Conclusions

I began this book by introducing two fictitious characters, spent some time discussing two species, and ended with two selves. The two characters were the intuitive System 1, which does JghtA5 `.J5 the fast thinking, and the effortful and slower System 2, which does the slow thinking, monitors System 1, and maintains control as best it can within its limited resources. The two species were the fictitious Econs, who live in the land of theory, and the Humans, who act in the real world. The two selves are the experiencing self, which does the living, and the remembering self, which keeps score and makes the choices. In this final chapter I consider some applications of the three distinctions, taking them in reverse order.

Two Selves

The possibility of conflicts between the remembering self and the interests of the experiencing self turned out to be a harder problem than I initially thought. In an early experiment, the cold-hand study, the combination of duration neglect and the peak-end rule led to choices that were manifestly absurd. Why would people willingly expose themselves to unnecessary pain? Our subjects left the choice to their remembering self, preferring to repeat the trial that left the better memory, although it involved more pain. Choosing by the quality of the memory may be justified in extreme cases, for example when post-traumatic stress is a possibility, but the cold-hand experience was not traumatic. An objective observer making the choice for someone else would undoubtedly choose the short exposure, favoring the sufferer's experiencing self. The choices that people made on their own behalf are fairly described as mistakes. Duration neglect and the peak-end rule in the evaluation of stories, both at the opera and in judgments of Jen's life, are equally indefensible. It does not make sense to evaluate an entire life by its last moments, or to give no weight to duration in deciding which life is more desirable.

The remembering self is a construction of System 2. However, the distinctive features of the way it evaluates episodes and lives are characteristics of our memory. Duration neglect and the peak-end rule originate in System 1 and do not necessarily correspond to the values of System 2. We believe that duration is important, but our memory tells us it is not. The rules that govern the evaluation of the past are poor guides for decision making, because time does matter. The central fact of our

existence is that time is the ultimate finite resource, but the remembering self ignores that reality. The neglect of duration combined with the peak-end rule causes a bias that favors a short period of intense joy over a long period of moderate happiness. The mirror image of the same bias makes us fear a short period of intense but tolerable suffering more than we fear a much longer period of moderate pain. Duration neglect also makes us prone to accept a long period of mild unpleasantness because the end will be better, and it favors giving up an opportunity for a long happy period if it is likely to have a poor ending. To drive the same idea to the point of discomfort, consider the common admonition, “Don’t do it, you will regret it.” The advice sounds wise because anticipated regret is the verdict of the remembering self and we are inclined to accept such judgments as final and conclusive. We should not forget, however, that the perspective of the remembering self is not always correct. An objective observer of the hedonimeter profile, with the interests of the experiencing self in mind, might well offer different advice. The remembering self’s neglect of duration, its exaggerated emphasis on peaks and ends, and its susceptibility to hindsight combine to yield distorted reflections of our actual experience.

In contrast, the duration-weighted conception of well-being treats all moments of life alike, memorable or not. Some moments end up weighted more than others, either because they are memorable Sareeva or because they are important. The time that people spend dwelling on a memorable moment should be included in its duration, adding to its weight. A moment can also gain importance by altering the experience of subsequent moments. For example, an hour spent practicing the violin may enhance the experience of many hours of playing or listening to music years later. Similarly, a brief awful event that causes PTSD should be weighted by the total duration of the long-term misery it causes. In the duration-weighted perspective, we can determine only after the fact that a moment is memorable or meaningful. The statements “I will always remember…” or “this is a meaningful moment” should be taken as promises or predictions, which can be false—and often are—even when uttered with complete sincerity. It is a good bet that many of the things we say we will always remember will be long forgotten ten years later.

The logic of duration weighting is compelling, but it cannot be considered a complete theory of well-being because individuals identify with their remembering self and care about their story. A theory of well-being that ignores what people want cannot be sustained. On the other hand, a theory that ignores what actually happens in people’s lives and focuses exclusively on what they think about their life is not tenable either.

The remembering self and the experiencing self must both be considered, because their interests do not always coincide. Philosophers could struggle with these questions for a long time.

