

"SURPRISINGLY ENTERTAINING. . . . ARIELY'S BOOK MAKES ECONOMICS AND THE STRANGE HAPPENINGS OF THE HUMAN MIND FUN." —USA TODAY

Why do our headaches persist after we take a one-cent aspirin but disappear when we take a fifty-cent aspirin?

Why do we splurge on a lavish meal but cut coupons to save twenty-five cents on a can of soup?

When it comes to making decisions in our lives, we think we're making smart, rational choices. But are we?

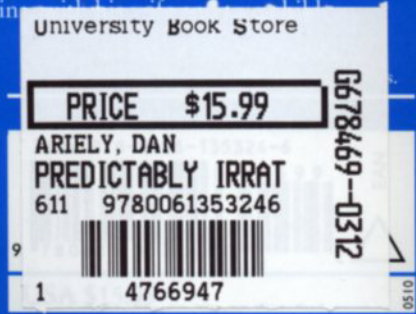
In this newly revised and expanded edition of the groundbreaking *New York Times* best-seller, Dan Ariely refutes the common assumption that we behave in fundamentally rational ways. From drinking coffee to losing weight, from buying a car to choosing a romantic partner, we consistently overpay, underestimate, and procrastinate. Yet these misguided behaviors are neither random nor senseless. They're systematic and predictable—making us predictably irrational.



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"A marvelous book . . . thought-provoking and highly entertaining."
—Jerome Groopman,
New York Times
bestselling author of
How Doctors Think

"In creative ways, author Dan Ariely puts rationality to the test. . . . New experiments and optimistic ideas tumble out of him, like water from a fountain."
—*Boston Globe*

NEW YORK TIMES BESTSELLER



REVISED AND
EXPANDED EDITION

PREDICTABLY IRRATIONAL

"Sly and lucid. . . . Revolutionary." —*New York Times Book Review*

*The Hidden Forces That
Shape Our Decisions*

DAN ARIELY

AUTHOR OF *THE UPSIDE OF IRRATIONALITY*

CHAPTER 15

Beer and Free Lunches

*What Is Behavioral Economics, and Where Are
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Introduction

How an Injury Led Me to Irrationality and to the Research Described Here

I have been told by many people that I have an unusual way of looking at the world. Over the last 20 years or so of my research career, it's enabled me to have a lot of fun figuring out what really influences our decisions in daily life (as opposed to what we think, often with great confidence, influences them).

Do you know why we so often promise ourselves to diet, only to have the thought vanish when the dessert cart rolls by?

Do you know why we sometimes find ourselves excitedly buying things we don't really need?

Do you know why we still have a headache after taking a one-cent aspirin, but why that same headache vanishes when the aspirin costs 50 cents?

Do you know why people who have been asked to recall the Ten Commandments tend to be more honest (at least immediately afterward) than those who haven't? Or why honor codes actually do reduce dishonesty in the workplace?

By the end of this book, you'll know the answers to these and many other questions that have implications for your personal life, for your business life, and for the way you look at the world. Understanding the answer to the question about aspirin, for example, has implications not only for your choice of drugs, but for one of the biggest issues facing our society: the cost and effectiveness of health insurance. Understanding the impact of the Ten Commandments in curbing dishonesty might help prevent the next Enron-like fraud. And understanding the dynamics of impulsive eating has implications for every other impulsive decision in our lives—including why it's so hard to save money for a rainy day.

My goal, by the end of this book, is to help you fundamentally rethink what makes you and the people around you tick. I hope to lead you there by presenting a wide range of scientific experiments, findings, and anecdotes that are in many cases quite amusing. Once you see how systematic certain mistakes are—how we repeat them again and again—I think you will begin to learn how to avoid some of them.

But before I tell you about my curious, practical, entertaining (and in some cases even delicious) research on eating, shopping, love, money, procrastination, beer, honesty, and other areas of life, I feel it is important that I tell you about the origins of my somewhat unorthodox worldview—and therefore of this book. Tragically, my introduction to this arena started with an accident many years ago that was anything but amusing.

ON WHAT WOULD otherwise have been a normal Friday afternoon in the life of an eighteen-year-old Israeli, everything changed irreversibly in a matter of a few seconds. An explo-

sion of a large magnesium flare, the kind used to illuminate battlefields at night, left 70 percent of my body covered with third-degree burns.

The next three years found me wrapped in bandages in a hospital and then emerging into public only occasionally, dressed in a tight synthetic suit and mask that made me look like a crooked version of Spider-Man. Without the ability to participate in the same daily activities as my friends and family, I felt partially separated from society and as a consequence started to observe the very activities that were once my daily routine as if I were an outsider. As if I had come from a different culture (or planet), I started reflecting on the goals of different behaviors, mine and those of others. For example, I started wondering why I loved one girl but not another, why my daily routine was designed to be comfortable for the physicians but not for me, why I loved going rock climbing but not studying history, why I cared so much about what other people thought of me, and mostly what it is about life that motivates people and causes us to behave as we do.

During the years in the hospital following my accident, I had extensive experience with different types of pain and a great deal of time between treatments and operations to reflect on it. Initially, my daily agony was largely played out in the “bath,” a procedure in which I was soaked in disinfectant solution, the bandages were removed, and the dead particles of skin were scraped off. When the skin is intact, disinfectants create a low-level sting, and in general the bandages come off easily. But when there is little or no skin—as in my case because of my extensive burns—the disinfectant stings unbearably, the bandages stick to the flesh, and removing them (often tearing them) hurts like nothing else I can describe.

Early on in the burn department I started talking to the

nurses who administered my daily bath, in order to understand their approach to my treatment. The nurses would routinely grab hold of a bandage and rip it off as fast as possible, creating a relatively short burst of pain; they would repeat this process for an hour or so until they had removed every one of the bandages. Once this process was over I was covered with ointment and with new bandages, in order to repeat the process again the next day.

The nurses, I quickly learned, had theorized that a vigorous tug at the bandages, which caused a sharp spike of pain, was preferable (to the patient) to a slow pulling of the wrappings, which might not lead to such a severe spike of pain but would extend the treatment, and therefore be more painful overall. The nurses had also concluded that there was no difference between two possible methods: starting at the most painful part of the body and working their way to the least painful part; or starting at the least painful part and advancing to the most excruciating areas.

