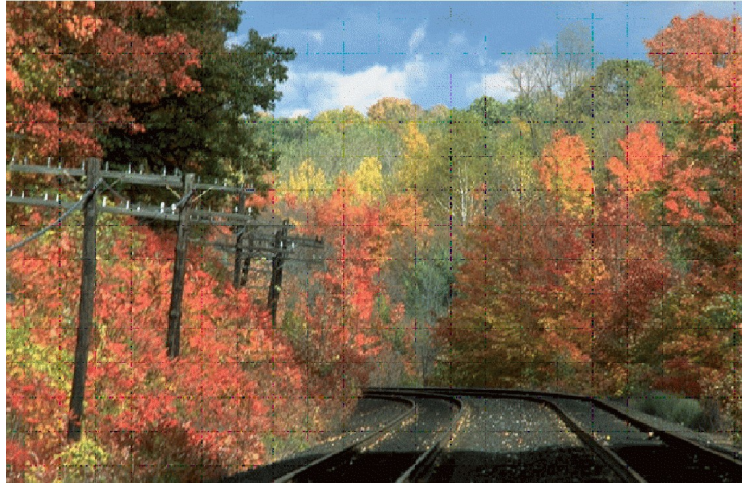


Chapter 1

Economics and the Principles of Choice



Human behavior is so complex that some of the brightest people find it frustrating. Even if they're comfortable reasoning about physics, mathematics, and chess, human action may seem different. After all, people can act unpredictably, on sudden emotions, whims, and urges. Their gender, race, religion, and even whether they're short or tall may affect their behavior. Did they skip breakfast or have too much coffee? They may have different moral or cultural beliefs, and different convictions about how firmly to honor them. An optimist and a pessimist may interpret identical circumstances differently, and even if we can see the circumstances we can't see their interpretations. Who could blame an intelligent scholar for concluding, in frustration, that the complexity of human behavior places it beyond the capabilities of reason?

Economics offers a solution—at least a partial one. It doesn't provide us with the ability to read others' minds, so we still won't be able to predict exactly how they will act in particular situations. A scholar trained in physics or biology may expect this of any science, but a human mind is inherently more complex than the object of a physical or biological scientist's study. We can predict how a rock will respond to observable forces because the rock can't change its mind, deciding to resist a forty-pound pull on a rope more enthusiastically than it did yesterday. A person can. Human behavior depends not simply on observable objective circumstances, but on how the individual interprets them—how one views their meaning, their significance to goals he or she is trying to achieve. We might make some reasonable guesses about others' probable goals and interpretations, but we can't be sure, especially before we see how they act. This fundamental difference between the objects that they study produces a fundamental difference between the physical and social sciences. Our physicist or biologist will feel less frustrated when he accepts that being truly scientific requires acknowledging that not everything about other individuals is knowable. That's science, that's life... and it's probably a good thing.

The social and physical sciences are different, and it's important that we acknowledge that.

What makes economics a science is its structure of concepts that allows us to think about human behavior in a logically organized way. Students of physical sciences are often excited to discover the possibility of logical thought about human behavior; much as the morning sun gradually burns off a thick fog, economics offers an understanding of issues that are important to one's life but had seemed mystical and beyond reason.

Here's a preview: People respond to incentives. To start thinking like an economist, look at individuals' behavior—including your own—from this perspective. Many of the mistakes that well-meaning but untrained people make about economic issues results from denying it.

People respond to incentives

Incentive is a comparison of benefit to cost. If something increases the benefit you expect from an action, your incentive to take it rises; something that increases the action's cost reduces your incentive. Price is part of your cost if you're thinking about buying something, so a higher price reduces your incentive, perhaps enough that you decide not to buy at all. If you're a seller, though, the price you're able

to receive is a benefit, so if it goes up your incentive to sell does too. (It's this contrast of opposite effects of price, affecting the desire to buy in one direction and the desire to sell in the other, that underlies the "supply and demand" framework that everyone identifies with economics. We'll get into that in plenty of detail in the next three chapters.) A common mistake is to assert that no change in price can affect buyers' incentives enough to change their actions. Look for language like "They need a certain amount, regardless of its price." It's a sure sign that someone hasn't yet grasped basic economics. Part of that fog lifting is the realization that what people feel they need depends on its price.

An incentive to you may be a disincentive to someone else, and this interaction among individuals' incentives is one of the things that makes economics so interesting (yes, just one, and yes, interesting). If you want Joe to design your web page but he says he has other things to do, you'll have to increase his incentive to work for you, probably—though not necessarily—by offering more money. Unfortunately, this reduces your incentive to hire him, and it may disappear before you've reached an offer that is high enough to make him willing to forgo his other opportunities. You may conclude, "Well, I like his work, but I can't afford him." The reason probably is that others like his work too, and were willing to offer Joe more money to work for them than his web design was worth to you.

Money is important, but it's never the only thing that matters.

Money is important, but there's more to incentive than money. Learning about environmental consequences may reduce your incentive to buy furniture of teak cut from the rainforests of tropical countries. The scarcity of parking spaces on campus increases your incentive to arrive early. Reading about the health problems of obesity may reduce the incentive to have another large bag of those delicious french fries. A new sympathy for people born into less prosperous or nurturing circumstances may increase your incentive to volunteer time or money. Higher urban crime rates, and perhaps the construction of a new highway, increase people's incentives to live farther from cities. Joe, our freelance web designer, may turn down twenty percent more money if it requires him to be in an office, dressed in a business suit, from eight to five every weekday. A boss's offer of a \$5,000 raise to falsify certain government or business or union records may be enough incentive for one employee, but not for another who holds moral principles more strongly. Economics helps us to understand human behavior, and money is important, but it's never the only incentive that shapes people's actions.

Interesting? That economics is interesting might seem absurd to anyone who's had to listen to some boring recitation of economic statistics. The delightful comedy *Ferris Bueller's Day Off* even featured Ferris's long-suffering sister, Jeannie, yawning through her high-school teacher's monotonic drone about the Hawley-Smoot Tariff and supply-side policies—until, that is, she glanced out the window and saw Ferris and his girlfriend climbing into an open red Ferrari. Most economists find this scene hilarious, well aware that producer John Hughes, seeking a good subject to convey that voice with the power to cloud men's minds, deliberately chose economics.¹

Think a bit about that "people respond to incentives" principle, so simple yet powerful in its many applications and implications, before you sign onto the fairly typical belief that economics is both tough and boring. It can be, but that's true of any serious subject: How deeply and broadly one goes is limited only by one's intellect, energy, and interest. Of course college credit requires meeting a teacher's standards, and that can happen before or after the student's interest flags. But whether any subject is exciting or dull, or easy or hard, is a subjective, personal judgment the student attributes to the subject, much as she might consider a cheeseburger "delicious" or a movie "thrilling." There's something objective under there—the academic subject, the burger, the movie—but what matters is the person's subjective judgment about it.

As our earliest paragraphs emphasized, individuals act on the basis of their interpretations or perceptions of situations or events, on their beliefs about how these things might help them to achieve their goals. Because another person cannot see these goals and perceptions, they are called subjective, determined by the unique and personal nature of the mind of the person making the judgments. The subjective nature of the evaluations that determine people's actions is so important to economics that we'll see it time and time again. But we must also remember that subjective judgments don't come from nothing; they are of or about objective things that exist in reality. You may think an apple would taste good right now and I may not, but each of us is evaluating the same objective thing, a little fruit that's roughly spherical and usually red.² Your choice between a new Ford and a new Nissan is determined by your

¹ Ben Stein, who played the mousy teacher and has acted in many commercials, really is an economist. In "One Man's Laffer Is Another's Laughter" (*The Wall Street Journal*, June 6, 1986, p. 24), he said Hughes asked for something "dry and incomprehensible." Stein presented a short but accurate explanation of President Reagan's economic policy. "Mr. Hughes was now laughing so hard that tears were coming down his cheeks. 'Cut!' he said, and the whole arc of watchers burst into uncontrollable hysteria, then applauded... Matthew Broderick... hugged me and said, 'I think I could get you a gig doing stand-up of this whole routine at The Comedy Store. I mean it. It's hilarious. How did you make all that stuff up?'"

² If we can't agree on this (for example, I insist that "apple" means a large ship on which I plan a world cruise while you insist that it's a fruit), no communication would be possible. The extreme is that we each live in our own world that has nothing in common with others' worlds. A person holding this position should give up trying to learn anything from anyone else, or even communicating with others in any way. Unfortunately, one finds this view in the common belief that one can learn only from those of his/her own gender, race, age, etc.

subjective judgments about them, but those judgments are based on the actual cars and their objective properties.