The issue of which of the two selves matters more is not a question only for philosophers; it has implications for policies in several domains, notably medicine and welfare. Consider the investment that should be made in the treatment of various medical conditions, including blindness, deafness, or kidney failure. Should the investments be determined by how much people fear these conditions? Should investments be guided by the suffering that patients actually experience? Or should they follow the intensity of the patients' desire to be relieved from their condition and by the sacrifices that they would be willing to make to achieve that relief? The ranking of blindness and deafness, or of colostomy and dialysis, might well be different depending on which measure of the severity of suffering is used. No easy solution is in sight, but the issue is too important to be ignored.

The possibility of using measures of well-being as indicators to guide government policies has attracted considerable recent interest, both among academics and in several governments in Europe. It is now conceivable, as it was not even a few years ago, that an index of the amount of suffering in society will someday be included in national statistics, along with measures of unemployment, physical disability, and income. This project has come a long way.

Econs and Humans

In everyday speech, we call people reasonable if it is possible to reason with them, if their beliefs are generally in tune with reality, and if their preferences are in line with their interests and their values. The word *rational* conveys an image of greater deliberation, more calculation, and less warmth, but in common language a rational person is certainly reasonable. For economists and decision theorists, the adjective has an altogether different meaning. The only test of rationality is not whether a person's beliefs and preferences are reasonable, but whether they are internally consistent. A rational person can believe in ghosts so long as all her other beliefs are consistent with the existence of ghosts. A rational person can prefer being hated over being loved, so long as hi Sso as alls preferences are consistent. Rationality is logical coherence—reasonable or not. Econs are rational by this definition, but there is overwhelming evidence that Humans cannot be. An Econ would not be susceptible to priming, WYSIATI, narrow framing, the inside view, or preference

reversals, which Humans cannot consistently avoid.

The definition of rationality as coherence is impossibly restrictive; it demands adherence to rules of logic that a finite mind is not able to implement. Reasonable people cannot be rational by that definition, but they should not be branded as irrational for that reason. *Irrational* is a strong word, which connotes impulsivity, emotionality, and a stubborn resistance to reasonable argument. I often cringe when my work with Amos is credited with demonstrating that human choices are irrational, when in fact our research only showed that Humans are not well described by the rational-agent model.

Although Humans are not irrational, they often need help to make more accurate judgments and better decisions, and in some cases policies and institutions can provide that help. These claims may seem innocuous, but they are in fact quite controversial. As interpreted by the important Chicago school of economics, faith in human rationality is closely linked to an ideology in which it is unnecessary and even immoral to protect people against their choices. Rational people should be free, and they should be responsible for taking care of themselves. Milton Friedman, the leading figure in that school, expressed this view in the title of one of his popular books: *Free to Choose*.

The assumption that agents are rational provides the intellectual foundation for the libertarian approach to public policy: do not interfere with the individual's right to choose, unless the choices harm others. Libertarian policies are further bolstered by admiration for the efficiency of markets in allocating goods to the people who are willing to pay the most for them. A famous example of the Chicago approach is titled *A Theory of Rational Addiction*; it explains how a rational agent with a strong preference for intense and immediate gratification may make the rational decision to accept future addiction as a consequence. I once heard Gary Becker, one of the authors of that article, who is also a Nobel laureate of the Chicago school, argue in a lighter vein, but not entirely as a joke, that we should consider the possibility of explaining the so-called obesity epidemic by people's belief that a cure for diabetes will soon become available. He was making a valuable point: when we observe people acting in ways that seem odd, we should first examine the possibility that they have a good reason to do what they do. Psychological interpretations should only be invoked when the reasons become implausible—which Becker's explanation of obesity probably is.

In a nation of Econs, government should keep out of the way, allowing the Econs to act as they choose, so long as they do not harm others. If a motorcycle rider chooses to ride without a helmet, a libertarian will support

his right to do so. Citizens know what they are doing, even when they choose not to save for their old age, or when they expose themselves to addictive substances. There is sometimes a hard edge to this position: elderly people who did not save enough for retirement get little more sympathy than someone who complains about the bill after consuming a large meal at a restaurant. Much is therefore at stake in the debate between the Chicago school and the behavioral economists, who reject the extreme form of the rational-agent model. Freedom is not a contested value; all the participants in the debate are in favor of it. But life is more complex for behavioral economists than for tru S th17;e believers in human rationality. No behavioral economist favors a state that will force its citizens to eat a balanced diet and to watch only television programs that are good for the soul. For behavioral economists, however, freedom has a cost, which is borne by individuals who make bad choices, and by a society that feels obligated to help them. The decision of whether or not to protect individuals against their mistakes therefore presents a dilemma for behavioral economists. The economists of the Chicago school do not face that problem, because rational agents do not make mistakes. For adherents of this school, freedom is free of charge.