As someone who had actually experienced the pain of the bandage removal process, I did not share their beliefs (which had never been scientifically tested). Moreover, their theories gave no consideration to the amount of fear that the patient felt anticipating the treatment; to the difficulties of dealing with fluctuations of pain over time; to the unpredictability of not knowing when the pain will start and ease off; or to the benefits of being comforted with the possibility that the pain would be reduced over time. But, given my helpless position, I had little influence over the way I was treated.

As soon as I was able to leave the hospital for a prolonged period (I would still return for occasional operations and treatments for another five years), I began studying at Tel Aviv University. During my first semester, I took a class that

profoundly changed my outlook on research and largely determined my future. This was a class on the physiology of the brain, taught by professor Hanan Frenk. In addition to the fascinating material Professor Frenk presented about the workings of the brain, what struck me most about this class was his attitude to questions and alternative theories. Many times, when I raised my hand in class or stopped by his office to suggest a different interpretation of some results he had presented, he replied that my theory was indeed a possibility (somewhat unlikely, but a possibility nevertheless)—and would then challenge me to propose an empirical test to distinguish it from the conventional theory.

Coming up with such tests was not easy, but the idea that science is an empirical endeavor in which all the participants, including a new student like myself, could come up with alternative theories, as long as they found empirical ways to test these theories, opened up a new world to me. On one of my visits to Professor Frenk's office, I proposed a theory explaining how a certain stage of epilepsy developed, and included an idea for how one might test it in rats.

Professor Frenk liked the idea, and for the next three months I operated on about 50 rats, implanting catheters in their spinal cords and giving them different substances to create and reduce their epileptic seizures. One of the practical problems with this approach was that the movements of my hands were very limited, because of my injury, and as a consequence it was very difficult for me to operate on the rats. Luckily for me, my best friend, Ron Weisberg (an avid vegetarian and animal lover), agreed to come with me to the lab for several weekends and help me with the procedures—a true test of friendship if ever there was one.

In the end, it turned out that my theory was wrong, but

this did not diminish my enthusiasm. I was able to learn something about my theory, after all, and even though the theory was wrong, it was good to know this with high certainty. I always had many questions about how things work and how people behave, and my new understanding—that science provides the tools and opportunities to examine anything I found interesting—lured me into the study of how people behave.

With these new tools, I focused much of my initial efforts on understanding how we experience pain. For obvious reasons I was most concerned with such situations as the bath treatment, in which pain must be delivered to a patient over a long period of time. Was it possible to reduce the overall agony of such pain? Over the next few years I was able to carry out a set of laboratory experiments on myself, my friends, and volunteers—using physical pain induced by heat, cold water, pressure, loud sounds, and even the psychological pain of losing money in the stock market—to probe for the answers.

By the time I had finished, I realized that the nurses in the burn unit were kind and generous individuals (well, there was one exception) with a lot of experience in soaking and removing bandages, but they still didn't have the right theory about what would minimize their patients' pain. How could they be so wrong, I wondered, considering their vast experience? Since I knew these nurses personally, I knew that their behavior was not due to maliciousness, stupidity, or neglect. Rather, they were most likely the victims of inherent biases in their perceptions of their patients' pain—biases that apparently were not altered even by their vast experience.

For these reasons, I was particularly excited when I returned to the burn department one morning and presented

my results, in the hope of influencing the bandage removal procedures for other patients. It turns out, I told the nurses and physicians, that people feel less pain if treatments (such as removing bandages in a bath) are carried out with lower intensity and longer duration than if the same goal is achieved through high intensity and a shorter duration. In other words, I would have suffered less if they had pulled the bandages off slowly rather than with their quick-pull method.

The nurses were genuinely surprised by my conclusions, but I was equally surprised by what Etty, my favorite nurse, had to say. She admitted that their understanding had been lacking and that they should change their methods. But she also pointed out that a discussion of the pain inflicted in the bath treatment should also take into account the psychological pain that the nurses experienced when their patients screamed in agony. Pulling the bandages quickly might be more understandable, she explained, if it were indeed the nurses' way of shortening their own torment (and their faces often did reveal that they were suffering). In the end, though, we all agreed that the procedures should be changed, and indeed, some of the nurses followed my recommendations.

My recommendations never changed the bandage removal process on a greater scale (as far as I know), but the episode left a special impression on me. If the nurses, with all their experience, misunderstood what constituted reality for the patients they cared so much about, perhaps other people similarly misunderstand the consequences of their behaviors and, for that reason, repeatedly make the wrong decisions. I decided to expand my scope of research, from pain to the examination of cases in which individuals make repeated mistakes—without being able to learn much from their experiences.

THIS JOURNEY INTO the many ways in which we are all irrational, then, is what this book is about. The discipline that allows me to play with this subject matter is called *behavioral economics*, or judgment and decision making (JDM).

Behavioral economics is a relatively new field, one that draws on aspects of both psychology and economics. It has led me to study everything from our reluctance to save for retirement to our inability to think clearly during sexual arousal. It's not just the behavior that I have tried to understand, though, but also the decision-making processes behind such behavior—yours, mine, and everybody else's. Before I go on, let me try to explain, briefly, what behavioral economics is all about and how it is different from standard economics. Let me start out with a bit of Shakespeare:

*What a piece of work is a man! how noble in reason!
how infinite in faculty! in form and moving how
express and admirable! in action how like an angel!
in apprehension how like a god! The beauty of the
world, the paragon of animals. —from Act II,
scene 2, of Hamlet*

The predominant view of human nature, largely shared by economists, policy makers, nonprofessionals, and everyday Joes, is the one reflected in this quotation. Of course, this view is largely correct. Our minds and bodies are capable of amazing acts. We can see a ball thrown from a distance, instantly calculate its trajectory and impact, and then move our body and hands in order to catch it. We can learn new languages with ease, particularly as young children. We can master chess. We can recognize thousands of faces without

confusing them. We can produce music, literature, technology, and art—and the list goes on and on.

Shakespeare is not alone in his appreciation for the human mind. In fact, we all think of ourselves along the lines of Shakespeare's depiction (although we do realize that our neighbors, spouses, and bosses do not always live up to this standard). Within the domain of science, these assumptions about our ability for perfect reasoning have found their way into economics. In economics, this very basic idea, called *rationality*, provides the foundation for economic theories, predictions, and recommendations.