To keep all of this straight, even that really smart person we discussed in our first paragraph can use some help. It's provided by the collection of logically integrated and consistent concepts that constitute economic theory. If you want to understand anything, theory is your friend. Don't let it be intimidating or frightening. Once again, it can be... especially if one identifies "theory" with the complicated mathematics one finds in advanced physics textbooks. You can find that in advanced economics books too; in fact, there are economists who identify economic theory with mathematical technique. Rest assured. This book is advanced enough, but I don't share this common belief that economic theory is essentially mathematical. (In my view this position results from a failure to understand the distinction between social science and physical science, in which mathematics is of central importance.) Economic theory consists of the set of concepts like benefit and cost, and supply and demand, that help us to understand human action while respecting its diversity and individuality. People respond to incentives. To delve into that principle further, everyone needs a little economic theory.

"Theory is fine for advanced students," you may have heard, "but beginners need everyday, real-world applications." Sorry, but this is precisely backward. One can't apply economic theory without knowing a little about it already, so it's actually more important for those just beginning than for more advanced students. This is why I am not a fan of one-semester survey courses that feature a menu of currently hot economic issues. A college entrusted with students' education should not imply that one can think intelligently about complex issues like environmentalism and health care without theoretical tools, so you won't find in this book the trendy catalog of applications. Students who have special interests can apply economics to environmentalism, gender biases in labor markets, professional baseball, medical services, and so forth...but only after getting a grip on fundamental concepts.³ Partly as I've explained above, I have also resisted the temptation to fill the book with mathematical and graphical tools popular in economics today. They are impressive and flashy and—once one has learned them—easy to explain, but they don't belong in an introduction to our subject.

The elements of economic theory are easy, not tough, and we'll illustrate them with choices we confront in our daily lives. These applications are not always obvious, and that's what provides the intellectual challenge every student has the right to expect in a college course, but the fundamental concepts are both powerful and simple. You'll forget most of the specifics, probably right after the final exam (after, please), but if you permit the elements of economics to shape your vision of human action and its consequences you'll enjoy a lifelong sense of fundamental understanding that will forever escape those who omit economics from their education.

People act on subjective judgments of objective reality.

Theory: It's the scholar's best friend!

Economic theory is not mathematical

Theory: It's especially your best friend if you're a beginner!

³ Many popular Principles textbooks, while filled with attractive graphics, exemplify the graphical/mathematical approach to theory and the kitchen-sink jumble of issues (a few years ago, one of the market leaders had more than eighty chapters) that I believe should not dominate a first course.

Economics, Theorizing, and the Post Hoc Fallacy

To see how economics and other social sciences work, let's head for a shopping mall. A great deal of business goes on there, with buying and selling and jobs and profits and costs, but we'll get to that later. For now, we're going to stay in the parking lot.

Where are the cars? People are free to park wherever they want, but their vehicles form a definite pattern, clustered around the door. The obvious explanation of this pattern is that people don't like to walk any farther than they have to. In fact, a little logic allows us to conclude that drivers' actions would produce a semicircular distribution of cars like Figure 1.1. Successive cars entering the lot would fill semicircular rings like growth rings in a tree, because any driver who parked behind a car in a partially completed ring would not minimize his walking.

Most shoppers don't notice or care about this pattern, and forming it is not anyone's deliberate goal. ("It's really crowded today. Where should we park? Well, we have to help to form a semicircular pattern") But each shopper chose the parking spot she considered most desirable, based on her own goals and knowledge, and each person's choice contributed to the semicircular pattern even though none of them deliberately sought it.⁴

Since this example illustrates the method by which economics helps us to understand human behavior, let's consider what we've done. First, we observed a social outcome, something resulting from human behavior, and decided we wanted to understand it: the pattern of parked cars. Second, we used introspection by thinking about how we ourselves decide where to park: minimizing the distance we have to walk. Third, we generalized that motive to others, assuming that they probably want to minimize their walking too. Fourth, we examined the logical implications of this generalization, finding that it would produce a semicircular pattern centered on the door. Finally, we compared our logically deduced pattern with the one we can actually observe, and found them to be very similar. As a result, we concluded that we have explained the observed pattern of cars because we understand how reasonable individual choice would produce it.

Now imagine that the social outcome we want to understand is not a pattern of parked cars, but the fact that even though the price of stone-washed jeans went up more of them were sold. Or that Gross National Product fell slightly (every macroeconomic aggregate is an unintended consequence), or that young men's car insurance costs more than young women's, but apparently identical dry-cleaning and haircuts cost more for women than men. Perhaps we want to understand a sharp drop in the number of well-paying jobs for those with little education. Each of these, like the parking pattern, results from individuals' choices even though no one person intends it, and to understand them we must use the same method.

"A man's got to know his limitations."
Clint Eastwood
(Dirty Harry)

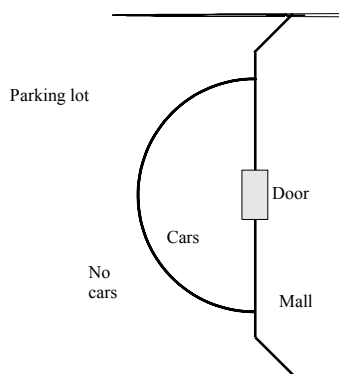


Fig. 1.1: Parking at the mall

A Short History of Economics

The complex nature of human action makes economic prediction tentative and imprecise, so it's easy to poke fun at economists who (perhaps confusing the physical and social sciences) succumb to the incentive to claim more than they can deliver. Clint Eastwood's famous Dirty Harry line, "A man's got to know his limitations," is critical to sensible economics. Some frustration with the uncertain nature of economic prediction underlies George Bernard Shaw's quip that if the world's economists were laid end to end they still wouldn't reach a conclusion, and Harry Truman's wish for a one-armed economist who couldn't say, "On the one hand..., but on the other..." These public disagreements are misleading. Economists agree on many things, but—like most people—they see no point in discussing uncontroversial conclusions. Still,

⁴We'll encounter this concept of the *unintended consequence* again soon, and often. Here it is, in Adam Smith's famous observation from the work that is often considered the first complete economics book, *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776, p. 423): "Every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it... he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectively than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good."

there are differences, even about the definition of economics.⁵ Let's take a short look at how our subject has evolved. Since our work focuses on what is now called microeconomics, the fascinating history of what's now called macroeconomics (including theories of money and business cycles) will be omitted.

Trade appears in the earliest evidence of human life. The discovery that one tribe could be better off, not by the usual killing and robbing of another, but by formulating primitive rules that we would, today, call property rights and then using them to establish an ongoing pattern of trade, was a great advance in human civilization. (The fable illustrating the folly of killing the goose that lays golden eggs illustrates the principle.) But not even the Greeks, to whom we owe the basic structure of Western civilization, developed the system of logical concepts that we identify as economics. That's not surprising, because theirs was not a very free society, but they understood—for example—that their economies would be wealthier if people skilled at particular tasks specialized in them and then traded for other things.⁶

Classical Greek civilization lasted from about 500 BC to 146 BC, when Rome conquered Carthage. The Roman period offered advances in law (including the modern corporation), largely to deal with the expanding international trade, but made no significant contribution to the science of economics. The Middle Ages were dominated, in Europe, by the growth of Christianity. Its jumble of effects on societies is still debated. Among those to consider are the religion's focus on afterlife and its goal of comforting the disadvantaged, which led to its disdain of worldly material wealth (except the organized churches' own, of course, which became considerable), the early Catholic church's disapproval of education and reading as a potential threat to its authority, later Protestant glorification of labor, and a prohibition of usury (receiving interest on loans). There is little doubt, though, that the science of economics made little advance during this Roman and Middle Ages period, about 500 AD to 1500 AD. Post-Roman medieval writers like Thomas Aquinas were more concerned with Christian justice than with understanding individuals' choices.

But the world was changing rapidly. Motivated partly by fame but mostly by visions of wealth through trade, adventurers like Marco Polo and Henry Cabot circled the globe and established long overland routes across Asia; indeed, the period from about 1300 to 1600 has been called "the age of exploration." More important for the evolution of economics, and not unrelated, was the gradual demise of feudalism. This Middle-Ages social system was complex; drastically simplified, it treated all land as the property of the king, who granted his political allies and friends royal titles (such as "lord") and permission to occupy and use large blocks of his land. Ordinary people who lived there, vassals and serfs, were obligated to work to pay rent and taxes to the lord. The arbitrariness and injustice of this system (by today's standards), which Robin Hood fought in his small way, may explain the disrepute in which landlords were held.⁷

The system that nudged feudalism aside was mercantilism, reflecting the growing power and significance of national states rather than local feudal manors. Dominating England and western Europe from about 1500 to 1750, it was a kind of partnership between business (merchants) and national government with each seeing the other as a means to wealth. For our brief history, its most important aspect was its identification of wealth with money. In those days money meant gold and silver, primarily, and a western European country's source of it (excepting some famous foreign conquests) was foreign trade. England's exports, so the theory went, obligated another country to send it money and therefore made England wealthier; imports, requiring England to ship money abroad in payment, made her poorer. As a loose national policy, then, mercantilist countries tried to restrict imports and promote (even to the extent of subsidizing) exports, reasoning that this would increase national wealth. All mercantilists considered it vital to regulate international trade, but writers early in this period seem to have believed that rigid controls over domestic production were also required to maximize the quantity of goods for export. By about the mid-1600s, though, some mercantilists had concluded that domestic controls were probably harmful, and that productivity would be maximized if individuals were left to make their own choices of occupations and production. This was the beginning of the shift toward our modern way of thinking. Though as economic theory and policy mercantilism has several fatal flaws (some of which, as we'll see in Chapter 8, are still popular economic errors), historically it served, in Ekelund and Hébert's phrase, as "an intervening period between feudalism and liberalism."

Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776) was largely a forceful and effective refutation of mercantilism. (I wish I could say "once and for all," but there are those errors to be explored in Chapter 8...) First, Smith argued that a nation's wealth consisted of its real goods—its people's clothing, food, and shelter—rather than money. Then, in brilliant passages some of which I'm

Trading with them might be better for us than killing them...

The Middle Ages' oppressive feudalism...

...is replaced by mercantilism in western Europe

Goods and money flow in opposite directions, so exports should be stimulated and imports discouraged, argued the mercantilists.

⁵ For an illuminating study of how economists' conceptions of their own subject have evolved over the years, see Israel M. Kirzner, *The Economic Point of View* (Kansas City: Sheed & Ward, 1976 [1960]).

⁶ A delightful example is Plato (428-348 BC); see *The Republic*, Part II, Chapter VI ("The Rudiments of Social Organization"). In the Francis Macdonald Cornford translation (New York: Oxford University Press, 1945), it's pp. 53-59.

⁷ For a few paragraphs on feudalism, see Ekelund and Hébert, *A History of Economic Theory and Method* (cited in this chapter's bibliography), pp. 24-5. To appreciate feudalism's history and complexity, see F. L. Ganshof, *Feudalism* (New York: Harper & Row, 1964).

Smith said that goods, not money, constitute the “wealth of nations,” and that it’s maximized by free trade.

not going to resist quoting, he explained that not only did domestic trade and production not require regulation, which the later mercantilists had recognized, but that foreign trade didn’t either. With some exceptions that most economists embrace even today, Smith argued that “the wealth of nations” would be maximized if countries adopted a legal structure that protected individuals’ rights and contracts but then left people free to pursue their own well-being, in both domestic economic activity and foreign trade. People respond to incentives, Smith understood; they would take on a job or make a foreign trade only if they thought it likely to increase their wealth, and in most cases they were in the best position to know whether it would or not.

Ricardo and Mill carried on Smith’s work...

The authors of the two subsequent major works that make up the Classical School of economics, David Ricardo’s *Principles of Political Economy and Taxation* (1817) and John Stuart Mill’s *Principles of Political Economy* (1848), explained how impressed they were with Smith’s work and were simply hoping to extend and modernize it. (Ricardo is noteworthy in part for his improvement in the logic of international trade, the concept of comparative advantage that we’ll encounter in Chapter 8.) By about 1870, when the British Classical School’s dominance faded, a couple of important steps had been taken on the Continent.

...while Cournot and Dupuit began to apply mathematics to economics.

In the 1830s and 1840s, two French writers, Augustin Cournot and Jules Dupuit, who were accomplished at mathematics and engineering but amateurs at economics, had begun the process of applying mathematics—especially differential calculus—to economics; Cournot’s 1838 analysis of monopoly is very much like what is taught today. Elsewhere, Karl Marx was writing tirelessly. His and Friedrich Engels’ *The Communist Manifesto* was published in 1848, but Marx’s great work *Capital* (Volume I of which was published in 1868) is of most interest to economists. Best known for his contention that all value is created by labor which should, therefore, be paid the entire value of output, Marx concluded that any payments of rent, interest, or profit were “unearned” and constituted “exploitation” of labor. Marx is fascinating to read—he’s brilliant and full of insights—but he’s wrong on the basics, because real estate, capital, and entrepreneurship also contribute to the value of output, and each requires its incentive. Without rent, interest, and profit these incentives will be the political coercion of dictatorships, but force is a poor incentive for the first two and completely worthless for the creative thought of entrepreneurship. Marx’s influence around the world has, until a few years ago, rivaled that of Smith, but his theory’s flaws explain why political attempts to apply it have caused poverty and misery.

The brilliant Marx, though, developed a fatally flawed theory.

Around 1870, the “marginal revolution” was a great advance

An upheaval in economic thinking, important enough to be called “the Marginal Revolution,” came along in the early 1870s, the simultaneous and independent discoveries of William Stanley Jevons (an Englishman), Léon Walras (a Swiss), and Carl Menger (an Austrian). As we’ll see in Chapter 2, “marginal” refers to differences or changes. If you’re considering buying a bagel, it’s not relevant how important “food” is to “humanity”; what matters is your well-being that this particular bagel would cause. The habit of focusing on a change that actually depends on your action, instead of a total (most of which probably doesn’t), is one of the most important lessons you can learn from economics. While these three writers emphasized the concept of the margin, their styles and other contributions were much different and they should not simply be lumped together.

Marshall tried to update classical economics with the marginal revolution

The last great work we’ll consider in this quick history of microeconomics is Alfred Marshall’s 1890 *Principles of Economics*. (Note that it’s no longer “political economy.”) The brilliant Marshall created what is now called “neoclassical price theory” by attempting to update Mill’s “classical” *Principles* with the new (“neo”) insights of the Marginal Revolution. (Marshall was also a talented mathematician, but he kept his graphs and mathematics almost entirely to footnotes and appendices.) Marshall’s *Principles* looks very much like an intermediate-level microeconomics textbooks of today, and a student who has taken such a course will feel comfortable reading it. Later editions were used as college textbooks into the 1930s.

Recent events, as historians know, are more difficult to evaluate and categorize properly, but it seems to me that the evolution of microeconomics in the century of the 1900s was dominated by two trends: the increasing use of the mathematics that had been pioneered by Cournot (1838) and Walras (1871), and greater understanding of the implications of the subjective nature of value, pioneered by Menger (1873).

Mathematics: where the prestige is, in modern academic economics...

To see the impact of mathematics on academic economics, on your next cruise through the library flip open an *American Economic Review* from the 1920s, then one from the 2000s. Don’t panic: That later work is strictly “professional drivers on a closed course” stuff and we aren’t going to do it here. While most economists consider this a huge advance, I see important compromises that mathematical technique imposes on our understanding of human behavior. (For example, describing goods with the smooth functions required for differential calculus requires them to be divisible into infinitesimal portions. That’s OK for wheat or water but not so accurate for cars or refrigerators.) In many respects—I won’t be shy about discussing them later—I’m concerned that economists, faced with a choice between a view that takes a realistic, reasonable view of markets and individual behavior and one that doesn’t but is much easier to model mathematically, will choose the latter. Its fans, however, will attribute to mathematics a

long list of contributions they consider important, including the application of game theory to economics (popularized by the movie about John Nash, *A Beautiful Mind*) and the modern theory of financial portfolios.

The most significant advances in economics, in my judgment, have deepened our understanding and appreciation of the subjective nature of human action. That value is subjective, personal to the individual and dependent on attitudes in his or her mind that others can't see, is acknowledged by all economists, but because it is difficult—perhaps impossible—to accommodate mathematically, these advances have been from economists who have resisted popular academic fashion and express themselves primarily in words. Leading this development was Menger's fellow Austrian Ludwig von Mises (1883-1973), whose 1922 book *Socialism* pointed out that market-determined money prices are the best measure we can get of people's unobservable values, so an "economy" (defined as a social organization in which production is directed by people's values) without basically-free prices, like socialism, would be impossible. Mises's student Friedrich Hayek (1899-1992), almost unbelievably energetic during the 1930s, simultaneously and brilliantly applied the subjectivist principle in debates about business-cycle theory (with John Maynard Keynes), the theory of capital (with Frank Knight), and "socialist economic calculation" (with Oskar Lange). Much of Hayek's work, including his well-known article "The Use of Knowledge in Society" (1945), focuses on the importance of prices (which are observable) properly reflecting individuals' subjective judgments of value (which are not). Another advance broadly within this category is the exploration of costs of transactions, like hassle and uncertainty, in addition to what you actually have to pay the seller; examples include Ronald Coase's 1937 analysis of why business firms exist and his 1960 discussion of "social costs." I'm going to group into this subjectivist-extending tradition, also, various analyses of economic institutions that have emerged to cope with the problem that the subjective things that really matter simply can't be observed. Among these institutions are "principal-agent" relationships in which one person hires another to (he hopes) represent him (stockholders and boards of directors offer a timely example), advertising, corporations' executive-compensation plans, and many others.