In 2008 the economist Richard Thaler and the jurist Cass Sunstein teamed up to write a book, *Nudge*, which quickly became an international bestseller and the bible of behavioral economics. Their book introduced several new words into the language, including Econs and Humans. It also presented a set of solutions to the dilemma of how to help people make good decisions without curtailing their freedom. Thaler and Sunstein advocate a position of libertarian paternalism, in which the state and other institutions are allowed to *nudge* people to make decisions that serve their own long-term interests. The designation of joining a pension plan as the default option is an example of a nudge. It is difficult to argue that anyone's freedom is diminished by being automatically enrolled in the plan, when they merely have to check a box to opt out. As we saw earlier, the framing of the individual's decision—Thaler and Sunstein call it choice architecture—has a huge effect on the outcome. The nudge is based on sound psychology, which I described earlier. The default option is naturally perceived as the normal choice. Deviating from the normal choice is an act of commission, which requires more effortful deliberation, takes on more responsibility, and is more likely to evoke regret than doing nothing. These are powerful forces that may guide the decision of someone who is otherwise unsure of what to do.

Humans, more than Econs, also need protection from others who deliberately exploit their weaknesses—and especially the quirks of System

1 and the laziness of System 2. Rational agents are assumed to make important decisions carefully, and to use all the information that is provided to them. An Econ will read and understand the fine print of a contract before signing it, but Humans usually do not. An unscrupulous firm that designs contracts that customers will routinely sign without reading has considerable legal leeway in hiding important information in plain sight. A pernicious implication of the rational-agent model in its extreme form is that customers are assumed to need no protection beyond ensuring that the relevant information is disclosed. The size of the print and the complexity of the language in the disclosure are not considered relevant—an Econ knows how to deal with small print when it matters. In contrast, the recommendations of *Nudge* require firms to offer contracts that are sufficiently simple to be read and understood by Human customers. It is a good sign that some of these recommendations have encountered significant opposition from firms whose profits might suffer if their customers were better informed. A world in which firms compete by offering better products is preferable to one in which the winner is the firm that is best at obfuscation.

A remarkable feature of libertarian paternalism is its appeal across a broad political spectrum. The flagship example of behavioral policy, called Save More Tomorrow, was sponsored in Congress by an unusual coalition that included extreme conservatives as well as liberals. Save More Tomorrow is a financial plan that firms can offer their employees. Those who sign on allow the employer to increa Syers liberalse their contribution to their saving plan by a fixed proportion whenever they receive a raise. The increased saving rate is implemented automatically until the employee gives notice that she wants to opt out of it. This brilliant innovation, proposed by Richard Thaler and Shlomo Benartzi in 2003, has now improved the savings rate and brightened the future prospects of millions of workers. It is soundly based in the psychological principles that readers of this book will recognize. It avoids the resistance to an immediate loss by requiring no immediate change; by tying increased saving to pay raises, it turns losses into foregone gains, which are much easier to bear; and the feature of automaticity aligns the laziness of System 2 with the long-term interests of the workers. All this, of course, without compelling anyone to do anything he does not wish to do and without any misdirection or artifice.

The appeal of libertarian paternalism has been recognized in many countries, including the UK and South Korea, and by politicians of many stripes, including Tories and the Democratic administration of President Obama. Indeed, Britain's government has created a new small unit whose mission is to apply the principles of behavioral science to help the government better accomplish its goals. The official name for this group is

the Behavioural Insight Team, but it is known both in and out of government simply as the Nudge Unit. Thaler is an adviser to this team.

In a storybook sequel to the writing of *Nudge*, Sunstein was invited by President Obama to serve as administrator of the Office of Information and Regulatory Affairs, a position that gave him considerable opportunity to encourage the application of the lessons of psychology and behavioral economics in government agencies. The mission is described in the 2010 Report of the Office of Management and Budget. Readers of this book will appreciate the logic behind specific recommendations, including encouraging "clear, simple, salient, and meaningful disclosures." They will also recognize background statements such as "presentation greatly matters; if, for example, a potential outcome is framed as a loss, it may have more impact than if it is presented as a gain."