From this perspective, and to the extent that we all believe in human rationality, we are all economists. I don't mean that each of us can intuitively develop complex game-theoretical models or understand the generalized axiom of revealed preference (GARP); rather, I mean that we hold the basic beliefs about human nature on which economics is built. In this book, when I mention the *rational* economic model, I refer to the basic assumption that most economists and many of us hold about human nature—the simple and compelling idea that we are capable of making the right decisions for ourselves.

Although a feeling of awe at the capability of humans is clearly justified, there is a large difference between a deep sense of admiration and the assumption that our reasoning abilities are perfect. In fact, this book is about human *irrationality*—about our distance from perfection. I believe that recognizing where we depart from the ideal is an important part of the quest to truly understand ourselves, and one that promises many practical benefits. Understanding irrationality is important for our everyday actions and decisions, and for understanding how we design our environment and the choices it presents to us.

My further observation is that we are not only irrational, but *predictably irrational*—that our irrationality happens the same way, again and again. Whether we are acting as consumers, businesspeople, or policy makers, understanding how we are predictably irrational provides a starting point for improving our decision making and changing the way we live for the better.

This leads me to the real “rub” (as Shakespeare might have called it) between conventional economics and behavioral economics. In conventional economics, the assumption that we are all rational implies that, in everyday life, we compute the value of all the options we face and then follow the best possible path of action. What if we make a mistake and do something irrational? Here, too, traditional economics has an answer: “market forces” will sweep down on us and swiftly set us back on the path of righteousness and rationality. On the basis of these assumptions, in fact, generations of economists since Adam Smith have been able to develop far-reaching conclusions about everything from taxation and health-care policies to the pricing of goods and services.

But, as you will see in this book, we are really far less rational than standard economic theory assumes. Moreover, these irrational behaviors of ours are neither random nor senseless. They are systematic, and since we repeat them again and again, predictable. So, wouldn't it make sense to modify standard economics, to move it away from naive psychology (which often fails the tests of reason, introspection, and—most important—empirical scrutiny)? This is exactly what the emerging field of behavioral economics, and this book as a small part of that enterprise, is trying to accomplish.

AS YOU WILL see in the pages ahead, each of the chapters in this book is based on a few experiments I carried out over the years with some terrific colleagues (at the end of the book, I have included short biographies of my amazing collaborators). Why experiments? Life is complex, with multiple forces simultaneously exerting their influences on us, and this complexity makes it difficult to figure out exactly how each of these forces shapes our behavior. For social scientists, experiments are like microscopes or strobe lights. They help us slow human behavior to a frame-by-frame narration of events, isolate individual forces, and examine those forces carefully and in more detail. They let us test directly and unambiguously what makes us tick.

There is one other point I want to emphasize about experiments. If the lessons learned in any experiment were limited to the exact environment of the experiment, their value would be limited. Instead, I would like you to think about experiments as an illustration of a general principle, providing insight into how we think and how we make decisions—not only in the context of a particular experiment but, by extrapolation, in many contexts of life.

In each chapter, then, I have taken a step in extrapolating the findings from the experiments to other contexts, attempting to describe some of their possible implications for life, business, and public policy. The implications I have drawn are, of course, just a partial list.

To get real value from this, and from social science in general, it is important that you, the reader, spend some time thinking about how the principles of human behavior identified in the experiments apply to your life. My suggestion to you is to pause at the end of each chapter and consider

whether the principles revealed in the experiments might make your life better or worse, and more importantly what you could do differently, given your new understanding of human nature. This is where the real adventure lies.

And now for the journey.

CHAPTER 1

The Truth about Relativity

*Why Everything Is Relative—Even
When It Shouldn't Be*

One day while browsing the World Wide Web (obviously for work—not just wasting time), I stumbled on the following ad, on the Web site of a magazine, the *Economist*.

Economist.com	SUBSCRIPTIONS
OPINION	Welcome to
WORLD	The Economist Subscription Centre
BUSINESS	Pick the type of subscription you want to buy or renew.
FINANCE & ECONOMICS	<input type="checkbox"/> Economist.com subscription - US \$59.00
SCIENCE & TECHNOLOGY	One-year subscription to Economist.com.
PEOPLE	Includes online access to all articles from
BOOKS & ARTS	<i>The Economist</i> since 1997.
MARKETS & DATA	<input type="checkbox"/> Print subscription - US \$125.00
DIVERSIONS	One-year subscription to the print edition
	of <i>The Economist</i> .
	<input type="checkbox"/> Print & web subscription - US \$125.00
	One-year subscription to the print edition
	of <i>The Economist</i> and online access to all
	articles from <i>The Economist</i> since 1997.

I read these offers one at a time. The first offer—the Internet subscription for \$59—seemed reasonable. The second option—the \$125 print subscription—seemed a bit expensive, but still reasonable.

But then I read the third option: a print *and* Internet subscription for \$125. I read it twice before my eye ran back to the previous options. Who would want to buy the print option alone, I wondered, when both the Internet and the print subscriptions were offered for the same price? Now, the print-only option may have been a typographical error, but I suspect that the clever people at the *Economist's* London offices (and they are clever—and quite mischievous in a British sort of way) were actually manipulating me. I am pretty certain that they wanted me to skip the Internet-only option (which they assumed would be my choice, since I was reading the advertisement on the Web) and jump to the more expensive option: Internet and print.

But how could they manipulate me? I suspect it's because the *Economist's* marketing wizards (and I could just picture them in their school ties and blazers) knew something important about human behavior: humans rarely choose things in absolute terms. We don't have an internal value meter that tells us how much things are worth. Rather, we focus on the relative advantage of one thing over another, and estimate value accordingly. (For instance, we don't know how much a six-cylinder car is worth, but we can assume it's more expensive than the four-cylinder model.)

