) community standards with respect to education and other important advantages. People are also strongly motivated to emulate the consumption habits of their neighbors. Taking a riskier job will often mean being able to come up with a down payment for a house in a better school district, or not having to drive the oldest car on the block.

Workers' willingness to trade risk for extra pay is vividly illustrated by practices in the nuclear power industry, where it is occasionally necessary to clean up radiation spills. This task commands a significant pay premium—and significant exposure to hazardous ionizing radiation. Even so, there is a ready supply of applicants eager to perform these tasks. Federal regulations limit the amount of radiation exposure, and workers get a bonus if they “burn out,” or exceed those limits. The cleanup workers, who are known in the industry as “glow worms,” invariably do burn out and, except for the federal limits, would willingly expose themselves to even higher doses of radiation. By their own account, the risks are worth taking in return for the additional advantages they are able to provide for their families. To the extent that many of these advantages are positional in nature, the individual payoffs to risk taking are spuriously inflated.

Seeing our children do well is a source of deep satisfaction. So, of course, is living to a ripe old age. Everyone would like to achieve both of these goals. When people can obtain higher wages by taking health and safety risks, however, the two are squarely in conflict. This conflict is attenuated by collective agreements that limit the risks we can take.

**Limiting the Work Week**

Positional externalities provide a more plausible rationale than monopsony exploitation for a variety of other regulations of the labor contract. A case in point is the length of the work week. The Fair Labor Standards Act requires that employers pay a 50 percent wage premium whenever people work more than eight hours per day or forty hours per week. This regulation sharply discourages overtime work.

In traditional economic models, which assume that workers do not care about relative position, it is not clear why anyone would favor such a regulation. If workers disliked working long hours, competition would result in an overtime premium even without a regulation. Alternatively, if workers wanted to work long hours, they would presumably not support a law that discourages employers from having them do so. Thus, in conventional economic models of the labor market, an overtime law is either harmful or irrelevant.

Once positional concerns are granted, however, a clear motive emerges for limiting the work week. Someone who stays a few extra hours at work will increase his or her earnings, both in absolute and in relative terms. But one person's forward movement means a backward movement in relative terms for others. Rather than fall behind, others will feel pressure to work longer hours themselves. In the end, these efforts are largely offsetting. After all, the laws of simple arithmetic make it impossible for more than 10 percent of us to be in the top tenth of the earnings distribution.

People who work until 9 p.m. each day can produce and consume more than those who work only until 5 p.m. But the former group has
much less time to spend with family and friends. Because many of the individual payoffs to having more goods are positional, the collective payoff to working longer hours is smaller than it appears to each individual. It is thus easy to see why people might prefer institutional arrangements that induce people to quit at 5:00.

**Savings**

Conservatives were once fond of complaining that the Social Security system deprives people of the option of deciding for themselves when and how much to save for retirement. This is a valid complaint and, on the economist’s view that having more options is better than having fewer, it might appear that participation in Social Security should be purely voluntary. Yet this conclusion seems to have been rejected by virtually every society in favor of mandatory programs to supplement retirement incomes. Positional externalities may again help us to understand why.

The argument is essentially the same as in the cases just considered. Parents have the choice of saving some of their current income for retirement or spending that income now on a house in a better school district or on some other form of current consumption. As with decisions involving safety or the length of the work week, positional pressures often make the second option compelling. The aggregate effects of such choices, however, often turn out to be far from what people intend. When everyone spends more on a house in a better school district, for example, the result is merely to bid up the prices of those houses. In the process, no one moves forward in the educational hierarchy, and yet parents end up having smaller savings for retirement. Acting as individuals, however, they have no real alternative except to send their children to less desirable schools.

The Social Security system mitigates this dilemma by keeping a portion of each person’s income unavailable for spending. It helps solve a related set of prisoner’s dilemmas as well. Job seekers, for example, know they should “look good” for interviews. Like a good education, however, a tasteful appearance is a relative concept. To look good means to look better than others, and the easiest means to this end is to spend more than most others do on clothing. The catch is that this same calculus operates for everyone. The result is a fruitless escalation in the amount people have to spend merely to avoid looking shabby. From a collective perspective, it would make sense to save more and spend less on clothing. But it would not pay any individual, acting alone, to take this step. The Social Security system, by sheltering a portion of our incomes, keeps people from spending too much in this and a variety of analogous situations.

**Positional Externalities within Subjects**

In the examples considered so far, one agent’s behavior affects a frame of reference important for some other agent or organization. Now we turn to cases in which the behavior of an agent affects a frame of reference important for himself at a later point in time. The enjoyment of food, for example, depends on a physiological and psychological frame of reference that in turn is strongly dependent on behavior during the preceding hours. When a person’s “current self” eats a whole can of honey-roasted cashew nuts an hour before dinner, he creates a positional externality by spoiling his “future self’s” appetite.