The example of a regulation about the framing of disclosures concerning fuel consumption was mentioned earlier. Additional applications that have been implemented include automatic enrollment in health insurance, a new version of the dietary guidelines that replaces the incomprehensible Food Pyramid with the powerful image of a Food Plate loaded with a balanced diet, and a rule formulated by the USDA that permits the inclusion of messages such as "90% fat-free" on the label of meat products, provided that the statement "10% fat" is also displayed "contiguous to, in lettering of the same color, size, and type as, and on the same color background as, the statement of lean percentage." Humans, unlike Econs, need help to make good decisions, and there are informed and unintrusive ways to provide that help.

Two Systems

This book has described the workings of the mind as an uneasy interaction between two fictitious characters: the automatic System 1 and the effortful System 2. You are now quite familiar with the personalities of the two systems and able to anticipate how they might respond in different situations. And of course you also remember that the two systems do not really exist in the brain or anywhere else. "System 1 does X" is a shortcut for "X occurs automatically." And "System 2 is mobilized to do Y" is a shortcut for "arousal increases, pupils dilate, attention is fo Stenations,cused, and activity Y is performed." I hope you find the language of systems as helpful as I do, and that you have acquired an intuitive sense of how they work without getting confused by the question of whether they exist. Having delivered this necessary warning, I will continue to use the language to the end.

The attentive System 2 is who we think we are. System 2 articulates judgments and makes choices, but it often endorses or rationalizes ideas and feelings that were generated by System 1. You may not know that you are optimistic about a project because something about its leader reminds you of your beloved sister, or that you dislike a person who looks vaguely like your dentist. If asked for an explanation, however, you will search your memory for presentable reasons and will certainly find some. Moreover, you will believe the story you make up. But System 2 is not merely an apologist for System 1; it also prevents many foolish thoughts and inappropriate impulses from overt expression. The investment of attention improves performance in numerous activities—think of the risks of driving through a narrow space while your mind is wandering—and is essential to some tasks, including comparison, choice, and ordered reasoning. However, System 2 is not a paragon of rationality. Its abilities are limited and so is the knowledge to which it has access. We do not always think straight when we reason, and the errors are not always due to intrusive and incorrect intuitions. Often we make mistakes because we (our System 2) do not know any better.

I have spent more time describing System 1, and have devoted many pages to errors of intuitive judgment and choice that I attribute to it. However, the relative number of pages is a poor indicator of the balance between the marvels and the flaws of intuitive thinking. System 1 is indeed the origin of much that we do wrong, but it is also the origin of most of what we do right—which is most of what we do. Our thoughts and actions are routinely guided by System 1 and generally are on the mark. One of the marvels is the rich and detailed model of our world that is maintained in associative memory: it distinguishes surprising from normal events in a fraction of a second, immediately generates an idea of what was expected instead of a surprise, and automatically searches for some causal interpretation of surprises and of events as they take place.

Memory also holds the vast repertory of skills we have acquired in a lifetime of practice, which automatically produce adequate solutions to challenges as they arise, from walking around a large stone on the path to averting the incipient outburst of a customer. The acquisition of skills requires a regular environment, an adequate opportunity to practice, and rapid and unequivocal feedback about the correctness of thoughts and actions. When these conditions are fulfilled, skill eventually develops, and the intuitive judgments and choices that quickly come to mind will mostly be accurate. All this is the work of System 1, which means it occurs automatically and fast. A marker of skilled performance is the ability to deal with vast amounts of information swiftly and efficiently.

When a challenge is encountered to which a skilled response is

available, that response is evoked. What happens in the absence of skill? Sometimes, as in the problem 17 × 24 = ?, which calls for a specific answer, it is immediately apparent that System 2 must be called in. But it is rare for System 1 to be dumbfounded. System 1 is not constrained by capacity limits and is profligate in its computations. When engaged in searching for an answer to one question, it simultaneously generates the answers to related questions, and it may substitute a response that more easily comes to mind for the one that was requested. In this conception of heu Septtedristics, the heuristic answer is not necessarily simpler or more frugal than the original question—it is only more accessible, computed more quickly and easily. The heuristic answers are not random, and they are often approximately correct. And sometimes they are quite wrong.