In the case of the *Economist*, I may not have known whether the Internet-only subscription at \$59 was a better deal than the print-only option at \$125. But I certainly knew that the print-and-Internet option for \$125 was better than the print-only option at \$125. In fact, you could reasonably deduce that in the combination package, the Internet subscription is free! "It's

a bloody steal—go for it, governor!" I could almost hear them shout from the riverbanks of the Thames. And I have to admit, if I had been inclined to subscribe I probably would have taken the package deal myself. (Later, when I tested the offer on a large number of participants, the vast majority preferred the Internet-and-print deal.)

So what was going on here? Let me start with a fundamental observation: most people don't know what they want unless they see it in context. We don't know what kind of racing bike we want—until we see a champ in the Tour de France ratcheting the gears on a particular model. We don't know what kind of speaker system we like—until we hear a set of speakers that sounds better than the previous one. We don't even know what we want to do with our lives—until we find a relative or a friend who is doing just what we think we should be doing. Everything is relative, and that's the point. Like an airplane pilot landing in the dark, we want runway lights on either side of us, guiding us to the place where we can touch down our wheels.

In the case of the *Economist*, the decision between the Internet-only and print-only options would take a bit of thinking. Thinking is difficult and sometimes unpleasant. So the *Economist's* marketers offered us a no-brainer: relative to the print-only option, the print-and-Internet option looks clearly superior.

The geniuses at the *Economist* aren't the only ones who understand the importance of relativity. Take Sam, the television salesman. He plays the same general type of trick on us when he decides which televisions to put together on display:

36-inch Panasonic for \$690

42-inch Toshiba for \$850

50-inch Philips for \$1,480

Which one would you choose? In this case, Sam knows that customers find it difficult to compute the value of different options. (Who really knows if the Panasonic at \$690 is a better deal than the Philips at \$1,480?) But Sam also knows that given three choices, most people will take the middle choice (as in landing your plane between the runway lights). So guess which television Sam prices as the middle option? That's right—the one he wants to sell!

Of course, Sam is not alone in his cleverness. The *New York Times* ran a story recently about Gregg Rapp, a restaurant consultant, who gets paid to work out the pricing for menus. He knows, for instance, how lamb sold this year as opposed to last year; whether lamb did better paired with squash or with risotto; and whether orders decreased when the price of the main course was hiked from \$39 to \$41.

One thing Rapp has learned is that high-priced entrées on the menu boost revenue for the restaurant—even if no one buys them. Why? Because even though people generally won't buy the most expensive dish on the menu, they will order the second most expensive dish. Thus, by creating an expensive dish, a restaurateur can lure customers into ordering the second most expensive choice (which can be cleverly engineered to deliver a higher profit margin).¹

SO LET'S RUN through the *Economist's* sleight of hand in slow motion.

As you recall, the choices were:

1. Internet-only subscription for \$59.
2. Print-only subscription for \$125.
3. Print-and-Internet subscription for \$125.

When I gave these options to 100 students at MIT's Sloan School of Management, they opted as follows:

1. Internet-only subscription for \$59—16 students
2. Print-only subscription for \$125—zero students
3. Print-and-Internet subscription for \$125—84 students

So far these Sloan MBAs are smart cookies. They all saw the advantage in the print-and-Internet offer over the print-only offer. But were they influenced by the mere presence of the print-only option (which I will henceforth, and for good reason, call the "decoy"). In other words, suppose that I removed the decoy so that the choices would be the ones seen in the figure below:

Economist.com	SUBSCRIPTIONS
OPINION	<p>Welcome to The Economist Subscription Centre</p> <p>Pick the type of subscription you want to buy or renew.</p> <p><input type="checkbox"/> Economist.com subscription - US \$59.00 One-year subscription to Economist.com. Includes online access to all articles from <i>The Economist</i> since 1997.</p> <p><input type="checkbox"/> Print & web subscription - US \$125.00 One-year subscription to the print edition of <i>The Economist</i> and online access to all articles from <i>The Economist</i> since 1997.</p>
WORLD	
BUSINESS	
FINANCE & ECONOMICS	
SCIENCE & TECHNOLOGY	
PEOPLE	
BOOKS & ARTS	
MARKETS & DATA	
DIVERSIONS	

Would the students respond as before (16 for the Internet only and 84 for the combination)?

Certainly they would react the same way, wouldn't they? After all, the option I took out was one that no one selected, so it should make no difference. Right?

Au contraire! This time, 68 of the students chose the Internet-only option for \$59, up from 16 before. And only 32 chose the combination subscription for \$125, down from 84 before.*

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SUBSCRIPTIONS	
<p>Welcome to The Economist Subscription Centre</p> <p>Pick the type of subscription you want to buy or renew.</p>	
<input type="checkbox"/> Economist.com subscription - US \$59.00 One-year subscription to Economist.com. Includes online access to all articles from The Economist since 1997.	16
<input type="checkbox"/> Print subscription - US \$125.00 One-year subscription to the print edition of The Economist.	0
<input type="checkbox"/> Print & web subscription - US \$125.00 One-year subscription to the print edition of The Economist and online access to all articles from The Economist since 1997.	84

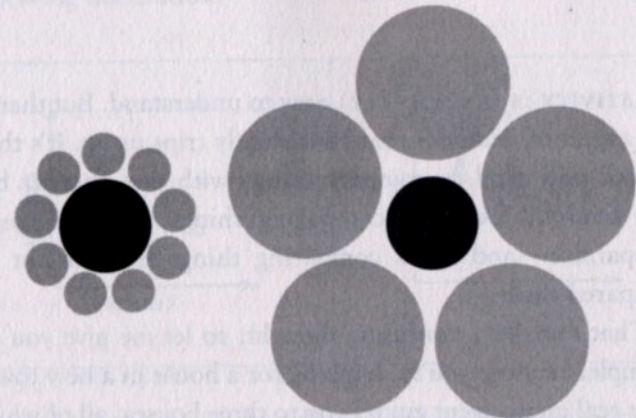
Economist.com	
SUBSCRIPTIONS	
<p>Welcome to The Economist Subscription Centre</p> <p>Pick the type of subscription you want to buy or renew.</p>	
<input type="checkbox"/> Economist.com subscription - US \$59.00 One-year subscription to Economist.com. Includes online access to all articles from The Economist since 1997.	68
<input type="checkbox"/> Print & web subscription - US \$125.00 One-year subscription to the print edition of The Economist and online access to all articles from The Economist since 1997.	32

What could have possibly changed their minds? Nothing rational, I assure you. It was the mere presence of the decoy that sent 84 of them to the print-and-Internet option (and 16 to the Internet-only option). And the absence of the decoy had them choosing differently, with 32 for print-and-Internet and 68 for Internet-only.