Why call such an effect an externality? If the same person owns both a beehive and an apple orchard, he or she can take direct account of the “external” effect that adding more bees will have on the output of the orchard. Similarly, if our current actions affect what happens to us tomorrow, why can’t we factor that into our decisions about what to do today? One answer is that we may not always know how our current actions affect future opportunities. Before word got around that tropical oils contribute to heart disease, for example, the eating behavior of many current selves unwittingly imposed external costs on their future selves. But even when we know all relevant future costs, we often give them too little weight. That is, we often choose small rewards in the present over much larger rewards available in the future, and later bitterly regret those choices. Both types of problem—ignorance and self-control—arise in connection with the decision of how to spread a given total amount of consumption across time.

**The Optimal Timing of Lifetime Consumption**

Traditional economic models hold that current utility depends on the current level of consumption. Permanent income and life-cycle theories conclude on this basis that the optimal consumption stream is roughly constant over time. But compelling psychological evidence tells us that current utility depends not only on current consumption
Positional Externalities

but also on the temporal frame of reference in which it occurs. Thus, for example, a person accustomed to consuming $50,000 per year is more likely to be dissatisfied with $30,000 than is someone accustomed to only $20,000.7

If utility depends in part on comparisons with past consumption, then current consumption levels may be said to impose positional externalities on the future self. A low level of current consumption will make a given level of future consumption more enjoyable; and conversely, high current consumption will make a given level of future consumption less enjoyable. Under these circumstances, the optimal consumption profile will be upward sloping, not horizontal (see figure 2.1).

People who follow the horizontal consumption profile enjoy greater utility in the early years, but in the process create a consumption context that diminishes their enjoyment of future consumption. As the examples that follow illustrate, this externality may sometimes be eliminated merely by calling attention to it.

Choosing the Right Quality Level

Imagine yourself faced with a choice among three pairs of stereo loudspeakers. For the sake of illustration, suppose that the optimal choice by this measure turns out to be C, the highest-quality version.

This procedure seems sensible, yet it overlooks the positional externality at issue. Much of the initial satisfaction from consuming the C system stems from the contrast between its quality level and A’s. But once C has been consumed for some period of time, its quality level becomes the norm, and this source of satisfaction vanishes. With the dynamics of this process in mind, a rational consumer might prefer to settle initially for a switch to B, saving the move to C for some future period. Thus, for example, even if your tastes and income are such that a $5,000 pair of stereo loudspeakers is the best choice for you ultimately, your lifetime satisfaction may be higher if you move to that quality level only in stages, rather than all at once.

Similar issues arise with respect to quality choices involving a host of other goods. Suppose that you are ignorant of the nuances of consuming fine wines when a friend invites you to attend a class that will remedy this deficit. Should you accept? You know that people who attend these classes often say they experience great satisfaction from consuming the higher-quality wines they are now able to appreciate. But another consequence of becoming more educated is that these higher-quality wines become the norm. In your current state, you can still enjoy sharing a $5 bottle of wine with your evening meal. Depending on your income level and the value you assign to alternative consumption opportunities, you may be prepared to sacrifice this capacity. But many consumers who confront such decisions are simply unmindful of this dimension of the problem. Learning to think in terms of intertemporal positional externalities may lead to better decisions for at least some of these consumers.

A General Strategy for Deferring Consumption

Merely knowing how current consumption affects the enjoyment possible from future consumption will not necessarily lead to an optimal intertemporal consumption profile. Many consumers already know they would be better off if they could defer current consumption, yet lack sufficient self-discipline to do so.

Within the last decade, Schelling and others have forged a substantial scholarly literature on the topic of self-control.8 The difficulties they discuss are familiar. Many of us, for example, find it difficult to
put down a suspense novel, even though we know that tomorrow we will regret having stayed up late to finish it.

Solutions to self-control problems often involve commitment devices of the sort discussed by Schelling in *The Strategy of Conflict*. Almost every author cites the example of Homer’s Ulysses, who realized that once he was within earshot of the sirens’ cries, he would be drawn irresistibly toward them and sail to his doom on the reefs. Ulysses’ commitment device was to seal the ears of his crewmen and instruct them to strap him tightly to the mast and not to release him, even though he might beg them to, until they had sailed safely past.

Similar commitment devices are familiar in modern life. Fearing we will spoil our dinners, we put the salted nuts out of easy reach. Fearing we will gamble too much, we limit the amount of cash we take to Atlantic City. Fearing we will stay up too late, we move the television set out of the bedroom. In the section that follows, I discuss a more general commitment device that helps solve a variety of within-subject positional externalities.