...but
subjectivism
is, in my
judgment,
where the
advances are.

Now, a little on the subject's nature and method

As our sketch of its history suggests, to the mercantilists economics was about money, because money was wealth. Smith shifted its focus to material wealth, but some later writers decided that "wealth" was really human welfare, not unrelated to money or material goods but more general, allowing for the possibility—maybe it's even true—that a happy healthy poor man is wealthier than the bitter sick millionaire; to these writers, economics was properly about welfare. Clearly, though, there was something especially significant about money and the markets it made possible, so there have always been writers who considered economics the science of monetary exchange. Alfred Marshall, in 1890, called economics "a study of mankind in the ordinary business of life... connected with the attainment and with the use of the material requisites of wellbeing" (*Principles of Economics*, p. 1).

In 1932 Lionel Robbins provided the view of economics that dominates today's literature. He wrote, in *The Nature and Significance of Economic Science*: "Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses" (p. 16). Each modern textbook makes this point a little differently, but here's Edwin Mansfield's, from his popular *Economics* (1989, p. 6): "...economics is concerned with the way resources are allocated among alternative uses to satisfy human wants."

I prefer a definition that is simpler and more general, while subsuming the popular Robbins point: Economics is the science of choice. Like any other tool that is small and powerful, this definition must be used cautiously.⁸ It implies that human behavior is not random—our parking pattern and of course the complex civilization in which we live prove that—and there are logical principles that can help us to explain, understand, and predict it. Helping you to understand them is the goal of this book.⁹

Economics is
the science of
choice

Our analysis of the parking lot illustrated what economics does. Its goals are understanding, explanation, and prediction, and the method by which it achieves them is to establish a causal connection between observable social outcomes and the process of individual choice. This approach, recognizing that every social outcome is a result of individuals' earlier choices and that explanation and understanding require us to discover the cause-and-effect connection between them, goes by the somewhat forbidding name of **methodological individualism**. It is the proper method of any social science.

Methodological
individualism:
What is the
causal link
between what
we can see,
and
individuals'
earlier
choices?

⁸ One writer who explicitly denies that economics should be considered the science of choice is George Reisman. His *Capitalism* (Ottawa IL: Jameson Books, 1996) is admirable in many respects but in others a curious throwback to classical economics.

⁹ Modern economic theory is sometimes identified as the *logic* of choice, but that suggests the alternatives are somehow already known. *Science* includes the logic of choosing among known alternatives, but also the processes of discovering (or creating) and valuing them.

Many interesting things result from our choices without being our deliberate goal

Introspection: good for social, no good for physical, scientists complex

The methods of the social and physical sciences differ because their subjects differ

Social scientists must respect the objects of their study: other human beings

The parking pattern doesn't demonstrate our parkers' goals, but it's an unintended consequence of their actions. This concept was very much part of the intellectual climate in the late 1700s. The Scottish political philosopher Adam Ferguson used the phrase "the result of human action, but not the execution of any human design" in 1767¹⁰, and nine years later Adam Smith noted that the "division of labour, from which so many advantages are derived, is not originally the effect of any human wisdom..." (*Wealth of Nations*, p. 13). Contrary to what one sometimes hears about Smith, from critics who apparently have not read him, he was not a libertarian anarchist, and the economic roles he considered proper for government are taught today as the most modern of economics. But his forceful argument that, with these few exceptions, a thriving economy would result simply from the natural actions of free individuals, without details deliberately designed and imposed by government orders, marked the beginning of our science.¹¹

Like the scholar whose beliefs about science introduced this book, even thoughtful people tend to identify science with physical sciences like chemistry and physics, whose subject is inanimate matter. We social scientists must appreciate the significance of the fact that our subject is the behavior of human beings.¹² Some physical and social scientists believe this difference makes the social sciences inferior to the physical. But a couple of consequences follow from the fact that social sciences deal with the human mind and physical sciences do not. First, understanding and not prediction is the social sciences' proper goal; as we've mentioned earlier, rocks can't change their minds, and the subject of the social sciences—the human mind—is more complex than the inanimate objects studied by physical sciences. Second, there is a difference in their scientific methods. Because the social scientist is a human using his mind to understand other humans who are using their minds, the method of introspection is available and appropriate to the social scientist.¹³ It was the second step in our process of analyzing the parking lot. Introspection is inappropriate in the physical sciences because their subjects do not have minds (actually, it's silly: "If I were a rock, what would I be thinking?"), but to ignore the differences between human and inanimate matter by insisting that the social sciences restrict themselves to methods appropriate for the analysis of rocks and molecules is itself unscientific.¹⁴ The physical and social sciences both rely heavily on logic, but the subjects of their studies are fundamentally different. Neither type of science, and neither scientific method, is "inferior" to the other. They're just different, each appropriate for its subject.

To respect the nature of our science we must recognize that choices are made by individual human beings and that no one can ever know exactly what someone else is thinking. It is indisputable that other individuals have goals, but because we can't read their minds we can't know precisely what their goals are. We don't know, for example, that others share our dislike of walking through the parking lot. Our ordinary experience with friends and others suggests that we are not alone, and if we're just trying to understand the pattern the assumption seems innocent. Before we take any important action based on our belief about others' goals, though, we should remember that our ability to know them is limited.

We must also remind ourselves, firmly and often, our status as social scientists does not excuse us from the moral obligation to treat others with respect. We don't have to like them, but we have to respect their rights. If we stole half of someone's wealth, as a scientific experiment to see how she would behave if she were half as wealthy, we would—and should!—be arrested as a common thief. Setting aside the argument that trees have rights, as far as we know physical scientists don't face this problem. Neither having a genius IQ, nor being a member of a particular race or gender or creed, nor having a Ph.D. in economics from a top university, confers upon anyone the moral authority to treat others as experimental subjects without their consent. The world has too many scientists who, fascinated with their own brilliance, pay little attention to the philosophical difference between, say, a chunk of granite and a human life.

¹⁰Cited in F. A. Hayek, *Studies in Philosophy, Politics and Economics* (Chicago: University of Chicago Press, 1967), p. 96.

¹¹For a highly critical judgment of this popular belief about Adam Smith, see Murray N. Rothbard, *Classical Economics* (Brookfield VT: Edward Elgar, 1995). For an excellent response to Rothbard, largely supporting the popular view of Smith, see Paul B. Trescott, "Murray Rothbard Confronts Adam Smith," *The Quarterly Journal of Austrian Economics* (1, 1), Spring 1998, pp. 61-72.

¹²See Hayek, "The Theory of Complex Phenomena," and Rothbard, "The Mantle of Science."

¹³Adam Smith's earlier book, *The Theory of Moral Sentiments* (1759), observed that we can understand others only by imagining ourselves in their place. This explains, for one thing, why everyone finds it harder to understand those whose circumstances (wealth, race, gender, cultural background, sexual preference...) differ greatly from one's own.

¹⁴The error of insisting that only the methods of the physical sciences are appropriate to the social sciences is what Hayek called *scientism*. It is responsible for much error in economic analysis and, because it has promoted misguided economic policy, for much real human suffering. Hayek battled this error throughout his 70-year career, but most accessible is his 1974 Nobel Lecture "The Pretence of Knowledge." See also Machlup, "The Inferiority Complex of the Social Sciences."

To illustrate these principles let's head back to the parking lot. It's half full, but there is a vacant spot near the mall entrance, and someone is driving into the lot. It may seem obvious where she's going to park, but for two reasons we can't be sure.

If she sees the empty spot and if her goal is to minimize walking, it's reasonable to infer that she'll take it. But both of those if's are important. She may not know the spot is available. We do, because we're making up this problem, but she has to act on her own knowledge, not ours. The closest spot she knows to be available is not necessarily the closest one of which we know.

Then there's the second if: We have no way of knowing exactly what her goals are. If she's proud of her new sports car, still free of parking-lot dings, she is not "irrational" to park in the farthest corner of the lot. One who rashly makes this judgment does not understand her goals. She also might park out there if her doctor has told her to get more exercise, because to her the walk is desirable.

These two characteristics of human behavior—individuals act on their own knowledge, not yours, and on their own goals and values, not yours—arise time and time again throughout this book. Although they make the careful economist modest about his ability to judge or predict other individuals' actions, they contribute powerfully to his quest for understanding and explanation.