This is not only irrational but predictably irrational as well. Why? I'm glad you asked.

*As a convention in this book, every time I mention that conditions are different from each other, it is always a statistically significant difference. I refer the interested reader to the end of this book for a list of the original academic papers and additional readings.

LET ME OFFER you this visual demonstration of relativity.



As you can see, the middle circle can't seem to stay the same size. When placed among the larger circles, it gets smaller. When placed among the smaller circles, it grows bigger. The middle circle is the same size in both positions, of course, but it appears to change depending on what we place next to it.

This might be a mere curiosity, but for the fact that it mirrors the way the mind is wired: we are always looking at the things around us in relation to others. We can't help it. This holds true not only for physical things—toasters, bicycles, puppies, restaurant entrées, and spouses—but for experiences such as vacations and educational options, and for ephemeral things as well: emotions, attitudes, and points of view.

We always compare jobs with jobs, vacations with vacations, lovers with lovers, and wines with wines. All this relativity reminds me of a line from the film *Crocodile Dundee*, when a street hoodlum pulls a switchblade against our hero, Paul Hogan. "You call that a knife?" says Hogan

incredulously, withdrawing a bowie blade from the back of his boot. “Now *this*,” he says with a sly grin, “is a knife.”

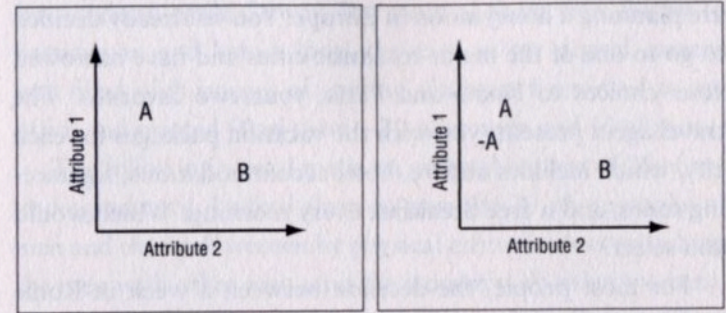
RELATIVITY IS (RELATIVELY) easy to understand. But there’s one aspect of relativity that consistently trips us up. It’s this: we not only tend to compare things with one another but also tend to focus on comparing things that are easily comparable—and avoid comparing things that cannot be compared easily.

That may be a confusing thought, so let me give you an example. Suppose you’re shopping for a house in a new town. Your real estate agent guides you to three houses, all of which interest you. One of them is a contemporary, and two are colonials. All three cost about the same; they are all equally desirable; and the only difference is that one of the colonials (the “decoy”) needs a new roof and the owner has knocked a few thousand dollars off the price to cover the additional expense.

So which one will you choose?

The chances are good that you will *not* choose the contemporary and you will *not* choose the colonial that needs the new roof, but you will choose the other colonial. Why? Here’s the rationale (which is actually quite irrational). We like to make decisions based on comparisons. In the case of the three houses, we don’t know much about the contemporary (we don’t have another house to compare it with), so that house goes on the sidelines. But we do know that one of the colonials is better than the other one. That is, the colonial with the good roof is better than the one with the bad roof. Therefore, we will reason that it is better overall and go for the colonial with the good roof, spurning the contemporary and the colonial that needs a new roof.

To better understand how relativity works, consider the following illustration:



In the left side of this illustration we see two options, each of which is better on a different attribute. Option (A) is better on attribute 1—let’s say quality. Option (B) is better on attribute 2—let’s say beauty. Obviously these are two very different options and the choice between them is not simple. Now consider what happens if we add another option, called (–A) (see the right side of the illustration). This option is clearly worse than option (A), but it is also very similar to it, making the comparison between them easy, and suggesting that (A) is not only better than (–A) but also better than (B).

In essence, introducing (–A), the decoy, creates a simple relative comparison with (A), and hence makes (A) look better, not just relative to (–A), but overall as well. As a consequence, the inclusion of (–A) in the set, even if no one ever selects it, makes people more likely to make (A) their final choice.

Does this selection process sound familiar? Remember the pitch put together by the *Economist*? The marketers there knew that we didn’t know whether we wanted an Internet subscription or a print subscription. But they figured that, of

the three options, the print-and-Internet combination would be the offer we would take.

Here's another example of the decoy effect. Suppose you are planning a honeymoon in Europe. You've already decided to go to one of the major romantic cities and have narrowed your choices to Rome and Paris, your two favorites. The travel agent presents you with the vacation packages for each city, which includes airfare, hotel accommodations, sightseeing tours, and a free breakfast every morning. Which would you select?

For most people, the decision between a week in Rome and a week in Paris is not effortless. Rome has the Coliseum; Paris, the Louvre. Both have a romantic ambience, fabulous food, and fashionable shopping. It's not an easy call. But suppose you were offered a third option: Rome without the free breakfast, called *-Rome* or the decoy.

If you were to consider these three options (Paris, Rome, *-Rome*), you would immediately recognize that whereas Rome with the free breakfast is about as appealing as Paris with the free breakfast, the inferior option, which is Rome without the free breakfast, is a step down. The comparison between the clearly inferior option (*-Rome*) makes Rome with the free breakfast seem even better. In fact, *-Rome* makes Rome with the free breakfast look so good that you judge it to be even better than the difficult-to-compare option, Paris with the free breakfast.

ONCE YOU SEE the decoy effect in action, you realize that it is the secret agent in more decisions than we could imagine. It even helps us decide whom to date—and, ultimately, whom to marry. Let me describe an experiment that explored just this subject.

As students hurried around MIT one cold weekday, I asked some of them whether they would allow me to take their pictures for a study. In some cases, I got disapproving looks. A few students walked away. But most of them were happy to participate, and before long, the card in my digital camera was filled with images of smiling students. I returned to my office and printed 60 of them—30 of women and 30 of men.