Deferring Consumption by Deferring Income

For workers in many occupations, productivity increases steadily over time, resulting in upward-sloping wage profiles. To the extent that capital markets do not permit full borrowing against future income, such terms of employment virtually assure a rising consumption profile. But for many other workers, such as commercial airline pilots, productivity is relatively constant over the life cycle. If wages varied strictly in accordance with productivity, as predicted by conventional labor market models, income streams should also tend to be constant over the life cycle. To achieve a rising consumption profile, these workers would have to save during the early years and dissave during later years. The difficulty, as noted, is that saving requires self-control.

One way to insulate oneself from the temptation to consume too much too soon is to form collective agreements with others of like mind. For at least two reasons, a person’s coworkers make up a particularly important reference group for such agreements. First, most people have closer and more extensive interactions with their coworkers than they do with any other group, and spatial proximity and degree of interaction are the most important determinants of reference group membership. Second, the transactions costs of implementing collective consumption agreements are much lower for coworkers than for friends, neighbors, or other less formal associations. If coworkers want to restrict their ability to consume in the present, they can do so by simply accepting employment under an upward-sloping wage profile like the one depicted for commercial airline pilots in figure 2.2.

Naturally, upward-sloping wage profiles will appeal most strongly to workers who expect to remain on the job for extended periods. Workers in short-term jobs will see no advantage in trading current compensation for the promise of higher future earnings that they will not be around to collect. But where long-term commitments exist, this type of contract may be very attractive indeed.

On the assumption that positional consumption externalities are relatively more important in close-knit groups, wage growth over the worker’s life cycle should be largest in occupations with the most extensive interaction among coworkers. The consumption standards maintained by a person’s coworkers are of course not the only ones that matter. One may also be tempted to match the higher consumption standards maintained by people outside the coworker reference group. As Duesenberry (1949) emphasized, the higher one stands in the overall distribution of income, the less often one is exposed to
such temptations. On the plausible assumption that positional externalities from outside the coworker group weigh more heavily for low-income workers, wage growth over the worker's life cycle should be greatest in occupations with the highest incomes. Both relationships—steeper wage profiles among more close-knit groups, and steeper profiles among high income groups—are observed in U.S. data. 12

Note that having a rising income profile helps solve not only those within-subject positional externalities that result from self-control problems, but also those that result from ignorance. A young person who simply cannot yet afford the most expensive loudspeakers will postpone purchasing them even if he is unaware that this is an optimal consumption strategy.

Concluding Remarks

Positional externalities are a particularly important form of externality. They arise between subjects when one person's action alters an important frame of reference for others. Such externalities may help explain twenty-four-hour supermarkets, excessive formalism in economics, cycles of fashion and public spiritedness, muddled bureaucratic language, excessive cosmetic surgery, and pressures to consume growth hormones. They may also help explain why we regulate safety, working hours, savings, and a variety of actions that affect relative position in the current consumption distribution.

Positional externalities within subjects occur when actions taken by a person's current self affect some important frame of reference for his future self. Knowing about such externalities will sometimes lead people to adopt consumption profiles that rise over time. Rising income profiles are one practical way of assuring rising consumption profiles when limits on self-discipline might otherwise result in excessive early consumption.

Externalities are discussed in many economics texts as though they were an isolated exception to a normal state of affairs in which choices affect only the agents directly involved. In Micromotives and Macrobhvior, Schelling has persuaded many of us that external effects are by no means isolated. Indeed, the more we learn about them, the more likely it seems that actions without external effects may be the real exceptions.

Notes

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1. Of course, staying open all night is not completely wasteful. Clerks require slack time to restock shelves, clean up, and perform routine maintenance, tasks that are now performed during the night shift. But there are also many other slack hours during the week (notably weekday mornings), and day-shift labor is less expensive than night-shift labor.

2. My colleague John Aboxed notes that almost every economist is continuously a job candidate.

3. From a CAB certificate of public convenience and necessity, quoted by Kahn in his June 16, 1977, memorandum to the staff of the Civil Aeronautics Board.

4. Early versions of this claim may be found in Smith 1937 (1776) and Veblen 1899.

5. The material in these sections is discussed in greater detail in Frank 1985b.

6. Workers might also care about safety in relative terms. But I have argued elsewhere that relative comparisons along the safety dimension carry less weight than do those along more easily observable dimensions of consumption (see Frank 1985a).

7. For a discussion, see Duesenberry 1949.


11. For a detailed discussion of the wage profile of commercial pilots, see Frank and Hutchens 1989.


References


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