System 1 registers the cognitive ease with which it processes information, but it does not generate a warning signal when it becomes unreliable. Intuitive answers come to mind quickly and confidently, whether they originate from skills or from heuristics. There is no simple way for System 2 to distinguish between a skilled and a heuristic response. Its only recourse is to slow down and attempt to construct an answer on its own, which it is reluctant to do because it is indolent. Many suggestions of System 1 are casually endorsed with minimal checking, as in the bat-and-ball problem. This is how System 1 acquires its bad reputation as the source of errors and biases. Its operative features, which include WYSIATI, intensity matching, and associative coherence, among others, give rise to predictable biases and to cognitive illusions such as anchoring, nonregressive predictions, overconfidence, and numerous others.

What can be done about biases? How can we improve judgments and decisions, both our own and those of the institutions that we serve and that serve us? The short answer is that little can be achieved without a considerable investment of effort. As I know from experience, System 1 is not readily educable. Except for some effects that I attribute mostly to age, my intuitive thinking is just as prone to overconfidence, extreme predictions, and the planning fallacy as it was before I made a study of these issues. I have improved only in my ability to recognize situations in which errors are likely: “This number will be an anchor…,” “The decision could change if the problem is reframed…” And I have made much more progress in recognizing the errors of others than my own.

The way to block errors that originate in System 1 is simple in principle: recognize the signs that you are in a cognitive minefield, slow down, and ask for reinforcement from System 2. This is how you will proceed when you next encounter the Müller-Lyer illusion. When you see lines with fins pointing in different directions, you will recognize the situation as one in

which you should not trust your impressions of length. Unfortunately, this sensible procedure is least likely to be applied when it is needed most. We would all like to have a warning bell that rings loudly whenever we are about to make a serious error, but no such bell is available, and cognitive illusions are generally more difficult to recognize than perceptual illusions. The voice of reason may be much fainter than the loud and clear voice of an erroneous intuition, and questioning your intuitions is unpleasant when you face the stress of a big decision. More doubt is the last thing you want when you are in trouble. The upshot is that it is much easier to identify a minefield when you observe others wandering into it than when you are about to do so. Observers are less cognitively busy and more open to information than actors. That was my reason for writing a book that is oriented to critics and gossipers rather than to decision makers.

Organizations are better than individuals when it comes to avoiding errors, because they naturally think more slowly and have the power to impose orderly procedures. Organizations can institute and enforce the application of useful checklists, as well as more elaborate exercises, such as reference-class forecasting and the premortem. At least in part by providing a distinctive vocabulary, organizations can also encourage a culture in which people watch out for one another as they approach minefields. Whatever else it produces, a St pof othersn organization is a factory that manufactures judgments and decisions. Every factory must have ways to ensure the quality of its products in the initial design, in fabrication, and in final inspections. The corresponding stages in the production of decisions are the framing of the problem that is to be solved, the collection of relevant information leading to a decision, and reflection and review. An organization that seeks to improve its decision product should routinely look for efficiency improvements at each of these stages. The operative concept is routine. Constant quality control is an alternative to the wholesale reviews of processes that organizations commonly undertake in the wake of disasters. There is much to be done to improve decision making. One example out of many is the remarkable absence of systematic training for the essential skill of conducting efficient meetings.

Ultimately, a richer language is essential to the skill of constructive criticism. Much like medicine, the identification of judgment errors is a diagnostic task, which requires a precise vocabulary. The name of a disease is a hook to which all that is known about the disease is attached, including vulnerabilities, environmental factors, symptoms, prognosis, and care. Similarly, labels such as “anchoring effects,” “narrow framing,” or “excessive coherence” bring together in memory everything we know about a bias, its causes, its effects, and what can be done about it.

There is a direct link from more precise gossip at the watercooler to

better decisions. Decision makers are sometimes better able to imagine the voices of present gossipers and future critics than to hear the hesitant voice of their own doubts. They will make better choices when they trust their critics to be sophisticated and fair, and when they expect their decision to be judged by how it was made, not only by how it turned out.