The following week I made an unusual request of 25 of my undergraduates. I asked them to pair the 30 photographs of men and the 30 of women by physical attractiveness (matching the men with other men, and the women with other women). That is, I had them pair the Brad Pitts and the George Clooneys of MIT, as well as the Woody Allens and the Danny DeVitos (sorry, Woody and Danny). Out of these 30 pairs, I selected the six pairs—three female pairs and three male pairs—that my students seemed to agree were most alike.

Now, like Dr. Frankenstein himself, I set about giving these faces my special treatment. Using Photoshop, I mutated the pictures just a bit, creating a slightly but noticeably less attractive version of each of them. I found that just the slightest movement of the nose threw off the symmetry. Using another tool, I enlarged one eye, eliminated some of the hair, and added traces of acne.

No flashes of lightning illuminated my laboratory; nor was there a baying of the hounds on the moor. But this was still a good day for science. By the time I was through, I had the MIT equivalent of George Clooney in his prime (A) and the MIT equivalent of Brad Pitt in his prime (B), and also a George Clooney with a slightly drooping eye and thicker nose (*-A*, the decoy) and a less symmetrical version of Brad Pitt (*-B*, another decoy). I followed the same procedure for the less attractive pairs. I had the MIT equivalent of Woody

Allen with his usual lopsided grin (A) and Woody Allen with an unnervingly misplaced eye (-A), as well as Danny DeVito (B) and a slightly disfigured version of Danny DeVito (-B).

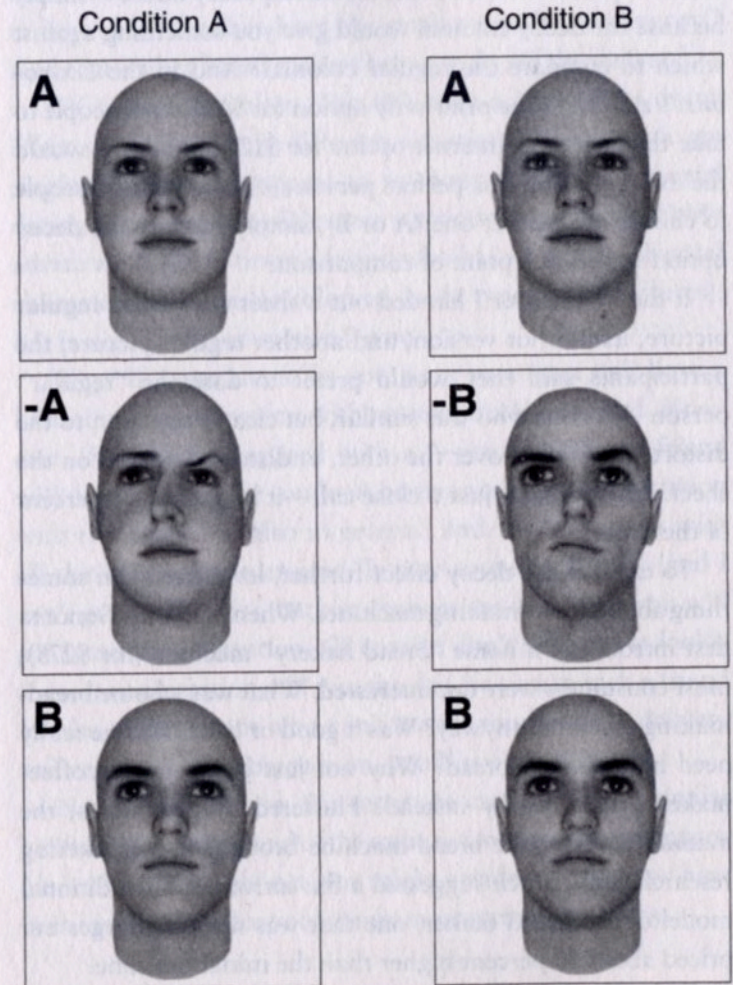
For each of the 12 photographs, in fact, I now had a regular version as well as an inferior (-) decoy version. (See the illustration for an example of the two conditions used in the study.)

It was now time for the main part of the experiment. I took all the sets of pictures and made my way over to the student union. Approaching one student after another, I asked each to participate. When the students agreed, I handed them a sheet with three pictures (as in the illustration here). Some of them had the regular picture (A), the decoy of that picture (-A), and the other regular picture (B). Others had the regular picture (B), the decoy of that picture (-B), and the other regular picture (A).

For example, a set might include a regular Clooney (A), a decoy Clooney (-A), and a regular Pitt (B); or a regular Pitt (B), a decoy Pitt (-B), and a regular Clooney (A). After selecting a sheet with either male or female pictures, according to their preferences, I asked the students to circle the people they would pick to go on a date with, if they had a choice. All this took quite a while, and when I was done, I had distributed 600 sheets.

What was my motive in all this? Simply to determine if the existence of the distorted picture (-A or -B) would push my participants to choose the similar but undistorted picture. In other words, would a slightly less attractive George Clooney (-A) push the participants to choose the perfect George Clooney over the perfect Brad Pitt?

There were no pictures of Brad Pitt or George Clooney in my experiment, of course. Pictures (A) and (B) showed ordi-



Note: For this illustration, I used computerized faces, not those of the MIT students. And of course, the letters did not appear on the original sheets.

nary students. But do you remember how the existence of a colonial-style house needing a new roof might push you to choose a perfect colonial over a contemporary house—simply because the decoy colonial would give you something against which to compare the regular colonial? And in the *Economist's* ad, didn't the print-only option for \$125 push people to take the print-and-Internet option for \$125? Similarly, would the existence of a less perfect person (–A or –B) push people to choose the perfect one (A or B), simply because the decoy option served as a point of comparison?

It did. Whenever I handed out a sheet that had a regular picture, its inferior version, and another regular picture, the participants said they would prefer to date the “regular” person—the one who was similar, but clearly superior, to the distorted version—over the other, undistorted person on the sheet. This was not just a close call—it happened 75 percent of the time.

To explain the decoy effect further, let me tell you something about bread-making machines. When Williams-Sonoma first introduced a home “bread bakery” machine (for \$275), most consumers were not interested. What was a home bread-making machine, anyway? Was it good or bad? Did one really need home-baked bread? Why not just buy a fancy coffee-maker sitting nearby instead? Flustered by poor sales, the manufacturer of the bread machine brought in a marketing research firm, which suggested a fix: introduce an additional model of the bread maker, one that was not only larger but priced about 50 percent higher than the initial machine.