Economics provides us with a way of thinking, a set of logically interrelated concepts with proven ability to help us understand individuals' behavior and its consequences. There is nothing hypothetical about these concepts or their logical connections. There is no way to "test" their truth, and no point in trying. Together, they comprise economic theory. But when we try to apply them, we have to make specific assumptions about other individuals' goals and knowledge, usually because they seem reasonable to us. Even if our logic is superb, the accuracy of our understanding, explanation, and prediction also depends on how well we have depicted the thoughts and values of others. This is inherently an "iffy" proposition, and always will be.

She acts on her knowledge and goals, not ours.

Economics offers a logical structure of concepts to help us to think about human behavior.

"Realistic! You have to be realistic!"

Our semicircular pattern of cars resulted from the simple hypothesis that people want only to minimize walking. That assumption gives us the most bang for the buck (explanation per mental effort), so it was the place to start. If there's more to the real story, we may introduce additional goals. If people feel comfortable being near the building, even if that means parking far down its side and walking a little farther, the pattern would be a squashed semicircle centered on the door. If they prefer a straight shot to the door, the pattern will be a narrow ellipse sticking far out into the lot. However fancy we get, though, we should begin with a straightforward and easily understood principle.

"Realistic! You have to be realistic!" The graduate business-school students I used to teach at night seemed fond of this claim. Some of them were impatient with general principles, perhaps convinced that such things were of no practical use. Every teacher confronts this position, and has to find a gentle way to explain that it is an anti-intellectual attitude that destroys any possibility of thinking.

What does it mean, anyway? Certainly an explanation limited to "minimize walking distance" is unrealistic in the sense that it is incomplete, but don't confuse that with false. What would constitute a non-incomplete analysis? Would we have to think about all of the details of the real world at once? After all, if we ignore some irrelevant property of something, like the piano-mover failing to notice that the G-sharp above middle C is a little flat, our thought processes aren't fully capturing reality.¹⁵

Where could we obtain an analysis that would meet this kind of completeness standard? Not from me, not from you; in fact, nobody is smart enough to think about everything at once. The limitations of the human mind require us to simplify, as the popular acronym KISS—"keep it simple, stupid"—reminds us. To apply theory to reality, or to theorize, our first step must be to decide which attributes of reality are probably worth thinking about and which aren't. If you associate these terms with "ivory tower" or "isolated from reality," you've probably been exposed to theorizing that omitted some of the wrong things, like a few non-irrelevant details.

Thinking by theorizing is hard work, and a great many people try to avoid it by relying on their emotions, mystically trusting that their feelings wouldn't lead them wrong. This is what happens to the people who try to be realistic by thinking about everything at once; when they find it impossible they wind up not thinking at all. The very process of thinking, of using one's mind to organize and identify causes and effects, requires the isolation and analysis of important attributes and the logical deduction of their implications. That is theorizing, and there's no good substitute.

The purpose of a college, in fact, is to be unrealistic in the sense of providing an environment in which insignificant details of the real world can be ignored. This helps you to isolate the principles, the truly

Our thinking is always "incomplete"

Theorizing requires us to select attributes likely to be important, and to ignore those that are not

¹⁵What's relevant depends on one's goal. The flat G-sharp is irrelevant to the piano-mover, while the piano's weight is irrelevant to the concert pianist.

important attributes, and offers you the chance to focus on them. Enjoy this intellectual climate while you can; it's not easy to recapture when you're balancing a career and family. Of course this "unrealistic" experience will actually help you to cope with the real world, to escape the errors of those who can't distinguish between the trivial and the significant.

Our goal: Understanding causes and effects

All science tries to identify and understand causality. "If we do this, what are the effects likely to be?" Or "This happened... what caused it?" Often you know what effect you want, like higher sales, a better grade, or healthy and happy children, and have to determine what action is likely to cause it. In the parking lot, we observed an effect (the semicircular pattern), and through a process of theorizing identified a cause (individuals' dislike of walking).¹⁶

To theorize about causality, we must imagine that only one thing changes, and explore what would happen if that were the case. If we permit several simultaneous changes, we won't know what causes what and will probably find the analysis so complicated that we can't think it through at all. This method of assuming that only one change occurs at a time is called *ceteris paribus*, "other things the same." Any economics book, this one included, uses it often. Laboratory sciences like chemistry may actually be able to

Ceteris Paribus on the Mudslide
 "Sometimes, the scientists place obstructions in front of the flow, like the steel cables some mountain towns have strung in front of suspect hillsides, and then use laser beams to precisely measure the cables' effect on flow pattern. They methodically alter the consistency of the soil, then swing the gates open once again. 'It's the classic science thing,' says Dr. Iverson, 'we try to hold all the variables constant except one.'" James P. Miller, "Mudslides Reveal Their Secrets on Flume," *Wall Street Journal*, July 27, 1998, p. B2.

Fig. 1.2: "It's the classic science thing"

Ceteris paribus: other things the same

hold other things the same, with perhaps only temperature varying between samples. As Dr. Iverson says, in the shaded box at the left, "It's the classic science thing." Because our subjects are humans, we can't do that, so *ceteris paribus* must be an act of our imagination: "Of course many things were changing, probably more than we'll ever know about. But what would have happened if this had been the only change?" It's our inability to think through everything simultaneously that makes the *ceteris paribus* method essential.

If more than one change actually occurred, you can then do a *ceteris paribus* analysis on the second factor, exploring its effect alone, and combine the two changes' effects. In simple cases, all you have to do is add them: You studied harder for the second test (*ceteris paribus*, higher grade), but the material was tougher (*ceteris paribus*, lower grade), and you have only to judge which effect was stronger. In more complex problems there may be interactions that prevent the effects from being additive. The time to get into these complications, though, is obviously after you understand the effect of each change by itself.

Short cuts? Everybody loves them. When they work, they help us to achieve our goal at lower cost. But watch out: If you want to understand cause and effect, there is no way around a process of careful, one-thing-at-a-time (*ceteris paribus*) theorizing. The anti-intellectual reliance on one's feelings is one of the desperate but futile quests for a short cut around this process. Another constitutes what I think is the most common mistake in economics.¹⁷

How to avoid the most common mistake in economics

For a couple of years I worked as an economist for a Washington, D.C. think-tank, and found this error committed by business executives, accountants, lawyers, and members of Congress and their staffers. These highly respected people work hard, dress well, and earn a great deal of money, but when they speak or write of economics they often fall into a trap about which every student is warned near the start of her first Principles course.

¹⁶A criticism of causality is that many things must come together before something happens, so it's improper to identify any one of them as its cause. For our science, people take these things for granted and believe a desirable goal will be achieved if, and only if, they act.

¹⁷The great French economist of the mid-19th century, Frederic Bastiat, agrees. In "Post Hoc, Ergo Propter Hoc," p. 187 of his *Economic Sophisms* (Irvington-on-Hudson NY: Foundation for Economic Education, 1964), he writes: "This is the most common and most deceptive of all fallacies." The essays in this collection were written in the 1840s.

This error in reasoning is hardly unique to our subject. It's a general logical fallacy known by the Latin phrase *post hoc ergo propter hoc*, which means "after this, therefore because of this." If you want to determine the cause of B, for example, and you remember that it occurred after A, this popular fallacy tempts you to interpret the before-after relationship as proof that A caused B.

You can't infer causality just because one thing happened after another

It's true that causes must occur before their effects, because time doesn't run backwards, but A is never the only thing that occurred before B and not everything that happened before a particular event can be identified as its cause. Except in a carefully designed laboratory experiment, many things change at once, and that makes the search for causes and effects more difficult than a quick glance at the clock or calendar.

Here's one possibility: The prior event (A) is completely independent of the subsequent event (B). Suppose you have a flat tire driving home, but shortly after you get there the mail arrives, notifying you of a scholarship for next year. If a few friends are also seeking scholarships, should you advise them to grab knives and puncture their own tires? In this example, although the arrival of the great news followed the flat, they were independent events with no cause-effect relationship.¹⁸

A and B may be unrelated...

A second possibility is that, while (A) and (B) often occur together it's not because one causes the other but because they share a common cause (C). If it's such a hot day (C) that the ice in your iced tea melts (A), and shortly later a car on the highway overheats (B), you wouldn't infer that your melting ice caused the driver's problem and that you could have prevented it by insulating your glass.

...or they may have a common third cause...

A third possibility makes the unreliability of the before/after relationship as proof of cause/effect especially clear: In this case the earlier event (A) actually makes the later event (B) less likely, but something else (C) has happened that makes (B) more likely, even if we haven't noticed it yet. If (C)'s effect is stronger than (A)'s, then (B) will occur even though (A) made it less likely. Perhaps the owner of the car had just installed the correct amount and type of new coolant (A), which reduces the chance of overheating (B), but an unnoticed mechanical failure like the fan belt or water pump occurred too (C). Identifying the fresh coolant as the cause because it came earlier is not simply wrong; it's the opposite of the truth.