Now sales began to rise (along with many loaves of bread), though it was not the large bread maker that was being sold. Why? Simply because consumers now had two models of bread makers to choose from. Since one was clearly larger and much

more expensive than the other, people didn't have to make their decision in a vacuum. They could say: “Well, I don't know much about bread makers, but I do know that if I were to buy one, I'd rather have the smaller one for less money.” And that's when bread makers began to fly off the shelves.²

OK for bread makers. But let's take a look at the decoy effect in a completely different situation. What if you are single, and hope to appeal to as many attractive potential dating partners as possible at an upcoming singles event? My advice would be to bring a friend who has your basic physical characteristics (similar coloring, body type, facial features), but is slightly less attractive (–you).

Why? Because the folks you want to attract will have a hard time evaluating you with no comparables around. However, if you are compared with a “–you,” the decoy friend will do a lot to make you look better, not just in comparison with the decoy but also in general, and in comparison with all the other people around. It may sound irrational (and I can't guarantee this), but the chances are good that you will get some extra attention. Of course, don't just stop at looks. If great conversation will win the day, be sure to pick a friend for the singles event who can't match your smooth delivery and rapier wit. By comparison, you'll sound great.

Now that you know this secret, be careful: when a similar but better-looking friend of the same sex asks you to accompany him or her for a night out, you might wonder whether you have been invited along for your company or merely as a decoy.

RELATIVITY HELPS US make decisions in life. But it can also make us downright miserable. Why? Because jealousy and envy spring from comparing our lot in life with that of others.

It was for good reason, after all, that the Ten Commandments admonished, "Neither shall you desire your neighbor's house nor field, or male or female slave, or donkey or anything that belongs to your neighbor." This might just be the toughest commandment to follow, considering that by our very nature we are wired to compare.

Modern life makes this weakness even more pronounced. A few years ago, for instance, I met with one of the top executives of one of the big investment companies. Over the course of our conversation he mentioned that one of his employees had recently come to him to complain about his salary.

"How long have you been with the firm?" the executive asked the young man.

"Three years. I came straight from college," was the answer.

"And when you joined us, how much did you expect to be making in three years?"

"I was hoping to be making about a hundred thousand."

The executive eyed him curiously.

"And now you are making almost three hundred thousand, so how can you possibly complain?" he asked.

"Well," the young man stammered, "it's just that a couple of the guys at the desks next to me, they're not any better than I am, and they are making three hundred ten."

The executive shook his head.

An ironic aspect of this story is that in 1993, federal securities regulators forced companies, for the first time, to reveal details about the pay and perks of their top executives. The idea was that once pay was in the open, boards would be reluctant to give executives outrageous salaries and benefits. This, it was hoped, would stop the rise in executive compensation, which neither regulation, legislation, nor shareholder

pressure had been able to stop. And indeed, it needed to stop: in 1976 the average CEO was paid 36 times as much as the average worker. By 1993, the average CEO was paid 131 times as much.

But guess what happened. Once salaries became public information, the media regularly ran special stories ranking CEOs by pay. Rather than suppressing the executive perks, the publicity had CEOs in America comparing their pay with that of everyone else. In response, executives' salaries skyrocketed. The trend was further "helped" by compensation consulting firms (scathingly dubbed "Ratchet, Ratchet, and Bingo" by the investor Warren Buffett) that advised their CEO clients to demand outrageous raises. The result? Now the average CEO makes about 369 times as much as the average worker—about three times the salary before executive compensation went public.

Keeping that in mind, I had a few questions for the executive I met with.

"What would happen," I ventured, "if the information in your salary database became known throughout the company?"

The executive looked at me with alarm. "We could get over a lot of things here—insider trading, financial scandals, and the like—but if everyone knew everyone else's salary, it would be a true catastrophe. All but the highest-paid individual would feel underpaid—and I wouldn't be surprised if they went out and looked for another job."

Isn't this odd? It has been shown repeatedly that the link between amount of salary and happiness is not as strong as one would expect it to be (in fact, it is rather weak). Studies even find that countries with the "happiest" people are not among those with the highest personal income. Yet we keep

pushing toward a higher salary. Much of that can be blamed on sheer envy. As H. L. Mencken, the twentieth-century journalist, satirist, social critic, cynic, and freethinker noted, a man's satisfaction with his salary depends on (are you ready for this?) whether he makes more than his wife's sister's husband. Why the wife's sister's husband? Because (and I have a feeling that Mencken's wife kept him fully informed of her sister's husband's salary) this is a comparison that is salient and readily available.*

All this extravagance in CEOs' pay has had a damaging effect on society. Instead of causing shame, every new outrage in compensation encourages other CEOs to demand even more. "In the Web World," according to a headline in the *New York Times*, the "Rich Now Envy the Superrich."

In another news story, a physician explained that he had graduated from Harvard with the dream of someday receiving a Nobel Prize for cancer research. This was his goal. This was his dream. But a few years later, he realized that several of his colleagues were making more as medical investment advisers at Wall Street firms than he was making in medicine. He had previously been happy with his income, but hearing of his friends' yachts and vacation homes, he suddenly felt very poor. So he took another route with his career—the route of Wall Street.³ By the time he arrived at his twentieth class reunion, he was making 10 times what most of his peers were making in medicine. You can almost see him, standing in the middle of the room at the reunion, drink in hand—a large circle of influence with smaller circles gathering around him. He had not won the Nobel Prize, but

*Now that you know this fact, and assuming that you are not married, take this into account when you search for a soul mate. Look for someone whose sibling is married to a productivity-challenged individual.

he had relinquished his dreams for a Wall Street salary, for a chance to stop feeling "poor." Is it any wonder that family practice physicians, who make an average of \$160,000 a year, are in short supply?*

CAN WE DO anything about this problem of relativity?

The good news is that we can sometimes control the "circles" around us, moving toward smaller circles that boost our relative happiness. If we are at our class reunion, and there's a "big circle" in the middle of the room with a drink in his hand, boasting of his big salary, we can consciously take several steps away and talk with someone else. If we are thinking of buying a new house, we can be selective about the open houses we go to, skipping the houses that are above our means. If we are thinking about buying a new car, we can focus on the models that we can afford, and so on.

We can also change our focus from narrow to broad. Let me explain with an example from a study conducted by two brilliant researchers, Amos Tversky and Daniel Kahneman. Suppose you have two errands to run today. The first is to buy a new pen, and the second is to buy a suit for work. At an office supply store, you find a nice pen for \$25. You are set to buy it, when you remember that the same pen is on sale for \$18 at another store 15 minutes away. What would you do? Do you decide to take the 15-minute trip to save the \$7? Most people faced with this dilemma say that they would take the trip to save the \$7.

Now you are on your second task: you're shopping for

*Of course, physicians have other problems as well, including insurance forms, bureaucracy, and threats of lawsuits for malpractice.

your suit. You find a luxurious gray pinstripe suit for \$455 and decide to buy it, but then another customer whispers in your ear that the exact same suit is on sale for only \$448 at another store, just 15 minutes away. Do you make this second 15-minute trip? In this case, most people say that they would not.

But what is going on here? Is 15 minutes of your time worth \$7, or isn't it? In reality, of course, \$7 is \$7—no matter how you count it. The only question you should ask yourself in these cases is whether the trip across town, and the 15 extra minutes it would take, is worth the extra \$7 you would save. Whether the amount from which this \$7 will be saved is \$10 or \$10,000 should be irrelevant.

This is the problem of relativity—we look at our decisions in a relative way and compare them locally to the available alternative. We compare the relative advantage of the cheap pen with the expensive one, and this contrast makes it obvious to us that we should spend the extra time to save the \$7. At the same time, the relative advantage of the cheaper suit is very small, so we spend the extra \$7.

This is also why it is so easy for a person to add \$200 to a \$5,000 catering bill for a soup entrée, when the same person will clip coupons to save 25 cents on a one-dollar can of condensed soup. Similarly, we find it easy to spend \$3,000 to upgrade to leather seats when we buy a new \$25,000 car, but difficult to spend the same amount on a new leather sofa (even though we know we will spend more time at home on the sofa than in the car). Yet if we just thought about this in a broader perspective, we could better assess what we could do with the \$3,000 that we are considering spending on upgrading the car seats. Would we perhaps be better off spending it on books, clothes, or a vacation? Thinking broadly like this is not easy,

because making relative judgments is the natural way we think. Can you get a handle on it? I know someone who can.

He is James Hong, cofounder of the Hotornot.com rating and dating site. (James, his business partner Jim Young, Leonard Lee, George Loewenstein, and I recently worked on a research project examining how one's own "attractiveness" affects one's view of the "attractiveness" of others.)

For sure, James has made a lot of money, and he sees even more money all around him. One of his good friends, in fact, is a founder of PayPal and is worth tens of millions. But Hong knows how to make the circles of comparison in his life smaller, not larger. In his case, he started by selling his Porsche Boxster and buying a Toyota Prius in its place.⁴

"I don't want to live the life of a Boxster," he told the *New York Times*, "because when you get a Boxster you wish you had a 911, and you know what people who have 911s wish they had? They wish they had a Ferrari."

That's a lesson we can all learn: the more we have, the more we want. And the only cure is to break the cycle of relativity.

Reflections on Dating and Relativity

In Chapter 1, on relativity, I offered some dating advice. I proposed that if you want to go bar-hopping, you should consider taking along someone who looks similar to you but who is slightly less attractive than you are. Because of the relative nature of evaluations, others would perceive you not only as cuter than your decoy, but also as better-looking than other people in the bar. By the same logic, I also pointed out that the flip side of this coin is that if someone invites you to

be his or her wingman (or wingwoman), you can easily figure out what your friend really thinks of you. As it turns out, I forgot to include one important warning that came courtesy of the daughter of a colleague of mine from MIT.

“Susan” was an undergraduate at Cornell who wrote to me, saying she was delighted with my trick and that it had worked wonderfully for her. Once she found the ideal decoy, her social life improved. But a few weeks later she wrote again, telling me that she’d been at a party where she’d had a few drinks. For some odd reason, she decided to tell her friend why she invited her to accompany her everywhere. The friend was understandably upset, and the story did not end well.

The moral of this story? Never, ever tell your friend why you’re asking him or her to come with you. Your friend might have suspicions, but for the love of God, don’t eliminate all doubt.

Reflections on Traveling and Relativity

When *Predictably Irrational* came out, I went on a book tour that lasted six straight weeks. I traveled from airport to airport, city to city, radio station to radio station, talking to reporters and readers for what seemed like days on end, without engaging in any type of personal discussion. Every conversation was short, “all business,” and focused on my research. There was no time to enjoy a cup of coffee or a beer with any of the wonderful people I encountered.

Toward the end of the tour I found myself in Barcelona. There I met Jon, an American tourist who, like me, did not speak any Spanish. We felt an immediate camaraderie. I imagine this kind of bonding happens often with travelers

from the same country who are far from home and find themselves sharing observations about how they differ from the locals around them. Jon and I ended up having a wonderful dinner and a deeply personal discussion. He told me things that he seemed not to have shared before, and I did the same. There was an unusual closeness between us, as if we were long-lost brothers. After staying up very late talking, we both needed to sleep. We would not have a chance to meet again before parting ways the following morning, so we exchanged e-mail addresses. This was a mistake.

About six months later, Jon and I met again for lunch in New York. This time, it was hard for me to figure out why I’d felt such a connection with him, and no doubt he felt the same. We had a perfectly amicable and interesting lunch, but it lacked the intensity of our first meeting, and I was left wondering why.

In retrospect, I think it was because I’d fallen victim to the effects of relativity. When Jon and I first met, everyone around us was Spanish, and as cultural outsiders we were each other’s best alternative for companionship. But once we returned home to our beloved American families and friends, the basis for comparison switched back to “normal” mode. Given this situation, it was hard to understand why Jon or I would want to spend another evening in each other’s company rather than with those we love.

My advice? Understand that relativity is everywhere, and that we view everything through its lens—rose-colored or otherwise. When you meet someone in a different country or city and it seems that you have a magical connection, realize that the enchantment might be limited to the surrounding circumstances. This realization might prevent you from subsequent disenchantment.