...or A may actually make B less likely to occur, but its effects are overpowered by those of C

Another example, perhaps closer to home, is the student's perennial quest for proof that careful and thorough studying actually causes lower grades. (The search for this causal link has been going on at least since I was an undergraduate. I may have taken part in it.) Evidence comes from the time you studied really hard but got a poor grade. Should we not mention that this "intensive studying" was an attempt to pack a month's material into one all-nighter? I hate to sound like an old fogey here, but blaming the studying is precisely the wrong conclusion to draw.

You may have discerned that the *ceteris paribus* method can help us to avoid the *post hoc* fallacy. If you had thought carefully about the flat tire, imagining your grades and extracurricular activities to have been identical to the other scholarship applicants' but that only you got the flat, it's unlikely that you would have thought it improved your chances. If the day hadn't been hot but you'd left your iced tea near a barbecue grill, if the motorist had changed the coolant and the fan belt hadn't broken, and if the studying had been accomplished throughout the month without extraordinary test fatigue, the errors above would have been unlikely. This is an exercise of the imagination. We must use our creative minds to find some logical connection, some process rooted in physics or logic or purposive human choice—something other than the simple fact that one followed the other.

If you doubt that wealthy and successful attorneys, accountants, and legislators would commit a fallacy described in the first chapter of most economics textbooks, let's look at some examples.

Raising the legal minimum wage is proposed periodically as a way to help the poor. It certainly helps some of them, and most students holding part-time minimum-wage jobs assume they'll be in this group. Maybe. Whatever your eventual judgment about this seemingly humanitarian legislation, you should realize that if an inexperienced, unskilled worker can produce only \$6 worth of services per hour, an employer who would hire him at a wage of \$5.75 will not hire if \$7.25 is legally required. If he's already working he will probably be let go. By making it illegal to pay less than \$7.25 per hour, the law—without really intending to—makes it illegal to hire any individual who cannot produce that much. Yet proponents of a rise in the minimum wage claim to have "solid, factual proof" that it won't cause unemployment: Sometimes when it has been increased, total employment has actually risen. They will present stunning graphs and complicated statistics showing employment data and computing ratios of all kinds to several decimal points.

Everyone tends to look first at the math and statistics, and it seems natural to conclude that if there are no math errors the conclusion must be right. Statistics are impressive, and anyone who can throw them

¹⁸ If you agree, it might be interesting to examine why we believe them to be independent. What kinds of things do we think about, to reach that conclusion?

around appears to be brilliant and scientific.¹⁹ Don't fall for it. Often they're camouflage for the simple error of *post hoc*. Suppose, for example, that the imposition of the higher wage floor (A) coincided with the start of a major economic boom (C). If employment among the inexperienced and/or unskilled later rises (B), the *post hoc* error permits identifying (A) as the cause of (B), when a story more consistent with economic logic would explain that the positive employment effect of the boom (C) must have overpowered the negative employment effect of the minimum-wage increase (A). Like the coolant and the overheating, calling the rise in employment the effect of the minimum-wage increase is the opposite of the truth. A little revision of our studying example provides an analogy: If your bleary-eyed but factoid-filled performance actually produces a higher grade than on a previous exam, you might follow the example of these minimum-wage advocates to identify "staying up all night" as the key to your success, and conclude that it's irrelevant whether you study or play pool in the wee hours of the morning.

Another debate involving *post hoc* was over the effectiveness of the investment incentives in the Economic Recovery Tax Act (ERTA) of 1980. Critics repeatedly claimed that its accelerated depreciation and investment tax credit failed to stimulate investment as the "supply-side" economists claimed they would. The critics' evidence? In ERTA's first couple of years, some measures of investment went down. The critics' reports were peppered with tables of numbers and computer-generated graphs. They were widely quoted in Congress and in the press as having "solid factual evidence."

The critics didn't mention that their investment data were preceded not only by ERTA but by the start of the most severe United States recession since World War II. Even if the effect on investment (B) of ERTA (A) were strongly positive, the sharply negative effect of the recession (C) could produce an overall decline. Only a *ceteris paribus* theoretical analysis is capable of isolating the effects on investment of changes in tax law. The critics didn't bother with that, probably suspecting that it would confirm our common sense that reducing the tax on an activity increases its incentive. My research group did such analyses, mostly using theory not much different from what you learn in this and later courses. I'm afraid we had little effect on the press. We tried to write well and clearly, but a theoretical argument places greater demands on the reader than does a collection of simple graphs, and doesn't have the pseudo-scientific (properly called scientific) aura that hovers in the air above random piles of statistics.²⁰

A final example is from an economist much of whose work I respect. It was a brief disagreement in *The Wall Street Journal* about whether foreign-exchange rates, prices of one country's currency in terms of another's (like how many dollars you would have to pay to buy a euro), should be fixed or floating, determined by governments or markets. Disagreeing with Jack Kemp, Milton Friedman ("Letters to the Editor," October 29, 1987) quoted Kemp as claiming that fixed rates are better. He then cited "the facts," comparing three macroeconomic variables in 1987 with those in 1971 (all good, and all higher in 1987), concluding with the "score" of Kemp 0, floating rates 3. That's it. It was a short letter.

The debate about exchange rates is irrelevant to our point. Milton Friedman is a brilliant and energetic economist, but his letter has the unfortunate implication that theory is unnecessary because causality can be inferred, in *post hoc* fashion, from "the facts." Here they are: After we got floating rates, things improved, so floating rates caused the improvement. Actually, all these numbers prove is that, whatever floating rates did, it didn't keep the macroeconomic variables from rising. That's a pretty weak point and certainly not the one Friedman wanted to make.

These three examples are offered to convince you that the *post hoc* fallacy is big-league stuff. It is the most common mistake in economics. Members of Congress are making law based on this fallacy. Nobel laureates in economics are lured into it when its distortions go their way. It may be the single most important error that you will find in people's efforts to understand economic reality.

The key to avoiding this most seductive of logical errors in economics is simple to state, tougher to practice: Don't ever let anyone's citing of "facts" and statistics substitute for well-reasoned theoretical argument, even when the facts confirm your position. Remember that the understanding for which economists and all other scientists search is a discovery of causality. Depending on the problem, the causal linkage must be found in the principles of natural or biological science or of purposive individual choice. It must use *ceteris paribus*. In laboratory sciences you may be able to hold other things constant; in social sciences, you can only imagine doing so. Knowing facts is important, of course (the fan belt broke; the ice melted; you got a poor grade; etc.), but facts don't explain their own causes. The whole point of *post hoc* is that the causal process producing those observable states can never be determined strictly from facts.

The cause is found through logic, not simply in a before and after relationship

¹⁹This attitude is related to the error of scientism to which I referred earlier.

²⁰Statistics are often misused, but they are important. A theorist's introspection usually identifies a number of responses that seem reasonable. For example, if the price of coffee were to rise by twenty percent, an individual might simply pay more or switch to tea. Historical data—properly interpreted with techniques you learn in statistics courses—can help the theorist to generalize properly about others' behavior. In our example, whether or not you switch to tea, some people probably do. A study of historical data about coffee and tea consumption, and coffee prices, can suggest how many people switched in the past. That, in turn, should help us to anticipate the probable effect of our hypothetical price increase in the future.

There are no short cuts around the process of reasoning using the method of *ceteris paribus*. Understanding and accepting this is mostly what differentiates a trained, disciplined thinker from someone who's just pretty smart. Without *ceteris paribus*, even the most intelligent of individuals are stuck. They can't think things through without it, so they have to rely either on their feelings or on the post hoc fallacy, which falsely suggests that they can infer causality from facts. When you understand, use, and advocate the *ceteris paribus* method, you'll have the satisfaction of knowing that you're defending scholarship, intellect, and reason against those who sneer at its impracticality. Besides, you'll be right a lot more often than the "practical" man who thinks he can "let the facts speak for themselves."

Facts do not identify their own causes; theory has to provide that

Sorry... no reliable shortcuts!

Facts do NOT "speak for themselves"!

The Principles of Choice

Economics is the science of choice. By thinking about choice, we can develop a few principles that will be useful throughout our study. They may seem obvious; they're supposed to. The elements of our theoretical structure should not be complicated or controversial.

1. Every human action implies a prior choice.

Actions differ in importance—whether and who you marry, where to eat lunch today, whether to pick up a nickel you see on the sidewalk—and in the thought underlying them, but each occurs only as the result of an earlier choice. You had to decide to pursue one course of action and not another.

Everyone has confronted situations in which he or she seemed to have "no choice," perhaps apologizing that "there just wasn't anything else I could do." Careful thought should reveal that these phrases simply mean it was easy to make the choice because all imaginable alternatives were much less attractive and easily dismissed.

There's always a choice... not always one that we like...

The mental processes involved in choosing are the essence of human action, and it's even been said that only when they're making choices are people acting essentially as human beings. (That proposition may have some interesting implications; we'll return to it later.) Of course every person's body is subject to laws of biology and physics, but these effects are not truly "human action." No conscious choice intervenes when a doctor tests your reflex by tapping your knee with a rubber hammer, or when gravity takes over in the second or two after you overestimate the friction of an icy sidewalk. When our bodies are responding simply as biological or physical entities, human action is not involved, and there truly is "no choice."

The limits set by biology and physics are wide, though, so there's plenty of scope for choice.

2. Choice implies the existence of alternatives.

Obviously, one can "choose" only if at least two options are available. Try to imagine the contrary: only one "option," only one thing you could possibly do. I don't mean to seem unsympathetic, but—from a scientific perspective—what's the problem? You have no decision to make, no thinking could possibly help, and whether you like it or not is irrelevant. There is no human action, no choice, and no role for the scientific analysis of choice.

People untrained in economics think this situation is much more common than it really is. Like the person a couple of paragraphs above, we all think, occasionally, that we have "no alternative." It's curious, though, that other options begin to surface as what had seemed to be the only option becomes more difficult, costly, and unattractive.

Sometimes the genuine alternatives lie a little beneath the surface. If there is only one means to a particular end, our alternatives are among ends. For example, perhaps the rules that define the Dean's List and the laws of logic imply that you'll have to earn an A in Economics this semester to make the list. Given this goal, of course you have "no alternative." But there are different goals. There is no rule of physics or logic that makes it impossible for you not to make the Dean's List, and one alternative to "earning an A and making the Dean's List" is "earning a B and not making the Dean's List"—a choice you might make if the difference between an A and a B requires a great sacrifice of other things you value. For another example, given a commuter's present location and that of the train station, if he insists on making the 6:10 he may have "no alternative" but to average 78 miles per hour for the next seven minutes. He really does have an alternative, though. It's drive properly and take the 6:50 instead.

There may be only one way to achieve a goal... but there are other goals

Without scarcity, there would be no need to make choices

There are a few corollaries to this second principle. First, there would be no meaning to the concept of choice if everyone could have everything that he could ever possibly desire. This is the principle of scarcity: the means to our desired ends are scarce. In a hypothetical world without scarcity, in which wishes were miraculously satisfied as they were conceived, there would be no choice and, obviously, no science of choice.

We can only choose among things of which we know

A second corollary also seems obvious. Individuals can choose only among alternatives of which they know. How could anyone consider an alternative he doesn't know exists? We've already noted that our shopper has to choose among parking spaces she knows to be empty, which may or may not include all of the ones that really are empty.

You're right—it should be obvious and not even necessary to state. But it is not at all uncommon, in either everyday life or in economics, for one person to criticize another's choice without considering that the actor may know less (or more!) about the available alternatives than his critic. Maybe you've been that critic, labeling someone else's action unwise because you believe that he would never have taken it if he had known what you know. Have you ever been your own critic, regretting a choice that was based on your knowledge at the time because you have since learned more? Everyone has. We don't have to suspend these judgments, especially of our own behavior, but there is reason for caution.

This principle suggests that, before we rush to judge another individual's choice, we appreciate that her knowledge of her alternatives may differ from ours. Every individual must act on the basis of her own knowledge of the alternatives. Perhaps you think she should know as much as you do; maybe you're right. But most of us learned long ago that we don't know everything. Pause for a second to consider all of the things that you don't know but she might.

Advertising can make us aware of more alternatives

Another implication of this principle is that economic institutions that make specific knowledge more cheaply and easily attainable broaden the individual's available set of alternatives. As we'll discuss here and there, full knowledge is not automatically provided to everyone with the snap of the fingers, so there is value to institutions that make information available. Consider advertising—perhaps a large billboard just outside of town. You may not like it, because it hides some pretty trees and you already know about the fast-food restaurant it advertises, but it may convey important information to an out-of-town traveler.

If you often find yourself judging someone else's choice on the basis of your knowledge, remember this principle. Perhaps it's reasonable to assert that he should have known what you know; often it isn't. Economists sometimes commit an extreme form of this error: They judge individuals' behavior and the market outcomes that it produces by the standard of perfect and complete knowledge. We'll discuss this error throughout the book.

The more accurate and complete our knowledge, the better our choice

A third corollary to our principle about choice and alternatives is that the more accurately the individual identifies his alternatives, the better his knowledge about their nature and effects, the more satisfactory his choice is likely to be. Wishful thinking is one of the villains here. We all can imagine alternatives that are superior to those confronting us at any particular time. We sometimes improperly identify an alternative, thinking it's something it really isn't.

What happens if you try to choose an alternative that isn't really there? Let's consider first the old lounge-lizard joke "I just flew in from Las Vegas... and boy, are my arms tired!" Suppose you want to attend a meeting in Boise and consider three alternatives: Take the 4:08 bus and make your meeting, don't go to the meeting, or fly to it using the arm-flapping method. You desperately want to make the meeting, so you rule out the second option, but you don't care much for bus travel, so you choose to fly. You thought this was an option, but a few seconds of arm-flapping convince you otherwise. Meanwhile, the bus has left, and you miss your meeting. This is the inevitable result of trying to choose an alternative that isn't really there: you wind up—by default—with one of the ones that do exist. If you're lucky, it will be the best of the existing alternatives; in this case, it wasn't.

In this example, the alternative you tried to choose couldn't exist because it violated physical laws. Now let's replace the arm-flapping option with "Get a ride to Boise with a friend, maybe." You'd rather ride with your friend than take the bus, and you'd prefer either of these to missing the meeting, but you aren't sure you'll be able to convince a friend to drive you. You take a chance and let the bus go, but then are unable to locate a friendly chauffeur, so you don't make your meeting.

Is this just another example of choosing a nonexistent alternative and attaining the less-preferred of the actual ones? In retrospect (economists like the term *ex post*), yes, but before the outcome was determined (which economists call *ex ante*) riding with the friend was a possibility. The alternative that you chose was not "Ride with a friend and make the meeting"; it was "Probably ride with a friend and make the meeting, but maybe be stuck here and miss it." We should not identify that alternative as "nonexistent" simply because its later outcome was disappointment. You chose, and actually obtained, the chance of a friendly

ride to the meeting. At the time of your choice, the outcome of your risk-taking lay in the future, and in the reputed words of Yogi Berra, “The future can be summed up in one word: You never know.”

The consequences of every choice are somewhat uncertain because they lie in the future, but some are more chancy than others. You buy a lottery ticket instead of a magazine, or you preregister for a popular course that might be filled and bypass a less desirable course that you’re sure to get into. If you knew that your ticket would be a loser, or that you’d miss both your first and second course choices by trying for the first, you would have acted differently. But your decision was made on the basis of your best knowledge at the time, and you tried to take the likelihoods into account. You took a chance and it didn’t pay off. That happens to everyone every day. There’s nothing wrong with deciding that the alternative that consists of a 20 percent chance of riding to the meeting with a friend and an 80 percent chance of missing the meeting (according to your probability estimates) is preferable to a 100 percent chance (again, your estimate) of riding to the meeting on a bus.²¹

Part of that knowledge is of future likelihoods

This corollary, in short, is not an insistence that we know the future or be omniscient. It just emphasizes that our current choice is always among currently available alternatives. The better our knowledge about them, perhaps only about realistic likelihoods of various future possibilities, the better our choice will be. If we misunderstand what our alternatives are, or construct phony ones by pretending we have options we don’t really have, we often wind up with outcomes that make us less well off than we could have been.

3. Choice requires a process for ranking alternatives. That process is valuation.

Suppose you have developed a list of alternatives open to you at a particular time, as complete and accurately identified as you’ve decided is worthwhile. You must have some way to decide which alternative to pick and which therefore to reject.

This is the point at which you must assign value to each option.

From those alternatives currently available, imagine taking Action A. Maybe it’s going hiking with Frank, or switching from Economics to Cultural Studies, or picking up that nickel. Imagine what your future would be like if you chose that action. If the action is marrying someone or having a child, you might want to scan over your whole anticipated lifetime; if it’s scratching your forearm the next ten seconds might suffice. Get a firm grip on that feeling, that sense of how well-off you would be. Economists throughout recent history have used the word utility to describe the size or magnitude of that sense of well-offness. Set that feeling aside, temporarily, in a brain file marked “Action A.”

Value and utility are the same

Now perform a similar thought experiment with Action B, another currently available alternative. What would your future be like if you were to choose this action? It would probably be much the same as if you’d chosen A, but some things would be different. How well-off would you feel? That’s the utility of action B. It would be silly to try to measure the magnitude of that feeling with a number, but try to develop a sense of its size, its utility, and file it under “Action B.”

You’ll have to do the same with each of the other alternatives that you consider, and there is no limit to their potential number. You might, for example, spend the next hour neither studying economics nor anthropology, but standing on your head on the sidewalk, or beginning a walk to Argentina. Even your dismissal of all but a few of these possibilities as ridiculous is an implicit judgment of their value: so low that they’re not worth considering further. This illustrates that valuation is implicitly, perhaps subconsciously, involved even in the very conceiving of your available alternatives.

Valuation is even involved in forming your list of alternatives

Valuation is the process of assigning value (utility) to the alternative actions open to you at a particular time. The value or utility of an action is the sense of how well-off you’ll be if you choose that action, and it is determined by imagining the future. Since the alternatives among which we must choose are actions, valuation is properly associated with an action, not with a thing. The distinction between actions and things can get a little strained, but it’s best to attribute value to “buying, owning, and/or using this fishing rod” and not to “this fishing rod.”

Valuation is estimating how well off you’ll be if you choose a particular action

Perhaps you enjoy the study of art and are thinking about becoming a museum curator. But you also love to race off-road vehicles, and are considering a career as a professional driver in Baja-style races. These radically contrasting careers appeal to different aspects of your personality, and the reasons that each of them produces value are different. Nonetheless, if you can’t do them both you must decide which is more attractive, which offers the greater value. In an example like this it’s especially tough because the specific sources of value are so different. Fortunately, all that is necessary is a sense of “more” and “less.”

²¹There is some controversy about the validity of using probability concepts with unique, non-repeatable events. The judgments to which the text refers are obviously informal degrees of belief. The “objective” or relative-frequency theory of probability is associated with Richard von Mises, *Probability Statistics and Truth* (London: George Allen and Unwin, 1957).

This is called an ordinal relationship, rather than cardinal numbers (“curator, 87.5; driver 79.2”) that may be fun but make no sense. They aren’t needed anyway.

It is easier to visualize the process of valuation if we depict it with diagrams called value scales. There will be a different one for each decision you face, but Figure 1.3 illustrates the concept. This diagram shows only that, in the current situation, you believe your future would be better if you were to choose action A than if you were to choose action B. Either of these would produce a better future than choosing C, D, or any of the lower-ranked alternative actions.

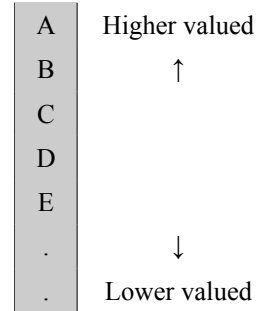


Fig. 1.3: A Value Scale

4. One chooses the highest-valued alternative, and forgoes each of the others.

Choice, the selection of one of the alternatives, requires that each of the others be forgone. If you could have more than one, the actions you have depicted are not really alternatives. If it were possible to have B and C together, for example, the value scale above is not correct. We should be comparing A not to B and to C, but to the single alternative “B and C,” which—to avoid confusion—we should call something else. The alternative actions ranked on a value scale, in other words, must be mutually exclusive: if you pick one, you can’t have any of the others.

The final step in our process may, again, seem obvious: One chooses the action that, by one’s own values, makes the future look brighter than does any of its alternatives. Beware of any inference of narrowly conceived, materialistic selfishness. Depending on your own attitudes, an afternoon of sunning yourself on the lawn may rank about fifth while spending the time as a blood-drive volunteer worker may give you the most satisfaction. You always choose the highest-valued alternative, but how you determine that is up to you.

This step sounds mechanical or automatic. It is. Once the alternative actions have been conceived, and values have been attributed to them, the work is over: the decision is automatic, not requiring any further thinking.²²

But haven’t you known that all along? The tough part of life is not deciding how to act when we have already conceived of our alternatives and have determined the consequences and value of each. It’s conceiving of our options in the first place, and imagining and assigning value to their consequences. What do you do if you’ve always wanted to go to a particular concert, but suddenly a close friend or family member asks you to visit that evening and will be sadly disappointed if you refuse? You must rank these options according to value. It’s likely to be an agonizing and arduous process, and no economist can help you much with it.

We will be using these principles of choice continually in our further study, adding new insights and, perhaps, restrictions or qualifications as we explore their implications. They don’t tell us everything we need to know to understand human behavior, by a long shot, but they provide us with an essential framework for thinking about choice and its implications.

Mutually exclusive: If you have one, you can’t have any of the others

²²You will find later that economic theorists often assume that value scales (perhaps in the guise of “preference maps,” “utility functions,” or “indifference curves,” are perfectly known, both by the actor and the economist. This assumption simplifies the logical analysis of choice, but bypasses much that is interesting—entrepreneurship, for one thing. The *logic* of choice is, as mentioned above, only part of the *science* of choice.

YOU SHOULD REMEMBER...

1. Economics is the **science of choice**.
2. **Methodological individualism** is the method of understanding an observable social event by tracing its cause to individuals' earlier choices.
3. *Ceteris paribus* ("other things the same") is our way of insisting "One thing at a time, please!"
4. *Post hoc ergo propter hoc* ("after this, therefore because of this") is the error of inferring causality solely from a before-after relationship.
5. People who try to "let the facts speak for themselves" are usually committing the *post hoc fallacy*.
6. Every human action implies a **prior choice**.
7. Choice implies the existence of **alternatives**.
8. Choice requires a process for ranking alternatives. That process is called **valuation**.
9. We choose the **highest valued** alternative, and forgo the others.

QUESTIONS FOR CONSIDERATION

- 1) It's 2:00 AM and you're driving alone on a desolate rural highway. Your car is old and you're worried that it might break down. You keep muttering to yourself that you *need* to get to your destination and that your car *can't* break down.

Is there any reasonable causal connection between what you "need" and whether your car breaks down? That is, does your sense of "need" make your car either more or less likely to break down? Why or why not? Consider, in general, the relationship between wishes and reality.

- 2) What is the causal connection, if any, between a student's "need" to receive a good grade and whether he or she actually receives one? Should a professionally responsible teacher consider a student's "need" when assigning grades?

- 3) Napoleon Hill, in the 1920s, wrote a book called *Think and Grow Rich*. He maintained that an almost sure-fire way to get rich is desperately to *want* to be rich. The individual should adopt getting rich as his "definite chief aim" and use psychological strategies like repeating aloud ten times every morning "I will do everything in my power today to become rich."

a) Do you suppose that Hill believes you can get rich just by thinking?

b) What, if anything, is the connection between "thinking" and "growing rich"? Does this have anything to do with your answer to Questions 1 and 2?

c) Defend the proposition that many people aren't rich simply because they don't **want** to be rich. What does "want" have to mean, in this context?

d) Let's apply our ideas from (c) to a particular case. If you were to ask a middle-aged man sprawled in his recliner, drinking a beer and watching professional wrestling on television, whether he wants to be rich, he'll probably say "yes." Hill might respond that he doesn't *really* want to be rich. What do they mean?

- 3) Here's a little *post hoc* exercise. You're driving along the Interstate, and several things have happened in the past few minutes. A flying rock punctured your car's radiator, allowing the liquid that keeps your motor cool gradually to drip out. You passed the sign that says "Exit 48 Murraysville, 1/2 mile." A new song by a popular rock group came on the radio, and you spilled a soft drink in your lap. A few miles down the road, you notice that your car is overheating.

a) Which of the events listed above is the most likely cause of your car's overheating?

b) Think about why you answered (a) as you did. What kind of knowledge, tentative though it may be, led you to that answer?

c) Give an incorrect answer (that is, attributing the cause to something other than what you identified in (a)) that commits the *post hoc* fallacy. State your answer so the *post hoc* error is obvious.

d) Formulate an answer that, while it correctly identifies the cause of the overheating, nonetheless uses the fallacious *post hoc* argument to reach this correct conclusion. Don't forget that "time is of the essence" in this fallacy. Not all incorrect reasoning commits *post hoc*.

e) What is the point of this question, anyway?

- 4) You are trying to determine what causes a particular disease. By thorough examination of many years' statistics, you find that the disease usually followed event A. (It might be drinking a certain kind of water, visiting a particular country, or taking some other kind of action.)

- a) Would you want to say this “proves” that A caused the disease?
- b) Even if “proof” is too strong a word, might this information help you to determine the cause? How?
- c) Suppose you discover that everyone who took action A got the disease, and no victim of the disease did not take action A. Would this be enough to convince you not to take action A? Would it be enough to prove that A caused the disease?
- d) What kind of discovery would constitute conclusive proof that A, indeed, is the cause of the disease?
- e) A general wrap-up: Would it be possible to determine causality if you had no facts whatsoever about the circumstances in which the disease developed? (In other words, are facts *necessary* for establishing causality?) Can one determine causality merely by examining these “facts”? (In other words, are facts *sufficient* for establishing causality?) If not, what more is required?

